CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

FACULTY OF ECONOMICS AND MANAGEMENT

AGRARIAN PERSPECTIVES XXIII.

THE COMMUNITY-LED RURAL DEVELOPMENT

PROCEEDINGS
of the 23th International Scientific Conference

September 16, 2014
Prague, Czech Republic

Czech University of Life Sciences Prague
Faculty of Economics and Management

Agrarian perspectives XXIII. - The Community-led Rural Development

International Scientific Conference

Editor:
doc. Ing. Luboš Smutka, Ph.D.

Technical editor:
Ing. Jiří Jiral

Publication is not a subject of language check.

Papers in individual sections are sorted by authors' names in alphabetical order.

All papers passed a double-blind review process.

ISBN 978-80-213-2545-6

ISSN 2464-4781 (Online); ISSN 1213-7960 (Print); ISSN 1213-7979 (CD-ROM)

Foreword

This year is the 23rd year of the annual conference Agrarian Perspectives. Title of the conference suggests that this conference has always been an opportunity for experts from different fields to get together and discuss issues related to agriculture from various points of view. Starting this year, the conference is becoming more problem-oriented in accordance with the research lines of the faculty. This year the conference puts emphasis on questions related to rural development, next year it will be economic issues, in 2016 management studies, 2017 information technology in agriculture and 2017 quantitative methods in economics.

This 23rd year of the conference focuses on the "Community-led rural development" (CLLD), which represents a tool for engagement of local citizens in response to economic, environmental and social problems related to local development. The CLLD in rural areas draws on more-than-20-year-old practice based on the bottom-up approach. Since the early 1990s the LEADER initiative has been developed to support many rural development projects which induced life quality improvements, social inclusion, nature diversity, and many other positive effects. CLLD can be considered as a multi-sector area-based development strategy which is implemented through the partnerships of various public and private partakers. It endeavors to avoid so called "sector thinking", to apply joint approach to local development and to implement an integrated strategy of rural areas development utilizing local potential.

The conference aims to establish a platform both for theoretical discussions, exchange of practical experience, and specification of business requirements to be solved in collaboration with academic sphere. The conference focuses on theoretical principles, institutional and policy Framework of the CLLD, transitive processes strengthening sustainability of rural region, partnership of local public, public administration, non-governmental organizations and companies in rural areas, rural development and agriculture within the regional economy, financial and economic aspects of CLLD, information support of community-led rural development and a role of social networks.

The conference managed to attract participants from all different countries. The plenary session has hosted three distinguished speakers that showed a range of possible ways of looking at the CLLD, namely from academic, policy and practical perspectives, due to the presence of dr. Andrew Copus (The James Hutton Institute, Aberdeen, UK), dr. Michael Gregory (ENRD Contact Point, Brussels) and dr. Radim Sršeň (European LEADER Association for Rural Development, Brussels). The following working groups hosted more than 40 participants from nine different countries. Their proceeding are presented in this book.

Lukas Zagata
(On behalf of the Scientific Committee of the AP 2014 Conference)

Plenary session- keynote speakers

Thing Globally, Act Locally: the Experience of LEADER and Challenges of Community-led Local Development both on European and Grassroot Level

Radim Sršeň, Zbyněk Dubský[1]

[1]Jan Masaryk Centre of International Studies, Faculty of International Relations, Unversity of Economics, Prague, nám. W. Churchilla 4, 130 67 Praha 3
srsenr@vse.cz, dubskyz@vse.cz

Annotation: LEADER method has proven itself to be very successful and effective tool in rural development policies in Europe in past 23 years. Based on this experience and in compliance with the new trends of EU structural and cohesion policies, European Commission introduced a ´Community-led Local Development´ as a new innovative tool for the EU programming period 2014 – 20, a sort of ´LEADER across all European Structural and Investment funds´, especially in relation to the rural development. This should give more opportunities and power to local stakeholders within local action groups to implement more effective local development based on multi-fund approach benefiting from the synergy effects of policies combined in the territory. It is true to say that LEADER method is not being used just as a part of rural development policies, it has been already successfully used also in cities, especially in relation to the social inclusion. Moreover, many pilot projects have been successfully launched in developing countries, especially in Africa and Latin America, and as a part of EU pre-accession policies. This makes LEADER to be a successful and innovative tool of development for promoting global goals throughout local actions.

Key words: LEADER, Community-led Local Development, multi-fund, EU legitimacy, territorial dimension

JEL classification: R58

1 Introduction

European integration process has played an important role in the development of the European territory for more than 60 years, using different tools and programs to ensure peaceful and sustainable development of Europe, deeper cooperation between countries and nations, and cohesion of European regions. Among the main pillars playing key role in achieving this goals have been regional, structural, cohesion and agricultural policies.

Meanwhile, the European family has been extending continuously from 6 to 28 members and, at the same time, the European integration process both deepening and widening its scope. As a result of all these processes, we have been facing new challenges and looking for new solutions all the time. One of the main principles of EC/EU policies emerging over the years have been "subsidiarity". It ensures that decisions are taken as closely as possible to the citizen and that constant checks are established to verify that actions at Union level are justified in light of the possibilities available at national, regional or local level. Specifically, the Union should not take action (except in the areas that fall within its exclusive competence), unless it is more effective than action taken at national, regional or local level (Treaty on the European Union, Article 5, 1992).

Based on the multilevel governance model of the European union (EU) and deepening process of the European integration we are facing new challenges related to the problems of EU legitimacy and identity. As a result, we could observe a trend of strengthening public euroscepticism and success of anti-European nationalistic and populist political movements arising across Europe (Diez, T. and Wiener, A., 2005).

Over the 60 years of experience of European regional development has brought many instruments either as a recipe to contemporary problems and, especially, to ensure that the European goals are achieved effectively. One of those tools being used in rural development since the beginning of 1990´s is LEADER.

The goal of our paper is to analyse to what extent the LEADER methodology was successful in promoting development of rural areas, if it could have contributed to build up legitimacy of the European union and, at the same time, to define main challenges of LEADER/CLLD for the future. Our hypothesis is: "LEADER has proven to be an effective tool of rural development and can be evaluated as an instrument strengthening legitimacy of the European union".

2 Materials and Methods

2.1 LEADER methodology

LEADER (*´Liaison Entre Actions de Développement de l'Économie Rurale´*, meaning ´links between the rural economy and development actions´) is a local development method which allows local actors to develop an area by using its endogenous development potential. It was introduced by the European Communities in 1991 with the LEADER I program financed from the European the European Agricultural Guidance and Guarantee Fund (EAGGF).

The LEADER methodology is grounded on the following seven key features which have to be applied simultaneously (European Commission, 2006):

- **An area-based approach** takes a small, homogenous, socially cohesive territory, often characterised by common traditions, a local identity, a sense of belonging or common needs and expectations, as the target area for policy implementation. Having such an area as a reference facilitates the recognition of local strengths and weaknesses, threats and opportunities, endogenous potential and the identification of major bottlenecks for sustainable development.
- **The bottom-up approach** means that local actors participate in decision-making about the strategy and in the selection of the priorities to be pursued in their local area. Experience has shown that the bottom-up approach should not be considered as alternative or opposed to top-down approaches from national and/or regional authorities, but rather as combining and interacting with them, in order to achieve better overall results.
- **Setting up a local partnership, known as a 'local action group' (LAG),** is an original and important feature of the LEADER approach. The LAG has the task of identifying and implementing a local development strategy, making decisions about the allocation of its financial resources and managing them. A LAG should associate public and private partners**,** and be well-balanced and representative of the existing local interest groups, drawn from the different socioeconomic sectors in the area. At the decision-making level, the private partners and associations must make up at least 50 % of the local partnership.
- LEADER can play a valuable role in **stimulating new and innovative approaches to the development of rural areas.** Such innovation is encouraged by allowing LAGs wide margins of freedom and flexibility in making decisions about the actions they want to support. Innovation needs to be understood in a wide sense. It may mean the introduction of a new product, a new process, a new organisation or a new market. This common definition of innovation is valid for rural as well as urban areas.

- LEADER is not a sectoral development programme; the local development strategy must have a **multi-sectoral approach**, integrating several sectors of activity. The actions and projects contained in local strategies should be linked and coordinated as a coherent whole. Integration may concern actions conducted in a single sector, all programme actions or specific groups of actions or, most importantly, links between the different economic, social, cultural, environmental players and sectors involved.
- **Networking** is one of the main features of the LEADER approach; furthermore, it is a very complex one in terms of objectives, tools, implementation methods, actors involved and ways of meeting the needs of members. Networking includes the exchange of achievements, experiences and know-how between LEADER groups, rural areas, administrations and organisations involved in rural development within the EU, whether or not they are direct LEADER beneficiaries. It is also about means of transferring good practice, of disseminating innovation and of building on the lessons learned from local rural development.
- **Cooperation** goes further than networking**.** It involves a local action group undertaking a joint project with another LEADER group, or with a group taking a similar approach, in another region, Member State, or even third country. Cooperation can help LEADER groups to boost their local activities. It can allow them to resolve certain problems or add value to local resources. For example, it can be a way of achieving the critical mass necessary for a specific project to be viable, or of encouraging complementary actions. Examples include joint marketing by Leader groups in different regions whose areas share a specialisation in a specific product (chestnuts, wool, etc.), or developing joint tourism initiatives based on a shared cultural heritage (Celtic, Roman, etc.).

2.2 European background

LEADER method is defined and embedded within EU regulations and guidances. However, its main principles are coming out of the strategic European documents, i.e. Lisbon Strategy, Lisbon Treaty and, especially, Europe 2020 Strategy with 3 main pillars:

- Smart growth
- Sustainable growth
- Inclusive growth

The Europe 2020 Strategy responds to the European and global post-crisis challenge by proposing seven flagship initiatives to catalyse progress under each priority theme:

- Innovation Union
- Youth on the move
- A digital agenda for Europe
- Resource efficient Europe
- An industrial policy for the globalisation era
- An agenda for new skills and jobs
- European platform against poverty

Cohesion policy and its structural funds are set out as key delivery mechanisms to achieve the goals. However, the emphasis placed on growth is similar to that of the original Lisbon

Strategy of 2000 which significantly failed to either prevent or contain the crisis. There is a risk that Europe 2020 Strategy will remain trapped in a growth paradigm that ignores the ambiguities and problems that obtain in reconciling the principles of economic competitiveness, social cohesion and environmental sustainability (Novy, Swiatek and Moulaert, 2012). Reflection and learning from the past is especially important because the territorial dimension is fundamental to reducing disparities in living conditions and working opportunities between Member States and Regions (Barca, 2009).

Priorities coming out of the Europe 2020 strategy relevant to the strong support of LEADER method include especially significant focuses on following areas: disappearing regional disparities, social inclusion, importance of linkages between rural and urban areas, multilevel governance and subsidiarity and inclusion of all stakeholders in the process of planning and implementing integrated strategies of local development.

3 Results and Discussion

3.1 Experience of LEADER

LEADER method has proved to be successful in past 23 years as a bottom-up process promoting cooperation in rural areas, stimulating local economy and putting main stakeholders - including civil society and the ´People´ - together to actively participate on local development.

The quantitative evidence of LEADER as a ´successful European story´ is evident from the following table:

Table 1: LEADER as the European Union Program 1991-2014

Stage	*Duration*	*Funds*	*Budget (EUR)*	*LAGs*
Leader I	*1991–1993*	*EAGGF-Guidance, ESF, ERDF*	*450 million*	*217*
Leader II	*1994-1999*	*EAGGF-Guidance, ESF, ERDF*	*1.7 billion*	*821*
Leader+	*2000-2006*	*EAGGF-Guidance*	*2.1 billion*	*893 in EU-15 (+ 250 in the Leader+type measure 2004-2006) in 6 MS*
„Leader axis“	*2007-2013*	*EAFRD*	*5.5 billion → 6% of the EAFRD funding*	*2 200 in EU-27*
CLLD	*2014-2020*	*CSF Funds*	*Min. 5% of EAFRD + ???*	*3 000?*

Source: European LEADER Association for Rural Development (ELARD), 2014

According to our opinion there are following key points which make LEADER successful:

- LEADER is able to mobilise, empower and involve the whole rural economy: from a traditional farm to a high-tech processing company. In rural context, where human

and other resources are scarce, this is particularly important. LEADER is a non-political, transparent and open for everyone tool to re-shape the rural future.

- LEADER is a cost-effective way of renewing, diversifying and developing the rural economy. For instance, in LAG territory in South-West part of Finland, with the population of 45 000, they have been supporting the generation of 200 new jobs during the programming period 2007-13, most of which are in the services sector where we have been lagging behind. In addition there is an extensive amount of local enthusiasm and voluntary work powering LEADER free of charge.
- LEADER is able to change the traditional top-down local development mindset to bottom-up. People on the ground start doing those things themselves that they were earlier blaming public civil servants and politicians not to do. LEADER also brings in the long-term strategic thinking through the Local Development Strategies that collect the individual projects under an umbrella and bigger territorial vision.

It is true to say that most of the European local action groups have not been just LEADER program implementation body, but have been rather successful also as grant beneficiaries, wide platforms for development and animation in the rural areas LAG or as a building stones of partnership and strategies on regional level.

LEADER method is not being used just as a part of the EU policies but many pilot projects have been successfully launched in developing countries, especially in Africa and Latin America, and as a part of EU pre-accession policies. This makes LEADER to be an innovative tool of development policies and aid and the European Commission is considering the possibility of using it as a systematic tool of its development programs in the future.

3.2 Challenges of Community-led Local Development

Based on the experience of application LEADER method within the rural development programs since 1991, the European Commission has proposed to EU member states a possibility of using an instrument of ´Community-led Local development´ financed also from other European Structural Investment Funds (ESIF), i.e. from the European Fund for Regional Development (EFRD), European Social Fund (ESF) and European Maritime and Fisheries Fund (EMFF). Moreover, it has promoted application of this tool also in cities, i.e. city districts, and within the urban-rural partnerships. However, apart of the obligatory use of LEADER/CLLD within the European Agricultural Fund for Rural Development (EAFRD), its financing from other ESIF funds is according to the 2014-20 programming period regulations just voluntary, not compulsory, and depends upon decision of each member state.

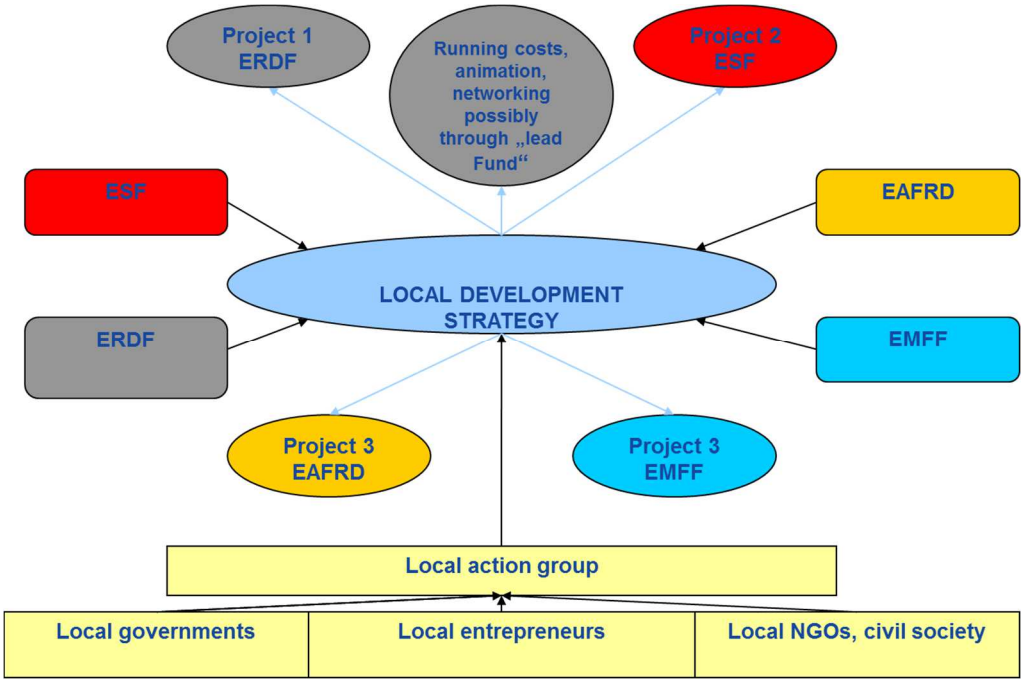
CLLD is one of the two instruments of new EU policy of ´territorial dimension´, which has been designed as one of innovative tools to reach the goals of Europe 2020 strategy. Thematic EU interventions and structural and cohesion policies in past programming periods have not proven to be successful in reaching EU goals, moreover, as a result of interventions, the regional disparities were even growing. As a consequence, the contemporary difference in GDP/capita between the most developed and poorest EU region is 13x, the richest EU region is 3x above EU average, the poorest one 4x below and there is significant and growing polarization between rural and urban areas, especially in Central Europe – Bratislava, Praha and Budapest being the most striking examples (OECD, 2013). As a solution, EU puts pressure on integrated and inclusive regional and local development using the instruments of Integrated Territorial Investments (ITI) and Community-led Local Development (CLLD).

ITI is a top-down approach focusing on strategic integrated investments to the area via using combination of different EU funds and interventions. Other main principles are similar to

CLLD/LEADER: engaging all stakeholders into public-private partnership, strategic integrated development planning and delegation of in-advance planning, decision making and financing to the hands of regional players, strengthening the subsidiarity principle and EU legitimacy and bringing effectiveness through synergy effects. Moreover, both instruments should be used in mutual compliance, ITI as top-down and CLLD as bottom-up principle.

Focusing on mechanism of implementing multi-fund CLLD/LEADER in the new programming period 2014-20, the following image demonstrates the ideal scheme of implementation:

Image 1: Mechanism of multi-fund CLLD implementation



Source: European LEADER Association for Rural Development (ELARD), 2014

As we have already mentioned, use of multi-fund CLLD/LEADER instrument is voluntary for member states and according to our research it should be implemented in 16-18 EU member states, some of them combining just 2 or 3 out of 4 possible funds.

And what are the opportunities and threats of using CLLD multi-fund approach based on the LEADER experience and discussions with managing authorities of different member states?

LEADER has proven to be a successful tool of rural development engaging all the main stakeholders. The biggest opportunity of multi-fund approach is, undoubtedly, to fully use the potential of synergy effect and have possibility to implement integrated local development strategies using different funds. It has proven to be appropriate especially for small scale projects and simple for potential beneficiaries. It has distributed a large amount of small grants widely to whole area, supporting local economy, especially micro and small and medium enterprises, and effectively promoting local production. It has great potential to stimulate cooperation between all stakeholders in the area, encourage voluntary work and re-find and promote traditions of the region. The projects implemented through LEADER are usually quite cost-effective in comparison to the big projects implemented through standard programs. As a consequence, successful LAGs should be able to reestablish feeling of identity

and local pride in rural areas, i.e. among young people, bringing them back to rural areas and inspiring them to participate on the local development. Finally, it fully supports the principles of subsidiarity, fulfilling European and global goals by local means, and good governance and, as a result, it contributes to the EU legitimacy.

On the other hand, there are also significant threats. Multi-fund CLLD/LEADER implementation is not simple for managing authorities, however, simple implementation schemes are not always the most effective ones, it takes time and patience to establish working CLLD/LEADER mechanism. The crucial issue is communication between different authorities on European, national and regional level, as this has not been that much required within implementation of thematic programs. It is important to define basic standards of LAGs quality and processes across Europe and in each member state sensitively search for optimal intersection between top-down and bottom-up approach, trying to define as simple and effective delivery schemes as possible. It is also essential to make CLLD/LEADER inclusive, not exclusive, i.e. to cover whole potential area by LAGs so that all possible beneficiaries have the opportunity to use this instrument. Finally, monitoring and evaluation are crucial parts of the program, there should be defined a clear set of both qualitative and quantitative measures to ensure that all LAGs work properly and according to the key seven principles of LEADER. Unless all the threats mentioned above are not prevented, there is a significant risk that the challenge CLLD symbolizes turns into failure.

4 Conclusion

LEADER method has proven itself to be very successful and effective instrument of rural development policies in Europe in past 23 years. Based on this experience and in compliance with the new trends of EU structural and cohesion policies, the European Commission introduced ´Community-led Local Development´ as a new innovative tool for the programming period 2014 – 20, widening the option to implement LEADER methodology across all European Structural and Investment funds. This gives a significant opportunity and more power to local stakeholders within LAGs to implement more effective local development based on the multi-fund approach, benefiting from the synergy effects of combining together different policies in the territory. However, so far the implementation of CLLD through ERDF, ESF and EMFF funds is voluntary and not all member states will use this opportunity in the new programming period 2014 - 20, especially due to the threats CLLD is facing. They are connected especially with the setting of implementation schemes and delivery mechanisms as well as ensuring quality of LAG strategies, processes and activities, based on effective monitoring and evaluation schemes. Czech Republic will be one of EU flagships in CLLD implementation and, therefore, observed very carefully how it uses the opportunities and faces the threats of this innovative tool. Its success would be an important precondition for wider use of CLLD across Europe in future, its failure would mean a serious step back in decentralization of EU rural policies.

It is true to say that LEADER method is not being used just as a part of rural development policies, it has been already successfully used also in cities and as tool of development policies in developing countries. LEADER methodology has developed into a successful and innovative tool for promoting European and global goals throughout local actions and, in line with EU strategies, fully supports the principles of subsidiarity, good governance and democracy and, as a result, significantly contributes to strengthen the legitimacy of the European Union. .

5 References

1. Treaty on the European Union (1992) *Official Journal of the European Communities No. C 191*, Brussels

2. Diez, T. and Wiener, A. (2005) *European Integration Theory*, Oxford University Press, Oxford

3. European Commission (2006) *The Leader approach — A basic guide*, Office for Official Publications of the European Communities, Luxembourg

4. *Europe 2020 Strategy*, www.europa.eu/europe2020/index_en.htm

5. Novy, A., Swiatek D. C. and Moulaert, F. (2012) ´Social Cohesion: A Conceptual and Political Elucidation´, *Urban Studies,* vol. 49, no. 9, pp. 1853-1889.

6. Barca, F. (2009) ´An agenda for a reformed cohesion policy: a place-based approach to meeting European Union challenges and expectations´, Independent report prepared on the request of Danuta Hubner, Commissioner for Regional Policy, European Commission

7. OECD (2013) *Rural-Urban Partnerships: An Integrated Approach to Economic Development*, OECD Publishing

’Local buzz’ or ‘organised proximity’ – getting the balance right in community-led rural development

Andrew Copus
Social, Economic and Geographical Sciences Group, The James Hutton Institute, Craigiebuckler, Aberdeen AB15 8QH, Scotland, UK.
andrew.copus@hutton.ac.uk

Annotation: Addressing “functional region failure” is of course only one of a range of arguments in favour of adopting a CLLD approach in preference to more conventional horizontal or sectoral policies. These include advantages associated with integration and coherence, sensitivity to regional specificities and the full range of territorial assets, multi-level governance and the strengthening of local capacity. These will continue to provide a justification for neo-endogenous and place-based approaches to rural development. Nevertheless the literature cited above should give cause for reflection about CLLD relocalisation strategies which fail to take account of the increasing complexity of the spatial organisation of economic activity. Rural economies are unlikely to thrive on the basis of “local buzz” alone, they must find ways to develop “organised proximities” across a range of spatial scales, linking them into networks which can extend their markets and provide access to sources of innovation.

Key words: Community-led rural development, balance, economy, loval buz, organized proximity

JEL classification: R58

Introduction

In my contribution to your conference on community-led rural development today I would like to make two observations about the recent upsurge of interest in local development models generally, and in urban-rural relationships in particular.

The first is to suggest that there is a danger of the popularity of urban-rural interaction/cooperation approach being characterised by the same shortcomings which Lovering (1999) ascribed to the New Regionalism, and more recently Harrison (2007) has associated with City Region ideas, i.e. that theorizing conducted in abstract was not adequately tested in relation to empirical realities, but that this had not restrained its use as a basis for normative policy recommendations.

The second is to suggest that the particular danger facing community-based rural development is an excessive concentration upon local embeddedness to the neglect of the equally important issue of the increasing potential benefits of interaction within a wider spatial, or even aspatial, relational context. Clearly the history of the LEADER ethos means that supporting endogenous growth processes will play a key role in rural CLLD. However the temptation to turn the clock back and attempt to recreate a kinder, quieter, less brutally competitive Utopian local economy, shielded from globalisation, must be resisted. The design of CLLD needs to take full account of a wide range of interactions, across all spatial scales, and taking full advantage of the selective abrogation of geographical proximity constraints. I will illustrate these points with particular reference to the role of rural-urban relationships in CLLD.

Policy tails and analytical dogs

The English expression “the tail wags the dog” describes a situation where the customary driver of a cause and effect relationship is reversed. Lovering uses this expression to sum up his view of the “New Regionalism” literature of the late 1990s as follows: “It is impossible to

resist the conclusion that the policy tail is wagging the analytical dog, and wagging it so hard indeed that much of the theory is shaken out" (1999 p390).

Lovering's view (later applied to City Regions by Harrison 2007) is that New Regionalism ideas were developed in abstract, rather than from empirical analysis, and that they were being used as normative policy guidelines without being fully validated by studies of the real world. The academic discourse was being driven by policy requirements, and indirectly, he suspects, by powerful economic and political interests. The proponents of New Regionalism were not all equally culpable in this; some "Sophisticates" were careful in their writings to maintain logical integrity within the abstract sphere. On the other hand "Vulgarians" freely applied abstract ideas to real (and much more complex) regional development issues with scant regard for empirical validation.

Rural development research is also vulnerable to these kinds of threats to its integrity. Examples of tails wagging dogs are not hard to find. For example, some would argue that the original imperative to develop multifunctionality as a concept was the need to justify continued support for farmers within the context of WTO pressure for greater exposure to world market forces. Thus, according to Delgardo et al (2003); "The term was initially used by the EU as a simple ideological pretext in the Millennium Round negotiations…". Similarly, Huylenbroeck and Durand (2003 p1) state that "…the EU has adopted the concept of multifunctional land use as a central principle to legitimate further support to agriculture…." The message I would like to take from these examples is simply that the same caution needs to be applied to the increasingly popular concept of Community Led Local Development (CLLD). As academic researchers we need to take care to avoid the errors of both the Vulgarians, and the Sophisticates, by anchoring our theories and policy paradigms firmly in an awareness of the changing empirical realities of rural Europe.

In the following sections I will provide a brief history of the evolution of theories and policy practice in relation to rural-urban relationships, culminating in the concept of "functional region failure" which apparently underlies recent city-region and rural-urban cooperation initiatives. This is followed by a review of recent theorising about the changing role of space in rural economies and patterns of interaction, leading to a consideration of the "relocalisation" approach. Consistent with my call for greater emphasis upon empirical evidence, I then propose a classification of urban-rural linkages, and highlight the differences in their geography. This leads me to advocate structured audits of interaction patterns as a basis for selection between three different policy modes, addressing different patterns/scales of spatial behaviour. The paper concludes with a reiteration of the key lessons for CLLD.

The rise, fall, and resurrection of urban-rural relationships as a rural development tool

The theoretical discourse on rural-urban relationships, and how they may be manipulated for the benefit of rural areas was initially (in the 1950s and '60s) focused upon economic aspects, and was 'normative' in approach. Key ideas were the growth pole theory of Françoise Perroux (1955) and Jacques Boudeville (1966), and the cumulative causation model of Gunnar Myrdal (1957). The work of Walter Christaller and August Losch on Central Place Theory, during the 1930s and 1940s, was also very influential in the background.

Over the next couple of decades policy experience based upon these ideas was rather mixed (Higgins 1983, Parr 1999). The original clarity of rationale was gradually lost as it filtered through policy documentation, and by the early 1990s there was relatively little research activity in this area. Writing in the US in the early 1980s Higgins (op cit p9) complained that "Reference to growth pole and growth center doctrine is made, in loose form, to justify the

policy of decentralization and the emphasis on small cities. Little hard analysis has been conducted of how diverting growth from capital cities and other metropolitan centers to rural centers, "growth centers," small towns, and middle-sized cities is supposed to promote development. Terms are used without definition….” In a UK context Paul Cloke (1979, pvii) observed that although “both planners and rural people had been until recently, operating on the basis of “total blind faith” within a “fog of ignorance”…. This theoretical vacuum seems to be still with us, accompanied by a worrying scarcity of empirical evidence for the benefits of urban-rural interaction.”

The revival of interest in rural-urban interaction can be traced to the European Spatial Development Perspective (ESDP) of 1999 (CEC 1999). In this document, strengthened urban-rural relationships were associated with the concept of “polycentric development”. One of the ESDP’s recommended policy options, (Ibid p25) was for “strengthening small and medium-sized towns in rural areas as focal points for regional development and promotion of their networking…” The term urban-rural cooperation was used to describe the nurturing of urban-rural relationships in a policy context (Zonneveld and Stead, 2007, p440). This approach was subsequently taken up by the Study Programme on European Spatial Planning (SPESP) and its successor, the European Spatial Planning Observatory Network (ESPON) (Schneidewind et al 2006; Bengs et al., 2006). As a consequence, the ideas found their way into the INTEREG III programme (Zonnevelt and Stead 2007, Waterhout and Stead 2007), the Territorial Agenda (COPTA 2007), the Fifth Cohesion Report (EC 2010) and the Territorial Agenda 2020 (TA 2020) document (COPTA 2011).

European Commission interest in urban-rural relationships was reflected in a series of seminars in 2008 and 2009, and (in 2011-13) a joint research initiative with the OECD, under the title “RURBAN”. The latter also culminated in two conferences, in Metz in 2012 and in Warsaw in 2013 . During 2012, DG Regio produced a series of short promotional videos, (available through its website) providing specific examples of how rural-urban relationships could be enhanced for the benefit of both rural and urban areas. These examples, and the report produced for the RURBAN initiative (Kawka et al., 2012) show that the concept materialised predominantly as a form of territorial integration of governance.

The rising popularity of the urban-rural relationship/cooperation concept among spatial planners and the regional/cohesion policy community was paralleled by an increasing use of the term “city region” in some Member State contexts (Harrison 2007, Rodriguez-Pose 2008; Caffyn and Dahlstrome, 2007), and by “relocalisation” and “sustainable rural development” concepts among rural development academics (Sonnino and Marsden 2006; Marsden 2009).

Functional Region Failure

Urban-rural cooperation and city region approaches share the assumption that urban areas are the engines of growth, and that rural areas deprived of agglomerative advantages, are largely passive recipients of spread effects, which may be enhanced through collaboration in governance. For example, in the TA 2020 document, according to Mendez et al (2011, p68) “cities are seen as motors of smart, sustainable and inclusive development and attractive places to live, work, visit and invest in. …Urban-rural interdependence should be recognised through integrated governance and planning based on partnership.”

The TA 2020 document itself argues that multi-sectoral approaches can “support balanced urban-rural relationships and strengthen natural functional relationships within the territory, i.e. ”catchment” or ”commuting” links between places fulfilling different social and economic functions” (COPTA 2011 p66). It later becomes clear that the TA 2020 authors believe that the need for urban-rural cooperation derives from a failure of urban-hinterland relationships to

keep up with developing cities, (for reasons which are not clear), but which may be compensated for by cooperation between local governance in urban and rural areas:

"The recent economic crisis underlined the interdependence of regions. This applies particularly for urban-rural relations… While cities are the main motors connected directly to the European and global networks, rural areas have to be well connected to the city network. Peripheries and rural areas with a high share of vulnerable groups particularly need to have sufficient connections to centres…The intensifying relations between cities and the rural territories surrounding them call for deepening the connections and cooperation between urban and rural territories, between cities and their regions… Small and medium-sized centres might have a crucial role in this field in rural areas; therefore it is important to improve the accessibility of urban centres from rural territories and so enhance people's access to job opportunities and services of general interest." Ibid p81.

Aspects of this diagnosis are echoed by the ESPON FOCI report (Lennert et al., 2010), which argues that larger metropolitan areas tend to be more closely integrated into global networks than hinterland towns. This is conspicuously the case in the former socialist states of Eastern Europe, where capital cities have experienced a rapid transformation, leaving the more rural surrounding regions behind. This process may perhaps be summed up by the term "functional region failure".

It is not clear that the functional region failure hypothesis is based upon, or has been tested with, a significant body of empirical analysis, across a range of geographical contexts. This may shed light on, for example, whether it is particularly a transitional phenomenon, or whether it is more ubiquitous. It is thus not immune from the accusation of being policy led. Furthermore it seems to take insufficient account of a body of literature, to which we will shortly turn, regarding changing interpretations of space and proximity.

Relocalisation and Sustainable Rural Development

In the context of rural development Marsden (2009) and others, have advocated -"Sustainable Rural Development". Key components of this are multifunctionality, short supply chains, quality products, and new forms of marketing. Relocalisation brings with it environmental and resource conservation benefits, and (ideally) (re)builds local human and social capital.

Sonnino and Marsden (2006) argue that Sustainable Rural Development ("relocalisation") has taken off in some parts of Europe (including Italian regions) more successfully than others, and that it is essentially competing against what Crowley et al (2008) term "para productivist" agriculture, ("delocalisation"). The key difference between the two forms of development is the extent to which they retain economic benefits in the countryside, rather than transferring them to globalised markets.

Thus "the new rural development paradigm… distinguishes itself from post-productivism in the emphasis and autonomy it promotes for a reconstituted agricultural, fibre, energy and land-based rural sector… In contrast to the dominant agri-industrial model that tends to assume atomistic farms and neoclassical farmers, the rural development model suggests a recreated potential for symbiotic interconnectedness between networks of farms and farmers in the same locale and regions. This is based upon the assumptions in the associational and institutional economics literature… and bears reference spatially to the emergence of more collaborative city–regions in which towns and cities recast their ecological production and consumption chains within their own rural hinterlands…" (Marsden 2009 p121). Thus relocalisation parallels the city region approach as a response to functional region failure. Once again, more empirical evidence would be required to establish its wider applicability

across a range of European contexts, although, as we shall see it explicitly acknowledges the changing role of proximity and physical distance in patterns of rural economic activity. It is to this subject that we now turn.

Changing interpretations of space and proximity

In 1997, the economist Frances Cairncross published a book entitled "The Death of Distance - How the Communications Revolution Will Change Our Lives". In the same year, Jean-Pierre Veltz, observed that the economic landscape was "no longer well ordered by distance" and that "the territory that counts is more and more the territory of social interaction, not merely of physical proximity". More recently, Tallman et al (2004) expressed this fundamental shift in the forces which govern patterns of economic activity as follows: "As the construct of closeness changes in the post-industrial economy, and as firms begin to relate to other firms that are close relationally—through networks of alliances—or virtually—through intensive information exchange—the relevant concept of space may move away from physical geography…"

Different academic disciplines have articulated their understanding of the implications of this fundamental change in a variety of ways, each with a distinctive vocabulary. For example, geographers and regional scientists have observed that as the cost of overcoming distance is reduced by technological changes in transport and communications, physical/geographical proximity is losing its role in the spatial organisation of economic activity (Bathelt and Glückler 2011). Economic and social life is becoming liberated from the costs associated with Euclidean distance, and what is now important are various kinds of relational, or "organised", proximity (social, administrative, knowledge-based, cultural, institutional); collectively known as "organised proximity" (Torre and Rallet 2005, Boschma 2005). Patterns of economic activity are progressively freed to shift towards new configurations in which the key relationships are no longer determined by agglomeration, but instead connect enterprises and other actors in "relational space".

Another vocabulary including the term "glocalisation", originated in political economy. Swyngedouw (2004) noted concurrent tendencies, since the 1980s, in both the organisation of economic activities and in governance, for an increase in importance of both local and global scales. Post-Fordism had been associated not only with globalisation, but with "industrial districts", "learning regions", and "milieux innovateur". Thus "…intensifying competition on an expanding scale is paralleled exactly by the emergence of locally/regionally sensitive production milieux. Yet, these localised or regionalised production complexes are organisationally and, in terms of trade and other networks, highly internationalised and globalised. The insertion of firms in a dense network of particular regional production milieux is part and parcel of a strategy of globalisation and global integration. …Companies are simultaneously, intensely local and intensely global." (Swyngedouw 2004 p38). Glocalisation implies that economic and social networks tend to "jump scales" (to use Swyngedouw's term), so that the traditional urban hierarchy is bypassed.

More recently the term "translocal" has been used in the context of migration and business networking (Hedberg and Carmo 2011). The business network literature has also featured a debate over the relative importance of local embeddedness, composed of a dense mesh of frequent local interactions, versus less frequent and extenuated links with actors outside the local area, termed "weak ties" by Granovetter (1985). It is usually argued that embeddedness is important for day to day support, whilst global linkages provide strategic market intelligence and knowledge to fuel innovation. Bathelt et al (2004) have coined the term "local buzz and global pipes" to convey this concept. A broad consensus has emerged that

both kinds of linkages are important (Bosworth 2008, Kalantaridis 2006, Kalantarides and Bika 2006, De Noronha Vaz 2006), but the balance between them varies considerably according to the kind of activity, characteristics of the locality and so on.

To return to "Sustainable Rural Development" Marsden argues that "What is clear from our research evidence in Europe as well as beyond is that it is possible to rebuild differentiated rural development in ways that increase interactions with the external economy at the same time as maximising the ways in which more economic and social value can be fixed in rural spaces…."(op cit p121). Thus the re-localisation approach shares with "glocalisation" the disruption of hierarchical urban-rural relationships, but instead of "jumping scales", the shift is primarily towards greater regional self-sufficiency.

Deconstructing urban rural relationships

In the final section of this paper I should like to return to the need to ground theory in empirical realities. I will do this by attempting to catalogue the changing components of rural–urban interaction, highlighting their changing spatial characteristics, and considering the implications for urban-rural cooperation and CLLD. I do not claim an adequate empirical basis for the following discussion, but propose it as a possible framework for further research.

Local economies, like city regions (Harrison 2007) are social constructs, and all too often, due to the paucity of empirical evidence "objects of mystery". Exactly half a century ago Dickinson (1964: 227) stated "This concept of the city-region, like all concepts, is a mental construct….The concept of the city-region can only be made specific and definable, as a geographic entity, by reference to the precise and areal extent of particular associations with the city." According to Harrison (2007 p26?) "the challenge for economic geographers remains – to study emerging state spaces (such as city regions) and position them within an increasingly complex territorial, networked, and relational world".

One way to respond to this challenge is to classify the range of different kinds of urban-rural interaction together with their characteristic geography. A number of classifications exist (Nordregio 2002, Zonnevelt and Stead 2007, Bengs et al 2006). Table 1 elaborates a classification of types of rural-urban interaction which draws heavily upon the work of Piacentino and Trapasso (2010).

Space will not allow a detailed commentary on the four types and ten sub-types. Nevertheless it is hoped that they illustrate the fact that many of the relationships which are commonly proposed as a basis for urban-rural partnership policies are less and less likely to involve contiguous "hinterlands". Instead they may either connect "generic" rural and urban areas which are not necessarily adjacent to each other, or they may be more completely 'footloose', not requiring any distinction between urban and rural. For example farmers and other rural businesses generally engage in transactions with both urban and rural customers and suppliers, but not necessarily local ones. Rural recreation and tourism by urban people is by no means restricted to the immediate vicinity of the home city. Planting trees for carbon capture cannot be directly linked to emissions from the neighbouring urban areas, and most rural renewable energy is distributed via a national grid. The ten sub-types of urban-rural relationships described above each has a different potential in terms of "contiguous" or "ubiquitous" benefits.

CLLD interventions designed to enhance interactions within and without functional regions require a better understanding of current interaction patterns, and the way in which they support or inhibit local development. The above framework could provide a starting point for a basic audit of the profile of flows which could begin to address this evidence gap.

Table 1: Types and sub-types of urban-rural Interaction, based on the OECD classification

Type of Interaction	Sub-type	Key recent trends
1. Demographic Linkages	(a) Urbanisation (rural-urban migration).	Still a live issue in extreme N of Europe, some NMS and Mediterranean regions.
	(b) Commuting and Counter-urbanisation	Longer distance commuting. Commuting mixed with home working. Counter urbanisation the dominant trend in Central and W Europe
2. Economic transactions and innovation activity	(a) 'Central place' consumer relationships.	Commuting disrupts CP hierarchy. Increased mobility extends 'range'. Rise of internet shopping.
	(b) Exchanges of goods and (private) services between rural SMEs and nearby cities	Polarisation between (mainstream) globalisation, translocal networks, increasing food miles and (minority) relocalisation, short supply chain etc. response. Rise in service sector. Development of hub-based logistics.
	(c) Diffusion of knowledge and innovation between countryside and nearby cities	Improvements in broadband and other communications.
3. Delivery of public services	(a) Delivery of urban-based SGI to rural households and businesses. Also access of rural areas to urban SGI access points	Drive for efficiency and cost effectiveness (associated with privatisation) – but also rise of innovative delivery solutions.
	(b) Public transport availability in rural areas.	Drive for efficiency and cost effectiveness (associated with privatisation). General reduction in public transport availability outside urban areas.
4. Exchanges in amenities and environmental goods	(a) Access to countryside for leisure and recreational use by urban residents.	Increasing car ownership – increasing short break tourism. Reduction in 'within hinterland' tourism and leisure – main vacation abroad.
	(b) Rural areas as sources of water supplies, carbon capture, waste treatment.	Increased interest in carbon capture. Increasing volume of waste together with stricter rules about disposal.
	(c) Rural areas as sources of renewable energy.	Much interest, substantial long term potential, but short term risks due to market fluctuation.

Source: Copus (2013)

Reflections on the implications for CLLD

Both 'deconstruction' of the concept of urban-rural relationships, and consideration of the changing nature of proximity, point to a degree of complexity and ongoing change which are incompatible with simplistic definitions of functional or city regions as frames or "containers" for rural-urban CLLD interventions.

Three distinct 'modes' of intervention may be envisaged. The first is a version of conventional urban-rural cooperation, based on 'functional regions', whilst the second and third are hybrid types which acknowledge the decreasing importance of contiguity and physical proximity.

Mode 1: Thematic City Region measures. Recognition of the complexity and transitory nature of current patterns and structures points to a thematic approach to rural-urban cooperation, in which objectives, intervention logic, the intervention geography, and implementation activities are clearly and explicitly specified in relation to an aspect (or aspects) of interaction between the countryside and urban areas. Such thematic intervention should be focused on forms of interaction for which proximity or contiguity remains important. A good example would be intervention to improve rural access to services (both private and public) or creation of relocalised food supply chains.

Mode 2: Cooperation between Generic Urban and Rural categories. This form of intervention would support interaction between generic urban and rural categories of space, without constraining them to link contiguous areas. An example would be a (national or international) initiative to connect urban consumers to rural leisure and tourism providers.

Mode 3: Fostering Organised Proximity in Rural Areas. This approach would seek to build 'translocal globalisation' through interventions designed to nurture and extend the scope of

organised proximity interactions by rural businesses. An example would be the 'match-making' type of business network brokering (Copus et al 2011).

Table 2 suggests how the three modes of intervention relate to the types of interaction discussed earlier. Further details are provided in Copus (2013). It is important to stress that the examples provided are intended to be illustrative, rather than comprehensive.

Table 2: Modes of Intervention by Type of Interaction and Policy Issue

Type of Interaction	Sub-type	Principal Policy Issue to be addressed	Examples of appropriate U-R cooperation interventions...	Modes of intervention		
				(i) Thematic U-R Coop.	(ii) Generic U-R Coop	(iii) Fostering Organised Proximity
1. Demographic Linkages	(a) Urbanisation.	Regional disparities (depletion of marginal areas).	Relocation of public sector employment in rural areas.	✓	✓	
	(b) Commuting and Counter-urbanisation.	Regional disparities (congestion of peri-urban areas?).	Investments in or better coordination of suburban transport.	✓		
2. Economic transactions and innovation activity	(a) 'Central place' consumer relationships.	Degradation of private services in smaller centres...	Support for community/social enterprises to run private services in rural areas.	✓	✓	?
	(b) U-R exchanges of goods and services.	Leakage of value added, employment etc. from rural areas.	"Matchmaking" service to build links between urban and rural SMEs	?	✓	✓
	(c) U-R Diffusion of knowledge and innovation.	Lower competitiveness...	Dissemination of technical and market knowledge through U-R business networks.		✓	✓
3. Delivery of public services	(a) Delivery of SGI.	Regional disparities – quality of life...	Innovative service delivery options in rural areas (community based, using IT etc)	✓	✓	?
	(b) Public transport.	Regional disparities – quality of life...	Strategic planning of public transport to ensure better U-R linkages.	✓		
4. Exchanges in amenities and environmental goods	(a) Leisure and recreation.	Need for diversification of the rural economy.	Marketing of rural leisure and recreation in urban centres.		✓	?
	(b) Resources and waste disposal.	Sustainable waste disposal, sustainable use of resources...	Strategic cooperation between urban utility providers and rural land holders/planning authorities.	✓	✓	
	(c) Renewable energy.	Sustainable energy production, climate change amelioration and adaptation.			✓	?

Source: Copus (2013)

Conclusions

Addressing "functional region failure" is of course only one of a range of arguments in favour of adopting a CLLD approach in preference to more conventional horizontal or sectoral policies. These include advantages associated with integration and coherence, sensitivity to

regional specificities and the full range of territorial assets, multi-level governance and the strengthening of local capacity. These will continue to provide a justification for neo-endogenous and place-based approaches to rural development. Nevertheless the literature cited above should give cause for reflection about CLLD relocalisation strategies which fail to take account of the increasing complexity of the spatial organisation of economic activity. Rural economies are unlikely to thrive on the basis of "local buzz" alone, they must find ways to develop "organised proximities" across a range of spatial scales, linking them into networks which can extend their markets and provide access to sources of innovation.

Avoiding relocalisation strategies based on outdated stereotypes of urban-rural relationships is just one example of the risks inherent in policy-led research, and concepts or paradigms which derived from political arenas, rather than from empirical analysis or observation. Fashionable terminology is beguiling, and our dependence upon public funding may tempt us to accept normative concepts or approaches rather than questioning them and testing them in relation to empirical realities. To add to the challenge it is necessary to be forward looking, sensitive to current trends, and as best we may, anticipate future ones. Anachronistic stereotypes are a poor basis for future policy strategies.

Acknowledgement: I am grateful to Bill Slee for very helpful comments and advice on an early draft of this paper.

References

Bathelt, H., Malmberg, A. and Maskell, P. (2004) Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation, *Progress in Human Geography*, Vol. 28 Issue 1, p31-56

Bathelt, H., and Glückler, J. (2011) *The relational economy: Geographies of knowing and learning*. Oxford University Press, Oxford.

Bengs, C. et al. (2006) *Urban Rural Relations in Europe*, Final Report ESPON 2006 Project 1.1.2 http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_ThematicProjects/urbanrural.html [Accessed 11th September 2014]

Boschma, R. (2005) Proximity and Innovation: A Critical Assessment, *Regional Studies*, 39:1, 61–74

Bosworth, G. (2008) Entrepreneurial In-Migrants and Economic Development in Rural England, *International Journal of Entrepreneurship and Small Business*, 6:3, 355-369

Caffyn, A. and Dahlstrom, M. (2005). "Urban-rural interdependancies: Joining up policy in practice " *Regional Studies* 39:3, 283-296.

Cairncross, F. (1997) *The Death of Distance - How the Communications Revolution Will Change Our Lives*, Orion, London.

Cloke, P. (1979) *Key Settlements in Rural Areas*, Methuen, London.

Commission of the European Community (CEC) (1999) European Spatial Development Perspective (ESDP). *Towards Balanced and Sustainable Development of the Territory of the European Union*. Brussels. Available at: http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/pdf/sum_en.pdf [Accessed 11th November 2014]

Commission of the European Community (CEC) (2010) *Investing in Europe's Future*, Fifth Report on Economic and Social Cohesion, Brussels.

Cooperation Platform for Territorial Cohesion (COPTA) (2007) *Territorial Agenda for the European Union: Towards a more Competitive and Sustainable Europe of diverse regions*. http://www.eu-territorial-agenda.eu/Reference%20Documents/Forms/AllItems.aspx [accessed January 14th 2014]

Cooperation Platform for Territorial Cohesion COPTA (2011) *The Territorial State and Perspectives of the European Union, Background document for the Territorial Agenda of the European Union 2020*, presented at the Informal Meeting of Ministers responsible for Spatial Planning and Territorial Development on 19th May 2011 Gödöllő, Hungary. http://www.eu-territorial-agenda.eu/Reference%20Documents/Forms/AllItems.aspx [accessed January 14th 2014]

Copus, A. (2013) *Urban-Rural relationships in the new century: Clarifying and updating the intervention logic*, in, Kolczyński M, New Paradigm in Action: On Successful Partnerships, Ministry of Regional Development, Warsaw. http://www.mir.gov.pl/english/Regional_Development/Regional_Policy/NSRD/doc_str/Documents/MRD_NPA_on_successful_partnerships.pdf [accessed 14th January 2014]

Copus, A. K. 2014 (forthcoming). New relationships between rural and urban areas in EU countries, Part II Chapter 4 in Bryce, B., Mantino, F., Ranaboldo, C. and Trapasso R.,eds., *EU and Latin America: Comparing Policy Experiences in Rural Development*. Paris: OECD, Paris,

Copus, A., Dubois, A., Hedström, M., Kairyte, E., Stastna, M., Potočnik Slavič, I. and Wellbrock, W. (2011) *Deliverable 1.4; Summary of Research Findings*, DERREG (Developing Europe's Rural Regions in the Era of Globalisation), FP7-SSH-2007-1, grant agreement 225204.

http://www.derreg.eu/content/resource-centre/wp1-work-package-summary-report [Accessed 1th September 2014]

Crowley, C., Walsh, J., and Meredith, D. (2008) *Irish farming at the Millennium - A Census Atlas*, National Institute for Regional and Spatial Analysis, Maynooth.

Delgardo, M., Ramos, E., Gallardo, R. and Ramos, F. (2003) Multifunctionality and rural development: a necessary convergence, Chapter 2, p19-36 in Van Huylenbroeck G and Durand G *Multifunctional agriculture: A new paradigm for European Agriculture and Rural Development*, Ashgate, Aldershot.

De Noronha Vaz, M., Cesário, M., and Fernandes, S. (2006) Interaction between Innovation in Small Firms and their Environments: An Exploratory Study. *European Planning Studies* 14:1, 95-117

Granovetter, M. (1985) Economic Action and Social Structure: The problem of Embeddedness, *American Journal of Sociology* 91, 3, pp 481-510

Harrison, J. (2007) From competitive regions to competitive city-regions: A new orthodoxy, but some old mistakes. *Journal of Economic Geography*, 7 (3), 311-332.

Hedberg, C., and Carmo, R. (2012) *'Translocal Ruralism': Mobility and Connectivity in European Rural Space*, Springer, Dordrecht.

Higgins, B. (1983) From Growth Poles to Systems of Interactions in Space, *Growth and Change* 14:4, 3-14.

Kalantaridis, C. (2006) A Study into the Localization of Rural Businesses in Five European Countries, *European Planning Studies* 14:1, 61-78

Kalantarides, C., and Bika, Z. (2006) In-migrant entrepreneurship in rural England: beyond local embeddedness. *Entrepreneurship and Regional Development*, 18, 109-131

Kawka, R., Artmann, J., Huttenloher, C. and Scholze, J. (2012) *Partnership for sustainable rural-urban development: existing evidences.* Report for DG Regio, Project n° 2011.CE.16.0.AT.017, Federal Institute for Research on Building, Urban Affairs, and Spatial Development and Federal Office for Building and Regional Planning, Berlin. Available at:

http://ec.europa.eu/regional_policy/what/cohesion/urban_rural/doc/rurban_study_long.doc [Accessed on 25th November 2013]

Lennert, M., Van Hamme, G., and Patris, C. (2010) Final Report, ESPON FOCI project (*Future Orientations for Cities*), Luxemburg. Available at: http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/foci.html [Accessed 20th January 2014].

Lovering, J. (1999) Theory led by policy: The inadequacies of the 'New Regionalism' (Illustrated from the case of Wales) *International Journal of Urban and Regional Research*, 23, 379-395.

Marsden, T. (2009) Mobilities, Vulnerabilitues and Sustainabilities: Exploring Pathways from Denial to Sustainable Rural Development, *Sociologia Ruralis* Vol 49 Number 2 P113-131.

Mendez, C., Bachtler, J., and Wishlade, F. (2011) Comparative study on the visions and optiopns for Cohesion Policy after 2013, European Parliament, Brussels.

http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=44151 [Accessed 11th September 2014]

Myrdal, G. (1957) *Economic Theory and Under Developed Regions*, London

Nordregio (2002) *Final Report on the SPESP*, Stockholm.

Parr, J. (1999) Growth-pole Strategies in Regional Economic Planning: A Retrospective View. Part 1. Origins and Advocacy, *Urban Studies*, 36:7, 1195-1215.

Perroux, F. (1955) Note sur la notion de pole de croissance. *Economie Appliquee* 8, 307–320.

Piacentini, M., and Trapasso, R. (2010) *Urban-Rural Linkages: Issues, Measurement and Policies in OECD Countries*, Paper presented to the joint meeting of the Working Party on Territorial Development in Urban Areas and the Working Party on Territorial Development in Rural Areas of the OECD's Territorial Development Policy Committee, Paris, 30 Nov 2010.

Rodriguez-Pose, A. (2008) The Rise of the "City-region" Concept and its Development Policy Implications, *European Planning Studies*, 16:8, 1025-1046

Schneidewind, P. et al. (2006) *The Role of Small and Medium-Sized Towns (SMESTO)*, Final Report, ESPON 1.4.1. Available at: http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_StudiesScientificSupportProjects/smallandmediumcities.html [Accessed 20th January 2014]

Sonino, R. and Marsden, T. (2006) Beyond the divide: rethinking relationships between alternative and conventional food networks in Europe. *Journal of Economic Geography* 6:2, 181-199

Swyngedouw, E. (2004) Globalisation or 'Glocalisation'? Networks, Territories and Rescaling, *Cambridge Review of International Affairs*, Volume 17, Number 1, p25-48

Tallman S, Jenkins M, Henry N. and Pinch S (2004) Knowledge, clusters and competitive advantage. *Academy of Management Review*, Vol. 29, No. 2, 258–271.

Torre, A., and Rallet, A. (2005) Proximity and localisation, *Regional Studies*, 39:1, 47–59.

Van Huylenbroeck, G. and Durand, G. (2003) *Multifunctional agriculture: A new paradigm for European Agriculture and Rural Development*, Ashgate , Aldershot.

Waterhout, B. and Stead, D. (2007) Mixed Messages: How the ESDP's Concepts Have Been Applied in INTERREG IIIB Programmes, Priorities and Projects, *Planning, Practice & Research*, 22:3, 395–415.

Zonnefeld, W. and Stead, D. (2007) European Territorial Cooperation and the Concept of Urban–Rural Relationships, *Planning, Practice & Research*, 22:3, 439–453.

ECONOMICS

Do local people know regional brands in their home region?

Michaela Antoušková[1]

[1]Department of Economics, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
antouskova@pef.czu.cz

Annotation: Bottom-up approach of the regional policy comes out from natural and cultural potentials of regions and local people initiatives. Using potentials of the region, regional specifics, and local people work can be seen in the regional branding system. Regional branding facilitates promotion of rural regions. It contributes to development of sustainable tourism by providing tourists with opportunities of buying desired original regional products. Buying local products reduces environmental burdens because transport distances are much shorter. The first regional brands in the Czech Republic arose in the regions of Krkonoše, Beskydy and Šumava. Nowadays, there are twenty-four regional brands in the Czech Republic and they are managed by the Association of Regional Brands. All products with regional certification have to meet the criteria of regional origin; quality; environmental friendliness; excellence of a region (relation to regional traditions; hand-made products; local materials used in production, regional motives; or other characteristics of excellence). Regional products are certified in five categories – handcrafts; agriculture products and foodstuff; natural products; accommodation and restaurant services; and experience. Local or regional branding systems can be found in almost all European countries. In the Czech Republic, the regional branding system was supported from the European Social Fund within the Operational Programme Human Resources. The aim of the presented paper is to investigate the knowledge concerning regional brands and to identify differences in the knowledge of local people and tourists. The research is focused on knowledge of certified foodstuff and agricultural products. Conducted research shows that only 25% of local people know over a half of the products and know about the certification, 70% of local people know over a half of products but they do not know about their certification and 5% of local people do not know over a half of products at all.

Key words: Region, brands, Krkonoše, Podkrkonoší, knowledge, logistic regression.

JEL classification: Q13, M37.

1 Introduction

On the market it is possible to find many products which represent the region of origin. Nevertheless, the relation between products and their place of origin is more complex. Perception of a region can influence symbolic qualities of physical products, and conversely, immaterial qualities of products can influence perception of the home region (Clifton, 2014; Liu and Johnson, 2005). Empirical studies, e.g. Fetscherin (2010) or Jansson and Power (2006), prove that places with strong brands are more successful in attracting businesses. Brands associations help consumers retrieve the brand from their memory, facing a choice among many brands (Aaker, 1996). Cadilova (2011) adds that branding enables effective advertising and promotion for producers and retailers and it opens new possibilities within the region as well as outside of the region.

Regional branding is applied also by the European Union, especially in the field of agriculture. The agricultural policy, which intends to promote quality over quantity (Antouskova, 2014), leads to development of geographical indication (GI). GI is a tool which

protects the geographical origin of agri-food products, and it also encourages producers to diversify and to focus on quality (Clifton, 2014).

To promote the place of origin of agri-food products, financial support of the European Social Fund was used in order to form an international platform for introducing a regional branding system and its concept (Cadilova, 2011). The Czech Republic has joined these projects, and the first regional brand helped to establish the Association of Regional Brands. The first brands for regional products in the Czech Republic were: Krkonoše, Beskydy and Šumava. Nowadays, there are twenty-four regional brands in the Czech Republic. All products with regional certification have to meet the criteria of regional origin; namely: quality; environmental friendliness; excellence of the region (relation to regional traditions; hand-made products; local materials used in production, regional motives or other characteristics of excellence). Regional products are certified in five categories – handcrafts; agriculture products and foodstuff; natural products; accommodation and restaurant services; and experience.

The paper focuses on products in the certified category of agriculture products and foodstuff and aims to investigate the knowledge of existence of regional brands. The paper examines especially the differences of knowledge between local people and tourists.

2 Materials and Methods

The research was conducted in the Krkonoše and Podkrkonoší regions. To investigate and to compare the knowledge of existence of regional brands, local people and tourist were interviewed in the studied regions. The results gathered from the interviews were examined by logistic regression.

Studied areas:

Krkonoše - The regional brand “Krkonoše original product” involves twenty-five products. Eighteen of all products are hand crafts, six products are in the category of foodstuff and agriculture products, and there are two natural products (Mead of Giant Mts. is in both categories).

Podkrkonoší - The Regional brand “Podkrkonoší original product” involves twenty-five products. Five of all products are hand crafts, eleven products are in the category of foodstuff and agriculture products, and there are nine natural products.

Data sources:

In order to meet the predefined aims of the research, interviews of local people and tourists were conducted. The respondents were questioned about their knowledge of regional branding, especially they were asked whether they knew the Krkonoše and Podkrkonoší regional brands. They were also asked to name other regional brands if they knew any. Subsequently, the respondents were offered a list of certified products in the category of foodstuff and agricultural products (see Table 1) and asked to classify their knowledge concerning these products by using three categories (I know this product and I know about its certification; I know this product but I do not know about its certification; I do not know this product at all).

Table 1. List of products

Product name	Product name
Krkonoše Mead	Beer Tambor
Dairy Products From Kunčice	Raw Milk From Holovousy
Coffee VOLKAFE	Kuks Wine
Beer Fries	Kubišta Hořické Trubičky
Meat Products From Studenec	Real Cider From Podkrkonoší
Czech Garlic From Podkrkonoší	Garlic From Ostroměř
Hořické Trubičky	Hand Made Bakery Products From Švamberk
Goodwater White And Red Sauerkraut	Podzvičin Mead
Pretzel From Lázně Bělohrad	

A list of products was provided to the respondents together with some information about the producer of products, in order to enable respondents to easily identify the product. Finally, personal questions were asked, including the information about the living place, to identify tourists and local people[1]. Totally 430 respondents were interviewed, including 240 locals and 190 tourists.

Logistic regression:

Logistic regression was applied to identify the odds of knowing products with regional branding. Three models were developed:

Model 1: ln (I know this product and I know about its certification) = $\alpha + \beta 1$ (tourist/local) + $\beta 2$ (sex) + $\beta 3$ (age) + e

Model 2: ln (I know this product and I do not know about its certification) = $\alpha + \beta 1$ (tourist/local) + $\beta 2$ (sex) + $\beta 3$ (age) + e

Model 3: ln (I do know no this product at all) = $\alpha + \beta 1$ (tourist/local) + $\beta 2$ (sex) + $\beta 3$ (age) + e,

where α is constant, β is coefficient of dependent variable, and e is error term.

The independent categorical variables were subsequently coded according to the studied variables. Local people were coded as l, the reference category being tourists. Sex was coded as: m – male, the reference category being female. Age was a continuous variable. To test the developed model Chi – square test, Cox&Snell R Square and Nagelkerke R Square were applied.

3 Results and Discussion

The research conducted about the knowledge of regional branding and product certification in the Krkonoše and Podkrkonoší regions proves the lack of knowledge concerning products and their certification, for both local people and tourists. Local people (65.3%) and tourists (24.2%) know about certification of Hořické Trubičky, which has the highest knowledge of

[1] Respondents living in Krkonoše or Podkrkonoší

all products. The lowest knowledge about certification is registered for Real Cider from Podkrkonoší. A prevailing number of products are known to local people, however, they do not know about their certifications. Tourists often do not know the products at all (see Table 2).

Table 2. Knowledge concerning regional products (%)

	Knowledge about product existence and product brand		Knowledge about product existence but no knowledge about brand		No knowledge about product at all	
	local people	tourists	local people	tourists	local people	tourists
Krkonoše Mead	25.5	5.6	65.5	32.5	9.0	61.9
Dairy Products From Kunčice	10.1	4.3	76.3	14.5	13.6	81.2
Coffee VOLKAFE	37.3	9.3	56.3	14.6	6.4	76.1
Beer Fries	12.4	1.2	45.1	6.9	42.5	91.9
Meat Products From Studenec	21.1	1.6	35.5	2.5	43.4	95.9
Czech Garlic From Podkrkonoší	5.3	2.5	32.1	3.4	62.6	94.1
Hořické Trubičky	65.3	24.2	32.1	56.3	2.6	19.5
Goodwater White And Red Sauerkraut	12.2	3.2	74.1	4.6	13.7	92.2
Pretzel From Lázně Bělohrad	4.3	5.6	65.3	23.5	30.4	70.9
Beer Tambor	33.2	3.5	53.5	15.8	13.3	80.7
Raw Milk From Holovousy	8.9	2.7	48.3	16.9	42.8	80.4
Kuks Wine	8.0	6.3	46.3	24.1	45.7	69.6
Kubišta Hořické Trubičky	21.4	9.1	42.2	53.4	36.4	37.5
Real Cider From Podkrkonoší	1.5	2.2	43.2	4.5	55.3	93.3
Garlic From Ostroměř	4.2	1.5	23.2	2.6	72.6	95.9
Hand Made Bakery Products From Švamberk	6.2	6.0	32.1	9.1	61.7	84.9
Podzvičin Mead	9.2	7.4	37.2	15.2	53.6	77.4

The developed models of logistic regression were statistically significant and the results of model 1 show that local people are more likely to know about the branding of products. This fact concerns all studied products. The highest difference in knowledge between local people

and tourists is indicated at Goodwater White and Red Sauerkraut and Czech Garlic, local people are 6.4 times more likely to know Czech garlic branding than tourists do and 5.3 times more likely to know Goodwater Sauerkraut. On the other hand, the lowest difference between local people and tourists can be seen at knowledge of regional branding of Hořické Trubičky and Kubišta Hořické Trubičky, at which tourists proved good knowledge about certification. The results show that the knowledge concerning certification rises with the age of respondents and differs between males and females (see Table 3).

Table 3. Model 1- exp(β) coefficient of knowledge concerning certification

	local (l)	sex (m)	age
Krkonoše Mead	4.04**	0.43	1.12*
Dairy Products From Kunčice	7.34*	0.54*	1.33
Coffee VOLKAFE	2.65**	0.34	1.35
Beer Fries	3.12*	2.34**	1.46*
Meat Products From Studenec	3.23	1.04	1.03
Czech Garlic From Podkrkonoší	6.43*	0.24**	1.24*
Hořické Trubičky	1.20*	0.24*	1.75**
Goodwater White And Red Sauerkraut	5.30*	1.23*	1.46*
Pretzel From Lázně Bělohrad	2.45*	0.45	1.38
Beer Tambor	1.34	2.87	1.76*
Raw Milk From Holovousy	3.24	0.98**	1.03*
Kuks Wine	3.98*	1.02*	1.23
Kubišta Hořické Trubičky	1.03*	0.98**	1.42*
Real Cider From Podkrkonoší	2.54	1.44*	1.61
Garlic From Ostroměř	2.34**	1.45*	1.92*
Hand Made Bakery Products From Švamberk	4.76*	0.78	1.36
Podzvičin Mead	2.34*	1.02	1.25

**Statistical significance α=0.05; *Statistical significance α=0.1

The developed model 2 shows that the differences in knowledge concerning the existence of a product and lack of knowledge relating to its certification are not too high between local people and tourists, comparing to model 1. The highest difference is indicated at Dairy Product of Kunčice and Pretzel from Lázně Bělohrad. The lowest difference in knowledge of regional branding between local people and tourists can be seen in Hořické Trubičky and Kubišta Hořické Trubičky, where exp(β) coefficient is close to 1, therefore no significant difference can be interpreted. Variables of sex and age show similar tendencies in the developed model 2 as in model 1 (see Table 4).

Table 4. Model 2-exp(β) coefficient of knowledge concerning products but lack of knowledge relating to certification

	local (l)	sex (m)	age
Krkonoše Mead	2.45*	0.26*	1.62*
Dairy Products From Kunčice	3.56	0.56	1.85
Coffee VOLKAFE	1.52*	0.25	1.95
Beer Fries	1.25	2.23**	1.62*
Meat Products From Studenec	1.64	1.25	1.31
Czech Garlic From Podkrkonoší	1.23*	0.89*	1.61
Hořické Trubičky	1.03**	0.26	1.76
Goodwater White And Red Sauerkraut	2.45	1.26	1.64**
Pretzel From Lázně Bělohrad	3.45*	0.59	1.78*
Beer Tambor	1.56	2.88	1.76**
Raw Milk From Holovousy	2.45*	0.52**	1.89
Kuks Wine	2.15	1.96	1.25
Kubišta Hořické Trubičky	1.01*	0.85	1.34
Real Cider From Podkrkonoší	3.12**	1.98**	1.64*
Garlic From Ostroměř	2.08	1.85*	1.64*
Hand Made Bakery Products From Švamberk	3.15*	0.96	1.96
Podzvičin Mead	2.98	1.96	1.62*

**Statistical significance α=0.05; *Statistical significance α=0.1

Model 3 shows that tourist are more likely not to know about the existence of a product at all, which is indicated through exp(β) coefficients lower than 1. The highest difference is seen at Coffee VOLKAFE. Tourists are 6.7 times more likely not to know about this Coffee at all in comparison to local people. The lowest statistically significant difference is seen at Goodwater White and Red Sauerkraut and Pretzel from Lázně Bělohrad. The results of the model developed also show that the knowledge about the product rises with the age, and that there are differences regarding the knowledge of females and males (see Table 5).

Table 5. Model 3-exp(β) coefficient of lack of knowledge concerning products and certification

	local (l)	sex (m)	Age
Krkonoše Mead	0.56**	0.52*	0.98*
Dairy Products From Kunčice	0.58	0.63	0.45
Coffee VOLKAFE	0.13*	0.51	0.15
Beer Fries	0.86	1.16*	1.01
Meat Products From Studenec	0.96**	1.56	0.69
Czech Garlic From Podkrkonoší	0.39*	0.78*	0.69
Hořické Trubičky	0.91*	0.63	1.06
Goodwater White And Red Sauerkraut	0.98*	1.12	0.84
Pretzel From Lázně Bělohrad	1.02*	0.39	0.75
Beer Tambor	0.39**	2.74	0.96
Raw Milk From Holovousy	0.98	0.94*	0.81
Kuks Wine	0.63	1.75	0.63
Kubišta Hořické Trubičky	0.36	0.93	0.97*
Real Cider From Podkrkonoší	0.29*	1.48*	0.56
Garlic From Ostroměř	0.75	1.69*	0.92
Hand Made Bakery Products From Švamberk	0.65*	0.47	0.74
Podzvičin Mead	0.87	1.96	0.69

**Statistical significance α=0.05; *Statistical significance α=0.1

4 Conclusion

The results obtained from conducted research show a lack of knowledge concerning the regional branding system, for local people as well as for tourists. The research shows that only 25% of local people know over a half of the products and know about the certification, 70% of local people know over a half of products but they do not know about their certification and 5% of local people do not know over a half of products at all. Concerning tourists, 8% of tourists know over a half of the products and know about the certification, 12% of tourists know over a half of products but they do not know about their certification and 80% of tourists do not know over a half of products at all. The logistic regression reveals the odds of local people and tourists regarding the knowledge of the products and awareness of their certification. In general, it is possible to sum up that for most products local people are more likely to know regional certified products and they are more likely to know about the certification in comparison to tourists.

The results of this research may serve for local authorities as grounds for stronger promotion of regional branding.

Acknowledgement

The findings presented in this paper arise from the research enabled by the grant provided by the Faculty of Economics and Management, Czech University of Life Sciences in Prague –

no. 20131042.

References

Aaker, D. (1996) *Building Strong Brands*, Free Press.

Antouskova, M. (2014) 'Travel cost model for an agrifarm specialised in horse riding activities', *Agris On-line Papers in Economics and Informatics*, vol. 6, no. 4, pp. 25–32

Cadilova, K. (2011) 'Regional branding in the Czech Republic and the Slovak Republic', in *Regional Branding throughout Europe*, Prague: Asociace regionálních značek o.s.

Clifton, N. (2014) 'Towards holistic understanding of county of origin effects? Branding of the region, branding from the region', *Journal of Destination Marketing & Management*, vol. 3, no. 3, pp. 122–132.

Fetscherin, M. (2010) 'The determinants and measurement of a country brand: The country brand strength index', *International Marketing Review*, vol. 27, no. 4, pp.466–479.

Jansson, J. and Power, D. (2010) 'Fashioning a Global City: Global City Brand Channels in the Fashion and Design Industries', *Regional Studies*, vol. 44, no. 7, pp. 889–904.

Liu, S. S. and Johnson, K. F. (2005) 'The automatic country-of-origin effects on brand judgments', *Journal of Advertising*, vol. 34, no. 1, pp. 87–97.

Regional competitiveness of Czech agriculture: What are the sources of neo-endogenous rural development in Czech regions?

Lukas Cechura[1], Zdenka Kroupova[2], Heinrich Hockmann[3]

[1]Deparment of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, Prague 6, 165 21 Czech Republic
cechura@pef.czu.cz

[2]Deparment of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, Prague 6, 165 21 Czech Republic
kroupovaz@pef.czu.cz

[3]IAMO, Agricultural Markets, Marketing and World Agricultural Trade, Theodor-Lieser-Str.2, Halle, Germany
hockmann@iamo.de

Annotation: The paper deals with the regional competitiveness of Czech agricultural and its sources in cereal and dairy sector. The aim of the paper is to evaluate regional differences in productivity and the role of agriculture in the rural economy growth on NUTS II level. This aim is addressed using the metafrontier multiple output distance function. The estimates are based on panel data set drawn from the FADN database provided by the European Commission. The data set covers the period from 2004 to 2011. The results show that there exist huge differences in Total Factor Productivity in NUTS II among EU regions. The regions located in east Europe falling behind the west ones, especially in dairy sector. This holds also for the Czech Republic. There can be found only two regions with higher productivity: Central Bohemia in dairy sector and Central Moravia in cereal sector. The resources of mentioned competitiveness are exogenous as well as endogenous. The technological change drives the power of rural development resources. The local resources (labour, land) are substituted especially by capital and innovations become one of the most important factors of development.

Key words: Competitiveness, Total Factor Productivity, Neo-endogenous rural development, Cereals, Dairy.

JEL classification: Q12, D24, R11

1 Introduction

Modern society perceived agriculture as an essential part of rural development (Lowe et al. 2002, Marsden and Sonnino, 2008). It is not only due to its job opportunities creation in its production activities connected with the income distribution to the rural inhabitants but also due to its nonproduction activities like countryside creation.

In scientific literature, we can find two main kinds of rural development models: agrarian model and wider rural development models. The agrarian model defined the production of food and material as the primary function of the rural economy. Then the development of rural areas can be measured by the marketable surplus of farms and improvements in productivity (Hubbard and Gorton, 2009). Moreover, the multifunctionality of agriculture is stressed as well. That means that agriculture produces a wide range of non-commodity goods and services, shapes the environment and affects social and cultural systems (Van Huylenbroeck et al., 2007). The wider rural development models (like exogenous,

endogenous end neo-endogenous models) are on the other hand based on an assumption that a competitive farming sector is not a prerequisite for a rural development. In the exogenous model the economic growth of rural areas is driven from urban centers, exactly from the relocation of capital and labour from the urban centers (Hubbard and Gorton, 2009). However, the function of rural areas is same as in the agrarian model – provide food for expanding cities. Then the measurement of development can be same as in the case of agrarian model. The endogenous model is on the other hand based on an assumption that the local resources are the key determinants of rural development (Lowe et al., 1995). In this concept, local initiatives and enterprises are drivers of growth and local resources (natural, human and cultural capital) are the key determinants of the development. Finally, neo-endogenous model rejects the polarization of exogenous and endogenous models and emphasizes the importance of interaction between local resources and global forces (political, institutional, trading), see Terluin (2003). In this point of view, the development of rural areas should be supported by resource allocation and competitiveness of agricultural enterprises.

This paper employs the neo-endogenous model and focuses on the regional competitiveness of Czech agricultural and its sources in cereal and dairy sector. Since competitiveness is a complex, multi dimensional, and relative concept and is linked to a large number of interdependent variables thus making it feasible we measure competiveness in terms of productivity. Productivity is generally defined as the relation of output to inputs, and thus, gives information about the efficacy of factor input. The most comprehensive measure is total factor productivity (TFP), which is a ratio of aggregated outputs and inputs. Thus, TFP and its changes are important indicators of firm or sector performance and will play a central role in our analysis.

The aim of the paper is to evaluate regional differences in productivity and the role of agriculture in the rural economy growth on NUTS II level. In particularly, the paper addresses following research questions: How the regional agriculture benefited from the adoption of innovation and if the technical change and other sources of adjustment have led to a convergence of the regions in terms of TFP. The second question is related to productivity development. We evaluate the catching up and falling behind processes on regional level and its sources.

The paper is organized as follows: Chapter Data and Methods contains the theoretical framework, presents the estimation strategy and describes the data set; Chapter Results and Discussion presents results of stochastic metafrontier multiple output distance function estimates, discusses estimated technology and technological change and compares technical efficiency and total factor productivity. Chapter Conclusions contains concluding remarks.

2 Materials and Methods

The research questions will be addressed using the metafrontier multiple output distance function for two productions: cereals and dairy. In the first step we estimate country specific stochastic frontier model. The second step uses efficient outputs from the first step to estimate stochastic metafrontier model. We use a translog functional form since it is flexible and provides well approximation of the production process. Moreover, it permits the imposition of homogeneity (Coelli and Perelman, 1996). Heterogeneity in technology is captured using a Fixed Management model (Álvarez et al. (2003 and 2004)). Finally, total factor productivity is calculated in the form of the Törnqvist-Theil index (Cechura and Hockmann, 2010).

We assume that the production possibilities can be well approximated by the translog multiple output distance function. The translog output distance function for 3 outputs and 5 inputs, as it is the case in our empirical application, is:

$$D_{Oit} = \alpha_0 + \sum_{m=1}^{3} \alpha_m \ln y_{mit} + \frac{1}{2}\sum_{m=1}^{3}\sum_{n=1}^{3} \alpha_{mn} \ln y_{mit} \ln y_{nit} + \sum_{k=1}^{5} \beta_k \ln x_{kit} +$$
$$+ \frac{1}{2}\sum_{k=1}^{5}\sum_{l=1}^{5} \beta_{kl} \ln x_{kit} \ln x_{lit} + \frac{1}{2}\sum_{k=1}^{5}\sum_{m=1}^{3} \gamma_{km} \ln x_{kit} \ln y_{mit} \quad (1)$$

where subscripts *i*, with *i = 1,…,N*, and *t*, with *t =1,…,T*, refer to a certain producer and time (year), respectively. $\boldsymbol{\alpha}$, $\boldsymbol{\beta}$ and $\boldsymbol{\gamma}$ are vectors of parameters to be estimated.

Following Lovell at al. (1994) we impose the homogeneity by choosing y_{1it} and dividing by it other outputs. Moreover, we introduce statistical noise, v_{it}, and associate $-lnD_{Oit}$ with inefficiency term, $u_{it} = -lnD_{Oit}$. Finally, we capture the effect of technological change by a trend variable (t). The resulting stochastic frontier multiple output distance function is:

$$-\ln y_{1it} = \alpha_0 + \sum_{m=2}^{3} \alpha_m \ln y^*_{mit} + \frac{1}{2}\sum_{m=2}^{3}\sum_{n=2}^{3} \alpha_{mn} \ln y^*_{mit} \ln y^*_{nit} + \sum_{k=1}^{5} \beta_k \ln x_{kit}$$
$$+ \frac{1}{2}\sum_{k=1}^{5}\sum_{l=1}^{5} \beta_{kl} \ln x_{kit} \ln x_{lit} + \frac{1}{2}\sum_{k=1}^{5}\sum_{m=2}^{3} \gamma_{km} \ln x_{kit} \ln y^*_{mit}$$
$$+ \delta_t t + \frac{1}{2}\delta_{tt} t^2 + \sum_{m=2}^{3} \alpha_{mt} t \ln y^*_{mit} + \sum_{k}^{5} \beta_{kt} t \ln x_{kit} + u_{it} + v_{it} \,. \quad (2)$$

where we assume that $v_{it} \sim N(0, \sigma_v^2)$, $u_{it} \sim \mathrm{N}^+(0, \sigma_s^2)$, and they are distributed independently of each other, and of the regressors (Kumbhakar and Lovell, 2000).

Álvarez et al. (2003 and 2004) specified the Fixed Management model as a special case of Random Parameters model in the following form:

$$\ln TE_{it} = \ln f(\mathbf{y}^*_{it}, \mathbf{x}_{it}, t, m_i; \boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\gamma}, \boldsymbol{\delta}) - \ln f(\mathbf{y}^*_{it}, \mathbf{x}_{it}, t, m^*_i; \boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\gamma}, \boldsymbol{\delta}) \le 0 \,,$$
$$\ln TE_{it} = -u_{it} \,, \quad \text{and} \quad (3)$$

$$-\ln y_{1it} = \alpha_0 + \sum_{m=2}^{3} \alpha_m \ln y^*_{mit} + \frac{1}{2}\sum_{m=2}^{3}\sum_{n=2}^{3} \alpha_{mn} \ln y^*_{mit} \ln y^*_{nit} + \sum_{k=1}^{5} \beta_k \ln x_{kit}$$
$$+ \frac{1}{2}\sum_{k=1}^{5}\sum_{l=1}^{5} \beta_{kl} \ln x_{kit} \ln x_{lit} + \frac{1}{2}\sum_{k=1}^{5}\sum_{m=2}^{3} \gamma_{km} \ln x_{kit} \ln y^*_{mit}$$
$$+ \delta_t t + \frac{1}{2}\delta_{tt} t^2 + \sum_{m=2}^{3} \alpha_{mt} t \ln y^*_{mit} + \sum_{k}^{5} \beta_{kt} t \ln x_{kit}$$
$$+ \alpha_{m*} m^*_i + \frac{1}{2}\alpha_{m*m*} m^{*2}_i + \delta_{tm*} m^*_i t + \sum_{k=1}^{5} \beta_{km*} m^*_i \ln x_{kit} + u_{it} + v_{it}. \quad (4)$$

Technical efficiency, $TE_{i(t)}$, with $0 < TE_{i(t)} < 1$, captures deviations from the maximum achievable output. $m^*_i \sim \bullet(0,1)$ represents unobservable fixed management. The symbol $\bullet$ expresses that m_i^* might possess any distribution with zero mean and unit variance. u_{it} is estimated according to Jondrow at al. (1982). Fixed management model is used for the estimation of stochastic metafrontier multiple output distance function. All the calculations are carried out in the econometric SW NLOGIT 5.

2.1 Data

The panel data set is drawn from the FADN database provided by the European Commission. The data set covers the period from 2004 to 2011. We estimate multiple output distance function with 3 outputs and 5 inputs for cereal and dairy production:

Cereal production: y_1 cereal production, y_2 other plant production, y_3 animal production, x_1 labour, x_2 land, x_3 capital, x_4 specific material and x_5 other material.

Dairy production: y_1 milk production, y_2 other animal production, y_3 plant production, x_1 labour, x_2 land, x_3 capital, x_4 specific material and x_5 other material.

Labour is represented by the total labour measured in AWU. Land is the total utilised land. Capital is a sum of contract work and depreciation. Specific material in cereal production consist of the costs of seeds, plants, fertilisers and crop protection and in dairy production is given by feed for grazing livestock. Outputs as well as inputs (except for labour and land) are deflated by country price indexes on each individual output and input (2005 = 100). The country price indexes are taken from the EUROSTAT database.

The multiple output distance function is estimated only for specialized producers. The specialization is defined as at least 50 % share of cereals/dairy production on total plant/animal production. Moreover, we excluded observations with negative and zero values. Finally, we involved in the estimation producers with 5 and more observations to eliminate the problem with entry and exit of producers from the database.

3 Results and Discussion

Tables 1 and 2 in Appendix provide parameter estimate of stochastic metafrontier multiple output distance function for cereal and dairy production in 24 EU member states (Cyprus, Luxemburg, Malta and Croatia are missing). As was expected, the first order parameters standardly discussed in production function estimate as well as the parameters on unobservable fixed management are highly significant, even with 1 % significance level. This also holds for majority of second order parameters. As far as theoretical consistency of the estimates is concerned we can conclude that monotonicity requirements as well as requirements on convexity in outputs and quasi convexity in inputs are met, evaluated on the sample mean.

Since all variables are normalised in logarithm by their sample mean, the first-order parameters of outputs represent the shares of outputs y2 and y3 in the total output and parameters of inputs can be interpreted as elasticities of production on the sample mean. That is, the share of other plant production is about 7 % and the share of animal production is 52 % for the analysed sample in cereal production. Cereal production dominates the plant production, however, more than half of the output is created by animal production. In dairy production, the share of other animal production is 7 % and the share of plant production is about 22 %. That is, dairy production dominates animal production and as opposed to the cereal production the plant production is not so important for “specialized” farms with dairy production. This holds on the sample mean. As was expected the highest elasticities of production are for material inputs and land. On the other hand, the lowest elasticity was estimated for capital. These estimates correspond to the values estimated for individual countries in the first step of our analysis (see the methodology).

Since the sum of production elasticities is -0.979 for cereal production and -0.889 for dairy production slightly decreasing or decreasing returns to scale were estimated for the EU member countries in cereal and dairy production, respectively. Since the sum is closed to one in cereal production the impact of scale efficiency on a productivity change will not be large on the EU average. However, the impact might be large for individual countries since the returns to scale differ significantly among the countries. Moreover, the impact of scale efficiency is pronounced in dairy production even for the EU average.

The parameters on unobservable management are highly significant which suggests that the chosen specification well approximates the estimated relationship and that heterogeneity among firms is an important characteristic of farmers with cereal and dairy specialisation in EU member countries. The unobservable management contributes positively to the production and the impact accelerates over time. The increase in management has

a positive impact on production elasticities of material inputs and negative on other inputs. The impact of technological change on technical efficiency is not pronounced in both productions (the coefficient is almost zero).

Technological change has a significant positive contribution ($\delta T < 0$) to the production and the impact of technical change is accelerating over time ($\delta TT < 0$). Moreover, the biased technological change is pronounced. The technological change is labour and land saving and capital and material using in cereal production and labour, land and other material saving and capital and specific material using in dairy production. This direction of the technological change corresponds to our expectations. The adoption of innovations leads to the situation where labour become scarcer and capital more abundant.

Parameter λ is highly significant and about one in cereal production and higher than one in dairy production. In other words, the variation in uit is almost equal to the variation in the random component vit in cereal production. The estimates indicate that efficiency differences among cereal producers are important reasons for variation in production. However, the estimate did not reveal significant differences among countries not even among regions. The results show that cereal producers in EU member countries highly exploit their production possibilities (evaluated on the sample mean). The averages of technical efficiency calculated on regional level (NUTSII) are in the interval 0.89 and 0.92. In dairy, the variation in uit is more pronounced than the variation in the random component vit. That is, the estimates indicate that efficiency differences among dairy producers are important reasons for variation in production. Moreover, we also found significant regional differences in technical efficiency of milk producers.

On the contrary to the technical efficiency estimate TFP differences among countries as well as among regions are significantly pronounced in cereal production. Figure 1 depicts the differences in TFP on the regional level. The lowest Törnqvist-Theil indexes (TTI), value lower than 0.7 (red colour in the Figure), were estimated for regions in Great Britain, south France, east Germany, the north Czech Republic, west Austria, central and east Slovakia, Latvia and most of regions in Bulgaria and Rumania. The most productive regions can be especially found in Spain, Italy, Germany and Denmark. We can conclude that catching up and falling behind processes are highly pronounced in cereal production among EU regions. Figure 2 depicts the regional differences in TFP for dairy production. The lowest Törnqvist-Theil indexes (TTI), value lower than 0.7 (red colour in the Figure), were estimated for regions situated especially in new member states (Latvia, Slovakia, Romania and Bulgaria). The most productive regions can be found in Spain, Italy, the Netherlands and Denmark. Thus, we can see that even after almost 10 years after accession the productivity differences in the agricultural among as well as within countries are substantial. We can observe that catching up and falling behind processes are highly pronounced in dairy production among EU regions. In particularly, new member states have on average significantly lower productivity and seem to be falling behind.

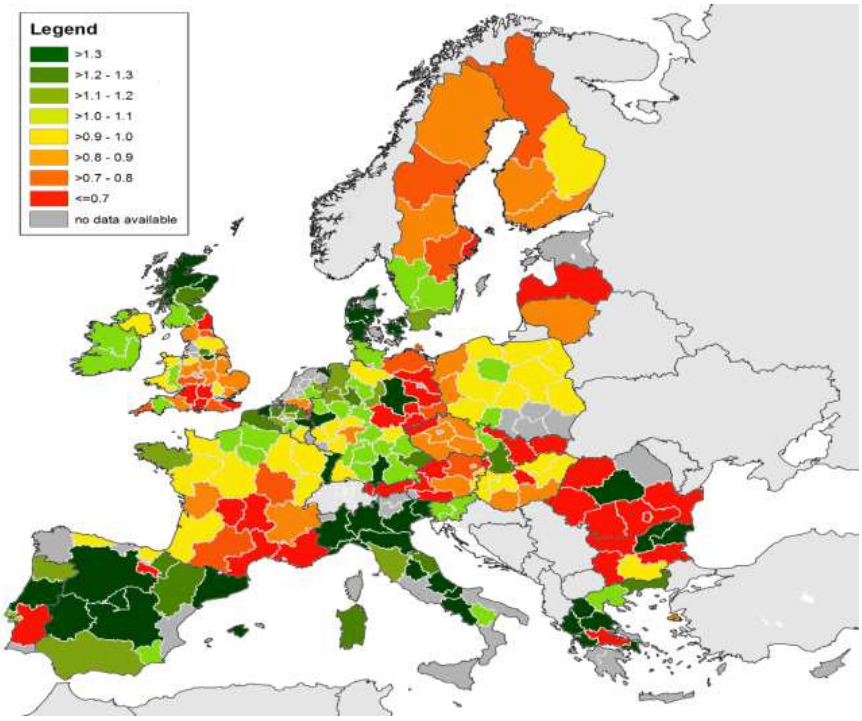


Figure 1. Regional differences in TFP – cereal sector

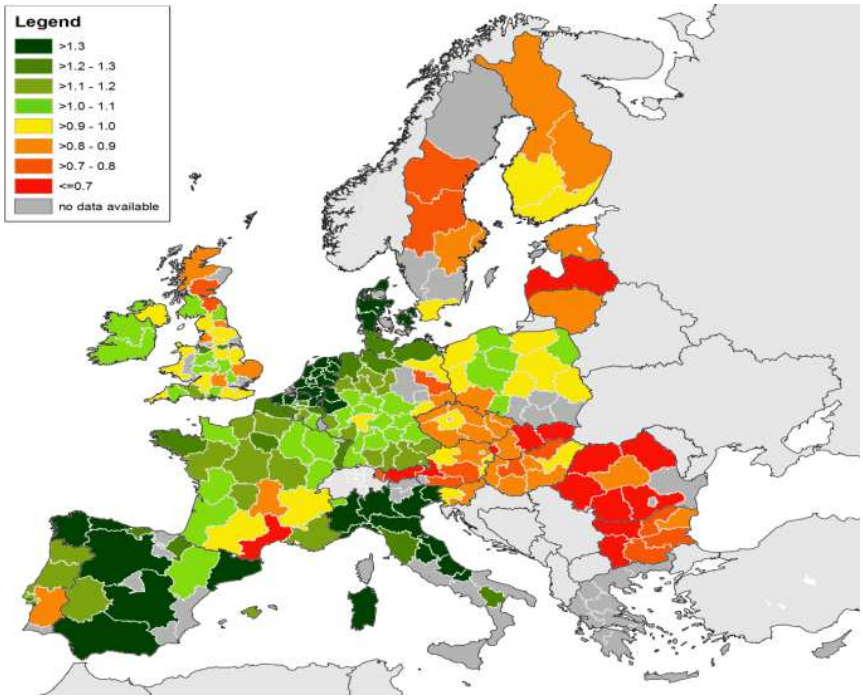


Figure 2 Regional differences in TFP – dairy sector

Total factor productivity is an important measurement of competitiveness which can be seen as a source of rural development. According to our results, there can be seen differences in competitiveness of NUTS II regions. The regions located in east Europe falling behind the west ones (as can be seen from the Figures 1 and 2), especially in dairy sector. This holds also for the Czech Republic, where TTI is lower than 0.8 in South-West, Nord-West, Nord-East, South-East region, Central Moravia and Moravian-Silesian region. The situation in cereal production is even worse, TTI is lower then 0.7 in South-West region and in Moravian-Silesian region. On the other hand, cereal producers in Central Moravia have

higher productivity then the rest of the Czech Republic. Mentioned can be result of geographical position of the region. The region can be characterized as on of the most fertility areas in the Czech Republic and most appropriate for cereal production. This is an endogenous resource of rural development. For example, Lowe et al. (1995) suppose that local resources (natural, human and cultural capital) are the key determinants of rural development. On the other hand, our results show that the technological change is labour and land saving. That is, the role of labour and land in rural development started to be substitute by capital and material and innovations become one of the most important factor of development.

Central Bohemia is the region with the highest level of TTI in the Czech Republic. However, it is not the result of natural base of location. The proximity of the capital city with higher purchasing power and higher competitive pressures seems to be more probably the resource of mentioned higher productivity. This confirms the exogenous theory of rural development (Hubbard and Gorton, 2009).

The rural development can be also affected by the subsidy policy focused on agricultural producers. If we recall our results that technological change is capital using in both production specialization, we can suppose that capital subsidies can support rural development. On the other hand, many authors found a negative correlation between CAP subsidies (especially direct payments) and technical efficiency (see Hadley, 2006, Kleinhanss et al., 2007 and Kroupová and Malý, 2010). That is rural development can be more support by rural subsidies than by the agricultural subsidies.

4 Conclusion

EU NUTS II regions highly differ in the competitiveness, measured by TFP of two production sectors: cereal and dairy. Both sectors can be characterized with decreasing return to sale, accelerating positive technological change and high technical efficiency, however, there exists significant differences in technical efficiency score among dairy producers. The regions significantly differ also in TFP. This holds for both sectors. In cereal sector, the lowest productivity was estimated for regions in Great Britain, south France, east Germany, the north Czech Republic, west Austria, central and east Slovakia, Latvia and most of regions in Bulgaria and Rumania. On the other hand, the most productive regions can be especially found in Spain, Italy, Germany and Denmark. Regions in new member states (Latvia, Slovakia, Romania and Bulgaria) are also characterized with the lowest TTI in dairy sector. The most productive regions in dairy sector are then in Spain, Italy, the Netherlands and Denmark. Thus, we can see that even after almost 10 years after accession the productivity differences in the agricultural among as well as within countries are substantial and that catching up and falling behind processes are highly pronounced in both sectors. In the Czech Republic, we can find only two regions with higher productivity: Central Bohemia in dairy sector and Central Moravia in cereal sector. The sources of their competitiveness are exogenous as well as endogenous. The endogenous sources seem to be more pronounced in cereal sector while exogenous sources, especially the proximity of capital city seem to be important in dairy sector. The technological change changes the power of rural development sources. The local sources (labour, land) are substituted especially by capital and innovations become one of the most important factors of development.

Acknowledgements

This paper was created within the project COMPETE – “International comparisons of product supply chains in the agro-food sectors: determinants of their competitiveness and performance

on EU and international markets". The project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 312029 (www.compete-project.eu).

References

Álvarez, A., Arias, C. and Greene, W. (2003) 'Fixed Management and time invariant technical efficiency in a random coefficient model'. Working Paper, Department of Economics, Stern School of Business, New York University, p. 10.

Álvarez, A., Arias, C. and Greene, W. (2004) 'Accounting for unobservables in production models: management and inefficiency'. Economic Working Papers at Centro de Estudios Andaluces E2004/72, Centro de Estudios Andaluces, p. 18.

Cechura, L. and Hockmann, H. (2010) 'Sources of economical growth in Czech food processing'. *Prague Economic papers*, vol. 2, pp. 169-182.

Coelli, T. and Perelman, S. (1996) 'Efficiency Measurment, Multiple-output Technologies and Distance Fucntions: With Application to European Railways'. CREPP 96/05, Université de Liége. p. 31.

Hadley, D. (2006) 'Patterns in Technical Efficiency and Technical Change at the Farm-level in England and Wales'. *Journal of Agricultural Economics*, vol. 57, no. 1, pp. 81-100.

Hubbard, C. and Gorton, M. (2009) 'Agriculture and rural structural change: An analysis of the experience of past accessions in selected EU15 regions'. In: Buchenrieder, G. and Möllers (eds.) Structural Change in Europe´s Rural Regions – farm Livelihoods Between Subsistende Orientation Modernization and Non-farm Diversification. Vol. 49 of IAMO Studies Series, pp. 91-112.

Kleinhanss, W., Murillo, C., Sanjuan, C. and Sperlich, S. (2007) 'Efficiency, Subsidies, and Environmental Adaptation of Animal Farming under CAP'. *Agricultural Economics*, vol. 36, no. 1, pp. 49 – 65.

Kroupová, Z. and Malý, M. (2010) 'Analysis of Agriculture Subsidy Policy Tools – Aplication of Production Function'. *Politická ekonomie*, vol. 6, pp. 778-798.

Lowe, P., Buller, H. and Ward, N. (2002) 'Setting the next agenda? British and French approaches to the second pillar of the Common Agricultural Policy', *Journal of Rural Studies*, vol. 18, pp. 1-17.

Lowe, P., Murdoch, J. and Ward, N. (1995) 'Beyond models of endogenous and exogenous development'. In: van der Ploeg, J.D., van Dijk, G. (eds.), Beyond Modernization: The impact of Endogenous Rural Development, Assen: Van Gorcum, pp. 87 – 105.

Marsden, T. and Sonnino, R. (2008) 'Rural Development and the Regional State: Denying multifunctional Agriculture in the UK', *Journal of Rural Studies*, vol. 24, pp. 422-431.

Terluin, I. J. (2003) ‚Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories', *Journal of Rural Studies,* vol. 19, pp. 327-344

Van Huylenbroeck, G., Vandermeulen, V., Mettepenningen, E. and Verspecht, A. (2007) ‚Multifunctionality of Agriculture: A Review of Definitions, Evidence and Instruments', *Living Rev. Landscape Res* 1, http://www.livingreviews.org/lrlr-2007-3.

Appendix

Table 1. Parameter estimates – cereal metafrontier

Means for random parameters				Coefficient on unobservable fixed management			
Variable	**Coef.**	**SE**	**P [|z|>Z*]**	**Variable**	**Coef.**	**SE**	**P [|z|>Z*]**
Const.	-0.1763	0.0015	0.0000	**Alpha_m**	-0.3633	0.0006	0.0000
Time	-0.0036	0.0002	0.0000	**Time**	-0.0009	0.0003	0.0004
X1	-0.0751	0.0011	0.0000	**X1**	-0.0168	0.0010	0.0000
X2	-0.2274	0.0011	0.0000	**X2**	-0.0415	0.0009	0.0000
X3	-0.0352	0.0009	0.0000	**X3**	-0.0200	0.0007	0.0000
X4	-0.1259	0.0010	0.0000	**X4**	0.0404	0.0008	0.0000
X5	-0.5157	0.0010	0.0000	**X5**	0.0418	0.0008	0.0000
				Alpha_mm	-0.0493	0.0007	0.0000
Variable	**Coef.**	**SE**	**P [|z|>Z*]**	**Variable**	**Coef.**	**SE**	**P [|z|>Z*]**
TT	-0.0039	0.0002	0.0000	**X13**	0.0038	0.0013	0.0034
Y2	0.0743	0.0008	0.0000	**X14**	0.0037	0.0015	0.0156
Y3	0.5212	0.0005	0.0000	**X15**	0.0441	0.0014	0.0000
Y2T	0.0033	0.0003	0.0000	**X23**	-0.0133	0.0010	0.0000
Y3T	0.0035	0.0002	0.0000	**X24**	-0.0059	0.0011	0.0000
Y22	0.0274	0.0011	0.0000	**X25**	0.0264	0.0013	0.0000
Y33	0.1281	0.0003	0.0000	**X34**	0.0221	0.0009	0.0000
Y23	-0.0213	0.0005	0.0000	**X35**	0.0054	0.0011	0.0000
X1T	0.0036	0.0004	0.0000	**X45**	0.0011	0.0012	0.3752
X2T	0.0103	0.0004	0.0000	**Y2X1**	0.0114	0.0013	0.0000
X3T	-0.0071	0.0003	0.0000	**Y2X2**	-0.0288	0.0010	0.0000
X4T	-0.0015	0.0004	0.0000	**Y2X3**	-0.0007	0.0009	0.4109
X5T	-0.0078	0.0004	0.0000	**Y2X4**	0.0000	0.0010	0.9661
X11	-0.0045	0.0022	0.0398	**Y2X5**	0.0196	0.0011	0.0000
X22	0.0500	0.0017	0.0000	**Y3X1**	-0.0266	0.0007	0.0000
X33	-0.0239	0.0007	0.0000	**Y3X2**	0.0414	0.0006	0.0000
X44	-0.0355	0.0010	0.0000	**Y3X3**	0.0145	0.0006	0.0000
X55	-0.0917	0.0018	0.0000	**Y3X4**	0.0155	0.0005	0.0000
X12	-0.0469	0.0017	0.0000	**Y3X5**	-0.0300	0.0008	0.0000
Sigma	0.1641	0.0007	0.0000				
Lambda	0.9925	0.0173	0.0000				

Note: ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively

Source: own calculation

Table 2. Parameter estimates – dairy metafrontier

Means for random parameters				Coefficient on unobservable fixed management			
Variable	**Coef.**	**SE**	**P [|z|>Z*]**	**Variable**	**Coef.**	**SE**	**P [|z|>Z*]**
Const.	-0.1156	0.0010	0.0000	**Alpha_m**	-0.3815	0.0006	0.0000
Time	-0.0076	0.0002	0.0000	**Time**	-0.0052	0.0002	0.0000
X1	-0.0725	0.0011	0.0000	**X1**	-0.0607	0.0010	0.0000
X2	-0.1398	0.0008	0.0000	**X2**	-0.0386	0.0006	0.0000
X3	-0.0659	0.0008	0.0000	**X3**	-0.0082	0.0008	0.0000
X4	-0.3215	0.0006	0.0000	**X4**	0.0871	0.0006	0.0000
X5	-0.2893	0.0011	0.0000	**X5**	0.0554	0.0010	0.0000
				Alpha_mm	-0.0575	0.0007	0.0000
Variable	**Coef.**	**SE**	**P [|z|>Z*]**	**Variable**	**Coef.**	**SE**	**P [|z|>Z*]**
TT	-0.0009	0.0002	0.0000	**X13**	-0.0039	0.0011	0.0003
Y2	0.0726	0.0005	0.0000	**X14**	0.0489	0.0010	0.0000
Y3	0.2172	0.0004	0.0000	**X15**	0.0232	0.0015	0.0000
Y2T	-0.0015	0.0002	0.0000	**X23**	-0.0090	0.0007	0.0000
Y3T	0.0005	0.0001	0.0001	**X24**	0.0344	0.0007	0.0000
Y22	0.0350	0.0005	0.0000	**X25**	0.0020	0.0009	0.0297
Y33	0.0791	0.0003	0.0000	**X34**	0.0220	0.0008	0.0000
Y23	-0.0024	0.0003	0.0000	**X35**	0.0111	0.0009	0.0000
X1T	0.0013	0.0003	0.0000	**X45**	0.0097	0.0009	0.0000
X2T	0.0029	0.0002	0.0000	**Y2X1**	-0.0066	0.0008	0.0000
X3T	-0.0051	0.0002	0.0000	**Y2X2**	0.0068	0.0006	0.0000
X4T	-0.0034	0.0002	0.0000	**Y2X3**	0.0024	0.0006	0.0002
X5T	0.0029	0.0003	0.0000	**Y2X4**	0.0062	0.0005	0.0000
X11	-0.0444	0.0021	0.0000	**Y2X5**	-0.0099	0.0008	0.0000
X22	-0.0230	0.0011	0.0000	**Y3X1**	-0.0056	0.0006	0.0000
X33	-0.0180	0.0005	0.0000	**Y3X2**	0.0083	0.0005	0.0000
X44	-0.1252	0.0007	0.0000	**Y3X3**	-0.0049	0.0005	0.0000
X55	-0.0723	0.0016	0.0000	**Y3X4**	0.0049	0.0003	0.0000
X12	-0.0033	0.0014	0.0157	**Y3X5**	-0.0022	0.0006	0.0006
Sigma	0.1418	0.0004	0.0000				
Lambda	1.2265	0.0136	0.0000				

Note: ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively

Source: own calculation

Quality of Life in the Rural Territories

Ludmila Dömeová[1], Andrea Jindrová[2]

[1]Deparment of systems engineering, Czech University of Life Sciences in Prague, Kamýcká 129, 16521 Praha Suchdol, Czech Republic
domeova@pef.czu.cz

[2]Deparment of statistics, Czech University of Life Sciences in Prague, Kamýcká 129, 16521 Praha Suchdol, Czech Republic
jindrova@pef.czu.cz

Annotation: The contribution explores the quality of life in the rural territory in the Czech Republic. The research is based on a survey which took place in all communities, which are members of the Local Action Group (LAG) Vyhlídky in the Central Bohemia Region. The main goal of the study is to identify the main problems in the quality of life from the subjective point of view of the local citizens and introduce the "bottom-up" access to the construction of the local strategies. The data for the investigation were collected in three surveys in 2011-2013. The investigation confirmed a raising interest in the community activities, call for economic and social development together with preservation of traditional way of life and rural landscape. The basic problems were detected in the lack of working places, schools, and social facilities. The study affirmed the changing role of the rural space, growing differentiation of production and services, and raising importance of local communities. The mayors who took part in the last survey were well informed about the needs and view of the local citizens. The existence and activities of the LAG was widely spread and positively assessed. The LAG is seen as a representative subject of the local community which can improve the quality of life in the locality.

Key words: Quality of life, local community, Local Action Group, survey, environment.

JEL classification: R13, R58

1 Introduction

The contribution explores the quality of life in the rural territory in the Czech Republic.

The data on the quality of life are important both for the local and central policies and funding. Construction of the local strategies should follow "bottom-up" access that is why the investigation of the view of the citizens is essential.

It is quite difficult to measure the quality of life because it is influenced by a huge number of factors. The subjective assessment of criteria plays a significant role, too. Furthermore, the criteria of the quality of life in the rural areas are in a continuous process.

Since 1990s the rural development goals have shifted to reflect the "post-productivist" (or post-rural by Brunori and Rossi, 2007) role of the countryside which has resulted from the decline of agriculture (Van der Ploeg et al., 2000). There is a growing need for more regionally and spatially oriented policy which is more customized to internal and external conditions of a concrete rural space (Marsden, 1998). The emphasis is on environmental conservation, agri-tourism and farm diversification, sustainable use of natural resources, improving the quality of life in rural areas and village renewal (Dwyer et al., 2007). The top-down policy, typical for various types of integrated and centralized rural policies, brings the risk of perverse outcomes. Promoting of housing outputs results in oversupply and associated problems (Gkartzios and Norris, 2011). Rural space changes its role: becomes middle-class residential

space (Murdoch and Marsden, 1994). The success of rural differentiation strategies requires sufficient degree of consensus among local social groups, consensus in specific informal and formal institutions and capacity of local forces to coordinate the relations between local public and private agents (Brunori and Rossi, 2007).

The article examines the quality of life from the geographical point of view. The geographical aspect of life is often mentioned as crucial, e.g. Helburn 1992, Dissart and Detler 2000, Massam 2002. By Andraško (2009) the quality of life does not change "man by man" but "place by place". The geographically oriented research deals with the life of people in a certain place.

The research is based on surveys which took place in all communities, which are the members of the Local Action Group (LAG) Vyhlídky in the Central Bohemia Region. The LAG represents local community and partnership of citizens, local administration, non-profit organizations and entrepreneurs with the goal to sustain and develop the rural environment, settlements and landscape (NNLAGCR, 2014). The main goal of the study is to identify the basic problems in the quality of life from the subjective point of view of the local citizens.

2 Materials and Methods

The data on the quality of life in the monitored area of the LAG Vyhlídky came from three surveys which took place in 2011-2013. In this time period the number of communities associated in the LAG Vyhlídky raised from 27 (in 2011) to 40 in 2013. The LAG is in the Central Bohemia region, north from the capital Prague (see Fig. 1).

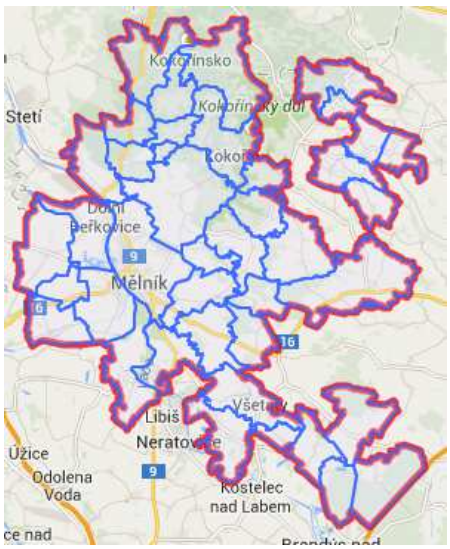


Fig. 1. LAG Vyhlídky; source: Mapa území MAS, http://nsmascr.cz/dokumenty/

2.1 Survey 1

The first survey realized in 2011 was focused on satisfaction with the life in the communities. The question form contained 20 questions. There identification questions, questions on the

satisfaction with the quality of life, and questions detecting the citizens´ awareness of the activities of the LAG. There were 108 responders from 15 communities.

2.2 Survey 2

The second survey took place in 2013. The question forms were places in co called "box of wishes" in all municipal authorities and in public places, e.g. post-offices and health centres. The form was divided into 5 parts:

1. Identification of the respondent,
2. Question investigating opinions on regeneration of the countryside (landscape and natural and cultural heritage),
3. Question investigating opinions on rural space communities (infrastructure, facilities, housing, stable and safe society),
4. Question investigating opinions on development of agriculture,
5. Proposal and remarks of the respondents.

The "boxes of wishes" were available five months. During this time, 384 citizens filled in the question form. As the LAG Vyhlídky has approximately 40,000 inhabitants in 40 communities, about 1% of the whole population took part in the survey.

2.3 Survey 3

The last investigation in 2013 was targeted to the representatives of the communities. All 40 mayors responded the questions focused on the quality of life in the communities, and the role of the LAG in the development of the community and the territory. The form of this qualitative investigation was an interview (not fully standardized).

2.4 Applied statistical methods

The data proceeding was based on quantitative analyses (mathematical and statistical analyses). The single dimensional analysis of data was applied on the qualitative data from surveys.

The single dimensional analysis, based on frequency distribution and descriptive characteristics, made possible the investigation of statistical variables. The descriptive characteristics are the numerical values providing us with the basic information on the statistical data file. The frequency distribution supplied an overview of the established values together with graphical representation of the variables (more about the statistical methods see Pecáková, 2008; Řezanková, 2005).

The statistical calculations were made using the software SPSS, version 22.

3 Results

3.1 Survey 1

There were 108 respondents; after first check of the filled in question forms two were removed so the primary data matrix contained 106 valid question forms.

From the final number of 106 respondents were 68 women (64.2%) and 38 men (35.8%). The biggest group (68%) were respondents of the age 27-65, in the age category 15-36 were 23.5%, and the rest were people over 65 (8.5%). About one half (46.3%) had secondary education with school leaving exam, 22.6 without exam. 21.7% of respondents were university graduates, and only 21.7% had only the basic education.

The first group of question targeted to the awareness of the LAG activities. 53.8 respondents stated that they knew what the LAG was, 33% never hears about it, and the rest (13.2) had heard the term LAG but they did not know what it meant. The citizens who knew what the LAG was, thought that is has a positive influence on the development of the community. More than 84% of respondents expressed that they had noticed some development activities of the community, and 52.8% of them knew that the activities were connected with the LAG.

Another group of questions dealt with the quality of life in the communities. 71.7% respondents were satisfied with their quality of life, 17 % were unsatisfied, and 11.3 % were not able to evaluate that. In the following part of the questionnaire the respondents should have mention what they were missing, and where was the need of some financial support. The most painful problem was the quality of local communications and side walks. On the second place were missing sport and cultural facilities; generally places for free time activities.

In the smaller communities, the sewerage systems and the Internet connection were often mentioned. On the other hand, the parking places seemed to be a problem in bigger places.

The biggest investment should be targeted to the creation of new working places (44.3% respondents), to the civil amenities (33%). Many responders also mentioned the investments to the transport infrastructure, to the development of traditions and typical crafts, and to the support of the social life in the communities. These investments would improve the quality of life and support the development of the communities.

The last set of question was devoted to the environment. 68.9% of responders were satisfied with the quality of the environment in their neighbourhood, 17% are unsatisfied, and the rest 14.1 had never thought about such question. In the following question the responders should have answered whether they are interested in the environment. 87.7% were interested, 6.6% were rather interested, 3.8% did not know, and 1.9% definitely was not interested. Even though majority of the citizens were satisfied with the environment quality, they stated that the LAG should be concerned with this topics rather that with others (39.6%).

3.2 Survey 2

The results of the survey from 2011 gave evidence that the citizens are interested in the development of local communities and the improvement of the quality of life in the rural area has become a topical issue. That was the reason, another survey was organized. The goal was to get information on the needs of local inhabitants. It should have targeted the activities of the LAG towards concrete task which would improve the quality of life in the region.

There were all together 384 responders, 376 after primary check up, 86 from a public sector, 38 from an entrepreneurial sector, 46 from NGP. Majority, 173 respondents did place themselves in any of above mentioned groups (see Fig. 2). The LAG Vyhlídky has approximately 40,000 inhabitants in 40 communities, so about 1% of the whole population took part in the survey. All 40 mayors responded the survey.

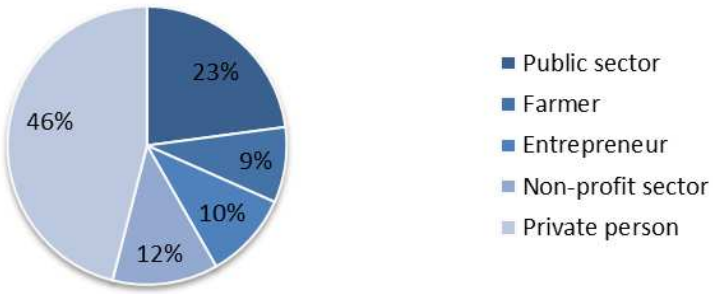


Fig. 2. Groups of respondents

The following part if the investigation was focused to the preservation and restoration of the landscape. It follows from the answers that the crucial tasks are (see Fig. 3): greenery care (21%), and the waste management (20%).

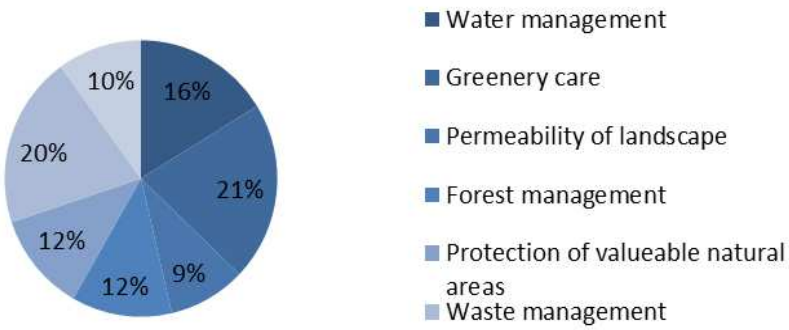


Fig. 3. Preservation and restoration of landscape

Other areas of interest were the heritage preservation and the restoration of landscape features.

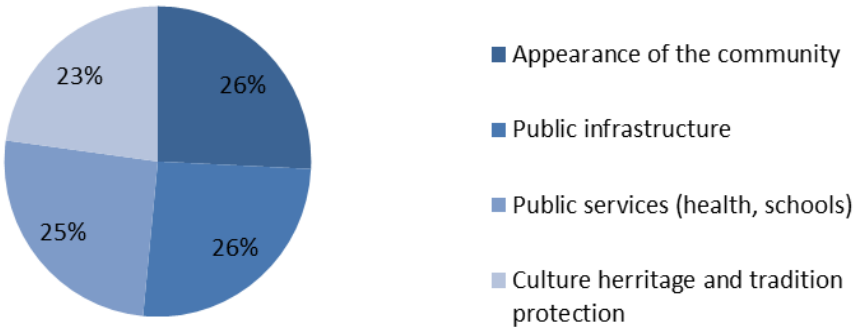


Fig. 4. Countryside restoration

The share of respondents who preferred one of the main topics in the restoration of the countryside was approximately the same for each topic (Fig. 4). That means, all the mentioned topics had the same importance for the quality of life improvement.

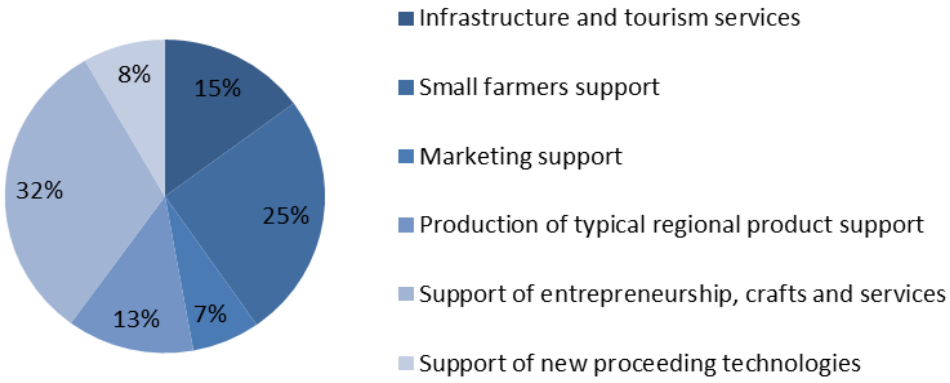


Fig. 5. Support of agriculture and entrepreneurship

The last set of questions was engaged in the development and support of the entrepreneurial activities. The most important was by the respondents the support of entrepreneurship, crafts and services (32%) and the support of small farmers (25%) (Fig. 5).

At the end, the responders could add their views and initiatives.

This survey showed again that the citizen were more and more interested with the activities inside their communities. Among shortcoming they listed the lack of pre-schools, maternity centres, and own cultural facilities or places for social events.

3.3 Survey 3

The investigation was finalized with the survey 3 among the mayors of all the communities, members of the LAG Vyhlídky. The form of the survey was a standardized interview. This

survey was focused on the activities of the LAG which could improve the quality of life and the satisfaction of the inhabitants.

All the mayors stated (100%) that they perceived positively the activities of the LAG. By them, it was helpful that there is an organization which took care of the development of the whole region, and arranged financial sources for the improvement of the life in the territory.

The importance of the LAG was seen also in creation the projects and submitting the applications for grant support. 78% of mayors gave out that the citizens were aware of the activities of the LAG Vyhlidky but did not know the term and abbreviation "Local Action Group - LAG".

The promotion of LAG was adequate. The LAG obligatory put up a public calls for fixed and electronic notice board and the activities were discussed at the local authorities meetings.

The articles on recent activities were often published in the local bulletins.

The questions connected with the living environment were also discussed in this part of investigation. The mayors (69%) quoted that the communities had many own projects, e.g. emission reduction, heating costs reduction if the public buildings, etc. The main role of the LAG was viewed as a support of revitalization of communities.

It reveals from the last part of the survey that the mayors would like to solve the following topics (the following problems are important for them):

- Pre-school and school facilities
- Waste management
- Social services
- Tourism
- Transport infrastructure and security
- Security of citizens police stations
- Leisure time activities (culture, sports)
- Material support of emergency situations
- Environment protection
- Sustaining the rural way of life
- Maintenance and reconstruction of cultural heritage

It follows from the results of the surveys that the main tasks of the mayors are in line with the demands of the citizens.

4 Discussion

These results is in line with the change of post-rural (Brunori and Rossi, 2007) goals of the country side. The citizens seek for comfortable life with wide range of possibilities of spending their free time. The research has confirmed other societal concerns tied to sustainable resource management, biodiversity preservation, and landscape protection, in line with the findings of Holmes, 2006.

The agriculture commodities production is not crucial any more but new working places should be created. These tendencies correspond with the changes of the role of the agriculture

entrepreneurship and with the multifunctionality where the joint production of commodity and non-commodity output together with social and other valued and defined goals (OECD, 2001). The multifunctionality calls for improvement of the farmers' entrepreneurial behavior which can be highly affected by the degree to which it is possible to integrate farming activity and products with rural economies (Morgan et al., 2010). It suggests a belated need to consider an integrated spatial policy approach on a regional basis, incorporating both urban and rural areas (Marsden, 1998).

There is a growing interest in community life and organizations, the LAG activities in the investigated territory are widely known. Collective action, viewed as results from interactions between actors involved in diverse socio-economic sectors e.g., localized socio-economic networks, enables farms and other companies to improve their socio-economic performance and create new opportunities for growth (OECD, 1998). The integration of several socio-economic sectors makes collective action a case in which the concept of multifunctionality is applied at local and collective levels (Bassi, 2014). Our results might be also connected with the reflection to the world financial crisis. By Murphy and Scott (2014) it is likely that job creation and local growth strategies will become an increasing focus as rural development actors adapt to further ruptures to rural economies; the potential role for local civil society organizations is then in providing a local support network for vulnerable households.

5 Conclusions

The investigation which was realized in the three surveys showed that generally the citizens are satisfied with the quality of life in their communities. The main reserves were regarded in the development of the entrepreneurial activities which would promise more working places. The citizens also felt negative about the lack of schools, and pre-schools, and own cultural facilities and places for social intercourse. Together with the call for an economical development the residents insisted on the preservation and restoration of the original landscape and on its protection. The mayors were familiar with the claims of the residents; they saw the same crucial topics for improvement of the quality of life in their communities.

The qualitative investigation discovered a raising awareness on the activities of LAG. Especially concerned are the municipalities, non-profit organizations, and small entrepreneurs that were supported by LAG in realization and funding of their own projects.

The questions in the surveys were not targeted to the rural economy (integration of small and medium enterprises, businesses, and labour force) neither to public government. These particular priority axes (Leader 2014+) should be included in following research.

References

Andráško, I. (2009) ‘The quality of life in Bratislava – application of SAW model’, Proceedings of XII. International Colloquium on Regional Sciences, Masaryk University, Brno, Czech Republic, pp. 209-213.

Bassia, I., Zaccarinb, S. and De Stefanob, D. (2014) ‘Rural inter-firm networks as basis for multifunctional local system development: Evidence from an Italian alpine area’, *Land Use Policy*, vol. 38, pp. 70-79.

Brunori, G. and Rossi, A. (2007) ‘Differentiating countryside: Social representations and governance patterns in rural areas with high social density: The case of Chianti, Italy’, *Journal of Rural Studies*, vol. 23, pp. 183-205.

Dissart, J. C. and Deller, S. C. (2000) ‘Quality of Life in the Planning Literature’, *Journal of Planning Literature*, vol 15, no 1, pp. 135-161.

Dwyer, J., Ward, N., Lowe, P. and Baldock, D. (2007) ‘European Rural Development under the Common Agricultural Policy´s Second Pillar: Institutional Conservatism and Innovation’, *Regional Studies*, vol. 41, pp. 873-888.

Gkartzios, M. and Norris, C. (2011) ‘If you Built It, They will Come: Governing property-led rural regeneration in Ireland’, *Land Use Policy*, vol. 28, pp. 486-494.

Helburn, N. (1982) ‘Geography and the quality of life’, Annals of the Association of American Geographers, vol. 72, [Online], Available: http://online library.wiley.com/doi/10.1111/j.1467-8306.1982.tb01837.x/abstract [16 March 2011].

Holmes, J. (2006) ‘Impulses towards a multifunctional transition in rural Australia: gaps in the research agenda’, *Journal of Rural Studies*, vol. 22, pp. 142-160.

LEADER 2014+ (2011) ‘National strategic plan’, [Online], Available: http://nsmascr/en/documents [26 June 2013].

Marsden T. (1998) ‘New Rural Territories: Regulating the Differential Rural Spaces’, *Journal of Rural Studies*, vol. 14, no. 1, pp 107-117.

Massam, B. H. (2002) ‘Quality of life: public planning and private living’. Progress in Planning, vol. 58, no 3, [Online], Available: http://www.sciencedirect.com/science/article/pii/S0305900602000235 [8 June 2014].

Marsden, T. (1998) ‘New rural territories: regulating the differentiated rural space’, *Journal of Rural Studies*, vol. 14, no. 1, pp. 107-117.

Morgan, S. L., Marsden, T., Miele, M. and Morley, A. (2010) ‘Agricultural multifunctionality and farmers' entrepreneurial skills: A study of Tuscan and Welsh farmers’ *Journal of Rural Studies*, vol. 26, no. 2, pp 116-129.

Murdoch, J. and Marsden, T. K. (1994) ‘Reconstituting Process: Class Community and Power in the Development process’, *University College of London Press*, London.

NNLAGCR (2014) ‘About us’, [Online], Available: http://nsmascr/en/about-us [26 June 2014].

Murphy, E. and Scott, M. (2014)‘After the crash: Life satisfaction, everyday financial practices and rural households in post Celtic Tiger Ireland’, *Journal of Rural Studies*, vol. 34, pp. 37-49.

OECD (2001) *Multifunctionality: Towards and Analytical Framework*, Paris: OECD Publications.

OECD (1998) *Co-operative Approaches to Sustainable Agriculture*, Paris: OECD Publications.

Pecáková, I. (2008) Statistics in terrain research, Prague: Profesional Publishing.

Řezanková, H. (2007) Analysis of cathegorial data, Prague: University of economics, Prague.

Van der Ploeg, J. D., Renting, H., Knickel, K., Mannion, J., Marsden, T., de Roest, K., Sevilla-Guzman, E., and Ventura, F. (2000) ‘Rural development: from practices and policies toward theory’, *Sociiologia Ruralis*, vol. 40, pp. 391-408.

Problems in accounting of livestock

Kristýna Dvořáková[1]

[1] Department of Accounting and Finance, University of South Bohemia in České Budějovice, Faculty of Economics, Studentská 13, 370 05 České Budějovice, Czech Republic
dvorakovakristyna@seznam.cz

Annotation: The main aim of this work was to analyse the current legislation, to compare the legislation with the needs of practice and then to propose measures that would lead to a better explanatory power and comparability of accounting firms engaged in animal husbandry. There was analysed current legislation relating to the accounting of animals in comparison with the needs of practice. There were identified several weaknesses that lead to problems with comparing the results of enterprises engaged in livestock production and animal husbandry. There were calculated the differences arising from the valuation of animals at the acquisition by purchase and at by their own activities, further the differences arising from the inclusion of the animal. This section also addressed other issues such as the obligation to classify animals into inventory, the conception of an animal, or the choice of accounting system. There were calculated the differences resulting from differing inclusion in the inventory and fixed assets, which are not related to the difference in income. In the classification of the animal in one case in the stocks and in the second on account of tangible property the differences arise out in the long-term and short-term assets. Finally, measures will be proposed, which would lead to higher information value of the accounts, which deals with the accounting treatment of animals.

Key words: animal husbandry, valuation, inclusion, accounting systems, farm animals

JEL classification: G39, M41, Q14

1 Introduction

Laws dealing with the accounts must cover a wide range of fields in which entrepreneurs and companies do business. The regulations do not pay the individual areas in depth. Rather than that, they set some general conditions for bookkeeping, in particular, to determine the income tax. The most important accounting regulations include no. 563/1991., The Accounting Act, further decree 500/2002 Coll. which implement certain provisions of the Law on Accounting and Czech accounting standards. However, agriculture is such a different field compared to other fields of business, thanks to which there are shortcomings of legislation concept even more significant. The accounting takes a lot of confusion.

Accounting of animals is very specific compared to other disciplines. Animal, although it is accounted for as property, it is a living creature. Accounting rules should take account of this fact. In recent years, there has been constant blurring in the differences between animals and property. Hence the increased attention accounting.

Animals could be divided into many groups from the viewpoint of breeding. Some animals are bred only for decoration, some for your benefit and other for breeding. An animal may be owned by an entrepreneur or a company, also because it is in the emblem of the company. There is a problem with the inclusion of these animals into these companies.

In this work the attention is given to domestic animals. A domestic animal is an animal which has some intentional use for people. Among domestic animals we include livestock, from which one obtains animal products, as well as commercial domestic animals (such as hunting or guard dogs), laboratory animals or animals used in health care. The value of these animals

is determined by the benefits that they bring. Determining the value of this benefit is very difficult. The animal is valued on the basis of historical cost, which may not be accurate over time. And it may offer different values for identical case. Is the value of the effect obtained in animal husbandry, even in adverse economic conditions, higher than the costs that would be incurred upon termination of the farm, such as unemployment compensation, insurance, allowance for housing, or for example an additional cost in material need?

Evaluation methods are very diverse and, therefore, it is necessary to monitor not only the necessary information, but also other aspects of animals. The various methods of valuation can motivate companies to become aware of different relationships, and, to get a better depiction of reality. Valuation method, however, is selecting the entity and, therefore, it is up to it if you choose the method that leads to a more objective evaluation of the animal.

A specific problem are also subsidies. Thanks to donations, the prices of food are at the comparable level of the past years. Although it seems that it is not linked with the mentioned problems, it is vice versa.

2 Materials and Methods

Uncertainties in accounting for animals, especially according to species, breeds and more expensive pieces are transferred into difficulties with reporting at the enterprise level. This work should contribute by analyzing and comparing the current legislation with the needs of practice, present in selected circuits proposals for possible solutions. Secondary targets include analysis of current legislation at Czech and international levels, comparisons of the differences in profit or loss incurred due to the valuation, classification and choice of accounting system. Finally, measures will be proposed to improve the presentation of the financial statements.

The following hypotheses were defined: method of classification of the animal doesn’t affect profit of enterprise; method of valuation of animals selected entity doesn’t affect profit of enterprise; czech accounting standards and international accounting regulations provide the same view of the registration of animals.

Literature, accounting legislation and internet will be used for processing work. The work will be performed using the methods of analysis; comparison of the differences arising from the valuation and classification; modeling in developing model examples and method of description.

3 Results and Discussion

When comparing the current legislation and the practical needs there were identified several weaknesses that lead to problems with comparing the results of enterprises engaged in livestock production and animal husbandry.

3.1 Awards

The first area of concern is the valuation of its own costs. Although by the valuation at the cost calculations are used, each company may have a different calculation. It is difficult to determine the proportion of costs attributable to a newborn young, because in addition to the birth of the young it is also necessary to produce breast milk or manure spreader. With the inclusion of other categories of costs, often in other levels set to costing above awards may not be comparable between enterprises. The actual costs also do not match the value of the

animals that have valuable genetic traits. The value of such animals, the amount of cost often exceeds several times. According to international accounting standards IAS and U.S. GAAP standards of America animals are measured at the amount equivalent to the market price less costs to sell. This value thus more accurately reflects the state of the entity's assets. In addition, the animals are revalued at each balance sheet date, which leads to clarification of their real value. Table 1 shows the differences in income due to the impact of valuation at their own cost and market price during the period in animal breeding. According to calculations, the value of an adult animal included in fixed assets at cost in the amount of CZK 34,431 and the purchase price of a comparable animal is 18,366 CZK (Kudrna and Homolka, 2009).

Table 1: The differences in profit due to appreciation

Accounting case	Dairy cow valued at the own cost	Dairy cow at the acquisition by purchase
Disposal of dairy cow of the inventory account	34 431 CZK	X
The inclusion of dairy cow	34 431 CZK	18 366 CZK
Amortization in each year	11 477 CZK	6 122 CZK
Disposal of assets	34 431 CZK	18 366 CZK
The amount of costs in each year	11 477 CZK	6 122 CZK

Source: own processing

Differently purchased one piece of cow caused a difference in the annual cost of one piece of animal CZK 5,355 annual tax savings income is at the current rate of 19% at 1 017,45 CZK at choice awards at the cost of the animal. This difference was caused by different amounts of input prices and the depreciation, which are tax deductible expenses. But if the accounting should give a true and fair view of the economic position of the company, the value should be reduced through adjustments to market value.

3.2 Classification of the animal

Effect on profit has the choice of including animal as fixed assets or stocks. The company has the option to set a lower limit for the inclusion of an animal in fixed assets (zákon č. 586/1992 Sb.). If the company ranks a beast on account of fixed assets, the value of the animal gets in expenses in the form of depreciation during the entire holding period in the animal breeding (Valder, 2008). If the animal is kept in inventory account during the breeding animal don't affect by the result. The value of this animal will be given to expenses by the exclusion this animal from the property. It is influenced by profit and financial analysis indicators, and this reduces the possibility of comparing the economic situation of enterprises. Table 2 shows the differences in income caused by the different classification of the animal. The input value of the animal was taken to the purchase price of 18,366 CZK. The dairy cow was ranked on the 30. 6. 201x and removed after 3 years. The costs of feeding 100 days for dairy cows are on average 17,594 CZK (ÚZEI, 2011). Per year (360 days), these costs are in the amount of CZK 63 338.4. The full weight of adult cows should be up at the third calving. The costs of one kilogram are in the amount of CZK 53.42. The weight of 90 kg gain will therefore be awarded

in the amount of CZK 4,808. The value of the animal increases by the value mentioned above within 2 years. Annually, it will therefore be about 2 403.9 CZK.

Table 2: The effect of including the animal to result in CZK

Accounting case	Animal in fixed assets	Animal in stocks
Costs in year 201x	34 730	31 699
Revenues in year 201x		1 202
Profit for the year 201x	-34 730	-30 497
Costs in year 201x+1	69 460	63 338
Revenues in year 201x+1		2 404
Profit for the year 201x+1	-69 460	-60 934
Costs in year 201x+2	69 460	63 338
Revenues in year 201x+2		1 202
Profit for the year 201x+2	-69 460	-62 136
Costs in year 201x+3	34 730	31 699 + 23 174
Profit for the year 201x+3	-34 730	- 54 873
Profit for the period of breeding	-208 380	-208 440

Source: own processing

Due to the different inclusion there was the difference in profit each year. In the first year the difference was of CZK 4,233 in the second year of CZK 8,526 in the third year of CZK 7,324 in the fourth year of 20,143 CZK. In subsequent years, the difference is caused by activation of depreciation in the value of the cost of an animal kept in stock. In the last year the value of disposed of the animal inventory makes a big difference, which will be reflected in the income statement. Overall, for the period of breeding, however, the difference in profit or loss does not occur.

3.3 The concept of animal

Another problem that has recently arisen is the concept of the animal. In the amendment of Decree no. 500/2002 Coll. From year 2008 the concept of “breeding” was replaced by the concept of ”usability” (vyhláška 500/2002 Sb.). It is against any attempt to approach the animal as living beings. It would be advisable to replace this term by a more concise one. Furthermore, experimental animals are put into the material. The improvement occurred earlier this year when the new Civil Code, which views animals as living creatures, entered into force (zákon č. 89/2012 Sb., občanský zákoník).

3.4 Selection of the accounting system

Problems arise even among businesses that have chosen a different accounting system. Businesses can choose to deduct expenses in the amount of 80% of revenue. With this option,

the accounting system does not play a role in the classification of animals; there is no need to apply amortization or calculation process. By using the tax accounting entity shall not classify adult animal from their own livestock as fixed assets. In the long-term assets it can lead only purchased animals (Kouřilová and Drábková, 2009). This leads to differences in the structure of fixed and current assets and differences in the amount of not only income, but also some indicators of financial analysis. In double-entry accounting entity has the option to set a limit awards for inclusion of animals in fixed assets. It may therefore account for this award include animals is under 40 000 CZK and thus take the advantage of depreciation and deferred tax. Different conditions for individual systems lead to the inability to compare the results of companies using different accounting system.

3.5 Animals unquoted in Act 586/1992 Coll., The Income Tax

Some species are completely omitted by law no. 586/1992 Sb., on income taxes. They are classified into either group depreciation. What options has the company in connection with their inclusion in the fixed assets, if their valuation exceeds 40 000 CZK? The company can put these animals in fixed assets, if their entry price exceeds the value specified entity. If they comply the conditions of the Act 563/1991 Sb., Accounting, (ie. Condition shelf life longer than one year), they can also depreciate. In this case, the amortizations set by entity are equal to the depreciation tax.

If the animal is not assigned to any group of depreciation under Annex to Act no. 586/1992 Sb., On Income Tax, the entity assign it to a second group of depreciation and amortized it over a period of 5 years.

In which situations is it preferable to keep these animals in stocks and in which it is appropriate to include them in fixed assets? If the animal is used more years, the entity should include this animal in fixed assets with the aim of a true and fair view of the accounts. If the animal remained posted on the inventory account, there would be a reduction in inventory turnover. Instead, some indicators of financial analysis would be higher , such as the liquidity of the third degree. If the entity behaves an animal whose value exceeds CZK 40 000, and it is an animal that can be classified under the Act as a fixed asset, even though the entity may leave it on account of inventory. If an animal is in stock, is it possible for the animal to stay in the breed after a period of 2 years (Dvořáková, 2014)?

The following example will show differences resulting from differing inclusion in the inventory and fixed assets, which are not related to the difference in income. For example, we can consider the same animal as in previous calculations. It will be a cow with the value of CZK 18,366. The company will buy 100 pieces of these animals. In the classification of the animal in one case in the stocks and in the second on account of tangible property the differences arise out in the long-term and short-term assets. The results are summarized in Table 3.

Table 3: Differences in indicators of financial analysis

indicator	The value of indicator in the enterprise with cows in fixed assets	The value of indicator in the enterprise with cows in inventory
Net working capital	6 130 thousand CZK	7 967 thousand CZK
The rate of fixed assets turnover	0.5470 (number of trips per year)	0.6519 (number of trips per year)
The rate of inventory turnover	1.9179 (number of trips per year)	1.21 (number of trips per year)
Inventory turnover days	187.705 days	297.451 days
Current liquidity	7.81	9.85
Quick liquidity	4.32	4.32

Source: own processing

The company, which ranks animals in fixed assets, the company has different indicators of financial analysis compared with a company that has this animal in inventory. It has a better result at the rate of turnover of fixed assets, as well as the turnover time of fixed assets. But the company achieves worse results at conventional indicators of liquidity and net working capital. If the company needs to have a higher ratio of net working capital and general liquidity it is favorable for them to lead the animals to the inventory account (Dvořáková, 2014).

4 Conclusion

In my work, there was described accounting treatment of animals. This field is specific, which leads to many uncertainties. Problems arise by accounting of the more expensive pieces, valuation and classification of animals and, in some cases there is no explanation in the law required for practice. Uncertainties arising from the accounting of animal are then transferred to the reporting enterprise level and leads to incomparability of financial statements of enterprises engaged in livestock production.

The work would suggest solutions through analysis of current legislation and practice needs that would lead to greater explanatory power of the entire accounting dealing with the recognition of animals. When compared with the needs of law practice identified several problems.

The first problem is to determine the amount of cost, which is attributable to an unborn young. Although companies use identical calculations, there are differences. Every company determines itself whether considered young for the main product and if it is the only major product that is formed. In The value of the young, there can be other items of costs and other amount costs

In appreciation of rare animals with valuable genetic traits exceeds the value several times the value of the cost of his birth and breeding. The award does not have to give a true and fair view. In the international accounting standards IAS-IFRS it is used the valuation of biological assets fair value used, and, in America U.S. GAAP accounting standards leads to a measurement, the realizable value. These two terms are comparable and compared with

appreciation by Czech law; this value gives a truer and fairer view of accounting. In addition, at the end of each reporting period, the assets are revaluated.

The value of the property affects the funding for the acquisition of capital assets. This grant reduced the value of assets and the amount of amortization applied in the following years. The reason is purely tax. No amortization of subsidies provided by the state. This leads to differences not only in income but also in some indicators of financial analysis.

Other differences in the amount of awards arise from the valuation of animals at the acquisition by purchase and at the acquisition by their own activities When buying the animals are valued at acquisition cost, and, the animals from own breeding has the valuation of its own costs. Asset values reported in the balance sheets of the two companies may be incomparable.

The entity itself sets a limit on awards for inclusion of an animal in fixed assets. Animals with the same zoo-technical aspects are in some companies included in inventories and in others in fixed assets. This leads to differences in the amount of profit or loss, of fixed and current assets and to the evaluation of the economic situation of the company.

Another problem is the concept of the animal itself. In recent years there has been a standardization of the conditions for the inclusion of an animal in fixed assets with other inanimate property. The term "time in breed" was replaced with the term "usability" from 2009, which is unethical. The experimental animals are kept in inventory account, which can complicate the situation protectors of animals, who often do not have to find objects of their activities.

Irregularities in accounting of animals occur also in the choice of accounting agenda. The main differences are the possibility to deduct expenses in the amount of 80% of revenue by the using of lump-sum expenses or the inability to classify an adult animal from their own breeding in fixed assets by using the tax records. These differences lead to lower comparability of results between different accounting systems.

Omission of some animals in law no. 586/1992 Coll., Income taxes, or duties to include animals in stock accounts under not exceeding the amount of the valuation provided by Act no. 586/1992 Sb., On income taxes, causing further problems with informative value accounting by accounting of the animals. Animals that are not included in this Act to one of depreciation groups, the entity may lead to account fixed assets. They include them into the second group of depreciation and amortized over 5 years. However, the option is to keep this animal in the inventory account, which leads to differences between individual companies. The specialty here is that they are appointed, for example donkeys, but more often kept animals like deer and ostriches are not mentioned. Loyalty and honesty of accounting is reduced by duties to include some species in inventory. These include fish, the rare individuals kept for decades must be kept in the accounts stocks if their value does not exceed 40 000 CZK, if the founder of company is municipality.

All the above-mentioned problems often lead to big differences and to reducing the comparability of financial statements of enterprises engaged in livestock or animals. The solution to these problems would be to issue legislation, which would cover the major uncertainties resulting from the accounting treatment of animals, given entities clearer guidelines for bookkeeping of animals and makes more transparent results that enterprises engaged in livestock production made public. It would also be appropriate to register the animals in natural units (such as livestock units).

References

Dvořáková, K. (2014) *Účtování o hospodářských zvířatech, vazba na reálnou situaci*. České Budějovice: Jihočeská univerzita v Českých Budějovicích, Ekonomická fakulta. Diplomová práce.

Kouřilová, J. and Drábková, Z.(2009) ‚Problematická účetní legislativa u chovu zvířat, dopad do praxe podniků'. *Acta universitatis*. XII: s. 135-139

Kudrna, V. and Homolka, P. (2009) *Vliv diety, zejména obsahu dusíkatých látek, na množství a kvalitu mléčné bílkoviny a zdraví dojnic*. [cit. 2014-03-02]. Dostupné z: http://www.vuzv.cz/sites/Dojnice.pdf

Ústav zemědělské ekonomiky a informací: Náklady a výnosy vybraných rostlinných a živočišných výrobků © 2011. [cit. 2014-03-02]. Dostupné z: http://www.uzei.cz/data/usr_001_cz_soubory/2011.pdf

Valder, A. (2008) *Účetnictví pro podnikatele v zemědělství*. Praha: Wolters Kluwer ČR, a.s.,

Vyhláška 500/2002 Sb., kterou se provádějí některá ustanovení zákona o účetnictví

Zákon č. 586/1992 Sb., o daních z příjmů

Zákon č. 89/2012 Sb., občanský zákoník

Alternative approaches to the prediction of EAA

Ivan Foltýn, Ida Zedníčková, Ondřej Chaloupka

ÚZEI Praha, Mánesova 75, 120 56 Praha 2
foltyn.ivan@uzei.cz

Annotation: The aim of this paper is to describe alternative approaches to modeling Economic Accounts for Agriculture (EAA) for the needs of predictions of agricultural development in the Czech Republic. In ÚZEI were designed two model approaches EAA-P1 and EAA-P2. Model EAA-P1 consists of accounts of the individual agricultural commodities while use off data from an existing model RENT-4 and partly from the original sub-model EAA-P2. Model EAA-P2 is formed by regression calculations of seasonal trends of the individual EAA indicators based on time-series of the ÚZEI database BASELINE-ÚZEI. Both models have their own apparatus for predicting agricultural commodity prices based on monthly time-series of the Czech Statistical Office.

Key words: EAA predictions, mathematical models, statistical regression, seasonal trend method, agricultural commodity accounts

JEL classification: Q18, Q15, Q51, C02, C31, C61

1 Introduction

Economic Accounts for Agriculture (EAA) are compiled on the basis of the European Parliament and Council Regulation (EC) no. 138/2004 in all EU countries. It is an essential instrument to measure the size and economic effectiveness of the agricultural sector. It is used to compare effectiveness of agriculture of the Member States. In the Czech Republic EAA are compiled annually by the Czech Statistical Office (CSO) are published on its website (EAA-CSO).

EAA can be divided into 4 parts: production account, income generation account, entrepreneurial income account and capital account. The fourth part of the EAA does not build on the preliminary results of the year (only on the final EAA version).

Terms sending EAA to Eurostat are binding for all EU Member States:

- first EAA estimate for year n in November of the year n.
- second EAA estimate for year n in January of the year n+1.
- semi-final EAA version for year n in September of the year n+1.
- final EAA version for year n in September of the year n+2.

For the needs of predictions of agricultural development and agrarian policy impacts were in ÚZEI designed two alternative models for the EAA estimates for the current year (model EAA-P1) and for a longer time period (model EAA-P2).

Both models are programmed in Microsoft Excel and utilize following resources:

1. monthly time series of agricultural producer prices (CZV), source: CSO
2. annually time series of selected indicators EAA, source: CSO
3. annually time series of land size and animal numbers of agricultural commodities, source: Internal database ÚZEI Baseline

4. annually time series of economic indicators of agricultural commodities, source: model RENT-4 - predictive econometric model, solving economic predictions for 37 essential commodities of the Czech agriculture (Foltýn, Zedníčková, 2010).

2 Material and methods

2.1 The basic structure of EAA-CSO

EAA is a global accounting scheme that summarizes the results of the agricultural sector for the calendar year. In the structure, which annually publishes CSO, contains 31 basic indicators u01,...,u31 in terms of value (CZK mil.) with the following content:

u01	total cereal production, which includes output value of wheat, rye, barley, oats, grain
u02	total production of industrial crops, which includes the production of oilseeds
u03	total production of feed crops including corn silage, fodder root crops and other fodder
u04	total production of vegetables and horticultural products
u05	total potato production
u06	total production of fruit including fresh fruit
u07	total production of table wines
u08	total production of olive oil
u09	total production of other vegetable products
u10	total crop production (u01 + ... + u09)
u11	total production of animals including cattle, pigs, equines, sheep and goats, poultry
u12	total production of animal products, milk, eggs and other products
u13	total animal production (u11 + u12)
u14	total production of agricultural products (u10 + u13)
u15	total agricultural production services, including agricultural services and rental income
u16	total agricultural production (u14 + u15)
u17	total value of non-agricultural secondary activities (inseparable)
u18	total agricultural output (u16 + u17)
u19	intermediate consumption includes all direct costs
u20	gross value added at basic prices (u18 - u19)
u21	consumption of fixed capital includes machinery and equipment, buildings, plantations
u22	net value added at basic prices (u20 - u21)
u23	compensation of employees
u24	other taxes on production
u25	other subsidies on production income
u26	factor income (u22 - u24 + u25)
u27	net operating surplus / mixed income (u26 - u23)
u28	prescribed rents and other rents from property
u29	interest expense
u30	interest income
u31	entrepreneurial income (u26-u23-u28-u29 + u30)

2.2 Model EAA-P1

From the described structure EAA-CSO it is evident that the whole account can be divided into the following sections: account of the total plant production (RV), account of the total animal production (ZV), account of intermediate consumption (MSP), and account of the final indicators of agricultural sector (FIN). These accounts can be described by the following mathematical relationships:

RV account

$$PRO_{RV} = u01 + u02 + \ldots + u09$$

$$= \text{sum}\ (i \in \text{KOM-RV}, PLOi * VYNi * CENi\ ),$$

where kOM-RV is the set of all plant commodities of Czech agriculture in the range of indicators u01 to u09 (cereals, oilseeds, industrial crops etc.),

PLOi, VYNi, CENi are the total area, average hectare yield and average annual producer prices for commodity i ∈ KOM-RV in the Czech Republic.

ZV account

$$PRO_{ZV} = u11 + u12$$

$$= \text{sum } (i \in \text{KOM-ZV}, STA_i * VYN_i * CEN_i),$$

where KOM-ZV is the set of animal commodities in the range of indicators u11 - animals (cattle, pigs, poultry, sheep and goats) and u12 - animal products (milk and eggs),

STAi, VYNi, CENi are the total numbers of animals, the average annual per capita production (slaughter meat, dairy and eggs) and average annual producer prices for i ∈ KOM-ZV int the Czech Republic.

MSP account

$$MSP = u19$$

$$= OSI + ENE + HNO + POR + VET + KRM + UST + UBU,$$

where each item of MSP constitute the total cost of seed OSI, energy ENE, fertilizers HNO, veterinary costs VET, feed costs KRM, costs of maintenance machinery and equipment UST and the cost of maintenance and repair of buildings UBU for the agricultural sector.

FIN account

Gross value added HPH = u20 = PRO_{RV} + PRO_{ZV} - MSP

Net value added CPH = u22 = HPH - SFK

Income from factor DFA = u26 = CPH - DAN + DOT

Net operating surplus CPP = U27 = DFA - NZA

Entrepreneurial income DPO = U31 = DFA - NZA - NAJ - URN + URV

where each item SFK, DAN, DOT, NZA, NAJ, URN and URV correspond to indicators u21, u24, u25, u23, u28, u29 and u30 of EAA-CSO.

Building of commodity accounts

The model EAA-P1 is based on accounts of individual commodities RV and ZV. For each commodity is necessary to create a structure of 31 indicators consistent with EAA-CSO. The model EAA-P1 will be the more close to EAA-CSO, the more representative the selection of agricultural commodities will be. For this purpose, there was chosen the model RENT-4 which provides time series of production-economic indicators of 37 agricultural commodities A1-A25 for RV commodities and A26-A37 for ZV commodities (A1=winter wheat, … , A25=apricots, A26=dairy cows, … , A37=poultry-hens) that adequately represents the Czech agriculture (Foltýn, Zedníčková, 2010).

Account of RV commodities

Sales of individual plant commodities (TRZ) per hectare are

$$TRZ_{ij} = VYN_{ij} * CEN_{ij} \qquad i \in \text{RV and } j = \text{year},$$

where VYN and CEN are hectare yields and producer prices taken from the model RENT-4.

The unit cost for plant commodities are taken from the model RENT-4 per hectare in CZK:

seed purchased (NRV1), seed own (NRV2), fertilizers purchased (NRV3), fertilizers own (NRV4), plant protection (NRV5), machinery costs (NRV6), other direct costs and services (NRV7), labor costs (NRV8), fixed costs (NRV9) and total costs (NRV10) – the sum of NRV1 to NRV9.

Breakdown of cost items from the model RENT-4 to individual EAA items show the following relations:

$$OSI_{ij} = NRV1_{ij} + NRV2_{ij}$$
$$ENE_{ij} = NRV7_{ij} * koef1$$
$$HNO_{ij} = NRV3_{ij} + NRV4_{ij}$$
$$POR_{ij} = NRV5_{ij}$$
$$UST_{ij} = NRV6_{ij} * koef2$$
$$UBU_{ij} = NRV9_{ij} * koef3$$
$$MSP_{ij} = OSI_{ij} + ENE_{ij} + HNO_{ij} + POR_{ij} + UST_{ij} + UBU_{ij}$$
$$HPH_{ij} = TRZ_{ij} - MSP_{ij}$$
$$SFK_{ij} = NRV9_{ij} * koef4 + NRV6_{ij} * koef5$$
$$CPH_{ij} = HPH_{ij} - SFK_{ij}$$
$$ZAM_{ij} = NRV8_{ij}$$
$$DOT_{ij} = POD_{ij}$$
$$DFA_{ij} = CPH_{ij} + DOT_{ij}$$
$$CPP_{ij} = DFA_{ij} - ZAM_{ij}$$
$$DPO_{ij} = DFA_{ij} - ZAM_{ij} - NAJ_{ij} - URN_{ij} + URV_{ij}$$

where koef1 to koef5 are coefficients of the decomposition of RV cost items in accordance with the structure of indicators u19 to u31.

Account of ZV commodities

Sales of individual animal commodities (TRZ) per a piece and year:

$$TRZ_{ij} = VYN_{ij} * CEN_{ij} + VYN2_{ij} * CEN2_{ij}$$ for commodity i and year j,

where VYN and VYN2 are unit indicators of primary and secondary performance of commodity i in year j relative to average 1 piece taken from the model RENT-4,

CEN and CEN2 are the producer price of primary and secondary production.

The unit costs of commodities are taken from the model RENT-4 for a piece and year in CZK:

feed purchased (NZV1), feed own (NZV2), pharmaceuticals and disinfectants (NZV3), machinery costs (NZV4), other direct costs and services (NZV5), labor costs (NZV6), depreciation of assets (NZV7) depreciation of animals (NZV8), fixed costs (NZV9) and total costs (NZV10) – the sum of NZV1 to NZV9.

Breakdown of cost items form the model RENT-4 to individual EAA items show the following relationships:

$$ENE_{ij} = NZV5_{ij} + NZV4_{ij} * koef11$$
$$VET_{ij} = NZV3_{ij}$$
$$KRM_{ij} = NZV1_{ij} + NZV2_{ij}$$
$$UST_{ij} = NZV4_{ij} * koef12$$
$$UBU_{ij} = NZV9_{ij} * koef13$$
$$MSP_{ij} = ENE_{ij} + VET_{ij} + UST_{ij} + UBU_{ij}$$
$$HPH_{ij} = TRZ_{ij} - MSP_{ij}$$
$$SFK_{ij} = NZV6_{ij} + NZV7_{ij} + NZV4_{ij} * koef14 + NZV9_{ij} * koef15$$
$$CPH_{ij} = HPH_{ij} - SFK_{ij}$$
$$ZAM_{ij} = NZV6_{ij}$$
$$DOT_{ij} = POD_{ij}$$
$$DFA_{ij} = CPH_{ij} + DOT_{ij}$$
$$CPP_{ij} = DFA_{ij} - ZAM_{ij}$$
$$DPO_{ij} = DFA_{ij} - ZAM_{ij} - NAJ_{ij} - URN_{ij} + URV_{ij},$$

where koef11 to koef15 are decomposition coefficients of cost items in accordance with the structure of indicators u19 to u31.

Model calculation of EAA for the Czech agriculture

Multiplying all account items for individual RV and ZV commodities A1-A37 by the total production land area and the total number of animals of these commodities in the CR, respectively, and summarizing them over all RV and ZV commodities then leads the model computation of the total EAA for the CR.

This approach represents the model estimation of EAA using the model EAA-P1.

EAA prediction for 2014

With the described model EAA-P1 it can be done the prediction of EAA for the current year. For this prediction there are necessary following input:

Income and costs for each commodity in 2014: source the model RENT-4.

Producer prices in 2014: for this purpose there was developed a model CEN-1, on the basis of monthly time series from 2000 to 2014 which predicts average annual prices for agricultural commodities on the base of several month data of the current year.

Production land size and animal numbers for RV and ZV commodities in 2014: for this purpose there is used the sub-model PST of the model EAA-P2 (see section 2.3), on the basis of annual time series data for all commodities A1-A37 provides prediction of these indicators for the current year.

Subsidies for agricultural commodities in 2014: source is CAP assumptions, i.e. rules and objectives of the EU CAP for the period after 2013.

2.3 Model EAA-P2

While the base of the model EAA-P1 are commodity accounts, the basis of the model EAA-P2 are projections of all 31 indicators of EAA-CSO. The RV and ZV accounts of the model EAA-P2 use the commodity structure A1-A37 from the model RENT-4. In the MSP and FIN accounts the model EAA-P2 is based on the time series of indicators u19 up to u31.

Model EAA-P2 is based on the regression of seasonal trends (see below) in prices, crop areas hectare yields, animal intensity and animal numbers from which there are calculated values of the total output indicators for agriculture. Furthermore, with the help of seasonal trends there are calculated cost items and other indicators of EAA. Predictions of subsidies are taken from the rules of Agrarian Policy of the EU CAP for the period up to 2020.

The basic input source into the model EAA-P2 is the database BASELINE-ÚZEI (Zedníčková, 2014) that collects long time series of natural and economic data for all important agricultural commodities.

The aim of the model EAA-P2 is to create a complex predictive model of EAA. This model consists of sub-models that predict separately harvest area and the animal numbers (STR), yields and animal intensities (INT), producer prices (CEN-2) and the cost and other items of EAA (NAK).

Method of seasonal trends

All EAA indicators of the model EAA-P2 are processed according to the same principle - a method of calculating the seasonal trends.

Variables and parameters of the method are:

x – measured values, y - variable time (years, months);

m - length of seasonality period determined by the user, p - number of periods which is determined by (n-m)/m, n - number of elements which must be integer multiple of m, k - multiplier of the projection.

Calculation of indicator projections is provided in the following steps:
Step 1: Input of variables x and y.
Step 2: Calculation of moving averages.
Step 3: Calculate the ratio of the previous period to the average.
Step 4: Calculation of the unadjusted indexes in the seasonal period.
Step 5: Calculation of adjusted seasonal index.
Step 6: Calculation of seasonally adjusted indexes in time series.
Step 7: Calculation of seasonally adjusted time series.
Step 8: Calculation of trend predictions:
- a. First calculates the selected regression (linear, polynomial and power function).
- b. From the regression there are obtained regression coefficients.
- c. Adjusts the variable y to length n' = n + mk (maximum projection length).
- d. From the calculation of the selected regression equation derives the forecast trend.

Step 9: The final calculation of the seasonally adjusted trend is made on the base of step 6 and step 8d.

A detailed description of the method it can be found in Chaloupka (2014).

Projection of EAA-P2 indicators using the seasonal trend method

Projections take place in each sub-model individually for the monitored commodities (model RENT-4) and for the cost and other items of EAA, for which there are used time series since 2000. Sample prediction results there are presented in graphs 1 – 4.

Description of individual sub-models and their characteristics

The sub-model CEN-2 draws data from monthly commodity prices since 2000 and as seasonality is here used one year (12 months). This sub-model offers the option of linear and power regression function. It is a choice between current prices and constant prices (base year 2000).

The sub-models STR, INT and NAK are identical in terms of structure. Data that enter into these sub-models begins since 2000. Seasonality is by default set to 3 years, but sub-models allow changing the length for all commodities. The choice is linear, power and polynomial regression function.

Each sub-model predicts development for several years in advance for each year, while there is a so-called folded projection. It consists in shifting base (input time series) by one step (one year) forward. All prediction sub-models are dynamic and responsive to the addition of new data as well as are able to fill missing data in time series.

3 Results and discussion

3.1 Results of the model EAA-P1

Tab. 1 shows the realization of the model EAA-P1. There are compared model results with the published values of the EAA-CSO in period 2008-2013. Prediction for year 2014 is under development on the basis of available data for the first half of 2014 (producer prices, sown areas for crops and total numbers of animal categories) and there are presented as preliminary results only to illustrate the methodological procedure.

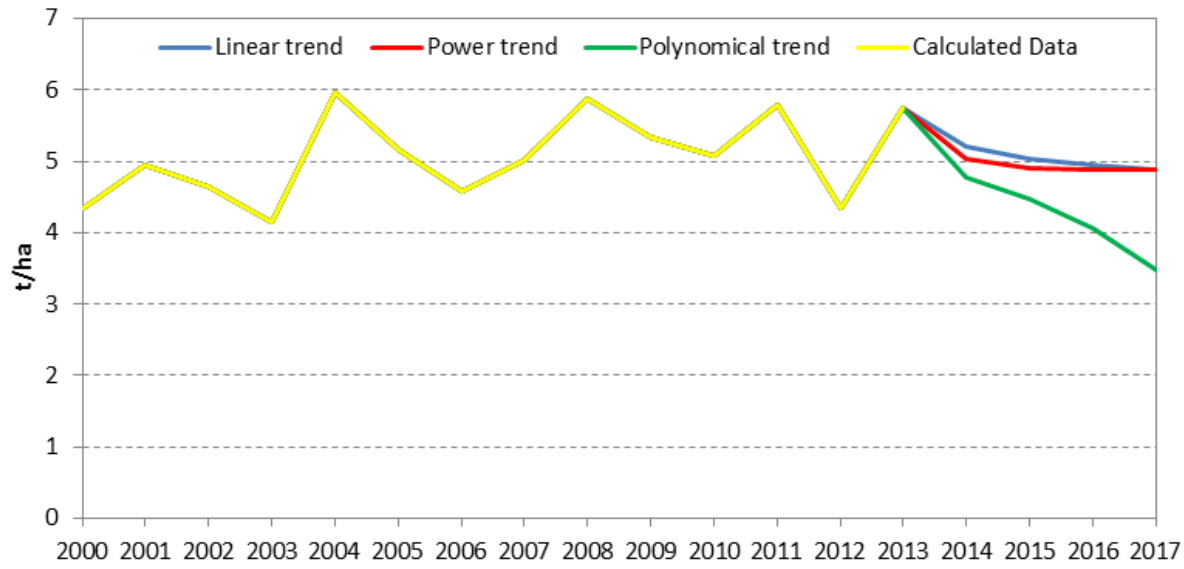
Tab. 1 Examples of model calculations EAA 2008-2013

Code		Model EAA-P1 (CZK mil.) - calculation							Model EAA-CSO (CZK mil.) - reality					
EAA	Indikcator	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013
01	Cereals (including seeds)	27 869	20 432	28 118	35 428	35 645	33 805	30 699	26 433	18 767	24 599	32 703	32 362	31 601
02	Industrial crops	14 638	12 474	14 908	17 052	18 491	19 966	21 207	16 171	13 272	13 572	17 536	19 039	20 219
03	Fooder crops	8 779	8 102	8 469	10 107	10 891	10 939	12 749	8 905	9 020	9 054	9 729	10 291	12 525
04	Vegetables and horticull products	5 082	5 088	5 233	5 535	5 331	5 578	5 494	4 853	4 846	5 043	5 169	5 170	5 451
05	Potatoes (including seeds)	3 229	2 958	5 131	2 533	3 251	4 450	3 855	2 630	2 489	2 395	2 104	2 059	2 448
06	Fruit	1 725	1 427	1 159	1 015	1 351	1 502	3 232	1 646	1 296	1 002	1 088	1 281	1 373
07	Wine	1 022	709	575	1 154	774	935	935	1 022	709	575	1 154	774	935
08	Olive oil													
09	Other vegetables products	850	716	712	769	830	610	610	850	716	712	769	830	610
10	Crop production (01 AŽ 09)	63 194	51 907	64 305	73 593	76 564	77 785	78 782	62 509	51 115	56 951	70 252	71 806	75 162
11	Animals	26 302	22 641	20 399	19 529	21 017	22 207	21 562	27 072	23 960	20 425	20 396	21 901	22 288
12	Animal products	26 240	19 740	21 667	23 827	23 831	25 153	27 676	25 345	18 442	20 465	23 021	23 117	24 608
13	Animal production (11+12)	52 542	42 382	42 067	43 356	44 848	47 360	49 238	52 417	42 402	40 890	43 417	45 017	46 896
14	Production of agricultural products (10+13)	115 736	94 288	106 372	116 949	121 411	125 145	128 020	114 926	93 517	97 841	113 669	116 824	122 058
15	Agricultural services	2 656,7	2 602,1	2 708,6	2 727,6	3 082,2	3 522,9	0,0	2 657	2 602	2 709	2 728	3 082	3 523
16	Agricultural products (14+15)	118 392,7	96 890,6	109 080,3	119 677,0	124 493,7	128 667,9	128 019,8	117 582	96 119	100 549	116 396	119 906	125 581
17	Non-agricultural secondary activities (inseparable)	2 193,8	1 696,7	2 056,5	2 483,3	2 468,2	2 487,6	0,0	2 194	1 697	2 057	2 483	2 468	2 488
18	Agricultural output (16+17)	120 586	98 587	111 137	122 160	126 962	131 155	128 020	119 776	97 816	102 606	118 879	122 374	128 068
19	Total intermediate consumption	89 854,4	83 292,4	78 634,9	86 619,0	86 126,6	93 521,9	100 420,3	88 907	78 684	78 170	83 444	88 223	93 083
20	Gross value added at basic prices (18-19)	20 631,9	6 088,2	22 894,4	24 780,6	30 004,5	26 323,1	22 299,5	30 868,9	19 132,0	24 435,8	35 435,4	34 151,2	34 985,3
21	Consumption of fixed capital	11 745,7	11 754,1	11 696,4	12 742,8	12 977,8	12 406,8	13 309,7	14 610,1	14 211,0	14 254,7	14 824,8	15 023,3	15 388,8
22	Net value added at basic prices (20-21)	8 886,2	-5 665,9	11 197,9	12 037,8	17 026,6	13 916,3	8 989,8	16 258,8	4 921,0	10 181,2	20 610,5	19 127,9	19 596,4
23	Compensation of employees	21 338,5	20 746,0	19 769,1	21 557,8	22 975,0	25 556,6	28 539,1	26 056,2	24 635,9	23 984,0	24 317,4	24 828,0	25 499,7
24	Other taxes on production	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1 191,7	1 264,7	1 364,1	1 257,2	1 219,1	1 260,0
25	Other subsidies on production	17 707,0	18 961,6	18 190,9	17 835,4	21 230,5	25 909,8	23 930,5	25 575,6	28 674,2	26 844,6	27 567,4	29 283,3	30 269,5
26	Factor income (22-24+25)	26 593,2	13 295,7	29 388,8	29 873,2	38 257,1	39 826,1	32 920,4	40 642,7	32 330,5	35 661,6	46 920,8	47 192,1	48 606,0
27	Net operating surplus/mixed income (26-23)	5 254,7	-7 450,3	9 619,7	8 315,4	15 282,1	14 269,5	4 381,3	14 586,5	7 694,6	11 677,6	22 603,4	22 364,0	23 106,3
28	Rents premiums and other rental property	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3 611,0	3 899,9	3 802,4	4 216,0	4 540,6	4 994,7
29	Interest expense	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1 443,5	1 348,8	726,9	1 398,1	1 830,1	1 885,4
30	Interest income	0,0	0,0	0,0	0,0	0,0	0,0	0,0	611,0	394,1	496,6	399,7	450,7	462,6
31	Business income (26-23-28-29+30)	5 254,4	-7 450,6	9 619,4	8 315,1	15 281,8	14 269,2	4 381,0	10 142,7	2 840,1	7 645,1	17 389,1	16 444,0	16 688,8

3.2 Results of the model EAA-P2

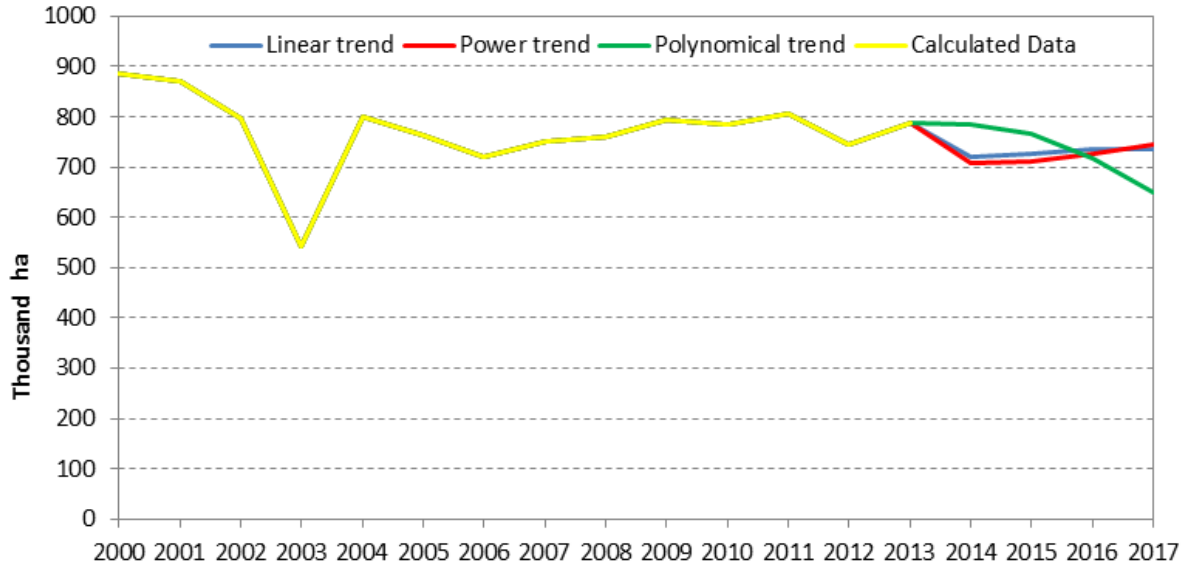
Graphs 1-4 illustrate EAA predictions to period 2014-2017 using the model EAA-P2 based on time series 2000-2014. These graphs show on examples of EAA chosen indicators the regression calculations that are provided by the sub-models INT, STR, CEN-2 and NAK with different regression function (linear, polynomial and power). The resulting EAA is then obtained by summarizing predictions of individual EAA items computed by these sub-models and modifying by the deviation parameters from reality. The deviation parameters are actually derived the percentage difference between the model results of EAA-P2 and real numbers of EAA-CSO in the real time period (2000-2013).

Graph 1 Calculation of the projection of the INT model for winter wheat (ha yield)



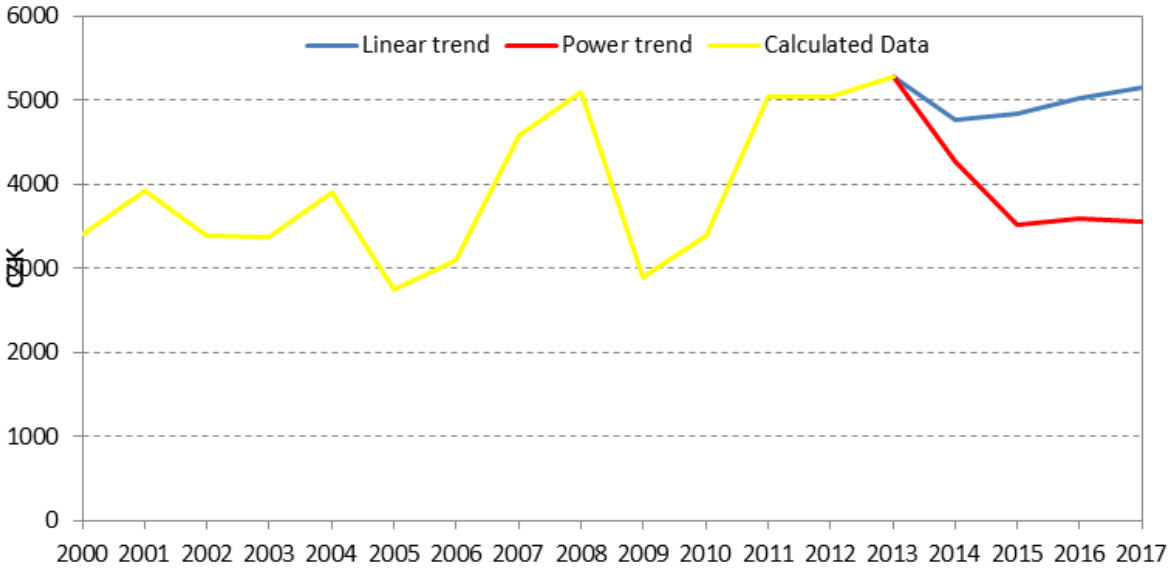
Source: Own calculations

Graph 2 Calculation of the projections from the STR for winter wheat (harvest area)



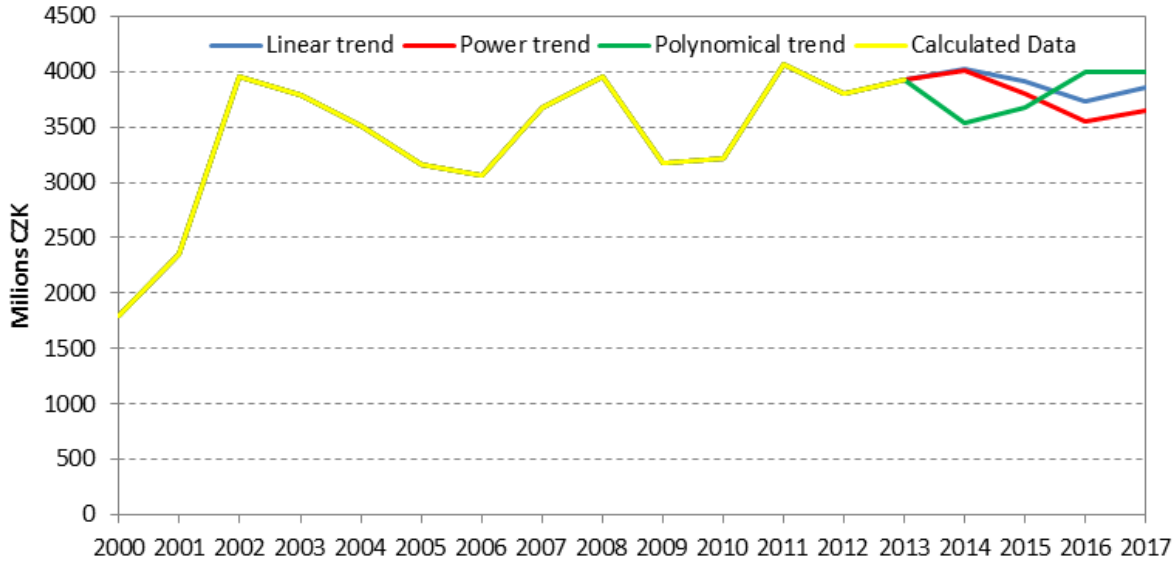
Source: Own calculations

Graph 3 Calculation of the projection model CEN2 for winter wheat



Source: Own calculations

Graph 4 Calculation of the projection model NAK for the cost of seed in the Czech Republic



Source: Own calculations

4 Conclusions

The above described prediction models EAA-P1 and EAA-P2 represent research effort of ÚZEI to give to the central sphere (Ministry of Agriculture) and agricultural entrepreneurs (farmers) important information about expected economic results of this branch and efficiency of the used big financial sources for support of agriculture as a whole in the framework of the agrarian policy (CAP) with the sufficient time reserve.

The development of these models will continue in the future in the frame of the internal research grant system of ÚZEI.

References

Foltýn, I. and Zedníčková, I. (2010) *Rentabilita zemědělských komodit*. Výzkumná studie ÚZEI, Praha, 70 str. + přílohy.

Chaloupka, O. (2014) *Metoda sezonních trendů.* Interní materiál ÚZEI, Praha.

Zedníčková, I. (2014) *Databáze BASELINE-ÚZEI.* (Databáze všech významných produkčně ekonomických informací o makro- i mikro-ekonomických o ukazatelích agrárního sektoru v časových řadách 1995-2014). Interní materiál ÚZEI, Praha.

Model FARMA-5 for economic and environmental optimization of agricultural enterprises

Ivan Foltýn[1], Jakub Kučera[1], Marie Trantinová[1], Václav Voltr[1], Ida Zedníčková[1]
Miloš Zapletal[23], Přemysl Pavka[2]

[1]ÚZEI Praha, Mánesova 75, 120 56 Praha 2
[2]EKOTOXA Opava, Otická 761/37, 746 01 Opava
[3]Silesian University in Opava, Faculty of Philosophy and Science, Masarykova 37, 746 01 Opava
foltyn.ivan@uzei.cz

Annotation: At present, increase demands for farming in the direction of sustainability. These include strengthening the positive and eliminating the negative environmental impacts such as erosion, unwanted contamination of agricultural land etc.

For this purpose it was designed and approved by the Technology Agency CR a project "Model FARMA-5 - Advisory optimization system for simulating the optimal behavior of agricultural enterprises in relation to the sustainability of agriculture and agricultural technologies to the environment friendly, with links to geographic information system".

The advisory system FARMA-5 consists of the following components: a mathematical model FARMA-5 for spatial optimization of production structures on the basis of soil blocks, created in the GAMS optimization system; model ERO-1 for the erosion hazard based on GIS linked with the classification of BPEJ; models EMI-1, IMI-1, DEP-1 to determine the impacts of atmospheric nitrogen deposition into agricultural land through the balance of NPK.

The mathematical optimization model FARMA-5 calculates the optimal production structure of a farm matching given inputs based on the variant task optimization, i.e. economic optimization (maximizing farm profit, regardless of environmental constraints), ecological optimization 1 (maximizing farm profit while taking into account the erosion hazard established by the model ERO-1), ecological optimization 2 (maximizing farm profit while taking into account the balance of N in relation to the results of models EMI-1, IMI-1, DEP-1) and ecological optimization 3 (maximizing farm profit with different combinations of ecological optimization 1 and 2). The use of advisory system FARMA-5 is assumed for the farm level and the decision-making level (Ministry of Agriculture) to simulate the impacts of future agricultural policy options.

Key words: advisory system, economic-mathematical model, model FARMA-5, economic optimizing, ecological optimization, erosion hazard, gas emissions, air pollution, ammonia, atmospheric deposition of N, nutrient balance of NPK

JEL classification: Q18, Q15, Q51, C02, C31, C61

1 Introduction

Economic analysis of quality problems and pollution of the environment should be based on the principle of responsibility. These trends are also reflected in the agricultural sector, when the principle of "polluter pays" has increasing support of politicians and the public. Getting polluters to bear the cost of disposing of their polluting activities is economically correct because it promotes fairness in society and contributes to economic efficiency. Agricultural policy is going the way of preventing environmental degradation, and therefore introduces the principles of good agricultural practice and standards of GAEC. The aim of GAEC-2 is mainly to protect the soil from water erosion and reduce the negative effect due to erosion. The problem of soil erosion is solved by setting requirements for the selected method of growing main crops on heavily and moderately erosion of vulnerable soils. For the pollution of surface and groundwater is standard given by the Nitrate directive.

In ÚZEI Prague, together with EKOTOXA Opava, in 2011 started the project FARMA-5 whose goal is to create a comprehensive methodological apparatus for analytical assessment and prediction of suitable farming methods for agricultural enterprises.

The advisory system uses already created an econometric model RENT-4 and includes several other models - model ERO-1 dealing with water limit soil erosion, models EMI-1, IMI- 1, DEP-1, engaged in ammonia emissions from livestock production and subsequent atmospheric deposition of nitrogen to the agricultural and forest land, and finally model FARMA-5, which connects mentioned models into a functional system based on operating software for both the farm level and central level.

2 Materials and Methods

2.1 Model FARMA-5

Model FARMA-5 is a spatial optimization model, which allows the economic, technological and environmental optimization of the production structure of a farm on the basis of external production conditions and its spatial distribution in the farm depending on geographical, soil and environmental assumptions about the environment in which the farm is located.

Network of soil blocks and matrix information base

Suppose that for a given farm there exists a network of soil blocks (PB) registered in the LPIS system with a unique identification code. For the model processing of the farm there is created a matrix input data structure

$$MAT = (i,j),\ i = 1,...,m,\ j = 1,...,n,$$

i.e. a system of matrices MAT1, MAT2, etc. with the same size, which contain important information about each PB of the farm, such as land size, the average altitude, average slope, ranking to LFA and production region classification, type of culture (arable land, grassland), assigning to BPEJ classification (containing land quality, e.g. humus content, the vulnerability of nitrogen, erosion hazard, expected hectare yields etc.).

A set of model plant commodities

The model also introduces a set KOM, which contains important commodities of the Czech agriculture (market commodities – e.g. cereals, oilseed rape, sugar beet, potatoes, further forage crops – e.g. silage maize, fodder and finally permanent grassland - meadows and pastures). For the set KOM the following condition holds:

$$\text{to each PB } (i, j) \in \text{MAT is assigned just one commodity kom} \in \text{KOM.}$$

The basic division of commodities of is on arable land (OP) and permanent grassland (TTP) which is done using subsets KOM-OP and KOM-TTP.

A set of model animal commodities

For animal commodities the model introduces a set KOM-ZV that contains the various categories of cattle, pigs and poultry which follows the structure of the commodity model RENT-4 (Foltýn, Zedníčková, 2010).

Connection between plant and animal commodities

For each animal commodity there is defined the need of feed nutrients (in energy units) and for each crop commodity there is defined the content of feed nutrients (in the same energy units) related to individual animal categories (from domestic sources, i.e. from the own farm production). Model FARMA-5 provides these connections using the system of equations:

$$KRMpotr(komZV) <= sum(komRV \in KOM, KRMprod(komRV, komZV))$$

$$for\ komZV \in COM\text{-}ZV$$

where KRMpotr is feeding need of the commodity komZV and

KRMprod is feeding production of the commodity komRV for the commodity komZV.

In other words, feeding needs of each animal category must be covered with an analogue output of a crop production.

The economic characteristics of commodities

To each commodity of the set KOM and each PB are assigned basic economic characteristics – hectare yields (vyn), costs (nak), supports (pod), prices (cen) and profit (zis).

For profit on the PB the following relation hold:

$$zis(kom,i,j) = (cen(kom,i,j) * vyn(kom,i,j) + pod(kom,i,j) - nak(kom,i,j)) * pocHA(i,j)$$

$$kom \in KOM\ a\ (i,j) \in MAT,$$

where pocHA(i,j) is the land size of PB (i,j).

Model variables

For each commodity kom from KOM and each PB (i,j) is assigned a model variable x(kom,i,j), with values of 0 or 1 that indicates whether the commodity is or is not on PB. It applies that

$$x(kom,i,j) = 1, \text{ if } kom \in KOM \text{ lies on PB } (i,j) \in MAT$$

$$= 0, \text{ if } kom \in KOM \text{ does not lie PB } (i,j) \in MAT.$$

Solving of the model FARMA-5 then is given by finding such a distribution of commodities from KOM on soil blocks PB of the farm that meets certain prescribed conditions, and is due to a given criterion the best (optimal solution).

The basic constraints of the model

The basic condition for the model is the spatial distribution of commodities, i.e. every PB may be placed no more than one commodity. This can be mathematically expressed as

$$sum(kom \in KOM, x(kom,i,j)) \leq 1,\ x(kom,i,j) = 0 \text{ or } 1 \qquad for\ all\ (i,j) \in MAT.$$

Given that so formulated problem leads to so-called integer optimization, which is in terms of mathematical and software solvability very difficult, this condition is mitigated and transferred into the form

$$sum(kom \in KOM, x(kom,i,j)) \leq 1,\ 0 \leq x(kom,i,j) \leq 1 \qquad for\ all\ (i,j) \in MAT.$$

Such a modified model is already solved in a reasonable time, as shown experiments with model FARMA-5. The condition, however, admits the possibility that on the given PB may occur more commodities with value of variable x between 0 and 1 (the sum of which is ≤ 1). The problem is then necessary to solve by post-optimization procedures ensuring the integer solution.

Lower and upper bounds of variables

For variables x(kom,i,j) are introduced into the model the lower and upper limits of allowable values that may have the solution to take. They are marked with symbols x.lo and x.up (lower, resp. upper bound) and are subject to restrictions

$0 \leq x.lo(kom,i,j) \leq x(kom,i,j) \leq x.up(kom,i,j) \leq 1$ for all kom $\in$ KOM a (i,j) $\in$ MAT.

If, for a given commodity kom $\in$ KOM and PB (i,j) $\in$ MAT is assigned x.lo(kom,i,j) = 1, then the lower and upper bound are equal to 1 and in solving process no other commodity than kom can enter in solution on PB (i,j). Commodity kom is "forced" into solution at the PB.

Analogously, if, for a given commodity kom $\in$ KOM and PB (i,j) $\in$ MAT is assigned x.up(kom,i,j) = 0, then the lower and upper limit are equal to 0 throughout the solving process the commodity kom cannot enter into solution on PB (i, j). Then the commodity kom is "excluded" from the form the solutions on the PB.

Restrictions for cultures, production regions and LFA areas

The procedure for specifying the limits of the variables in the model is used to define the conditions for existence of PB in various groups of agricultural land.

Arable land: if PB (i,j) contains arable land,

then x.lo(kom,i,j,) = 0 a x.up(kom,i,j) = 1 for kom $\in$ KOM-OP

x.lo(kom,i,j,) = 0 a x.up(kom,i,j) = 0 for kom $\in$ KOM-TTP.

Permanent grassland: if PB (i,j) contains TTP, then

x.lo(kom,i,j,) = 0 a x.up(kom,i,j) = 0 for kom $\in$ KOM-OP

x.lo(kom,i,j,) = 0 a x.up(kom,i,j) = 1 for kom $\in$ KOM-TTP.

Area LFA-H:

x.lo(kom,i,j) = 0 a x.up(kom,i,j) = 1, if PB (i,j) is located in LFA-H

x.lo(kom,i,j) = 0 a x.up(kom,i,j) = 0, if PB (i,j) is located out of LFA-H.

Analogously, for the other LFA areas (LFA-O, or LFA-S) and for production regions (KR – maize and sugar beet, BR - potatoes, BH – potatoes-oats and mountain).

Other restrictive conditions

Adequacy of the model to reality depends on the wording of restrictive conditions for the variable x(kom,i,j), which contains a selection of commodities to individual PB depending on:

- natural conditions: size, location in the agricultural area, elevation, soil quality etc.;

- economic conditions: yield per hectare, costs, prices, aid under the rules CAP, profit, etc.;

- specific conditions: farm management, ecological production, erosion hazard, nutrient balance of NPK etc.

Optimization criterion

The optimization criterion of the model is to find maximum of the total farm profit ZIScel

ZIScel = sum (zis(kom,i,j), kom $\in$ KOM and (i,j) $\in$ MAT)

while meeting all restrictive conditions.

Interconnection between model FARMA-5 and database BPEJ

There was created a database of potential soil fertility - BPEJ (Voltr et al., 2011). BPEJ database contains about 2,200 BPEJ types that cover all the agricultural land of the Czech

Republic. Further, there was developed a statistical model which calculates the dependence of the hectare yields of individual crops on soil fertility factors defined in BPEJ system (production function). This covers quantifiable factors, such as mineral fertilizer N, P, K, chemical protection, humus content, erosion hazard, vulnerability of soil nitrogen etc. Production function was derived for approximately 20 plant commodities and HPEJ (major soil ecological units), representing approximately 60 aggregation BPEJ for Czech agriculture.

Within the LPIS database for each soil block available is defined assignment to BPEJ classification. This enables the interconnection of the model network FARMA-5 with the database BPEJ for the farm.

2.2 Model ERO-1

To assess the degree of erosion endangerment of soil blocks it was used the universal Wischmeier - Smith equation (USLE = Universal Soil Loss Equation) in modification USLE 2D:

$$G = R * K * L * C * S * P$$

where within farming is possible in the following ways to change the value of factors:

G average annual soil loss in $t.ha^{-1}.year^{-1}$,

R factor of rain erosion efficiency, independent of farming,

K factor of susceptibility to soil erosion, dependent on agricultural activities in the long term (e.g. degradation of soil compaction due to cultivation),

L slope length factor, influenced by the organization of land, building limits, roads, contour furrows and other counter-erosion applications, and counter-flood measures interrupting the slope,

S the slope factor, independent of farming, or dependent on farming in a small scale,

C factor of the protective influence of vegetation, very dependent on agricultural activities (choice of crops, growing season, use of under-sowing etc.),

P factor of influence of counter-erosion measures highly dependent on agricultural activities (cultivation method, application of soil conservation practices).

From the above it follows that for constant values of the R factor (average 40) and the factor P (P=1) it can be calculated the product of the factors of R, K, L, S, P for each soil block and then multiplying the value of the factor C - related to the proposed crop – to get the estimated value of the erosion degree washes for that block.

This procedure was used in the preparation of data for incorporation degree of erosion hazard in the model FARMA-5.

The erosion values relative to the main soil unit (K factor) were updated in the project, while retained the average values of the factor C, that were specified for each crop (but not for different methods of cultivation or use of under-sowing). The recommended average value of R factor increased to 40, as against the original methodology (R = 20) means an increase in calculated values about 100 %. There was also the unification of allowable soil loss limits for the deep and average deep soils to the value 4 $t.ha^{-1}.year^{-1}$, while shallow soils are recommended for grassing.

Preparing the database

The processor had a vector layer of soil blocks of individual farms with basic database exported from an authorized section of the portal LPIS in ESRI shape-file format. Furthermore, there were ensured exports of DBF databases from the authorized section LPIS portal with information on soil and erosion situation (see tab. 1) that define the conditions for land management with regard to policy support.

The first step was to perform a database linking across key field ID_FB (code of soil block) and connection to the shape-file of soil blocks. For calculations and visualization of the erosion threat there were prepared basic information listed in the table 1.

Tab. 1 The first block parameters related erosion hazards linked to the shape-file attribute table.

Field name	Type of field	Length field	Description field
ID_FB	N	10	The internal identifier of the recording of the soil block
KULTURAKOD	C	1	Culture code
ZKODFB	C	10	Short code block
SVAZITOST	N	3,1	The average slope PB/DPB systém are calculated using data ZABAGED
BPEJ_xx	N	7,2	Acreage allocated PB/DPB in hectares to two decimal places BPEJ
KOD_EROZ_O	C	6	Code erosion hazard Ax(N1), Bx, AxBx(N1)
POT_MEO	C	20	Codes of appropriate specific measures applicable to MEO Px, Zx, Sx, Vx, Kx
MELIORACE	C	3	Amelioration YES/NO

The occurrence of soils with strong or moderate erosion threats to soil blocks

Information on the occurrence of the strong soil erosion threat on the block defines restrictions on the crop use in the model FARMA-5. Since the information has not a spatial location, the condition of exclusion of the erosion dangerous crop covers the entire block with the occurrence of SEO. Specifications SEO, MEO and a detailed description of the measures can be found on the website of the MA - farmer portal.

With the help of GIS and database analyses in ArcGIS programs and USLE 2D there were prepared basic layers for calculation of erosion washes, which were subsequently converted into a single raster format (ESRI grid) with a resolution of 10 m with a common origin and extent solved lots of individual farms. Raster of sub-factors were multiplied with each other and with the help of zonal raster statistics in the extent of farm soil blocks ther were calculated summary values of five factor product, which were processed and tabulated and they served as an essential basis for the computation of variant erosion washes in the model FARMA-5.

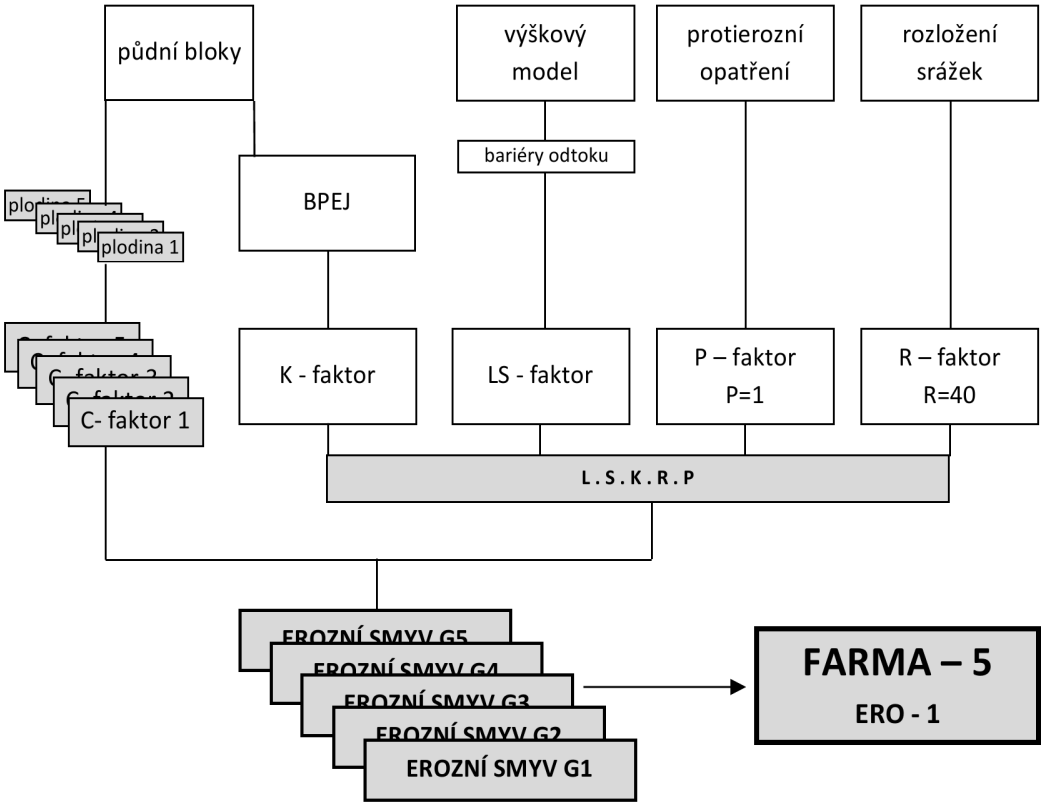


Fig. 1 Diagram of the first process of erosion calculations to model FARMA-5

Erosion model ERO-1 evaluates (in the course of modeling process of farming) changes in the level of erosion washes per unit area (in this case on the soil block). Since the model does not reflect the intervention in the plot (like construction furrow or limits) thus interrupting slope counter-erosion elements, it can be considered within the plot sum of products of the factors L, S, K, R and P as constant. Change the crop causes then only change of C factor, i.e. the resulting rate of erosion washes so depends only on the model change of this factor.

The resulting value of the average annual erosion washes from the block in the model FARMA-5 has been varying according to a engineered crop, thus with the change of C factor. For import in the model there was prepared for each farm a table consisting of a block identifier, information about the erosion threat and appropriate measures according to the LPIS, and the column with the product of the factors L, S, K, R, P from the equation USLE. Values of these factors for each block were obtained by the sum of zonal values of raster product of individual factors in the range of the soil block.

2.3 Models EMI-1, IMI-1, DEP-1

The problem of the negative impacts of agricultural activities on the environment is strongly related to cycling of nutrients N, P, K in farmland. Nitrogen inputs into agricultural land from industrial and organic fertilizers and atmospheric deposition has both positively - as the most important factor influencing the level achieved per hectare crop yields, partly negative - leakage of nitrogen from agricultural soils into groundwater and the negative impact of atmospheric nitrogen deposition on forest ecosystems in the area of agricultural company.

For these reasons, it is a significant problem assessing the overall balance of nitrogen in agricultural soils and the determination of the atmospheric deposition of nitrogen to the total nitrogen input to agricultural and forestry land. For the determination of total nitrogen

deposition are significant oxidized forms of nitrogen (nitrogen oxides, nitrates in aerosols and precipitation) and reduced form (ammonia, ammonium ions in aerosols and in precipitation). Models EMI-1, IMI-1, DEP-1 were designed and tested to determine the optimal production structure of agricultural holdings. Models EMI-1, IMI-1 and DEP-1 estimate total deposition of nitrogen to the agricultural and forest land in the vicinity of these farms.

Model EMI-1 estimates the emissions of ammonia (NH3) from livestock numbers and average annual emission rate for each species. The emission factor is based on the measurement of emissions of the animals housed in the Czech Republic (Zapletal, Chroust, 2006a) and includes four types of NH3 emissions - emissions from housing, emissions from manure storage (manure), emissions from the application of manure (slurry) and emissions from grazing period.

The derivation of atmospheric ammonia concentrations at different distances from agricultural sources was designed by model IMI-1, which is based on the relationship that suggested Theobald et al. (2006). This model provides an exponential curve that sets out how the atmospheric NH3 concentration decreases with distance from the source, depending on the amount of NH3 emission from the source, the probability of wind speed and direction, the nature of the surface between the source of NH3 and place for which it is modeled concentrations of ammonia and dry deposition of ammonia. NH3 concentration dropped rapidly with distance from the source. It was good agreement between measured and modeled concentrations of NH3 (Zapletal, Chroust, 2014).

It was used regional meteorological data for model IMI-1 in the Czech Republic. For map processing wind speed and frequency of wind direction was chosen 36 synoptic meteorological stations in the Czech Republic with a long series of observations. For the 47 areas in the Czech Republic were the basic windroses divided into different classes of atmospheric stability and wind speed of each class. They were compared to the modeled velocity and frequency of wind direction for the selected area in which the farm is located and measured the speed and frequency of wind direction in the area of the farm. It was good agreement between measured and modeled velocity and frequency of wind direction. Model IMI-1 takes into account the likely effects of different wind speed and direction using average data for the Czech Republic (Czech Hydrometeorological Institute, 2007a, 2007b) and characteristics of land use (EEA, 2005) between the source and the point for which the modeled deposition. Models EMI-1 and IMI-1 have been linked with regional meteorological characteristics of the 47 areas in the Czech Republic and integrated to module. Integrated module with input parameters (the characteristics of livestock, surface characteristics in the vicinity of the farm, the number of areas in which a farm) calculates emissions of ammonia and subsequently air pollution ammonia concentration in the vicinity of the farm, depending on weather and environmental conditions in selected areas.

For the determination of total nitrogen deposition on the background in the vicinity of these farms was designed a model DEP-1. The model DEP-1calculates total deposition of nitrogen from the total wet and dry deposition of oxidized nitrogen compounds (NOx, nitrate in precipitation) and total wet and dry deposition of reduced nitrogen compounds (NH3 and ammonium ions in precipitation) in the 1x1 km grid in the Czech Republic. Dry deposition in 1x1 km grid was modeled from concentrations of gaseous components (NOx, NH3) in the atmosphere and their deposition velocities. The deposition velocities of nitrogen oxides (NOx) and ammonia (NH3) were modeled from meteorological data, data on surface roughness and land use using a model of resistance (Zapletal, 2001). Wet deposition of nitrate and ammonium ions were calculated from precipitation and concentration of NO3- and NH4+ in precipitation. Total nitrogen deposition is the sum of the total dry deposition of nitrogen (NOx, NH3) and total wet deposition of nitrogen (NO3-, NH4+). The output of the model

DEP-1 is a map of the total deposition of oxidized and reduced forms of nitrogen in the background 1x1 km grid in the Czech Republic. Current total deposition of nitrogen to the soil blocks and forest land in the vicinity of farms was calculated as the sum of the total deposition of nitrogen in a 1x1 km grid and dry deposition of ammonia in the vicinity of these farms. Dry deposition of ammonia was calculated from the modeled concentrations of NH3 in air and their deposition velocities using model IMI-1.

Current total deposition of nitrogen (calculated as the sum of dry deposition of ammonia and total nitrogen deposition in the background) is compared with the critical loads of nitrogen calculated based on the mass balance of hydrogen ions in forest soils and empirical critical loads of nitrogen for forest soils (Zapletal, 2006b). NH3 emissions from farms can potentially negatively affect forest ecosystem in the vicinity of these farms.

2.4 Advisory system FARMA-5

By combining the model FARMA-5, model ERO-1 and models EMI-1, IMI- 1 and DEP-1 there was created an advisory system FARMA-5, which allows optimize the production structure of a farm, to reduce the risk of hazard erosion and to achieve acceptable levels of nutrient N, P, K in farmland. The functioning of the advisory system FARMA-5 for a particular farm may be described in the following steps:

Step 1: From the LPIS database to generate soil blocks (PB), along with other information such as identification of land culture (arable land or permanent grassland), PB belonging to production regions and LFA classification, as well as the average slope of PB and assignment BPEJ to PB.

Step 2: From the information in step 1, to generate matrix information system MAT1, MAT2 etc. for the model FARMA-5.

Step 3: Use the model ERO-1, to generate a matrix of erosion vulnerability parameters for each PB depending on selected agricultural commodities.

Step 4: Using models of EMI-1, IMI-1 and DEP-1 and localization of the livestock production, to generate a matrix of atmospheric deposition of nitrogen for all PB of the farm.

Step 5: Linking the model FARMA-5 with the model RENT-4 and BPEJ database, to generate a matrix of production-economic model inputs for each PB and each crop commodity: hectare yield, costs, policy support and market prices, as well as the level of fertilizers N, P, K according to commodities.

Step 6: Enter the farm default production structure, i.e. land size for crops and number of animals.

Step 7: The model FARMA-5 is ready optimize the farm production structure while respecting the erosion problem and NPK nutrient balance based on the model atmospheric N deposition.

2.5 Using data sources BPEJ and LPIS for advisory system FARMA-5

Basic idea

To use LPIS resources that users are commonly available as input data in the mathematical model FARMA-5 and in the model of erosion hazard ERO-1, whose outputs will design to user an optimized use of the cultivated land.

Extent and details

The method was tested on 11 enterprises farming in regions Příbram, Prachatice, Český Krumlov, České Budějovice, Jindřichův Hradec, Ústí nad Orlicí, Blansko, Bruntál and Opava. All characteristics were measured at the level of managed soil blocks.

Studied characteristics

For each farm enter into the model following available characteristics of LPIS:

- map layer of PB managed by the farm (the attached database includes acreage, average slope and elevation of land, culture, belongingness of PB to the cadastral territory);
- detailed information form LPIS (LFA, nitrogen vulnerable zones, distance from the water, ameliorative interventions application zone, fitness for grassing);
- data on erosion endangerment (erosion endangerment code GAEC, areas fo the strongly/slightly vulnerable soil erosion, runoff longest line, suitability for sowing and planting);
- AEO obligations (obligation code, grassing area etc.).
- BPEJ classification (code and area of all relevant BPEJ registered to PB);
- agricultural production regions (ZVO).

Data sources and availability used

LPIS data are obtained by the user through the "Farmer portal (eAGRI) on http://eagri.cz/public/web/mze/farmar/. It is possible to download Datawell package that contains the current map data sources of PB in shape-file format, including some basic characteristics. Part of the package is a database BPEJ related to each PB. The limiting factor for obtaining Datawell package is the availability of maps and BPEJ data, which can only be obtained in cooperation with the user.

In case of the other LPIS data exports (detailed data to PB, data on erosion endangerment and list of commitments AEO) it was possible to access this data via the MA website at https://portal.mze.cz/ssl/web/portal-mze/, where you can export the data to a specific date in the format *.xls.

Procedure

It is a data-link at the PB level. It was used both tools ArcView, partly MS Access. For the calculation of the erosion threat there was made a database of the above-mentioned characteristics of LPIS, BPEJ and ZVO, which was connected via a PB identifier (ID-FB) to the map layer of PB. The same database enters in the model FARMA-5, but without the mapping data.

Data on BPEJ was necessary to transform form the original format, because the database contained duplicate PB list with the appropriate BPEJ type acreage (tab. 2) that contains the PB code as the unique indicator and different BPEJ types ordered by significance from the largest to the smallest acreage (tab. 3).

Tab. 2 The original data format BPEJ after withdrawal of Datawell LPIS

IDBF	BPEJ_KOD	AREA
8377211	54178	7,64
8377211	52614	10,54
8377211	52654	4,84

Tab. 3 Data BPEJ after transformation per line

IDFB	BPEJ1	VYM1	BPEJ2	VYM2	BPEJ3	VYM3
8377211	52614	10,54	54178	7,64	52654	4,84

Data on ZVO are known at the cadastral territory. To each PB was assigned a ZVO, depending on cadaster centroid occurring (center of gravity) of the polygon PB (source LPIS).

3 Results and discussion

To test the functionality of the advisory system FARMA-5 were selected 11 farms. To illustrate results of these farms there was chosen a farm X.

Basic characteristics of farm X

The farm X is located at about 190 PB, of which one-third is arable land and two-thirds is TTP. The farm lies mainly in the potato production area and in LFA-O classification. Farm X focuses on production of cereals (winter and spring wheat, winter and spring barley) and oilseeds (rape seed and poppy), as well as the production of fodder for animal production (maize silage, perennial forage and TTP). In animal production, the farm is focused on breeding dairy cattle (about 500 pieces, of which 50 % are dairy cows) with market dairy production and selling young cattle.

Economic optimization of farm X

For the farm X, a number of model calculations were made using the model FARMA-5 comparing initial actual production structure (var. BAS) with optimized production structure, where about 20% of the released extent of cultivation for each crop (var. OPT). For the optimization of both variants were used theoretical assumptions on hectare yields for each PB derived from the database BPEJ, and the costs, prices and commodity subsidies from the model RENT-4 in relation to the classification of production regions and LFA.

Optimization results for the farm X were following: the total profit in var. BAS represents amount about 8 mil. CZK, while in var. OPT nearly 11 mil. CZK. Difference between these two values documents production capability "revealed" by the model FARMA-5.

Ecological optimization of farm X

The main benefit of advisory system FARMA-5 for the farm X are the ecological optimization calculations, which are considered ecological criteria - the threat of erosion (results of the model ERO-1) a limitation of nutrient N, P, K (results of the models EMI-1, IMI-1 and DEP-1). The results of ecological optimization are presented in tab. 4.

Tab. 4 Optimization of the production structure of the company X with respect to erosion hazard and NPK balance

	Erosion t/ha	Deposition N kg N/ha	Input N kg N/ha	Taking N kg N/ha	Balance N kg N/ha	Input P kg P/ha	Taking P kg P/ha	Ballance P kg P/ha	Input K kg K/ha	Taking K kg K/ha	Balance K kg K/ha
Var. 1 - enter: erosion=0, balance NPK=0, profit 11 271 tis.CZK											
min on PB	0,00	10,85	21,32	0,00	-87,44	0,00	0,00	-64,33	0,00	0,00	-183,32
max on PB	44,36	28,54	214,32	157,87	143,97	10,00	74,33	-5,13	15,00	198,32	-7,92
average ZP	4,18	13,96	122,72	87,43	49,25	8,57	34,74	-26,18	12,85	91,42	-78,57
Var. 2 - enter: erosion=0, balance NPK=1, profit 8 968 tis.CZK											
min on PB	0,00	10,85	33,89	42,86	1,16	2,56	12,46	-32,45	3,84	53,84	-50,00
max on PB	36,58	28,54	138,60	100,12	50,00	10,00	41,66	-5,13	15,00	65,00	-44,35
average ZP	4,96	13,96	86,89	61,74	39,11	6,68	23,49	-16,81	10,02	59,91	-49,89
Var. 3 - enter: erosion=1, balance NPK=0, profit 10 106 tis. CZK											
min on PB	0,01	10,85	0,00	0,00	-8,35	0,00	0,00	-65,03	0,00	0,00	-191,75
max on PB	3,87	28,54	196,18	164,87	160,11	10,00	75,03	0,00	15,00	206,75	0,00
average ZP	1,68	13,96	109,67	78,94	44,70	8,06	30,75	-22,70	12,08	82,76	-70,67
Var. 4 - enter: erosion=1, balance NPK=1, profit 7 843 tis. CZK											
min on PB	0,01	10,85	3,13	16,78	1,16	1,43	3,85	-32,06	2,15	19,93	-50,00
max on PB	18,17	28,54	135,31	98,43	50,00	10,00	41,49	-2,27	15,00	64,92	-17,56
average ZP	3,36	13,96	78,72	57,57	35,11	6,28	21,64	-15,35	9,43	56,33	-46,90

Note: erosion = 1/0 – the erosion limit (4 t ZP washes for each PB) is/is not considered in the course of the farm profit optimization, balance NPK = 1/0 – the balance nutrient limit (range -50 to +50 kg of N, P, K per hectare of ZP for each PB) is/is not considered in the optimization process

Contribution of indicator optimization of farming in relation to the environment and their reflection in the overall farm economy is impossible without complex calculations. Therefore, the calculation of total income, while respecting certain limits, based on the aforementioned indicators can help in the decision-making process, which direction to develop the farm, or vice versa to dampen some ways of farming.

In the case of N balance (but also in P and K balance) may not lead to long-term uneven balances (shortage or surplus) of these nutrients. NPK balance is influenced by a process of ammonia emissions from animal production and subsequent atmospheric deposition of N. Another important indicator is the erosion vulnerability of certain parts of the farmland where inappropriate farming methods can lead to significant erosion of soil washes with adverse effects on fertility reduction as well as disposals of agricultural land. On the basis of precise inputs using figures which are based on universally available information (LPIS) and special measuring emissions in the farm can then model FARMA-5 through model simulations provide valuable information and guidance on how to avoid potential negative economic consequences.

On the other hand, to the central authorities the above mentioned calculations may show the problematic locations in Czech agriculture, where there can be assumed negative consequences of management. On the basis of model calculations then it can be proposed a stimulus targeted support for Czech producers, which should act to minimize or eliminate negative consequences, and thereby to introduce positive societal impacts of future agricultural policy. The advisory system FARMA-5 and its software realization in collaboration with a research team of consultants should be available for operational troubleshooting of agriculture for both these spheres of the future use (agricultural enterprises and Ministry of Agriculture).

4 Conclusions

The advisory system FARMA-5 may serve as the basis of the methodology for designing and evaluating future development of farms, while allowing respecting their specific production-economic and organizational conditions. In the case of processing larger areas allows software apparatus to study the behavior of agricultural enterprises in line with the objectives of the CAP of the EU, i.e. to ensure sustainable agricultural development with respect to the requirements of good agricultural practices and agricultural technologies friendly to the environment.

References

ČHMÚ (2007a): *Informace o klimatu.* Český hydrometeorologický ústav, Praha, odbor klimatologie, http://www.chmi.cz/meteo/ok/infklim.html.

ČHMÚ (2007b): *Atlas podnebí Česka.* ČHMÚ, UP, 2007.

EEA (2005): *CORINE "Land Cover vector by country"*. European Environmental Agency data service, http://dataservice.eea.eu.int.

Foltýn, I., Kučera, J., Trantinová, M. and Božík, M. (2013) ‚Model FARMA 5 – prostorová optimalizace ekonomického a ekologického chování zemědělských podniků', Sborník mezinárodní konference Agrární perspektivy, Praha, [CD-R].

Foltýn, I., Zedníčková, I., Humpál, J., Voltr, V., Kučera, J. and Doucha, T. (2014) *Model FARMA-5 – prostorové modelování ekonomických, ekologických a agro-environmentálních podmínek typových podniků ČR v podmínkách budoucí SZP*. Závěrečná zpráva Interního výzkumného projektu ÚZEI, Praha, 30 str. + přílohy.

Foltýn, I. and Zedníčková, I. (2010) *Rentabilita zemědělských komodit*. Výzkumná studie ÚZEI, Praha, 70 str. + přílohy.

Theobald, M. R., Bealey, W. J. and Sutton, M. A. (2006) *Refining the Simple Calculation of Ammonia Impact Limits (SCAIL) model for application in Scotland.* SEPA, 2006, s. 55.

Zapletal, M. (2001) 'Atmospheric deposition of nitrogen and sulphur compounds in the Czech Republic', *The Scientific World (2001) 1 (S2),* 294-303.

Zapletal, M. and Chroust, P. (2006a) 'Spatial distribution of ammonia emissions on the territory of the Czech Republic', In: Aneja, V. P., Schlesinger, W. H., Knighton, R., Jennings, G., Niyogi, D., Gilliam, W., Duke, C. S (eds.): Workshop on Agricultural Air Quality, State of the Science, June 5.-8., 2006, Bolger Conference Center, Potomac, Maryland, USA, Washington DC, 2006, s. 1258-1262.

Zapletal, M. (2006b) ‚Atmospheric deposition of nitrogen and sulphur in relation to critical loads of nitrogen and acidity in the Czech Republic', *Journal of Forest Sci.* 52, 92-100.

Zapletal, M. and Chroust, P. (2014) ‚Imisní koncentrace a suchá depozice amoniaku v okolí zemědělského podniku', *Meteorologické zprávy*, roč. 67, č. 2, s. 41-47.

Russian agricultural sector development and its impact on the rural population

Natalia Ishchukova, Luboš Smutka, Michal Steininger [1]

[1] Department of Economics, PEF, Czech University of Life Sciences Prague,
Kamycka 129, 165 21 Prague 6 – Suchdol
ishchukova@seznam.cz, smutka@pef.czu.cz

Annotation: The objective of the paper is to determine the influence of agricultural sector's development and employment in agriculture on rural population in Russian Federation and to identify the factors, which reduced the rate of urbanization in the country compared with the global trends. These objectives were realized through hypothesis testing.
There was not discovered any correlation between the absolute value of agricultural production and rural populations. But decline of the rural population was not caused by the decline in agriculture, but fall of its importance in relation to other sectors of the economy. There was confirmed a direct relationship and high correlation between employment in agriculture and rural population, despite the fact that the decline in employment in agriculture occurred much faster than the decrease in the rural population.
Among the reasons which can explain differences in the development of Russian rural population from the global trends are administrative reorganizations, development of household plots instead of big collective farms, differences in the development of particular regions and migration between regions, natural decline in the urban population, migration from the former Soviet republics and blurred boundaries between rural and urban populations.

Keywords: Agriculture, rural population, collective farms, Russia, regions, urbanisation, employment.

JEL classification: J10, J11, J18, Q01, R11, R12

1 Introduction

Over the last 20 years many urban areas have experienced dramatic growth, as the world economy has been transformed by a combination of rapid technological and political change (Svatos et al, 2014; Ishchukova et al, 2013). Rural–urban migration and the transformation of rural settlements into towns and cities have been important determinants of rapid urban growth (Cohen, 2004).

For the period from 1980 to 2012, the average world rural population decreased from 60.6 to 47.5% of all population. Employment in agriculture decreased from 48.5% to 33.2%. Share of agriculture in GDP decreased from 7.5 to 3.1%. (Smutka L., Steininger M., Maitah M., Škubna O. and Vasilyonok V., 2014).

Thus, the global trend is expressed in the reduction of the role of agriculture in the global economy and was followed by a decline in the number of jobs in the agricultural sector and reduction of the rural population.

However, if we look at the statistics of the rural population of Russia for the same period, we can see significant differences. In 1980, the share of rural population was 30%, by 1990 it dropped to 27%, and until 2013 remained almost unchanged, ranging between 26-27%. Thus, the overall decline was less than 4%, while the world average decline was 13.1%.

What can explain such a significant deviation from the global trends? Experts in the field of demography and economic geography called some of the possible reasons for this phenomenon. Among such reasons are growth of large cities due to reduction of small towns

(Lexin, 2009), migration to the rural areas of Russia from neighboring countries, mainly from the former Soviet republics etc. (Nefedova T.G., Treyvish A.I., 2010).

In addition, there are other distinctive features of the Russian rural development. Firstly, it is significant decline in the share of agriculture in country's GDP. For the period 1990-1992 it decreased from16.6 to 7.7% of total GDP due to the collapse of Soviet Union and the process of economic transformation.

The decline in the share of employment in agriculture is also noticeable. If in the beginning of 90s the share of employed in agriculture was 14%, in 2012 it was two times smaller (only 7.3%).

Therefore, we can observe that a significant decline in the share of agriculture in GDP and employment in agriculture were followed by a relatively small decrease in the rural population. This may suggest that rural development in Russia is specific case compared to the rest of the world. There is a disproportion between the development of agriculture and the rural population.

This paper is trying to explain these trends through the analysis of the relationship between the development of agriculture and rural populations in the Russian Federation to find possible explanation of this phenomenon.

2 Materials and Methods

The objective of the paper is to determine the influence of agricultural sector's development and employment in agriculture on rural population in Russian Federation and to identify the factors, which reduced the rate of urbanization in the country compared with the global trends. This objective is realized through hypothesis testing. These hypotheses are as follows:

Hypothesis I: *The volume of agricultural production affects the rural population.*

Hypothesis II: *The share of agriculture in GDP affects the rural population.*

Hypothesis III: *There is a relationship between the rural population and share of people employed in agriculture.*

The analyzed period is 23 years (from 1990 to 2012). Thus it covers the whole period of transformation of the Russian economy since the collapse of the Soviet Union. As sources of statistical data, we used Russian Federal Statistical Servise database, World Bank database and FAOSTAT.

In this paper we performed a regression analysis using the classical least squares method. There were calculated a regression equation, coefficients of correlation and coefficients elasticity, coefficient of determination (R^2). To test a significance of the hypotheses there were used the classical p-value, F statistic and t-statistic. To test for the presence of heteroscedasticity, we used the Spearman's rank correlation coefficient and Goldfeld–Quandt test.

3 Results and Discussion

The analysis starts with the formulation of hypotheses.

Hypothesis I: *The volume of agricultural production affects the rural population.*

Agriculture and the rural population are narrowly interrelated. Agriculture has historically developed in rural areas, far from urban settlements. Development of agriculture would create new jobs, and thus attract new residents to the rural areas.

Hypothesis II: *The share of agriculture in GDP affects the rural population.*

The analysis should consider not only the impact of agricultural growth in absolute terms, but its share in the GDP of the country. Globally, there is a decline in agriculture not in absolute terms, but relative to other, more rapidly growing industries. We expect the positive correlation between the share of agriculture in GDP and rural population in Russia.

Hypothesis III: *There is a relationship between the rural population and share of people employed in agriculture.*

Historically, most of the people living in rural areas are involved in agricultural production. Alternative employment in rural areas is characteristic of developed countries, while in Russia it is not significant. Therefore, we expect the positive correlation between rural population and employment in agriculture.

Data set was prepared for a regression analysis. It should be noted that the data on the number of rural and urban population according to statistics, are strongly distorted due to administrative reforms, which resulted in a formal change in the categories of settlements without any qualitative changes. So, we have adjusted the rural population to eliminate the changes of settlements category to exclude the possible distortion of Russian statistics from the changes due to administrative and bureaucratic reasons, and to be closer to an understanding of the economic nature of the phenomenon.

Table 1 - Input data for the regression analysis

Year	Agriculture, value added (% of GDP)	Employment in agriculture (%)	Gross agricultural production (in constant prices 2004-2006)	Rural population (thousand people)	Rural population after elimination of changes in settlements categories (thousand people)
1990	16.6	13.9	68003	39455	38943
1992	7.4	15.4	59163	39573	39323
1994	6.6	16.1	49545	39492	39478
1996	7.2	15.3	44750	39459	39121
1998	5.6	11.7	38868	39341	38755
2000	6.4	14.5	41628	39068	38263
2002	6.3	11.3	44904	38996	37631
2004	5.6	10.2	46075	38812	36890
2006	4.5	10.0	47821	38366	36145
2008	4.4	8.6	50083	37813	35775
2009	4.7	9.7	50339	37595	35638
2010	3.9	7.7	44947	37516	35328
2011	4.3	7.7	53957	37420	35135
2012	3.9	7.3	52097	37231	34962

Sources: World Bank, FAOSTAT, Russian Federal State Statistics Service (2014)

After the calculation of all three hypotheses, test of significance and tests of autocorrelation and homoscadasticitty, we obtained the following results (Table 2).

Table 2 - Results of regression analysis and hypotheses testing

	Hypothesis 1	Hypothesis 2	Hypothesis 3	Critical value
Correlation coefficient	0.12	0.62	0.95	.
Coefficient of elasticity	0.03	0.0568	0.16	.
R-square	0.0142	0.3807	0,8986	.
P-value	0.5882	0.0017	0.00	0.05
Standard Error	1614	1280	518	.
F-statistics	0.3	12.91	186.14	>4.35
Student's t-test	0.58	3.59	13.64	>2.08
Approximation error	3.75	2.94	0.97	<7
Spearman's coefficient	0.37	0.0631	0.0771	<0.45
Goldfeld–Quandt test	1.36	2.72	1.15	<4.35

Sources: own processing (2014)

Hypothesis I : *Gross agricultural production value and rural population*

Considering the results of testing of the hypothesis 1, we can observe a low correlation between the gross value of agricultural production and rural population. Correlation coefficient is 0.12, indicating a very weak relationship between the studied variables.

According to R-Square, only 1.42% of the variation in rural population is explained by variations in gross agricultural production value. Tests of statistical significance showed that the regression gave negative results. F = 0.3 that is less than the critical value (4.35) at a given level of significance. T-statistics = 0.58 is also less than critical value t_{crit} = 2.08. The p-value (p = 0.58) is more than the common alpha level of 0.05, which indicates that it is statistically insignificant. There is no homoscedasticity in the regression model.

Hence, we will accept the null hypothesis, which states that the volume of agricultural production does not affect a rural population. The hypothesis I can be **rejected**. There was not a close correlation between the increase in agricultural production and rural populations.

Hypothesis II: *Share of agriculture in GDP and rural population*

In the first hypothesis we observe a correlation between the share of agriculture in GDP and rural population. Correlation coefficient is equal 0.62, indicating a not very high, but still a significant relationship between the studied variables.

R-Square tells us that 38.07% of the variation was explained by variations in the independent variable. Tests showed that the regression is deemed significant. F = 12.91 that is more than the critical value at a given level of significance. T-statistics = 3.59 is more than critical value t_{crit} = 2.08. The p-value (p = 0.0017) is less than the common alpha level of 0.05, which indicates that it is statistically significant. Hence, we will reject the null hypothesis. There is homoscedasticity in the regression model.

Therefore, the empirical results of the directly support the hypothesis 2. The share of agriculture in GDP has an impact on rural population. The hypothesis 2 can be **accepted**.

Therefore we can see, that despite the fact that the absolute value of agricultural production does not affect rural population, decline in the share of agriculture relative to other sectors of the economy.

The correlation is not very high. Decline in agriculture is much faster than the decline in the rural population. There may be a number of explanations for this phenomenon.

One of these factors is lack of a clear division between population of urban and rural areas. Russian official statistics considers it as a part of the urban areas, though often they have all signs of rural settlements. It can introduce distortions in the official data.

In addition, in the early 90s there was a trend to a sharp decline in the share of agriculture in the economy as a result of the transformation process and the simultaneous growth of the rural population as a result of the crisis and the decline in living standards in the big cities and as a result of migration from the former Soviet republics.

Hypothesis III: *Rural population and share of people employed in agriculture.*

Testing the hypothesis about the relationship between employment in agriculture and rural population showed the following results. Correlation coefficient is equal 0.95, indicating a high relationship between the share of people employed in agriculture and rural population.

Coefficient of elasticity shows that 1% increase in gross agricultural production value entail a 0.16% change in the rural population. R-Square is equal 0.8986. It means that 89.9% of the variation was explained by the regression.

The p-value (0,00) is less than the alpha level of 0.05, which indicates that the regression is statistically significant. F statistic (F = 186.14) is more than the critical value (F_{crit} = 4.35) at a given level of significance, the value of t=13.64 is more than critical (2.08). It means that the null hypothesis can be rejected.

There is evidence the strong relationship between the employment in agriculture and rural population. The hypothesis 3 can be **accepted**. Thus, there was confirmed a direct relationship and high correlation of these parameters

In 1990-1994, the share of employed in agriculture increased from 13.9% to 16.1%. But then it began to fall. For the period 1994-2012 it declined from 16.1% to 7.3%. (Sutherland, 2008)

One of the possible reasons that can explain this difference is development of agriculture in Russia in form of household plots instead of big collective farms. So it turns out that people continue to live in rural areas, breed cattle and grow vegetables for their own consumption, which is not taken into account either in the calculation of the total value of agricultural production, nor in the calculation of employment in agriculture. If you take into account the significant proportion of household plots in Russian agriculture, this may well explain the deviation from the global trends (Ioffe G., Nefdova T. and Zaslavsky I., 2006).

There is another feature of Russia's development, which distinguishes it from many other countries. Russian is the biggest country in the world. Its size is equal to about 17 million square kilometres. But only about 143 million people live in this vast territory. It means it is not possible to apply traditional approaches typical for the European Union to understand the problem of rural areas development. The giant territory of the Russian Federation stipulates significant differences in the economic and demographic processes, depending on the region.

The population of Russia taken on its territory is extremely uneven. This is a reflection of both natural conditions and features of the economic development of the territory in the last 2-3 centuries. Figure 1 shows the classification of areas of Russia by the specifics of the development of urban and rural population in 1990-2013.

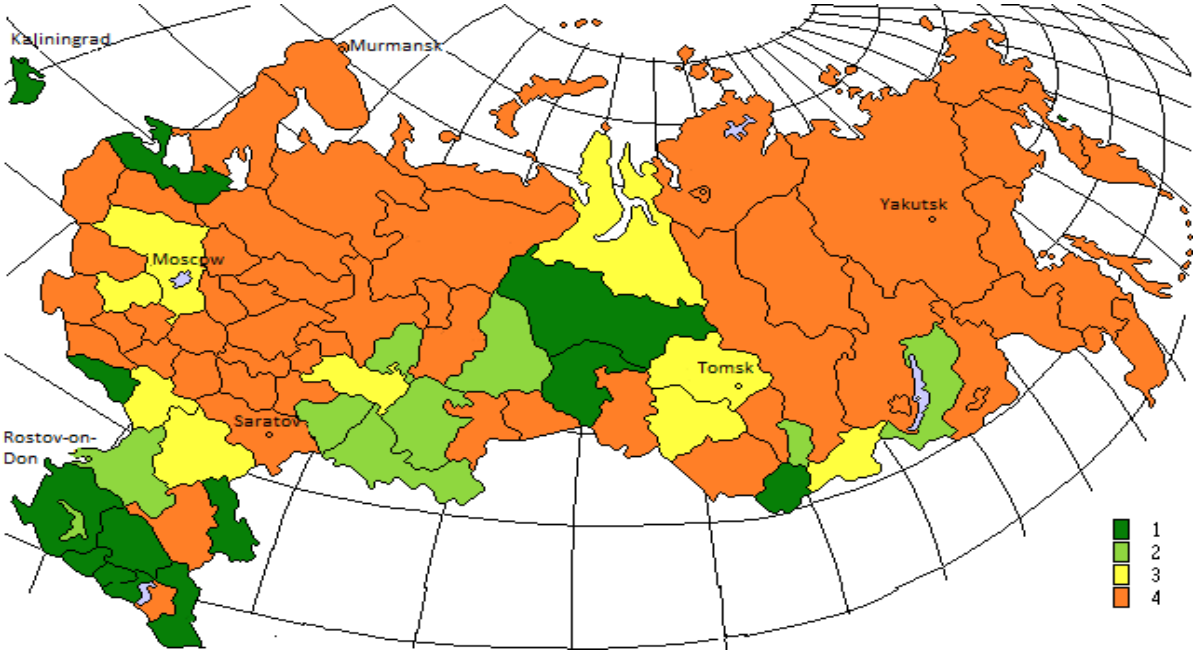


Figure 1 – Regions of Russia by the nature of the changes in the rural and urban population

Sources: Russian Federal State Statistics Service (2014)

The map shows the four types of regions:

1 - The growth of both rural and urban populations

2 - The growth of the rural population, the decline of the urban population

3 - The growth of the urban population, the decline of the rural population

4 - Reduction in both rural and urban populations

The first type of regions is the areas where both urban and rural population increased. This can be explained by high birth rates, as well as by migration from other regions of Russia or former Soviet republics.

Territory assigned to the second type is characterized by increase of the rural population and decrease of urban population. This trend can be explained by two factors. The first one is the decline of industrial production, which was accompanied by job losses and a sharp drop in the standard of living of the urban population, so significant part of population moved from the cities to the countryside (Gerry, 2008). The second reason is development of agriculture that attracts people to rural areas.

The third type is the area in which the urban population has increased over the period, while the rural population has decreased. This is mainly the territory of Central Russia and the Western Siberia.

The 4th/last type includes designated areas with a negative population growth both in rural and urban areas. It covers most of the country. Particularly noticeable decrease in the number of both urban and rural populations was observed in areas with extreme weather conditions and areas where the considerable distance from the central areas is existing: Magadan (the urban population decreased by 29.6%, and rural population by 52.4 %) and Sakhalin (urban population decreased by 7.5, and rural – by 22.2%) (Nefedova T.G., Treyvish A.I., 2003).

To be able to compare rural population development in individual Russian regions - the following figure 2 provides a brief overview related to agricultural production development in individual Russian Federation's regions.

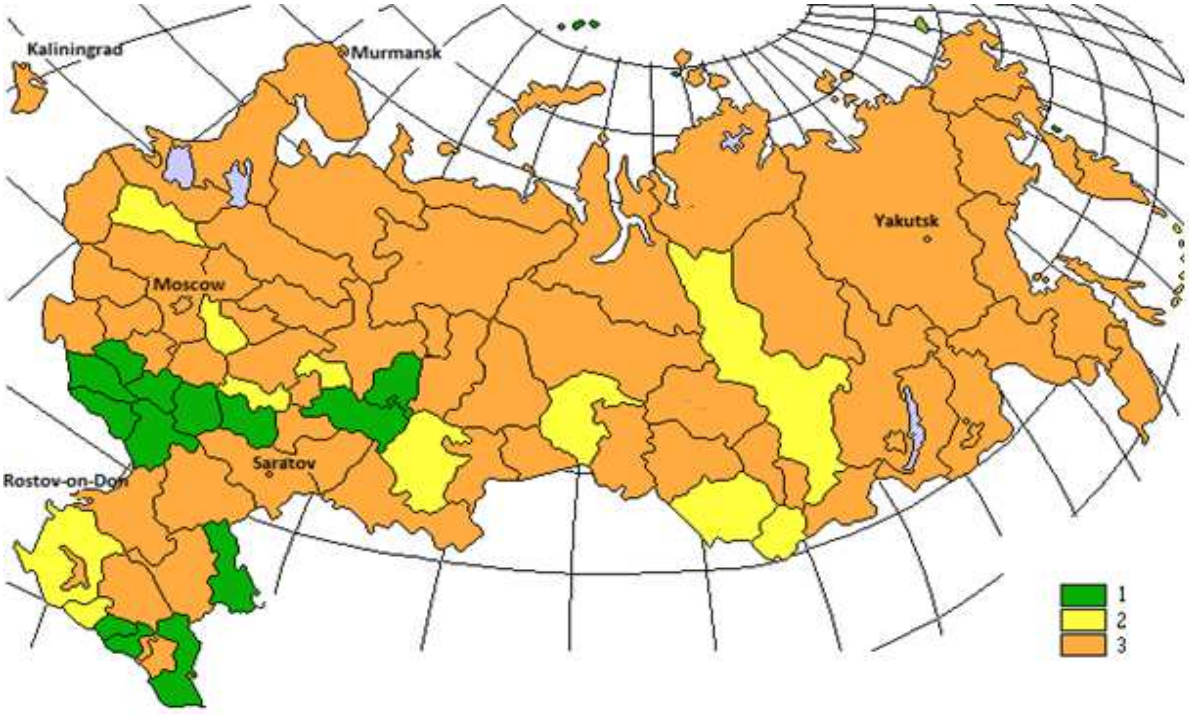


Figure 2 – Regions of Russia by the nature of the changes in agricultural production

Sources: Russian Federal State Statistics Service (2014)

The map identifies the three different types of regions:

1 - Agricultural production increased

2 - Agricultural production decreased but less than country's average

3 - Agricultural production decreased but more than country's average

Comparing regions with the increased number of the rural population and the regions with the increased volume of agricultural products, we can see that these are not always the same regions.

Development of agriculture and the rural population in particular regions do not always accompany each other. An increase in the rural population often occurred in regions with declining agriculture. So, in some regions, in the period of economic transformation, there was a decline in a quality of living in the big cities, which caused the outflow of population to the countryside, where the effects of the crisis were not so pronounced. In other areas, the rural population increased due to the growth of agriculture (Kabardino-Balkaria, Karachay-Cherkessia, Republic of Altai etc.). However, the vast majority of Russian regions experienced a decline both in agriculture and the rural population.

4 Conclusion

Based on the regression analysis as well as statistical data processing the following conclusions can be made.

There was not discovered any correlation between the absolute value of agricultural production and rural populations. This is typical for developed countries, but it is not typical for transitional countries and it is not typical also for developing countries. But we can say that the decline of the rural population was not caused by the decline in agriculture, but fall of its importance in relation to other sectors of the economy. The economy performance and value growth generated by other sectors of national economy is much higher in comparison to agricultural sector. There was confirmed a direct relationship and high correlation between employment in agriculture and rural population, despite the fact that the decline in employment in agriculture occurred much faster than the decrease in the rural population During the last two decades many people left agricultural sector and they found their new job positions in industrial and services sectors. Those sectors' ability to generate new working positions is much higher in comparison to agricultural sector.

Among the reasons which can explain differences in the development of Russian rural population from the global trends are administrative reforms and changes in settlements category, migration between regions, migration from the former Soviet republics, differences in the development of individual regions, blurred boundaries between rural and urban populations, and natural decline in the urban population. It is also necessary to highlight the fact that the development of agriculture in Russia in form of household plots instead of big collective farms played an important role in this process.

On the basis of these facts, we can conclude that the transformation processes in the economy of Russia is not yet over, and demographic processes continue to evolve. From the statistics of recent years can be seen that after considerable disturbance at the beginning of the transformation period, in the last decade, Russia goes to the European way of urbanization, accompanied by a gradual but steady decline in the rural population as well as decline in the importance of agriculture in the economy.

Acknowledgements

This paper was prepared with financial support of the project "Socio-economic practices of sustainable development in the new industrialization". The project is funded by the Government of the Russian Federation, Grant 074-U01 and conducted within the ITMO University.

References

Cohen, B. (2004) 'Urban Growth in Developing Countries: A Review of Current Trends and a Caution Regarding Existing Forecasts', *World Development*, vol. 32, no. 1, pp. 23–51.

FAOSTAT (2014) Faostat database, available at: http://faostat.fao.org/site/291/default.aspx.

Gerry, C. J., Nivorozhkin, E. and Rigg, J. A. (2008) 'The great divide: 'ruralisation' of poverty in Russia', *Cambridge journal of economics*, vol 32, no 4, pp. 593-607.

Golovina, S., Nilsson, J. and Wolz, A. (2011) 'The Development of Agricultural Production Co-operatives in the Russian Federation', Proceedings of the 5th conference on Economics and Management of Networks, Cyprus, pp. 1-18.

Ioffe, G., Nefdova, T. and Zaslavsky, I. (2006) *The End of Peasantry? The Disintegration of Rural Russia*, University of Pittsburg Press.

Ishchukova, N. and Smutka, L. (2013) ‘Comparative advantage: Products mapping of the Russian agricultural exports’, *Agris On-line Papers in Economics and Informatics*, vol. 5, no. 3, pp. 13–24.

Kurganova, I, and Lopes de Gerenyu, V., (2014) ‘Carbon cost of collective farming collapse in Russia, *Global Change Biology*, vol 20, no 3, pp. 938–947.

Lindner, P. (2007) ‘Localising privatisation, disconnecting locales - Mechanisms of disintegration in post-socialist rural Russia‘, *Geoforum*, vol. 38, no. 3 pp. 494-504.

Lexin, V. (2006) "Regional Capitals" in the economic and social life of Russia, *Problems of Economics*, no 7, pp. 84–93.

Lexin, V. (2009) ‘The cities of authority: the administrative centers of Russia’, *World of Russia*, no 1, pp. 3–33.

Nefedova, T. G. and Treyvish, A. I.(2003) ‘Differential Urbanisation in Russia. Tijdschrift voor economische en sociale geografie’. *Journal of Economic and Social Geography*, vol. 94, no 1. pp. 75–88.

Nefedova, T. G. and Treyvish, A. I. (2010) ‘The "crisis" geography of contemporary Russia’, *Eurasian Geography and Economics*, vol. 51, no. 2, pp. 203–21.

Russian Federal State Statistics Service (2014) Agriculture in Russia, Statistical Yearbooks 2002-2013, Rosstat, Moscow, available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/en/figures/agriculture/

Russian Federal State Statistics Service (2014) Demographic Yearbook of Russia 2002-2013, Rosstat, Moscow, available at: http://www.gks.ru/bgd/regl/B13_16/Main.htm.

Smutka, L., Steininger, M., Maitah, M., Škubna, O. and Vasilyonok, V. (2014) Rural population development in the context of decreasing share of agriculture in global economy, unpublished source

Svatoš, M., Smutka, L., Ishchukova, N. and Vasilyonok, V. (2014) ‘Russian agrarian foreign trade development - the impact of selected factors’. *Agris On-line Papers in Economics and Informatics*, vol. 6, no. 3, pp. 79–91.

Sutherland, L. (2008) ‘A Post-Soviet Agricultural Employment: A Case Study of Employee Incentives in Krasnodar territory, Russia‘, *Journal of peasant studies*, vol. 35, no. 3, pp. 369-389.

World Bank (2014) “World Development Indicators - database”, WB, available at: http://data.worldbank.org/data-catalog/world-development-indicators.

Wegren, Stephen K. (2013) *Rural Inequality in Divided Russia*, Routledge Chapman & Hall.

Situation of Local Action Groups in selected EU member states in programming period 2014 - 2020

Alena Kolářová[1], Kateřina Boukalová[2], [1]Helena Řezbová, [1]Jiří Čermák

[1]Department of Economics, [2]Department of Humanities, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
kolarovaa@pef.czu.cz, boukalova@pef.czu.cz, rezbova@pef.czu.cz, jcermak@pef.czu.cz

Annotation: Community-Led Local Development (CLLD) is currently a sensitive issue that has been long discussed and continues to be opposed by some Member States. The very strong discussions involve rural actors across the European Union both at the European and local level. The CLLD approach builds on the experiences and lessons learnt from the LEADER method which has proved to be a viable solution for rural development over the past twenty years "by fully taking into account the multi-sectoral needs for endogenous rural development through its bottom-up approach." (EP, 2011). The possibility of expanding LEADER should therefore be considered in the upcoming programming period 2014-2020.

Key words: programming period 2014-2020, LEADER, community-led local development, local action groups

JEL classification: F15, R58

1 Introduction

LEADER was launched as a Community Initiative in 1991 and, first, was carried out as 'an experimental approach to the promoting of development in rural areas' (Dargan and Shucksmith, 2008: 279). With the passage of time, the approach was developed in a number of different phases (LEADER I, LEADER II, LEADER+, LEADER/axis 4) and reached the stage where became a high point step of European policy in attempts of mainstreaming of participation and multi-level governance into European policy and practice (High and Nemes, 2007). LEADER was described as an effective tool primarily for development of rural localities in the past programing periods (EC, 2014), since it encourages involving of the local people in development of areas they live in, fosters a sense of belonging to a community and create an suitable environment Capacity building (improving communication, experience, linkages among people) which 'is viewed at the creation of social capital that could benefit whole community (Putnam, 1993). Social capital form interactions between individuals and groups. 'The concept of social capital is closely linked to policies that focus on attracting appropriately skilled people to localities to promote economic growth' (Lee et al, 2005: 270).

Since the beginning of the previous programming period, being one of the four axes of the CAP's second pillar, LEADER has become an integral part of the rural development program and one of its main tools. The greatest innovative character of such an approach lies in the transfer of power and public funds from the level of community administration to the local level (Ramos and Delgado, 2003). Citizens themselves „form local action groups and share experiences with counterparts in neighboring communities, perhaps networking at the regional and national level" (Trägardh et al 2013: 74). This has been done with the aim of enabling local people to develop a set of actions by the creation of Local Action Groups, known as LAGs. These LAGs should associate public and private partners, and be well-balanced and representative of the existing local interest groups, drawn from the different

socioeconomic sectors in the area (EC, 2014) and „should act so as to benefit the inhabitants and the rural area it represents“ (Schiller, 2011: 11). LAGs have the task of identifying and implementing a local development strategy, making decisions about the allocation of its financial resources and managing them. Therefore, “LEADER is popular in rural areas both as a funding instrument and as an approach, not only among members of local action groups but also and above all among local authorities and other operators in rural areas” (EESC, 2011).

Over the past 20 years, the EU funding for LEADER has helped to establish a unique network of rural actors across all the 29 EU Member states. The experimental phase (1991-1993) including *217 LAGs* opened up the whole LEADER life cycle and extended further to LEADER II (1994-1999) focusing primarily on disadvantaged rural areas. LEADER+ (2000-2006) as its third phase represented by *1 153 LAGs covered* all types of rural areas and finally the mainstreamed LEADER as an integral part of Rural Development Programmes (2007-2013). A total of *2 402 LAGs*, covering 77% of the EU’s territory, were selected to be funded under the LEADER measures in the previous programming period. (ENRD, 2013).

1.1 Reasons for LEADER, CLLD

The EU tends to the greater involvement of the local actors (by strengthening of the local partnership principle) in the implementation of the Operational Programmes in the future programming framework. Therefore a further aim of the Commission is to simplify and expand the use of LEADER approach through the Community-led local development (CLLD) approach. It can mobilize and involve local communities and organizations towards the development of a territory by accepting a “place-based approach” (one key concept in the Barca report) (Barca, 2009) rather than one of a mix of sectoral policies. By increasing participation within communities, building the sense of involvement and ownership and stimulating innovation and entrepreneurship, the regions shall be able to take up the challenges they currently face (Dargan and Shucksmith, 2008). Political structure of local action groups depends on social structural model of voting behaviour (Kopřiva, Varvařovská, 2011).

It became apparent that the “context of innovation as an insight into the driving factors behind the economic performance of rural regions is not only of scientific interest, but also of high political relevance” (Terluin, 2003). Since there was a need for a new type of policy approach, neither sectoral nor territorial but comprehensive and integrated (see for example Pělucha, 2009), the more explicit support and harmonized rules for the five Funds, namely European Regional Development Fund (ERDF), European Social Fund (ESF), European Agriculture Fund for Rural Development (EAFRD), European Marine and Fisheries Fund (EFMF), Cohesion Fund (CF) will be realized in the 2014-2020 programming period in order to make it more user-friendly for beneficiaries. A single methodology for CLLD will be applicable across all funds and beneficiaries will have opportunity to design multi-fund strategies better adapted to their needs. These integrated strategies will be implemented across actions which are funded from a range of different programmes with both rural development and social inclusion objectives (Council EU, 2013).

2 Materials and Methods

The main purpose of this paper is to provide a short insight into the policy-making process across the member states. It focuses on the scope and preconditions for promoting the CLLD approach by means of the EAFRD. Member States are only obliged to utilise the EAFRD for the funding of CLLD (5 % of the allocation of EAFRD), with the use of all other funds being optional. Each Member State has the option of funding the CLLD approach also through the

EMFF, ERDF, ESF. Each member state has to specify its approach to CLLD in the Partnership Agreement, where the basic principles, the roles and responsibilities of the involved parties should be described. In the case CLLD is not included in this document it cannot be implemented after 2013. The article builds up on data gathered during two questionnaire surveys among ELARD (European LEADER Association for Rural Development) members which were realized in April and May 2014. The additional data was provided by the ENRD (European Network for Rural Development). The comparative analyses is made and the findings is compared with the situation in the Czech Republic as it is one of the several member states applying so called multi-fund (MoRD, 2014). Multi-fund means using more than one fund for CLLD implementation.

3 Results and Discussion

Currently, 21 member states (regions)2 decided to develop multi-funded approach and implement multi-funded Local Development Strategies. These are namely Austria, Cyprus, Czech Republic, Estonia, Germany, Denmark, Greece, Hungary, Italy, Finland, France, Lithuania, Latvia, Poland, Portugal, Sweden, Slovenia, Slovakia, Spain, the United Kingdom (England, Scotland). The rest MS do not intend to implement multi-funded local development strategies - namely Bulgaria, Croatia, Luxembourg, Netherlands, Malta, Romania, Flanders, Wallonia and the United Kingdom-Wales. The authors will focus on the countries applying the multi-fund in the discussion.

As shown in the table 1., among the most considered options for possible combination of funds are EAFRD (as at least 5% of the fund is required to be allocated to the LEADER/CLLD approach by the EC Regulation), followed by EMMF and ERDF then ESF. Sweden, Poland, Portugal, Greece and Hungary intend to take advantage of implementation of the Local Development Strategies funded even by all funds.

Table 1. CLLD in individual member states

Member State	multifund	EAFRD	ERDF	ESF	EMFF
Austria	multifunded	x	x		
Cyprus	multifunded	x			x
Czech Republic	multifunded	x	x	x	
Denmark	multifunded	x			x
Estonia	multifunded	x			x
Finland	multifunded	x			x
Greece	multifunded	x	x	x	x
Hungary	multifunded	x	x	x	x
Latvia	multifunded	x			x
Lithuania	multifunded	x			x
Slovakia	multifunded	x	x		
Slovenia	multifunded	x			x

[2] 3 regions are considered in the case of the United Kingdom – Wales, Scotland and England.

Sweden	multifunded	x x x x
Italy	multifunded	set of regional programmes
France	multifunded	set of regional programmes
Gremany	multifunded	set of regional programmes
Poland	multifunded	x x x x
Portugal	multifunded	x x x x
Spain	multifunded	set of regional programmes
UK-England	multifunded	no data available
UK - Scotland	multifunded	no data available

Unfortunately, the data are not complete and according to long term negotiations, which are still ongoing, the list is not exhaustive. Moreover, the Partnership Agreements of all member states are in the process of being approved and only several states have published their english versions providing their insufficient summaries instead. Information about the allocation are to be explored furhter. The certain difficulties to collect data stream from the administrative structure of the state, too. Because in regionalised member states (MS), the regions have the possibility to follow a multi-funded CLLD approach or not. The country can submit a single programme for its entire territory or a set of regional programmes. For example Spain, Germany, Italy, Greece apply the set of regional programmes while the other states apply the national programmes. France and Poland submit both, set of regional programmes and national programme as well.

Table 2. Percent distribution of EAFRD allocation for the funding of CLLD

State	% of EAFRD	State	% of EAFRD
Cyprus	5	Ireland	7
Czech Rep.	5	Lithuania	6
Denmark	5	Macedonia	5
England	5	Poland	5
Estonia	10	Slovakia	5
Finland	5	Slovenia	5
France	5,3	Spain-Argon	10
Greece	9	Sweden	5
Hungary	12	Italy-Tuscany	6

However, as indicated Table 2., 5% of the total EAFRD contribution is reserved for the LEADER activities in the case of 10 countries. 6% contribution is considered for LEADER in two countries. One member state will allocate 7% of the total EAFRD. Even 9% of the fund will be spent through the LEADER activities in Estonia and Greece and over 10% of the agricultural fund will be reserved in Hungary and Spain-Argon. The highest percentage, up to 12% of the EAFRD, will be distributed through LEADER in Hungary.

As far as the management and coordination of funds are concerned, a variety of possible ways for the harmonisation of funds have been identified (with regard to both EAFRD and multi-funded approaches). The situation in selected MS is as follows: In Denmark, the CLLD will not be used for the ESF and the ERDF at all. 5% of the total EAFRD contribution will be

reserved for LEADER. Unfortunately, a sort of incomprehension was experienced during negotiation and discussions with Danish managing authorities. Some of them refuse LEADER/CLLD as a tool which will run off with the money, run off with the power and which has not been included in the Partnership Agreement. As the Fishery fund is concerned, since they have a very good experience with LEADER in the Fishery Fund, they hope for the continuation of the existing actions. The harmonisation of approaches with regard to LAGs and FLAGs will be achieved through joint procedures for the implementation of Local Development strategies (including national regulation guidelines, etc.). In Estonia, as well as in Denmark, CLLD is considered just for the LEADER groups - 10% of the budget allocated to Estonian National rural development strategy shall be implemented through LEADER. The CLLD approach is considered as an implementation of the EAFRD along with the EMFF. After two-year-long negotiated procedures with ministries of economy, environment and education the CLLD will not be considered in the case of the other operational programmes. Despite the benefits to be gained from the CLLD implementation, the concern of decentralisation of competencies in fovour of regional bodies still remains at the national level. In Slovenia, the representatives of the local actors were very active during negotiating of the Partnership Agreement. Unfortunately 5% of the ERDF and 5% of the ESF will not be given to CLLD, despite being promised. Ministries managing the ESF and the ERDF ignore CLLD. Nevertheless, a bottom up approach is very strong in Slovenia, great enthusiasm for the bottom up initiative persists. The CLLD approach will be based on the EAFRD and the Fishery fund. Spain submitted both a national programme and a set of regional programmes. Regional programme's share of the national allocation shall be 30%. The only two spanish regions (of 17) have decided to implement the CLLD approach. Unfortunately, Spanish LAGs did not participate in the preparatory process of the Partnership Agreement. In the Czech Republic the CLLD will be implemented not only through the EAFRD, but also through the other operational programmes. In the Czech Republic, the support provided by the EAFRD is the weakest one, no more than required 5% of the EAFRD will be allocated for LEADER activities, while the fund (Rural Development Programme-RDP) is principally focused on agribusiness. There were the huge negotiations with the ministries and strong interventions from the bottom up to managing authorities, which led to the strenghtening of the CLLD in other funds. Moreover, the Ministry for Regional Development is preparing a uniform methodology for calls for proposals, project applications and monitoring system among all relevant operational programmes which will include CLLD. In Bulgaria, Local Development Strategies will be supported from EAFRD exclusively. But a close cooperation between EAFRD and ESF is foreseen, at least at the national level. In Sweden, the same managing authority will manage all relevant CLLD programmes. Similar national regulations are developed for EMFF and EAFRD. Similarly, in Lithuania the same Managing Authority (as well as Paying Agency) is responsible for EAFRD and EMFF management. In Finland, the Ministry of Agriculture and Forestry has appointed the Selection Committee for both EAFRD and EMFF.

In 5 member states (Denmark, Hungary, Cyprus, Lithuania and Slovakia) indicated that LAGs can apply for multiple funds under certain conditions. In Denmark, Lithuania and Cyprus the use of EAFRD and EMFF is foreseen in designated rural and fisheries areas (i.e. areas where operate LAGs and FLAGs). A topic of evaluation of the LAGs was mentioned in the Czech Republic, Estonia and Finland. The evaluation takes into account the quality of the organizational and management processes in LAGs. In the case of the Czech Republic the Ministry of Agriculture will select a group of LAGs that meet the basic eligibility criteria for preparing strategies. These strategies will be reviewed and assessed by the Ministry of Regional Development.

Across the Europe a political situation has important consequences for the policy making process - some of the states (Hungary, Estonia, Bulgaria, Slovenia, Spain) pointed the political situation they are facing. An approval of the RDPs and the other strategic documents could not be accepted by the current government and were not going to be approved till the new government was appointed.

4 Conclusion

The LEADER programme has a notable importance to local economies and for the past 22 years it has allowed the channelling of investments of thousands of projects in rural areas. The practice of local development methods - as the LEADER is - signifies an occasion to test the quality of local democracy. The current LEADER model has been held up across Europe as the best model for rural development funding therefore the plan to extend the tool of the LEADER method to the tool of Community-led Local Development developed. Unfortunately, it was not given the reception hoped for by the regional authorities and especially by local actors operating in the field of rural development. This time only several member states took the advantage of the multi-funded approach. Sweden, Poland, Greece and Portugal included into multi-funded approach all four funds in order to achieve the integrated approach at local levels. With regard to a landlocked territory of the Czech Republic and thereby assuming not implement the EMFF, the full multi-fund is applied in the CR as well.

Despite the benefits to be gained from the CLLD implementation, the concern of decentralisation of competencies in fovour of regional bodies still remains at the national level (Slovenia, Spain, Estonia, Czech Rep.) In fact, the representative bodies at national level are not used to using discretion through the bottomu-up approach in order to achieve the sustainable local development. This aspect is generally perceived as a crucial condition for efficient EU's rural development policy implementation. This kind of country's rigidity is called by Dwyer "the institutional conservatism".

There is a second chance in 2017, during the mid-term review, but in the meantime the CLLD method remains confined and not fully utilized.

Acknowledgements

The survey was supported by the internal grant: "*Potenciál spolupráce očima místních akčních skupin: synergie nebo obava*" No. 20131041: 11190/1312/3156 of the IGA of the FEM of the CULS in Prague and "*Identifikace vhodných finančních nástrojů pro dotační politiku se zaměřením na návratné formy podpory"* No. č. 20141044: 11110/1312/3132.

References

Barca, F. (2009) 'An Agenda For a Reformed Cohesion Policy. A place-based approach to meeting European Union challenges and expectations', *Independent Report* prepared at the request of Danuta Hübner, Commissioner for Regional Policy. Retrieved from: http://ec.europa.eu/regional_policy/archive/policy/future/pdf/report_barca_v0306.pdf.

Council of European Union-Council EU (2013) '*COUNCIL REGULATION (EC) No 1305/2013 of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005*', Official Journal of the European Union L347/487.

Dargan, L. and Shucksmith, M. (2008) 'LEADER and Innovation', *Sociologia Ruralis*, vol. 48, no. 3, pp. 274 – 291.

European Commission-EC (2014) '*Guidance on Community-led Local Development in European Structural and Investment Funds*', June 2014. [Online], Available: http://ec.europa.eu/regional_policy/information/guidelines/index_en.cfm#3 [11 June 2014]

European Economic and Social Committee-EESC (2011) 'Opinion of the EESC on LEADE*R as a tool for local development*', NAT/502-CESE 1388/2011.

European Parliament-EP (2011) '*Regulation of the European Parliament and of the Council on support for rural development by the EARFD*', PE-CONS No/YY – 2011/0282 (COD).

European Network for Rural Development-ENRD (2013) '*LEADER LAGs Map'*. [Online], Available: http://enrd.ec.europa.eu/enrd-static/leader/leader/en/lags-database_en.html.[5 March 2014]

European Network for Rural Development-ENRD (2013) 'Mapping report – Background Document in relation to the NRN Thematic Cluster on CLLD',[Online], Available: http://enrd.ec.europa.eu/enrdstatic/app_templates/enrd_assets/pdf/clld/CLLD_mapping_report_update_171213.pdf [6 May 2014]

High, Ch. and Nemes, G. (2007) 'Social Learning in LEADER: Exougenous, Endogenous and Hybrid Evaluation in Rural Development', *Sociologia Ruralis,* vol. 47, no. 2, pp. 103-118.

Kopřiva, R. and Varvařovská, P. (2011) 'Social structural model and voting behaviour under the conditions of Czech rural areas' Agris On-line Papers in Economics and Informatics, III., 2011 (No.3), s. 165-178. ISSN 1804-1930, [Online], Available http://online.agris.cz/files/2011/agris_on-line_2011_3.pdf [16 March 2014].

Lee, J. et al (2005) 'Networking: Social Capital and Identities in European Rural Development', *Sociologia Ruralis,* vol. 45, no.4, pp.269-283.

Ministry of Regional Development-MoRD (2014) '*Partnership Agreement for the programming period 2014-2020*'.[Online], Available://www.strukturalni-fondy.cz/getmedia/3471bed1-8a29-484e-bcdf-65444cf99f08/Dohoda-o-partnerstvi_17-4-2014.pdf.

Pělucha, M., Bednaříková, D. and Viktorová, D. (2009) 'Možnosti nastavení efektivní politiky rozvoje venkova EU', *Acta Oeconomica Pragensia*, vol. 5.

Putnam, R. (1993) '*Making Democracy Work: Civic Tradition in Modern Italy*', Princeton: Princeton University Press.

Schiller, H. (2011) '*Network of Local Action Groups in Rural Areas – The Example of the EU Initiative Broads and Rivers LEADER+*', Saarbrücken: VDM Verlag Dr. Müller GmbH & Co. KG.

Ramos, E. and Delgado, M. (2003) 'European Rural Development Programmes as a mean of strengthening democracy in rural areas. Walking towards justice: democratization in rural life', *Research in Rural Sociology and Development,* vol. 9, pp. 135–157.

Terluin, I. (2003) ‚Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories', *Journal of Rural Studies,* vol. 19, pp. 327–344.

Trägardh, L. et al. (2013) ‚*Civic Society in the Age of Monitory Democracy*', Berghanh books. pp. 350.

Concept and arrangement of internal economic control in agricultural sector in terms of Russian Federation

Stanislava Kontsevaya [1]

[1]Faculty of Economics and Finance, Russian Timiryazev State Agrarian University Timiryazevskaya st. 49,127550 Moscow, Russia
s.kontsevaya@mail.ru

Annotation: The aspects of internal control development, methods and arrangement in management system of agricultural enterprises are decided in this work.

The key condition of long-lasting and successful activity of agricultural organization is an ability of management to analyze success and provide its development by targeted activity. To obtain it both analysis information system and feedback (internal economic control system) is mandatory.

The paper clarified the concept of "internal control", defined its role and place in the control system, set the subject and object control. This allows solving the problems of internal control at any level from the whole business to definite operation. In other words not only managers and specialists are involved in internal control system but controlling persons (control administration) as well. It takes place due to links between internal control and other functions of agricultural activity management

We suggest functional efficiency estimation of internal control for management system of the organization. There are key efficiency indicators i.e. profit of internal economic control activity, profitability of internal economic control activity, coefficient of disclosed reserves, coefficient of potential expanses, coefficient of economic benefits and gross amount of internal economic control efficiency.

We have developed a system of counting the number of personnel internal kontol. The following procedure takes into account the number of major objects for control, time for one controlled element per one month, selectivity of control, extra time and working time fund of one controler, number of the internal control person.

Efficiency or inefficiency of internal control system of the specific enterprise is correlated with risk for its business and management system. The following work proposes the factor model of reasonable internal control risk calculation and defines the procedure of preliminary review scoring in order to define average risks of the factor model and internal control risk.

Practical implementation of theoretical methods, development and arrangement of internal economic control was done in Integrated Agricultural Production Center Michurin, Vavozhskiy district, Russia.

Key words: Internal economic control; controlling; efficiency; management; accounting risk; the risk management system for the business; agricultural enterprises.

JEL classification: G31, G32, Q12, Q14

1 Introduction

Under current market conditions the basic aspect for effective development of agricultural activity is modification of production management system by means of wide application its economic techniques on the basis of accounting and control revision. The main objective of management system is a development and application of management solutions. Key principle is optimality principle stating that in the process of management solution development it is mandatory to take into account maximum number of possible ways of its application and choose the ways providing the most complete achieving of targets. (Alborov 2005).

Conceptual (interpreted) information of control i.e. the deliverables of control activity in any agricultural organization becomes an important factor to take such managing decisions on optimization of production, planning, programs, solutions of other issues for example safe and efficient use of organization property.

The key condition of long-lasting and successful activity of agricultural organization is an ability of management to analyze success and provide its development by targeted activity. To obtain it both analysis information system and feedback (internal economic control system) is mandatory. The problems of development of theoretical basis, techniques and control improvement are covered by economist scientists Belov N.G.,(2006) Sokolov Ya. V.,(2011) , Arense E. A., Lobbek J.K(1995) etc. The term of control is decided in a different way in their works. Control is a function of management, control process, an attribute of economic management etc. Reference literature defines the control in a complex way. According to Explanatory Dictionary of Russian Language (1992) control is defined as checking and permanent observation of economic processes. To control means to observe. German Dictionary of Economics (2007): Controlle is a check or control. English Dictionary of Economics (2007) - I. Control (eng.) – 1) management, leading; 2) authority; 3) countenance; self-control; 4) monitoring, check; 5) adjustment; 6) devices, actuating levers. II. Control (eng.) – 1) to manage, to lead, to prevail; The word «control» was adopted from French and means to check something and to observe something or an observation aimed to check an object. This word has the same meaning in German too. Deciding meaning of this word in English we identify visible difference i.e. this word in English means not only check or observation aimed to check the object but also management, leadership, adjustment and means of management. The word «control» is also translated in Russian as a verb meaning to manage, to regulate, to lead, to possess, to check, to constrain and to check.

In other words «control» is rendered in a different way and wide range of meanings and names leads to big diversity of approaches to practical tasks solution and in this case the tasks are not properly defined. Under such conditions scientifically based name and its definition has not only important theoretical meaning but also identifies practical side of the problem of control. In this work the internal control is defined as one of methods of financial and economic activity control in agricultural organization and. Control is also regulated system of observation, check of economic operations aimed to collect and interpret information about them to get credibility, economic and legal reasonability, real status of given and forecasted economic factors and taking managing decisions to regulate them.

The purpose of this article is to clarify the place and role of internal control for management. We offer a methodology for the calculation of the efficiency of the service and the method of calculating the number of employees of the Internal Control.

2 Materials and Methods

2.1 Methods, concept of development and arrangement of internal control in agriculture

The elements of internal control system are subject of control, object of control, item of control, technique of control, method and technology of control, process, collection and treatment of initial information for control, informational analysis of results, subject (expert) taking decision on the basis of results and a result of control. In accordance with internal economic control there is a system, a subsystem and an element. Such division allows solving the problems of internal control at any level from the whole business to definite operation. In other words not only managers and specialists are involved in internal control system but

controlling persons (control administration) as well. It takes place due to links between internal control and other functions of agricultural activity management (Fig. 1).

Legend of pic.1.: A – output information of management accounting, interpreted in control system and implemented in management system; B – transfer of information about financial accounting checked by internal economic control system to outside administrations accepting financial statements; C – input outer information subjected to internal economic control and used in planning and forecasting of risks, uncertainties, market condition etc.; D – information of internal economic control used in management system as an evidence and base of taking decisions; E, G – management accounting information checked in internal economic control system and used in planning, forecasting and taking of management decisions; F, H – financial accounting and economic analysis information checked in internal economic control system and used in process of activity organization, arrangement of economic operations, planning, forecasting, making of accounting (financial) statements and evaluation of survival rate of organizational property.

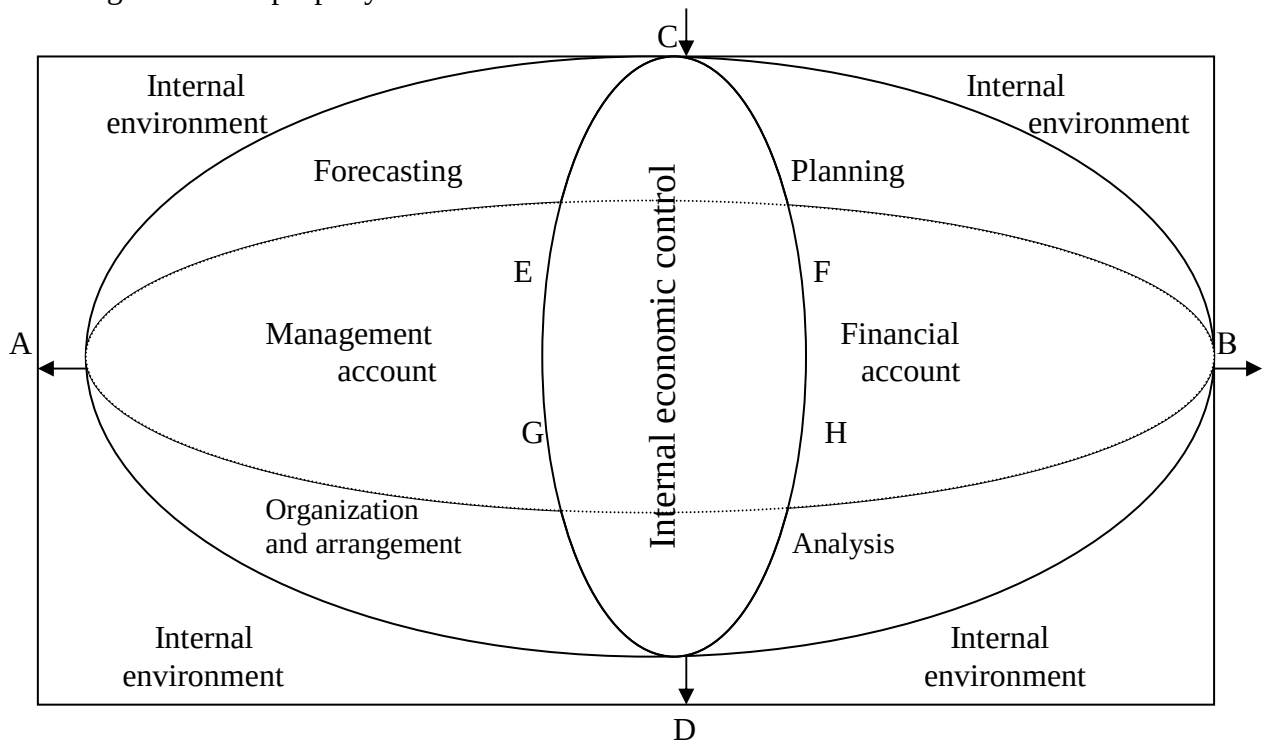


Fig. 1 Position and function of internal economic control in agricultural organization management system.

When defining the place of internal economic control and its ways of development in administration process, it is mandatory to take into account that the key element of economic mechanism is management system and internal economic control system is servicing element.That is the reason why successful development of internal economic control should be modeled in directions of subsystems (definition of subsystems and their scope of control objects), basic categories (definition of the content, form and its structural elements), fundamentals and functional tools (establishing of technology and techniques of development) (pic.2).

So the fundamental elements of internal economic control in management system of modern agricultural company in market conditions should be modeling of content and structural aspects of control mode of the basis of internal control establishment. Internal control can transform passive evolutional mode of internal economic control functioning into developed

active self-adapting system and ensure its polytyping mode of it behavior to achieve efficient management of agriculture. Presented model provides developing of solution of scientific and practical problems and establishing internal economic control in agricultural organizations so that it could solve the problems and make assigned functions to increase management efficiency of agricultural organization and its segments.

Improvement of internal control system in agricultural organizations is linked with establishing of controlled objects. Objects of internal economic control are financial, material, nonmaterial, labor and information resources; processes in organization; deliverables of divisions functioning; administrative decisions etc. In author's opinion, when executing internal economic control, objects of control are also cycles of activity in organization and its responsibility centers. The whole organization, a shop, division, area of activity, managed by responsible person (manager) having an authority and opportunity of taking administrative decisions within his area can be responsibility centers.

Improvement of internal economic control system is continuous process involving its reasoning and realization of it's the most progressive forms, methods, techniques and ways of its generation and development and improvement some of its sides, control and identification of its bottlenecks on the basis of continuous evaluation of its conformity to internal and external conditions of organization functioning. The key aspect of internal economic control development is application of its following types: guiding, filtering, program targeting and program resulting. Implementation of these types of control and internal control as well will encourage transformation of internal control system into controlling system.

<table>
<tr><td rowspan="5">Aim and objectives of internal control in agriculture</td><td rowspan="5">Functioning of internal control in agricultural management system</td><td colspan="4">Internal control subsystem</td></tr>
<tr><td>Revision of supervision board and control committee</td><td>Internal control in organization</td><td colspan="2">Self-control of specialists, managers of own activity, social control at economic level</td></tr>
<tr><td colspan="4">The main elements of internal control development</td></tr>
<tr><td>Content</td><td colspan="3">Form</td></tr>
<tr><td>Development method: principals, assumptions, requirements, scientific techniques, patterns (standards), axioms</td><td>Development mechanism: legislative, regulatory, methodological, organizational, normative, administrative, managing, automatized</td><td>Links: coordination, subordination, direct and reverse, dynamic and static, horizontal, vertical</td><td>Content of elements: object and subject of control, data sources, environment, time, period of realization, linking methods, means of control</td></tr>
<tr><td colspan="2">Strategic orientation of internal control</td><td colspan="4">Process of internal control development</td></tr>
<tr><td colspan="6">Internal control system</td></tr>
</table>

Fig. 2 – Concept model of internal control development in agricultural organizations

Establishment of internal economic control should provide documentary proved evidences necessary for taking strategic, political and operational administrative decisions by management of organization on the basis of the most reasonable forms and modes of control.

During arrangement of internal economic control the most important aspect is correct order of introduction sequence into process of interlinked stages of the system (observation, check, documenting of evidences, arrangement of evidences, subdivision into groups and documenting of results). Internal economic control being a dynamic process and artificial system with its content specificities and form is in connection with application of its intellectual potential, means and objects of labor. For this reason all elements of internal control process are subjected are to be improved, reasonably arranged and managed.

2.2 Method of internal control efficiency system evaluation in agriculture

In our opinion, the common criterion of efficiency evaluation of internal economic control in market conditions should be profitability index of control activity in certain agricultural organization. This index can be quite precisely calculated in accordance with information from accounting reports and regulatory (planned) data about structure of costs for functioning of internal economic control in overall organization management costs:

1. $P_{int.control} = [(P_{ord.act} - E_{ord.act}) + (P_{oth.act} - E_{oth.act})] \times \frac{E_{share}}{100} - E_{int.control}$,

Where $P_{int.control}$ – profit from internal control activity, rub.;

$P_{ord.act}$, $E_{ord.act}$ – profit and expenditures respectively from ordinary activities of organization during accounting period, rub.;

$P_{oth.act}$, $E_{oth.act}$ – other profit and expenditures respectively during accounting period, rub.;

E_{share} – relative share of regulatory (planned) expenditures for support and functioning of internal economic control of organization for current accounting period, %

$E_{int.control}$ – actual expenditures for support and functioning of internal economic control in organization for accounting period, rub.

2. Profitability of internal economic control activity in organization for accounting period can be calculated in accordance with presented model:

$$P_{share.int.control} = \frac{P_{int.contrd}}{E_{int.contrd}} \cdot 100,$$

Where $P_{share.int.control}$ – profitability of internal economic control activity in organization for accounting period, %

Specific criteria of efficiency evaluation of internal economic control and its subsystems, for example, internal control, can be absolute and relative indexes of control results:

3. Coefficient of revealed reserves of production and distribution efficiency improvement (C_{rr}):

$$C_{rr} = \frac{\sum RRP}{\sum E_{int.contrb}},$$

Where ΣRRP – amount of revealed reserves for production and distribution efficiency improvement, rub.

Following coefficient demonstrates an amount of revealed rubles calculated for 1 ruble of expenditures for support and functioning of internal economic control of organization for current accounting period, rub.

4. Coefficient of potential profits from identified shortages, losses from spoiling and thefts for employees' guilt and mistakes in tax system made before tax control of organization ($C_{pot.prof.}$):

$$C_{pot.prof.} = \frac{\sum SLT}{\sum E_{int.control}},$$

Where ΣSLT – an amount of revealed shortages, losses from spoiling and thefts for employees' guilt, potential penalties for mistakes in tax system, rub.

This coefficient identifies efficiency of internal economic control activity aimed for revealing negative cases and their elimination in time.

5. Coefficient of economic benefit delivered by gained economic disputes and legal trials ($C_{benifit}$):

$$C_{benifit} = \frac{\sum EB}{\sum E_{int.control}},$$

Where ΣEB is an amount gained or kept by internal controlers at trial or arbitration of economic disputes presenting organizational interest, rub.

6. Absolut amount of internal control efficiency in organization $A_{eff.int.control}$):

$A_{eff.int.control} = \sum RRP + \Sigma SLT + \Sigma EB - \Sigma E_{int.control}$.

The problem of improvement and increasing of efficiency of internal control departments in agricultural organizations is the most actual objective which solution depends on headcount of division as well. For this reason when the division defines its headcount it is necessary to take into account quantity of major control objects, quantity of major elements (sub-objects) in structure of these objects controlled within a month, time consumption per one control element, choice of control, additional time consumption and fund of working time of one controler:

7. Average annual headcount of controlers for internal economic control, persons ($A_{per.}$)

$$A_{per.} = \frac{O_{ob.control} \cdot E_{ob.control} \cdot t \cdot C_{select.control} \cdot C_{time}}{M_{time}}$$

$O_{ob.control}$ – quantity of major control objects (processes of procurement, production, sales, investments), pcs.;

$E_{ob.control}$ – quantity of actual elements (sub-objects) of control in structure of major objects subjected to control (for example, during check of procurement process i.e. long-lasting contract relationships with suppliers and procurement of valuables; expenditure cycle in order to procure valuables; warehouse and warehouse accounting, etc.), pcs.;

t – time consumption per one control element, hours (days);

$C_{select.control}$ – coefficient of control selectivity ($C_{select.control}$ = 1-$C_{consumpt.}$, where $C_{consumpt.}$ – coefficient of time consumption decrease in selective control conditions);

C_{time} – coefficient of additional expenditures on arrangement of control evidences, their documenting and documenting of control results:

$C_{time} = 1 + \frac{T}{t}$, где T – additional time consumption, hours (days);

M – fund of working time per month of one controler of internal economic control, hours (days).

Efficiency or inefficiency of internal economic control system of specific organization creates risk for its business for success of business activity and competitiveness of this organization depends on credibility of external users to financial reports (Khoruzhiy 2010). Extent of credibility of financial reports depends on means of control status, control environment and whole internal control system. Efficiency or inefficiency of internal economic control influence risk of management system of organization for this type of control is internal management function and it is interconnected with database for taking management decisions, regulation of economic processes, forecasts and planning of acting organization. Hence, in order to perform internal control it is necessary to make a preliminary evaluation of risk of inefficient control activity. Factor model of risk evaluation for internal economic control can be presented by the following formula:

ARC=AR x MR x PR,

Where: ARC – acceptable risk for internal economic control activity; AR – accounting risk in organization; MR – management system risk for business and effective activity of the organization; PR – procedure risk of internal economic control.

Accounting risk is of ineffective accounting process in the organization. This risk depends on self-control of activity at accounting department, their mistakes and provision of users with incorrect information. Management system risk for business and effective activity of the organization is an evaluation of ineffective management system. This risk depends of self-control of leaders and managers of the organization and taking unreasonable administrative decisions.

Specificity of agricultural organization activity, scope and complexity of control require its clear subdivision into steps, distribution of responsibilities between controlers and definition of time to do control works. Mandatory means of such preparation is well considered planning. We offer planning, programming and implementing of internal economic control in accordance with economic cycles (processes). The cycles are procurement and application cycle (procurement process), production cycle (works and services), cycle of forming expenditures, benefits, financial results and proprietary capital, capital assets investment cycle and financial investment cycle.

3 Results and Discussion

Practical implementation of theoretical methods, development and arrangement of internal economic control was done in Integrated Agricultural Production Center Michurin, Vavozhskiy district, Russia. This Agricultural Production Center is medium size and It has a population of 200 workers. Specific department of internal control interconnected with other departments of management system was established. This department consists of three controllers and the Head of Department. The department is arranged in step order i.e. preparation step, methods and techniques step and finalization step.

The headcount of Control Department and evaluation of its efficiency was calculated by abovementioned formulae (see Table 1).

Table 1. Efficiency evaluation indexes of internal economic control in Integrated Agricultural Production Center (IAPC) named after Michurin, Vavozhskiy district, Russia

Name of index	Formula	Value of index
1. Profit from internal control activity, ($P_{int.control}$), krub.	$P_{int.control} = [(P_{ord.act} - E_{ord.act}) + (P_{oth.act} - E_{oth.act})] \times \frac{E_{share}}{100} - E_{int.control}$	30
2. Profitability of internal economic control activity in organization for accounting period ($P_{share.int.control}$),%	$P_{share.int.control} = \frac{P_{int.contrd}}{E_{int.contrd}} \cdot 100$	14,3
3. Coefficient of revealed reserves (C_{rr})	$C_{rr} = \frac{\sum RRP}{\sum E_{int.control}}$	1,9
4. Coefficient of potential profits ($C_{pot.prof.}$)	$C_{pot.prof.} = \frac{\sum SLT}{\sum E_{int.control}}$	0,2
5. Coefficient of economic benefit ($C_{benifit}$)	$C_{benifit} = \frac{\sum EB}{\sum E_{int.control}}$	-
6. Absolut amount of internal control efficiency in organization ($A_{eff.int.control}$), krub.	$A_{eff.int.control} = \sum RRP + \Sigma SLT + \Sigma EB - \Sigma E_{int.control}$	230
7. Average annual headcount of controllers (A_{per}), persons	$A_{per.} = \frac{O_{ob.control} \cdot E_{ob.control} \cdot t \cdot C_{select.control} \cdot C_{time}}{M_{time}}$	4
8.Labor productivity calculated for one controllers (LP), krub.	$LP = \frac{line\ 6}{line\ 7}$	57,5

Note: annual expenditures on stuff support and operation of internal control were 210 krub., ΣRRP=395 krub., ΣSLT=45 rub, ΣEB=0 for 2013.

It was calculated the efficiency of the internal control on the proposed method in the article on the financial statements for 2013 in the Integrated Agricultural Production Center Michurin in table 1.

Profits from the operation of the internal control was 30 thousand. Rub., The profitability of the work of internal control was 14.3%.
According to the procedure in 2013, economically reasonable number of employees for the internal control was 4 people.
The results were taken into practical implementation of the Ministry of Agriculture of the Udmurt Republic of the Russian Federation

4 Conclusion

Improvement of production management is essential aspect in competitive activity and rising of efficiency of whole economic and financial activity of the agricultural enterprise. Management improvement expects implementation of the most efficient working techniques of management, economic methods of management and reasonable mechanism of internal economic control. The control is a common independent function of economic management and it is interconnected with other management functions. It is presented in accounting, analysis, planning, forecasting and regulation resulted from management process technology application.

Development of internal control must be carried out with respect of its role in management system of agricultural organization, improvement of key elements of content development and mode of control, its targets and objectives and predetermined functions in agriculture. Application of systematic control and provision with relevant information of modern management in order to take a decision and regulate economic processes is mandatory for efficient management of the organization, organizational activities, economic relationships with other agricultural organizations and government through financial operations and financial deliverables of specific organization.

Arrangement of internal control is series of actions intended for efficient combination of means and methods of control in order to achieve its targets and objectives effectively.

Functional efficiency estimation of internal control is much important for management system of the organization. The system of key efficiency indicators i.e. profit of internal economic control activity, profitability of internal economic control activity, coefficient of disclosed reserves, coefficient of potential expanses, coefficient of economic benefits and gross amount of internal economic control efficiency.

All of these factors was tested in the APC them. Michurin. Profits from the operation of the internal control was 30 thousand. Rub., The profitability of the work of internal control was 14.3%.

The solution of problems regarding improvement and rising of efficiency of internal control division in agricultural enterprises depends on personnel optimization of this division. Therefore personnel head count procedure has been developed to inspect specific cycle. The following procedure takes into account the number of major objects for control, time for one controlled element per one month, selectivity of control, extra time and working time fund of one controllers.

Following this procedure in the APC them. Mitchurin numbering 200 people, economically reasonable number of specialists of internal control was 4 people.

Efficiency or inefficiency of internal control system of the specific enterprise is correlated with risk for its business and management system. Therefore preliminary control inefficiency evaluation is necessary for internal control of the enterprise. This risk is directly correlated with accounting risk, management system risk for business and internal control procedure risk. For this reason the following work proposes the factor model of reasonable internal control risk calculation.

References

Alborov, R. A. (2005) *Management accounting - theory and practice*. Moscow: Delo I Service

Arense, E. A. and Lobbek, J. K. (1995) *Audit*. Moscow: F&S

Belov, N. G. (2006) *Control and audit in agricultural organization*. Moscow: F&S

Ozhegov, S. I. (1992) *Explanatory Dictionary of Russian Language.* Moscow: Az Ltd

Khoruzhiy, L. I. (2010) *Audit of agricultural cooperatives.* Moscow: Publishing house of Russian Timiryazev State Agrarian University

Sokolov, Ya. V. (2011) *Controlling*. Moscow: INFRA-M

English Dictionary of Economics (2007) Moscow: Center-polygraph

German Dictionary of Economics (2007) Moscow: Roussu

An Empirical Study of Critical Factors Affecting the Success of Community-led Rural Development Projects in Palestine

Mansoor Maitah [1], Rami Hodrab [1, 2], Khalid Rabayah [2]

[1] Department of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech, Kamýcká 129, 165 21 Praha 6 - Suchdol, Czech Republic

maitah@pef.czu.cz

2 Department of ICT and Informatics Research Center, Faculty of Engineering and IT, Arab American University-Jenin, Palestine, *PO Box* 240, *Jenin*, West Bank, Palestinian Territory

k.rabayah@gmail.com, ramihodrob@gmail.com

Annotation: This paper presents the results of a questionnaire survey to investigate the critical factors affecting Community-led Rural Development Projects that are absolutely essential for successful implementation in rural development in Palestine. Out of a possible list of 100 names of development rural projects were targeted, with 90 usable questionnaires returned, thus giving a response rate of 90 percent. The analysis led to the development of a criticality Community-led Rural Development Projects success factor structure, comprising 25 factors sorted in descending order of criticality through three tiers. All of the factors were found to be supported by similar studies and quoted literatures.

Keywords: development indicators; development tracking; development adoption; intention-based theories; sustainable development; decision participation; Palestine

Introduction

Research and evidences of links between critical factors of influencing specially those of ICT and development is not satisfactory and not inclusive, especially at micro level (individual and community level) [Aizlewood and Doody, 2002; Chowdhury and Wolf, 2003; Seale, 2009]. It is still not evident-oriented that these factors of development specially ICT ones can advance socio-economic development [Dighe and Reddi, 2006]. In the past decades enormous number of development projects were employed in different regions and across several sectors and in support for socio-economic development initiatives in Palestine, but the reported outcomes are to large extent disappointing [Bush, 1998; Diwan, 1999; Ziara, 2002]. Out of the earlier studies, there were little hard evidences of the transformative potential of development factors as of ICT especially in promoting development in most of the developing countries [Casal, 2007; Greenberg, 2005; Lipsey et al., 2005], and in order to advance the development in the society there is a need to fulfill the gap between scholars, practitioners, and policymakers as for community-based development projects [Byrne and Sahay, 2007; Mansuri and Rao, 2004; Woolcock and Narayan, 2000]. The bulk of investment in rural communities as of Palestine goes to investment in infrastructure, especially hardware, software, and networks, but minimal attention is paid to investment in human capital to make them effectively capable of utilizing these investments and technologies [Farrell, 2004; Guerrieri et al., 2007]. There is a need to use innovative environment dominated by quality management to advance new products development as a result of innovative working

mechanism of development projects [Füller et al., 2006; Ngwenyama et al., 2006; Maitah, Hodrab and Melad, 2014].

There is a need to customize development projects and to adapt them to the true need of the developing societies according to prioritized influencing factors' mechanisms, than creating similar needs and requirements as of developed countries. So, there is a need to identify the

critical factors affecting the success of community-led rural development projects in Palestine to guide the roadmap of development in rural communities specially for Palestine.

It is important to find if investment in projects for advancing rural development in Palestine alone sufficient to promote development even without development programs on other fronts like education, good governance and freedom, healthy investment environment, together with other enabling development policies and spheres.

THE STUDY

The questionnaire survey which targeted the rural population of beneficiary stakeholders of developed projects in Palestine aims at identifying the perception of critical factors affecting the success of rural development projects. The survey was designed primarily to allow objective identification of consensus amongst the beneficiary population of rural development projects. Some of the factors that have been used in this study is stemmed from intention-based theories, which developed factors of users' behavioral intentions for information technology adoption [Ajzen, 2002]. The mainly recognized theoretical models that explain the relationship between user beliefs, attitudes, and intentions are Theory of Reasoned Action [TRA –Fishbein and Ajzen, 1975], Technology Acceptance Model [TAM – Davis, 1989] and Theory of Planned Behavior [TPB – Ajzen,1991]. The targeted factors are shown in table 1, where these factors are used to investigate the feedback of development projects stakeholders so as to identify the success factors of planning, implementation, funding procedures, products and services of development projects for developing rural community-based population.

Sample selection

The decision concerning the survey sample was made to target the beneficiary population of rural development projects in Palestine. Therefore, the total of 100 beneficiary population, are representative of the Palestinian case, permitting generalized use of the survey findings.

Survey questionnaire design

The questionnaire was designed to specifically measure the perceived importance

of the factors to the success of rural development projects' implementation in the respondent's population, as follows:

(1) *Critical.* Factors that you feel are critical and absolutely essential.

(2) *Important.* Factors that you feel are important but not absolutely essential.

(3) *Minor importance.* Factors that you feel are of minor importance.

Response rate and customers breakdown

Having the rural development projects in Palestine targeted; and as the area of Palestine is very small (land area is 6,170 km^2, 130 km long and 40-65 km in width). A total of 90 usable questionnaires were received correctly, achieving the 90 per cent response rate that was determined at the outset.

Table 1: Constructs and questions included in the questionnaire

Construct	Item	Measurement
Perceived usefulness (PU)	PU1	Using the output (product, system, service, etc) of the development project is useful.
	PU2	Development project improves rural community life efficiency.
	PU3	Development projects encompasses a number of products and services under its ambit which include facilitating technology tools, tools improving working environment and knowhow working experience etc.
	PU4	Development projects is compatible with Palestinian work environment.
	PU5	Enhance level of health, education, environmental, and social services among others
	PU6	Lessens damages from natural disasters.
Perceived ease of use (PEOU)	PEOU1	Learning to use development rural projects products, services and systems is very simple.
	PEOU2	Interaction with representatives, responsible and developers of rural development projects is clear and understandable.
Social influence (SOI)	SOI1	Implementing and following the rural development projects is affected by personal recommendation from rural community population.
	SOI2	The culture, knowledge and experience of rural population influence the success of rural development projects.
Facilitating conditions (FAC)	FAC1	The availability of the necessary resources (infrastructure, knowledge, etc) positively affects the implementation and sustainability of rural development projects.
	FAC2	There will be professionals to help in resolving any difficulty of implementing and developing rural development projects to be finished within the needed scope, time and budget.
Innovation and Creativity (IC)	IC1	Promote innovation, and creativity in implementing rural development projects.
	IC2	Using the advances of information and communication technologies to promote the planning and implementation of rural development projects.
Sustainable Development (SD)	SD1	Development projects help in creating the environment to build a sustainable development discourse.
	SD2	Development projects lead to sustainable income growth for project beneficiary population.
Fight Poverty (FP)	FP1	Development projects raise the income of poor people and consequently fight poverty.
	FP2	Development projects give poor people opportunities, and allow them to make their voice heard by politicians..

Decision Participation (DP)	DP1	Being involved in development projects decisions increase peoples participation in decision making, enabling them to practice decision making techniques.
	DP2	Being involved in development projects decisions allow people to raise their voices, especially in regards to issues that touch their and their children future and wellbeing..
Credibility (CR)	CR1	Supervisors of development projects have enough specialists to detect fraud and resources theft.
	CR2	No money will be lost in unauthorized fund transfers during development projects implementation.
Trust (TR)	TR1	Rural population trust the donors of development projects.
	TR2	Mangers and developers of rural development projects keep their promises and commitments.
	TR3	Rural development projects scope and quality keep stakeholders' best concern.
Resistance to change (RC)	RC1	Being Interested on new development projects that facilitate your work environment.
	RC2	Rural development projects have improved our lives.
	RC3	Being comfortable in using development projects products and services for handling economic activities.
Attitude (A)	A1	Using rural development projects products and services is a good idea.
	A2	Using rural development projects value-added products and services to help in performing daily activities is a good idea.
	A3	Being not satisfied with using traditional legacy project services when performing life activities.
	A4	Encouraging the use of rural development projects products and services among social group.
Behavioral intention (BI)	BI1	I plan to use or consume rural development projects products and services in the future.
	BI2	If possible, I will try to use rural development projects value-added services.
	BI3	I will strongly recommend others to use or consume rural development projects products and services.

Methods and Measures

Three-point ordinal scale was used in the study survey as a level of measurement with three classifications critical, important, and minor. The categories are non-numeric as there is no sign of distance between them. Numbers of 1, 2, and 3 respectively were assigned for the three levels of importance critical, important and minor categories. The data which imply frequency distribution allow the patterns of the responses to be examined and descried effectively in tabular or graphic form [Cavana et al., 2001]. In our investigation study we used frequency distribution as an appropriate measure for the data organization where it allows the summarization of the responses distribution for a variable by calculating the typical value which is the point of central tendency, and in this way we can measure the spread of this typical value [Carlson and Thorne, 1997]. This method of investigation is what is needed to realize the objective recognition of compromise and the quantitative comparison of the critical factors affecting the success of Community-led Rural Development Projects. For the three-

point scale which is used in the questionnaire, there are only three possible levels of value. When all respondents give a Community-led Rural Development Project's factor the same rating (one, two or three) then we will get a zero value of the range, as the maximum and minimum scores will be the same. A zero value of the questionnaire results will mean no spread on the Community-led Rural Development Project's adoption factor, which declares a trend for all the responses to cluster into any one of the three categories. A value of one will signify that the trend of responses is discrete around two successive categories. A value of two will signify a trend for the responses to be discrete around all three categories or two tremendous end categories. In the cases of a value of one or two of the range, the range by itself indicates little about the general conformity on the importance of a Community-led Rural Development Project's adoption factor. This makes the mission of constructing a hierarchy of Community-led Rural Development Projects' factors more complicated. This places an interest of the importance of looking at other balancing measures of spread to attain the aims of this exploration. Discrepancy ratio is the percentage of responses that do not drop into the modal category. It is a fitting measure of spread for the ordinal data that we have in this study. Variation ratio (VR) is calculated as follows:

VR =1 - Frequency distribution of the mode.

A variation ratio is a very constructive measure of broaden for the intention of this study, where it implies how descriptive the method is of the data as a Community-led Rural Development Project's factor is not satisfactory where the consensus is by itself says little (Weisberg, 1992). Variation ratio has to be calculated to demonstrate the degree of agreement on objective foundation in specifying the related factor as critical. A value of zero will mean agreement for Community-led Rural Development Project's adoption factor as critical. The index of diversity is declared as a distribution measure depending on a percentage of responses in each group (Weisberg, 1992). Index of distribution is illustrated mathematically as:

Index of distribution = $1 - (p_1^2+p_2^2+\ldots+p_k^2)$.
Where p_k = the proportion of responses in category k and k is the number of categories.

This distribution index declares the focus degree of responses in a few large groups as squaring magnitude that highlight the large proportion, more than small values (Weisberg, 1992). Therefore in this perspective, the index of diversity can be proposed as a substitute measure of conformity between respondents taking into account the response distribution of each of the invistigated factors. A low index value illustrates common conformity on the importance of a Community-led Rural Development Project's factor, in the other hand; high index value illustrates common disagreement on the importance of the Community-led Rural Development Project's factor. This means that an index value close to zero will imply near agreement. A value close to 0.5 represents equal clustering around two large groups. A near normal distribution in the three level categories will provide a maximal value close to 0.667 (3-1/3) indicating high altitude of disagreement.

Analysis and Discussion

All of the rural development projects' factors response distributions are unimodal leading to the suitable prove of the use of mode as the compute of innermost trend for this level of examination. Unimodal declares that the majority commonly occurring responses come into view on one group. A sum of 25 out of 35 rural development projects' factors was stacked on critical and important groups, while ten rural development projects' factors were returned as of minor importance by the enormous bulk of the respondents. These factors are related to

Innovation and Creativity, Decision Participation and Resistance to change development projects initiatives. This is accredited to the fact that benefices of development projects do not being aware of innovation and creation of doing work environment or producing concerned products and services, but they are concerned of solving basic problems they face despite the nature of used mechanism and technique, in addition they are not concerned about decision making participation as the nature of people of developing countries who need others to decide on behalf of them, also they are anxious to use any new ways of doing their work or producing needed products or services without resisting these new ways.

This study finds that the response distributions of the rural development projects' success factors include only two possible kinds of ranges, which are one and two. Regrettably a zero value of range was not shown. Few distributions exhibit a range of one (14 distributions), the majority of the distributions reveal a range value of two (21 distributions), while no single distribution reveals a range value of zero despite its positive or negative effect. Distributions with a range value of one can be detached into two groups, critical and important, and the distributions with a range value of two can be detached into all three groups. In this study, distributions with a range value of one are clustered into one group which is critical. The other 21 distributions are detached into the three categories. These results are shown in Table 2, which summarizes the groups of the rural development projects' success factors by the variety values.

Table 2: Group rural development projects' success factors by range value

Range value	**No. of factors**	rural development projects' success factors	**Group**
1	14	PU1, PU2, PU3, PU4, PU5, PU6, PEOU2, FAC1, FP1, FP2, CR1, CR2, TR1, TR2	Critical
2	21	PEOU1, SOI1, SOI2, FAC2, IC1, IC2, SD1, SD2, DP1, DP2, TR3, RC1, RC2, RC3, A1, A2, A3, A4, BI1, BI2, BI3	Critical, important, minor importance

For the kind of our research investigation a three-tier construction is used, where, the range and the computed variation ratio values entail a three-tier structure, with the intention that if numerous factors were returned with a range value of zero, and others with range value of one and two, and the computed variation ratio values were between zero and greater than 0.5, in that case, most likely a four-tier construction might be happening. Conformation of the rural development projects' success factors, consequently, declares the recognized rural development projects' success factors, considering their effect level in the successful planning, funding and implementing of developed projects for rural developing communities such as Palestine in our case prioritize procedure of these rural development projects' success factors with respect to their apparent criticality. Critical rural development projects' success factors of tier one are those that are necessary to flourishing rural development projects' success factors accomplishment as apparent by all respondents of project stakeholders to affect on the success of development projects realization. This tier contains 14 rural development projects' success factors, which are ordered as shown in the first group of table 2. Rural development projects' success factors of tier two are completely necessary as apparent by the bulk of the customers while some customers recognize them to be of no effect with consider to the accomplishment of development project implementation. This tier contains 11 e-banking adoption factors, which are ordered according to their bulk agreement level as follows (refer to group 2 of table 2): PEOU1 , FAC2, SD1, SD2, A3,TR3, A4, SOI1, SOI2, A1and BI1. Rural development projects' success factors of tier three are those with

the lowest impact on the planning, development, funding, implementing and using or consuming the products, services or systems of developed projects. This tier contains the remaining factors, which are ordered according to the bulkiness of conformity level as follows: A2, BI2, BI3, IC1, IC2 , DP1, DP2, RC1, RC2 and RC3.

Summary and Conclusion

The increasing recognition of community-led rural development Projects as an administration philosophy for advancing the development of rural communities competitiveness and effectiveness left the development of empirical research behind (Botos, Herdon, 2013). The problem is much more obvious in the developing countries where knowledge and practice of community-led rural development projects are in the very early stages. This research attempted to narrow the distance between the existing body of literature and approaches of effective community-led rural development projects‘ planning and implementation in a newly established Palestine context. The results of this investigation suggest that addressing the 25 critical community-led rural development projects‘ success factors which are illustrated in this study, as part of the rural development adoption management process, increases its chance of success in the Palestinian context. The discussion of the findings reveals that about 14 out of 35 critical rural development projects‘ factors identified in this investigation share most of the values covered by the key principles espoused by feedback from development projects stakeholders and related previous studies (Terluin, 2003).

There is a need for rural development related institutions to develop systems for measuring key indicators that influence the way the rural development project adds value using rural development projects‘ success factors that positively affect the rural community. In addition develop a system using tools such as dash boards for measuring key indicators of the level of tracking the procedure of success factors implementation when developing these related rural community projects through concerned individuals and institutions. rural development projects activities, tools, techniques, features and functions that promote the usefulness, ease of use, facilitating conditions, creditability and trust issues need to be demonstrated by providing role models, developing clear mission and defining development projects values encountering strategic planning, developing comprehensive policy, goal setting, planning process, promoting awareness, and creating the elements of development project structure. Also, there is a need for continuous development of project process improvement.

The findings of the survey questionnaire also proved that rural development projects management is a generic philosophy of rural development success nowadays as all the rural development project success factors identified as important by related studies were returned as critical or important by Palestinian rural development stakholders. Therefore, the confirmed critical rural development projects’ success factors can be used to construct a framework for leading and tracking rural development projects‘ planning, funding and implementation in the Palestinian context. Such a framework is based on the awareness of the important of the 25 critical rural development projects‘ success factors ordered according to their criticality.

The study offers a self-reported, one-dimensional focus. For the purpose of the study, this approach was deemed appropriate. However, the success of community-led rural development projects funding and implementation depends on its ability to satisfy the interests of multiple stakeholders. It may, therefore, be appropriate to consider gathering further information from various stakeholders such as funding institutions, employees and affected community in future research.

References

Aizlewood, A., & Doody, M. (2002) ‚Seeking community on the Internet: Ethnocultural use of information communication technology'. In *Technology and Society, 2002.(ISTAS'02). 2002 International Symposium on* (pp. 5-12). IEEE.

Ajzen, I. (1991) 'The theory of planned behavior'. Organizational Behavior and Human Decision Processes, 50, 179-211.

Ajzen, I. (2002) Constructing a TPB questionnaire: Conceptual and methodological considerations.

Botos, S. and Herdon, M. (2013) ‚Document Differences of Broadband Network Infrastructure, e-Readiness and Usage in EU Rural Regions', *Agris On-line Papers in Economics and Informatics*, 5, (4), 47-53.

Bush, K. (1998) ‚A measure of peace: Peace and conflict impact assessment (PCIA) of development projects in conflict zones'. *The Peacebuilding and Reconstruction Program Initiative. Dostupné z:< http://www. idrc. org/uploads/user-S/10533919790A_ Measure_of_Peace. pdf*.

Carlson, W. L. and Thorne, B. (1997) ‚Applied Statistical Methods for Business, Economics, and the Social Sciences'. Upper Saddle River, NJ: Prentice Hall.

Casal, C. R. (2007) ‚ICT for education and development'. *info*, *9*(4), 3-9.

Cavana, R., Delahaye, B. L. and Sekeran, U. (2001) *Applied business research: Qualitative and quantitative methods*. John Wiley & Sons Australia.

Chowdhury, S. K. and Wolf, S. (2003) *Use of ICTs and the economic performance of SMEs in East Africa* (No. 2003/06). WIDER Discussion Papers//World Institute for Development Economics (UNU-WIDER).

Davis, F. D. (1989) ‚Perceived usefulness, perceived ease of use, and user acceptance of information technologies'. MIS Quarterly, 13, 3, 319-340.

Dighe, A. and Reddi, U. V. (2006) Women's Literacy and Information and Communication Technologies: Lessons That Experience Has Taught Us.*Commonwealth of Learning*.

Diwan, I. (Ed.). (1999) *Development Under Adversity: the Palestinian economy in transition* (Vol. 489). World Bank Publications.

Farrell, G. (2004) ICT and literacy: who benefits?: experience from Zambia and India.

Fishbein, M. and Ajzen, I. (1975) Belief, attitude, intention and behavior; An introduction to theory and research. Reading, MA: Addison-Wesley.

Füller, J., Bartl, M., Ernst, H. and Mühlbacher, H. (2006) Community based innovation: How to integrate members of virtual communities into new product development. *Electronic Commerce Research*, *6*(1), 57-73.

Greenberg, A. (2005) ICTs for Poverty Alleviation: basic tool and enabling sector.

Guerrieri, P. A. O. L. O. and Padoan, P. C. (2007) Modelling ICT as a general purpose technology. *Evaluation*.

Lipsey, R. G., Carlaw, K. I. and Bekar, C. T. (2005) *Economic Transformations: General Purpose Technologies and Long-Term Economic Growth: General Purpose Technologies and Long-Term Economic Growth*. Oxford University Press.

Maitah, M., Hodrab, R. and Melad, A. (2014) ‚Information and Communication Technology Firms'. *International Business Management*, *8*(6), 312-326.

Mansuri, G. and Rao, V. (2004) ‚Community-based and-driven development: A critical review'. *The World Bank Research Observer*, *19*(1), 1-39.

Ngwenyama, O., Andoh-Baidoo, F. K., Bollou, F. and Morawczynski, O. (2006) ‚Is There A Relationship Between ICT, Health, Education And Development? An Empirical Analysis of five West African Countries from 1997-2003'. *The Electronic Journal of Information Systems in Developing Countries*, *23*.

Seale, J. (2009) ‚Digital Inclusion'. *A research briefing by the technology enhanced learning phase of the teaching and learning research programme*,[Online] Available at: http://www. tlrp. org/docs/DigitalInclusion. pdf.

Terluin, I. J. (2003) ‚Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories'. *Journal of rural studies*, *19*(3), 327-344.

Weisberg, H. F. (1992) Central tendency and variability. Sage University Paper Series.

Woolcock, M. and Narayan, D. (2000) ‚Social capital: Implications for development theory, research, and policy'. *The world bank research observer*,*15*(2), 225-249.

Ziara, M., Nigim, K., Enshassi, A. and Ayyub, B. M. (2002) ‚Strategic implementation of infrastructure priority projects: case study in Palestine'. *Journal of infrastructure systems*, *8*(1), 2-11.

The Influence of Location, Legal Form and Size on the Efficiency of the Functioning of Czech Local Action Groups

Marie Pechrová[1]

[1]Deparment of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, 196 21 Prague 6, Czech Republic
pechrova@pef.czu.cz

Annotation: Local Action Groups (LAGs) are one of the main actors in rural areas applying CLLD principles. As they are financed from public budget, efficiency of their performance should be evaluated. Therefore, the aim of the paper is to assess the influence of various determinants on technical (TE), pure technical (PTE) and scale efficiency (SE) of the functioning of the LAGs. Particularly we consider location, legal form and size of the LAGs. Two Data Envelopment Analysis models (CCR assuming constant returns to scale and BCC with variable returns to scale) were calculated for all 112 supported LAGs in the CR for years 2012 and 2013. TE decreased overtime. While in 2012 the LAGs produced 64.23 % of their potential output, in 2013 it was only 48.22 %. It is due to fact that 2013 was the last of the RDP program and 97.3 % of the budget was already committed. The LAGs had less financial resources not only for their functioning, but also for redistribution. Hence, they could not achieve the required outputs. Theoretically they should increase the outputs by 35.77 % in 2012 and 51.78 % in 2013 to be 100 % efficient. We found that the need to serve more people lead LAGs to the achievement of returns to scale. The average TE, PTE and SE were also the highest in the largest LAGs. However, increasing returns to scale changed to decreasing in all groups overtime. This might imply that LAGs were operating above their optimal size with given resources in 2013.

Key words: rural regions, population development, mortality, fertility, population projection

JEL classification: C83, J11

1 Introduction

Local Action Groups (LAGs) are considered to be the main actors of Community-led local development (CLLD) applied in rural areas in the Czech Republic (CR). They function on the basis of the LEADER approach which has certain principles that make it a suitable instrument for local development. Guidance issued by four Directorates-General of the European Commission define the Community-led local development (CLLD) as a tool for encompassing citizens in developing responses to the social, environmental and economic challenges. It involves "partners at local level including the civil society and local economic actors in designing and implementing local integrated strategies that help their areas make a transition to a more sustainable future" (DG AGRI, EMPL, MARE and REGIO, 2013). According to Rose (1996) this new form of government – governance through community – unlike previous ones that sought to achieve national security through state-based socialized forms of intervention and responsibility, seeks to govern without governing society, to govern through regulated choices made by discrete and autonomous actors. LEADER is expected to be more adaptive to local needs as it is intended to be more "bottom-up" and "flexible" than traditional rural development programs. "It should allow a flexible implementation corresponding to "local knowledge" and "needs" as defined by the local participants" (Papadopoulou et al., 2011; Botos, Herdon 2013). Cohesion of the inhabitants with the village and the active participation on the development activities are considered by Pechrová and Boukalová (2013) to be key aspects which contribute to the successful and sustainable development.

The transfer of the local development model in the framework of the Common Agricultural Policy of the EU implies learning a new form of public action based on initiatives borne by local stakeholders. LAGs were established in 1991 when LEADER program started. At the beginning, it was only a small scale Community Initiative, but since that the number of partnerships has multiplied by more than ten. In the CR, 29 partnerships were established in 2004 in the framework of LEADER+ and LEADER CR. When program LEADER CR started to function in 2004, Ministry of Agriculture (MoA) selected 16 LAGs to implement it. In the second year of the existence the interest of local partnership in this program rose and subsidies were distributed among 23 LAGs. (Maříková and Herová, 2008) In 2006 other 7 LAGs were supported. Than 3 rounds of LAGs selection took until there were finally 112 LAGs supported from Rural Development Program (RDP) under axis IV. Despite that only 5 % of the RDP budget was allocated to it, in absolute terms it accounted for 205.8 mil. EUR. As LAGs are financed from public budgets, economic aspects of their functioning are important. Their activities and functioning should be evaluated. The functioning of Czech LAGs interested for example Delin (2011, 2012) and Hudečková and Lošťák (2008) who assessed the role of the farmers in those partnerships. Chevalier et al. (2012) examined how LEADER approach is incorporated in Hungary, Lithuania and in the Czech Republic. Official assessment of LAGs is annually done by MoA. However, the criteria are not fully reflecting the nature of the LEADER approach and fail to compare LAGs among themselves. We proclaim that LAGs should operate efficiently. They should produce maximal accessible output with given resources or use minimal accessible input to produce given output. We use non-parametric Data Envelopment Analysis (DEA) to calculate the efficiency. This method assume that a decision making unit (DMU) which employs less input than another to produce the same output can be considered as more efficient. DEA serves as a tool to compare the DMUs with the best practice. "DEA can be viewed as a tool for multiple-criteria evaluation problems where DMUs are alternatives and each DMU is represented by its performance in multiple criteria which are coined / classified as DEA inputs and outputs" (Cook et al., 2014) Therefore, we apply DEA for the LAGs' performance assessment. To the best of author's knowledge this method has not been applied in this area yet.

2 Methods and Data

The aim of the paper is to assess the influence of location, legal form and size on technical (TE), pure technical (PTE) and scale efficiency (SE) of the LAGs. DEA is used because it measures the efficiency without prior assumptions about the production function. According to Speelman et al. (2008), other advantage of DEA is that it permits the construction of a surface over the data, which allows the comparison of one production method with the others in terms of a performance index. Using DEA, efficiency measures are not significantly affected by a small sample size, as long as the number of inputs is not too high in comparison to the sample size. On the other hand, the disadvantages of DEA are that it is a deterministic method and therefore sensitive to extreme values, measurement errors and other noise in the data. Besides, an assumption about the returns to scale of the chosen production technology must be made. We may consider constant returns to scale (CRS) or variable returns to scale (VRS), increasing (IRS) or decreasing (DRS). The DEA models also differ according to their orientation. Input oriented search for minimal attainable combination of inputs to produce a given output. Output oriented model maximizes the outputs with available resources.

Depending on expected returns to scale we distinguish: CCR model proposed by Charnes et al. (1978) which assumes CRS, and BCC elaborated by Banker et al. (1989) expands the model to VRS. In the case of LAGs, the assumption of CRS is relatively strong. It suggests that increasing the input by one unit will cause proportional increase of an output by one unit.

VRS assume that the outcome of the process will generate more than (IRS) or less than (DRS) one unit. The difference between constant and variable returns to scale enables to decompose technical efficiency on PTE and SE. “Scale efficiency measured the ability to operate with average output per input is maximal and pure efficiency is the ability to use best practices when the returns to scale are varying” (Pechrová, 2013). The DMU is 100 % technically efficient when if the output changes in relation to the optimum, the efficiency will drop. The scale inefficiency appears in cases when there is difference between total TE (TE under CRS assumption) and pure TE (TE under VRS). SE is calculated as a ratio of TE and PTE. It takes values from 0 to 1. For LAGs that produce outputs below or above optimal level is SE $\leq$ 1.

The more inputs and outputs are included into the model, the more units are considered to be 100 % efficient. Therefore, Golany and Roll (1989) advice to include at least twice more DMUs than the sum of inputs and outputs. Banker et al. (1989) proposed that the number DMUs should be higher than the product of number of inputs and outputs or three times higher than the sum of inputs and outputs. We include two inputs and three outputs of LAGs operation. Firstly a LAG needs finances for functioning. Therefore, x1 are the subsidies from measure IV.1.1 of the RDP devoted to the LAGs operation. Second input x2 is the number of employees recalculated on the full-time employed persons. First output y1 is the amount of redistributed subsidies from measure IV.1.2 of the RDP because it is one of the tasks of the LAG to allocate finances for the development of the area. The subsidies are given to the projects selected during the calls for subsidies. We assume that the more calls (y2) during the year, the more active LAG is. Finally, LAGs’ operation is assessed by the MoA and according to the received points a financial bonus to the standard allocation for LAGs (y3) is given.

The analysis of technical efficiency covers the years 2012 and 2013. The calculations were done in software Stata 11.2. The input oriented DEA is run for each LAG in each year separately. It is examined how TE, PTE and SE develop overtime. Both, CCR and BCC models are calculated and SE is obtained. Consequently it is explored by Kruskal-Wallis median test whether the location in predominantly rural / urban or intermediate NUTS III region have statistically significant impact on TE. Other tested determinants are the legal form and size of the LAG. According to the economic theory, the larger is the firm, the higher is the efficiency due to returns to scale. This process lasts until the optimal size of the company is achieved. Therefore, we examined the TE, PTE and SE for LAGs of different sizes.

3 Results and Discussion

Firstly, CRS were assumed and CCR input oriented model calculated. This enabled calculation of total TE. Average efficiency in year 2012 was 64.23 % suggesting that in that year LAG did not fully exploited their potential. Theoretically they could increase their outputs by approximately 35.77 % to be 100 % efficient. Due to the fact, that the DEA method was never applied on LAGs, it is difficult to compare our results with others. Average TE decreased overtime as in 2013 accounted only for 48.22 % of the potential output. On the other hand, median of TE increase. More than half of LAGs was efficient from 62.69 % in year 2012 and 63.08 % in 2013. It is due to the fact that 59 LAGs improved their efficiency, but a lot of LAGs worsen and became highly inefficient. The number of 100 % efficient LAGs decreased from 6 to 5. The distribution of LAGs according to their TE is at Fig. 1.

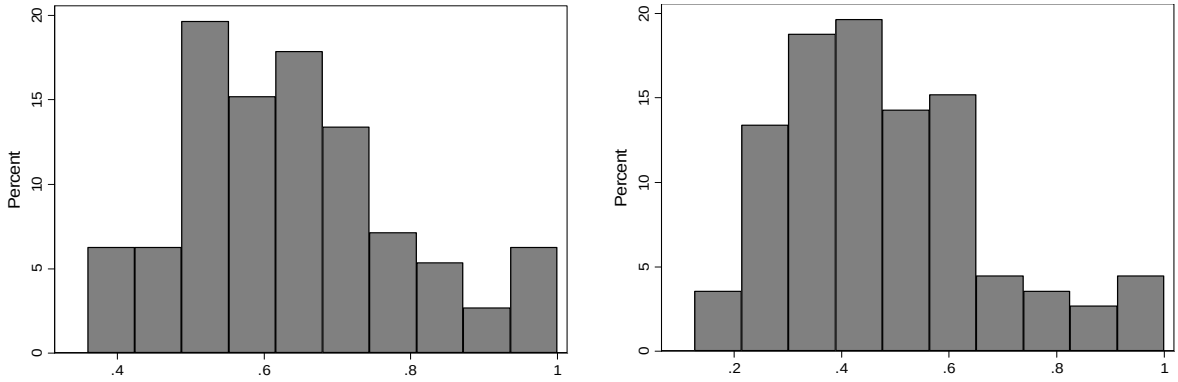


Fig. 1. 2012 (left) and 2013 (right); Source: own elaboration

Distribution of TE in NUTS III regions is displayed at Fig. 2. The most efficient LAGs are in Karlovarský region (80.23 % in average); the less efficient in Vysočina (54.63 % in average) in 2012. The efficiency significantly decreased one year later in 6 regions. We supposed that LAGs in rural areas might be less efficient (average efficiency was 62.00 %) than in urban region (65.96 %). However, the most efficient LAGs were in intermediate regions (67.02 %). Having tested whether the differences in median TE among those regions were statistically significant by Kruskall-Wallis test, the p-value 0.13 in 2012 and 0.16 in 2013 suggested retaining the null hypothesis that the medians of TE are equal. Hence, we may conclude that TE of LAGs does not differ in relation to the region.

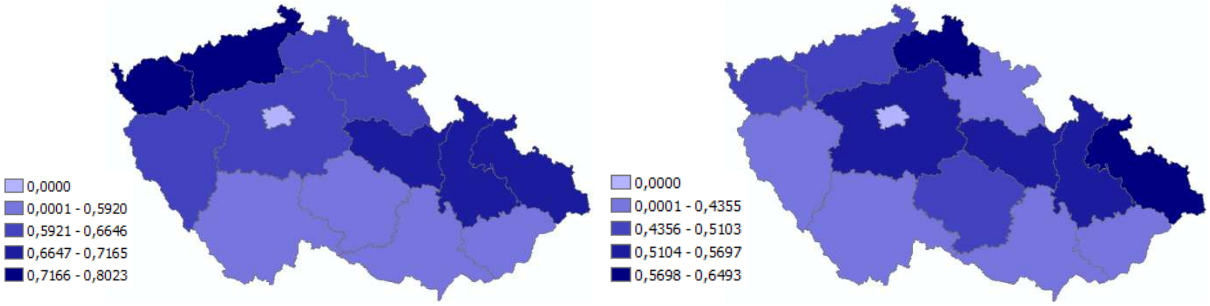


Fig. 2. LAGs' technical efficiency in 2012 (left) and 2013 (right); Source: own elaboration

Secondly, a BCC model which assumes VRS was used to calculate PTE. According to the results it also decreased (from 71.32 % in 2012 on 53.46 % in 2013). While there were more than half of LAGs purely technically efficient from 69.18 % in 2012, this half of LAGs was efficient only from 50.27 % one year later. Also the number of 100 % efficient LAGs decreased from 12 to 10 and the situation worsen for 59 LAGs. The distribution of LAGs according to their pure technical efficiency is displayed at Fig. 3.

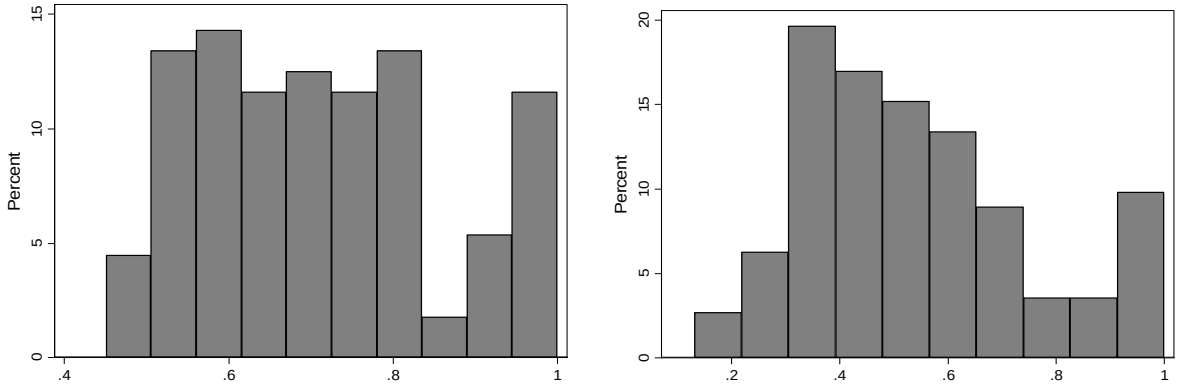


Fig. 3. Distribution of LAGs according to their PTE in 2012 (left) and 2013 (right); Source: own elaboration

Distribution of PTE of LAGs in particular NUTS III regions can be seen at Fig. 4. The most purely technically efficient were LAGs in Pardubický region, while those from Karlovarský region were on the second place. However, in both regions TE decreased overtime. On the other hand, four LAGs in Liberecký region improved (from 71.92 % to 82.21 %) and became the most efficient from all. (We must note that there are only four of them, therefore, the results might be biased. Again, the LAGs in located in predominantly rural areas seemed to be less pure technically efficient (72.38 % in average) than in intermediate (73.75 %) and predominantly urban region (73.12 %). P-values for Kruskall-Wallis test (0.91 and 0.44) revealed that there were no statistically significant differences in pure technical efficiency among LAGs operating in rural, intermediate and urban areas.

According to the legal form, the most efficient were 2 association of legal entities (z. s. p. o.), which in 2012 produced at the level of 74.40 % of potential output and in 2013 only at 63.69 % level. Efficiency decreased also in other legal forms. The less efficient were civil associations (o. s.) (63.50 %) whose TE decreased from 63.50 % on 47.16 %. The most purely technically efficient were again LAGs with legal form z. s. p. o. (78.62 %) than public benefit corporation (o. p. s.) (73.34 %) and finally o. s. (69.96 %) in 2012. PTE decreased a year later. The decline was the highest in o. s. (on 52.30 %) and the lowest in z. s. p. o. (on 64.26 %).

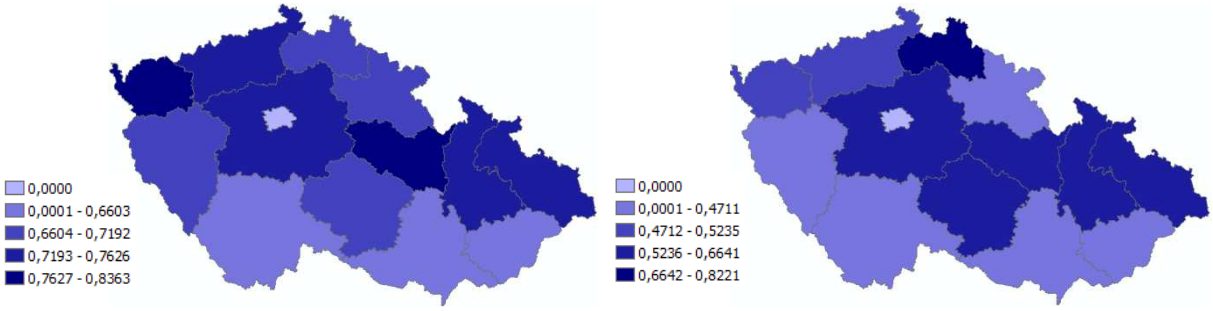


Fig. 4. LAGs' pure technical efficiency in 2012 (left) and 2013 (right); Source: own elaboration

The results of CCR and BCC models are summarized in Table 1. According to the expectations (see e. g. Pechrová (2013) or Pechrová (2014)) BCC model predicted more efficient units. It is due to the shape of envelope of the data. While in CCR model it is conical, in BCC model it changes on convex and include more units to the frontier. The results of both models correspond. Pearson's correlation coefficient was statistically significant (0.86 in 2012 and 0.88 in 2013) i. e. when the LAGs are technically efficient they also tend to be purely technically efficient. On the other hand, when the LAG is overall technically efficient, it does not necessary mean that it operates at optimal scale. The correlation between TE and SE is weak (0.42). There was no linear relationship found between PTE and SE (-0.09).

Table 1. LAGs' technical, pure technical and scale efficiency; **Source: own elaboration**

Year	**2012**			**2013**		
Efficiency type	**TE (CRS)**	**PTE (VRS)**	**SE**	**TE (CRS)**	**PTE (VRS)**	**SE**
Average for all LAGs	0.6423	0.7132	0.9025	0.4822	0.5346	0.6640
Std. dev. for all LAGs	0.1523	0.1528	0.1034	0.1924	0.2193	0.2500
Variance range	0.6402	0.5492	0.4066	0.8730	0.8870	0.8406
% of efficient LAGs	5.36%	10.71%	5.36%	4.46%	8.93%	26.79%

The LAGs mostly worked at IRS in year 2012 (71 of them). Only 6 LAGs achieved CRS. While there were 35 LAGs where DRS were present in 2012, a one year later there were already 59 of them. Also the number of LAGs with CRS increased on 9. This finding corresponds to the previous result suggesting that the efficiency has decreased between those

two years. Share of purely efficient LAGs was higher in 2012 (around 10.71 %) than in 2013 (only 9.93 %). When we divide the LAGs according to their size on three groups according to the number of inhabitants, there were 51 of them operating in the area with less than 28 000 inhabitants and 15 with more than 56 000 inhabitants. We expected that having had to serve to more people LAGs would develop certain returns to scale. The results confirmed our expectations as the average TE, PTE and SE is the highest in the third group. On the other hand, share of fully technically efficient and scale efficient LAGs was the highest in the group of LAGs operating at the areas with less people.

In general, the most of LAGs achieved IRS with exception of the largest LAGs where 60 % of LAGs operated at decreasing returns to scale in year 2012. In 2013, the share of LAGs with IRS and DRS was equal in the group of largest LAGs. Surprisingly also some LAGs in other groups started to apply DRS. This might mean that LAGs were operating above their optimal size with given resources in 2012. However, we also have to keep in mind that the year 2013 was the last of the programming period and functioning of the RDP and hence 97.3 % of the budget was already committed (MoA, 2014). The LAGs had significantly less financial resources not only for their functioning, but especially for redistribution. Hence, they could not achieve the required outputs. In both years only minority of LAGs was operating with CRS which proved that the assumption of CRS was unreal.

Considering the division according to the number of members we get three groups of LAGs: 40 with less than 30 members, 16 with more than 60 members and 56 middle sized. Surprisingly the results are different. The most technically efficient were the smallest LAGs and the less efficient the largest in both years. This suggests that having more members does not necessary mean that they would help the LAG to act efficiently. They might rather complicate the functioning of the LAG than making it easier. In year 2012 PTE was the highest in middle group, while this group applied SE in the lowest extend (only 1 LAG was SE). One year later the largest LAGs were more PTE than the other groups. Middle group improved its SE and was the best. Again, as the available resources fell, the LAGs became more inefficient in 2013. While in year 2012 the most majority of LAGs achieve IRS, one year later they fell to DRS. The only exception are the largest LAGs where the decline was not that strong and still half of the LAGs operated with IRS.

4 Conclusions

The aim of the paper was to evaluate the influence of various factors on technical (TE), pure technical (PTE) and scale efficiency (SE) of Local Action Groups (LAGs). Particularly we considered location in predominantly rural / intermediate / predominantly urban regions, legal form and size in terms of the number of inhabitants living in their area and number of members. LAGs are the main actors of CLLD in rural areas. As they are financed from public budgets, it is important that they use the funds efficiently. Two DEA models (CCR and BCC) were calculated for all 112 financially subsidized LAGs in the Czech Republic for years 2012 and 2013.

The results show that TE decreased overtime. This is not a desirable state of art, but might be caused by the less available resources for overhead costs and redistribution. The LAGs might not have been able to achieve returns to scale. Despite that the number of 100 % scale efficient LAGs rose, average SE decreased. The highest difference was in the group of large LAGs in terms of the number of members. It points out that they probably have too many members to efficiently transform inputs into outputs. Hence, we suggest to large LAGs to reconsider the number of members in the situation when less resources is available. Different situation is when we divide LAGs according to the number of inhabitants. We found out that

operating on the larger area and serving more people lead to higher scale efficiency. The fact that larger LAGs get higher subsidies also matter as the average TE and PTE were the highest in the largest LAGs. The analysis suggests that the more inhabitants the LAG serves, the more it is efficient. To the policy making purposes we confirmed that the allocation of the financial resources according to the number of inhabitants in the area is justified. However, in terms of the number of LAG's members, rather smaller size is recommended. The optimal number of members is between 31 and 60. The challenge for future research is to look more closely on 100 % efficiency LAGs and reveal their best practices which can be followed by others.

Acknowledgements

The research is financed from the internal grant Nr. 11110/1312/3179 (Vliv dotací z Programu rozvoje venkova na technickou efektivnost příjemců) of the IGA of FEM, CULS.

References

Banker, R. D., Charnes, A., Cooper, W. W., Swarts, J. and Thomas, D. (1989) 'An introduction to data envelopment analysis with some of its models and their uses', *Research in Government and Nonprofit Accounting*, vol. 1989, no. 5, pp. 125-163.

Botos, S. and Herdon, M. (2013) ‚Document Differences of Broadband Network Infrastructure, e-Readiness and Usage in EU Rural Regions', *Agris On-line Papers in Economics and Informatics*, vol. 5, no. 4, pp. 47-53.

Cook, D. W., Tone, K..and Zhu, J. (2014) 'Data envelopment analysis: Prior to choosing a model', *Omega*, vol. 4, no. 4, pp. 1-4.

Delin, M. (2011) 'Role and Participation of Farmers in Local Action Groups: the Case of Members of the National Network of the Local Action Groups in the Czech Republic', Proceedings of the 14th International Colloquium on Regional Sciences, Bořetice (Czech Republic), pp. 233-243.

Delin, M. (2012) 'The role of farmers in Local Action Groups: The case of the national network of the Local Action Groups in the Czech Republic', *Agricultural Economics (Czech),* vol. 58, no. 9, pp. 433-442.

DG AGRI, EMPL, MARE and REGIO (2013) 'Common guidance of the European Commission's four Directorates-General Agri, Empl, Mare and Regio on Community-Led Local Development in European Structural and Investment funds', Available on-line: < http://ec.europa.eu/regional_policy/informing/dialog/pdf/clld_guidance_2013_04_29.pdf>

Golany, B. and Roll, Y. (1989) 'An application procedure for DEA', *OMEGA*, vol. 17, no. 3, pp. 237-250.

Hudečková, H. and Lošťák, M. (2008) 'LEADER in the Czech Republic and the farming sector', *Agricultural Economics (Czech),* vol. 54, no. 12, pp. 555-565.

Charnes, A. W., Cooper, W. W. and Rhodes, E. (1978) 'Measuring efficiency of decision making units', *European Journal of Operational Research*, vol. 2, no. 6, pp. 429-444.

Chevalier, P., Dedeire, M., Kovács, D. and Póla, P. (2012) 'The implementation of the Leader programme in Central Europe: Between a local development approach and political instrumentalisation', *Discussion Papers*, vol. 2012, no. 89, pp. 5-31.

Maříková, P. and Herová, I. (2011) ‘Analysis of Social Networks in Local Action Group’, Proceedings of Agrarian Perspectives XX, Prague, pp. 359-366.

Ministry of Agriculture (MoA) (2014) ‘Podkladové materiály k 16. zasedání MV PRV 24. 6. 2014’, Available on-line: <http://eagri.cz/public/web/mze/dotace/program-rozvoje-venkova-na-obdobi-2007/monitorovaci-vybor/podklady-z-jednani/x16-zasedani-mv-prv-24-6-2014.html>

Papadopoulou, E., Hasanagas, N. and Harvey, D. (2011) ‘Analysis of rural development policy networks in Greece: Is LEADER really different?’, *Land Use Policy*, vol. 2011, no. 28, pp. 663-673.

Pechrová, M. (2013) ‘Efficiency of biodynamic farms’, Proceedings of the Agrarian Perspectives XXII.: Development trends in agribusiness, Prague, pp. 55-69.

Pechrová, M. and Boukalová, K. (2013) ‘Best practice in rural development: Case study on municipalities awarded in competition the Village of the Year’, Proceedings of the Agrarian Perspectives XXII.: Development trends in agribusiness, Prague, pp. 290-302.

Rose, N. (1996) ‘The death of the social? Re-figuring the territory of government’, *Economy and Society*, vol. 25, no. 3, pp. 327-356.

Speelman, S., D'Haese, M. and Buysse, J. (2008) ‘A measure for the efficiency of water use and its determinants, a case study of small-scale irrigation schemes in North-West Province, South Africa’, *Agricultural* Systems, vol. 98, no. 1, pp. 31-39.

The Impact of Population Development on the Sustainability of the Rural Regions

Ondřej Šimpach[1], Marie Pechrová [2]

[1]Department of Demography, Department of Statistics and Probability, Faculty of Informatics and Statistics, University of Economics in Prague, W. Churchill sq. 4, 130 67 Prague 3, Czech Republic
ondrej.simpach@vse.cz

[2]Department of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, 196 21 Prague 6, Czech Republic
pechrova@pef.czu.cz

Annotation: The aim of the paper is to assess the impact of population development on the sustainability of the rural regions. There are 6 predominantly rural NUTS III regions in the Czech Republic: Plzeňský, Jihočeský, Vysočina, Pardubický, Zlínský and Olomoucký region. The rural regions often suffer by unfavourable demographic development. Our paper examines the development of the population in the rural regions based on two scenarios: a simple baseline scenario (SC1), where no changes are made to the fertility and mortality rates and probable scenario (SC2) when the fertility rate is getting closer to the level of fertility of Prague today and the mortality decreases. Using the projections we calculate the future average age and selected comparative indices based on biological and economic generations: the Sauvy age index and economic dependence index. These relations would get worse in the future. The longevity and ageing of the population will increase the economic dependence of the people. This affects the sustainability of the regions' development. This calls not only for the social policy reform, but also for the action on a regional level and solidarity among generations. We suggest taking important decisions without delay.

Key words: rural regions, population development, mortality, fertility, population projection

JEL classification: C83, J11

1 Introduction

Rural regions often suffer by unfavourable demographic development. As noted by Klijn et al. (2005) "we can witness phenomena like stagnation in population growth or even a decline, ageing and ongoing migration to cities draining rural areas." For the development of the regions, not only the number of population but also its structure is extremely important – especially in the light of Community-led local development promoted by the EU. According to this concept local actors have a better knowledge of local challenges that need to be addressed and the resource and opportunities available. The local actors draw up a strategy of the region, analyse the development needs and potential of the area, and identify the main themes of the development process. There are various drivers of the development of rural regions and various indicators of its sustainability. Amcoff and Westholm (2007) argue that the demographic change is a key determinant for explaining social change. Therefore, local actors should know the population trends to prepare the strategy for combating the resulting challenges. "Population changes are fairly predictable and the age transition can explain a wide range of social economic changes" (Amcoff and Westholm, 2007; Botos, Herdon, 2013). The population size and structure is "determined by three fundamental demographic processes: fertility, mortality and migration" (Klijn et al., 2005). Therefore we predict their development.

Regional demographic projections are important for predicting the future age and sex structure of specific population. Unfortunately, the construction of regional projection is

particularly difficult because of a small population and insufficiently detailed data. Luckily it is not the case of Czech Republic's NUTS III regions. There are 6 predominantly rural regions in the Czech Republic: Plzeňský (PLZ), Jihočeský (JIČ), Vysočina (VYS), Pardubický (PAR), Zlínský (ZLN) and Olomoucký region (OLM) for which we project the population. The projections consequently serve for estimation of the characteristics of particular demographic structures in the future and as a tool for a discussion of rural development policy options (Pechrová and Šimpach, 2013a).

2 Methods and Data

The paper examines the development of the population in the rural regions based on two scenarios: a simple **baseline scenario** (SC1), where no changes are made to the fertility and mortality rates (the same trend as today) and **probable scenario** (SC2) when the fertility rate is getting closer to the level of fertility of Prague today and the mortality decreases (see e.g. Šimpach and Langhamrová, 2014). The projections are based on the component method without migration (see e.g. Šimpach and Dotlačilová, 2013b). We consider zero migration balance in the near future (the sum of immigrants to the region equals to the sum of emigrants from the region) (Šimpach and Dotlačilová, 2013a) and period from 1st January 2013 (current population structure) to 1st January 2043. In probable scenario SC2 the future population structure is estimated by own projection.

Firstly we calculated the shortened life tables for males / females (5 year intervals) based on the Czech Statistical Office's (CZSO) data for 2013: age-specific number of deaths $M_{t,x}$ and number of mid-year population $\bar{S}_{t,x}$ (where t is time and x is age). For the algorithm of life tables' calculations see e.g. CZSO (2014). The shortened range of life tables is 0, 1–4, 5–9, 10–14, …, 100+ of completed years of life, 0-year-old persons are considered separately. The population projections are constructed for 30 years. The important output from life tables is age-and-sex specific table – the number of living persons l_x. Let for each year t be the table number of 0-year-old living set on (1), where t = 2013.

$$l_{t,0} = l_{t+5,0} = l_{t+10,0} = \ldots = 100000, \tag{1}$$

Using the decreasing coefficient of probability of death q_x for a year t the number of living is

$$l_{t,x} = l_{t,x-h} \times \left(1 - k \times \frac{l_{t-5,x-h} - l_{t-5,x}}{l_{t-5,x-h}}\right), \tag{2}$$

where k is the decreasing coefficient of probability of death and h is width of the age interval (5 years). SC1 considers the same trend in mortality as today and the SC2 the probability of death q_x decreasing in the future. Hence, the decreasing coefficient of probability of death is set on 1.00 for males and females in the first case and on 0.93 for males and 0.94 for females in the second case. The coefficients are set according to Šimpach et al. (2014). Because the table number of living persons l_x is in shortened range of life tables for the years t = 2013, 2018, ..., 2043, we recalculate the table number of living persons to the centres of the time intervals t–h = 2013–2017, 2018–2022, ..., 2038–2042 by linear interpolation as

$$l_{t,x} = \frac{4 \times l_{t-1,x} + l_{t+4,x}}{5}. \tag{3}$$

Using the recalculated table number of living persons we estimate the life expectancy at birth. The relation mentioned e.g. by Keyfitz (1991). We use a simple formula (4)

$$e_{t,0}^{0} = h \times \frac{\sum_{x=1-4}^{100-104} l_{t,x} - \frac{l_{t,1-4}}{2}}{l_{t,1-4}}. \quad (4)$$

In the next step the projection coefficients are calculated separately for: live-born persons, 0–4 year old persons, 5–9 year old persons, and older. (The constant (SC1) or lower level (SC2) probability of death is incorporated into the earlier calculated table.) The projection coefficients include this trend for particular time intervals. They have for live-born persons (*) and the time interval *t* the form used by Koschin (1993) modified for shortened life tables as

$$P_{t,*} = \frac{(1-\alpha)\times l_{t,0} + (2+\alpha)\times l_{t,1-4} + 2\times l_{t,5-9}}{5\times l_{t,0}}. \quad (5)$$

Projection coefficient for 0–4 year old persons and the time *t* for the shortened projection is

$$P_{t,0-4} = \frac{2{,}5\times(l_{t,5-9} + l_{t,10-14})}{(1-\alpha)\times l_{t,0} + (2+\alpha)\times l_{t,1-4} + 2\times l_{t,5-9}}. \quad (6)$$

Finally, the projection coefficients for persons 5–9 year old and older using Koshin's (1993) formula and modified for shortened life tables is

$$P_{t,x-(x+h-1)} = \frac{l_{t,(x+5)-(x+5+h-1)} + l_{t,(x+10)-(x+10+h-1)}}{l_{t,x-(x+h-1)} + l_{t,(x+5)-(x+5+h-1)}} \text{ for } x \geq 5-9. \quad (7)$$

The prior assumptions for the projection of live-born persons are needed. SC1 presume any changes in total fertility rates, while SC2 assume that the total fertility rates of regions are getting closer to the level of Prague today. They are linearly approximated to the reference region – Prague, where the total fertility rate is one of the lowest in the country (1.36 children per female in average for 2008–2012). Age-specific fertility rates for Prague in 2008–2012 are calculated as

$$f_{2008-2012,x}^{PRG} = \frac{N_{2008-2012,x}^{(v),PRG}}{5\times S_{2010,x}^{(F),PRG}}, \quad (8)$$

where $N_{2008\text{-}2012,x}^{(v),PRG}$ stay for the number of live-born persons of *x*-year-old mothers (*x* = 15, ..., 49 completed years of life) in Prague during 2008–2012 and $S_{2010,x}^{(F),PRG}$ are the number of females *x*-year-old, (where *x* = 15 to 49 completed years of life) in Prague in 2010. Total fertility rate is the summation of the all age-specific fertility rates (age interval *h* = 5 years):

$$tfr_{2008-2012}^{PRG} = h\times \sum_{x=15-19}^{45-49} f_{2008-2012,x}^{PRG}. \quad (9)$$

Then we calculate the age-specific fertility rates for each rural region in 2008–2012 and the total fertility rate in this region. Firstly, we calculate the age-specific fertility rates at the end of the projection (years 2038–2042) (equation 10), and then we focus on age-specific fertility rates in the middle of the projection period (years from 2013–2017 to 2033–2037), which are calculated by linear interpolation (equation 11).

$$f_{2038-2042,x}^{region} = \frac{tfr_{2038-2042}^{region,ex.}}{tfr_{2008-2012}^{PRG}} \times f_{2008-2012,x}^{PRG}, \quad (10)$$

where $tfr_{2038\text{-}2042}^{region,ex.}$ is the expected level of total fertility rate in the region during 2038–2042.

$$f_{t,x}^{region} = f_{2008-2012,x}^{region} + \frac{\left(f_{2038-2042,x}^{region} - f_{2008-2012,x}^{region}\right)}{(2038-2008)\times(t-2008)}, \quad (11)$$

where t are the beginnings of the time periods 2013–2017, 2018–2022, …, 2038–2042. We consider zero migration balance in the near future (see Šimpach and Dotlačilová, 2013a).

The population projection has a threshold of 1st Jan. 2013. We use the approach presented by Koschin (1993), which we modified for males (M) and females (F) and the region as

$$S_{t,x}^{(M),region} = N_{t-h}^{(v),(B),region} \times P_{t-h,*}^{(M),region} \text{ and } S_{t,x}^{(F),region} = N_{t-h}^{(v),(G),region} \times P_{t-h,*}^{(F),region} \text{ for } x = 0-4. \quad (12)$$

The number of older people, males and females in each region is calculated as

$$S_{t,x}^{(M),region} = S_{t-h,x-h}^{(M),region} \times P_{t-h,x-h}^{(M),region} \text{ and } S_{t,x}^{(F),region} = S_{t-h,x-h}^{(F),region} \times P_{t-h,x-h}^{(F),region} \text{ for } x \geq 5-9. \quad (13)$$

We estimate the number of live-born persons for the time period t = 2013–2017, 2018–2022, ..., 2038–2042 to x-year old mothers for analysed region using the equation

$$N_{t,x}^{(v),region} = 5 \times \left(\frac{\left(S_{t,x}^{(F),region} + S_{t+h,x}^{(F),region}\right)}{2} \right) \times f_{t,x}^{region} \text{ for } x = (15-19) - (45-49). \quad (14)$$

The total number of live-born boys (B) and live-born girls (G) is calculated as

$$N_{t}^{(v),(B),region} = \sum_{x=15-19}^{45-49} N_{t,x}^{(v),region} \times 0{,}515 \text{ and } N_{t}^{(v),(G),region} = \sum_{x=15-19}^{45-49} N_{t,x}^{(v),region} \times 0{,}485 \quad (15)$$

where constants 0,515 and 0,485 are the long term proportions of boys and girls at birth. Two types of generations are recognized: biological and economical (see e.g. Tinker, 2002 or Fiala et al. 2011). Considering biologic generations (the age intervals: 0–14 years (*I*), 15–49 years (*II*) and ≥ 50 years (*III*) the Sauvy age indices are calculated. They express how many grandparents per one child are there in the region's population.

$$ix_t^{Sauvy} = \frac{III_{t,bg}}{I_{t,bg}} \quad (16)$$

Using economical generations (the age intervals: 0–19 years (*I*), 20–64 years (*II*) and ≥ 65 years (*III*), the economic dependence indices are calculated. They express how many persons unable to work (pre/postproductive) are depended on productive and economic active persons.

$$ix_t^{dependence} = \frac{I_{t,eg} + III_{t,eg}}{II_{t,eg}} \quad (17)$$

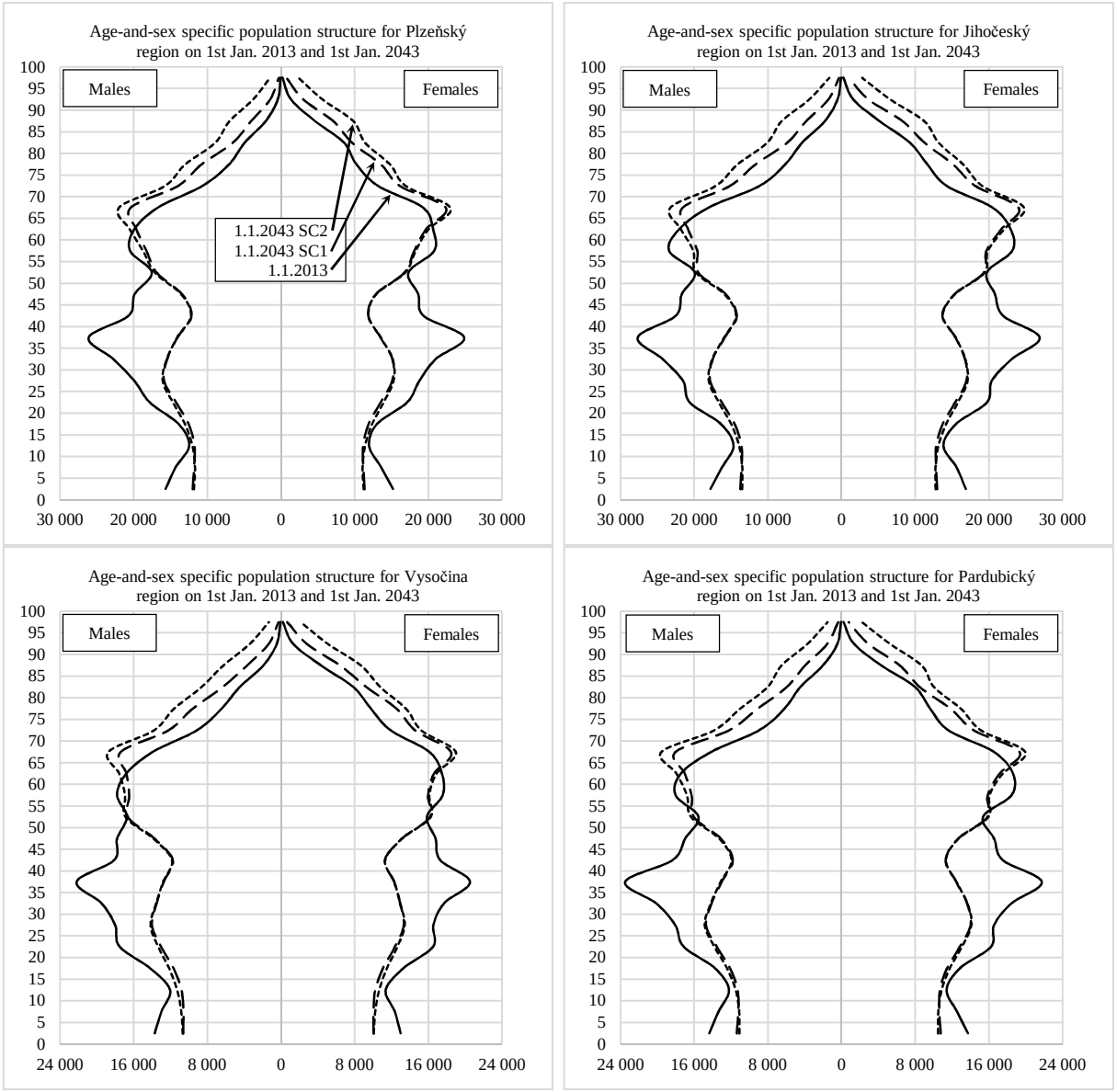
3 Results and Discussion

Age-and-sex population structures for rural regions are shown in Fig. 1. Full lines mark current demographic structures, dotted lines show modelled scenarios (SC1 and SC2). The shape of the population pyramid becomes regressive at the top in the future. The increase of number of persons in the highest ages indicates longevity. The population will get older in all regions. Ageing will be difficult issue for local actors in all analysed rural regions and it is the right time now to take important decisions and actions to deal with it.

Besides the age-and-sex population structure the Sauvy age indices and economic dependence indices are important (see Table 1). Longevity of the population causes that there will be around 2.5–3.0 grandparents per one child in 2043. There were less than 2.0 grandparents in

2013. From social point of view it is desirable that the children will have grandparents to later ages than before. However, from economic perspective there will be costs related with taking care of seniors. This is a challenge for the improvement of the social policy which should promote the home care. Economic dependence index was between 0.6–0.7 dependent person per one productive person in particular region in 2013. However, its value will strongly increase in majority of the predominantly rural regions. It will reach almost 1.0 in 2043. In other words, one productive person will have to support almost one person that is unable to secure financial means for living.

Solidarity among generations and social cohesion in the region is needed. The social system in the CR in current setting is probably not able to accommodate the population development.



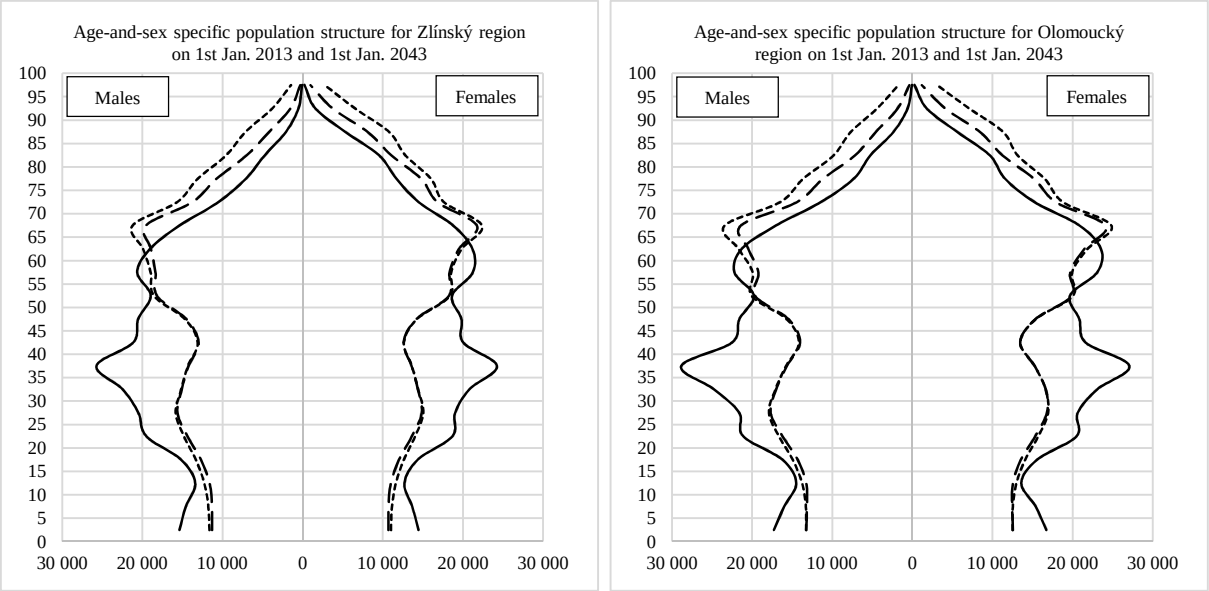


Fig. 1. Age-and-sex specific demographic structures of predominantly rural regions, population on 1st Jan. 2013 and on 1st Jan. 2043 by scenarios SC1, SC2; Source: own calculations and illustrations based on data from CZSO

Predominantly rural regions are specific. They were relatively "young" (i.e. the average age was lower in the past), but had become ageing.

Table 1. Sauvy age indices and economic dependence indices in rural regions on 1st Jan. by scenarios SC1, SC2; Source: own calculations

Year	PLZ				VYS				ZLN			
	SC1		SC2		SC1		SC2		SC1		SC2	
	Sauvy	Dep.	Sauvy	Dep.	Sauvy	Dep.	Sauvy	Dep.	Sauvy	Dep.	Sauvy	Dep.
2013	1,887	0,662	1,881	0,663	1,842	0,681	1,839	0,681	1,928	0,662	1,922	0,663
2018	1,904	0,739	1,904	0,747	1,886	0,733	1,891	0,740	1,979	0,725	1,979	0,733
2023	2,019	0,811	2,032	0,831	1,993	0,792	2,011	0,811	2,100	0,790	2,108	0,810
2028	2,303	0,817	2,343	0,852	2,220	0,808	2,256	0,842	2,356	0,806	2,377	0,843
2033	2,536	0,815	2,643	0,865	2,423	0,817	2,502	0,867	2,597	0,817	2,653	0,871
2038	2,628	0,815	2,836	0,879	2,546	0,819	2,701	0,886	2,742	0,819	2,866	0,892
2043	2,593	0,894	2,885	0,978	2,587	0,876	2,824	0,963	2,779	0,880	2,977	0,977
	JIČ				PAR				OLM			
2013	1,834	0,670	1,830	0,671	1,793	0,681	1,790	0,681	1,860	0,666	1,855	0,667
2018	1,862	0,744	1,867	0,751	1,806	0,751	1,815	0,757	1,878	0,740	1,881	0,747
2023	1,973	0,818	1,993	0,837	1,900	0,816	1,928	0,834	1,982	0,809	1,998	0,829
2028	2,223	0,829	2,271	0,862	2,138	0,822	2,198	0,852	2,240	0,819	2,278	0,854
2033	2,428	0,829	2,539	0,877	2,336	0,819	2,460	0,863	2,456	0,820	2,549	0,870
2038	2,509	0,829	2,715	0,892	2,426	0,819	2,644	0,877	2,556	0,818	2,737	0,884
2043	2,497	0,895	2,790	0,977	2,424	0,888	2,733	0,966	2,564	0,886	2,829	0,973

Thanks to better health condition of the population in these regions, developed infrastructure, higher living standards and other related issues (see Thatcher et al., 1998, or Boleslawski and Tabeau, 2001), the population in all regions will live longer (see mainly SC2) and the life expectancy will increase. However, it must be taken into account that increasing living standards of the population bring also the need to keep people more economic active than before (see e.g. Pechrová and Šimpach, 2013b or Šimpach and Langhamrová, 2014). Indexes

of economic dependence point on the fact that more people will be economically dependent on the less. The social system in the CR is not yet ready to manage the population change and prepared for absorbing this social burden. Police makers are probably aware of the situation, but do not have certain instruments to solve it. It is difficult to prepare and launch projects such as investments to retirement houses or to change the social policy and aim more financial means to people who would take care of their old parents at home. Also programs for joining the working process (i.e. the benefits for mothers on parental leave) are important.

4 Conclusion

The aim of the paper was to assess the impact of population development on the sustainability of the predominantly rural regions in the Czech Republic. There were two scenarios considered: a baseline (SC1), with no changes in fertility and mortality rates and probable scenario (SC2) when the fertility rate is getting closer to the current Prague‘s level and mortality decreases. The future average age and the Sauvy age index and economic dependence index were calculated. Not surprisingly, the results of our calculated projection show that the population will be continuously ageing in all selected regions. Thanks to better living conditions, improved health care and other related factors, the longevity will be more often observed phenomena. Government in the CR and local actors in rural regions should consider the development and take actions. A reform of the social policy system might be needed – not only on the state level, but also at the regional one. The regions probably should not fully rely on the state help, but the local actors should address these population development issues too. Otherwise, the unfavourable age structure might cause serious problems to the sustainability of their development. Besides, sustainable development requires not only people rooted in the regions, but also active people familiar with local situation, who are able to identify the needs of the region, and are competent to find and implement the solutions. When there are more economically inactive people, it is harder to enhance the development. Rural regions are in unfavourable position, as their population is ageing. Its influence has also a migration, which we did not consider (for simplification and due to shorter time horizon of the prediction). In the future research, the migration should be also examined closer, as the “flight of young” from rural areas is often observed.

References

Amcoff, J. and Westholm, E. (2007) ‘Understanding rural change as a key to the future’, *Futures*, vol. 39, no. 4, pp. 363-379.

Boleslawski, L. and Tabeau, E. (2001) ‘Comparing Theoretical Age Patterns of Mortality Beyond the Age of 80’. In: *Forecasting Mortality in Developed Countries: Insights from a Statistical, Demographic and Epidemiological Perspective*, pp. 127-155.

Botos, S. and Herdon, M. (2013) ‚Document Differences of Broadband Network Infrastructure, e-Readiness and Usage in EU Rural Regions‘, *Agris On-line Papers in Economics and Informatics*, vol. 5, no. 4, pp. 47-53.

CZSO (2014) ‘Úmrtnostní tabulky – metodika’. [cit. 27.05.2014], Available at: < http:// www.czso.cz/csu/redakce.nsf/i/umrtnostni_tabulky_metodika>

Fiala, T., Langhamrová, J. and Průša, L. (2011) ‘Projection of the Human Capital of the Czech Republic and its Regions to 2050’. *Demografie*, vol. 53, no. 4, pp. 304-320.

Keyfitz, N. (1991) ‘Experiments in the projection of mortality’. *Canadian Studies in Population*, vol. 18, no. 2, pp. 1-17.

Klijn, J. A. et al. (2005) *The EURURALIS Study: Technical Document*, Wageningen: Alterra.

Koschin, F. (1993) *Aktuárská demografie*. 1. vyd. Praha: Oeconomica VŠE, 141 p.

Pechrová, M. and Šimpach, O. (2013a) 'Rural Areas in the Czech Republic: How Do They Differ from Urban Areas?' In: *AGRARIAN PERSPECTIVES XXII.* Prague: Czech University of Life Sciences Prague Faculty of Economics and Management, pp. 322–334.

Pechrová, M. and Šimpach, O. (2013b) 'Assessing the impact of standard of living on the life expectancy at birth using Vector Autoregressive Model'. In: *Mathematical Methods in Economics 2013*. Jihlava: College of Polytechnics Jihlava, pp. 921-926.

Šimpach, O. and Dotlačilová, P. (2013a) 'Analysis of Migration Attractiveness of the Regions in the Czech Republic during 2007-2011'. In: *Region v rozvoji společnosti 2013*. Brno: MU v Brně, pp. 322–335.

Šimpach, O. and Dotlačilová, P. (2013b) 'Komponentní metoda s předpokládaným vývojem úmrtnosti, plodnosti a s alternativním odhadem neznámé migrace ve výuce demografických projekcí', *Forum Statisticum Slovacum*, vol. 9, no. 1, pp. 95–103.

Šimpach, O., Dotlačilová, P. and Langhamrová, J. (2014) 'Effect of the Length and Stability of the Time Series on the Results of Stochastic Mortality Projection: An application of the Lee-Carter model'. In: *ITISE 2014*. Granada: University of Granada, pp. 1375–1386.

Šimpach, O. and Langhamrová, J. (2014) 'Development of Socio-Economic Indicators and Mortality Rates during Ten Years of the CR Membership in the EU' In: *ICEI 2014*. Ostrava: VŠB TU, pp. 675–683.

Tinker, A. (2002) 'The social implications of an ageing population', *Mechanisms of Ageing and Development*, vol. 123, no. 7, pp. 729-735.

Thatcher, R. A., Kanistö, V. and Vaupel, J. W. (1998) *The Force of Mortality at Ages 80 to 120*. Odense University Press.

Case study - The possibility of using waste heat from biogas plants

Josef Slaboch, Jiří Mach, Pavlína Hálová

Department of Economics, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Prague 6 - Suchdol
jslaboch@pef.czu.cz, mach@pef.czu.cz, halova@pef.czu.cz

Annotation:
The BGP selected for this study is operated by the Novosedly agricultural cooperative (IN: 00113824) in the region of Southern Bohemia. The installed electric output is 537 kWh and heat output is 538 kWh – for own heating of administrative buildings, cow barn etc. the enterprise uses approx. 45 % of the usable heat energy. In 2013 this capacity was grossed up by an additional co-generation unit, and total electric output is now 695 kWh and heat output is 775 kWh. The goal of this case study is to determine from real data the benefits for the municipality and also for the company, which is also the co-investor into the project. The authors carried out the primary data collection about the costs and benefits arising from the distribution and use of waste heat for domestic heating in the municipality. Among the important indicators of evaluation of this particular investment are net present value, internal rate of return, quantity of waste heat used etc. (for this evaluation the indicators of financial analysis are also used). From an economic point of view this is a very interesting project, which can increase the return of the BGP for the company, because within the process of electricity production the waste heat, which powers the whole process, is fully used. It has been concluded, that heat from BGP decreases emission load in the village by 430t of CO_2/year. Decrease in emissions is achieved by replacement of solid fuels stoves by non-emission producing heat source in the village. But replacement of the heat source is very capital intensive process that has a serious impact on the project economy. Net present value calculation presents unprofitability if project is not supported by subsidy. Calculated net present value (discount rate of 5%, 15y) is negative (-5 mil CZK). But if subsidy is provided (66% of investment price), net present value decreases although remains still negative (- 408 ths. CZK) with internal rate of return 2% (however there are not environmental impacts evaluated, but only savings for the heat and hot water). The main benefits of the project are: lower heat price, lower emission CO_2 (in winter time especially), higher BGP Novosedly efficiency and decreased municipality costs for solid waste collection.

Key words: biogas plant, waste heat, community-led rural development, renewable energy

JEL classification: Q42, Q20, Q53, O13

1 Introduction

It is generally accepted that the utilisation of fossil fuels (crude oils, coal etc.) is accompanied by negative externalities influencing the environment (Otáhal, 2009), the quality of life of countryside inhabitants (Pasten, Santamarina, 2012) and also tourism in specific areas (Frantál, Kunc, 2011). These externalities contribute towards global warming – the emissions of greenhouse gases into the atmosphere (Turton, Barreto, 2006). An important factor in recent years is the pressure on the enhancement of the share of renewable resources of energy in the total energy production. The energy produced from renewable sources in the EU conditions is more difficult, which is why support from the public budget is necessary. It frequently arouses controversies (Jacobsson et al., 2009). New decentralised producers of energy have begun to operate (bio-gas plants - BGP, photovoltaic power stations, wind power stations). Numerous studies point out that the current state of centralisation of energy industry is problematic and support its decentralisation (Greenpeace 2005; Chapman et al. 2006; Lovins et al. 2002; Jenkins et al. 2000; Wolfram et al. 2003).

Centralised energetics depend upon limited fossil resources and has an overall negative impact on the environment, whereas the decentralised model is better suited to renewable energy resources and has fewer negative impacts (Polanecký et al. 2008 ; Chapman et al, 2006; Greenpeace 2005). Another downside of the centralised system is its vulnerability – the risk of outage and widespread interruptions of supply, which can affect a large number of consumers at the same time (Greenpeace 2005). For these reasons this article is made as a case study, which considers the possibility of a community connection to a bio-gas plant to use the off-heat (waste heat) as a suitable source for domestic heating. For this project a grant was provided from the environment fund. The BGP[3] selected for this study is operated by the Novosedly agricultural cooperative (IN: 00113824) in the region of Southern Bohemia. The installed electric output is 537 kWh and heat output is 538 kWh – for own heating of administrative buildings, cow barn etc. the enterprise uses approx. 45 % of the usable heat energy. In 2013 this capacity was grossed up by an additional co-generation unit, and total electric output is now 695 kWh and heat output is 775 kWh. Based on the results it is evident, that use of heat in the companies, shares in the total BGS revenues only in 0.3 – 0.4 %. Just the use of waste heat from BGS is a very significant attribute for efficient use of the total BGS potential. (Homolka, Slaboch, Švihlíková, 2014)

The goal of this case study is to determine from real data the benefits for the municipality and also for the company, which is also the co-investor into the project. The lowest price of heat according to a ministerial regulation is set at 100 CZK/GJ. During the operation of the BGP the co-generation units can be taken out of service for necessary maintenance – thus there is a risk of interruption of heat supply. According to Kosina (2013) the time of shut-down is 3 days per year on average taking data from a similar project. A second benefit of the usage of waste heat is an improvement of air quality, especially in winter months. The authors carried out the primary data collection about the costs and benefits arising from the distribution and use of waste heat for domestic heating in the municipality. Among the important indicators of evaluation of this particular investment are net present value, internal rate of return, quantity of waste heat used etc. (for this evaluation the indicators of financial analysis are also used). From an economic point of view this is a very interesting project, which can increase the return of the BGP for the company, because within the process of electricity production the waste heat, which powers the whole process, is fully used. The heat consumption for the process biogas is particularly dependent on the heat loss from the fermenter, the type of the temperature of the fermentation process (mesophilic or thermophilic). The consumption of heat for technological heating BGP is between 20-40%. (CZ BIOM, 2014)

2 Materials and Methods

The aim of this case study is to evaluate investments and quantify the costs incurred during implementing the connection of village on heating from waste heat from biogas, which is located in an agricultural company (AC Novosedly) on the outskirts of the village.

For evaluation of the investments are used net present value and internal rate of return by the following formulas:

$$\text{Net present value} = \sum_0^t \left(\frac{\text{CF}}{(1+\text{i})\text{t}}\right) - \text{IN} \qquad \textbf{(1)}$$

$$\text{Internal rate of return} = \text{in} + \frac{\text{NPVn}}{(NPVn - NPVv)} * (\text{iv} - \text{in}) \qquad \textbf{(2)}$$

[3] Biogas plant

where: CF – cashflow, i – interest rate, in – Lower interest rate, iv- higher interest rate, NPVn – NPV at a lower interest rate, NPVv - NPV at a higher interest rate.

The main part of this article "results and discussion" is divided into three parts. In the first part is defined difference between the current and the new conditions in the terms of energy consumption in quantity and also in money. In this section is also defined what objects are affected by this project. The second part shows the total costs of this project of using heat from biogas plant of AC Novosedly. In this part is also quantification of financing, cost structure and schedule of work. The final section describes the economic and environmental evaluations of the project, which is defined below.

The project description

The project includes construction of a central supply of heat from the biogas plant in the village Novosedly. Village is located in South Bohemia, on the ORP Strakonice. It is a small village with the large numbers of family houses with the necessary amenities. Individual buildings are heated by local sources of heat. Hot water is provided in the electric storage heaters. Pipeline insulation with exception of new building does not match to requirements of the decree 193/2007 Code of law, and the combustion losses are considerable and energy in the fuel is small. Heating control is usually manual, thermostatic valves on radiators are installed. In the agricultural area on the outskirts of the villages is situated central cogeneration source of heat which burning biogas.

Power of CSH4 is 610 kWt and is not fully utilized. The heat produced in a cogeneration unit is currently used to heat buildings in agricultural areas, but the greater part is thwarted, incur costs and electricity consumption for its obstruction. In the service building of BGP is located machinery for the heat distribution of suitable capacity for the connection of the buildings of the village. Total is built 548 m distributions CSH, 15 connections to buildings with a total length of about 170 m and the total performance of 310 kW. The implementation of these measures is to reduce annual emissions of 4.4 tons EPS5 and annual energy savings for heating and hot water in the amount of 698.8 GJ. The use of heat from a biogas plant for industrial heating municipality will contribute to an increased use of renewable energy for heating and hot water. It also increases the efficiency and operation of the existing BGP, where the heat produced by the cogeneration unit currently partially thwarted. The present project is sustainable - implementation of measures for more comfortable use of individual objects, and has a positive contribution to the environment - implementation will improve the air quality in the area.

3 Results and Discussion

The source of heat for heating distribution will be existing co-generation (combined heat and power) unit of bio-gas plant (BGP), or more precisely the cooling of its engine and heat exchanger of combustion gases. The BGP is situated in northwestern part of municipality in the area of the agricultural cooperative.

The heat from co-generation unit is used for warming of biomass in fermenter, for pre-warming of air in drier of crops and for heating of company buildings at present time. There will be markedly improved the using of heat from co-generation unit with expansion of heating take-off by connected buildings. In these newly connected buildings will stay the

[4] Central source of heating

[5] Precursores of secondary elements

current sources of heat (furnaces, beaters) to avoid a problem of heat insufficience in time of cut off in BGP.

These heat sources will be used in some circumstances of the lowest outdoor temperatures, when the temperature of heating water will not be sufficient for full heating of buildings. Designed construction serves to extend the current heat exploitation produced by existing BGP. Usable heat rate of BGP for municipal heating is 310kW. Outdoor caliduct is led from the pre-isolated pipeline loaded in excavation by directly buried pipe.

The usage of heat from BGP is as follows:

- administrative building (570m^2)
- workshop 1 (800m^2)
- workshop 2 (720m^2)
- parlour and drier (36 m^2)
- offices (8m^2)

Total heated area in agricultural company Novosedly is 2134 square meters with total installed heat load of 470 kW.

Subsequently, next part of waste heat from BGP will be used for:

- family houses (1474 m^2)
- apartment houses (multi-family; 1010m^2)
- kindergarten (248 m^2)
- elementary school (154 m^2)

Total heated area for residents and municipal property is 2,885 square meters with a total usable output of 310 kW (Project documentation is in Appendix n. 1)

Heating systems in village Novosedly are various. The village is under gas service, but natural gas is used just minimally – only in elementary school. The main source for heating is brown coal (lignite) combusted in local furnaces, which are connected with gravity circulation systems (90/70°C) with radiators without thermostatic valves. In small part of houses electric hot-water heating is applied. There is also used the natural gas combusted in gas furnace in one case. The regulation of heating is usually manual, the room thermostats are used for heat management in case of electric and gas heating.

In the next table, the average annual costs of heating and water warming are shown before building insulation, i.e. for 10 family houses, 3 apartment houses, kindergarten and elementary school. The total costs for heating were CZK 952,634 and the consumption od energy was 5,511 GJ.

Table 1. Average annual costs of engaged buildings

Annual referential consumption – 3 year average (2009-2011)					
Inputs of fuels and energy	Unit	Quantity	Heating value	GJ conversion	Annual costs in CZK
Purchase of electricity	MWh	112.933	3.6	406.6	225755
Purchase of heat	GJ	1839.9	1	1839.9	183991
Natural gas	ths.m3	0	34.1	0	0
Brown coal (lignite)	t	169.7	17.5	2970.2	522764
Black coal	t	0	23	0	0
Coke	t	0			
Wood for heating	t	14	12.5	175	19249
Heavy fuel oil	t				
Light fuel oil	t				
Petroleum	t				
Other gases - PB	t	2.8	43	120	876
Secondary energy	GJ				
Renewable sources	GJ				
Other fuels	GJ				
Total inputs of fuels and energy				5511.7	952634
Stock changes				0	0
Total consumption of fuels and energy				5511.7	952634

Source: AC Novosedly

In more detailed view on the structure of energetical expenditures (see the table below), it is evident that there are relatively big losses of heat in particular heat sources and in the distribution. About 1/5 of energy is affected by losses, it is CZK 206,453 in monetary expression.

Table 2. Recapitulative annual energetical balance of current situation

	GJ/year	Costs in CZK
Input of fuels and energy	5511.7	952634
Fuels stock change	0	0
Renewable and secondary energy consumption	0	0
Fuels and energy consumption	5511.7	952634
Final fuels and energy consumption	5511.7	952634
Losses in heat sources and distribution	1173	206453
Consumption of heat for heating and water warming	4338.7	746181

Source: AC Novosedly

The changes in heating against the situation before:

The usage of central source of heating (CSH) will decrease the ash production and consequently also the item „waste disposal“. The Novosedly municipality annually spend about 119 ths. CZK for waste disposal presently. It is possible to suppose the cut about 25 %. We have to calculate also with higher price of heat than it is now in connected buildings (CZK 100/ GJ). The heat will be selling to the secondary distribution, where will start new operation and maintenance costs, and so minimally CZK 80/GJ will have to be added to the price from primary heat distribution. Next is the price from secondary distribution calculated

as CZK 180/GJ. This price is below brown coal price and still remains motivated for connected buildings. In the next table no. 3 are shown the energy parameters after the expansion of central source of heating (from BGP) into the part of village. The higher efficacy of the new source of heat means lower need of energy at the end – from present 5,511 GJ to the expected value of 4,480 GJ. In monetary expression it means savings of 170 ths. CZK. The efficiency of brown coal furnace is about 55% against the central source of heating from BGP with 88%.

Table 3. Energy parameters of rating expansion:

Items	Quantity	Unit
Total heat losses	501.2	kW
Warm water systems	501.2	kW
Buildings connected with CSH	228.2	kW
Current total heat consumption	4338.7	GJ
Current total fuel consumption	5511.7	GJ
Efficiency of CSH	85%	
New consumption from CSH	4479.9	GJ
Energy savings due to decreasing of losses	732.1	GJ
Current costs of fuels	952634	CZK
Current costs of transportation	48000	CZK
Current costs of ash disposal	29750	CZK
New costs of energy	860335	CZK
Energy savings due to decreasing of losses	170049	CZK
Average utilization of source	2649	hour

Source: AC Novosedly

The financial savings are relative small, even with inclusion of others costs connected with current fuels (transportation, ash disposal, manipulation etc.), because there will be changed relatively cheap fuels by more comfortable energy in form of district heating from biogas. The savings will appear just in the buildings of kindergarten and elementary school from the property of Novosedly municipality as the investor. The savings in council buildings can be calculated as ratio from total savings:

Table 4. Kindergarden and elementary school:

Items	Quantity	Unit
Heat consumption	402.7	GJ
Fuel consumption	602.3	GJ
Losses for school	50.4	kW
New fuel from CSH	473.7	GJ
Energy savings	128.6	GJ
Total energy savings	732.1	GJ
Total financial savings	170,049	CZK
Share of energy savings of kinderg. and school from total savings	17.6%	%
Share of financial savings	29,863	CZK

Source: AC Novosedly

For municipality, as the main investor, are the savings in heating of buildings relatively small – about CZK 30 ths. per year.

The total savings for lifetime of project (15 years) can be calculated as a product of annual cost savings of heating with lifetime of project (ceteris paribus). Total savings from viewpoint of investor and also from viewpoint of residents (part of community) are CZK 2,550,735 (savings only for heating and water warming). It is necessary to add also cost savings for waste disposal to this amount (according to suppose of decrease of 25%). In this case it covers an amount of CZK 446,250 for lifetime of project. Total savings for lifetime of project are then 2,996,985 CZK for municipality and connected community. However, in this evaluation are not calculated the environmental impacts of this project.

Costs of the project

The project is financially demanding – total expenses are CZK 7,476,661. From the table below (no. 5) it is evident, that the direct implementation costs of construction works make the highest share of costs in total amount of 7,037,261 CZK (94.12% of total expenses). The project documentation costed CZK 350,400 (4.98%) and works inspection CZK 84,000 (1.12%). Also a memorial plaque was unveiled (CZK 5,000).

Table 5. Costs structure of the project

	Capable expenses (in CZK with VAT)	Non-capable expenses (in CZK with VAT)	Total expenses (in CZK with VAT)
Project documentation	350 400		350 400
Elaboration of project documentation	86 400		86 400
Elaboration of energy audit	84 000		84 000
Processing of application for subsidy	72 000		72 000
Processing of contractual documents, selection procedure organisation	36 000		36 000
Processing of documents of erection	72 000		72 000

Obligatory publicity	5 000		5 000
Lasting memorial plaque	5 000		5 000
Works inspection	84 000		84 000
Works inspection	84 000		84 000
Direct implementation costs	7 037 261		7 037 261
Construction works	7 037 261		7 037 261
Savings of operating costs		149 315	149 315
Savings of operating costs generated in 5 years in buildings in property of applicant		149 315	149 315
Total	7 327 346	149 315	7 476 661

Source: AC Novosedly

In the next figure no. 1 are displayed particular costs of construction works, which are described in detail. The highest part of construction costs are the costs of piping (61% of total direct realisation costs), consequently are important also groundwork, constructions and costs of adaptation of foot-paths and roads.

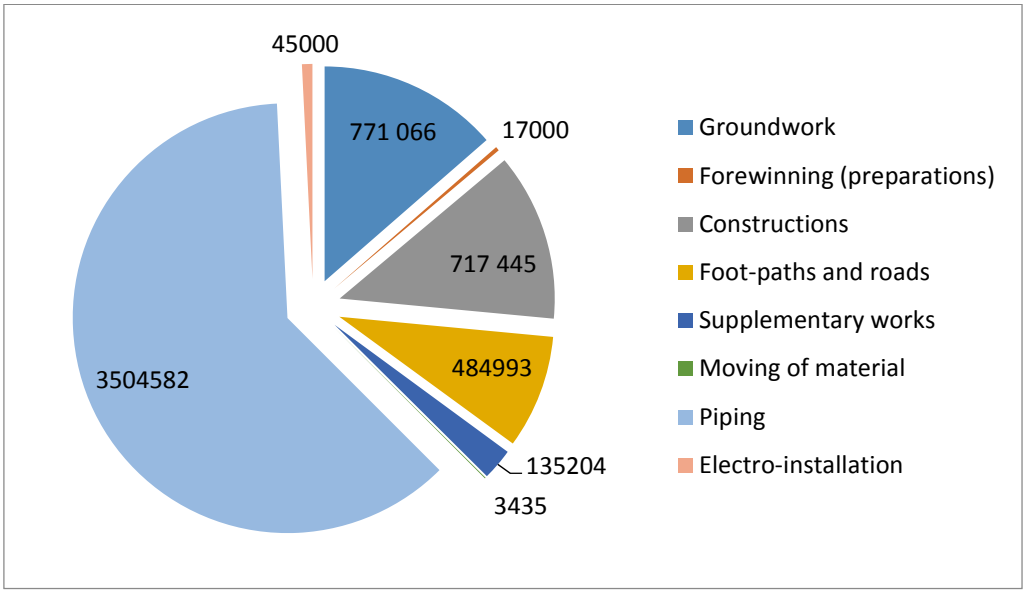


Figure 1: Structure of construction works costs (source: AC Novosedly)

The structure of project financing is following: the main part of financial resources came from the ERDF[6] fund in total amount of CZK 4,824,800, what is 66% from total costs of project. The second part of resources provided municipality in total amount of CZK 2,502,546, what is the rest 34%. From the forewinning and heftiness of preparations point of view, it is long-term project with total time of building of 3 years (from preparation to start).

6 European Regional Development Fund

In the next figure no. 2 is shown the lay-out of works among particular activities in time of piping from BGP to individual delivery points. The longest time was spent for the site excavation – 20 weeks. The construction of caliduct was divided to 3 stages according to schedule (+ ending works). Particular stages tie together – the construction works of caliduct underground laying (548 m) spent 7 months. From referred materials it is evident that the costs per 1 m of caliduct are CZK 13,371.

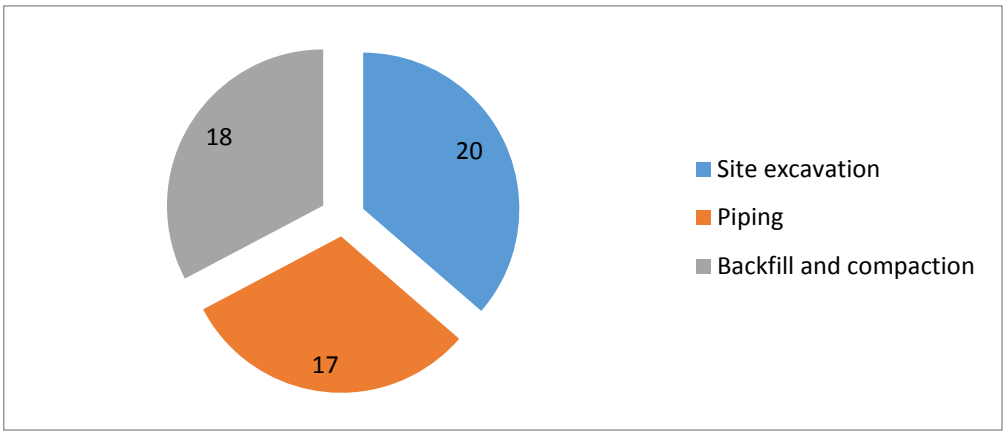


Figure 2: Lay-out of works (number of weeks; source: appendix n.2)

Economic evaluation

The effectivity of included finance is assessed with 5% interest rate condition. The period of evaluation for building parts is chosen for 15 years (service life). The following table n.6 contains evaluation of heat-water system investment with the help of net present value and internal rate of return. In the first column alternative n. 1 is given (in case of not providing the subsidy from OP environment in the amount of 4,824,800 CZK) where investment is fully paid by the village – total cost 7,327,340 CZK. In the alternative n. 1 the net present value is negative i.e. – 5,003,334 CZK. Annual yield is qualified as citizen and village saving for heat and communal waste disposal. In the alternative n. 2 (approved subsidy from OP environment in the amount of 4,824,800 CZK and remaining part 2,502,546 CZK paid by village is considered) the net present value is negative, but only in the amount of – 408,286 CZK. Internal rate of return was positive, in the amount of 2%. From the evaluation point of view, neither alternative brings positive net current value based on own calculations. However, this evaluation does not account for environmental impact of project, which is stated in following pages.

Table 6. The investment evaluation of heat-water system

	Alternative 1	Alternative 2
Start investment	7327346	2502546
Loan	7327346	2502546
Annual yield	199799	199799
Considered discount	5%	5%
Service life	15 years	15 years
Net present value	-5 003 334 CZK	-408 286 CZK
Internal rate of return	negative	2%

Source:autor´s calculations based on data of AC Novosedly

It is not realistic to demand complete heat-water system investment return from just the energy savings. It is clear that local heat source connectible to CCU modernization will bring higher comfort of heat supply in part of village, manual work will not be necessary and it will be possible to heat without interruptions.

From the individual connected end-user point of view, we may declare, connection starting costs for purchase of delivery heat station are 54,000 CZK. Based on estimate of saved costs for heating and hot water the connection CCU means saved costs in the amount of 59 CZK/m2 per annum. The average size of connected family house is 147 m2, which means saved costs of 8,673 CZK per annum. In this case the net return period for family house is 6 years. The average size of flat in a block of flats is 72 m2. In this case only one delivery heat station is necessary (one block of flats includes 4 flats). Therefore lower net return period is applied, namely 3 years and 2 months.

Environmental evaluations of the project

Implementation of the measures will have an impact on the environment that will reduce fuel consumption. Central cogeneration unit (CSH), from which heat is supplied, burning biogas. To calculate the estimated environmental benefits are based on the distribution of the fuel base separately for existing situation and the new variant with the heat of BPS.

Table 7. Consumption of energy before and after project

Fuel	Current condition -GJ	Amount – current condition	New condition - GJ	Amount - new condition
Brown coal	2970.2	169.7 t	0	0
Coal	0	0 t	0	0
Wood	175	14 t	0	0
Natural gas	120	2.8 ths.m^3	0	0
Electricity	406.6	112.9 MWh	0	0
Biogas	1839.9	1839.9 GJ	4779.6	4779.6
Total consumption	5511.7		4779.6	

Source: AC Novosedly

Calculation of CO2 equivalent emissions was conducted according to the general emission factors Decree. 425/04 Code of law. Other emission factors according to the Decree. 146/07 Code of law:

Table 8. Production of pollutants before and after project

Pollutant	Current condition (t/year)	New condition (t/year)
solids	1.913	0.003
SO_2	3.802	0.001
No_x	0.813	0.225
CO	7.644	0.045
hydrocarbons	1.532	0.009
CO_2	429.156	0.000
EPS[7]	4.682	0.201
EPS (share in %)	100%	4.30%

Source: AC Novosedly

In new alternative the current fuel and energy for heating and hot water is completely replaced by biogas heat. According to decree 425/04 Code of Law biogas as a product of biomass has zero emission factor, therefore new alternative shows maximum possible CO2 saving. From the global point of view, all emission kinds will be decreased by influence of saving arrangements in the heating system project objective, where the emission savings are calculated to the CO2 equivalent in accordance with Decree 425/04 Code of Law.

Solid fossil fuels are replaced by renewable sources of energy. From the ecological point of view the air pollution in village of Novosedly in Strakonice region is decreased. Parameters of this project correspond with subsidy program for CCU system enlargement and CO2 emission savings, which considerably proved in the amount of subsidy from OP environment.

4 Conclusion

Benefits of this project are for village Novosedly very positive. By project realization current mostly non ecologic local solid fuel heating sources with low effectivity were replaced with central heat distribution produced by biogas station in AC Novosedly. This step leads to decrease emission quantity of air pollutants from fuel burning, which means increased air quality in village Novosedly and all region Strakonice. The biogas station heat usage brings higher utilization of renewable energy sources for heating and hot water in the village. At the same time the effectiveness of current biogas station production has increased, because the part of the heat was thwarted. This project was co-financed from EU subsidies (OP environment – 66% of total costs) and remaining part was paid from Novosedly budget (34% of total costs).

From the economic point of view the project is at the level of 5 % interest rate non profitable for the village, it does not reach positive values in evaluated indicators. Net present value (in case of granted subsidy in the amount of 66% total costs) is negative, in the amount of CZK – 408,286.38 with internal rate of return of 2%. However, this evaluation does not account with environmental impacts. The alternative n.1 considers NPV in case of not obtaining subsidy and its amount is CZK – 5,003,334.

From the environmental evaluation point of view, the project decreases emission burden of the village by 429 tons of CO2 per annum and at the same time it decreases precursores of secondary elements by 95.7%. Other watched pollutant indicators show considerable decrease.

[7] Precursores of secondary elements

Total savings during lifetime of project (15 years) are CZK 2,550,735 (savings from heating and hot water only). It is necessary to add save cost for waste disposal to this sum (expected decrease by 25%), which is in the amount of 446,250 CZK. Total savings from this project are 2,996,985 CZK for the village and local connected community.

Total project expenditure is CZK 7,476,661. The highest sum of caused costs is determined by direct realization expenditure for building in the total amount of CZK 7,037,261. The inhabitants of individual houses and flats face costs for purchase of central cogeneration unit in the amount of 54,000 CZK. The fact, that biogas station has been used for 5 years and licence has been granted by ERU (energy regulating bureau) for 20 years, is significant disadvantage. The question is, if BGS Novosedly will obtain licence extension as they can guarantee only 15 years.

Acknowledgements

This paper was supported by grant IGA PEF No. 20131030 - Alternatives for biomass processing and animal waste in biogas plants and their impact on the economics of enterprises.

References

Frantál, B. and Kunc, J. (2010) 'Factors of the uneven reegional development of wind energy projects (a case of the Czech Republic)', *Geographical Journal*, vol.62, 3: 183-201.

Greenpeace (2005) *Decentralising Power: an Energy Revolution for the 21st Century*. Greenpeace, London.

Chapman, D. et al. (2006) *Distributed Generation and Renewables*. European Copper Institute, Brussels.

Homolka J., Slaboch J. and Švihlíková A. ‚Evaluation of Effectiveness of Investment Projects of Agricultural Bio-gas Stations'. *Agris on-line Papers in Economics and Informatics*, vol.6, 4: 45-57.

Jacobsson, S. et al. (2006) EU renewable energy support policy: Faith or facts? *Energy Policy*, vol. 37, 6: 2143-2146.

Jenkins, N. et al. (2000) *Embedded Generation*. The Institution of Engineering and Technology, London. ISBN: 978-0-86341-958-4

Kosina, L. 'Využití odpadního tepla z bioplynové stanice'. *Biom.cz* [online]. 2013-08-05 [cit. 2014-07-14]. Dostupné z WWW: <http://biom.cz/cz/odborne-clanky/vyuziti-odpadniho-tepla-z-bioplynove-stanice>. ISSN: 1801-2655.

Lovins, A. B. et al. (2002) *Small is Profitable: Hidden Economic Benefits of Making Electrical Resources the Right Size*. Rocky Mountain Institute, Snowmass. ISBN: 1-881071-07-3.

Otáhal, T. (2009) Problém zastoupení v institucionální ekonomii. *Politická ekonomie*, vol. 57, 5: 677-695.

Pasten, C. and Santamarina, J. C. (2012) 'Energy and quality of life'. *Energy Policy*, vol.49: 468-476.

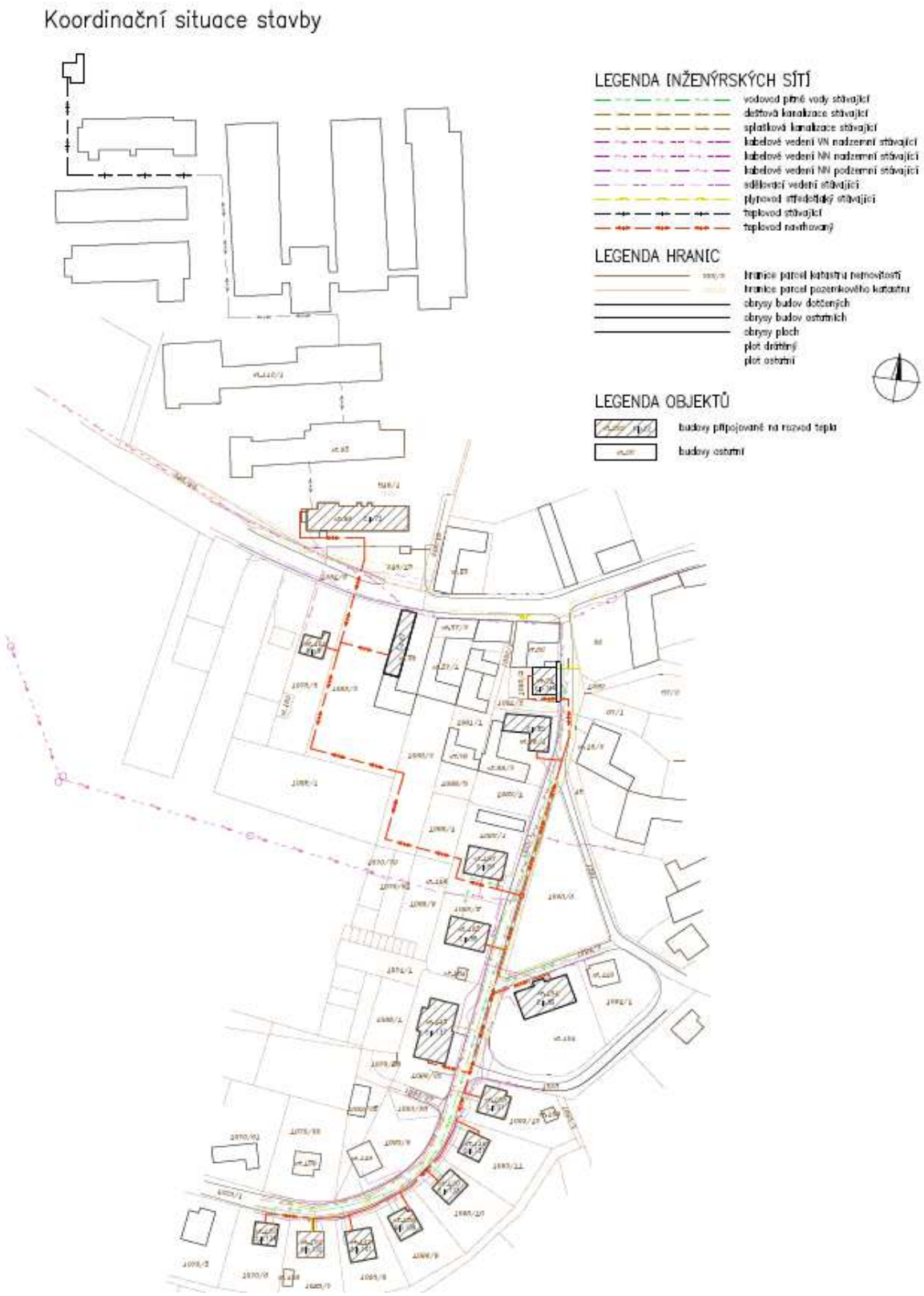
Polanecký, K. et al. (2008) *Energie nadosah. Bezpečnostní, sociální a ekonomické výzvy decentralizované energetiky*. Zelený kruh a Hnutí DUHA, Praha. ISBN: 978-80-903968-3-8.

Turton, H. and Barreto, L. (2006) Long-term security of energy suply and climate change. *Energy Policy*, vol. 34, 15: 2232-2250.

Wolfram, J. et al. (2003) *Decentralised Power Generation in the Liberalised EU Energy Markets: Results from the DECENT Research Project*. Springer-Verlag, Berlin. ISBN: 978-3540401339.

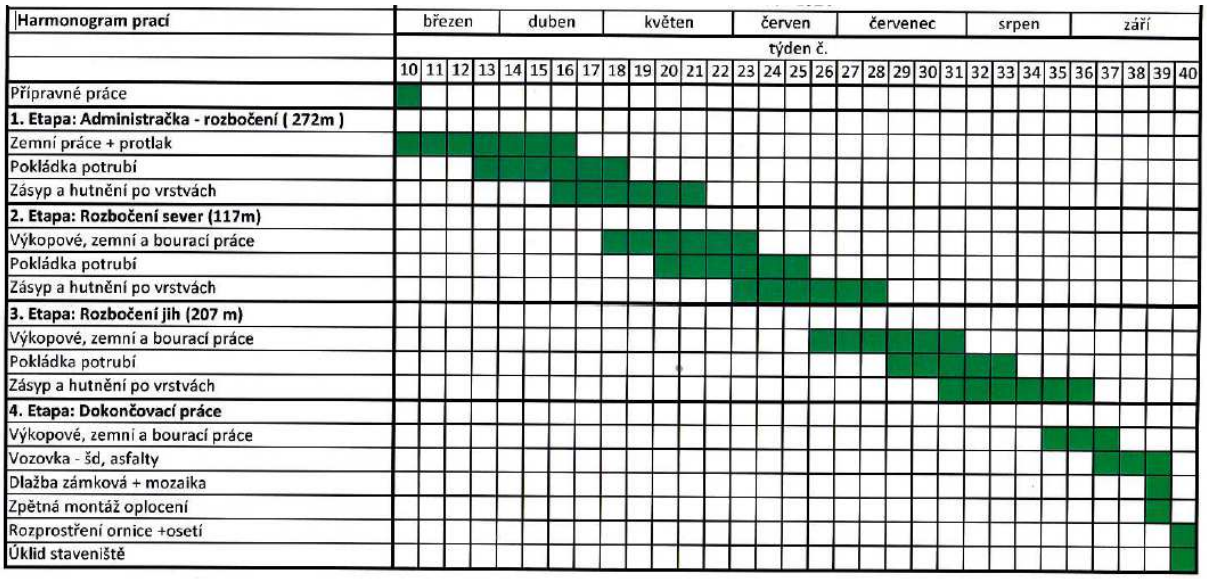
CZ Biom,: Využití odpadního tepla z výroby bioplynu. *Biom.cz* [online]. 2020-12-18 [cit. 2014-08-21]. Dostupné z WWW: <http://biom.cz/cz/odborne-clanky/vyuziti-odpadniho-tepla-z-vyroby-bioplynu>. ISSN: 1801-2655.

Appendix 1



Source: AC Novosedly

Appendix 2



Source: AC Novosedly

The relationship between the global/regional rural population development and agricultural sector development

Luboš Smutka[1], Mansoor Maitah[1], Michal Steininger[1], Ondřej Škubna[1], Vasilyonok Viktor[2]

1 Department of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Prague, The Czech Republic
2Institute of Refrigeration and Biotechnologies, ITMO, Lomonosova 9, 194044 St. Petersburg, Russia
smutka@pef.czu.cz

Annotation: Development trends in the area of agriculture and rural areas are closely inter-related. Rural area and its character are to a large extent influenced by the volume and especially by the structure of its settlement. An important role in shaping the character of the countryside and its settlement structure is, undoubtedly, played by agriculture. As the global, regional and local economies are transforming these days, there is a decline in the importance of agriculture as a key economic area. The decline in the share of agriculture in economy, accompanied by the reduction in the number of jobs in agriculture, subsequently leads to a significant reduction in the proportion of the population living in rural areas. The article analyzes the development of the rural population (or its share) in the context in relation to agricultural sector development during the past several decades. The main emphasis is placed on identifying the differences existing between the various regions of the world. The results of the analysis of the development of the share of rural population in the total population of the world and selected regions implies the following. The volume and particularly the structure of the global rural population have changed extremely over the last three decades. While at the beginning of the period observed in this study about 2.6 billion people lived in the countryside, at the end of the period it was already 3.33 billion people. Over the years the dynamics of the rural population growth has decreased significantly. The result of this development was a decline in the share of rural population in the total population of the world from 60.6% to about 47.45%. In particular, restructuring of the global economy, which has led to a significant decline in importance in terms of rural economic growth has shown to be a major determinant of the development in time. In this regard, there has been a significant reduction in agriculture, which had long constituted a major source of income and employment in rural areas. As the share of agriculture in the global economy fell (by more than half) and the volume of jobs in agriculture decreased – in other words, the proportion of people working in agriculture in the total number of workers in the global economy has reduced - there was a significant decline in the rural population growth and a substantial outflow of this population into urban and suburban areas.

Key words: Rural areas, population, agriculture, structure, factors, influence, development.

JEL classification: J10, J11, J18, Q01, R11, R12

1 Introduction

Agriculture and rural areas are very closely interconnected. Due to the fact that agriculture as an economic activity has a global character and is implemented on very large areas usually outside urban area, its link to the rural areas (where more than 95% of the land is found - this number includes not only agricultural land, but also forests and other land types) more than logical.

Agricultural activity takes place on more than 48 million square kilometers, which represents more than 35% of the mainland area on the ground. In terms of economic activity (manufacturing, mining and services), agricultural sector is the most dependent on large expanses of available land resources of high quality (high demands on soil nutrients and fresh water supply). Farmland in the past represented and still represents a natural base for the development of human civilization.

In the countryside, where most of the agricultural activities take place there currently live about half the world's population - more than 3.5 billion people. The relationship between the rural development and development in agriculture is historically very long and significant (Lupták and Naxera, 2013). It is the rural areas where the very beginnings of human civilization developed. A very dynamic development of rural areas then occurred, especially with the advent of agriculture about ten thousand years ago. It was agriculture that largely determined the character of the cultural landscape, and further development of settlements, villages and later also cities.

The position of agriculture began to change over time with the advent of the industrial revolution, when until then the prevailing national economic model AIS (methodology by Holub, 1972) (agriculture-industry-services) or AIS was gradually replaced by the IAS model (industry-agriculture-service) or ISA - this means that the dominant position of agriculture was broken in favour of industry.

With the gradual development of industrialization and the consequent development of the service sector, the importance of agriculture as the main economic activity began to decline much faster - at present time when most countries in the world are dominated by the SAI or SIA (service-industry-agriculture) model of economy, the importance of agriculture is very limited. Agriculture currently accounts for 4-5% of global GDP value, and the added value generated by the agrarian sector in the world represents about 2.4 trillion USD.

Despite the fact that the agrarian sector currently represents only a fraction of the value generated by the global economy, it is still necessary to accept the agrarian sector as a key component of the global economy – within the meaning of further development, especially of rural areas. If we ignore its importance (which is impossible) in food production, and also in the area of rural development and maintenance of the landscape, the importance of agriculture is still immeasurable, especially in its ability to offer a huge number of job opportunities.

In agriculture today - whether voluntarily or involuntarily – more than 1.3 billion economically active population are working - this means that agriculture employs about 30-35% of the economically active population living on Earth (in this respect we particularly mean the population living in developing countries, as in the developed countries "only" about 30 million people work in agriculture).The volume of agrarian population, that is the population which is directly dependent on agricultural activities, is much greater. According to FAO estimates, it concerns more than 2.8 billion people.

It follows, therefore, that agriculture continues to be a key activity for more than 40% of the world population. In this regard, it should be emphasized that more than 90% of these people live and work right in the countryside (FAO, 2011). The above facts indicate that a very strong link exists between the development of agriculture and development of the rural areas and their populations (Dorosh and Thurlow, 2012; Adesina, 2009, de Janvry, and Sadoulet, 2010). With the declining importance of agriculture in different regions of the world, there is an abrupt shift of population from rural areas to urban areas (cities and suburbs), where there is a significant concentration of industry (about 25% of the world GDP value) and services (about 71 -73% of the world GDP value).

As the development of industry and subsequently of the services gradually advanced, a very significant reduction in agriculture occurred, particularly in the developed world. An extreme transfer of population has occurred (Zinchenko, 2012), into towns in North America (about 80% of the local population) and Europe (75-80% of the local population). Very significant transfers of population into towns can also be seen in developing countries (Latin America - more than 70%), Africa and Asia (more than 45% of the local population now live in cities

and in a number of countries restrictions have to be imposed on the movement of inhabitants from rural to urban areas (WB, 2014)).

A wide range of causes can be seen behind a radical decline in the share of rural population in the total population. The most important one is the decline in the share of agriculture in the total value of economic activities in the world, as well as the lower growth rate of the added value generated by the agricultural sector compared to other sectors of the global economy. The generally lower level of income in agriculture and not least important the decline of jobs in the agricultural sector, which is crucial to maintaining the rural settlement structure, also play their role. This applies in relation to both the developing and the developed countries of the world. It is important in this regard is to take also into account the size of the country and the population density. This is because, especially in those countries that have a large area, the dynamics of the rural population share decline is very high and dependent on how the economic power of developing urban and suburban areas is developing (Marsden, 1996).

2 Materials and Methods

This study examines the development of the rural population's share of the total population in the world and selected regions and countries. The article analyses the development of the rural population (or its proportion) in the context of the past several decades (or from the perspective over the past 30 years - from 1980 to 2012. Some reduction in the time series was necessary due to data availability). The main emphasis is put on identifying the differences existing between various regions of the world, and then on the influence of the GDP development (including and after deduction of agricultural GDP), GDP/cap (including a deduction for the agricultural GDP/cap), GDP generated by agriculture, GDP/person working in agriculture, on the number and especially on the share of the population living in rural areas.

This article analyzes the development of the share of the rural population in terms of three different dimensions - individual countries (179 countries), selected regions and then groups of countries. The article is focused mainly on the identification of differences existing between various regions (East Asia and the Pacific, Europe and Central Asia, European Union, Latin America and the Caribbean, the Middle East and North Africa, North America, South Asia and sub-Saharan Africa) and groups of countries (High Income, Upper Middle Income, Middle Income, Lower Middle Income and Low Income Countries).

Dividing countries into groups was carried out through the methodology used by the World Bank (WB, 2014). The database is based on the analysis of the relationships existing between the proportion of the population living in rural areas on the one hand, and the share of agriculture in GDP, the value of agricultural production, the value of agricultural production per worker, employment in agriculture, GDP, GDP per capita, and total population on the other hand. Data included in the analysis represent a synthesis of time series provided by the World Bank (WB, 2014), the International Monetary Fund (IMF, 2014) and FAOSTAT (FAO, 2014).

Primarily, the analysis focuses on the relationship between the development of the share of rural population and the development in the value of the share of agriculture in GDP and the share of agricultural employment in total employment. In this respect, the main paradigm is based on the assumption that it is precisely the economic extent of agriculture (in the context of the economy as a whole) and its ability to generate jobs, which represent the key determinants influencing the development of the share of the population living in rural areas in different countries and regions.

In respect to the methods that have been applied, this article uses elementary statistical calculations (Hindls et al., 2007): the chain index or average growth rate calculated as a geometric mean of individual annual changes, the correlation between the selected variables on the one hand, and the share of rural population on the other hand, elasticity or sensitivity of the proportion of the rural population to the percentage changes in variables. Elasticity in this regard is calculated as function elasticity - that is, the elasticity is calculated by means of a logarithmic regression. Individual regression functions were statistically significant at the alpha level of 0.05.

3 Results and Discussion

One of the main factors influencing the volume and share of a population living in a rural area is agriculture - this is particularly true in relation to developing countries and, also, to a limited extent in relation to developed countries. When we focus on extreme values, we see that among the countries of the world there are large differences in terms of the share of agriculture in GDP - if we focus only on the utmost extremes, it can be demonstrated that countries with the highest share of agriculture in forming the GDP is Sierra Leone (about 56.7%) and, by contrast, the country with the lowest share of Kuwait with 0.46%.

In general, it holds that the share of agriculture contributing to the world GDP is about 3.25%. There is a very strong correlation (0.97) between the development in agriculture and the share of rural population. In the years of 1980 - 2012 the share of agriculture in GDP in the world has reduced from 7.57% to 3.25%, and there was also a reduction in the share of population living in rural areas from 60.63% to 47.45%.

On average, it is valid that when the value of the world agrarian GDP or the share of agrarian GDP in the total GDP value changes by 1%, the share of rural population is then reduced by 0.22% or 0.32% respectively. The relationship between the two variables is inverted. The growth in the share of agricultural GDP generally increases the proportion of the population living in rural areas and vice versa. The following Table 1 illustrates the differences, some extreme, that exist across the countries of the world.

Table 1. Selected regions' and groups of countries' share of agricultural GDP in total GDP and rural population's share in total population

2012	Agriculture, (% of GDP)	Rural population (% of total population)
Low income	28,01481	71,80631
Least developed countries: UN classification	25,70914	71,03992
South Asia	18,30559	68,64726
Pacific island small states	14,18883	63,24425
Sub-Saharan Africa (all income levels)	14,40379	63,1875
Lower middle income	16,77939	61,06287
Caribbean small states	3,618991	56,84921
Small states	4,946084	54,2763
Low & middle income	10,45577	53,59916
Other small states	5,419113	52,36261
Middle income	10,01516	50,45114

World	3,250000	47,45163
East Asia & Pacific (all income levels)	4,296744	46,3885
Arab World	6,203995	42,81434
Upper middle income	7,803353	39,33078
Middle East & North Africa (all income levels)	6,593243	36,82234
Europe & Central Asia (all income levels)	1,949249	29,52986
European Union	1,545382	25,84918
Euro area	1,678347	24,20728
High income: nonOECD	2,304294	22,66187
Latin America & Caribbean (all income levels)	5,321941	20,64487
OECD members	1,533319	19,99692
High income	1,441818	19,79423
High income: OECD	1,388372	19,17451
North America	1,245228	17,55668

Source: WB, 2014

The above data indicate that there are extreme differences between individual groups of countries and regions. The data show that the highest proportion of people living in rural areas can be found in low-income countries and in the least developed countries - generally in the following regions: South Asia, the Pacific, sub-Saharan Africa, the Caribbean and East Asia. In these regions more than 50% of their population live in rural areas. The share of agriculture in GDP of these countries is very high and ranges from 3.6 to 28%.

By contrast, in developed countries - particularly the members of OECD - located mainly in North America and in Europe, the share of people living in the countryside is about 17% or 30% respectively and the share of agriculture in GDP is very low in the range of about 2%. These sorted data indicate that the decline in the share of agriculture in GDP is usually accompanied by a significant reduction of the proportion of the rural population in the total population. In general, this trend can be confirmed for most countries of the world. As the structure of the world economy continues transforming, the transfer of population into urban areas is becoming faster.

In the years of 1980 – 2012 alone there was an increase in the world rural population from about only 2.68 billion people to 3.33 billion people (ie. an average annual growth rate had reached about 1%), while in urban and suburban areas the population increased from 1.74 billion people to more than 3.69 billion people (average annual rate of population growth exceeded 2%). The above results therefore indicate a significantly higher growth rate dynamics of the urban population as compared with the growth rate of rural population.

This extreme has been noticeable in recent years in developing and low-income countries, where the population shift from rural to urban areas is increasingly more dynamic. An important role in this process of this dynamisation is played by a change in the structure of the economy, when during the years of 1980 - 2012 the share of agriculture in GDP has reduced in developing countries (low income - from 37.7% to 28%, lower middle income - from 30.2% to 16.8% middle income - from 22.29% to 10%; upper middle income - from 201% to 7.8%) much more strongly than was the case in developed countries (from 4% to 1.44%) .

Generally, as the process of economic transformation becomes more dynamic and the share of agriculture in GDP is reducing, there is also a reduction in the proportion of the people working in agriculture in the total number of employees - the result of this process is a significant reduction in the proportion of rural population. This decrease is becoming dynamic along with the acceleration of economic transformation process - ie. is dependent on the declining importance of agriculture as a sector contributing to GDP and providing the jobs.

The presented results show that it is the poorest countries of the world where agriculture and hence the proportion of the rural population still maintain high values within the observed indicators. By contrast, in developed countries it is valid that the more advanced the economy is, the lower the share of agriculture in GDP, and the number of jobs in agriculture is also reduced. Subsequently, the proportion of the rural population is also reduced and it is more or less dynamically moved to the cities where there is a greater number of jobs and a significantly higher economic potential. The following Table 2, together with Figures 1 and 2 provide a general overview of the development of the share of rural population in relation to the percentage of employees in the total working population and in relation to the share of agriculture in total GDP.

The data show clearly that in the world - and thus in individual groups of countries - some very significant changes took place during the past three decades. The percentage of people employed in agriculture has declined significantly (from 48.5% to 33%), the share of agriculture in GDP declined from 7.5% to 3.1% and consequently the proportion of rural population also decreased from 60.6% to 47, 45%. This trend concerned all surveyed groups of countries.

Table 2. Development of agricultural GDP's share in total GDP, employment in agriculture and rural population in selected groups of countries – between 1980 – 2012

		Agriculture, (% of GDP)	Employment in agriculture (% of total employment)	Rural population (% of total population)
World	1980	7,569893	48,50209	60,62762
Middle income	1980	22,29382	55,33561	69,16951
High income	1980	4,0717	8,49828	28,3276
Low income	1980	37,67682	73,34948	81,49942
Upper middle income	1980	20,11229	59,68737	66,3193
Lower middle income	1980	30,17217	58,02364	72,52955
World	2012	3,104334	33,21614	47,45163
Middle income	2012	10,01516	35,3158	50,45114
High income	2012	1,441818	3,480646	19,79423
Low income	2012	28,01481	64,62568	71,80631
Upper middle income	2012	7,803353	29,29835	39,33078
Lower middle income	2012	16,77939	43,12014	61,06287

Source: WB, 2014

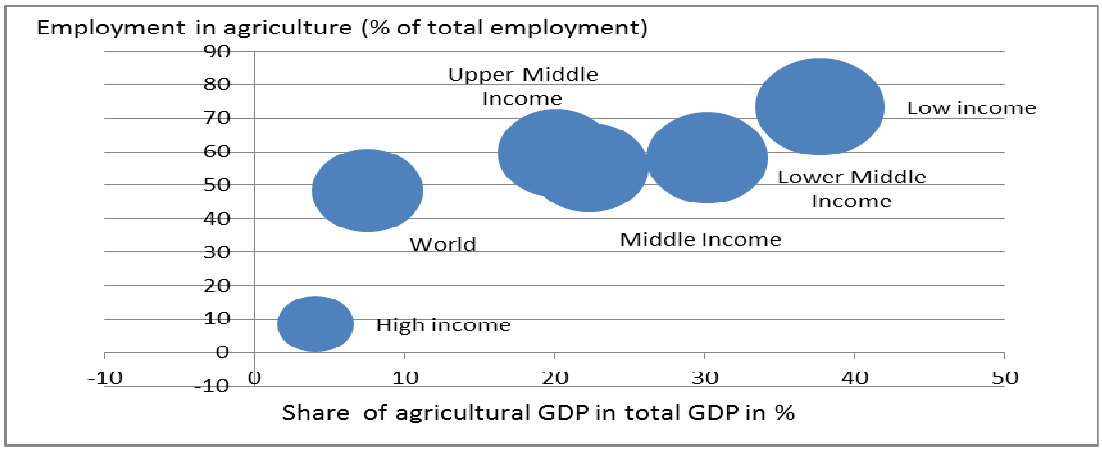


Fig. 1. Individual groups of countries – selected characteristics (agricultural GDP share in total GDP, employment in agriculture and rural population in selected groups of countries) in 1980

Source: Authors's data, WB, 2014

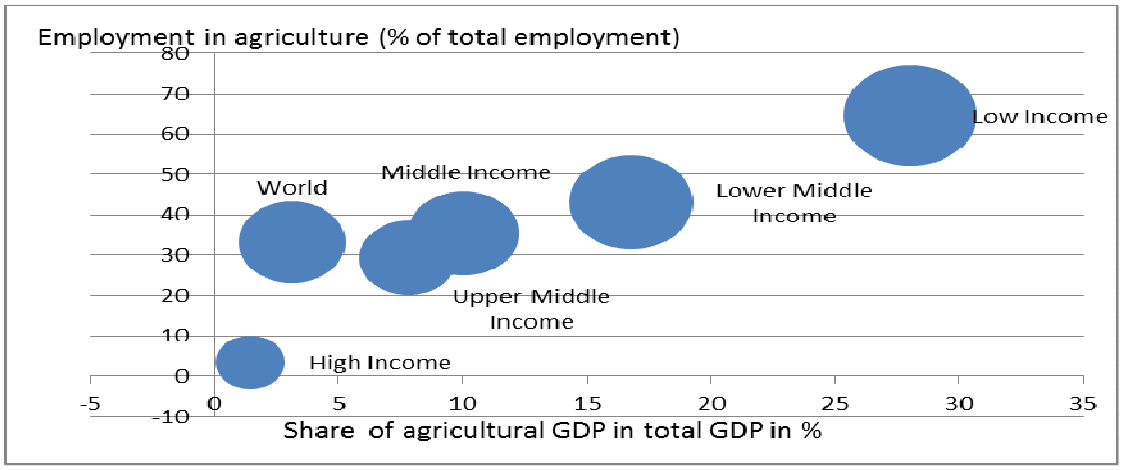


Fig. 2. Individual groups of countries – selected characteristics (agricultural GDP share in total GDP, employment in agriculture and rural population in selected groups of countries) in 2012

Source: Authors's data, WB, 2014

The above two Figures show that the difference between developed and poorest countries of the world has deepened and the analysis also indicates that transitive or newly industrializing economies tend to follow the trend of development in developed countries, where in those regarded as middle income and upper middle income countries the transformation of their economies and societies in recent years has become more dynamic. This had subsequently led to a decline in the importance of agriculture in the economy and was followed by a massive influx of population into the cities.

In this respect it is worth noting the extremely high increase in population living mainly in the big cities of over one million inhabitants. The process of transformation of the settlement structure is largely dependent upon changes in the economy. The analysis shows that there is generally a very strong correlation between the development of the population living in rural areas and the volume of jobs in agriculture and added value generated by agriculture.

The analysis also shows that the overall GDP growth, or growth of GDP per capita, which is much more dynamic outside the agricultural sector, leads to a direct decrease in the proportion

of people living in rural areas (strong negative correlation). From the above therefore follows that with the decline in the share of agriculture in GDP, there is a significant reduction of the rural population – or its share of the total population. This trend is especially typical for East Asia and the Pacific, Europe and Central Asia, the European Union, Latin America, the Middle East and North Africa, North America and South Asia.

This trend does not include only sub-Saharan Africa which, however, is specific by its extreme backwardness and extremely high rate of growth of its own population. Nevertheless, even in the case of this exceptional region it can concluded that the transformation of the economy and the decline in the share of agriculture in GDP over time lead to the growth of cities and urban agglomerations and thus lead to a significant increase in the number of people living in urban areas.

The data generally indicate that it is the GDP share of agriculture and the proportion of jobs in agriculture (in the total GDP or in the total number of jobs in the economy), which have been in the long term increasing in most countries of the world (with the exception of those marked as Low income Lower and middle income) and thus lead to a decline in the attractiveness of rural areas. The result is a gradual decline in the growth rate of the local population, which is lower in the long term, when compared with the growth rate of the population living in cities - as a result of this development two phenomena occur.

The proportion of the population living in rural areas is declining and the existing structure of the population is rapidly aging. Given that the predominantly older generation (parents) remains in rural areas and the younger generation (their children) leaves for the cities, in most regions there are significant changes in terms of demographic structure. Especially in developing countries, cities are getting younger and their population is growing dynamically, while the rural areas have an aging population and an overall stagnation.

The data suggest that an important driver of these changes is the general economic growth (the main source of which lies outside the agricultural sector and rural areas), the growth of individual income per capita (nevertheless, the main source of economic activities is not the rural areas but cities and therefore, people form rural areas naturally migrate to urban and suburban areas). Generally, the growth of the economy (GDP and GDP/capita) has a negative impact on the proportion of the rural population (confirmed at the significance level of alpha 0.05).

This trend is confirmed by the correlation coefficient values, as well as by the values of the functional elasticity (by means of logarithmic regression). The trend is typical for most countries and regions of the world. Generally, the rural population – or its share – is most dynamically reduced in the case of a High income and Upper middle income countries (from 295 mil. (28%) to 252 mil. (19.8%) or from 1,070 mil. (66, 3%) to 940 mil. (39.33%)).

In Middle Income Countries there is an obvious significant stagnation in the growth of the rural population (from 2,064 mil. to 2,470 mil.), which was shown by a particularly strong reduction of the share of the population in the total population (from 69.2% to 50.45%). The strongest dynamics of the physical growth of the rural population is shown by countries designated as Lower middle income (from 993 mil. to 1,530 mil.) and especially the Low Income Countries (from 320 mil. to 608 mil.).

The consequence of this development is their totally unsuitable structure of the economy, in which the primary sectors still play an important role - particularly agriculture and hence also the extraction of mineral resources. Important factors inhibiting transfer of population to the cities is the high rate of the rural population growth, limited ability of the economy to create new jobs, especially in secondary and tertiary sectors, and then also an extremely poor

transport infrastructure. However, despite the growth of the physical number of rural residents, even in these countries it is possible to observe a considerable reduction in their share of the total population (from 72.5% in 1980 to 61% in 2012, or from 81.5% to 72%).

4 Conclusion

Through individual analyses the article focuses on a very topical issue, which currently forms the development of the global economy and society. The results of the analysis of the development of the share of rural population in the total population of the world and selected regions implies the following. The volume and particularly the structure of the global population have changed extremely over the last three decades. The number of people living on Earth has increased from about 4.4 billion to more than 7 billion. The population structure also underwent significant changes.

While at the beginning of the period observed in this study about 2.6 billion people lived in the countryside, at the end of the period it was already 3.33 billion people. Over the years the dynamics of the rural population growth has decreased significantly. The result of this development was a decline in the share of rural population in the total population of the world from 60.6% to about 47.45%. In particular, restructuring of the global economy, which has led to a significant decline in importance in terms of rural economic growth has shown to be a major determinant of the development in time (Jenicek, 2012).

In this regard, there has been a significant reduction in agriculture, which had long constituted a major source of income and employment in rural areas. As the share of agriculture in the global economy fell (by more than half) and the volume of jobs in agriculture decreased – in other words, the proportion of people working in agriculture in the total number of workers in the global economy has reduced - there was a significant decline in the rural population growth and a substantial outflow of this population into urban and suburban areas.

The high dynamics of the transfer of population to urban areas was accelerated particularly by the economic growth coupled with the development of secondary and especially tertiary sectors of the global economy. The main accelerator of the transfer is the growth of the GDP/capita, which is significantly higher in urban areas compared to rural areas (Jenicek, 2011). Regarding the differences existing between countries and regions, it can be said that they are substantial.

The results show that the differences existing between countries and regions in the development of the rural population share, are based mainly on differences in the economy (Jenicek, 2010; Tips, 2014) and the economic prosperity of individual countries or regions. With the growth of non-agricultural GDP, which is generated mainly in urban and suburban area agglomerations, these areas become significantly more attractive, and the inhabitants are progressively moving in from the countryside.

The main obstacles to the transfer are the ability of these areas to generate employment and business opportunities, inadequate infrastructure, limited accommodation capacity (especially in developing countries), and further restrictions placed on the movement of people from rural to urban areas, which exist in some areas of the world (e.g. China). At the present time the most dynamic decline in the rural population share occurs especially in transition and industrializing economies.

In developed countries the decrease in the share of the rural population in the total population is less dynamic. A specific group of countries is represented by the countries designated as Low Income and Lower Middle Income. In these countries it is also possible to see a significant decline in the proportion of rural population, however, this decline is not as

dynamic as in other countries, mainly because of the high rate of population growth (due to high fertility and increased life expectancy - Jenicek, 2010), limited capacity of urban areas, and then also because of the limited ability of the secondary and tertiary sectors to generate employment and other economic opportunities, which are one of the main drivers of urban population growth and falling numbers in the population living in rural areas, or a decline in the rural population share in the total population (Michaels et al. 2012).

Acknowledgements

"This paper was prepared with the financial support of the project “Socio-economic practices of sustainable development in the new industrialization”. The project is funded by the Government of the Russian Federation, Grant 074-U01 and conducted within the ITMO University."

References

Adesina, A. A. (2010) ‘Conditioning trends shaping the agricultural and rural landscape in Africa’, *Agricultural economics*, Vol. 41, No. 1, pp. 73-82.

de Janvry, A. and Sadoulet, E. (2010) ‘Agricultural Growth and Poverty Reduction: Additional Evidence’, *World bank research observer*, Vol. 25, No. 1, pp. 1-20.

Dorosh, P. and Thurlow, J. (2012) ‘Agglomeration, Growth and Regional Equity: An Analysis of Agriculture-versus Urban-led Development in Uganda’, *Journal of African economies*, Vol. 21, No. 1, pp. 94-123.

FAO (2011) ‘The state of food and agriculture’, Food and agricultural organization of United nations, Rome, ISSN 0081-4539

FAO (2014), ‘Faostat database’, available at: http://faostat.fao.org/site/0/Default.aspx

Hindls, R. et al. (2007) ‘*Statistika pro ekonomy’*, Professional publishing, ISBN: 978-80-86946-43-6

Holub, A. (1972) ‘A Brief Review of Structural Development in Developing ECAFE Countries’, *Economic Bulletin for Asia and the Far East*, Vol. 11, No. 1-2 (1970), pp. 4- 9.

IMF (2014), ‘Data and Statistics – database’, available at: http://www.imf.org/external/data.htm

Jenicek, V. (2010) ‘Population problem in the future - challenges, questions’, *Agricultural economics*, Vol. 56, No. 3, pp. 97-107.

Jenicek, V. (2010) ‘World population - development, transition’, *Agricultural economics*, Vol. 56, No. 1, pp. 1-15.

Jenicek, V. (2011) ‘Developing countries: trends, differentiation’, *Agricultural economics*, Vol. 57, No. 4, pp. 175-187.

Jenicek, V. (2012) ‘Globalisation - content, dynamics’, *Agricultural economics*, Vol. 58, No. 3, pp. 127-134.

Lupták, L. and Naxera, V. (2013) ‘Role cukrové třtiny při formování moderního světového systému’, *Listy cukrovarnické a řepařské*, Vol. 129, No. 3, pp. 111 - 113.

Marsden, T., Munton, R., Ward, N., et al. (1996) ‘Agricultural geography and the political economy approach: A review’, *Economic geography*, Vol. 72, No. 4, pp. 361-375.

Michaels, G., Rauch, F. and Redding, S. J. (2012) ‘Urbanization and Structural Transformation’, *Quarterly journal of economics*, Vol. 127, No. 2, pp. 535-586.

Spicka, J. (2014) ‘The regional efficiency of mixed crop and livestock type of farming and its determinants’, *Agris on-line Papers in Economics and Informatics*, Vol. 6, No. 1, pp. 99-109.

WB (2014) ‘World Development Indicators – database’, World Bank, available at: http://data.worldbank.org/data-catalog/world-development-indicators.

Zinchenko, V. V. (2012) ‘The idea of restorative World socioeconomic development and institutional trends in glohbalization’, *Actual problems of economics*, Vol. 1, No. 127, pp. 17-24.

Community-led initiatives in rural finance. What have we forgotten?

Michał Soliwoda[1]

1Department of Agricultural Finance, Institute of Agricultural and Food Economics – National Research Insititute, Świętokrzyska 20, 00-002 Warszawa (Warsaw), POLAND
Michal.Soliwoda@ierigz.waw.pl

Annotation: Collective initiatives have been very important for the agricultural and rural development. The paper aims to discuss selected theoretical and methodological problems concerning the impact of community-led initiatives on financial condition and stability of rural households. The research goals include: (i) to evaluate various forms of collective initiatives, given their possible importance in rural finance; (ii) to identify selected weaknesses and strengths of community-led initiatives (in Poland) from the standpoint of rural finance; (iii) to design a conceptual model describing the role of community-led initiatives concerning improvement of financial stability of rural households. A critical literature overview, a documentary method, comparative analyses were used, whereas sources of secondary data included expertises and governmental reports. Various forms of collective actions may be assessed using criteria concerning the degree of independence of participants, the effect on off-farm income of households, a linkage to the financial infrastructure, the degree of dependence on the state and EU subsidies. Weaknesses of Polish local actions groups (LAGs) in 2007-2011 referred to the principle of reimbursement with the associated lack of access to effective and affordable forms of earlier project financing. Collective actions may raise the financial awareness of participants. The stabilizing effect associated with promoting entrepreneurial forms may significantly reduce the level of the risk of financial and social exclusion.

Key words: rural finance, community-led approach, Leader, collective actions, EU subsidies.

JEL classification: Q14, R51, Q13.

1 Introduction

Cooperation and integration have been always regarded as the fundamental drivers for the development of agricultural sector and rural areas (Meizen-Dick, Di Grigorio and McCarty, 2004; Singh, 2009). For ages, peasants, then farmers, have been participated in various forms of groups or associations (Mazoyer and Roudart, 2006). For example, cooperative movement, backing from the nineteenth century, may be treated as an impetus to the development of various forms of integration of rural inhabitants (Meizen-Dick, Di Grigorio and McCarty, 2004). There is a vast literature on the concept of 'collective actions'[8] (CA), taking various approaches and typologies into consideration. A widely cited work of Olson (2011)[9] sheds light on the importance of CA in providing public goods[10]. Having analysed various types of organisations, Vanni (2014) highlighted that an important issue in analysis of CA is the type of organization. On the other side, Swallow et al. (2002) concluded that at community level,

[8] The definition provided by Encyclopædia Britannica underlines that "a number of people work together to achieve some common objective" (Collective action problem, 2014). For example, according to Marshall (1998), CA may be defined as "the action taken by a group (either directly or on its behalf through an organization) in pursuit of members".

[9] Results from this study has been applied in several areas, including polical sciences and environmentalism.

[10] Olson (2002) stated that rational choice of participants may result in the following situation where individuals who are better equipped with resources will be more burdened in the provision of the public goods. Nevertheless, results based on empirical studies in Japan (Sarker, 2014) indicate that larger organisation may be characterised by better performance as the collection of federated groups.

the results of CA are transparent. This is a consequence of the fact that participants can use local/rural resources in order to ease societal problems. Results from studies conducted by Willy and Holm-Müller (2013) indicate that "neighbourhood social influences, subjective principles, gender, education, educational background farm size, access to credit and livestock ownership" may determine effectiveness of CA, including those relating to environmental problems.

Numerous examples from the developed countries show that a good access to finance services (mainly savings and credits, insurances) could significantly affect the opportunities of poor inhabitants to improve their livelihood and food security (IFAD/FAO, 2009). Key elements of the Empowerment Zone and Enterprise Community (EZ/EC) in the U.S. underlined that a particular attention should be paid to low-income and minority inhabitants and others who are sensitive to social exclusion (Reid and Flora, 2002). Having rethinked the concept of rural development in EU countries, Mantino (2014) indicated the gap referring to institutions in explaining rural development processes. He included the issues concerning the cooperation/conflict relations among stakeholders, as well as the role of governmental supervision. Based on survey data from China, Yang and Liu (2012) found that promoting development of farmer organizations by government may lead to both agricultural specialization and rural income growth. On the other side, findings presented by McDonald et al. (2013) indicate that "partnerships generate networks through micro-processes that enhance collective efficacy and build political capital amongst key policy actors, which are important pre-conditions for effective rural planning and decision making and policy development to distribute resources to address rural problems". This justifies the need for investigation into the role of community-led initiatives in rural finance.

The main aim of this paper is to discuss selected theoretical and methodological problems concerning the impact of community-led initiatives on financial condition and stability of rural households. The research goals are as follows: (i) to evaluate various forms of collective initiatives (including community-led approach), given their possible importance in rural finance; (ii) to identify selected weaknesses and strengths of community-led initiatives (in Poland) from the standpoint of rural finance; (iii) to design a conceptual model describing the role of community-led initiatives concerning improvement of financial stability of rural households. The article concludes with recommendations for policymakers.

2 Materials and Methods

Sources of secondary data included expertises (inter alia, Final Report. Evaluation of the local action groups pursuing local development strategy of the RDP 2007, prepared by PSBP in 2012) and governmental reports (mainly, prepared by Ministerstwo Rolnictwa i Rozwoju Wsi).

The research framework was supported by a combination of various methods: a critical literature review, a documentary method, comparative analyses (i.e. financial comparatistics) as well.

In order to outline the significance of collective initiatives from the standpoint of rural finance, various functions of joint actions, including degree of independence of participants, effect on off-farm income of households, connection with the financial infrastructure (Alińska, 2008), degree of dependence on the state and EU subsidies, impact on stability of income of households, were extracted and evaluated. The financial comparatistics (comparative analysis) was utilized in order to underline selected similarities and differences between various types of organisations. The comparative finance (*vergleichende Finanzen*) leads to formulating patterns of interpretations and is a basis for conclusions. Selecting the

most suitable method of comparing results from comparative goals and functions performed by these goals as well (Flejterski and Solarz, 2015).

The next step was to extract key strengths and weaknesses of community-led initiatives, based on secondary data (experts' and governmental reports). This part of study included a short description of local action groups (LAGs) as the element of the Rural Development Programme 2007-2013 in Poland.

The last step was to design a conceptual model focusing on the functions of community-led initatives. Having indicated differences between traditional and new approach to rural finance, the conceptual model built by Zeller et al. (1997) was updated. According to Schumann and Ardia (2011), heuristic methods, including conceptual modelling, may be useful in presenting financial theory. The contribution of the author was to extend the block describing characteristics of members of community-led actions. The conceptual model presented (in a very detailed way) a mechanism how community-led initiatives may be beneficial from the standpoint of the concept of 'safety net' on rural areas. This model referred to a holistic approach to rural finance, including the importance of social policy, economic psychology and other economic disciplines. Furthermore, a transfer of concepts from other social disciplines was utilised.

3 Results and Discussion

3.1 Importance of collective initiatives from the standpoint of rural finance

As shown in table 1, various forms of collective actions (informal networks, neighborhood groups, producer groups, associations, labour unions, charities, cooperatives) may be assessed using criteria concerning the degree of independence of participants, the effect on off-farm income of households, a connection with a financial infrastructure, the degree of dependence on state and the state and EU subsidies. It should be noted that the increasing level of formalization of organizations is associated with a turn to the forms close to corporations (e.g. agricultural cooperatives). Members of organization lose their autonomy, to give greater social security, as well as considerable bargaining power of the groups. Collective actions have been recognized as an important driver that may be useful for the provision of agri-environmental public goods through agriculture (Vanni, 2014). Polman, Slangen and van Huylenbroeck (2011) stated that environmental co-operatives may be regarded as "a form of 'club' providing public goods and other benefits to a wide society". Main results correspond to findings of Majerová, Kment and Sálus (2013) who highlighted that economic crisis on rural areas may be eased by entrepreneurship, with a respect to "the rural space uniqueness and the diversity of the individual activities".

It should be stated a relatively good financial performance of rural non-farm households in EU countries (in comparison with developing countries) hinders progress in the dissemination of various models based on collective actions. Although informal networks and neighborhood groups are weakly linked to the financial institutions and the system of EU subsidies, these organizations cannot be ignored in the circulation of cash flows in rural areas, especially in the poorer Member States (MS). The Leader approach base on the autonomy of participants. This leads to a relatively medium impact on the financial stability of rural households.

Table 1. Collective initiatives from the standpoint of rural finance

Type of collective initiative	Degree of independence of participants	Effect on off-farm income of housholds	Linkage to the financial infrastruture	Degree of dependence on the state and EU subsidies	Impact on stability of income of households
Informal networks	+++	+	⇔	⇔[A]	++
Neighbourhood groups	++	+	⇔	⇔[A]	++
Producer groups	++	++	++	+++	++
Associations	++	+	++	++	+
Labour unions	++	⇔	+	⇔	+
Charities	+++	+	⇔	++	+
Cooperatives	+	++	+++	++	++

Explanation: The number of + indicates the strength of dependency.The sign ⇔ shows diffculties in assesing the impact; [A] – individual memebers (as farmers) of informal networks or neighbourhood groups may benefit from EU subsidies.

Source: own studies.

3.2 Weaknesses and strengths of community-led initiatives in Poland

It should be stated that in the financial perspective (years 2007-2013), rural development policy in Poland was implemented through the Rural Development Programme 2007-2013 (RDP 2007-2013). Total budget of this programme amounted to 17.2 billion euro, of which 13.2 billion from the European Agricultural Fund for Rural Development (EAFRD) (Ministerstwo Rolnictwa i Rozwoju Wsi, 2009).

Budgets of local action groups (LAGs) depend on the number of residents registered for permanent residence in the area of LAGs[11]. The implementation of the local development strategy of the LAG had at its disposal the amount equal to a product of the number of inhabitants and the rate of 116 PLN. In addition, the LAG could receive 29 PLN/capita for coverage of operating costs. Besides, they may get 3 PLN capita for financing cooperation projects. The largest part of budgets of 110 surveyed LAGs (37%) were allocated to projects

[11] It should be underlined that seven following features of the Leader approach describe the essence of this rural policy measure: (1) area-based local development strategies; (2) bottom-up approach; (3) public–private partnerships: the local action groups (LAGs); (4) facilitating innovation; (5) integrated and multi-sectoral actions; (6) networking; (7) cooperation. Moreover, LAGs decide on the specifics of financial processes, thus they may play as key actors in rural finance. The main feature of LAGs lies in the fact that public organisations (national agencies, in Poland - Agency for Restructuring and Modernisation of Agriculture, ARMA) may delegate a large proportion of responsibilities concerning managerial (including) financial measures directed to rural areas. This refers to payment, monitoring, control and evaluation tasks. The financial policy of LAGs may be partly based on grants co-financed by EU and national public funds (European Commission, 2006). The main concept of LAGs involves a high level of autonomy and utilization local resources; openness to innovative ideas, integrating separate sectoral approaches (European Commission, 2006).

within the action "Rural renewal and development". Moreover, about 22% of their budgets supported of the implementation of “Small Projects”. Expenditures for the implementation of "Diversification into non-agricultural activities" and "Creation and development of micro-enterprises" respectively accounted for 10% of budgets (Ministerstwo Rolnictwa i Rozwoju Wsi, 2009).

Main weaknesses of LAGs in 2007-2011 (from the perspective of rural finance) include (PSDB, 2012):

- the lack of motivation and commitment to the as the most significant difficulty for the partnerships (as a result of low level of social capital);
- the significant part of initiative of LAGs was prepared without public consultations, so the part of proposed projects do not always reflect the financial needs of the rural communities (for example, barriers to obtaining non-agricultural income);
- an excessive visibility of the public sector (resulted from the strong dependence of LAGs from municipal contributions), on the other hand, low participation of the private economic sector; this refers also to serious administrative problems (as threats): an expanded bureaucracy (European Court of Auditors, 2010), complicated procedures, the principle of reimbursement with the associated lack of access to effective and affordable forms of earlier project financing[12].

Key strengths of LAGs relate to (PSDB, 2012):

- a territorial approach (referring to the issue of consistency of local communities) - larger LAGs (in terms of the population), covering several municipalities are more effective in allocating financial resources for the development of local communities;
- a partnership approach – the number of partners/members from the social sector is still growing, this leads to proposing projects oriented to real needs of rural inhabitants;
- larger LAGs may be described by higher indexes of effectiveness, partnership and local community development than smaller groups; this results from economies of size and “bargaining power”.

The main dilemma concerning the impact of the LAG on the condition of rural finance is associated with the general effectiveness of their activities. Generally, this refers to the answer to the question "How much participation of local members vs. central control?”. The increased flexibility at the cost of smaller competences within financial policy may also be troublesome.

3.3 Conceptual model: community-led initiatives vs. financial stability of rural households

The conceptual model is based on a new approach to rural finance, proposing income expansion and poverty reduction of rural inhabitants. This stems from a logical connection between of various groups of determinants. As presented in table 2, a proposed model refers to a new approach to rural finance. This means that community-led initiatives are oriented to “creating more favourable policy” and a supportive framework that can stimulate the development of entrepreneurship in rural areas. Due to higher level of management autonomy

[12] Some problems with eligibility of costs were recorded. This referred to small projects within LEADER Programme. On the other hand, bigger LAGs which have a larger budget (over PLN 2 million) operated more effectively and were able to activate local community to a greater extent (PSDB, 2012).

and accountability for the performance of Rural Finance Institution (RFIs) community-led initiatives lead to greater outreach and higher level of self-sustainability.

Table 2. New vs. traditional approach to rural finance

Traditional approach	New approach
Main goals	
▪ Income growth and income expansion ▪ Poverty reduction	▪ Income growth ▪ Poverty reduction
Working assumptions	
▪ Accelarated economith growth based on the significant role of interventionism ▪ Small farmers and rural entrepreneurs cannot save ▪ Access to licenced credits and loans as a crucial factor for growth and poverty reduction	▪ Accelarated economith growth based on the increased competition of financial markets ▪ Small farmers and rural entrepreneurs want and can accumulate savings ▪ Access to non-subsidised financial services as a basis for growth and poverty reduction
Various variables and results of policies	
▪ Under-investment in rural infrastructure is acceptable ▪ Rural non-agricultural entrepreneurs have a limited access to financial services which hampers the development of rural economy ▪ RFIs' results are evaluated on the basis of the traditional indicators of financial viability, ignoring the costs of subsidies, the actual maintenance costs are not known.	▪ Improvement of rural infrastructure, education and health facilities as the necessary conditions ▪ All rural entrepreneurs have access to financial services ▪ Rural Finacial Institutions (RFIs) are autonomous in the implementation of effective operational methods. ▪ Supporting building institutions and improving financial discipline ▪ Performance of RFIs is assessed as reaching target customers, as well as financial self-sufficiency

Source: adapted from Yaron, Benjamin and Piprek, 1997.

Figure A1 (Appendix) shows the conceptual model referring to the role of community-led actions (initiatives). Based on a new approach a rural finance (Yaron, Benjamin and Piprek, 1997), community-led initatives (e.g. LAGs) may have a positive impact on financial condition of rural households. The starting point for designing the conceptual model was the flow chart presented by Zeller et al. (1997) who underlined the pathways to improve food security. However, economists do not analyze thoroughly the role of community-led initiatives. Participation in community-led initiatives leads to improvement of financial stability through better financial education of decision-makers from rural households. On the other hand, rural inhabitants who are engaged in LAGs know how to find easy access to financial services. The concept of LAG is based on entrepreneurial potential activation in rural areas. This, this leads to a greater diversification of households' income. It should be noted that the impact of community-led actions on financial stability depends a set of psychological determinants that affect risk preferences and willingness to participate in group actions. Thus, this leads to greater diversification of households' income. Households with part-time farming may benefit from linkage to LAGs. Whereas organizations based on the

approach represented by microfinance institutions are oriented to the needs of the poor (Matthäus-Maier I. and von Pischke J.D. (eds.), 2009), the concept of LAGs is only indirectly related to the financial infrastructure. This corresponds to a participatory approach with a wide range of impacts on rural development.

4 Conclusion

Collective actions (mainly based on community-led approach) may raise the financial awareness of participants. It should be underlined that the stabilizing effect associated with promoting entrepreneurial forms may significantly reduce the level of the risk of financial and social exclusion. A relatively good financial performance of rural non-farm households in EU countries (in comparison with developing countries) weakens a linkage of collective actions to the financial infrastructure. The main dilemma concerning the impact of the LAGs on the condition of rural finance is associated with their effectiveness. It should be noted that the impact of community-led actions on financial stability depends a set of psychological determinants that affect risk preferences and willingness to participate in group actions. The involvement in community-led initiatives corresponds to the concept of the 'safety net' on rural areas. The impact of LAGs on the financial condition of rural households is limited by administrative problems and too strong participation of the public sector. On the other hand, a significant problem concerning trade-off between flexibility and the scope of competences related to the financing of projects may be identified.

The traditional research approach in rural finance involved questionnaire surveys and in-depth interviews, as well as case studies. The interdisciplinary nature of the research topic may lead to the use of economic experiment. This will create the basis for recognition heuristics, algorithms of decision-making in rural households. A systematic approach for analysis how community-led initiatives may affect financial condition of rural households of participants is strongly recommended: in-depth empirical studies should be based on a combination of techniques (including Data Mining) and detailed surveys.

The LEADER approach as EU measure for local rural development may contribute to the dissemination of various forms of collective-led approach. Actions oriented to human capital should be managed to a greater degree by LAGs., whereas investment projects outght to be controlled to a large extent by the paying agency (ARMA) and provincial governments. LAGs should continue to act as consulting, training centers that are oriented to local community activation (PSDB, 2012).

References

Alińska, A. (2008) *Instytucje mikrofinansowe w lokalnym rozwoju społeczno-gospodarczym (Microfinance Institutions in a Local Socio-Economic Development):* Warsaw: Szkoła Główna Handlowa w Warszawie.

Collective action problem (2014). In Encyclopædia Britannica. Retrieved from http://www.britannica.com/EBchecked/topic/1917157/collective-action-problem/309135/Incentives-and-disincentives-of-collective-action, [access data: 01.09.2014].

European Commission (2006), *The Leader Approach. A basic guide.*

European Court of Auditors (2010), *Implementation of The Leader Approach for Rural Development*, Special Report No 5/2010.

Flejterski, S. and Solarz, J. K. (2015) *Komparystyka finansów (Comparatistics in Finance)*, Warsaw: C.H. Beck.

IFAD/FAO Grant Programme for Regional Gender Capacity and Knowledge (2009), *Gender and Rural Finance: Reaching and Empowering Women*.

Majerová, V, Kment, P. and Sálus J. (2013) 'Economic crisis in rural areas of the Czech Republic and Slovakia' in Kowalski, A., Chmieliński, P. and Wigier M. (ed.) *Economic, social and institutional factors in the growth of agri-food sector in Europe*, Warsaw: IAFE-NRI.

Mantino, F. (2014) 'Rethinking rural development approaches and their relations with agricultural and agro-food local systems', Italian Association of Agricultural and Applied Economics, Congress Papers 2014, Third Congress, June 25-27, 2014, Alghero, Italy, pp. 1-36.

Matthäus-Maier I. and von Pischke J. D. (eds.) (2009), *New Partnerships for Innovation in Microfinance*, Berlin Heidelberg: Springer-Verlag.

Mazoyer, M. and Roudart, L. (2006) *A history of world agriculture: from the neolithic age to the current crisis*, London: Earthscan.

Meinzen-Dick, R., DiGregorio, M. and McCarthy, N. (2004), 'Methods for Studying Collective Action in Rural Development', *Agricultural Systems*, vol. 82, iss. 3, pp. 197–214.

Ministerstwo Rolnictwa i Rozwoju Wsi (2009), *Oś IV PROW 2007 – 2013 – Lokalne Grupy Działania i Lokalne Strategie Rozwoju* (*Axis IV of the RDP 2007 - 2013 - Local Action Groups and Local Development Strategies*).

Olson, M. (2011) *The Logic of Collective Action*, Cambridge: Harvard University Press.

Polman, N., Slangen L. and van Huylenbroeck, G. (2011), 'Collective approaches to agri-environmental problems' in Oskam, A., Meester, G. and Silvis H. (eds.), *EU Policy for agriculture, food and rural areas*, Wageningen: Wageningen Academic Publishers.

PSDB (2012) *Raport końcowy. Ocena funkcjonowania lokalnych grup działania realizujących lokalną strategię rozwoju w ramach PROW 2007 – 2013 (Final Report. Evaluation of the local action groups pursuing local development strategy of the RDP 2007 – 2013)*, Warszawa.

Reid, J. N. and Flora, C. B. (2002) 'Advancing knowledge and capacity for community-led development', Agricultural Outlook Forum 2002 Presented: February 22, 2002, pp. 1-28.

Schumann, E. and Ardia, D. (2011) 'Heuristic Methods in Finance', *The Statistical Computing & Statistical Graphics Newsletter*, Vol. 22, 2011, pp. 13-19.

Singh, K. (2009) *Rural Development: Principles, Policies and Management*, London: SAGE Publications Ltd.

Swallow, B. M., Garrity, D. P. and Van Noordwijk M. (2002) 'The effects of scales, flows and filters on property rights and collective action in watershed management', *Water Policy*, 3 (2002), pp. 457–474.

Vanni, F. (2014) *Agriculture and Public Goods. The Role of Collective Action*, Dordrecht: Spinger Science + Business Media Dordrecht.

Willy, D. K. and Holm-Müller K. (2013) 'Social influence and collective action effects on farm level soil conservation effort in rural Kenya', *Ecological Economics*, vol. 90, June 2013, pp. 94–103.

Yang, D. and Liu, Z. (2012) 'Does farmer economic organization and agricultural specialization improve rural income? Evidence from China', *Economic Modelling*, vol. 29, iss. 3, May 2012, pp. 990-993.

Yaron J., Benjamin M. P. and Piprek G. L. (1997) *Rural Finance, Issues, Design, and Best Practices*, Washington: The World Bank.

Zeller M., Schrieder G., von Braun J. and Heidhues F. (1997) *Rural Finance for Food Security for the Poor. Implications for Research and Policy*, Washington: International Food Policy Research Institute.

Appendix

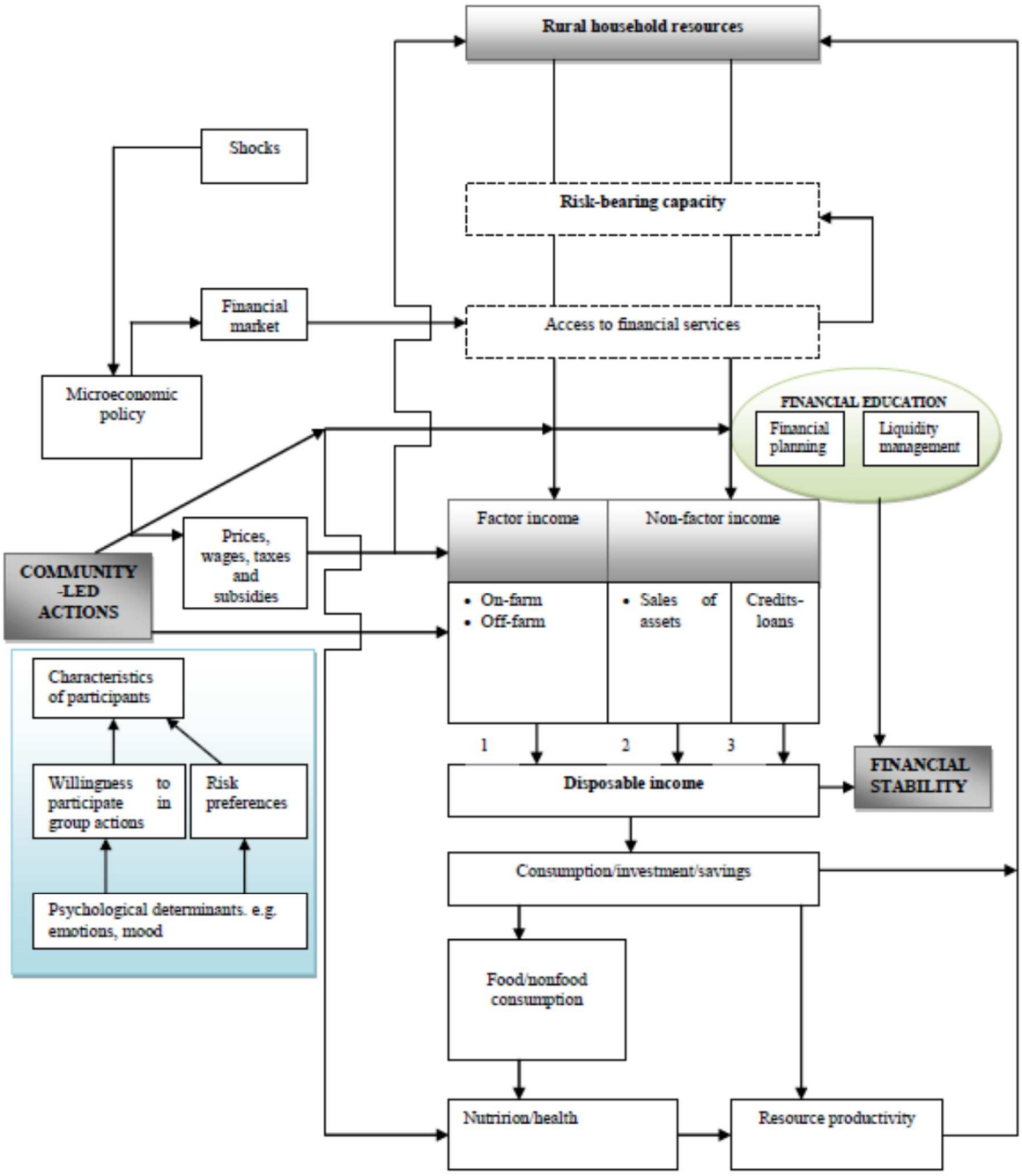


Fig. A1. Conceptual model describing the role of community-led initiatives for rural finance

Source: own studies, adaptation from Zeller et al, 1997 was implemented.

Does the rural development come along with the reduction of differences in labor costs among agricultural holdings in the Czech Republic in 2008-2011?

Jana Steklá[1], Marta Gryčová[2]

[1]Deparment of Economics, Faculty of Economics and Management, Czech University of Life Sciences in Prague, Kamýcká 129, 165 21 Praha 6 - Suchdol, Czech Republic
stekla@pef.czu.cz

[2]Deparment of Economics, Faculty of Economics and Management, Czech University of Life Sciences in Prague, Kamýcká 129, 165 21 Praha 6 - Suchdol, Czech Republic
grycova@pef.czu.cz

Annotation: Does regional development in the agricultural sector for cooperatives comes along with the reduction of differences in labor costs in the specific region among agricultural holdings? The aim of this paper is to find out the coincidence of regional development and labor costs to output ratio disparity and to assess the correlation of the calculated ratios of labor costs and capital employed to output for cooperatives across the Czech regions using the data from 2008 to 2011. The region with highest positive disparity from the average of labor costs to output ratio and capital employed to output ratio during the monitored period is Karlovy Vary region and the region with highest negative disparity is Prague. The highest positive disparity in labor costs to capital employed ratios from the average during the period is in Karlovy Vary region and biggest negative disparity from the average of labor costs to capital employed ratio is in Hradec Králové. The correlation coefficients reveal the coincidence of the direct connection between the labor costs and the value of capital employed per unit of output for the region of Prague and Karlovy Vary. The values of the mentioned indicators for these two regions are also mostly negatively correlated to the rest of the regions.

Key words: labor costs, capital employed, output, agricultural sector, cooperatives

JEL classification: D24, J43, Q13

1 Introduction

The agricultural sector is an important part of the national economy and has its own specifics. Its specificities are mainly seasonal nature of production and dependence on natural conditions. These specifics are reflected in the economic results of farm enterprises, thereby affecting their capital structure and especially then their labor costs. The problem of the inter-industry differences of labor costs in the agricultural sector has been prolonged and well-known mainly for the agricultural sector due to its specific characteristics of the agricultural production and seasonal workforce. However, less monitored intra-industry labor costs differences that are the main subject of this paper could be more interesting for the analysis and countable for the uncovering of the reasons behind the labor costs differences among cooperatives in different regions.

The simplest measure of labor costs, and one which receives much attention in the popular press, is based on wage rates or total compensation. However, differences in compensation often reflect productivity tend to have high labor compensation. Most studies of comparative labor costs therefore focus on unit labor costs, defined as total compensation per hour employed, divided by productivity, or total output per hour (Hooper, Larin, 1988; Botos, Herod, 2013). Competitiveness, especially in agricultural sector, could be measured by assessing a country's success in exporting certain types of goods and services. Two recent studies have measured the sensitivity of countries' export performance to changes in labor

costs (Carlin, Glyn, Reenen, 2001; Páges, Ruíz-Núňez, 2001). To avoid the problem that higher wages are just a measure of higher labor productivity, and therefore not of higher labor costs, both studies distinguished between the raw cost of labor (that is, wages and other non-wage components of labor costs) and productivity-adjusted wage measures. These measures adjust labor costs for the fact that some workers are more productive than others, either because they have more and better capital to produce, because they make more of an effort, or because the technology used by some plants is more efficient than others. The most widely used productivity-adjusted measure is the unit labor cost. This measure divides nominal wages by the average productivity of a worker (Inter-American Development Bank, 2001). The literature highlights a large range of factors that determine regional wage inequalities, for example specific labor market aspects, human capital differentials, general regional characteristics that may attract or reject firms and employees etc. From the employers' point of view, human capital differentials, that translate into labor productivity inequalities, represent a key determinant of territorial differences in wages (Goschin, 2014). The close relationship between labor productivity and wage is a long-running theme in economics, addressed both in theoretical and empirical studies. Most empirical studies confirm their tendency to correlate (Fisher, Hostland, 2002; Feldstein, 2008), given that productivity growth may exceed average wage growth or not, depending on country and period of time (Sharpe et al., 2008).

As regards the relationship between wages and productivity (or more specifically, the relationship between wage growth and productivity growth), it has become one of particular policy relevance in recent years (Meager, Speckesser, 2011). As the International Labor Organization has observed – Balanced trade requires that wages should grow in line with national productivity. Otherwise counties with relative higher growth in unit labor costs will systematically lose market share and build up trade deficits. The case for a coordinated wage policy to avoid imbalances is analyzed in Hoffer, Spiecker (2011). The effect of an increase in unit labor cost is much larger in low-technology industries, which presumably depend more on low-skilled labor (Inter-American Development Bank, 2001). Kwok and Leland (1982) focused on asymmetric information in the labor market as the reason of brain draining, by showing that wage differentials among countries or areas is only a consequence and not cause of this phenomenon. On the other hand, Miyagiwa (1991) emphasized the importance of scale economy in education in attracting skilled workers of places with significant concentration of qualified labor force. According to this author, the scale effect in education improves productivity, and hence skilled people income in a region showing significant skilled labor agglomeration. This fact, as he put it, explained wage differentials among regions. It is also described in Freguglia, Conçalaves and Ribeiro da Silva (2014).

Firms, obviously, do care about labor costs because they track the relationship between their total labor costs and how productive workers are. If a firm's labor cost increases, most likely it will lose market share and its growth expectations will be negatively affected. The solution to this problem is a combination of wage restraint and labor productivity increase; it is usually achieved by introducing labor-saving techniques that are profitable (Felipe, Kumar, 2011). In the 1930s, 40s and 50s the topic of the functional distribution of income was frequently debated and economists were trying to measure and understand the shares of labor and capital (Giovannoni, 2014).

The goal of the paper is to assess the differences between the agricultural holdings, primarily cooperatives, among Czech regions (NUTS3) and to try to find out the correlation between the indicators of the value of labor costs relative to the total output of the cooperative (labor costs per one unit of output) and total capital employed in the firm for respective regions.

2 Materials and Methods

Data were obtained from the database Albertina for time series 2008 – 2011. After cleaning the data file (because of duplicates or incomplete information accounts) were analyzed 527 cooperatives (5 in Prague, 81 in South Bohemia Region, 49 in South Moravia Region, 4 in Karlovy Vary Region, 104 in Vysočina Region, 39 in Hradec Králové Region, 16 in Liberec Region, 18 in Moravia-Silesia Region, 43 in Olomouc Region, 32 in Pardubice Region, 30 in Plzeň Region, 63 in Central Bohemia Region, 13 in Ústí Region and 30 in Zlín Region). They were selected businesses focusing their activities on crop and agriculture production. For the purpose of the analysis the regions are divided with respect to their GDP per capita (average of 2008-2011) with Prague region on the top, then all other regions below the average during the monitored period and the worst value is for Karlovy Vary region.

The methodology in this paper consists of two main steps: firstly the calculation of the ratios Labor costs to output ratio (L/O), Capital employed to output ratio (K/O) and Labor costs to capital employed ratio (L/K) and their differences from average among cooperatives across the regions and secondly the correlation of the ratios with respect to the regional perspective using Pearson Correlation coefficient (King, Rosopa, Minium, 2011, Sharma, 2005). Pearson Correlation coefficient is a statistical measure of the strength of a linear correlation between two variables X and Y. It is giving a value between +1 and -1 inclusive, where 1 is total positive correlation, 0 is no correlation, and -1 is total negative correlation. Pearson's Correlation coefficient between two variables is defined as the covariance of the two variables divided by the product of their standard deviations.

Pearson's correlation coefficient (Sharma, 2005) when applied to a sample is commonly represented by the letter r. It is possible to obtain a formula for r by substituting estimates of covariances and variances. That formula for Pearson's correlation coefficient is:

$$r = \frac{\sum_{i=1}^{n}\left(X_i - \overline{X}\right)\cdot\left(Y_i - \overline{Y}\right)}{\sqrt{\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2}\sqrt{\sum_{i=1}^{n}\left(Y_i - \overline{Y}\right)^2}} \quad (1)$$

$$r = \frac{1}{n-1}\sum_{i=1}^{n}\left(\frac{X_i - \overline{X}}{s_X}\right)\cdot\left(\frac{Y_i - \overline{Y}}{s_Y}\right) \quad (2)$$

For the first formula (1) and the second formula (2), the sample mean is:

$$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i \quad (3)$$

For the second formula (2), the sample standard deviation is:

$$s_X = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2} \quad (4)$$

The main hypotheses of this paper are based on the idea that there is also a lower or negative labor costs disparity in the regions with high GDP per capita that means higher productivity from lower labor costs. Also the regions that have similar wealth pattern should have their ratios more positively correlated.

3 Results and Discussion

In the first part of this section the summary statistics of the calculated ratios of labor costs to output, capital employed to output and labor costs to capital employed are showed. Then the correlation coefficients for the respective regions and ratios are presented.

Selected summary statistics of the calculated L/O, K/O and L/K ratios. The table no. 1 consists of the average values, standard errors of the labor costs to output (L/O), capital employed to output (K/O) and labor costs to capital employed (L/K) ratios for the agricultural cooperatives in all Czech NUTS3 regions and also their disparity from the average value of the calculated ratios for the Czech Republic during the period of 2008-2011. As supposed and according to the theory Prague has the lowest, resp. highest negative, disparity in labor costs to output and capital employed to output ratios, but for the labor costs to capital employed ratio the highest negative disparity Karlovy Vary region has the highest positive disparity in all three ratios.

Table 1. Selected summary statistics of the calculated L/O and K/O ratios for the Czech agr. coop., 2008-2011

Region	Average of the L/O ratio	Stand. error of L/O	Disparity (difference between each L/O ratio and total average L/O ratio (=0,2298)	Average of the K/O	Stand. error of K/O	Disparity (difference between each K/O ratio and total average K/O ratio (=2,1387)	Average of the L/K	Stand. error of L/K	Disparity (difference between each L/K ratio and total average L/K ratio (=0,1094)
Prague	0.1063	0.0217	**-0.1235**	0.9162	0.1269	**-1.2225**	0.1195	0.0304	0.0100
Central Bohemia	0.2002	0.0212	-0.0297	2.0189	0.2029	-0.1198	0.0992	0.0038	-0.0103
South Bohemia	0.2372	0.0234	0.074	2.3398	0.2271	0.2012	0.1014	0.0019	-0.0080
Plzeň Region	0.2716	0.0305	0.0417	2.2709	0.2805	0.1322	0.1197	0.0019	0.0103
Karlovy Vary	0.3629	0.0230	**0.1330**	2.7315	1.3587	**0.5928**	0.1560	0.0466	**0.0466**
Ústí	0.2671	0.0273	0.0373	2.1005	0.1705	-0.0382	0.1272	0.0073	0.0177
Liberec	0.3018	0.0311	0.0720	2.4644	0.2676	0.3258	0.1225	0.0008	0.0131
Hradec Králové	0.2052	0.0106	-0.0246	2.5006	0.1781	0.3619	0.0823	0.0044	**-0.0272**
Pardubice	0.2047	0.0170	-0.0251	2.0306	0.1953	-0.1081	0.1010	0.0026	-0.0085
Vysočina	0.2192	0.0183	-0.1016	2.0145	0.1863	-0.1242	0.1090	0.0038	-0.0005
South Moravia	0.1733	0.0199	-0.0565	1.9081	0.1424	-0.2306	0.0906	0.0051	-0.0188
Zlín	0.2266	0.0220	-0.0033	2.4985	0.2853	0.3598	0.0909	0.0021	-0.0185
Olomouc	0.2056	0.0198	-0.0243	2.0728	0.1865	-0.0658	0.0992	0.0032	-0.0102
Moravia-Silesia	0.2360	0.0270	0.0061	2.0741	0.2290	-0.0646	0.1138	0.0038	0.0043

Correlation coefficients. The table no. 2 contains the correlation coefficients for the labor costs to output ratios for the agricultural cooperatives in all Czech NUTS3 regions during the period of 2008-2011. In the case of the L/O ratio Prague region as the above average of GDP per capita region has nearly no or only low correlation with other Czech regions except for Karlovy Vary region that is the opposite region to Prague in terms of GDP per capita so that it has negative correlation with Prague (the correlation coefficient in this case is equal to -0.75). The rest of regions are quite highly positively correlated among each other.

Table 2. Correlation coefficients of L/O ratio for the Czech agr. coop., 2008-2011, Gretl ouptut

	Prag	Centr. Boh.	South Boh.	Plzeň	Karl. Vary	Ústí	Liberec	Hradec Kr.	Pardubice	Vysočina	South Mor.	Zlín	Olomouc	Mor.-Silesia
Prag.	1,000	0,002	**-0,039**	**-0,073**	**-0,750**	0,006	0,059	**-0,246**	0,006	0,072	**-0,302**	**-0,009**	**-0,011**	0,035
Centr.Boh.		1,000	0,999	0,955	0,517	0,982	0,997	0,894	0,999	0,871	0,888	0,980	0,988	0,992
SouthBoh.			1,000	0,966	0,560	0,975	0,995	0,914	0,996	0,882	0,910	0,973	0,982	0,986
Plzeň				1,000	0,668	0,885	0,962	0,979	0,941	0,966	0,970	0,881	0,900	0,912
Karl.Vary					1,000	0,429	0,492	0,802	0,495	0,598	0,829	0,434	0,457	0,440
Ústí						1,000	0,971	0,808	0,990	0,766	0,807	1,000	0,999	0,997
Liberec							1,000	0,895	0,994	0,896	0,885	0,968	0,977	0,986
HradecKr.								1,000	0,874	0,943	0,998	0,805	0,828	0,835
Pardubice									1,000	0,848	0,870	0,988	0,994	0,997
Vysočina										1,000	0,920	0,757	0,784	0,809
SouthMor.											1,000	0,806	0,827	0,831
Zlín												1,000	0,999	0,996
Olomouc													1,000	0,998
Mor.-Silesia														1,000

The table no. 3 shows the correlation coefficients for the capital employed to output ratios for the agricultural cooperatives in all Czech NUTS3 regions during the period of 2008-2011. In the case of the K/O ratio Prague region has little bit higher negative correlation with other Czech regions, but still below 0.8 except for Ústí region, but positive correlation with Karlovy Vary that has negative correlation to the rest of the regions. The reason might be that the development of K/O ratio in time can be similar even the values for K and O might be quite different. The rest of regions are quite highly positively correlated among each other.

Table 3. Correlation coefficients of K/O ratio for the Czech agr. coop., 2008-2011, Gretl ouptut

	Prag	Centr. Boh.	South Boh.	Plzeň	Karl. Vary	Ústí	Liberec	Hradec Kr.	Pardubice	Vysočina	South Mor.	Zlín	Olomouc	Mor.-Silesia
Prag.	1,000	**-0,631**	**-0,538**	**-0,103**	0,824	**-0,871**	**-0,437**	**-0,689**	**-0,563**	**-0,053**	**-0,271**	**-0,660**	**-0,731**	**-0,725**
Centr.Boh.		1,000	0,975	0,831	**-0,614**	0,924	0,962	0,995	0,995	0,753	0,913	0,968	0,986	0,984
SouthBoh.			1,000	0,888	**-0,434**	0,847	0,992	0,975	0,991	0,715	0,952	0,986	0,965	0,969
Plzeň				1,000	**-0,141**	0,557	0,938	0,791	0,879	0,878	0,985	0,798	0,754	0,758
Karl.Vary					1,000	**-0,826**	**-0,377**	**-0,622**	**-0,529**	**-0,363**	**-0,276**	**-0,495**	**-0,635**	**-0,616**
Ústí						1,000	0,793	0,944	0,883	0,528	0,688	0,896	0,956	0,949
Liberec							1,000	0,950	0,985	0,782	0,983	0,957	0,932	0,936
HradecKr.								1,000	0,987	0,683	0,884	0,983	0,998	0,997
Pardubice									1,000	0,769	0,947	0,973	0,975	0,975
Vysočina										1,000	0,856	0,602	0,632	0,624
SouthMor.											1,000	0,886	0,855	0,859
Zlín												1,000	0,985	0,989
Olomouc													1,000	1,000
Mor.-Silesia														1,000

The table no. 4 lists the correlation coefficients for the labor costs to capital employed ratios (as the ratios of L/O and K/O) for the agricultural cooperatives in all Czech NUTS3 regions during the period of 2008-2011. Prague region has quite high significant negative correlation with other Czech regions except for Karlovy Vary with which it has positive correlation (the correlation coefficient in this case is equal to 0.988). Also Karlovy Vary has again negative correlation coefficients with other regions. The rest of regions are quite highly positively correlated among each other.

Table 4. Correlation coefficients of L/K ratio for the Czech agr. coop., 2008-2011, Gretl ouptut

	Prag	Centr. Boh.	South Boh.	Plzeň	Karl. Vary	Ústí	Liberec	Hradec Kr.	Pardubice	Vysočina	South Mor.	Zlín	Olomouc	Mor.-Silesia
Prag.	1,000	**-0,888**	**-0,943**	**-0,078**	0,988	**-0,645**	**-0,687**	**-0,928**	**-0,924**	**-0,652**	**-0,747**	**-0,865**	**-0,842**	**-0,873**
Centr.Boh.		1,000	0,940	0,024	**-0,820**	0,920	0,309	0,684	0,757	0,806	0,952	0,537	0,995	0,977
SouthBoh.			1,000	**-0,194**	**-0,880**	0,807	0,423	0,860	0,752	0,582	0,899	0,698	0,922	0,974
Plzeň				1,000	**-0,184**	**-0,148**	0,435	**-0,110**	0,441	0,574	**-0,223**	0,142	**-0,021**	**-0,186**
Karl.Vary					1,000	**-0,532**	**-0,790**	**-0,934**	**-0,963**	**-0,638**	**-0,639**	**-0,919**	**-0,761**	**-0,788**
Ústí						1,000	**-0,089**	0,396	0,448	0,720	0,982	0,177	0,953	0,921
Liberec							1,000	0,768	0,838	0,310	0,032	0,929	0,215	0,245
HradecKr.								1,000	0,822	0,332	0,549	0,950	0,624	0,722
Pardubice									1,000	0,742	0,525	0,876	0,692	0,670
Vysočina										1,000	0,669	0,332	0,795	0,663
SouthMor.											1,000	0,326	0,974	0,974
Zlín												1,000	0,457	0,530
Olomouc													1,000	0,979
Mor.-Silesia														1,000

Prague region and Karlovy Vary region as the regions on the range of all regions performs negative correlation coefficients during this period with other regions as assumed and in accordance with the theory.

4 Conclusion

As supposed according to the hypotheses of lower unit labor costs in regions with higher GDP per capita growth the results partly confirm the theory highlighted above. The region with highest positive disparity from the average of L/O and K/O during the monitored period is Karlovy Vary region and the region with highest negative disparity is Prague. During the period the regions with the highest standard deviation in L/O are Liberec region and Plzeň region compared to Hradec Králové region with lowest standard deviation. The standard deviations for the variable K/O are highest for Karlovy Vary region and the lowest for Prague region. Much lower standard deviations are in the case of L/K ratio, with the highest in Karlovy Vary and Prague region and lowest in Plzeň region. The highest positive disparity in L/K ratios from the average during the period is in Karlovy Vary region and biggest negative disparity from the average of L/K ratio is in Hradec Králové.

To conclude the correlation coefficients reveal the coincidence of the direct connection between the labor costs and value of capital employed per unit of output for the region of Prague and Karlovy Vary. The values of the mentioned indicators for these two regions are also mostly negatively correlated to the rest of the regions. The task for further research is to find out the true background behind those relationships that requires more developed regional model.

Acknowledgements

The paper was elaborated within the research IGA. The title of the research is Capital and wage disparity in the agricultural sector (registration number: 20141031).

References

Botos, S. and Herdon, M. (2013) ‚Document Differences of Broadband Network Infrastructure, e-Readiness and Usage in EU Rural Regions', *Agris On-line Papers in Economics and Informatics*, vol. 5, no. 4, pp. 47-53.

Carlin, W., Glyn, A. and Reenen, J. V. (2001) 'Export Market Performance of OECD Countries: An Empirical Examination of the Role of Cost Competitiveness'. *The Economic Journal*, vol. 111, no. 468, pp. 128-162.

Feldstein, M. S. (2008) 'Did Wages Reflect Growth in Productivity?' NBER *Working Paper*, no. 13953.

Felipe, J. and Kumar, U. (2011) 'Unit Labor Costs in the Eurozone: the Competitiveness debate Again'. Levy Economics Institute of Board College. *Working Paper,* no. 651.

Fisher, T. and Hostland, D. (2002) 'The Long View: Labour Productivity, Labour Income and Living Standards in Canada'. *The Review of Economic Performance and Social Progress,* vol. 2, pp. 57-67.

Freguglia, R. da S., Conçalaves, E. and Ribeiro da Silva, E. (2014) 'Composition and Determinants of the Skilled Out-Migration in the Brazilian Formal Labor Market: A Panel Data Analysis from 1995 to 2006'. *Economia,* vol. 15, pp. 100-117.

Giovannoni, O. (2014) 'What Do We Know About the Labor Share and the Profit Share? Part III: Measures and Structural Factors'. Levy Economics Institute of Bard College. *Working Paper,* no. 805.

Goschin, Z. (2014) 'The Determinants of Average Wage in Romania'. *Procedia Economics and Finance,* vol. 8, pp. 362-269.

Hoffer, F. and Spiecker, F. (2011) *Change or Lose Europe: ILO Global Job Crisis Observatory.* Geneva: International Labour Office.

Hooper, P. and Larin, K. A. (1988) 'International Comparisons of Labor Costs in Manufacturing'. *International finance Discussion Papers,* vol. 330, pp. 31-32.

Inter-American Development Bank (2001). *Competitiveness: The Business of Growth: Economic and Social Progress in Latin America: 2001 Report.* IDB: Washington D.C., 2001.

King, B. P., Rosopa, P. J. and Minium E. W. (2011) *Statistical Reasoning in the Behavioral Sciences.* 6th ed. New York: John Wiley and Sons.

Kwok, V. and Leland, H. (1982) 'An Economic Model of the Brain Drain'. *American Economic Review*, vol. 72, no. 1, pp. 91-100.

Meager, N. and Speckesser, S. (2011) 'Wages, Productivity and Employment: A Review of Theory and International Data'. *European Employment Observatory,* Thematic Expert ad-hoc Paper, pp. 73.

Miyagiwa, K. (1991) 'Scale Economies in Education and the Brain Drain Problem'. *International Economic Review,* vol. 32, no. 3, pp.743-759.

Páges, C. and Ruíz-Núñez, F. (2001) *Unit Labor Cost and Export Market Share: Evidence from Latin American Manufacturing Industries.* Inter-American Development Bank. Mimio.

Sharma, A. K. (2005) *Text Book of Correlations and Regression.* 1st ed. New Delhi: Discovery Publishing House.

Sharpe, A., Arsenault, J. F. and Harrison, P. (2008) 'The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries'. Centre for the Study of Living Standards, *Research Report,* no. 2008-8.

The Role of Institutions in the Development of the Pork Production in Poland

Elżbieta Jadwiga Szymańska

Department of Economics and Organisation of Enterprises, Warsaw University of Life Sciences - SGGW, ul. Nowoursynowska 166, 02-787 Warsaw, POLAND
elzbieta_szymanska@sggw.pl

Annotation: The aim of the study was to identify and assess institutional system running on pork market in Poland. Institutions operating in rural areas are presented at national, regional and local levels and according to different sectors. In analyses the study the subject literature and the material from the statistical surveys carried out by the Institute of Agricultural Economics and Food Economy-State Institute were used. The research showed that in literature there are multiple classification of institutions and organizations that make up the meat industry environment. Consequently, it is required to stimulate development and improvement of institutions conducive to the creation and strengthening of organizational structures. The compatibility of institutional and organizational structures depends to a large extent on the policy of the State. In pig holdings with a greater intensity of relationships with institutions there is less financial liquidity. These farms are characterized by lower labour intensity without a significant increase in the capital intensity and cost-absorption.

Key words: institutions, farms, pork production, market.

JEL classification: D02, P48, Q12.

1 Introduction

Production of the swine in Poland was the most important branch of agricultural production in Poland over the years. Only in the year 2000 production of live pigs accounted for 37.6% of commercial livestock production and for 23.5% commercial agricultural production. At the same time pork production exceeded by 17% the value of milk production and more than 3 times the value of poultry production (Blicharski, Hammermeister 2013). Currently, this sector is experiencing a crisis. The status of the pig population decreased to 11.4 million units in 2012, and the production of pork decreased to approximately 22,2 million tons (Rynek 2014). According to data from the Central Statistical Office (GUS) in In the same year contribution pork was 31.7% in goods livestock production and 14,2% of the stock agricultural production (Rocznik 2013).

Development of live pigs production in Poland relies on institutional support in various spheres of activity. In terms of EU integration particular importance have those institutions that mediate in the transfer of financial resources from the Community budget, but also institutions and organizations supporting active citizenship of local communities. An important role in this process have local authorities, chambers of agriculture and cooperative banks that operate in the immediate vicinity. The importance is attributed to the non-governmental organizations, which represents economic interests of members of these entities.

The improvement of this institutional environment in which operates the economy can be achieved in several ways. By adding new institutions to pre-existing ones, replacing inefficient institutions with the more efficient, experimenting in creating new institutions and enabling institutions to compete with each other on a regional, national and transnational scale

(Wilkin 2003). In order to accelerate the process of building institutional order aimed at economic and social cohesion, the EU now faces harmonization of legal standards and the adoption of the EU legal order by the new Member States (Woźniak 2009).

The aim of the study was to identify and assess institutional system running on pork market in Poland. The analysis included contacts of pork producers with institutions, the frequency of these relationships, intensity of these relations. Moreover, the intensity of institutional relationships of farmers with the environment and the extent of holdings of the manufacturing structure in agriculture was defined.

2 Materials and methods

This paper covers a review of literature on the definition of the concept of institutions and their classification. Institutions operating in rural areas are presented at national, regional and local levels and according to different sectors. Subsequent analysis use the results of a nationwide survey of FADN farms entitled "Equilibration of individual agricultural holdings". The studies were undertaken by the staff of the Institute of Agricultural and Food Economics - National Research Institute, Poznań University of Economics and the Warsaw University of Life Science. They involved 400 farms operating in the accounting system of the Polish FADN. There were extracted 94 holdings out of that group that were rearing and breeding pigs.

Based on the available research data, the intensity and the structure of institutional relationships between the pig holdings and the environment have been determined. Five component indicators have been used in this regard. Their value was assessed in the so-called zero-one evaluation by assigning points for adequate answers to questions relating to:

- objectives of management,
- participating in public life,
- cooperation with organisations,
- contract integration,
- mobility of the farmer's family.

Subsequently, the weighted sum of indicators was calculated and defined as the aggregate index of the degree of institutionalization of a farm. At the same time it was assumed that the component indicators contribute to the index on an equal basis.

In order to determine the effect of institutions on the structure of agricultural production there was used the following set of indicators characterizing the relative levels of the flow and absorption developed by B. Czyżewski (2008):

- cost-absorption of revenues - the ratio of the total amount of direct costs, indirect costs and the costs of external factors to the total production.
- investment activity - the ratio of the balance of investment flows to assets (excluding land),
- net transfers - the ratio of the balance of current subsidies and taxes and of the subsidies and taxes associated with investments to the economic strength of a farm expressed in the assets value.
- liquidity (inverted index) - the ratio of short-term liabilities to circulating assets,
- capital intensity - the ratio of productive assets, that is buildings and structures, machinery and equipment and means of transport to the total production,

- land consumption (inverted index) - the ratio of production to the size of agricultural land,
- labour intensity - the ratio of labour on the farm (in hours) to the value of total production.

The specified indicators set up a vector of correlated dependent variables which are potentially affected by institutional structures. Therefore in this case institutional structures were the independent quality variable which determined the allocation of resources in the individual farming in Poland. The analysis of this interaction was based on the analysis of variance (MANOVA) where dimensions were provided for by the described indicators and the qualitative predictor (factor) were the institutional structures.

3 Results and Discussion

The founder of the traditional institutionalism was T. Veblen (1971) who defined institutions as "prevalent habits of thought with respect to particular relations and particular functions of the individual and of the community. Veblen's institutions arise when the habit becomes common and gets strengthened in a given community or group, taking the form of socio-economic institutions. According to another definition of T. Veblen "economic institutions are habitual methods of carrying on the life process of the community in contact with the material environment in which it lives (...)" (Stankiewicz 2000). Whereas Dopfer (1991) defined economic institutions as "any correlated (interrelated) behaviour of agents that occurs under the same or similar conditions", In this context, examples of economic institutions are: enterprises, banks, government agencies, trade unions, universities and offices.

A. Czyżewski (2008) proposed to define an institution in the traditional sense as the institutional environment. In his view, an institutional environment of the agricultural sector is a set of institutions that support market processes (the so called "supporting institutions"), including these national economy entities that do not take a direct part in the transactions between agriculture and the environment (in the sense that they are a party or support them) but have an impact on the functioning of production structures. In the literature, institutions are divided into "standards," "markets "and "organizations". Standards mean legislations which define the rules for the functioning of economy and the conclusion of contracts. As for the markets, the following types are taken into consideration: financial market, labour market and a goods and services market as an infrastructure allowing for relations with these markets and increasing the mobility of production factors which are the subject of transactions concluded there. Whereas the category of "organisations" relates primarily to state institutions implementing agricultural policy, mainly the intervention policy. Especially recognised must be here Agencja Rynku Rolnego (Agency for Agricultural Markets), Agencja Restrukturyzacji i Modernizacji Rolnictwa (Agency for Restructuring and Modernisation of Agriculture), Agencja Nieruchomości Rolnych (Agricultural Property Agency), Ośrodki Doradztwa Rolniczego (Agricultural Advisory Centres), organizations supporting the export of agri-food products, as well as Chambers of Agriculture and farmers' unions.

According to the new institutional economics institutions are a set of formal and informal rules, along with mechanisms for their enforcement. Their aim is to control the operators' decisions made on a case by case basis, and thereby reduce the uncertainty associated with the economic activity. Therefore, institutions are rules that indicate who decides which actions are allowed, what procedures to implement, what information to provide and what an operator receives as a result of its business activity. Institutions provide an adequate incentive structure to take allocative decision (North 1994).

According to D. Milczarek, the definition most often used by economists explains that institutions are relatively stable sets of commonly recognized and realized expectations concerning human behaviour. These are all forms of of restrictions invented by people to shape their behaviour (Brzozowski and others 2006).

Institutions may be the result of deliberate human activities (e.g. fundamental laws - constitutions) or develop gradually (e.g. customary laws) in response to the ongoing progress. According to many economists, institutional arrangements in a given country are largely conditioned by cultural, historical, geographical, and also political factors (Miłaszewicz 2011).

There are multiple item classification of institutions and organizations in the literature that make up the agri-environment, including the meat industry. M. Kłodziński (2006) distinguished two types of institutions working for the development of small enterprises that are present in the country:

- central institutions: agencies, foundations, foreign funds,
- regional and local bodies: regional development agencies, foundations, socio-economic initiatives, business schools, consulting firms, stock exchanges, displays, fairs, business incubators.

Another classification of institutional environment was presented by Hausner, Kudłacz and Szlachta (1997). In their opinion the institutional set-up includes:

- agencies, foundations and regional development associations,
- independent organization of the economic self-government (chambers of commerce),
- authorities of the local public administration,
- other institutions - universities, associations, political parties, trade unions, social organizations.

T. Miś (2008) lists institutions, which may facilitate the transformation processes in agriculture:

- local authorities,
- fundamental institutions of markets, for example, financial markets, insurance,
- the economic and professional self-government organizations (e.g. chambers of agriculture),
- sectoral organizations of agricultural producers, for example, producers' associations, cooperatives, marketing group,
- production advisory organizations, economic, social,
- private institutions and organizations that support the transformation of rural areas.

According to Grzybek (2003) regardless of the classification of institutions and organizations that make up the business infrastructure all listed entities stimulate both the development of small enterprises as well as local communities. The existence of such institutions is a very common condition for the use of human and economic potential of cities and villages, conducive to stimulating local entrepreneurship, attracting foreign investment and creating a positive image of various regions of the country.

Taking into account different definitions, it has been adopted for the development of this study that an institution is a set of functionally related legal standards and principles (the institutional environment) as well as a separate organizational structure (organizations) and the mechanisms of its functioning. As a whole, institutions in a given country constitute its institutional system which, as in Poland, determines the functioning of the pork market.

There are many active institutions in the Polish pork market (Fig. 1), the most important being public organizations (government and local self-government). They have the ability to gather information and have extensive knowledge of the specific problems in the live pigs market as well as an effective influence on the ongoing changes. These organizations are protected by the administrative structures of the state, especially by the sectors of justice and public administration.

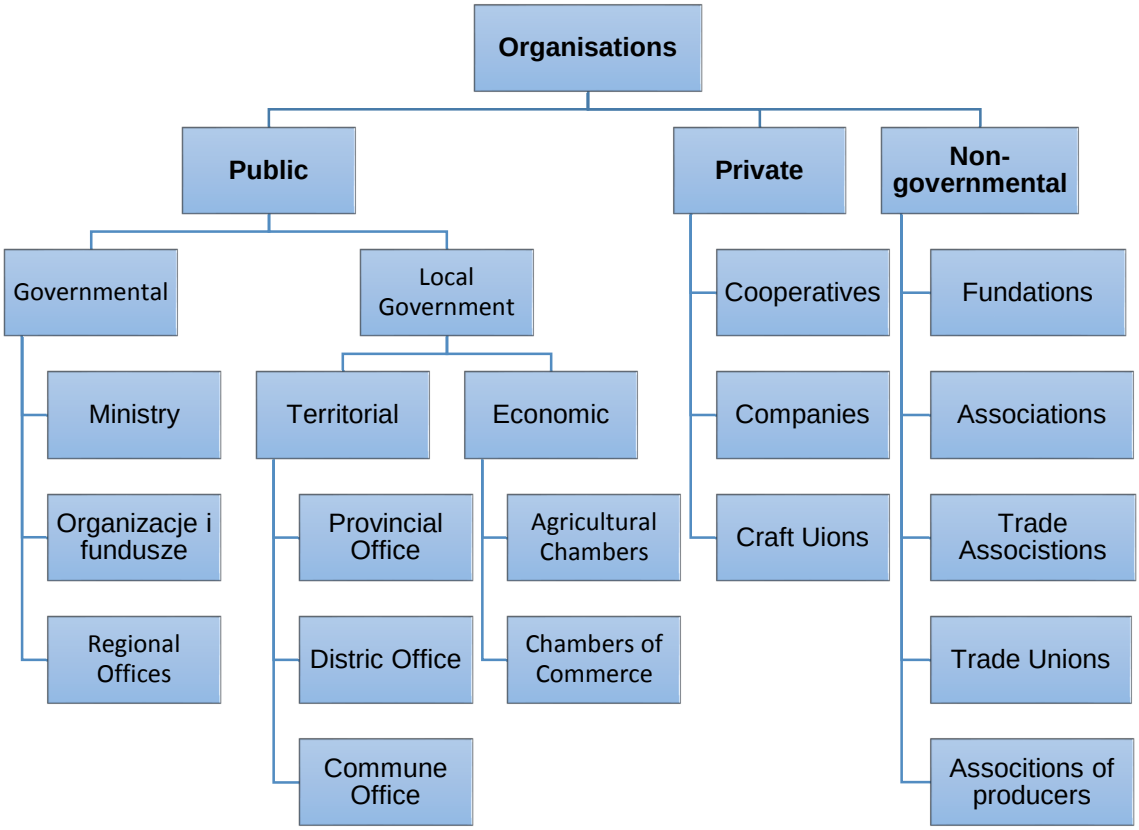


Fig. 1. Organisational structure in the pork market

Source: own elaboration.

The role of governmental organisations is to take decisions on various aspects of operations in accordance with the rules of democracy and the principles of market economy contained in certain normative acts. Within these organizations of great importance for the market of live pigs in Poland is Agencja Rynku Rolnego (Agency for Agricultural Markets). Since 01 May 2004 it plays the role of the paying agency responsible for the use of all instruments governing the market of pork, beef, veal, sheep meat and goat meat, and thus:

- it implements subsidy programs launched by the European Commission for private storage of pork and beef,
- it administers the import and export licenses and pays subsidies to the exports of slaughter and cut up products and live poultry.
- it administers the measures for supporting promotional activities which can also be used in the meat sector,

- it carries out activities of communication and dissemination of information concerning Community regulations for the pork, beef and poultry markets.
- it supplies the Community system of the meat market management with information coming from the area of its activities.

The economic self-government in legal terms is an expression of decentralized public administration in the field of economic life. These are chambers of commerce which play the major role in its organizational structure. There are currently 62 chambers of commerce operating in the country, the majority of them (14) in Mazowieckie province and the least numerous (1) in Lubuskie, Opolskie, Podlaskie, Łódzkie and Świętokrzyskie provinces. The main task of the chambers of commerce on a regional or local level is to support the economic development of the area. The oversight of the activities of these entities is maintained by the Minister responsible for the object of the chamber activities or the voivode competent for the seat of the Chamber. The chambers of commerce, similarly to other economic self-government organisations may associate at the National Chamber of Commerce.

Whereas the basic local agricultural organizations include agricultural chambers, which were established by the Act of 14 December 1995 (Dz.U. z 1996, Nr 1, poz. 3). There are currently 16 provincial chambers operating in the country. The primary purpose of their establishment is to create stable and transparent conditions for further functioning and development of the Polish agriculture. Each provincial agricultural chamber has its district divisions. The duties of agricultural chambers involve cooperation in solving many socio-economic issues in rural areas. The Chief organ of agricultural chambers is the National Council of Agricultural Chambers.

A significant importance in the functioning of pork market in Poland also have private organisations. They arise as a result of joint actions of people wanting to form group associations (formal or informal). Organizations which associate in a formal way include: cooperatives, companies and crafts unions, and those associated informally are mutual aid organizations.

The institutional system functioning on the meat market is complemented by local trade organizations. The self-government of producers, processors and traders in the meat sector is very well organized, both at the level of Member States and across the European Union. It represents the interests of domestic processors of livestock, producers and farmers of pigs, cattle and poultry in front of the national administration. Basic organisations of this type include:

- Association of Polish Butchers and Producers of Processed Meat,
- Polish Meat Association,
- The Union of Producers and Employers of the Meet Industry,
- Polish Pig Breeders and Producers Association „POLSUS".

Association of Polish Butchers and Producers of Processed Meat is a national organization bringing together the owners of the meat industry. Its aim is to stimulate butchers and producers of processed meat operating in the field of meat and meat products for the development and utilization of economic potential, the implementation of new technologies, inventions in the field of processing meat and making sausages and upgrading the professional skills of the stuff. It is also active in shaping positive social attitudes and professional ethics among its members and in presenting the members' opinion to the government and administration of the Republic of Poland.

Polish Association of Meat is also an organization representing business interests of the associated companies which operate within the meat sector and cooperate with the association in the field of manufacturing, trading and /or in services, in particular in front of the state authorities. In 2006 the Polish Meat Association turned into Polish Meat Chamber of Commerce whose activities will continue the practices of the Association in favour of the sector.

The Union of Producers and Employers of the Meet Industry is a union of employers associating meat industry operators. It was established in 13 December 2005. The Union brings together natural and legal persons on a voluntary basis and the initiative of its formation has attracted considerable interest from companies operating in the meat sector. As of today, the members of the Union are the operators from a wide range of the sector.

Polish Pig Breeders and Producers Association „POLSUS" is a self-governing organisation acting since 1958. It currently associates 19 provincial unions. Its area of operation covers all over the country. It implements breeding programs for the following breeds of pigs: Polish Large White (PLW), Polish Landrace (PL), Hampshire (H), Duroc (D), Pietrain. (P) and Pulawska [Pulawy] breed. It arranges for adequate records and books in this respect. What is more, its activities include: evaluation of pig production and breeding, providing specialized training, establishing producer groups, negotiating minimum prices and intervention purchase of farm and slaughter animals as well as improving livestock breeding.

Local authorities prepare a framework and mechanisms for regulating the behaviour of users of agricultural holdings in economy management processes. Among other things, the existence of these institutions helps:

- the households adapt faster to changing economic and organizational conditions,
- engage in efficient commercial activities,
- access to the information on the situation in the agricultural markets.
- reduce transaction costs.

National self-government organizations are also members of the European industry self-regulatory bodies, among which the most important are:

- European Livestock and Meat Trading Union (UECBV),
- Centre Liaison for the Meat Processing Industry in the European Union (CLITRAVI),
- Association of Poultry Processors and Poultry Trade in the EU (AVEC).

European organizations which are industry self-regulatory bodies are a good platform to agree on common interests of entities operating in the industry, including the relationships between producers and processors and determining positions on the common agricultural policy on the market.

The phenomena particularly hindering the development of non-governmental organizations in rural areas include the weakening of social bonds, erosion of the sense of cultural community and disappearing responsibility for local space as well as strengthening individualism. This occurred with the loss of authority of public institutions in local communities, as well as a result of reduced significance of vocational education.

In the analyzed group the farms were grouped according to the constructed aggregate index. This allowed to distinguish 8 classes of farms (non-intersecting intervals of the same width).

With the potential maximum intensity of institutional relationships (equal to 100 points) value of this index for 13.8% of farms was 30 points (Fig. 2). More than 55.3% of the surveyed farms were classified in the largest group in which the index value was between 30 and 50 points. For 1/5 of farms it was from 50 to 60 points. In turn, in case of 10.6% farms it exceeded 60 points. At the same time, with the growing strength of quantitative institutional

relations, an increase of economic strength of farms has been recorded too. In this context, there appears a question concerning a cause - effect relationship, i.e. whether the strong farms reached their position thanks to strong institutional associations or is it the maintenance of such relations which is necessary for the farms to be able to operate and achieve increasingly higher profitability.

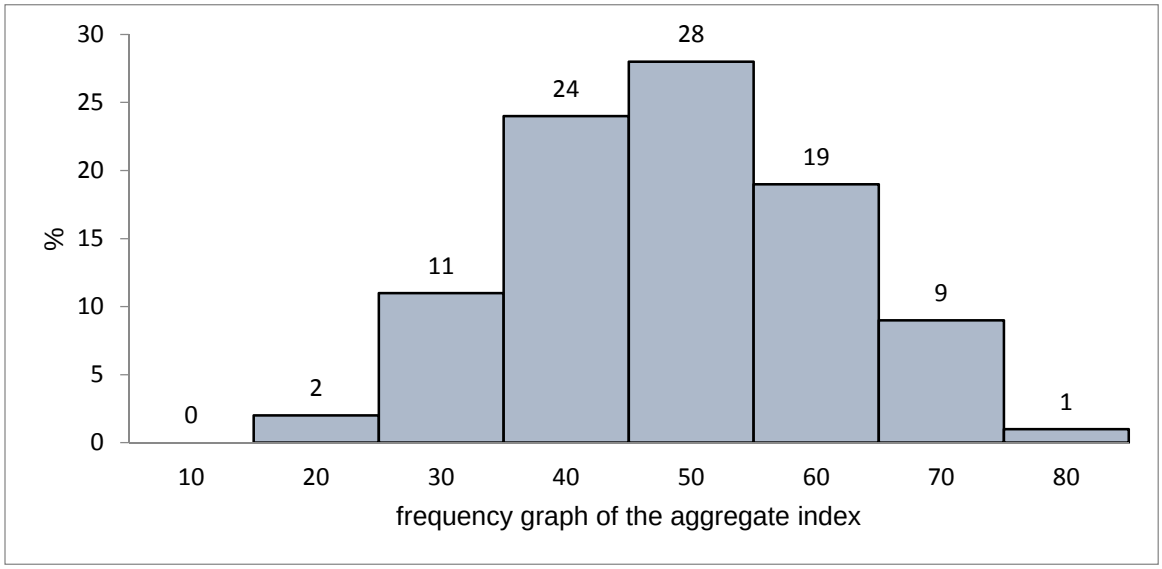


Fig. 2. Groups of farms according to the intensity of institutional relations with the environment

Source: own development based on the survey carried out among the FADN farms.

In the sample of farms raising and breeding pigs a multivariate analysis of variance were conducted based on 3 groups of institutional structures ordered according to the intensity of institutional relations with the environment (Czyżewski 2008). The first group included farms from the 2nd, 3rd and 4th class of the aggregated indicator of institutionalisation, the second group - from the 5th class and the third group - from the 6th, 7th and 8th class. In this way collections of observations of similar and sufficiently large number were obtained.

In line with the procedures of variance analysis, on the first stage in each of the subgroups the distributions of dependent variables were reduced to normal by appropriate transformations and MANOVA assumptions were verified. The indicator of investment activity, despite attempts to transform variables and remove outlying observations, preserved a distribution significantly deviating from the normal, thus not meeting the assumptions of the analysis. Therefore it was excluded from it in order not to disturb the distribution of multivariate space. At the same time it was decided to put under analysis only the farms of the first and third group because the distributions of allocation indicators in the second group differed significantly from the distributions of the variables of other groups and required transition to other functional forms. After these procedures there was no reason to reject the null hypothesis of equality of variances and homogeneity of the covariance matrix. (Table 2).

Table 2. The assumption of homogeneity of covariance in a multivariate space

Test M Boxa: predictor of quality - "institutional structure"				
	M Boxa	Ch^2	df	p
M-Boxa	35,09657	30,95090	21	0,074479

Źródło: (Czyżewski 2008).

Then it was verified how significant are the differences between the vectors of the average coefficient values. According to the assumptions, the null hypothesis of equality of average vectors was rejected for the alternative hypothesis that their difference is significant. Table 3).

Table 3. Significance of differences between the vectors of average resource allocation coefficients

Multivariate tests of significance - coefficients of resource allocation						
Variable	Test	Value	F	Effect	Error	p
Institutional Structure	Wilkisa	0,7802	2,348	6	50	0,044796
	Pillai'a	0,2198	2,348	6	50	0,044796
	Hotelln.	0,2818	2,348	6	50	0,044796
	Roy'a	0,2818	2,348	6	50	0,044796

Source: as in Table 2.

The obtained results indicate that the matrix of coefficients describing the allocation of resources in the farms raising and breeding pigs considerably varies with the development of the institutional structure. In contrast, one-dimensional ones confirmed the significance of variation of only one coefficient of resource allocation, namely the coefficient of labour intensity (Table 4).

Table 4. The significance of variation of the coefficient of labour intensity

One dimensional tests of significance - labour intensity				
	SS	MS	F	p
Institutional structure	2,1187	2,1187	4,243	0,044147
Error	27,4615			
Total	29,5802			

Source: as in Table 2.

In the highest class of institutions an average labour intensity was relatively much lower than in the other groups. This was accompanied, however, by a decline in net transfers and liquidity. This was presumably due to the increasing burden on the budget and the liquidity could be additionally burdened by investments whose value was relatively high. No significant increase was observed as for the capital intensity or cost-absorption. Therefore a lower labour intensity translating into an increase in income per unit of labour could be due to relatively effective institutions that protect the added value generated in the specialized

production of pigs and render 'institutional pensions" according to the model of" integrated agriculture.

4 Conclusions

This study does not cover all the issues of the functioning of institutions in the market of live pigs, nevertheless there can be drawn some conclusions on its basis.

1. In the literature of the subject there are multiple classification of institutions and organizations that make up the meat industry environment. All listed entities interact directly or indirectly on the farm with pigs and meat industry. The existence of this institution is a prerequisite for the proper functioning of the subjects on the EU market.
2. The compatibility of institutional and organizational structures depends to a large extent on the policy of the State. Consequently, it is required to stimulate development and improvement of institutions conducive to the creation and strengthening of organizational structures, which are essential in the development process of the production of pork in Poland.
3. In pig holdings with a greater intensity of relationships with institutions there is less financial liquidity. This can result from investments, whose value is relatively high. In addition, these holdings are characterized by lower net flows in the framework of budgetary transfers, which is probably due to the greater burden for the budget.
4. Farms which are more cooperative and more tied to institutions are characterized by lower labour intensity without a significant increase in the capital intensity and cost-absorption. This results in an increase in revenue per unit of work, which may be the result of a relatively efficient institutions that create added value on farms specializing in the production of pork, referred to as "an institutional rent".

Acknowledgements

The project was funded by the National Science Centre on the basis of decision DEC-2013/09/B/HS4/03606.

References

Blicharski, T. and Hammermeister A. (ed.) (2013) ‘Strategia odbudowy i rozwoju produkcji trzody chlewnej w Polsce do roku 2030’. Polski Związek Hodowców i Producentów Trzody Chlewnej „POLSUS, Warszawa.

Brzozowski, M., Gierałtowski, P., Milczarek, D. and Siwińska-Gorzelak J. (2006) Instytucje a polityka makroekonomiczna i wzrost gospodarczy, Uniwersytet Warszawski, Warszawa.

Czyżewski, B., i in. (2008) Rola inwestycji w modernizacji gospodarstw rolnych. IERiGŻ-PIB, Warszawa.

Dopfer, K. (1991) ‘Toward a Theory of Economic Institution: Synergy and Path Dependency’, *„Journal of Economic Issues”,* Vol 25, No 2, Jun., pp. 536-550.

Grzybek, M. (2003) Dywersyfikacja instytucjonalnego otoczenia małych przedsiębiorstw w woj. Podkarpackim, Zeszyty Naukowe UR w Rzeszowie, Seria Ekonomiczna, z. 9, Ekonomika Rolnictwa 1, Rzeszów, pp.155-163.

Hausner, J., Kudłacz, T. and Szlachta, J. (1997) 'Instytucjonalne przesłanki regionalnego rozwoju Polski'. Synteza wyników badań terenowych. Studia KPZK PAN, Warszawa.

Kłodziński, M. (2006) Aktywizacja gospodarcza obszarów wiejskich, Wyd. PAN, IRWiR, Centrum Nauk Wdrożeniowych, SGGW, Warszawa.

Miłaszewicz, D. (2011) 'Jakość instytucji a wzrost gospodarczy'. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania nr 19, pp. 5-24.

Miś, T. (2008) 'Otoczenie instytucjonalne rolnictwa' [w:] Rola lokalnych instytucji w przekształceniach rolnictwa o rozdrobnionej strukturze gospodarstw, A. Czudec, R. Kata, T. Miś, D. Zając, Wyd. Uniwersytetu Rzeszowskiego, Rzeszów.

North, D. C. (1994) 'Economic Performance through Time', *American Economic Review*, Vol. 84, No. 3, Jun., 1 pp.359-368

Rocznik Statystyczny Rzeczypospolitej Polskiej, GUS, Warszawa 2013.

Rynek mięsa, stan i perspektywy, nr 46/2014, IERiGŻ, ARR, MRiRW, Warszawa.

Stankiewicz W. (2000) Historia myśli ekonomicznej, PWE, Warszawa.

Ustawa z dnia 14 grudnia 1995 roku o izbach rolniczych (Dz.U. z 1996 r. Nr 1, poz. 3.)

Veblen, T. (1971) Teoria klasy próżniaczej, PWN, Warszawa.

Wilkin, J. (2003) Peryferyjność i marginalizacja w świetle nowych teorii rozwoju (nowa geografia ekonomiczna, teoria wzrostu endogennego, instytucjonalizm) [w:] Regiony peryferyjne w perspektywie polityki strukturalnej Unii Europejskiej, (ed.) A. Bołtromiuk, Wyd. Uniwersytetu w Białymstoku, Białystok.

Woźniak, M. G. (2009) Fundamentalne kwestie budowy spójności społeczno-ekonomicznej i gospodarki innowacyjnej w Polsce [in:] Nierówności społeczne a wzrost gospodarczy. Uwarunkowania instytucjonalne, (ed.) M.G. Woźniak, z. 15, Wyd. Uniwersytetu Rzeszowskiego, Rzeszów.

Analysis of unemployment in Liberec region in the years of 2009-2014

Daniel Toth, Štefan Toth, Petr Procházka, Michaela Štefková, Lenka Kučírková

Department of Management, Department of Trade and Accounting, Department of Management, Department of Economics, Department of Languages, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol, Czech Republic
tothd@pef.czu.cz, toth@pef.czu.cz, stefkovam@pef.czu.cz, pprochazka@pef.czu.cz, kucirkova@pef.czu.cz

Abstract: The analysis of unemployment in the Liberec region is focused on the problem of unemployment in the region. To assess the state of unemployment the analysis uses selected factors affecting the rate of unemployment. This paper shows that unemployment is far from just an economic problem. It is becoming a social problem as well. In order to successfully fight against unemployment, it is necessary to capture not only its causes, but also its development and behaviour, as it affects both individuals and the whole of society. Based on specific statistical data, the paper evaluates changes and shows deficiencies that cause the problem of unemployment, and consequently it deals with possible solutions. The final part summarises the findings in the study of materials and data, and tries to propose possible solutions that would reduce unemployment. Research has shown that the development of employment in the Liberec region must be understood as a priority. Rising unemployment is a social risk. The next year threatens to occur more than 2% rise in unemployment. The starting point may be active promotion of agricultural and food production that ensures sustainable jobs.

Key words: unemployment, rate of unemployment, natural rate of unemployment, demographic changes, job seekers, active employment policy

JEL classification: R11

1 Introduction

Unemployment is a complex problem, not only an economic one. However, in the culture of work, it plays a key role in people's lives. This is proved by the fact that the entry into an economic activity or departure from it is one of life's milestones. Work provides a dignified existence and material security.

At the same time it also gives a sense of fulfillment and social usefulness. Nowadays, the criteria and demands of employers on employees in connection with work performance, education, work experience and skills are constantly tightening (Grigoryeva, 2012). Greater requirements of the employer are to some extent related to the constantly developing technology. If an employee does not meet the employer´s requirements, or the demands on him do not match with what the employee is able to offer, employment can be terminated. A sudden and unexpected loss of a job is an uncomfortable matter for everyone, and unfortunately, constantly a more real risk. As far as the long-term unemployed are concerned, after a certain time there are changes that make it difficult for them to return back to work. People often lose their experience, skills and practical and theoretical knowledge which were acquired and maintained throughout their job. A long-term exclusion from the labour process also influences the other side of the market, i.e., a potential employer. He/she may, for example, assume that when a person is unemployed for a long time, his/her qualification is

reduced, and immediately after starting a new job, he/she is unable to work as efficiently as in a previous job.

From a macroeconomic point of view, unemployment concerns the working age population, whose age is in the Czech Republic set from 15 years of age, which is usually from the end of compulsory school attendance, until retirement. The paper deals with the analysis of unemployment in the Liberec region, which is formed by the districts of Česká Lípa, Jablonec nad Nisou, Liberec and Semily. With its 3,163 square kilometers, it is, after Prague, the smallest region in the country. The region has a predominantly industrial character. With its 438,594 inhabitants it ranks second place in the Czech Republic (data for 2012) with the smallest number of inhabitants. Most of the population is concentrated in the district of Jablonec nad Nisou. The average density of 138.6 inhabitants per km2 exceeds the national average. Compared to the national average, Liberec region has a slightly younger age structure.

2 Objectives

The main objective of the study is to verify the hypothesis of the rate of unemployment possible development in Liberec region in the period from 2009 to 2013, and the prediction for 2014, i.e., if the unemployment development will have rather an increasing or decreasing tendency. For this purpose, knowledge of statistical methods, especially time series will be used. The partial objective is to assess the state of unemployment in the region using the selected factors affecting the rate of unemployment. It concerns particularly the age, gender and educational attainment of job seekers.

3 Materials and methods

To obtain the data, a specialist literature related to a given topic both in a book form and an in an electronic one is used. The calculation of unemployment rate indicators, the calculated values of which are used in graphs and tables, is explained here. For the elaboration of the next part, it was necessary to obtain statistical data regarding the followed period, i.e., from 2009 to 2013. The main source of primary data was a website portal of the Ministry of Labour and Social Affairs (MLSA) and the Czech Statistical Office (CSO). All the data were transferred to the MS Excel software programme, then processed into tables, which largely formed the basis for creating graphs. Due to the suitability and the text supplementing, the graphs and tables were inserted into the text. Due to the unavailability of all necessary values, the indicator of the proportion of unemployed persons from the website of the MLSA is used for the calculation.

To determine the future development of unemployment concerning the year 2014, the statistical analysis of non-periodic time series was used. All statistical data processed into graphs, tables and maps refer only to the Liberec Region. If it is, for example, a nationwide comparison, then this fact is stressed in a specific part of the text. The final section summarises findings acquired while studying materials and data. This is followed by their evaluation and possible solutions to reduce unemployment.

To calculate forecasts for the period up to 2016 were used advanced methods for time series / prediction software Statistica12. Specific functions used to predict the function ARIMA.Time Series module offers a complete implementation of ARIMA. Models may include a constant, and the series can be transformed prior to analysis; transformations will automatically be "undone" when ARIMA forecasts are computed, so that the forecasts and their standard errors are related to the values of the original input series. You can calculate the approximate and

exact maximum likelihood conditional sums of squares. ARIMA (p,d,q) forecasting equation: ARIMA models are, in theory, the most general class of models for forecasting a time series which can be made to be “stationary” by differencing (if necessary), perhaps in conjunction with nonlinear transformations such as logging or deflating (if necessary). A random variable that is a time series is stationary if its statistical properties are all constant over time. A stationary series has no trend, its variations around its mean have a constant amplitude, and it wiggles in a consistent fashion, i.e., its short-term random time patterns always look the same in a statistical sense. The latter condition means that its autocorrelations (correlations with its own prior deviations from the mean) remain constant over time, or equivalently, that its power spectrum remains constant over time. A random variable of this form can be viewed (as usual) as a combination of signal and noise, and the signal (if one is apparent) could be a pattern of fast or slow mean reversion, or sinusoidal oscillation, or rapid alternation in sign, and it could also have a seasonal component. An ARIMA model can be viewed as a “filter” that tries to separate the signal from the noise, and the signal is then extrapolated into the future to obtain forecasts. The ARIMA forecasting equation for a stationary time series is a linear (i.e., regression-type) equation in which the predictors consist of lags of the dependent variable and/or lags of the forecast errors. That is: Predicted value of Y = a constant and/or a weighted sum of one or more recent values of Y and/or a weighted sum of one or more recent values of the errors. If the predictors consist only of lagged values of Y, it is a pure autoregressive (“self-regressed”) model, which is just a special case of a regression model and which could be fitted with standard regression software. For example, a first-order autoregressive (“AR(1)”) model for Y is a simple regression model in which the independent variable is just Y lagged by one period (LAG(Y,1) in Statgraphics or Y_LAG1 in RegressIt). If some of the predictors are lags of the errors, an ARIMA model it is NOT a linear regression model, because there is no way to specify “last period’s error” as an independent variable: the errors must be computed on a period-to-period basis when the model is fitted to the data. From a technical standpoint, the problem with using lagged errors as predictors is that the model’s predictions are not linear functions of the coefficients, even though they are linear functions of the past data. So, coefficients in ARIMA models that include lagged errors must be estimated by nonlinear optimization methods (“hill-climbing”) rather than by just solving a system of equations. The acronym ARIMA stands for Auto-Regressive Integrated Moving Average. Lags of the stationarized series in the forecasting equation are called "autoregressive" terms, lags of the forecast errors are called "moving average" terms, and a time series which needs to be differenced to be made stationary is said to be an "integrated" version of a stationary series. Random-walk and random-trend models, autoregressive models, and exponential smoothing models are all special cases of ARIMA models. A nonseasonal ARIMA model is classified as an "ARIMA(p,d,q)" model, where: p is the number of autoregressive terms, d is the number of nonseasonal differences needed for stationarity, and q is the number of lagged forecast errors in the prediction equation. The forecasting equation is constructed as follows. First, let y denote the dth difference of Y, which means:

$$\text{If } d=0: \quad y_t = Y_t$$

$$\text{If } d=1: \quad y_t = Y_t - Y_{t-1}$$

$$\text{If } d=2: \quad y_t = (Y_t - Y_{t-1}) - (Y_{t-1} - Y_{t-2}) = Y_t - 2Y_{t-1} + Y_{t-2}$$

Note that the second difference of Y (the d=2 case) is not the difference from 2 periods ago. Rather, it is the first-difference-of-the-first difference, which is the discrete analog of a second derivative, i.e., the local acceleration of the series rather than its local trend. In terms of y, the general forecasting equation is:

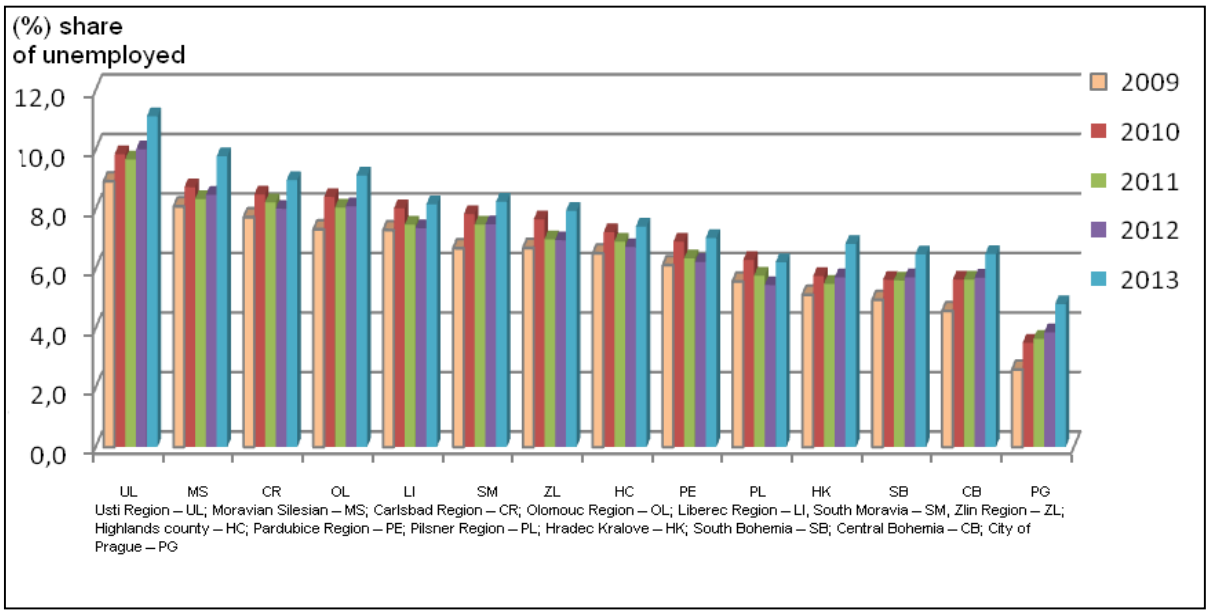
$$\hat{y}t = \mu + F1\ yt\text{-}1 + \ldots + Fp\ yt\text{-}p - \theta 1et\text{-}1 - \ldots - \theta qet\text{-}q$$

Here the moving average parameters (θ's) are defined so that their signs are negative in the equation, following the convention introduced by Box and Jenkins. Some authors and software (including the R programming language) define them so that they have plus signs instead. When actual numbers are plugged into the equation, there is no ambiguity, but it's important to know which convention your software uses when you are reading the output. Often the parameters are denoted there by AR(1), AR(2), …, and MA(1), MA(2), … etc.. To identify the appropriate ARIMA model for Y, you begin by determining the order of differencing (d) needing to stationarize the series and remove the gross features of seasonality, perhaps in conjunction with a variance-stabilizing transformation such as logging or deflating. If you stop at this point and predict that the differenced series is constant, you have merely fitted a random walk or random trend model. However, the stationarized series may still have autocorrelated errors, suggesting that some number of AR terms ($p \geq 1$) and/or some number MA terms ($q \geq 1$) are also needed in the forecasting equation. The process of determining the values of p, d, and q that are best for a given time series will be discussed in later sections of the notes (whose links are at the top of this page), but a preview of some of the types of nonseasonal ARIMA models that are commonly encountered is given below.

4 Results and discussion

From the point of view of assessing the rate of unemployment in the region, it is necessary to know the situation in the Czech Republic (CR). During the period from 2009 to 2013, Liberec region was in the fifth place with the highest annual average rate of unemployment, as illustrated by the following chart compiled from statistics published on the website of the Ministry of Labour and Social Affairs (MLSA). Due to the fact that according to the land area it is the smallest region in the Czech Republic (after Prague), this figure is striking. The highest annual average unemployment rate in this region was 8.2% in 2013. For other regions of the country, the year of 2013 became unfavourable as well.

Graph 1: Average annual rate of unemployment in the CR by the regions from 2009 to 2013



Source: MPSV CR. Own processing.

The average rate of unemployment in each year of the followed period in Liberec region was higher than the average rate of unemployment in the Czech Republic. In early 2009, the difference was 1.2% and at the end of 2013 it was only 0.5%. This does not mean that unemployment in Liberec region was decreasing, it only grows more slowly than the national average annual rate of unemployment.

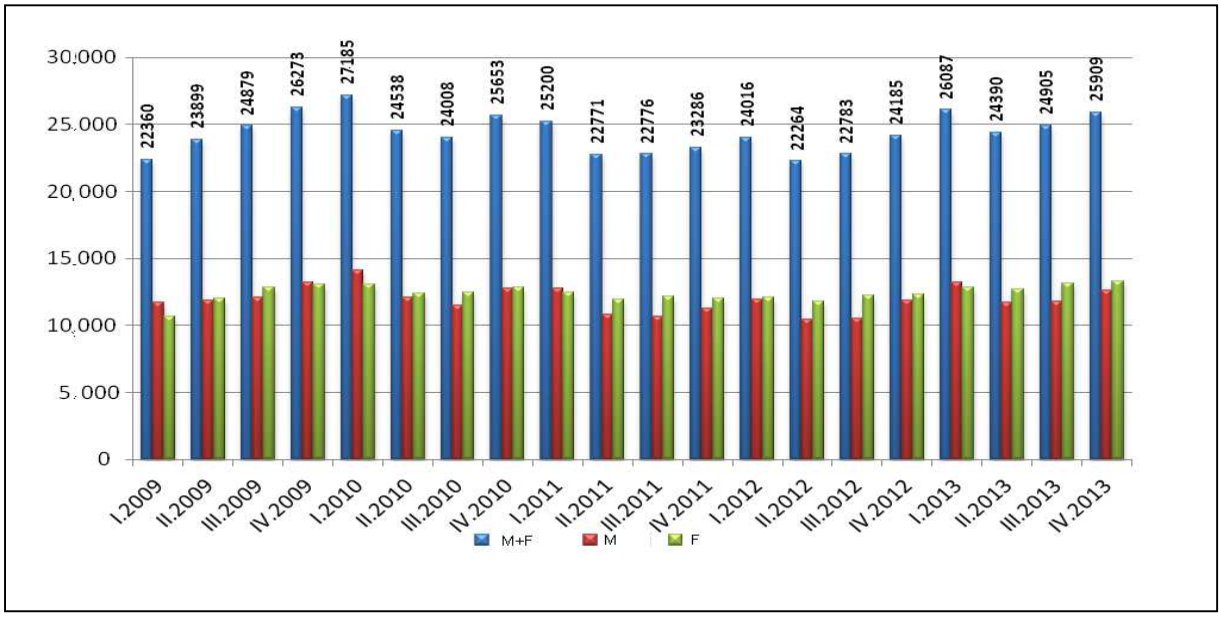
Table 4: Annual average rate of unemployment (in %)

	2009	2010	2011	2012	2013
Liberec region	**7.3**	**8.0**	**7.5**	**7.4**	**8.2**
Total in CR	**6.1**	**7.0**	**6.7**	**6.8**	**7.7**
Difference	**1.2**	**1.1**	**0.8**	**0.6**	**0.5**

Source: MPSV CR. Own processing.

The highest rate of unemployment 9.1 % in Liberec region districts as of 31 December 2013 was in the district of Česká Lípa. Unemployment here is even higher by 0.9% than the national rate of unemployment, which was 8.2% as of the above mentioned date. Graph 2 shows the development of the number of the unemployed in the years of 2009 - 2013 for individual quarters as of 31 December each year. Most job seekers (27,185 persons) were registered in the first quarter of 2010 and the lowest number was registered in the second quarter of 2012 (22,264 persons). When comparing the number of unemployed women with men, unemployment affects slightly fewer men. The average number is 11,950 men in the quarter, while for women it is 12,418 In total, this state is fairly balanced in relation to the gender, there is not any abnormal difference in any quarter.

Graph 2: Development in the number of the jobless in the years of 2009 – 2013 (by quarters)



Source: ČSÚ. Own processing.

The forecast of the further rate of unemployment development from February 2014 to December 2014 is shown in Table 2. To determine the direction of the development of 2014, an exponential trend function was used. Necessary data were obtained from the website of the MLSA and recorded in a table in MS Excel programme, in which the calculation of future values was carried out.

Table 5: Calculation of the rate of unemployment from February 2014 to December 2014 (exponential trend function)

Year	Rate of unemployment (in %)												Annual averages (in %)
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	
2009	5.95	6.58	6.99	7.31	7.40	7.53	7.78	7.78	7.81	7.80	7.89	8.29	**7.29**
2010	8.61	8.62	8.57	8.32	8.02	7.80	7.90	7.74	7.60	7.49	7.43	8.06	**8.02**
2011	8.14	8.05	7.90	7.60	7.25	7.11	7.30	7.27	7.20	7.04	7.04	7.34	**7.47**
2012	7.61	7.72	7.57	7.23	7.14	7.06	7.20	7.20	7.26	7.29	7.40	7.75	**7.35**
2013	8.29	8.40	8.44	8.30	8.06	7.88	8.08	8.06	8.11	8.02	8.10	8.46	**8.15**
2014	8.80	7.90	7.91	7.92	7.93	7.93	7.94	7.95	7.95	7.96	7.97	7.98	**7.94**

Source: MPSV CR. Own calculations, own processing.

A linear trend function was used as another suitable model. The results are shown in the following table:

Table 6: Calculation of the rate of unemployment from February 2014 to December 2014 (linear trend function)

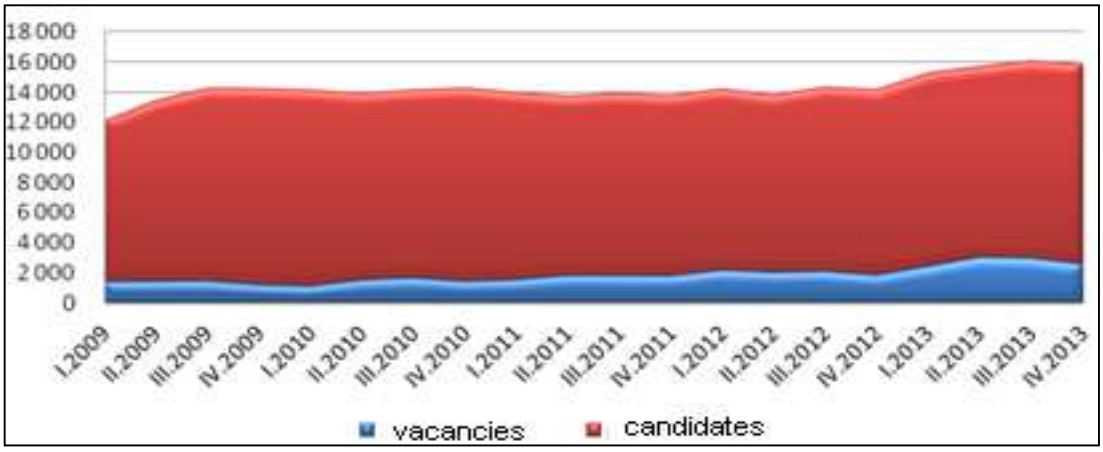
Year	Rate of unemployment (in %)												Annual averages (in %)
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	
2009	5.95	6.58	6.99	7.31	7.40	7.53	7.78	7.78	7.81	7.80	7.89	8.29	**7.29**
2010	8.61	8.62	8.57	8.32	8.02	7.80	7.90	7.74	7.60	7.49	7.43	8.06	**8.02**
2011	8.14	8.05	7.90	7.60	7.25	7.11	7.30	7.27	7.20	7.04	7.04	7.34	**7.47**
2012	7.61	7.72	7.57	7.23	7.14	7.06	7.20	7.20	7.26	7.29	7.40	7.75	**7.35**
2013	8.29	8.40	8.44	8.30	8.06	7.88	8.08	8.06	8.11	8.02	8.10	8.46	**8.15**
2014	8.80	7.91	7.92	7.93	7.93	7.94	7.95	7.95	7.96	7.97	7.97	7.98	**7.95**

Source: MPSV CR. Own calculations, own processing.

The appropriateness of chosen models was assessed using MAPE.

For an exponential trend function, the value is 5.5841% and for a linear trend function the value is 5.5966%. It can be assumed from the stated values that they are optimum models. The results of future values of 2014 are of increasing tendency with both trend functions. Therefore, it is expected that unemployment in the Liberec region will slightly increase. In order to assess the opportunities on the labour market, besides monitoring the unemployment rate it is also useful to compare the number of job seekers with the number of job vacancies.

Graph 3: Development of number of job seekers and job vacancies



Source: MPSV CR. Own calculations, own processing.

From the original lowest number of 10,681 unemployed in the first quarter of 2009, the number of the unemployed increased gradually and at the end of 2013 there were 13,286 job seekers. The number of job vacancies usually follows the curve of job seekers; only in the second quarter of 2013 there was a slight increase. At the beginning of 2009, there were 1,401 job vacancies and at the end of 2013 their number increased to 2,549. This implies that the chances of the unemployed to find a job vacancy is on average 15%. The situation on the labour market has improved a little. While at the beginning of 2009 there were 7.62 job seekers for one vacancy, at the end of 2013 it was only 5.21 persons.

It should be noted that not all job vacancies will be occupied by job seekers. It also happens that a job seeker has not got necessary qualifications for the vacancy. Education can play an important role in the job search. The following table shows that the largest group of unemployed persons are those who have secondary education with an apprenticeship certificate. The second largest group is represented by job seekers with basic education. According to the collected data, it cannot unambiguously be said that with higher educational attainment the unemployment rate is falling, as the next group of job seekers is represented by people with secondary vocational education with leaving examination without apprenticeship.

Table 7: Job seekers as of 31 December 2013

Highest level of education	**Number of job seekers**	**Proportion (in %)**
Without education	19	0.07
Incomplete basic education	101	0.39
Basic education	7. 406	28.58
Lower secondary education	11	0.04
Lower secondary vocational education	550	2.12
Secondary vocational education with an apprenticeship certificate	**10. 429**	**40.25**
Secondary education without a leaving examination and an apprenticeship certificate	151	0.58
Complete general secondary education	508	1.96
Complete secondary vocational education with apprenticeship and a leaving examination	831	3.21
Complete secondary vocational education with a leaving examination without apprenticeship	4. 531	17.49
Higher vocational education	182	0.70
Bachelor education	296	1.14
University education (Master education)	854	3.30
Doctoral education	40	0.15
Total	**25. 909**	**100**

Source: MPSV CR. Own processing.

As a rule, the young and educated people are considered to have fewer problems with unemployment than older age groups with a low level of education. An age relation to unemployment is illustrated in the following chart.

Graph 4: Graph shows analysed data that consist of 60 observations ranging from 1/2009 to 12/2013

Source: Own calculations.

The most important statistics for the data is presented below in the Table 5. Summary statistics, using the observations 2009:01 - 2013:12 for the variable 'unemployment rate' (60 valid observations).

Table 5: Table shows analysed data that consist of 60 observations ranging

from 1/2009 to 12/2013

Mean	7.6857
Median	7.7450
Minimum	5.9500
Maximum	8.6200
Standard deviation	0.52644

Source: Own calculations.

The statistics shows minimum as well as maximum levels that were reached. In order to proceed with the prediction it is necessary to examine the nature of data in terms of their stationarity. This is done through Augmented Dickey Fuller test, the results of which are presented in the Table below.

Table 6. Unit root test (Augmented Dickey Fuller)

Augmented Dickey-Fuller test for unemployment rate

including 8 lags of (1 - L) unemployment rate

(max was 10, criterion modified AIC)

sample size 51

unit-root null hypothesis: a = 1

model:

$$(1 - L)y = b0 + (a - 1)*y(-1) + \ldots + e$$

1st-order autocorrelation coeff. for e: 0.013

lagged differences: F(8, 41) = 2.693 [0.0177]

estimated value of (a - 1): -0.103508

test statistics: tau_c(1) = -1.22243

asymptotic p-value 0.6671

test with a constant and trend model:

$$(1 - L)y = b0 + b1*t + (a - 1)*y(-1) + \ldots + e$$

1st-order autocorrelation coeff. for e: 0.011

lagged differences: F(8, 40) = 2.579 [0.0226]

estimated value of (a - 1): -0.0990649

test statistics: tau_ct(1) = -1.14859

asymptotic p-value 0.9194

The test shows that the time serie is not stationary, i.e. we cannot reject the null hypothesis that the time serie has a unit root of order 1. This means that in order to predict the time series in the future, it is necessary to do appropriate differencing. Therefore, for the next step, a model of ARIMA (1,1,1) is selected with the AR(1), MA(1) and 1st order differencing to forecast the time series in the period from 1/2014 to 12/2015. ARIMA models are the most general types of models for predicting time series.

ARIMA (1,1,1)

Function evaluations: 37

Evaluations of gradient: 13

Model 1: ARIMA, using observations 2009:02-2013:12 (T = 59)

Estimated using Kalman filter (exact ML)

Dependent variable: (1-L) v1

Standard errors based on Hessian

Table 6: Coefficient std. error z p-value

coefficient	std. error	z	p-value	
const	0.0563946	0.0502003	1.123	0.2613
phi_1	0.395526	0.205322	1.926	0.0541 *
theta_1	0.223328	0.197820	1.129	0.0589 *

Source: Own calculations, own processing.

Table 7: Criterions

Mean dependent variable	0.042542	S.D. dependent variable	0.228024
Mean of innovations	-0.003795	S.D. of innovations	0.191407
Log-likelihood	13.63520	Akaike criterion	-19.27041
Schwarz criterion	-10.96026	Hannan-Quinn	-16.02646

Source: Own calculations, own processing.

Results show that both AR and MA elements are significant on a 10% level. Hence, we can assume that the data generating model is adequate unless there is an autocorrelation presented. This is tested in the Table 5.

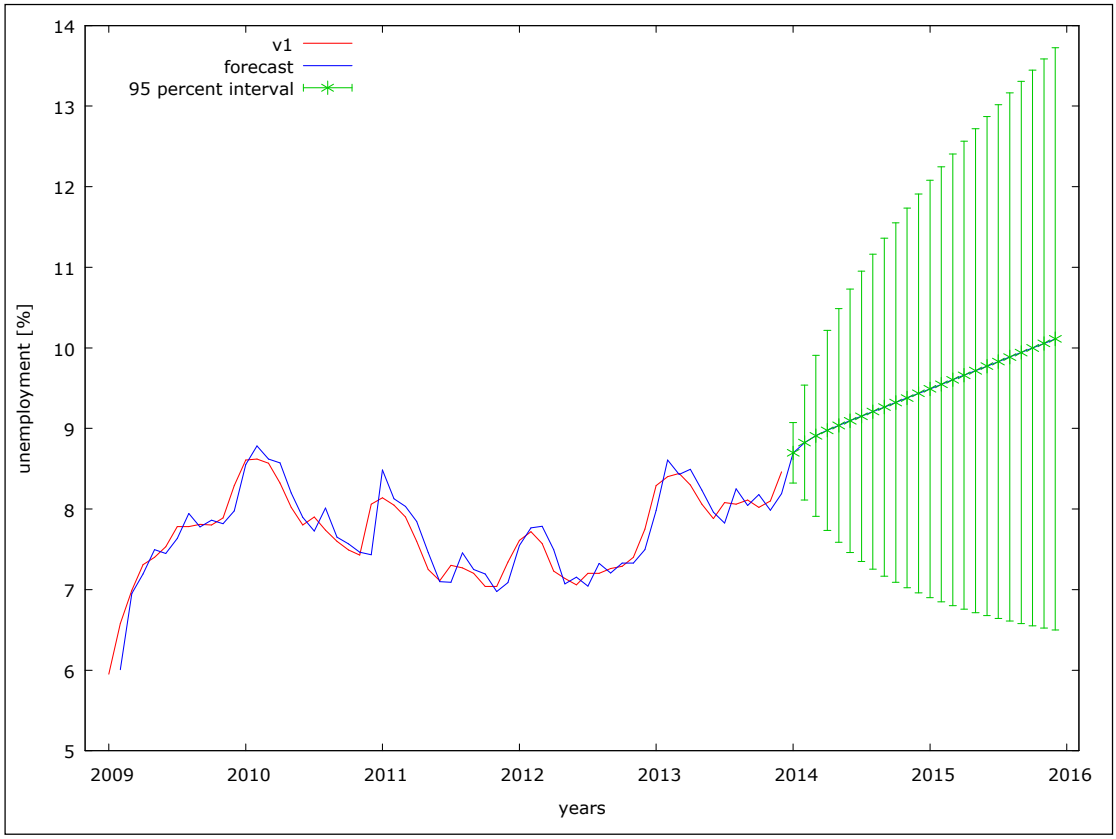
Test for autocorrelation reveals that in the model there is no autocorrelation presented.

Graph 5. Test for autocorrelation

Ljung-Box Q' = 19.7341, with p-value = P(Chi-square(10) > 19.7341) = 0.05187

Therefore, we can use the model to predict the unemployment rate for the period of 1/2014 to 12/2015.

Graph 5: Unemployment forcast



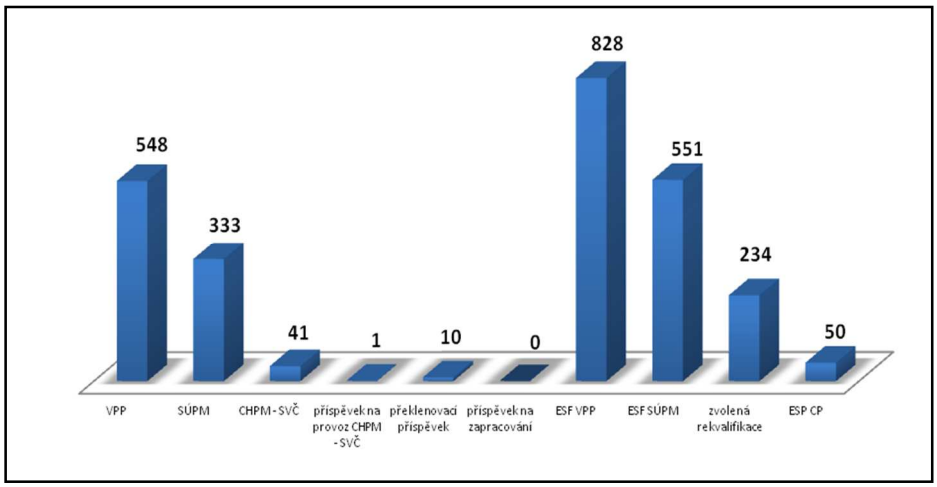
Source: Own calculations.

The monitored group is represented by job seekers aged from 15 to 64 years as of the last day of 2013. The lowest unemployment is before the twentieth and after the sixtieth year of age. This is probably influenced by the fact that by twenty, most young people are constantly preparing for a future career, and after sixty years of age there is the possibility of retirement. Most of the unemployed are in the ages of 20 to 24 years and then in the ages of 50 to 59 years. High unemployment rate in the group from 35 to 39 years, which is expected to have some education, qualification and sufficient work experience, is striking. In total, it can be stated that the number of job seekers slightly decreases with the age.

Use of active employment policy tools in the Liberec Region

The basic tools for combating unemployment include active employment policy, which is ensured by MPVP Czech Republic along with labour offices. In 2013, 2,596 people benefitted from any tools of the active employment policy in the Liberec region. Most supported were these in public welfare work (PWW). For 828 people, PWW program was supported by the European Social Fund (ESF) and 548 job applicants were in the program without funding from the ESF. The second most applied tool is socially beneficial jobs (SBJ).13

Graph 6: Number of persons supported within active employment policy



Source: Own calculations.

Less often used tools of active employment policy (AEP) are contributions to the running of the protected workplaces for the purpose of self-employment (PW - SE), for bridging allowance and for targeted programmes (TP).

5 Discussion

Comparing the unemployed in the Liberec region and throughout the Czech Republic, the proportion in the Liberec region is higher each year in the period from 2009 to 2013. This difference is diminishing all the time. While in 2009 it was 1.2%, in 2013 the difference was only 0.5%. Based on the found data it cannot be said that in Liberec region unemployment was decreasing, but it is growing slowly there. The development of the number of the unemployed does not record any striking differences. The number of job seekers is also balanced in relation to gender. Unemployed citizens of the Liberec region do not rely only on help from the state, but they are themselves involved in the search for a job vacancy. Rising unemployment is alarming; however, a more serious problem is the structure of people who are registered in labour offices. The importance of regional development is contingent on the increasing demand for these products, and that pressure on job creation and employment development, not only originating in that region, but also in developing countries. Products

[13] Socially beneficial jobs are jobs which the employer establishes on the basis of the agreement with the LO CR and fills with job seekers.

are marketed to specific customer segments. This segment is supported by the so-called. Marketing Green. Typically, a customer purchases a regional production, as well as from third world countries. The research project deals with the proposal of signification food products sold through Fair Trade (FT) in the Czech Republic, supported by IGA 2013 (Registration No. 816 11210/1312/3173 project). In Liberec region it concerns mainly young people under 25 years, job seekers from 35 to 39 years old and over 50 years. The Labour Office offers professions that should not be a problem to be occupied. People would often like to get these jobs, but unfortunately, they do not have the required qualifications. Benefits could be found in a changed view of job seekers, in the interest in what they can do, and what skills they applied in the past.

A certain way to reduce unemployment is to support small and medium-sized enterprises because these companies are able to absorb an unused labour force. Another way to reduce unemployment is labour mobility through improving the availability of housing and providing support when moving for a new job. The Czech labour market could be temporarily improved by a new upcoming project on household services. It concerns assisting in the maintenance of gardens, houses, cooking or cleaning. In the future, thousands of people could find a job in this project. "The main aim is to create new jobs. Nowadays, households pay for these services within the grey economy, however, workers are not insured and do not have the status of employees," said the president of the Union of Employers Unions Jiří Horecký.

Official assistance would have to be cheaper than the amount people are paying for it illegally. Those interested in these services could get a cheque for a certain value. The cheque would be handed over to the worker for work done, and it would be exchanged in a job agency that hired him for money of a higher value than the cheque. The difference would be offset by the state through subsidies or taxation reliefs. Expenditures would be returned in levies due to higher employment. A very important factor that positively affect employment, agricultural production. In Liberec region's traditional food traditions. An essential ingredient of vegetable farming in the Liberec region is growing of cereals (wheat and barley), potatoes, flax and oilseed rape. To a lesser extent there also grows corn, beets, fruit and vegetables. Behavior is here mainly cattle, pigs and poultry. Are well known in the henhouse Brništi and Příšovice.

6 Conclusion

Each region in the Czech Republic has its specifics regarding the spatial distribution, historical development of a given territory, infrastructure, population and its structure. All these mutually interacting factors have a major influence on the development of a particular situation on the labour market. Liberec region, as one of the smallest regions in the Czech Republic in comparison with other regions, has a higher rate of unemployment. In conclusion, it can be pointed out that on the basis of the calculation of future values of the unemployment rate, in 2014, the unemployment rate should slightly increase. It depends largely on how the state will deal with this issue and what tools it will use to reduce unemployment in the Liberec region. Research has shown that the development of employment in the Liberec region must be understood as a priority. Rising unemployment is a social risk. The next year threatens to occur more than 1,6 % rise in unemployment. The starting point may be active promotion of agricultural and food production that ensures sustainable jobs.

References

ČSÚ (2013) *Jak se neztratit v datech o nezaměstnaných*. ČSÚ [Online]. Available: http://www.czso.cz/csu/tz.nsf/i/jak_se_neztratit_v_datech _o_ nezamestnanych_20131018 [Accessed: 28 June 2014].

Danshöfer, V. (2014) *Politika zaměstnanosti*. PRÁCE A MZDY [Online]. Available: http://www.pamprofi.cz/?cid=332006&wa=WWW14E3%20MU&uid=CT02868324 &e=799718&odkud=ENMUP [Accessed: 13 June 2014].

Grigoryeva, N. (2012) The problem of youth unemployment in rural area. *Agris On-line Papers in Economics and Informatics*, vol. 4, no. 1, pp. 3-12.

Jurečka, V. et al. (2010) *Makroekonomie.* 1st edition. Prague: Grada Publishing.

Krajská správa ČSÚ v Liberci (2013) *Charakteristika kraje*. ČSÚ [Online]. Available: http: //www.czso.cz/xl/redakce.nsf/i/charakteristika_kraje [Accessed: 02 July 2014].

Mareš, P. (2002) *Nezaměstnanost jako sociální problém.* 3rd edition. Prague: Sociologické nakladatelství.

MPSV (2002) *Politika zaměstnanosti*. [Online]. Available: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2013p1/anal2013p1.pdf [Accessed: 02 July 2014].

MPSV (2002) *Upozornění na změnu metodiky.* [Online]. Available: http://portal.mpsv.cz/sz/stat/nz/zmena_metodiky [Accessed: 28 June 2014].

NET PROSPEKT (2014) *Definition of International Labour Organisation* [Online]. Available: http://ww2.prospects.ac.uk/cms/ShowPage/Home_page/Members___Log_in/Labour_market_information/Graduate_Market_Trends/Definitions_of_International_Labour_Organisation_measures/p!edXbLa [Accessed: 28 June 2014].

Svatošová, L. and Kába, B. (2012) *Statistické metody II*, 1st edition. Prague: FEM, CULS Prague.

Tuleja, P. et al. (2006) *Základy makroekonomie.* Brno: Computer Press.

Management of the Development of Regional Agritourism in the Rokycansko Region

Štefan Toth, Daniel Toth, Jan Borák

Department of Trade and Accounting, Department of Economic Theories, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol, Czech Republic
toth@pef.czu.cz, tothd@pef.czu.cz, borak@pef.czu.cz

Annotation: The management of regional development brings important impulses for the development of competitiveness and also for social development. Both aspects need to be developed on the basis of a thorough description and analysis. When applying quantitative methods, one needs to be aware of their instrumental and subsidiary character. Finding innovations or solution ideas that will facilitate social development as the most important factor of the development of the quality of life is always a priority. The goal of the study is to define the proposal of a solution at the general level as well as at the level of concrete research and calculation results so that the outcome can be applied to the qualitative growth of regional competitiveness and social sustainability in the selected region of Rokycansko. The research questions focus on the effect of improving the promotion of the area to attract more domestic and foreign tourists, thus contributing to the increase of income as a part of the national and local budget revenues. The following question is whether or not promotion helps create new business opportunities and thus contributes to a more efficient use of the homestead, farm or another facility, not only for farming, but also as an accommodation facility for tourists. The solution proposal shall always consider the requirement for the development and increase in the number of new job opportunities, which contributes to requalification of employees in the given area, helps promote and improve the awareness of organic produce and other regional products. And that is possible thanks to the regional development of agritourism with an ecological approach. The following objective is to confirm or dismiss the suggested hypotheses and find out whether or not there is dependence between the individual qualitative attributes. These are subsidiary objectives that should contribute to the managerial proposals in the field of social and regional development. The result of this study is to conclude that the regional employment policy has to draw on the potential of agro-tourism. In the region in question opens up the possibility of creating The relative of a sufficient number of vacancies in agrotourism and services associated with them. Regarding sustainable jobs that even without the subsidy period lasts longer than two years.

Key Words: Regional Development, Social Development, Sustainability, Rokycansko, Agritourism, Employment

JEL classification: R11

1 Introduction

The social development and the development of employment is a current problem that concerns the entire European territory (Antouskova, 2014). A special attention needs to be paid to regions called “internal rural peripheries”. In the Czech Republic, Rokycansko is one of the internal social and economic peripheries. It has a unique position in some social and regional contexts. The employment rate is quite high with regard to the geographic proximity of Plzen and its location near the highway that connects Plzen and Prague. As far as employment is concerned, the Plzen Region is a successful one; it is one of the regions with low unemployment rate in the long term and the unemployment rate has been below the average national value since 2004. The Plzen Region usually rates among the first five regions in the country and in some months the unemployment rate is even the second lowest, right after Prague, which has the lowest unemployment rate permanently.

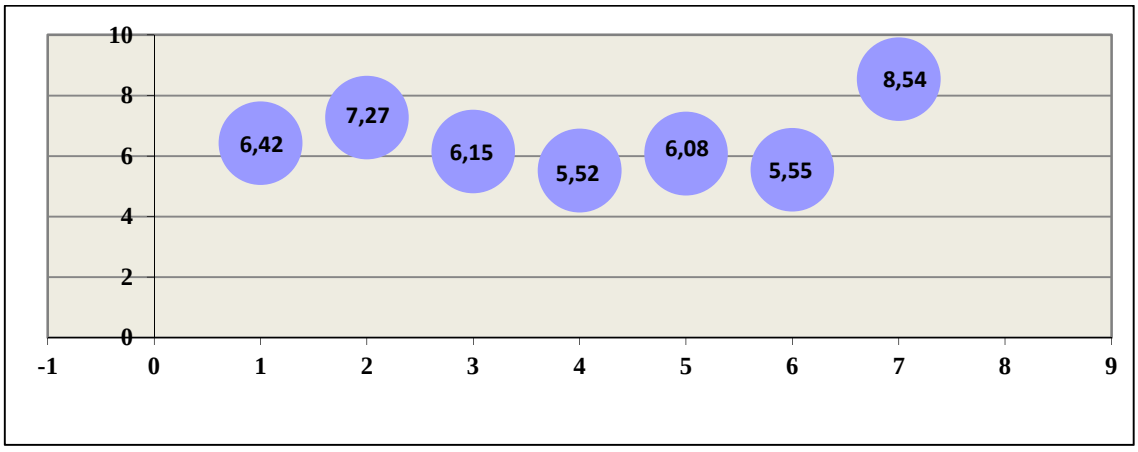
Table 1: Development of Unemployment Rate in the Plzen Region in 2009 – 2014

Registered Unemployment Rate (%)				Ratio of the Unemployed (%)	
2009	**2010**	**2011**	**2012**	**2013**	**2014**
8.16	8.25	7.01	7.31	6.45	5.66

Source: Own research. Data available at the Czech Statistical Office (2014) Time series. CZSO, 27th June 2014 [Online], Available: http://www.czso.cz/xp/redakce.nsf/i/casove_rady [05 July 2014].

However, the registered unemployment rate is no longer included since the beginning of 2013; it is now the ratio of the unemployed persons. As of 31 December 2013, the Plzen Region had the second lowest ratio of the unemployed in the Czech Republic. The ratio of the unemployed in the Plzen Region was 6.45 %; which was by 1.73 percent point lower than the ratio in the Czech Republic. The lowest unemployment rate was traditionally recorded in the Capital City of Prague (5.14 %); the highest then in the Ústí nad Labem Region (11.47 %), Moravian-Silesian Region (10.47 %) and in the Olomouc Region (9.79 %). The year on year ratio of the unemployed in the Plzen Region increased by 0.51 percent point. When compared to the same period in the previous year, the number of vacancies increased by 158, i.e. by 6.5 %. The increase of the vacancies for graduates and the young more than doubled annually. The vacancies for the disabled increased by 12.1 % (Czech Statistical Office, 2014). The following districts of the Plzen Region had a lower unemployment rate: Plzeň-jih (5.52 %), Rokycany (5.55 %) and Plzeň-sever (6.08 %); on the other hand, Tachov (8.54 %) and Klatovy (7.27 %) had the highest unemployment rate (Czech Statistical Office, 2014).

Figure 1: Unemployment Rate by Individual Districts as of 31 December 2014



Source: Own research.

As the report on the situation on the regional labour market prepared by the Regional Labour Office in Plzen implies, several significant employers in the Plzen Region laid off or are planning to lay off several of their employees in 2014. In 2013, the Office received several intentions of mass layoffs. This concerns, for example, Panasonic AVC Networks Czech, s. r. o., which laid off 125 employees as of 30 April 2013; ČEZ Zákaznické služby, which laid off 36 employees as of April 2013. Eurogate Warehousing & Distribution Czech, s. r. o. and Nežárka were also planning mass layoffs. And Lesní společnost Železná Ruda, a. s. or Apex City Casino are planning to lay off 19 people. Also, 154 employees of Trolli Bohemia, s.r.o., received notices of termination at the end of 2013. The Regional Labour Office in Plzen prepared quite an optimistic prognosis of the market development in 2014. The report states

that the difference between the labour supply and demand will continues and that there might be a slight increase in the number of available jobs as against 2013. The development in 2014 will depend on the economic situation, particularly that of strategic employers in the Region. The employers will mainly focus on engineering technicians, mechanical engineers, machine operators and fitters, programmers, shop assistants, drivers, cooks, sales representatives, bricklayers and industrial technicians. In the future, the economic situation in the Plzen Region might be influenced by neighbouring Germany more. On one hand, there are contracts between Czech and German companies that play an important role, and also there are job opportunities for Czech citizens in Germany. As for the age structure of job applicants, the largest group of applicants at the end of 2013 was the age category of 55 – 59, or 13.7 %. The following group was the age category of 35 – 39 (12.3 %) and young people at the age of 20 – 24 (12.2 %). The actual numbers of applicants are recorded in the table below (Integrated Portal of the Ministry of Labour and Social Affairs, 2014).

Table 8: Age Structure of Job Applicants in 2011 – 2013

Age	Status to date					
	2011-12-31		2012-12-31		2013-12-31	
	abs.	in %	abs.	in %	abs.	in %
until 19 years	1 176	5,0	1 176	5,0	1 016	4,0
20 - 24 years	3 025	13,0	3 093	13,0	3 146	12,2
25 - 29 years	2 534	10,9	2 565	10,8	2 848	11,1
30 - 34 years	2 661	11,4	2 533	10,7	2 814	10,9
35 - 39 years	2 916	12,5	2 935	12,4	3 167	12,3
40 - 44 years	2 271	9,7	2 415	10,2	2 716	10,6
45 - 49 years	2 531	10,9	2 536	10,7	2 631	10,2
50 - 54 years	2 813	12,1	2 695	11,4	2 896	11,3
55 - 59 years	2 969	12,7	3 155	13,3	3 523	13,7
over 60 years	412	1,8	621	2,6	952	3,7
Total	**23 308**	**100**	**23 724**	**100**	**25 709**	**100**

Source: MPSV [Online], Available: http://portal.mpsv.cz/upcr/kp/plk/statistiky/ [12 July 2014].

The employment rate in the monitored region could receive another new impulse, and that is the promotion of agritourism, especially thanks to the nearby Brdy area. Tourism has a significant effect on the economy: it shows the most dynamic growth, creates job opportunities and contributes to GDP (about 3 %). However, it is necessary to look for other services in tourism that would not only attract foreign tourists to the Czech Republic, but that would also increase the interest of local residents in domestic tourism, thus supporting social development. One of the possibilities of offering something new within the Czech Republic is rural tourism and the related agritourism. This form of tourism has become very popular in some European countries (such as Germany, Austria, Italy…). The Czech Republic, however, has not used its extraordinary potential for the development of rural tourism yet. The aim of

rural tourism is not only to increase the visit rate in rural areas, but also to contribute to the sustainable development of the countryside, to offer new jobs also for workers without qualification, to contribute to the diversification of the farming countryside and to improve the quality of life in rural areas. Rural tourism, and agritourism in particular, help entrepreneurs in the agricultural field gain sufficient revenues while being friendly to nature and preserving the traditions and culture of the countryside as the aim of agritourism is to put oneself in the place of the farmer. Some of the major obstacles of the development of these services are the low economic potential of business and the level of support of business activities. A successful development requires cooperation and interest of the local residents, regional authorities and the involvement of local organisations (such as micro-regions) in the activities. A great opportunity lies in the European funds and programmes for the period of 2014 – 2020 that offer grants for the development of tourism and diversification of the agricultural activity. The partnership contract that regulates the use of structural funds has already been signed and thus it is now required to take the first steps to implementation of projects. This article focuses on the development of rural tourism in the Plzen Region with regard to the specifics of the social and regional development of Rokycansko. There are large disparities between urban and rural areas in this region. The region is mainly visited by domestic tourists for short-term stays. The development of this type of tourism and agritourism could bring a significant contribution to the region.

2 Objectives and Methodology

The objective is to propose optimization of the social development management using the instruments of the development of tourism and agritourism in Rokycansko. The output will also include a foundation for the creation of a suitable procedure for determining the employment rate and social development of the particular sector. The research also aims at assessing the status and condition of employment in relation to rural tourism and agritourism in the selected region (Šrédl, 2006). The analytical part focuses on establishing the current employment rate in the selected region with reference to the potential of development of rural tourism and agritourism. There are some specific geographic and social determinants in the Plzen Region and Rokycansko that could have a positive effect on employment in agritourism and in the selected area. Also, supporting services and accommodation facilities are suitable for that type of tourism development and thus social development. The actual benefits for the Plzen Region arising from rural tourism and agritourism may have a positive effect on sustainability of employment. For municipal and regional decision-making, it is required to define a proposal of the development of the particular region that would be suitable for the development of rural tourism and agritourism as well as its effect on the social environment and what its benefits will be. The research questions focus on the effect of improving promotion of the area in order to attract more domestic and foreign tourists, thus contributing the increasing national and local budget revenues, and whether or not it creates new business opportunities and contributes to a more effective use of the homestead, farm or another facility, not only for agriculture, but also as accommodation for tourists and learning about the local lifestyle. The solution proposal shall always consider the requirement for the development and increase in the number of new job opportunities, which contributes to requalification of employees in the given area, helps promote and improve the awareness of organic produce and other regional products. And that is possible thanks to the regional development of agritourism with an ecological approach. The following objective is to confirm or dismiss the suggested hypotheses and find out whether or not there is dependency between the individual qualitative attributes. These are subsidiary objectives that should contribute to the managerial proposals in the field of social and regional development.

Hypothesis 1: The interest in agritourism and rural tourism is influenced by residence.

Hypothesis 2: The interest in agritourism and rural tourism is influenced by age.

Hypothesis 3: The visit rate of the Plzen Region is influenced by interest in agritourism.

Hypothesis 4: The interest in agritourism and rural tourism is influenced by the offer of services related to this type of tourism.

For the purpose of analysis, we will apply the time series analysis (linear and multiple regression) in the first step. It is used as an instrument of analysing the situation on the labour market in the monitored period. It also allows monitoring trends in employment and economic activities. The LINREGRESE tool will be used for the selection of secondary data. The LINREGRESE function uses the method of smallest squares to make regression as close to the particular data as possible. There will be one independent variable x; m and b will be calculated according to the following formulas:

$$m = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sum(x - \bar{x})^2}$$

$$b = \bar{y} - m\bar{x}$$

Where x and y are the mean values of the selection.

The quantitative research uses questionnaires, observations or experiments to collect data, to name a few examples. This part of the research includes a questionnaire sent out electronically. Firstly, the hypotheses that predict the expectations in the research are formulated; then a questionnaire is created with twenty closed-ended questions and semi-closed-ended questions (Hendl, 2008). The questions are prepared according to Kozlov's (Kozel, 2005) recommendation for question order. First, the opening questions are presented, followed by filter questions to allow a logical structure of the questionnaire and to make sure that only suitable respondents are involved, then material questions concerning the research and finally identification questions. The hypotheses are verified by the analysis of the qualitative indicator dependency strength. Testing is performed using contingence tables that allow measuring the dependency strength. Pearson's $\chi 2$ test is used to verify the statistically confirmative dependency between the qualitative indicators. Pearson's $\chi 2$ test can be calculated as follows:

$$x^2 = \sum_{i=1}^{k}\sum_{j=1}^{m}\frac{\left(n_{ij} - n_{oj}\right)^2}{n_{oj}}$$

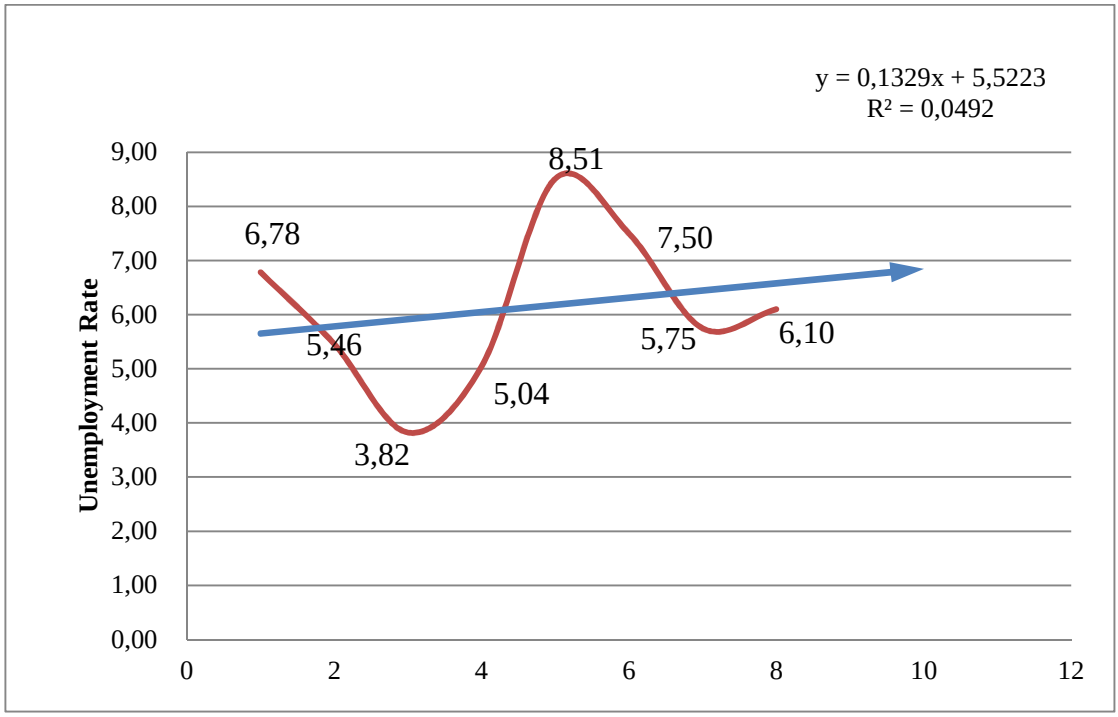
This test is based on Zero Hypothesis H0 which is negative and assumes independence between both indicators. Testing criterion $\chi 2$ has $\chi 2$ division for the number of levels of

scope. First, the level of significance α is selected (usually α = 0.05); the theoretical frequencies are calculated in the contingency table; the testing criterion is calculated according to the relation specified above. The calculated χ2 is compared with the table χ2α for the particular number of levels of scope. If the calculated value χ2 is greater than the table value χ2α, it is established that there is interdependence between both qualitative indicators that can be generalised (Hendl, 2008). This test may be applied to selections exceeding 40 and to theoretical frequencies over 5 (Svatošová, Kába and Prášilová, 2004). This testing is performed using the Statistica programme and supplemented with manual calculations and graphs in Microsoft Office Excel.

3 Results – Rokycany

The calculations of the development of the registered unemployment rate are used as an analytical tool to clarify the social and economic situation on the labour market in the selected region of Rokycansko. It is a region that does not only face quite a high unemployment rate when compared with the Plzen Region as a whole, but that also deals with a steep increase in the unemployment rate with future approximation so that the registered unemployment rate is going to increase. The registered unemployment rate was used as an indicator until 2012; it has been replaced with the ratio of the unemployed in the total amount of 15 – 64 years of age, which we have to include.

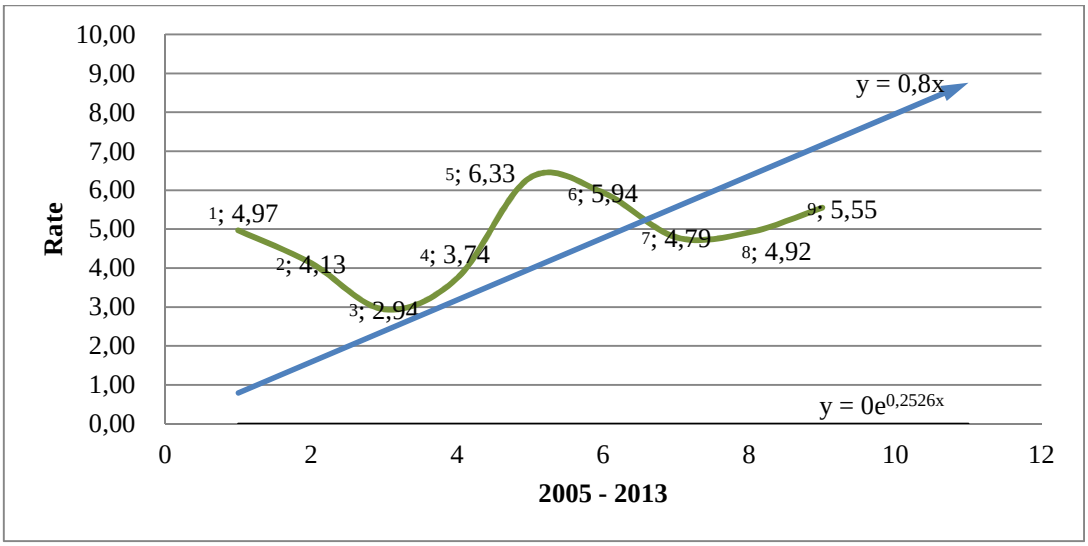
Graph 1: Development of the Registered Unemployment Rate according to the New 2005 – 2014 Methodology (Rokycansko)



Source: CZSO, 2014, own calculation.

The graph implies that the trend is going to be rising in the following period, i.e. in 2014 and 2015. This is by 1 to 2 percent higher when compared with the Plzen Region and the Czech Republic.

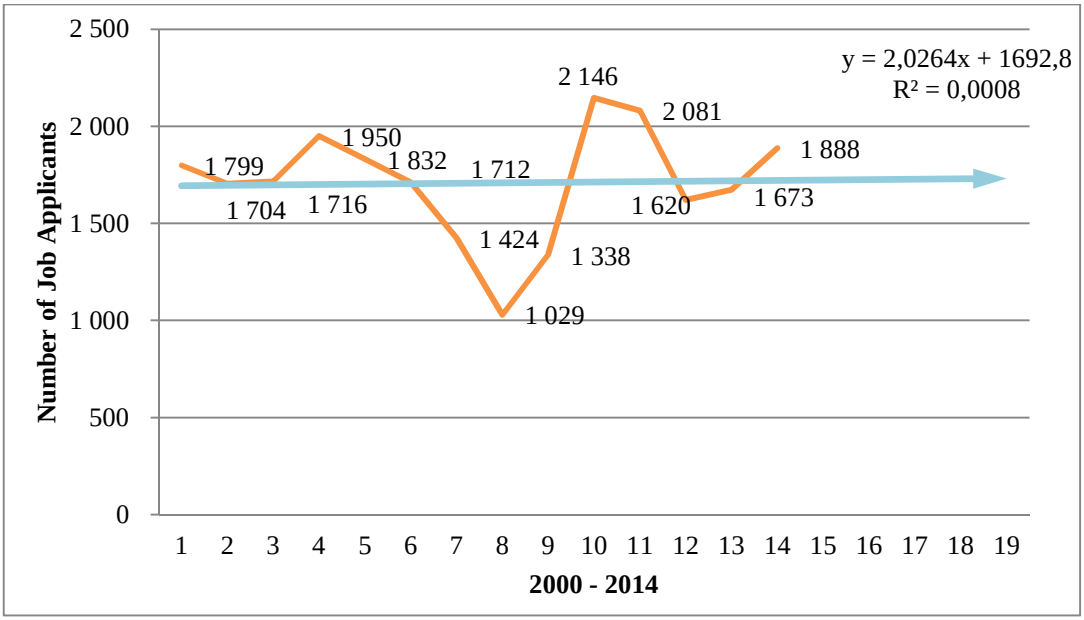
Graph 2: Ratio of the Unemployed in the Total Number of Persons at the Age from 15 to 64 (Rokycansko)



Source: CZSO, 2014, own calculation.

The following graph implies that the social risk of the increase in the unemployment rate in Rokycansko is quite high. The estimate for 2014 is 7 to 7.5 %. It is also necessary to take into account the fact that more than 30 % of the employed commute to work either to the Plzen Region, as shown above, or to the Prague Region, which is made possible by the easy accessibility. The graph also shows strong cyclical fluctuations caused by the closedowns of large regional employers. The largest swing upwards can be seen in 2009; it was caused by strong foreign factors and the decrease of demand in Western Europe.

Graph 3: Total Number of Job Applicants in 2000 – 2014 (Rokycansko)



Source: CZSO, 2014, own calculation.

The following analytical part shows the potential of the development of agritourism as a tool of development of employment. The interest in agritourism and its analysis shows the direction of the trend of the development of the creation of new jobs and how it is possible to achieve social sustainability and competitiveness in the region of Rokycansko. Predefined hypotheses are tested within the scope of the study and research of the relation between social indicators and the potential growth of the branch. Dependences between qualitative indicators are determined. The calculations and verifications of the tested hypotheses were performed in the Statistica programme. The following tables show the theoretical values (rounded up to 2 decimal positions), the calculation of $\chi 2$ and the comparison with table $\chi 2$ at the 0.05 level of significance for the particular number of levels of scope (sv).

Hypothesis 1

H0: The interest in agritourism and rural tourism (VT) is not influenced by residence.

HA: The interest in agritourism and rural tourism is influenced by residence.

Table 3: Estimated Frequencies of Hypothesis 1 implies that the calculated $\chi 2$ is greater than the table $\chi 2$ at the 0.05 level of significance, thus H0 is rejected and we can state that there is dependence between both qualitative indicators. The place of residence by size has an effect on the interest of people in agritourism and rural tourism.

Table 3: Estimated Frequencies of Hypothesis 1

Interest in Agritourism	Population				
	Above 500,000	From 3000 to 100,000	From 100,000 to 500,000	Below 3000	Total
Yes	54.19	23.59	10.20	14.03	102.00
No	30.81	14.41	5.80	7.98	58.00
Total	85.00	37.00	16.00	22.00	160.00

Source: own research.

sv = 3 $\chi^2 > \chi^2\ 0{,}05 \longrightarrow$ H0 is rejected

$\chi^2 = 10.821$

$\chi^2\ 0.05 = 7.815$

Hypothesis 2

H0: The interest in agritourism and rural tourism (VT) is not influenced by age.

HA: The interest in agritourism and rural tourism is influenced by age.

Table 4: Estimated Frequencies of Hypothesis 2 implies that the calculated χ^2 is greater than the table χ^2 at the 0.05 level of significance, thus H0 is rejected and we can state that there is dependence between both qualitative indicators. It is thus possible to claim that age influences the interest of people in agritourism and rural tourism.

Table 4: Estimated Frequencies of Hypothesis 2

Interest in Agritourism	Age Category						
	15 – 25	26 – 35	36 – 45	56 – 65	46 – 55	Over 65	Total
Yes	29.33	34.43	8.29	10.20	10.20	10.56	102.00
No	16.68	19.58	4.71	5.80	5.80	5.44	58.00
Total	46.00	54.00	13.00	16.00	16.00	15.00	160.00

Source: own research.

sv = 5 $\chi^2 > \chi^2\ 0.05 \longrightarrow$ H0 is rejected

$\chi^2 = 17.155$

$\chi^2\ 0.05 = 11.071$

Hypothesis 3

H0: The visit rate of the Plzen Region is not influenced by interest in agritourism.

HA: The visit rate of the Plzen Region is influenced by interest in agritourism.

Table 5: Estimated Frequencies of Hypothesis 3 implies that the calculated χ^2 is smaller than the table χ^2 at the 0.05 level of significance, thus H0 is not rejected and we can state that these two qualitative indicators are not mutually influenced.

Table 5: Estimated Frequencies of Hypothesis 3

Interest in Agritourism	Visit Rate of the Plzen Region		
	Yes	No	Total
Yes	75.23	26.78	102.00
No	42.78	15.23	58.00
Total	118.00	42.00	160.00

Source: own research.

sv = 1 $\chi^2 < \chi^2\ 0.05 \longrightarrow$ H0 is not rejected

$\chi^2 = 1.991$

$\chi^2\ 0.05 = 3.841$

The visit rate of the Plzen Region is not influenced by the interest in agritourism; the visitors choose this region for other reasons as well. The previous implies that 19.49 % of respondents visited the Plzen Region for agritourism and rural tourism.

Hypothesis 4

H0: The interest in agritourism and rural tourism is not influenced by the offer of services related to this type of tourism.

HA: The interest in agritourism and rural tourism is influenced by the offer of services related to this type of tourism.

Table 6: Estimated Frequencies of Hypothesis 4

Agritourism and Rural Tourism Services	Interest in Agritourism		
	Yes	No, but I will consider it in future	Total
Horse riding	18.12	29.88	48.00
Participation in local traditional events	17.37	28.63	46.00
Trying out crafts	11.33	18.67	30.00
Stay and work at a farm, production of products	27.18	44.82	72.00
Total	74.00	122.00	196.00

Source: own research.

sv = 3 $\chi^2 > \chi^2\ 0.05 \longrightarrow$ H0 is rejected

$\chi^2 = 8.566$

$\chi^2\ 0.05 = 7.815$

Table 6: Estimated Frequencies of Hypothesis 4 implies that the calculated $\chi 2$ is greater than the table $\chi 2$ at the 0.05 level of significance, thus H0 is rejected and we can state that there is dependence between both qualitative indicators. It is thus possible to claim that the services of this type of tourism influence the interest of people in agritourism and rural tourism. In summary, people from large cities prefer agritourism and rural tourism and people from municipalities and villages with population below 3,000 are not interested in such type of tourism. It is more interesting for the middle class. There is an economic potential that will have an impact on the development of the creation of new jobs in this branch. People under 35 are most interested in trying such services. That is a demographically favourable factor that should provide quite a good sustainability of jobs. The people who have travelled for agritourism and rural tourism usually chose stays with horse riding but they are also interested in learning and participating in the life on a farm.

4 Conclusions and discussion

Rural tourism and agritourism are still at the beginning in the Czech Republic and the potential of the Czech countryside has not been quite utilised yet. Domestic tourists are discovering this type of tourism very slowly. However, agritourism could become popular and important for rural districts in the future, just as it is in other European countries (particularly

in Austria, Germany, Italy, the Netherlands and so on). Moreover, rural agritourism in the monitored region can also create new sustainable jobs. The research implies that it is not possible to expect social and environmental sustainability without a systematic and central support. However, that does not mean that the particular industry should be continuously state-aided and subsidised. The Plzen Region has very good conditions for rural tourism: natural, cultural, recreational and sport-related. Thus, it is capable of achieving very good results in the long term with initial assistance. It is very suitable for agritourism thanks to the large number of ecological farms, agricultural businesses and stables. This potential of the region is currently unexploited and not promoted. People interested in agritourism usually come from large cities and they are under 35 years old; they are mainly interested in horse riding and participating in local traditional events and they are interested in an active stay at a farm in the future. The questionnaire respondents choose such a holiday both in the Czech Republic and abroad. However, majority of tourists come to the Plzen Region for hiking, knowledge and cycling. In 2013, 536,483 tourists visited the Plzen Region, out of which 70 % were domestic tourists. The number of overnight stays has been the lowest in the past few years: 1,428,491 overnight stays in group accommodation facilities. This is related to the social development of new jobs and employment. Officially, statistics do not monitor specific data about agritourism and rural tourism, such as number of entrepreneurs in agritourism, number of visitors or number of beds, number of jobs and annual increase. It is necessary to monitor the trends in sector analyses and to focus systematic support to areas with the potential of growth and success. The data are monitored only locally in some regions or districts, usually for communal and municipal purposes. The Regional Authority in Plzen does not monitor or promote this type of tourism; it has not defined it as a development priority. Some accommodation facilities are promoted by the Rural Tourism Association or the European Centre for Eco-Agritourism. Farms have 20 beds at the most and the owners do not report the number of visitors and overnight stays to any institutions. The number of new jobs is mostly the result of qualified estimates. The most optimistic estimates move around 1,200 jobs in agritourism in the Plzen Region. According to the estimates, the capacity of about 37,000 beds (in the Czech Republic) in farms or accommodation facilities involved in rural tourism and agritourism was created in 2012. There is a gradual increase of the interest in offering services of rural tourism and agritourism, as the increasing number of registered applications for Subsidy Title III. 1. 3 Promotion of Tourism of the Rural Development Programme shows. Since 2010, 583 applications have been submitted. 51 projects for the development of rural areas have been supported within Priority Axis 3 Development of Tourism of the Regional Operational Programme for the Southwest. In the peripheral region of Rokycansko, in the municipality of Břasy, several agritourism farms have been founded. The owners are involved in horse and sheep breeding and in ecological cultivation of grasses. They also provide accommodation and catering services and thus a farm is ideal for the development of rural tourism and agritourism. The creation of new jobs is more or less unitary. In the programme period from 2007 – 2013, it was possible to ask for a subsidy from the European Agricultural Programme for Rural Development within the scope of the Rural Development Programme, Axis III Quality of Life in Rural Areas and Diversification of Rural Economy, Priority III. 1, Measure III. 1. 3 Promotion of Tourism, Intention b) Construction of Small-capacity Accommodation Facilities and Sports Equipment Rentals. Another option is the structural fond called European Regional Development Fund within the scope of the Regional Operational Programme NUTS II Southwest (ROP SW) where tourism is concerned in Priority Axis 3 Development of Tourism, Area of Support 3.1 – Development of Tourism Infrastructure. Another option is cross-border cooperation within the Dispositional Fund, Objective 3 Czech Republic – Free State of Bavaria, which is also financed from the European Regional Development Fund. In the following programme period, it will be

possible to continue within the scope of OP Czech Republic – Free State of Bavaria. However, the new regional operational programmes have not been approved by the Government yet and thus it is not possible to announce calls. Rural tourism is not significant only for the entrepreneur. It is also an important factor of the development of the municipality as it contributes to stabilisation of rural settlement and its sustainable social development. New jobs might be created if the farm's operations are successful. Services offered by entrepreneurs in the field of agritourism will attract more visitors and tourists to the region; they may increase the interest in organic products and ecological agriculture. The development of agritourism helps maintain and revive local traditions and customs, contributes to the use of the cultural, historical and natural potential of the surroundings without disturbing the rural life and nature in a significant way. The social development of Rokycansko is also related to the availability and sale of regional products, organic products as well as ethical shopping brands. This industry creates sustainable jobs in a segmented shop outside the chains. Another aspect is the link to the development of farms and rural tourism that needs to be supported by the sale of such products. The offer of the product variety with a regional label is accompanied by the sale of Fair Trade and Direct Trade brands, which, in the international scope, maintains social sustainability and liability. The significance of the regional development is also conditioned by an increased demand for such products and thus pressure to create jobs and develop employment; this does not only concern regional products, but also products from developing countries. The products are offered to a specific segment of customers. This segment is supported by green marketing. Typically, the customer buys regional production as well as products from third world countries. This is also the subject of research by Proposal of Significance of Food Products Sold in the Form of Fair Trade (FT) Supply in the Czech Republic, supported by IGA 2013 (Project Registration Number: 20131023 - 11210/1312/3173) and IGA 2013 (Project Registration Number: 20131052 - 11210/1312/3169). The cooperation of local citizens, mayors, local organisations and the regional authority is very important for sustainable development. According to the respondents of the questionnaire survey, the most optimal regions for rural tourism and agritourism are the South Bohemian Region, South Moravian Region, Vysočina and the Plzen Region. The Plzen Region (Rokycansko) should utilise its preconditions for the development of rural tourism and agritourism as soon as possible to be one of the first regions where there is a quality supply of such services. Objectives of the work consisted of an objective finding gaps in the labor market in the region. The study was to define the potential for creating and maintaining jobs. In this area the job creation potential of agrotourism. It is a sector with a growth trend as research shows. It can therefore create and maintain jobs and move freely disposable capacity of the human capital of the reduced secondary sector to the tertiary sector. This trend is supported by the European Union and form the core of an active employment policy and employment strategy for the period up to 2020.

References

Agroturistika: Praktický rádce (2002) 1st edition. České Budějovice: Rosa - jihočeská společnost pro ochranu přírody, o.p.s.

Antouskova, M. (2014) 'Travel cost model for an agrifarm specialised in horse riding activities', *Agris On-line Papers in Economics and Informatics*, vol. 6, no. 4, pp. 25–32

Authors team (2007) *Venkovský cestovní ruch, jeho specifika a podmínky pro rozvoj*. Prague: Ministry of Regional Development CZ.

Czech Statistical Office (2014) *Statistický bulletin – Plzeňský kraj 1. čtvrtletí 2014.* CZSO, 4th July 2014 [Online], Available: http://www.czso.cz/csu/2014edicniplan.nsf/krajp/330109-14-xp [05 July 2014].

Dudák, V. (2008) *Plzeňsko: příroda, historie, život*. 1st edition. Prague: Miloš Uhlíř – Baset.

Hall, D., Kirkpatrick, I. and Mitchell, M. (2005) *Rural tourism and sustainable business.* 1st edition. Great Britain: Channel View Publications.

Hendl, J. (2008) *Kvalitativní výzkum: základní teorie, metody a aplikace*. 2nd edition. Prague: Portál.

Informační publikace o Regionálním operačním programu regionu soudržnosti Jihozápad (2007) [Online], Available: http://www.rr-jihozapad.cz/vismo/o_utvar.asp?id_org=200047&id_u=1039 [01 July 2014].

Jakubíková, D. (2007) *Strategický marketing*. Prague: Oeconomica.

Kantor, T. and Marek, D. (2007) *Příprava a řízení projektů strukturálních fondů Evropské unie*. 1st edition. Brno: Barrister & Principal.

Kozel, R. (2005) *Moderní marketingový výzkum.* 1st edition. Prague: Grada.

Majerová, V. (2011) *Sociální kapitál a rozvoj regionu.* Prague: Grada.

Ministry of Agriculture (2007) *Program rozvoje venkova na období 2007 – 2013*. Praha.

Místní akční skupiny v Plzeňském kraji (2008) Plzeň: Odbor regionálního rozvoje Krajského úřadu Plzeňského kraje.

Moravec, I. et al. (2006) *Venkovská turistika: Teoretická východiska*. 1st edition. České Budějovice: Centrum pro komunitní práci ČB.

Navrátilová, L. (2005) *Program rozvoje cestovního ruchu v Plzeňském kraji* Plzeň: Krajský úřad v Plzni [Online], Available: http://www.kr-plzensky.cz/article.asp?itm=23466 [05 July 2014].

Orieška, J. (1999) *Technika služeb cestovního ruchu*. 1st edition. Prague: Idea Servis.

Palatková, M. (2006) *Marketingová strategie destinace cestovního ruchu: Jak získat více příjmů z cestovního ruchu*. 1st edition. Prague: Grada Publishing.

Pělucha, M. et al. (2006) *Rozvoj venkova v programovacím období 2007 – 2013*. Prague: Ireas.

Pourová, M. (2002) *Agroturistika*. 1st edition. Prague: FEM CULS Prague.

Pourová, M. and Stříbrná, M. (2003) *Venkovská turistika: zlepšení marketingových a odborných znalostí provozovatelů agroturistických farem.* 1st edition. Kolinec: AgAkcent.

Provazníková, R. (2009) *Financování měst, obcí a regionů*. 2nd edition. Prague: Grada publishing.

Ročenka ekologického zemědělství v České republice (2008) Prague: Ministry of Agriculture.

Svatoš, M. (2007) *Ekonomika agrárního sektoru*. 4th edition. Prague: FEM CULS Prague.

Svatoš, M. et al. (2009) *Agrární politika*. 1st edition. Prague: FEM CULS Prague.

Svatošová, L., Kába, B. and Prášilová, M. (2004) *Zdroje a zpracování sociálních a ekonomických dat – učební texty.* Prague: CULS Prague.

Šrédl, K. (2006) *Ekonomie a teolog*. 1st edition. Brno: L. Marek.

Tachovský deník (2007) *Díky koním přijedou cizinci.* Tachovský deník, 14th June 2007 [Online], Available: http://tachovsky.denik.cz/podnikani/kone_cizinci_20070613.html [30 June 2014].

Tomšík, K. (2007) *Evropská integrace a environmentální ekonomika*. 2nd edition. Prague: FEM CULS Prague.

Tschechien-Online (2014) *Agroturistika v ČR láká hlavně na jízdu na koni.* Finanční noviny, 16th July 2006 [Online], Available: http://www.tschechien-online.org/news/5412-agroturistika-cr-laka-hlavne-na-jizdu-na-koni/ [30 June 2014].

Václavík, T. (2008) *Agroturistika na ekofarmách: Jak na to*. Brno [Online], Available: http://www.bio-info.cz/uploads/download/Agroturistika_na_ekofarmach.PDF [12 July 2014].

What factors affect the use of rural development subsidy funds for the period 2007 - 2013, Axis III and IV

Marie Trantinová[1], Tomáš Hlavsa[2], Andrea Čapkovičová[2], Jiří Hrabák[2],

1Deparment, Institute of Agricultural Economics and Information, Manesova 75, Praha2, 12056, The Czech Republic,
trantinova.marie@uzei.cz

Annotation: The main objective of this IAEI internal research project was to assess what factors influence drawing of subsidies from the 3rd and 4th Axis Rural Development Programme in the Czech Republic over the period 2007 – 2013. We analyse factors of rural development and employ a questionnaire survey. Research work has been split into two parts.

One part concentrates on quantitative analysis and assesses available data on factors of development on the level of municipality (village), categorised by individual measures of the Rural Development Programme 2007 – 2013 in Axes 3 and 4 (from 2007 through June 2013). The other part considers selected municipalities and their successful applicants. The quantitative approach is suitable for a general territory categorization and general monitoring of development. In order to analyse factors which influence the drawing of subsidies, a qualitative approach is necessary, represented here by a questionnaire survey.

Results of the analysis of publicly available data showed that the statistical methods did not produce sufficient explanation of factors that affect the utilization of grant funds for measures of Axis 3 and 4 of the Rural Development Programme 2007 - 2013. Quantitative approach is suitable for a general categorization of territorial monitor progress. For an explanation of the factors that influence the utilization of grant funds is necessary qualitative investigation, such as questionnaires. The questionnaire showed that the initial information about the project is being received almost exclusively randomly. Therefore, it is recommended to increase promotion of public awareness of rural development measures in next period (2014-2020).

The conclusions of questionnaire identified several important findings by the main type of organization and individual applicants, by type of operation as well as by clusters. Results of questionnaire survey proved that the main reason why respondents asked for financial support from the RDP was their planned investment to improve quality of life in the municipality or region (78%). The need to eliminate gaps in service provision and to meet requirements of legislation is the second reason why they applied for a subsidy. The third most frequent reason was the intention to start own entrepreneurial activity. In most cases, the request was initiated by respondents themselves (90%). Nearly half of them were told about the possibility to receive subsidies through personal contact with some competent person (mayor or consultants, etc. 49%). A large proportion of respondents also received information from the Internet (44%). Almost three quarters of respondents have to use assistance from outside during preparation the project (72%). Two thirds of those who took advantage of external assistance used remunerated consulting firm (65%). Less than a quarter of institutions received assistance for free (from the mayor, staff or colleagues LAG - 23%). If respondents had re-applied for support for a similar project, they would have required at least half of the funds to be provided by the European Union. Only 16% of respondents would be willing to cover the project cost from its own resources if they should cover more than 50% themselves. Only 3% of respondents did not want subsidy in the case that their own funds should cover only 10% of the cost.

Key words: the views of grant applicants, factors of rural development, found and subsidies, mathematical analyses, support of municipalities, Axis III and Axis IV of Rural Development Program, LEADER

JEL classification: C02, C38, Q18, J19

Introduction

The quality of life in rural areas is significantly influenced by conservation and development of rural space in general. Through measure III axis was supported investment into basic infrastructure in municipalities with population below 2,000 inhabitants. Support for the setting up of new and for the development of existing non-agricultural microenterprises14 including new trades in the area of production, processing and services, especially in the area of crafts and services for the economy and population shall assist in achieving goals of the Lisbon Strategy. Rural social structures and social capital together with the structure of built-up areas offer significant potential for diversification of activities

The measure should as well ensure an increasing of quality of life in rural areas through development of public amenities and services in municipalities with a population of less than 500 inhabitants.

The question of rural development is usually based on two basic approaches. The historically older approach highlights the role of agriculture and its related industries and activities. A new approach to rural development, however, concentrates on non-agricultural activities and sectors. This latter approach can be called Integrated Rural Development (see Marsden, Bristow, 2001), as it endeavours to bring together various actors in the region who represent a wide range of interests, in accordance with their social and economic status (Baldock et al., 2001). This approach does not elevate farmers' interests over those of others, but pursues interests of rural actors from different sectors. Two trends can be observed at the moment: the number of employees in agriculture is declining, and the sectoral approach to industry is giving way to a mixed sector-territorial approach. This shift is the subject of OECD (2006) who define a New rural development paradigm based on developing non-agricultural activities in rural areas. The basic principles of this approach are: 1) focus on site instead of focusing on sectors, 2) focus on investment instead of focusing on subsidies (OECD, 2006). Multi-level governance is another principle of the new approach to rural development. Such governance delegates rules onto individual levels (supranational, national, regional, local) and also involves various local stakeholders in the decision-making process. The goal is to achieve an integrated approach with cooperation at various levels. Under the new approach the regions should see a better use of underemployed resources such as using sites of high quality environment for developing tourism. Individual approaches to rural development are based on waking up resources and factors of development. Individual factors of rural development are supported according to the chosen approach to rural development. The distinction between endogenous and exogenous factors is especially hotly debated. Exogenous are generally subsidies provided by the central authorities and other political and economic interventions. Endogenous factors are more difficult to ascertain, primarily they involve processes associated with human and social capital. In accordance with the new rural paradigm (OECD, 2006) it may be noted that the nature of support directed to localities (such as investment) can be considered triggers the activation process of human and social capital to achieve rural development. The last twenty years have seen a transition away from emphasizing exogenous factors and into to emphasis on endogenous ones (Stimson and Stough, 2009).

14 Commission Recommendation 2003/361/EC concerning the definition of micro, small and medium-sized enterprises. A micro-enterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.

Rural development policy is currently an integral and important part of EU's Common Agricultural Policy's subsidy policy. In the current programming period 2007-2013 it is supported as a second Pillar of the CAP by the establishment of European Agricultural Fund for Rural Development (EAFRD). Its support is conditional on establishing a seven-year Rural Development Plan by individual Member States. Measures aimed at improving the quality of life in rural areas and promoting a bottom-up approach (LEADER initiative), which create conditions for supporting also non-agricultural actors in the rural economy, make up only a minor part of its emphasis, however. Even so, their very inclusion as eligible applicants can be considered a significant step that reflects the natural evolution of the relation between countryside and farming in society.

In the programming period 2007-2013 a total of 96.3 trillion EUR (20% of the CAP) were earmarked from the EU budget for rural development policy. The allocation of national tax money in the Czech Republic in individual thematic axes of the RDP 2007-2013 is close to the average EU-12 in axes 3 and 4. In the area of measures to support competitiveness of agriculture national allocation is below the average (22%), while in environmentally oriented measures (which form a dominant element of the programming period 2007-2013 RDP) the national allocation is above average (56%). The presented study aimed to identify the factors that affect the use of subsidies from RDP 2007-2013 Axis III and Axis IV in rural municipalities. The research team focused specifically on these factors in the Czech Republic.

Selection of factors from existing knowledge

Many factors of determining conditions of economic performance of rural areas have been described in the literature. For example, Agarwal et al. (2009) are looking for regional differences in p.c. GDP and combining factors of economic, social and environmental character. Productivity as the main component is dependent on the skill of the individual (level of higher education), investment (net average expenditure per capita) and infrastructure (length of roads and highways per square mile). Last but not least there are important factors such as measures of peripheriality (distance from the capital) and accessibility (distance from the nearest larger town, distance from regional centres). Another component of economic performance, employment, depends on the number of jobs created (registered entities per 1000 population), economic structure (employment in the primary sector), administrative structure (employment in the public sector and public administration), accessibility and peripheriality and the proportion of people handicapped through a long-term illness. The last component of economic performance is the proportion of population on the labour market. It is most influenced by the size of the household since larger households can generally free up more of its members for the labour market. Also important are share of people with long-term disability and workers' skill (in the opposite direction primarily due to a lack of employment opportunities in rural areas). It has been shown that competition on the labour market increases proportionately with population density (through population increase). Crescenzi (2009) identifies three main domains: educational attainment, employment and the demographic structure. Midmore et al. (2010) consider population change and net migration to be the best indicators of quality of life in rural communities. Stable or even increasing rural population shows that rural communities are attractive for existing and new residents. When choosing a place to live, households consider the relative quality of life, beauty of the site (including the environment) and economic opportunities. The willingness of people to associate and jointly solve problems has also been identified as one of the key conditions for a successful village. Village mayors consider the level of development of physical infrastructure as a key sign of a successful village (Chromy et al. 2011). Building

infrastructure is very expensive for municipalities and they strive for external funding, for example in the form of investment subsidies.

Method

Work as executed in line with the main and partial objectives described in Figure 1.

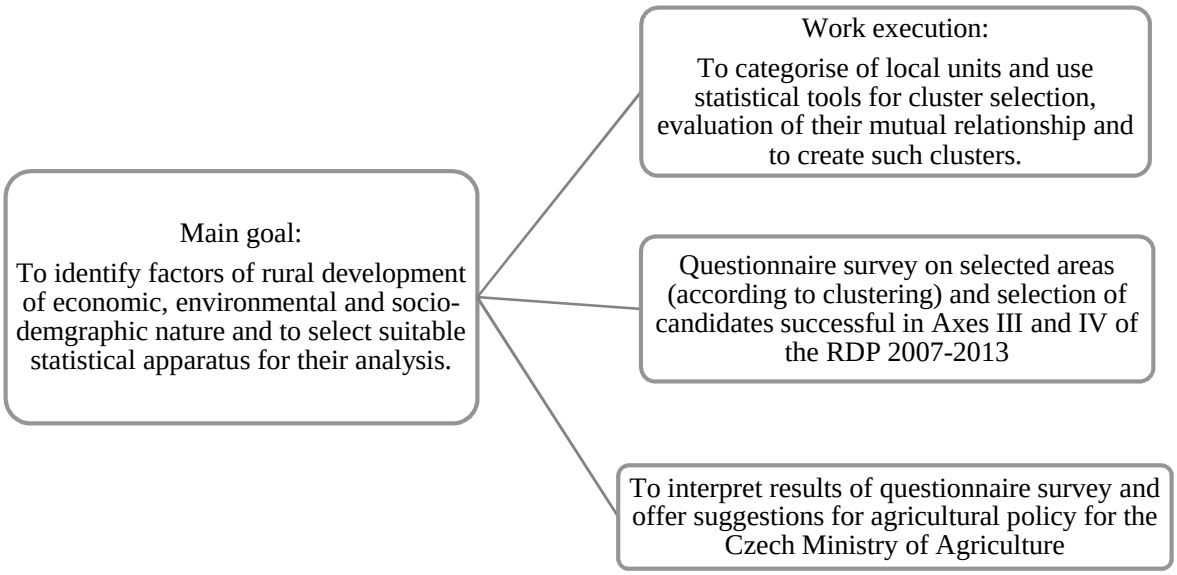


Fig. 1 Diagram of illustration distribution of the main objectives into partial processes

Factors of rural development were selected, data for their description on the municipal level were gathered and statistically analysed. Subsequent choice of suitable multi-criterial statistical methods was guided by concern to secure qualitative assessment and determination of dependences between factors, in order to create clusters. Selected statistical methods (e.g. Principal component analysis, regression analysis, etc.) were employed to identify factors. The project sought dependency between factors of rural development and the degree of subsidies according to the type and size of subsidies drawn from various measures of Axes 3 and 4 of the Czech RDP 2007-2013.

Correlation analysis

The purpose of the correlation analysis was to determine the relationships between variables in the data set. To determine the possible connections between pairs of variables we used the Pearson and Spearman correlation analyses. Strong correlation is pronounced whenever the coefficient exceeds 0.75 (Hebák, 2005). At least one of the two coefficients (Pearson's or Spearman's) had to exceed the 0.75 threshold in order to be considered strongly correlated.

Data source

Data for analysis come mostly from the Czech Statistical Office (from census, demographic data on municipal level, Little lexicon of municipalities), Czech Office for Surveying, Mapping and Cadastre (aggregates on land types), Ministry of Labour and Social Affairs, Ministry of Agriculture, publicly available database on municipal budgets (www.rozpocetobce.cz). There were also used results of a 2012 internal research project at IAEI. Drawing of RDP subsidies is considered as of 28 February 2013.

Questionnaire survey

The qualitative part of the research verified the results of the statistical methods through field research carried out by telephonic survey of a questionnaire. The main outcome was an assessment of causal links among selected factors and identification of characteristics of significant factors influencing the utilization of subsidies under Axes 3 and 4. The survey was carried out on a sample of 509 respondents. The sample of respondents was composed of successful applicants from the various measures Under Axes 3 and 4. Individual Measures were represented as follows (N = 509):

- III.1.1 Diversification of non-agricultural activities (N=54),
- III.1.2 Support for business creation and development (N=89),
- III.1.3 Promotion of Tourism (N=48),
- III.2.1 Village renewal and development, public facilities and services (N=116),
- III.2.2 Protection and development of the rural heritage (N=27),
- IV.1.2. Implementation of local development strategies (N=175).

Sampling was by random selection from a database of entities meeting the criteria on minimum representation of respondents for each measure and in each community according to the 4 clusters. The method of data collection and processing was sub-contracted using CATI (Computer Assisted Telephone Interviewing). Statistical data processing was carried out with the software SPSS for PC.

The sample of respondents was divided into the following categories:

- Municipality or Group of municipalities (N=231),
- Non-state non-profit organisation, public welfare community organisation, registered church (N=56),
- Agricultural entity (N=100),
- Business entity outside agriculture (N=122).

The survey was influenced by the results of statistical tests (e.g. choice of villages according to clusters) and by discussions of the authors over available literature.

Results

In the quantitative part of the research, the selected indicators (covering the three areas of rural development: economic, environmental and socio-demographic) were gathered in a table. (Indicators were represented in the columns and individual municipalities in the rows.) Thus a an „indicator matrix“ was created with 47 indicators for 6250 municipalities in the Czech Republic. The level of support within Axes 3 and 4 was summed up from a database at the Czech Ministry of Agriculture on subsidies in the RDP15

During statistical evaluation, the data were first processed. In order to assure comparability (e.g. per population, per area, etc.) some data were converted. Missing observations were substituted by interpolated average values for the municipality size, as defined by the Czech Statistical Office. (ČSÚ, 2013).

Exploratory analysis was conducted to sift out indicators with low variability.

The database was reduced after correlation analysis; factor analysis was used to assess relations between indicators. Altogether 36 indicators survived the correlation analysis and entered the factor analysis. Factors were extracted using Principal component analysis. Eigenvalues of individual factors suggested that suitable count of factors was between 13 and

[15] From 1.1. 2007 through 30.6. 2013

16. These factors had eigenvalues greater than or close to 1, which is according to Kaiser rule the appropriate threshold for determining the factor count (Hebák, 2005, Manly, 2005). The aim was to capture variables with loads exceeding the absolute value of 0.6. Some indicators, however, posted lower values. The following list describes the factors:

1. Joint factor of facilities and population density,
2. Environment of the municipality,
3. Education and share of employment in the secondary sector,
4. Transport distance in general, including transport into local employment sub-region,
5. Employment summary
6. Expenditure per Axis, or per Measures I.3.1.,
7. Demographic indicators: Age index, Population growth and Economic activity,
8. Municipality's tax revenue and investment activity,
9. Measures 3.2 and leader,
10. Employment in the primary sector, municipality area and locality count, net migration,
11. Measure 3.3.1.,
12. Share of applicants and
13. Presence of water and gas infrastructure, distance to the County („kraj") capital.

Results of Cluster Analysis

Municipalities were clustered on the basis of scores of either all thirteen or five the most significant factors.

Model 1 (based on 13 factors) suggests that municipalities with worse conditions and results can be observed along the border with Saxony, Bavaria, Upper Austria and in the region of Znojmo, as well as along the border with Poland in the regions of Jeseník and Bruntál. In the internal Czech Republic such municipalities can be found mostly on the outskirts of some districts („okres") in Central Bohemia, South Bohemia, Highlands and South Moravia. Clusters of municipalities with worse conditions had a higher unemployment rate, higher index of age, more significantly negative natural population growth, higher average distance to employment area, or a higher share of employment in the primary sector.

Model 2 yields a more compact clusters of municipalities indicating worse results (cluster 4, darkest colour), as plotted in Figure 2.

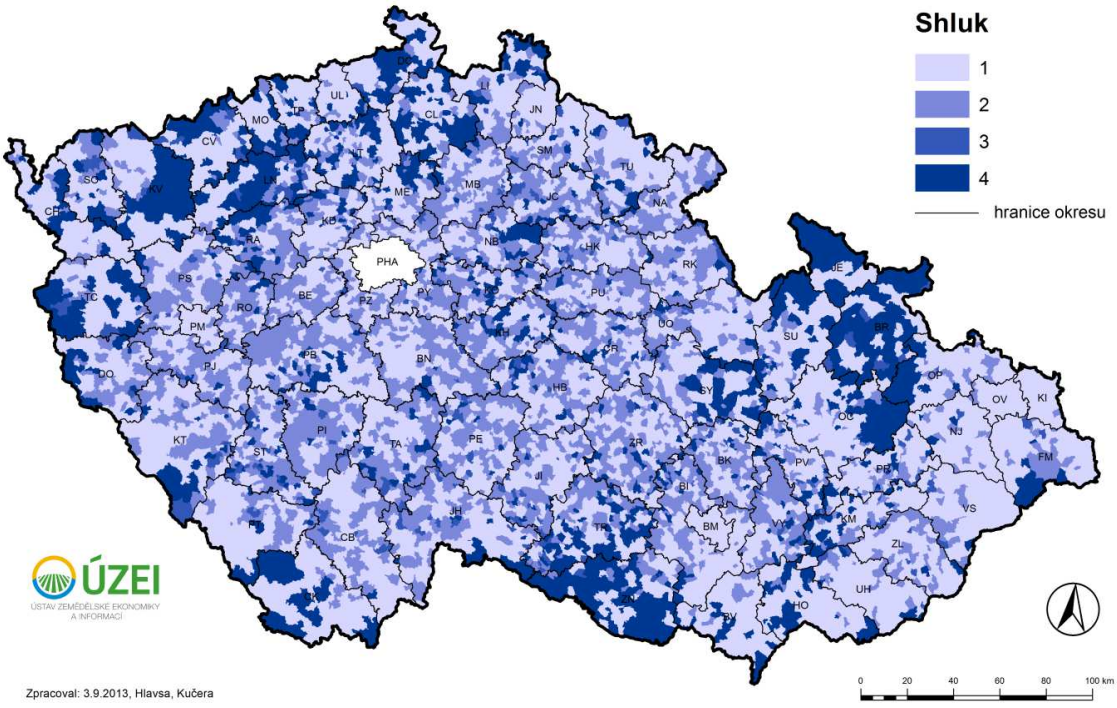


Fig. 2 Cluster analysis generated four groups of municipalities and ordered them from the best (1) to the worst (4)

Clustering was made on five selected factors. Stratification of clusters within the Czech Republic is similar to Model 1. The border regions are equivalent, but in addition cluster 4 is now more present also in the county of Ústí, in the regions of Znojmo, Jeseník, Bruntál, Přerov and in the northern Bohemian outcrops. Compared to Model 1, clusters 1-4 are here characterised by smaller variance in average indicators such as Age index, distance to employment area, share of university graduates, and agricultural indicators. As for drawing RDP subsidies, Cluster 4 indicates the highest average in Axis 1. Measure 3.1. was least drawn upon in Cluster 2, measures 3.2. and 3.3.1 in Cluster 1, and measures 4 in Cluster 2 again (although here the average is very similar to Clusters 1 and 4). Model 2 was used for selecting municipalities for questionnaire survey (in terms of statistical representation of all four clusters).

Qualitative results

The aim of this analysis is to help identify the factors determining the economic level of municipalities, including the level of drawing of funds represented by measures of the RDP. Subsequently we seek clusters of municipalities that have worse monitored indicators - including drawing on RDP funds. Such categorisation and clustering serve for better targeting of qualitative analysis (questionnaire) and for ascertaining differences between "stronger and weaker" municipalities. The distribution of respondents is shown in Table 1.

Tab. 1. Number of applications for subsidy submitted by respondents, sorted by clusters from 5 indicators

q8: How often did you ask for subsidies from RDP 2007-2013 (without regard to success)?										
number of app.	cluster 1	%	cluster 2	%	cluster 3	%	cluster 4	%	all	%
1	66	29,20	35	24,48	15	21,43	16	22,86	132	25,93
2	41	18,14	19	13,29	11	15,71	19	27,14	90	17,68
3	32	14,16	19	13,29	12	17,14	9	12,86	72	14,15
4	21	9,29	29	20,28	7	10,00	10	14,29	67	13,16
5	35	15,49	7	4,90	8	11,43	5	7,14	55	10,81
6	8	3,54	14	9,79	4	5,71	3	4,29	29	5,70
7	5	2,21	11	7,69	8	11,43	2	2,86	26	5,11
8	5	2,21	3	2,10	2	2,86	3	4,29	13	2,55
9	5	2,21							5	0,98
10	4	1,77	4	2,80					8	1,57
11	1	0,44			1	1,43			2	0,39
12			1	0,70			1	1,43	2	0,39
14							1	1,43	1	0,20
15	1	0,44			1	1,43			2	0,39
16			1	0,70					1	0,20
17					1	1,43			1	0,20
19	1	0,44							1	0,20
25							1	1,43	1	0,20
30	1	0,44							1	0,40
celkem	**226**	**100**	**143**	**100**	**70**	**100**	**70**	**100**	**509**	**100**

source: data ÚZEI

Respondents most frequently submitted only one application for support (26%). However, submitting more than one was also relatively frequent; the average number of applications was 3.6. Respondents were fairly successful with their requests - 39% of those who submitted multiple applications were successful with all applications! Only a tenth of respondents who submitted multiple applications were successful in fewer than half of them.

If respondents had to re-apply for support for a similar project, most of them would require the EU to provide at least one half of the funds. Only 16% of respondents would be willing to cover more than 50% of the project's costs from own resources. 3% of respondents would not apply for a subsidy again even if they only had to cover mere 10% from their own funds.

Almost a half (49%) of the respondents only learned about the possibility to get a subsidy through a personal contact with a competent person (the mayor, professional consulting firms, friends, consultant). A large proportion of respondents also used information from the Internet (44%). Almost three quarters of respondents have used outside help with the preparation of the project (72%). Two-thirds of those who have used foreign aid were helped by a remunerated consulting firm (65%), the rest used a pro-bono advisor, they mayor or someone else (5%). Less than a quarter of institutions obtained information without assistance.

The main reason for requesting financial assistance from the Rural Development Programme was planned investment to improve life in the village or region (78%). The second most frequent reason was the need to fill gaps in service and to fulfil legal requirements. 4% of respondents wanted to start their own business. In the vast majority of cases, the request was initiated by the respondents themselves (90%) (figure3, figure 4).

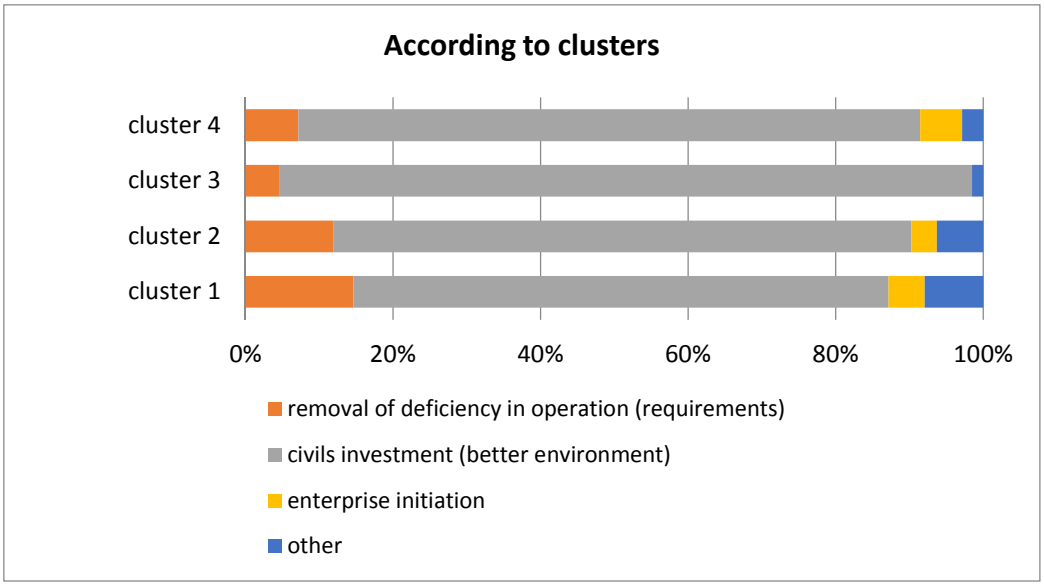


Fig. 3 Motivator for put in an application according to clusters

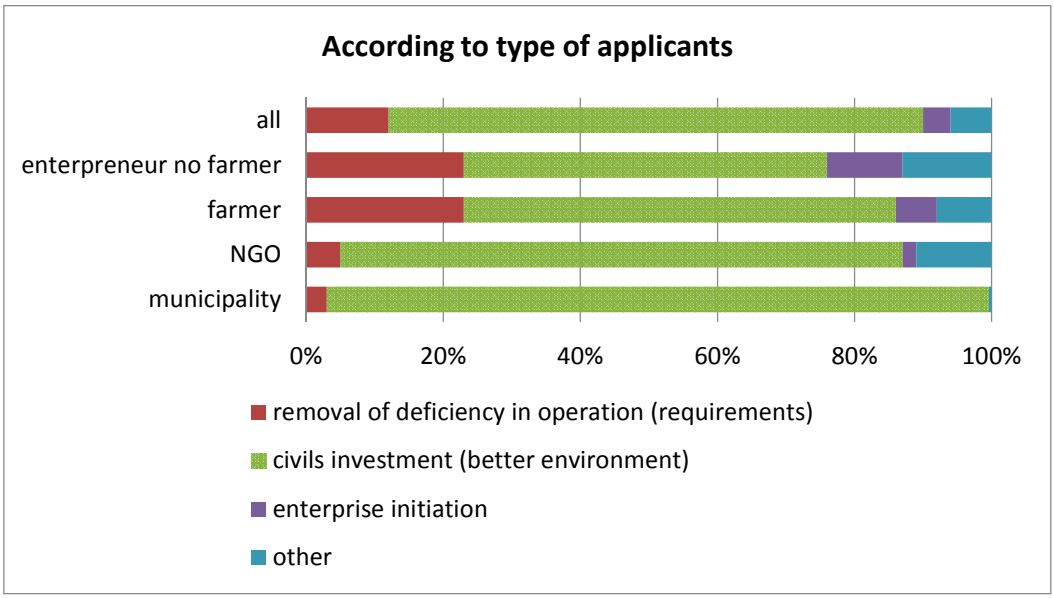


Fig. 4 Motivator for put in an application according to type of applicants

The main reason for requesting financial assistance from the Rural Development Programme was planned investment to improve life in the village or region (78%). The second most frequent reason was the need to fill gaps in service and to fulfil legal requirements. 4% of respondents wanted to start their own business. In the vast majority of cases, the request was initiated by the respondents themselves (90%).

Statistical analysis indicates that one of the strongest factors for drawing on subsidies was the level of facilities in the municipality. As population declines, there are fewer primary schools, sewers, health centres. At the same time decreasing population density is associated with rising employment in the primary sector and lower in secondary (e.g. manufacturing). A sub-group of respondents indicated that the greatest motive for drawing on subsidies are investment in projects which will improve the amenities (mentioned by 78% of respondents overall). Regarding the type of organisation applying for a subsidy, the results indicate the greatest motivation for the municipal authorities themselves (97%) and the smallest

motivation for entrepreneurs (53%) whose motives include starting a business (11%) and other (13%). Regarding the cluster segmentation of municipalities, the results are summarised in Chart 2. It is evident that applicants from municipalities in Cluster 1 („best“) use subsidies for a greater variety of problems than just local amenities.

Some measures may be difficult for the applicant, project documentation and administrative requirements may be more demanding. More than a half of applicants seek help with preparation of the project. The greatest share of help-seekers can be found in Measure 3.1.2. Starting a business (83%), the smallest under 3.2.1. Protection and development of cultural heritage. Regarding the type of organisation, the most avid help-seekers were non-agricultural entities, the least avid publicly welfare community organisations, NGOs and churches (59%).

When an applicant requested outside help with project preparation, the most frequent helpers were paid consultants (65%) or a mayor or a colleague working pro bono (23%).

In order to set the rules appropriately it is important to know the level of support necessary to be bearable for the applicant during the project. Greatest own contributions can be seen among business entities in agriculture and outside (most of them can contribute between 40% and 60% from their own resources). The lowest readiness for co-financing can be found among churches, NGOs and community organizations (the majority around 30% of own funds).

Respondents were offered a set of factors to be graded on a four-point scale as to their influence on the success of the project. The greatest factor of success was deemed by the respondents to be small number of young people in the community (17%). Other factors (share of commuters, distance from the town, salaries, education) were considered to have a minimal effect (under 8%). The results suggest that outside influences (not determined by the applicant) do not play a crucial role in drawing subsidies. In terms of individual Measures, the greatest strength of external factors can be found under 3.2.1. Renewal and development of countryside, and almost none at all under 3.1.1 Diversification of activities.

Creation of jobs within Axes 3 and 4 projects proved to be a somewhat problematic indicator. Only 28% of interviewed applicants created jobs during the implementation of the project. Of those that did, most often it was one job (40% of job creating projects) or two (29%). The average was 2.4 jobs per job-creating project. Large majority of these jobs were on full-time basis, only 14% of respondents created a part-time job. In 70% of cases the created job went to a local resident. The greatest barrier to job creation was reported the disproportionately necessity to keep on the job (5 years). Measure 3.2.2. Protection of cultural heritage and Cluster 2 municipalities provided the greatest averages of created jobs per project.

One third of respondents believed that demand for their products or services is growing in the last five years. Absolute majority see a stagnating demand over the same period (57%), 4% observe a decline and 6% see volatile demand.

A clear majority of respondents (53%) reported that their organizations do not face any competition in their activities, 17% of respondents experience mild competition, one fifth face significant competition and one tenth are faced with fierce competition. The competition is mainly located within the region (45%), in the Czech Republic (23%) or in their own municipality (19%). Respondents considered the state sector to be most stable, but also one offering the least „growth“ or improvement. The greatest competition is faced by the business sector, especially outside agriculture. Such competition is variable dispersed among local, regional, national and EU.

The relationship of the applicant with the municipality hosting the project is another factor affecting business in the region. The vast majority of respondents live in the same

municipality where the supported project was implemented (83%). A clear majority of them had lived there from birth (57% of those who live in the same village). Respondents living outside of the village usually live in the neighbouring village (35%) or in a more distant village of the same district (okres; 35%). The good news is that more than nine out of ten respondents at least occasionally participate in community events in the municipality where the project was implemented (70% actively, 21% occasionally). A majority of them are members of the municipal council (51%) and local organizations or associations (53%). They participate in the village life also in other ways: providing services to the municipality (79%), helping to organize public events (82%), provide sponsorship to the local authority or community organizations (76%).

Conclusion

Analysis of publicly available data through statistical methods (clusters and correlation analyses) provides valuable information on the interaction among development factors, but has not brought sufficient depth in explaining what affects the individual drawing of subsidies under Czech Rural Development Programme for the period 2007 - 2013, Axes 3 and 4. For that a qualitative research among individual applicants is necessary.

Measures that lead to a greater diversification of the rural economy create in essence a space for the use of local resources, including local manpower. The results of the questionnaire offer insights that it is exactly the business community who has in most cases positive links with local residents, non-profit and community organizations and village authorities. These ties may not be directly related to the business but they strongly feel competition in their business from outside. In this case the projects under the LEADER can play an important role because there is a presumption of cooperation, participation of public and private sector, bottom-up, according to the real needs of people from rural areas.

Initial information about the project is received almost exclusively at random by the applicants. At a second stage of application they draw on services of paid advisors. This does mean additional jobs. They will not appear in the official job count of the project but can be a source of jobs for rural job-seekers. We can recommend increased publicity, promotion and training on the use of public funds in rural development for the next period. The Rural Development Programme is about to experience changes in the years 2014 - 2020 when there will be fewer Measures (and probably also less money) directed at developing rural communities and business. There will therefore be an even greater emphasis on the ability of potential subsidy applicants to seek out also other sources and to father new skills and experience.

References

Agarwal, S., Rahman, S. and Errington, A. (2009) *Measuring the determinants of relative economic performance of rural areas*. Journal of Rural Studies, 25, 309-321.

Baldock, D., Dwyer, J., Lowe, P., Petresen, J.-E. and Ward, N. (2001) The nature of rural development: *Towards a sustainable integrated rural policy in Europe*. A Ten-Nation Scoping Study for WWF and the GB Countryside Agencies, January, IEEP

Crescenzi, R. (2009) Undermining the Principle of Concentration? *European Union Regional Policy and Socio-economic Disadvantage of European Regions.* Regional Studies, 41 (1), 111-133.

Hebák, P. a kol. Vícerozměrné statistické metody 3. Praha: Informatorium, 2005, ISBN 80-7333-039-3.

Hušek, R., Pelikán, J. Aplikovaná ekonometrie, teorie a praxe. Praha: Professional Publishing, 2003. ISBN 80-86419-29-0.

Manly, B. F. J.: Multivariate statistical methods. Laramie, USA: Chapman and Hall, 2005. ISBN 1-58488-414-2.

Chromý, P., Jančák, V., Marada, M. and Havlíček, T. (2011) *Venkov–žitý prostor: regionální diferenciace percepce venkova představiteli venkovských obcí v Česku*. Geografie, 116(1), 23-45.

Marsden, T. and Bristow, G. (2000) *Progressing integrated rural development: a framework for assessing the integrative potential of sectoral policies*. Regional Studies, 34(5), 455-469.

Midmore, P., Partridge, M. D., Olfert, M. R. and Ali, K. (2010) The Evaluation of Rural Development Policy: *Macro and Micro Perspectives*. Eurochoices, 9(1), 24 – 29.

Ministerstvo zemědělství (2012) Program rozvoje venkova České republiky na období 2007-2013, Praha, září 2012. Dosažitelné na: http://eagri.cz/public/web/file/193481/PRV_aktualni_schvalene_zneni.pdf (6.5.2013)

OECD (2006) The New Rural Paradigm. Policies and Governance, OECD Publishing.

Stimson, R. J. and Stough, R. R. (2009) Regional Economic Development Methods and Analysis: Linking Theory to Practice. In Theories of Local Economic Development: *Linking Theory to Practice,* edited by J. E. Rowe. Burlington: Ashgate.

INFORMATICS

The use of Websites by Czech Biofarmers for their operations and the rural developement

Eva Daniela Cvik, Radka MacGregor Pelikánová[1]

[1]Department of Law, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
Cvik@pef.czu.cz, pelikanovar@pef.czu.cz

Annotation: European integration and the Common Agricultural Policy ("CAP") are inseparably linked. The Agenda 2000 brought on a new dynamic in their interaction and introduced, among other features, two equivalent pillars of the CAP - production support and rural development. This fundamental movement in the post-Lisbon EU implies a reinforcement of the co-operation on all levels. The European, as well as Czech, strategy for rural development cannot attain the desired goals without the active involvement of EU citizens. The modernized program for the support of agrarian space in the form of sustainable development and the increase of competitiveness continues on during 2014-2020 when the II. Pillar of the CAP reflects the priorities of the strategy Europe 2020 in the post-modern environment. It raises the question of the extent and intensity of the materialization of these priorities through the activities of farmers while using information systems and information technologies ("IS/IT"). Czech farmers producing and commercializing bio-products are a relatively homogenous group with the potential to join the community led rural development through its IS/IT. A search and assessment was performed concerning whether these farmers effectively and efficiently use their internet Websites, for their operation as well as for rural development according to the II. Pillar of CAP. The performed investigation and methodological rigorous processing of data leads to surprising results, namely the Czech Biofarmers understand IS/IT, and despite a lack of public support, they use them reasonably effectively and efficiently for their operation and they are open to consider other types of their use, including the co-operation with third parties as well as local and public authorities.. Sadly, they are not aware about e-format of EU and national rural networks and thus one highly appropriate venue to get them involved in the Community-led Rural via Websites is, so far, missed.

Key words: Biofarmers, Common Agricultural Policy ("CAP"), Rural development, Websites.

JEL classification: M15, Q13, R11.

1 Introduction

The success of the European integration in the second decade of the 21st century strongly depends upon the effective and efficient use of innovations, which typically take an intangible form and their example par excellence is Information systems ("IS") operating based on using Information technology ("IT"). The IS-IT offers not only optimal solutions, but also support to reach such solutions in an interactive manner, in particular the Internet and social networks have the capacity to become an open e-platform to all stakeholders of rural development and to facilitate an active engagement and involvement by the ultimate addressees, European farmers. The e-network of e-networks, the Internet, allows for the access to a system of interlinked hypertext documents, the Websites belonging to European institutions as well as European farmers. Since a Website is a set of related and connected Webpages located and served by domains around computers with appropriate storage capacity or similar Internet devices (KÖHLER, 2011), each institution, entity, or individual from the EU can have or rent such a server, register a domain and attach Websites with Webpages carrying information about this individual or entity. Whether this happens depends strongly upon the information, readiness and willingness of the individual or entity to use it, and to take advantage of innovations in general. A host web server is a storage for a Website attached to a domain, while a domain name is mainly a word indicator of an IP resource, such as a personal

computer and its sphere (MacGREGOR, 2012). The server space can be rented and the domain name registered under TLD .eu or another TLD for just a few EURs.

Sustainable development lies at the core of European integration and belongs to EU priorities. The famous Common Agricultural Policy ("CAP") began at the start of European integration and its evolution led to two pillars – production support and rural development, while the Liaison Entre Actions de Développement de l'Économique Rurale ("LEADER") initiative became a critical methodological approach to the rural and regional development with the involvement of Local Action Groups ("LAGs"). Not just because the new strategy launched in the EU in 2010 for the new decade ("Europe 2020") stresses sustainable and inclusive growth while using IS-IT (EC, 2010), but as well because it is logical and appropriate, the objectives of the CAP should be met while using tangible as well as intangible instruments, as Websites. The Lisbon Reform Treaty from 2007/2009 reflects this by stressing the need of sustainable development, the promotion of technological advances and networks´ support to communities. Although modern EU policies need active participation of all stakeholders in a manner going even beyond the principle of shared management (PETERS, 2014) and the Internet can be a great vehicle for it (MacGREGOR, 2013a), especially if Websites are used (MacGREGOR, 2013b), the EU law and institutions cannot order EU citizens to get their own Websites, linked to a central EU network and actively communicate and support the European integration. Although innovation significantly impacts the professional, social and private life in the EU (MacGREGOR, 2012) and is a well recognized factor for regional economic development and growth, it is still unequally distributed across different parts of the EU (COPUS, 2008). The task for a player higher in the CAP hierarchy, as well as for national authorities of EU member states, is to inspire and induce farmers to use IS-IT in their business and get involved in the Community-led Rural Development while actively working with their Websites and the Websites set by the EU and national authorities, e.g. European network for rural development ("ENRD") and national rural networks ("NRNs"). Both, ENRD and NRN, were established based on the Council Regulation (EC) No. 1698/2005 as the hub to connect rural development stakeholders and support the bottom-up approach with the employment of IS-IT. Websites of ENRD and NRNs were duly launched and linked to be efficient and effective, but demonstrably they reach different levels of customer friendliness and arguably some of them serve better stated goals than others. These differences might reflect regional particularities and/or different levels of commitment of national authorities.

Clearly, the Internet is an important venue for agriculture operations, and appropriate Website presentations increase the competitiveness of farms and farmers (ŠMEJKALOVÁ, 2013). In addition to e-marketing, e-commerce and other features of agriculture e-business, these Websites can become instrumental for the Community-led Rural development and vital for the application of the bottom up approach. European farmers should be actively involved in the work on CAP goals and objectives and should take advantage of IS-IT for this purpose, their high competitiveness and strong commitment for rural development should be projected in the appearance of their management of their domain, in the selected domain name (Huber, 2010) and Website. And what is reality? How does a homogenous group of farmers from one region feel and act in this respect? What do they know, say and do in this respect? The combination of information stated and implied by interviews of Czech Biofarmers and of their Website observations and study sheds a new light in the unjustly overlooked sphere of the commitment of bottom CAP players to the rural development and their use of IS-IT.

2 Materials and Methods

The selection of material and methods was performed based on a rather atypical objective to perform an investigation of a predetermined set of Websites operated by or for Czech Biofarmers and assess, on that basis, the nature and extent of their commitment to rural development, and in general the level of their awareness and endorsement regarding programs within the II. Pillar of CAP and the Community-led Rural development. A triad of sources, approaches and methods was chosen. The first covers the relevant legal, scientific and academic documents and their dividing analysis. The second deals with the description, testing and functional comparative assessment of the Websites of a relatively homogenous group of Czech Biofarmers. The third focuses on questionnaires, answers provided by the selected Biofarmers and related implied information. All collected data and information will be evaluated, based on quantitative analysis with an ad hoc qualitative complementation. Thus the comparison of preselected Websites will be done in parallel with a terrain field search and questionnaires to be completed by the pertinent Biofarmers. The ultimate assessment of Websites will target their contribution to goals and priorities of the II. pillar of CAP in the given region and the indication about the general awareness of Czech Biofarmers in this area. In the case of a negative finding, there will be suggested a solution in order to improve the development of the region and rural environment in general, and to assist Biofarmers to be more successful in their activities and more involved in the Community-led Rural development.They can thus become active pro-players in the CAP and European integration. The hypothesis will be set and refined based on the investigation performed.

3 Results and Discussion

Neither the post-Lisbon EU primary law, nor Europe 2020, nor Council Regulation (EC) No. 1698/2005 on support for rural development nor other provisions of the EU secondary or supplemantary law set down a duty for Czech Biofarmers to follow ENRD, NRN or to set up their own Website. Similarly, the Czech law does not include any such rule, and thus the use or non use of the Website and the participation or non participation in the Community-led Rural development is at the free discretion of Czech Biofarmers. Considering the predominantly mono-cultural feature of the Czech society, a similar education level and similarities in Czech Bioproduction, it may be assumed that, despite a lack of the legislative mandate, the Czech Biofarmers will exhibit a comparable manner of the Website's use for their operation as well for the rural development, especially the Community-led Rural Development. Therefore, five Czech Biofarmers having Websites were selected, their Websites were observed and they were provided with a questionnaire targeting qualitative as well as quantitative elements related to their operation, to their use of IS-IT and their rural development participation. The key purpose of the questionnaire search was to determine whether they effectively and efficiently use IS-IT for their own operation and for the rural development according to the 2nd pillar of the CAP. Selection of the five Czech Biofarmers was done by indicating a pertinent key word in the Automatic search engine and taking the first five from the resulting list. All five duly completed the questionnaire and indicated whether they agree upon their explicit identification in this paper or want to stay anonymous.

The 1st examined Biofarm is the Biofarm Miroslav Horut, which is located in Rožnov pod Radhoštem. It functions ever since 2001, has one full time employee and focuses on dairy products. Their Biomilk can be purchased through automats and their cheeses and butter as well satisfy bio quality. A particular attention is paid to the quality of products and to the dignity of their animal life. The domain name reflects the stress on *bio* and the community, the TLD is national and the URL to achieve it is www.biofarmaroznov.cz

Fig. 1. Website www.biofarmaroznov.cz and Website www.zelenydvur.cz and Website www.freshbedynky.cz

The observation of the Website and its Website suggests that they are a semi-professional platform addressing correctly and consumer friendly e-business aspects, but they are not used for other purposes, such as community or rural development. A further insight is provided by answers to the questionnaire.

Table 1. Questionnaire – 1. Biofarm examined - Biofarm Miroslav Horut – Source: Own processing

Question	Answer	Comment
Website since	2011	After 10 years
Who selected the domain name	Website designer	Not typical
Who manages the Website	3rd party	
Did you receive any public support with your Website	No	
Would you like to receive it	Yes	
Cooperation with other farms	No	
Links to other farms on the Website	No	
Use of the Website for rural development projects	No	
Do you know what ENRD and NRN mean	No	
Receiving funding support from the EU, reg.	Yes	EU

The 2nd examined Biofarmer agreed to complete the questionnaire but wished to be kept anonymous. Thus, its name as well as domain name and URL will be not disclosed. This family Biofarm functions since 2011, does not have any employees and focuses on pork and beef breeding and honey production. They sell live animals as well, and they arrange for their processing. Their Website is simple and provides merely basic data without any additional functions.

Table 2. Questionnaire – 2. Biofarm examined – Biofarm XXX – Source: Own processing

Question	Answer	Comment
Website since	2014	After 3 years
Who selected the domain name	Biofarmer	Typical
Who manages the Website	3rd party	
Did you receive any public support with your Website	No	
Would you like to receive it	Yes	
Cooperation with other farms	Yes	
Links to other farms on the Website	No	
Use of the Website for rural development projects	No	
Do you know what ENRD and NRN mean	No	
Receiving funding support from the EU, reg.	Yes	Czech Ministry of Agriculture

The 3rd examined Biofarm is the Biofarm Zelený Dvůr located in Prague. It functions since 2006, does not have any employees and focuses on bio vegetables and animals breeding, especially beef, sheep and goat and meat production, and dairy products. The domain name mirrors the Biofarm name and is registered under the national TLD, the URL to achieve it is www.zelenydvur.cz. The observation of

the Website and its Website suggests that they are rather basic, a further insight is provided by the answers to the questionnaire.

Table 3. Questionnaire – 3. Biofarm examined – Biofarm Zelený Dvůr – Source: Own processing

Question	Answer	Comment
Website since	2008	After 2 years
Who selected the domain name	Biofarmer	Typical
Who manages the Website	Biofarmer	
Did you receive any public support with your Website	No	
Would you like to receive it	Yes	
Cooperation with other farms	Yes	
Links to other farms on the Website	Yes	
Use of the Website for rural development projects	No	
Do you know what ENRD and NRN mean	No	
Receiving funding support from the EU, reg.	Yes EU	

The 4th examined subject is not a Biofarm *per se*, instead it is a reseller of boxes with Bioproducts named Fresh bedýnky – YesFresh, s.r.o. It is located in Prague, functions since 2009, has 35 employees and focuses on cooperation with bioproducers of fruits, vegetables, eggs, dairy products, meat, etc., resells their products and provides additional services. The domain name mirrors the business name and it is registered under the national TLD, the URL to achieve it is www.freshbedynky.cz The observation of the Website and its Website suggests that they are a highly professional and definitely customer friendly platform, addressing exclusively e-business aspects.

Table 4. Questionnaire – 4. Biofarm examined – Freshbedynky – Source: Own processing

Question	Answer	Comment
Website since	2009	Immediately
Who selected the domain name	Biofarmer	Typical
Who manages the Website	Biofarmer	External advices as well
Did you receive any public support with your Website	No	
Would you like to receive it	Yes	
Cooperation with other farms	Yes	
Links to other farms on the Website	Yes	
Use of the Website for rural development projects	No	
Do you know what ENRD and NRN mean	No	
Receiving funding support from the EU, reg.	No	!No public support at all!

The 5th examined agreed to complete the questionnaire but expressed the desire to be kept anonymous. Thus, its name as well as domain name and URL will be not disclosed. This family Biofarm has functioned since 2009, has five employees and focuses on vegetable production. They sell live animals and can arrange for their processing. Their Website has a professional appearance, the orientation within is easy and an abundance of information relevant to the main business line of this Biofarm is provided.

Table 5. Questionnaire – 5. Biofarm examined – YYY – Source: Own processing

Question	Answer	Comment
Website since	2009	Immediately
Who selected the domain name	Biofarmer	Websitedesigner advice
Who manages the Website	3rd party	External advices as well
Did you receive any public support with your Website	No	
Would you like to receive it	Yes	
Cooperation with other farms	No	
Links to other farms on the Website	No	
Use of the Website for rural development projects	No	
Do you know what ENRD and NRN mean	No	
Receiving funding support from the EU, reg.	Yes	Czech Ministry of Agriculture

4 Conclusion

The structure of the EU rural development policy, the LEADER Axis with Competitiveness Axis, Environmental Axis and Economic diversification Axis (EC, 2014) and their related e-platforms of ENRD and NRNs seem unknown to their Czech ultimate addresses. Even more alarming is the lack of awareness about them by successful Czech Biofarmers, which manage to obtain EU and/or Czech support and demonstrate IS-IT understanding. The rate of their innovative activity with respect to Websites of these SMEs differs, but does not reach a level of serious disparity and the innovative gap in this respect is less significant than as observed in other studies (Copus, 2008). Plainly, Czech Biofarmers understand the meaning and importance of domain, domain name and Website and despite the lack of any public guidance, they manage to get on their own, with a possible paid assistance by a third party, reasonable domain name registration, create Websites and manage them. The large majority of the Czech SMEs actively use their own Websites (Asociace, 2013) and the Biofarmers are not exceptions. Sadly, this potential is not explored and manifestly the opportunity to link them to various rural development or other projects is missed. The Community-led rural development and the famous *bottom up* approach need their active participation and manifestly they are even not aware about it. In addition, they unanimously express their interest to get more assistance with their Website and their open up their Website for usage for other than e-business activities, i.e. even for rural development. The EU rural networking as correctly described (Peters, 2014) can hardly reach success if such a potential is not explored and this aborted, and especially if these aborted opportunity occurs in the well known setting of economic disparity (Rýsová, 2009). A further research should be performed to specify instruments to correct this deplorable situation with significant negative consequences and which probably can be improved by a rather simple change in methodology and by enhancement of awareness of an already very alert and cooperative auditorium. The positive attitude of Czech Biofarmers, and EU farmers in general, towards IS-IT along with Europe 2020 measures could lead to a new push for the Community-led Rural Development.

References

Asociace Malých a Středních podniků podniků a živnostníků (2013) *České firmy na internetové vlně – Jak Internet mění podnikání a marketing malých a středních firem – Výsledky studie.* Available at http://www.amsp.cz/ceske-firmy-na-internetove-vlne and http://www.nainternetovevlne.cz/o-projektu.html

Copus, A., Skuras, D. and Tsegendi, K. (2008) 'Innovation and Peripherality: An Empirical Comparative Study of SMEs in Six European Union Member Countries', *Economic Geography*, vol. 84, no. 1, pp. 51–82.

European Commission, DG for Agriculture and Rural Development (2014) *Rural development in the EU - Statistical and economic information : report 2013.* Luxembourg: Publications Office of the European Union, 388 p. ISBN 978-92-79-34798-6.

European Commission (2010) *Communication from the Commission - Europe 2020. A strategy for smart, sustainable and inclusive growth.* Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

Huber, F. and Hitzelberg, F. (2010) *Ratgeber Domain-Namen*, 2.Auflage, Norderstedt: Books on Demand GmbH, 142 p. ISBN 978-3-8391-7389-3.

Köhler, M. and Arntd, H. W. (2011) *Recht des Internet*, 7.Auflage, Heidelberg: C.F.Müller, 336 p. ISBN 978-3-8114-9627-9.

MacGregor Pelikánová, R. (2013a) 'Internet My Dearest, What Type of European Integration Is The Clearest?', *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, vol. 61, no. 7, pp. 2475-2481.

MacGregor Pelikánová, R (2013b) 'European Integration and Top Level Domain in 2013', *The Lawyer Quarterly*, vol. 3, no. 4, pp. 311-323.

MacGregor Pelikánová, R (2012) 'New top level domains – pending success or disaster? '*Journal on Legal and Economic Issues of Central Europe*, vol. 3, no. 1, pp. 75-81.

Peters, R. and Gregory, M. (2014) 'Networking, Small Farms and EU Rural Development Policy. Réseautage, exploitations de petitie taille et politique européenne de développement rural. Vernetzung, landwirtschaftliche Kleinbetriebe und die Politik der EU zur Entwicklung des ländlichen Raums', *EuroChoices*, vol. 13, no. 1, pp. 36-39.

Rýsová, L. (2009) *Regióny, regionálny rozvoj, regionálna politika a dosahovani hospodárskej a sociálnej súdržnosti v rámci Európskej únie*, Banská Bystrica: UMB, 194 p. ISBN 978-80-8083-875-1.

Šmejkalová, M. (2013) 'Logo design for websites', *Agrarian Perspectives XXII. Development Trends in Agribusiness – Proceedings of the 22nd International Scientific Conference*, 148-154. ISBN 978-80-213-2419-0. Available at http://ap.pef.czu.cz/books-of-proceedings/

The use of community-led development in rural areas. Case study: beekeeping and ICT.

Cestmir Halbich[1], Vaclav Vostrovsky[2]

[1]Department of Information Technologies, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
halbich@pef.czu.cz

[2]Department of Information Engineering, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
vostrovsky@pef.czu.cz

Annotation: First, it is characterized the current situation in the field of Community-led local development (further CLLD) generally and then in two selected areas in rural areas especially. First is focused more to the use of the information and communication technologies. Second area of use of CLLD which is compared with first is focused at benefits for beekeeping. In the introduction the article describes the current situation in two selected fields which are appropriate for use of the CLLD. Then it is discussed model which describes barriers to entry. The next section describes data obtained from two different monitored domains. For evaluating of collected data was ingested statistical software. At first phase were collected data in monitored domains. Then Porter's Five Forces Model was adopted. The method is generally well-known (Porter, 2008). Porter's Five Forces Model is used as a holistic approach towards competitive strategy. Our adopted model provides a framework for the strategic direction of management teams that are seeking an edge over their competitors and additional factors that may undermine profits. The implementation of Porter's Five Forces Model it seems be crucial on business practice in order to establish a successful countryside operation and reduce cost of expansion. Implementation of the model increases the chances of success for firms that are considering branching out or simply starting a new company in rural areas. The authors intentionally chose two very different areas of use of CLLD with very different amounts of investments, very different amounts of tacit knowledge and very different profit in each of both areas. Results of statistical processing are disclosed and explained next. In further research will be searched more exact model expressed by differential or difference equations which can best describe the situation in two above-mentioned domains.

Key words: Porter's Five Forces Model, Community-led local development, information and communication technologies

JEL classification: C51

1 Introduction

Authors perceive Community-led local development (CLLD) like a tool for engaging citizens at the local level to find solutions to social, environmental and economic challenges we face today. CLLD is an approach that requires time and effort, but a relatively small financial investment can have a significant impact on people's lives and creating new ideas and joint implementation of these ideas into practice. In the introduction the article describes the current situation in two selected fields which are appropriate for use of the CLLD. First is focused more to the use of the information and communication technologies. Second area of use of CLLD which is compared with first is focused at benefits for beekeeping. The authors intentionally chose two very different areas of use of CLLD with very different amounts of investments, very different amounts of tacit knowledge and very different profit in each of both areas. The situation in the provision of Internet services is known, customers typically can choose these services from several internet service providers (further ISP). The situation

in the second area is characterized by the saturated level of consumption of the product and a global problem called Colony Collapse Disorder. As expected, it can be seen that the situation in both investigated regions are significantly different.

2 Materials and methods

The goal of the paper was to compare by statistical tools and methods these two different areas and demonstrate the hypothesis about their difference against level of barriers to entry. At first phase were collected data in monitored domains. Then Porter's Five Forces Model was adopted. The method is generally well-known (Porter, 2008). Porter's Five Forces Model is used as a holistic approach towards competitive strategy. Our adopted model provides a framework for the strategic direction of management teams that are seeking an edge over their competitors and additional factors that may undermine profits. The implementation of Porter's Five Forces Model it seems be crucial on business practice in order to establish a successful countryside operation and reduce cost of expansion. Authors started with their analysis from point of view of (Zang, Wolff 2004). Implementation of the model increases the chances of success for firms that are considering branching out or simply starting a new company in rural areas. The Company's management strategic vision also benefits from Porter's Model because it points out the forces that affect the organization's profitability. In conclusion, Porter's Five Forces Model influences the profitability, product prices, costs, and capital investment essential for the survival of an organization that is operating overseas. Porter's model is fundamental for making strategic decisions and developing successful countryside strategies that will ensure higher profitable opportunities.

In this model, the strategic position of the firm, and its strategies, are determined by competition with its traditional direct competitors. Porter's model is about the firm's general business environment. Five competitive forces in this model greatly affect and shape the firm. They are, traditional competitors, new market entrants, substitute products and services, customers, and suppliers.

The competitive forces model describes competitive advantage as, firms doing better than the other because of access to more resources, or using commonly available resources more efficiently. With the help of a greater knowledge of information and resources, a firm's revenue and productivity will grow. This positively effects a firm and helps to achieve more compared to competitors.

From this background we can derive four competitive strategies that firms can pursue and how information systems support them:

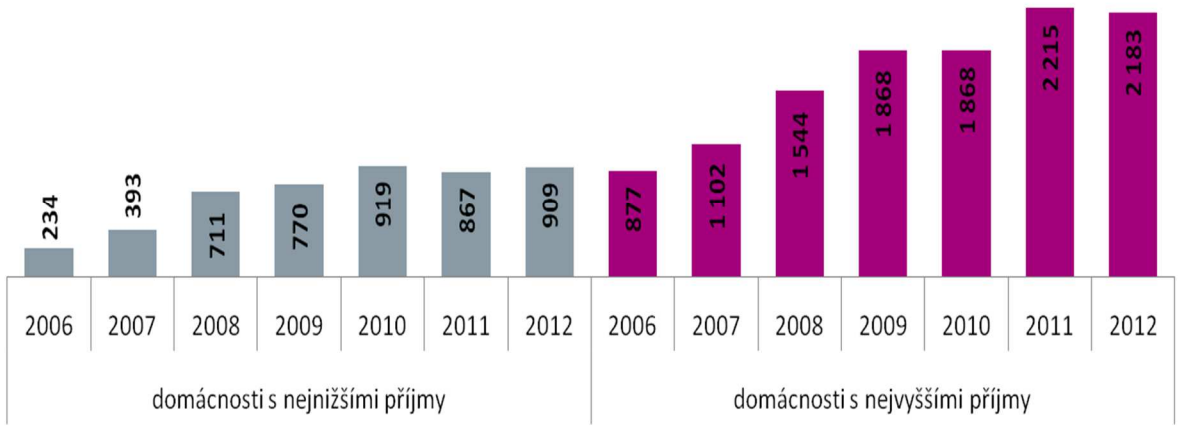
1. Low-cost leadership
2. Product differentiation
3. Focus on market niche
4. Strengthen customer and supplier intimacy

Information systems support the "Low-cost leadership" strategy through production. Products and services are produced at a lower price than competitors and enhances the quality and level of service. In the case of the "Product differentiation" strategy is supported by information systems by allowing the assembly of new products and services. Which greatly changes customer convenience and experience. A "Focus on market niche" strategy uses information systems to enable a specific market focus better than competitors. The last strategy, "Strengthen customer and suppliers" uses information systems to create tight links with suppliers and develop loyalty with customers, also increasing switching costs.

3 Results and Discussion

Our model started from detailed knowledge of authors about both monitored domains and is based at differences between these two fields of our study. At the base of analysis authors build model which is characterized with some equalities and some differences. The same is the situation in Threat of Substitute Products or Services, because there is no substitute for honey or services of Internet services providers (further ISP companies) in rural areas. At the other hand there is the difference in amount of demand for honey bee and for internet services. It exist difference in knowledge of participants in both monitored domains. The beekeepers have higher level of tacit knowledge (see, Vostrovský 2006), at the other hand participants in field of internet technologies have higher level of explicit knowledge and these are more numerous. The implicit information is easily stored and shared which is its advantage. Generally the ICT projects have higher budget than projects in field of beekeeping. There are successful Leader projects in the field of beekeeping in the Czech Republic or abroad. On the other hand, the local ISP can use for your development funding from European funds, such as the European Agricultural Fund for Rural Development (EAFRD) and the European Regional Development Fund (ERDF). The relatively low barriers to entry are evidenced by the development of WIFI in the Czech Republic in the last decade. As a general recommendation on the amount of the budget, it is possible to say that it is necessary to apply for grants to the highest possible level because the project proposal and management is quite high and the cost of project management is given to EU directives.

Graph 1. Household spending on Internet traffic by household income
(annual averages in CZK per one member of the household))



Source: Czech Statistical Office, Household Budget Survey

When authors quantified levels in their model of barriers to entry, they analyzed data from different sources from both observed domains, i.e. community driven projects of beekeeping and ISPs too. The field of ISPs is mainly driven by engineering and craftsmanship abilities it means, that it is easier to calculate costs and incomes and the budget is usually higher with higher number of specialists and workers. At the other hand the projects in field of beekeeping are use more workmanlike manners and tacit knowledge of beekeepers. The budget of projects is lower led frequently to building of exhibits or museum of beekeeping for wide society. In area of beekeeping CLLD projects are often focused no only at beekeeping museums but at education and training of young people at this centers and other goal, see (Museum of beekeeping), (Tarn Moor Apiary site) and other projects. Of course exist

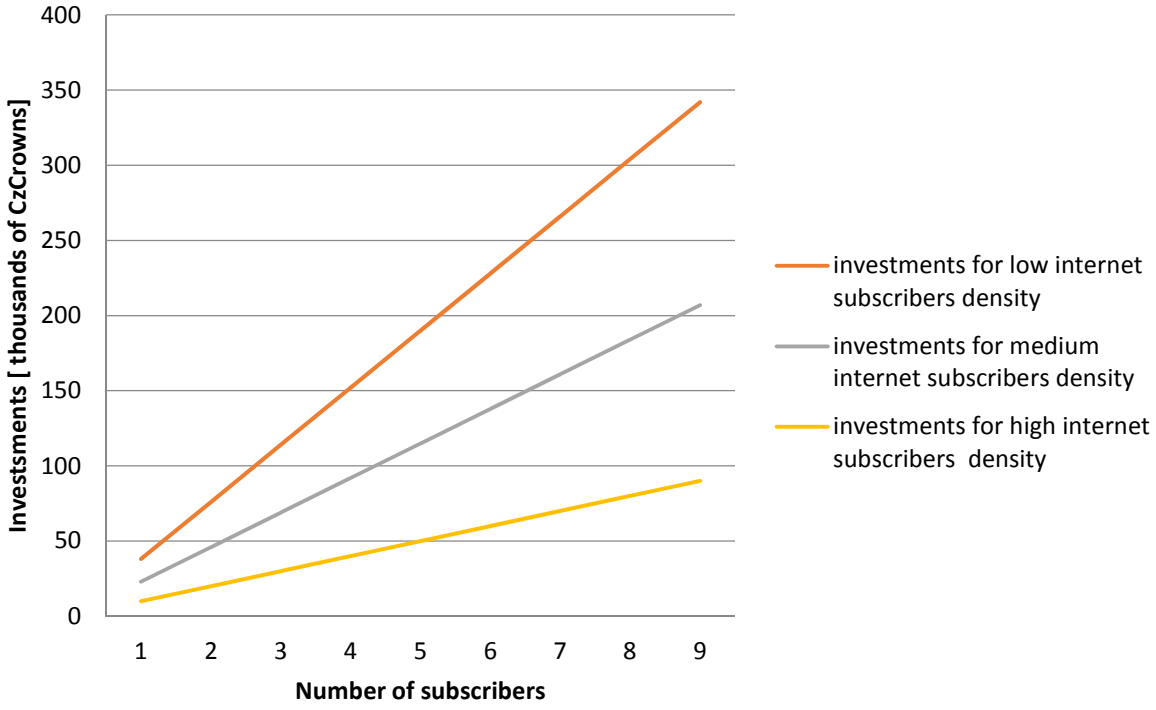
projects focused on investments into beekeeping technology and machines which improves effectiveness and efficiency of beekeeper's activities and led to higher honey bee production.

All submitted projects in their own way to cope with Colony Collapse Disorder. Halbich and Vostrovsky (Halbich, Vostrovsky 2012) described the cooperation of the community beekeepers with the state administration in case of limiting the spread of other epidemic fatal disease of bees. In this case it was so called the American Foulbrood disease.

In the next section, the authors detail with areas ISPs .In Graph 1. we can see, mainly in right part of Graph 1., that prices of internet connection started decrease, because we can presuppose, that the amount of data is permanently increasing. It is important for future incomes for new subjects in field of Internet service providers. The new subjects must calculate their own costs to overcome barriers to entry in our model. If prices of internet connection decrease then barriers to entry are higher. The payback period is longer.

In the next Graph 2. authors demonstrate dependency of investments on internet subscribers density for fiber optic. The dependences for wireless connection by WIFI technology is a bit different but no important for our model. In both cases i.e., fiber optic and WIFI connection of course exist effects of economies of scale which a bit change both models, but with the same way. When we compare situation between commercial ISP and community driven ISPs, the share of an operating expense (OPEX) to a capital expenditure (CAPEX) is different. In community driven ISPs the OPEX is usually lower. CAPEX is the same in both types ISPs. In community driven ISPs the OPEX is decreasing for example by enthusiasm and volunteering of members of community.

Graph 2. Investments for different internet subscribers density for fiber optic



Source: own author's research

Dependence on population density results from the ratio of prices cabling and active elements. In rural areas the internet subscribers density is commonly lower than in urban areas and

naturally investments depend on natural conditions like plains or hills environment. The WIFI technology is generally cheaper for subscribers but unfortunately has lower transfer speed and can less satisfy subscribers. The hills are best places for transmitters, but in hills areas may arise shadows without wireless signal. The fiber optic technology is less appropriate for low internet subscribers density but at other hand the transfer speed can be substantially higher than in the use of WIFI technology. The number of members of the fiber optic community should more than one thousand of subscribers. Cechura (Cechura 2014) demonstrated that not always the model using economies of scale can prove. The hypothesis was not confirmed here. In this case, it may be erroneously chosen methodology used incorrect data or may be other reasons. The use of fiber optic technology is more industrial than the use of the WIFI technology and of course the WIFI technology is more industrial than beekeeping. At other hand the beekeeping uses more tacit knowledge than IPSs technologies, but use of tacit knowledge in field of IPSs companies can led to more efficiency solving of problems in daily operations. At other hand is harder to share and store tacit knowledge in field of ISP services.

4 Conclusion

In conclusion it can be said that there exist similarities and differences between in two above-mentioned domains. The same is the situation in Threat of Substitute Products or Services, because there is no substitute for honey bee or services of ISP companies. On the other hand there is the difference in amount of demand for honey bee and for internet services. The demand of internet services (mainly data) is de facto infinite. It exist difference in knowledge of participants in both monitored domains. The beekeepers have higher level of tacit knowledge, at the other hand participants in field of internet technologies have higher level of explicit knowledge and these are more numerous. From this reason the barriers to entry in field of human resources in the case of ISPs are lower than in field of beekeeping. For further research is advantageous that historical changes between WIFI and fiber optics to allow more precisely quantify the parameters of our models in Czech Republic.

References

Beekeeping and Rural Development Policy in the period 2014, last updated: 2014-02-05 [cit. 2014-05-05]. available at http://ec.europa.eu/dgs/health_consumer/information_sources/docs/ahw/20140407_pres_12.pdf

"BEST PRACTICES" FOR SUPPORTING INTERNET AND DEVELOPMENT INITIATIVES, last updated: 20014-02-05 [cit. 2014-05-05]. available at http://www.fao.org/docrep/w6840e/w6840e06.htm

Čechura, L. Analysis of the Technical and Scale Efficiency of Farms Operating in LFA.

Published in Agris on-line Papers in Economics and Informatics, Vol. 6, Issue 4, 2014, Pp. 33 – 44. Faculty of Economics and Management, Czech University of Life Sciences Prague, Prague. 2014. ISSN 1804-1930.

Halbich, Č. and Vostrovský, V. (2014) ‚Monitoring of infection pressure of American Foulbrood disease by means of Google Maps'. *Agris on-line Papers in Economics and Informatics,* Vol. 4, Issue 4, 2012, Pp. 19 – 26. Faculty of Economics and Management, Czech University of Life Sciences Prague, Prague. 2014. ISSN 1804-1930.

Museum of beekeeping (in czech language) [cit. 2014-05-05]. available at http://www.lounovicepodblanikem.cz/zocsv/muzeum_vcelarstvi.pdf

Tarn Moor Apiary site [cit. 2014-05-05] available at http://www.ydmt.org/news-details-community-projects-in-dales-receive-%C2%A3263k-13688

Porter, M. E. (2008) 'The Five Competitive Forces That Shape Strategy', Harvard Business Review, vol. 86, no. 1, pp. 24-40

Vostrovský, V. (2006) 'Expert systems utilization in knowledge management', Agricultural economy, vol. 52, no.10, pp. 451–455

Zhang, M. and Wolff, R. (2004) 'Using Wi-Fi for cost-effective broadband access in rural and remote areas', Proceedings of IEEE Wireless Communications and Networking Conference, WCNC 2004 3, Atlanta, pp. 1347-1352

Comparison of e-platform of National Rural Networks in selected EU member states

Radka MacGregor Pelikánová[1]

[1]Department of Law, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Prague 6 – Suchdol
pelikanovar@pef.czu.cz

Annotation: Our post-modern global society is reliant on information systems and information technologies ("IS-IT"). Agenda 2000, the Lisbon strategy 2000, Europe 2020 and the post-Lisbon wording of the Treaty on EU ("TEU") and of the Treaty on the functioning of EU ("TFEU") show that the European integration, rural development and use of IS-IT are related priorities of the EU in the 21st century. The Rural Development Policy as the second pillar of the Common Agricultural Policy ("CAP"), required establishing an organized and synchronized system called the European Network for Rural Development ("ENRD") composed of National Rural Networks ("NRNs") with a clear need of an appropriate support of IS-IT. The EU law created a mandatory framework, member states launched their NRNs as a part of the ENRD in 2008, the whole super network ENRD has functioned for over 5 years. Due to the same applicable EU law regime, technical interconnectivity, identical goals and the commonly shared recognition of the importance of IS-IT, e-platforms of NRNs are clear subjects of a critical comparative analysis. Although various NRNs belonging to ENRD have similar structural settings and *modus operandi*, their e-face is strikingly different with a varying suitability notably for the bottom up use and ultimate addressees. The active period of ENRD approaches a semi-end, its Website no longer updated, its ripe for balancing. It is instructive, as to the employment of IS-IT by ENRD and NRNs based on pre-set criteria, and to discuss consequences and implications, along with advice to help to meet stated goals, follow the co-operation and bottom-up approach, and improve the settings of communication and awareness in regard to rural development at various levels as such.

Key words: Information Systems – Information Technology ("IS-IT"), European Network for Rural Development ("ENRD"), National Rural Network (NRN), Website.

JEL classification: K23, M15, R58.

1 Introduction

The post-modern global society is heavily virtualized and dematerialized. Intangible scenery world-wide, including the European Union ("EU"), is largely marked and shaped by Information systems ("IS") operating based on using Information technology ("IT"), like the application of computers, and other e-devices assisting in the storage, retrieval, transfer and manipulation of data. The IS-IT are typical examples of innovation which is an accepted factor for regional economic development and growth and yet is still unequally distributed across different parts of the EU (COPUS, 2008). An excellent example of IS-IT is the e-network of e-networks, the Internet with Websites. A Website is a set of related and connected Webpages located and served by a single domain. All publicly accessible Websites constitute the World Wide Web ("www"), while servers are all computers with appropriate storage capacity or similar devices on the www (KÖHLER, 2011). A host web server is a storage for a Website attached to a domain, while a domain name is mainly a word indicator of an IP resource, such as a personal computer and its sphere, a server computer or a Website (MacGREGOR, 2012). A domain name has a tree structure and consists of names of nodes up to the tree roots (SONNTAG, 2006). The Internet significantly impacts the professional, social and private lives of millions of people and entities (MacGREGOR, 2012) and its appropriate use is critical for European integration (MacGREGOR, 2013a), especially if e-platforms such as Websites are used (MacGREGOR, 2013b). Meanwhile, rural sustainable

development lies at the core of European integration and belongs to EU priorities. The famous Common Agricultural Policy ("CAP"), begun at the start of European integration, serves now many purposes way beyond mere generating and providing of food.

The project of key EU institutions, Agenda 2000: for a stronger and wider Union, COM (97) 2000 ("Agenda 2000"), was a policy and legislative package entailing numerous measures leading to the reform dividing CAP into two pillars – production support and rural development. The Liaison Entre Actions de Développement de l'Économique Rurale ("LEADER") initiative in 1991 soon became the main methodological approach to the rural and regional development with the involvement of Local Action Groups ("LAGs") gaining importance. Modern EU policies need active participation of all stakeholders, this goes even beyond the principle of shared management (PETERS, 2014). Such an active participation needs the right framework and also e-platform. In 2000, there was issued by the European Council as well the Lisbon Strategy of EU ("Lisbon Strategy 2000") requesting a framework facilitating e-communication, e-business, and other intangible methods and instruments, including speedy Internet access. The interest in a good business environment for small and medium sized enterprises („SME"), which are typical for agrarian operation with a potential for rural development, was explicitly mentioned. The Lisbon Reform Treaty from 2007/2009 aided this evolution and the post-Lisbon EU primary law underlines the sustainable development, the promotion of technological advances and networks´ support to regional and local communities. In 2010 was launched a new EU strategy for one decade called Europe 2020 ("Europe 2020"), which addresses overcoming the economic crisis and improves the whole integration model while focusing on smart, sustainable and inclusive growth (EC, 2010). The Europe 2020 builds on lessons learned from the Lisbon Strategy 2000, and reflects the CAP with its tangible and intangible format. Goals of the Europe 2020 are aided via flagship initiatives, which follow successful lines of ENRD, NRNs and their Websites.

The ENRD and NRNs were established by the European Commission based on the Council Regulation (EC) No. 1698/2005 on support for rural development, including ENRD and NRNs, as the hub to connect rural development stakeholders from the EU especially in 2007-2013. However, before or after 2013, the partnership between the private and public sector, enhanced awareness, implementation of RDP, and information management, need to have both tangible and intangible forms. The proclaimed approached bottom-up stresses the importance of interactive IS-IT and its Websites, provided they are effective, efficient, and customer friendly. The IS-IT are important instruments for agriculture, and appropriate web presentations increase the competitiveness (ŠMEJKALOVÁ, 2013). It is highly instructive to proceed in 2014 with a comparative assessment regarding formal, content, as well as operational aspects of the e-platforms of ENRD and various NRNs. Their Websites need to reflect the background and scope of activities of subjects active in rural development and induce their participation. The efficient and effective NRN Websites should inspire others.

2 Materials and Methods

The goals of the paper are to study, compare, and critically assess the e-platforms of ENRD and of various NRNs belonging to ENRD, namely their Websites differences based on selected conventional formal, content and operation criteria. These Websites are instrumental for the Community-led Rural development. It is necessary to explore materials and observe resources and seek how to improve these Websites to enhance the rural development.

A myriad of methods with a strong focus on inter-disciplinarity, meta-interaction and descriptive-comparative analysis will be employed. The economic data will be extracted from

various official and semi-official sources of the EU as well as the national provenience and the legal framework information will be acquired through a descriptive and summarizing study. Additional data, especially of an IT and sociological nature, will be obtained by direct observation and field inquiry. The resulting block of knowledge related to ENRD and various NRNs Websites - their formal (placing and wording of domain name, design, etc.), content (provided information, language versions) and operational aspects (functionality, search mask, interactive elements) - will be comparatively scrutinized. The implied conglomerate of preliminary findings will be classified and assessed with quantitative as well as qualitative instruments, with an employment of forensic techniques and Meta-Analysis. The discrepancies and reconciliation inappropriateness are addressed by additional research targeting problematic elements generated by the comparison of Websites of ENRD Website and NRN Websites in the Czech Republic, France, Germany, Poland, Bulgaria and Slovakia based on the set criteria. The ultimate assessment of Websites shows that these NRNs follow a slightly different IT/IS approach, demonstrate various levels of national commitment and customer friendliness. Their comparison suggests how they could be improved to inspire and facilitate the involvement of the bottom stakeholders in the rural development.

3 Results and Discussion

The formal, content and operational aspects of Websites of ENRD and selected NRNs will be indentified, classified, compared and critically assessed in the light of the goals and objectives of CAP. Their differences will be discussed, also their capacity to facilitate the interaction between stakeholders of the ENRD and NRNs and to inform and induce bottom stakeholders in the Community-led Rural Development. ENRD was aimed to support effective rural development in the EU by generating knowledge and facilitating the information exchange and cooperation. The ENRD e-platform was designated for the sharing of information about rural development, especially in the connectivity with NRNs and LAGs, and was launched in 2008, the ENRD Contact Point ceased its activities on 9th July 2014. The ENRD Website has not been updated since 20th June 2014 and thus http://enrd.ec.europa.eu/en/home-page_en.cfm is just an archive version. Considering formal aspects, the Website for ENRD was linked to a sub-domain attached to a domain registered within the Top Level Domain ("TLD") for the EU and the name of the sub-domain was conceived as a four part indicative reference reflecting four domain levels, i*enrd.ec.europa.eu*, and the URL link to the Website is http://enrd.ec.europa.eu/. The design of the introductory Webpage is minimalistic and is rather merely a gateway to 6 (!!!) full language versions and to 8 reduced language versions, called light versions. It is worthy to note that there are 24 official languages in the EU, that the 6th full version of ENRD Website, after the conventional quintuple (EN, FR, DE, IT, ES) is Polish (PL) and that one of the 8 light versions of ENRD Website is Czech (CZ).

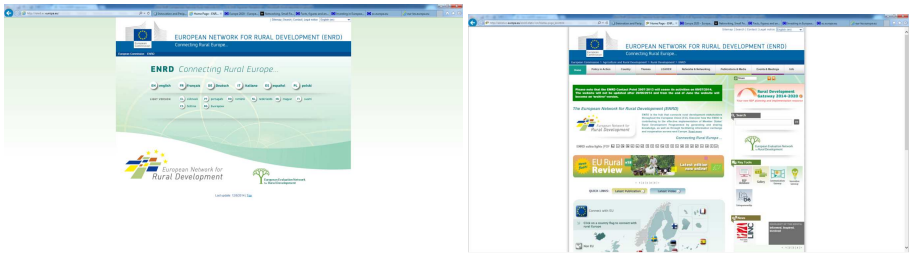


Fig. 1. ENRD Website http://enrd.ec.europa.eu/ and http://enrd.ec.europa.eu/enrd-static/en/home-page_en.html

Regarding content aspects, it is necessary to click on the introductory Webpage and move to sub-Webpage, e.g. in the English full version http://enrd.ec.europa.eu/networks-and-networking/nrn-information/en/nrn-information_en.cfm, which is conceived as a complex and abundant resource with

a set of interactive elements and links to other important and thematically related Webpages, such as the Webpage for Rural Development Gateway 2014-2012. The search mask is located on the right side and in the middle and in the lower part of the Webpage are actively moving banners, which may be perceived *prima facie* as attractive, but in the case of a search for information are rather distracting and confusing. Operationally, the functions of the ENRD Website are fully active and their speed and smooth operation is preserved even after July 2014. Thus, through interactive links offered in verbal as well as logo form, e.g. click on the national flag, Websites of NRNs can be promptly reached along with introductory information about the particular NRN. In the case of the Czech Republic, the Webpage of ENRD is http://enrd.ec.europa.eu/enrd-static/networks-and-networking/nrn-information/czechrepublic/en/czechrepublic_en.html which offers a link to the Webpage (!not Website!) of the Czech NRN http://eagri.cz/public/web/en/mze/national-rural-network/.

The Czech Republic launched the NRN, in November 2008, as a part of the ENRD in order to reach a higher efficiency of the Community-led Rural Development and cooperation on various levels. The Czech e-NRN, as other e-NRNs, should support the integrated and active bottom up approach to rural development. For example, Czech farmers should benefit from such an IS-IT support and get actively involved in rural development. Considering formal aspects, the domain for the Website of the Ministry of Agriculture of the Czech Republic is registered under country code TLD ("ccTLD") for the Czech Republic .cz and carries the domain name "*eagri.cz*", thus the link is http://eagri.cz/public/web/mze/. In order to reach the pertinent Czech NRN Webpages, either a set of steps needs to be done or the correct long link indicated. Regarding content aspects, the Czech NRN Webpage has a Czech and English version. A cursory overview demonstrates their differences. Operationally, the Czech NRN Webpages show a set of issues. The access is complex and not intuitive. The URL is long and the access-link entails two extra steps *venkov* and *Program rozvoje venkova ČR* and their placing on the Webpage is "hidden" between other linking options. Fortunately, a search mask is included. In order to evaluate the mentioned issues of Czech NRN Webpages, three NRNs from larger EU member states are reviewed, French, German and Poland, and two NRNs from smaller EU member states, Bulgarian and Slovak.

Fig. 2. Introductory Webpage of the Czech Ministry of Agriculture http://eagri.cz/public/web/mze/ and of the Czech NRN in CZ http://eagri.cz/public/web/mze/venkov/program-rozvoje-venkova/ and of the Czech NRN in EN http://eagri.cz/public/web/en/mze/national-rural-network/

France complied promptly and enthusiastically with new CAP requirements and joined ENRD network. The French NRN Webpage as a part of ENRD Website was officially launched in December 2008 under Uniform Resource Locator ("URL") http://enrd.ec.europa.eu/networks-and-networking/nrn-information/france/en/france_en.cfm, however the linked French NRN domain under URL http://www.reseaurural.fr/ was already in operation since April 2008. Considering formal aspects, there is a special domain only for NRN French issues within ccTLD for France .fr. Thus the electronic access to NRN is easier for French farmers than their Czech counterparts. They can just intuitively type the equivalent *network* and *rural*, i.e. *resau rural* or *resaurural.fr*, and get to http://www.reseaurural.fr/. Only a French version is offered. The search mask frame is in the middle of the Webpages. Top bookmark leads to Webpages of 26 regions. No moving banners are included, the information is provided in an organized and static manner.

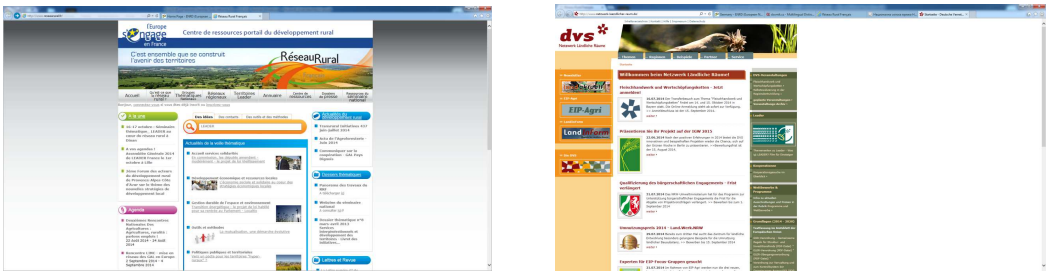


Fig. 3. Website of the French NRN http://www.reseaurural.fr/ of the German NRN http://www.netzwerk-laendlicher-raum.de

The German determination to master IS-IT and to plan and act accordingly is shown by their e-participation in ENRD, in the EU project of the TLD .eu, and in other Internet domain related issues, such as new gTLDs (MacGREGOR, 2012). The German NRN, *Nationales Netzwerk für den ländlichen Raum Deutschland*, and its e-platform was prepared way before 2008, as is witnessed by a Press Release of Memorandum by European Commission from 20th December, 2007. There is a special domain only for NRN within ccTLD for Germany .de. The domain name is rather complex and entails three words separated by two hyphen symbols "-", i.e. German equivalents of *network*, *rural* and *space* are in the URL http://www.netzwerk-laendlicher-raum.de/. Only a German version of the Website is provided. Operationally, it needs to be pointed out that special Webpages for German regions, *Ländern*, are offered under URL http://www.netzwerk-laendlicher-raum.de/regionen/ No (!) search mask frame is offered and no moving banners are included.

The Polish assertion was successful in the arena of ENRD e-platforms, where to the conventional 5 "top" languages - EN, FR, GE, SP, IT - was added Polish. The URL for the Polish NRN Website is http://ksow.gov.pl/ and http://ksow.pl/. Poland took advantage of modern IS-IT allowing that one e-device can be linked to more domains and thus a Website can be reached by indicating various domain names (KÖHLER, 2011), i.e. domains *ksow.pl* and *ksow.gov.pl* lead to the Polish NRN Website. Poland reflected the scientificly proven preference of users for short domain names (HUBER, 2010) and used *ksow* instead of *Krajowa Sieć Obszarów Wiejskich*, i.e. Regional Network of Rural Areas. The Polish NRN Website offers an English version with a slightly reduced content. Both versions have the search mask in the top right corner. Under the search mask is a map of Poland and with a click on a region, the redirecting to the pertinent Webpage occurs. The Webpages of regions have a similar design to the principal Polish NRN Webpage, making the orientation easier. The absence of distracting moving banners enforces the customer friendliness.

The URL for the Bulgarian NRN with the Website is http://www.nsm.bg/. Considering formal aspects, there is a special domain only for NRN Bulgarian issues. The domain name consists of the NRN abbreviation and TLD indication, *nsm* for *Nacionalnaja Selska Mreža* meaning NRN, and *.bg*. A quasi-full English version is provided under URL http://www.nsm.bg/en. No special regional Webpages are offered on the introductory page, but via bookmark of the Local Action Groups ("LAGs") a similar effect can be reached. The search mask is in the top right corner, no interactive banners are included. The URL for the Slovakian NRN domain with the Website is http://www.nsrv.sk/, it uses the NRN abbreviation, *nsrv* for *Národná sieť* rozvoje *vidieka*, and Slovak ccTLD indication, .sk. A light English version is provided, both versions (!!!) offer sub-Webpages of regions with contact information. The search mask is atypically in the top left corner, no interactive banners are included.

EU member states complied with Council Regulation 1698/2005 and other provisions of the EU law regarding e-platform for ENRD and NRNs. They all decided to link NRN Websites

and their domains registered within their ccTLDs, but not all EU member states have a special domain for NRN. There are large differences in the methodology, in the selected domain names, in the Website and Webpages design, etc.. All Webpages are operational, but their efficiency, effectiveness and especially customer friendliness are extremely diverse.

Table 1. Comparative overview of criteria as applied to selected Websites and Webpages (Y=yes, N=Non)

Own Domain	Length, Language Versions, Search Mask. Regional Webpages, Interactive Banner	Comment
ENRD	N, Short, Y, Y, Y, Y	Standardized
Czech NRN	N, Long, Y, Y, Y, N	Complicated
French NRN	Y, Short, N, Y, Y, N	Interestingly Centralized Design
German NRN	Y, Medium, N, N, Y, N	Good, but no Search Mask
Polish NRN	Y, Short, Y, Y, Y, N	More venues
Bulgarian NRN	Y, Short, Y, Y, Y, N	Matching Dual Versions
Slovak NRN	Y, Short, Y, Y, Y, N	Easy Orientation

The attitude to IS-IT and generally the rates of innovative activity are region specific and the interregional differences are the consequence of regional heterogeneity (COPUS, 2008). The EU law does not justify a rigid application of a totally unified e-platform network system for ENRD and NRNs. On the contrary, the differences and particularities should be observed and served for cross-regional and cross-border inspiration and exchanges of information at all levels. It is just a parallel dimension of the need to go even beyond the shared management principle in the arena of the rural development in the EU (PETERS, 2014). The *bottom* stakeholders deserve to have a perfect e-support, including from ENRD and NRNs. They should benefit from Websites, which are improved based on the observation of the operation of sister Websites and the asymmetry of information and e-access to data should be reduced. Definitely, the Community-led rural development needs a more vigorous IS-IT support on all levels.

4 Conclusion

The EU has not required a centralized establishment of domains and Websites for ENRD and NRNs and left it up to the discretion of EU member states how they will satisfy the general requirement to establish interconnected infrastructure to provide e-support for CAP, LEADER and the *bottom-up* approach. The light legal regulation and the lack of guidelines for NRN domains and Websites are not *per se* wrong. However, the differences between them point to an asymmetry of information and a varying level of capacity to induce and support the rural development on various levels with the engagement stakeholders, especially those at the *bottom* of the hierarchy. The Europe 2020 uses the experience of Lisbon strategy, and the NRNs´ domains and Websites should undergo a critical scrutiny. The *bottom* stakeholders should be informed about options and should be able to influence them, so these domains and Websites inform them well and support their active involvement in the rural development.

The results of the Meta-analysis and comparison of ENRD and NRNs domains and Websites offered in this paper were preliminarily presented to a smaller pool of randomly selected Czech *bottom* stakeholders and they showed their general approval of the set criteria and their interest in the suggested simplification and enhancement of customer friendliness. Their reactions endorse this paper's ultimate conclusion that further study needs to be done to understand the perception of the NRN Websites by stakeholders and to recommend their well-tailored improvement. Now, the information support of Community-led Rural Development reaches varying intensity by NRNs in EU member states. The potential for asymmetry of information must be avoided, the harmonization and standardization should be used, soft measures such as guidelines and positive stimulus should be offered and NRNs' domains with Websites should be improved, to boost the Community-led rural development in the EU.

References

Copus, A., Skuras, D. and Tsegendi, K. (2008) 'Innovation and Peripherality: An Empirical Comparative Study of SMEs in Six European Union Member Countries', *Economic Geography*, vol. 84, no. 1, pp. 51–82.

European Commission, DG for Agriculture and Rural Development (2014) *Rural development in the EU - Statistical and economic information : report 2013.* Luxembourg: Publications Office of the European Union, 388 p. ISBN 978-92-79-34798-6.

European Commission (2010) *Communication from the Commission - Europe 2020. A strategy for smart, sustainable and inclusive growth.* Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

Huber, F. and Hitzelberg, F. (2010) *Ratgeber Domain-Namen*, 2.Auflage, Norderstedt: Books on Demand GmbH, 142 S. ISBN 978-3-8391-7389-3.

Köhler, M. and Arntd, H. W. (2011) *Recht des Internet*, 7.Auflage, Heidelberg: C.F.Müller, 336 S. ISBN 978-3-8114-9627-9.

MacGregor Pelikánová, R. (2013a) 'Internet My Dearest, What Type of European Integration Is The Clearest?', *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, vol. 61, no. 7, pp. 2475-2481.

MacGregor Pelikánová, R (2013b) 'European Integration and Top Level Domain in 2013', *The Lawyer Quarterly*, vol. 3, no. 4, pp. 311-323.

MacGregor Pelikánová, R (2012) 'New top level domains – pending success or disaster? '*Journal on Legal and Economic Issues of Central Europe*, vol. 3, no. 1, pp. 75-81.

Peters, R. and Gregory, M. (2014) 'Networking, Small Farms and EU Rural Development Policy. Réseautage, exploitations de petitie taille et politique européenne de développement rural. Vernetzung, landwirtschaftliche Kleinbetriebe und die Politik der EU zur Entwicklung des ländlichen Raums', *EuroChoices*, vol. 13, no. 1, pp. 36-39.

Sonntag, M. (2006) *E-Business Recht – Eine Einführung für Informatiker*, Linz: Johannes Kepler Universität – Universität Verlag Rudolf Trauner, 254 S. ISBN 978-3-85499-120-5.

Šmejkalová, M. (2013) 'Logo design for websites', *Agrarian Perspectives XXII. Development Trends in Agribusiness – Proceedings of the 22nd International Scientific Conference*, 148-154. ISBN 978-80-213-2419-0. Available at http://ap.pef.czu.cz/books-of-proceedings/

Potential of Open Data in the Community-led Rural Development

Václav Vostrovský[1], Hana Rysová [2]

[1]Department of Information Engineering, PEF, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
vostrovsky@pef.czu.cz

[2]Department of Information Technology, PEF, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
rysova@pef.czu.cz

Annotation: This article deals with the potential of open data in conjunction with the community-led rural development. This development represents a social activity which promotes involvement of local public in a given region within the framework of current economic, environmental and social issues. The one of the preconditions of the community-led rural development is then complete transparency of the realized activities. This transparency of these activities is realized by means complete availability of data and information relating to these activities. In practice, in this context then speaks about the so called open data. In practice, this means not only sharing information but also data. This data after further its processing (analysis, aggregation) can then provide a significant support in effective choice of development tactics and strategies. The open data found wide application especially in the public sector. The specific benefit of open data is thus currently subject of research in both the scientific institutions and renowned consulting agencies. The topic of open data does not focus on the transparency and public service improvement only, but can also mean a business opportunity for creating new products and services designed for rural development. The authors of this article set out the benefits of open data in the commercial sector and leads to the assumption that similar benefits can be achieved even in the community-led rural development. The aim of the anticipated paper will to define the meaning and the benefits of open data in in the community-led rural development, including the identification of possibilities and assumptions for their meaningful use, given the existing information needs and appropriate disposition.

Key words: Community-led rural development, open data, NN LAG CR, information need, LEADER initiative, open eGovernment

JEL classification: D80

1 Introduction

This article deals with the potential of open data in conjunction with article The Community-led Rural Development. The Community-led Rural Development represents a social activity which promotes involvement of local public in a given region within the framework of current economic, environmental and social issues. Thus conceived rural development and with him related communities is the purpose of the *National Network of Local Action Groups in the Czech Republic* (*NN LAG CR*). NN LAG CR was founded at the beginning of April 2007, while the network itself had been established as early as in November 2005 as a informal grouping of Local Action Groups called "The National Rural Development Network". The objective of the NN LAG CR is first and foremost to support the activities of Local Action Groups, to promote their cooperation and transfer of experience.

The partial objectives of the NN LAG CR are the following:

- to improve the quality of life in rural areas through continuous and integrated local development,
- to ensure reciprocal transfer of knowledge and experience between the individual members of the network and through the cooperation with the EU Member States and their LAGs,

- to encourage the cooperation with other countries that are ready to apply the LEADER approach in their rural areas.

Development of NN LAG CR is supported by MMR (Ministry for Regional Development) and CLLD (Community-Led Local Development) will be also applied in other programs. It is expected the opening of the 170 NN LAG CR. The 112 NN LAG CR has been set up under RDP (Rural Development Programme) yet (MMR, 2014). The one of the preconditions of the community-led rural development is then complete transparency of the realized activities. This transparency is realized by means complete availability of data and information relating on these activities. In practice, in this context then speaks about the so called *open data*. This data after further its processing (analysis, aggregation) can then provide a significant support in effective choice of development tactics and strategies.

The aim of the anticipated paper will to define the meaning and the benefits of open data in in the community-led rural development, including the identification of possibilities and assumptions for their meaningful use, given the existing information needs and appropriate disposition.

The goal of this paper is to define the meaning and the benefits of open data in the community-led rural development, including the identification of possibilities and assumptions for their meaningful use, given the existing information needs and appropriate disposition. These possibilities will be derived from the benefits of open data in the public and the agrarian sector. The basis for these purposes will be the results of the questionnaire surveys implemented by the authors of this paper (Grant projects of IGA PEF Czech University of Life Sciences Prague of the Czech Republic No. 20131038 and No. 20141036)

2 Materials and Methods

The issue of the open data has recently been subject of intense research and discussions. This topic is relevant especially in relationship with the public sector, in which it is implemented following the principles of:

- publishing : "*What is not secret can be published*",
- openness : make available as much information about your own activities, decisions, rules, and financial flows as possible,
- availability : publish the information in available and understandable form,
- client-side control: transfer the relevance control of open data from publisher to recipient,
- free access : keep the open data available free of charge,
- open standards : comply with the open standards and data quality standards.

The open data found wide application especially in the public sector. The specific benefit of open data is thus currently subject of research in both the scientific institutions and renowned consulting agencies (**Lewis, 2012)**.

The topic of open data does not focus on the transparency and public service improvement only, but can also mean a business opportunity for creating new products and services designed for rural development (Berg, 2013). The open data currently find its main use in traffic, logistics, health care, and insurance services (**Chui, Manyika and Van Kuiken, 2014).**

The Lokal Action Groups are situated mostly in countryside. Most often used information from the Czech agricultural is shown in the following chart:

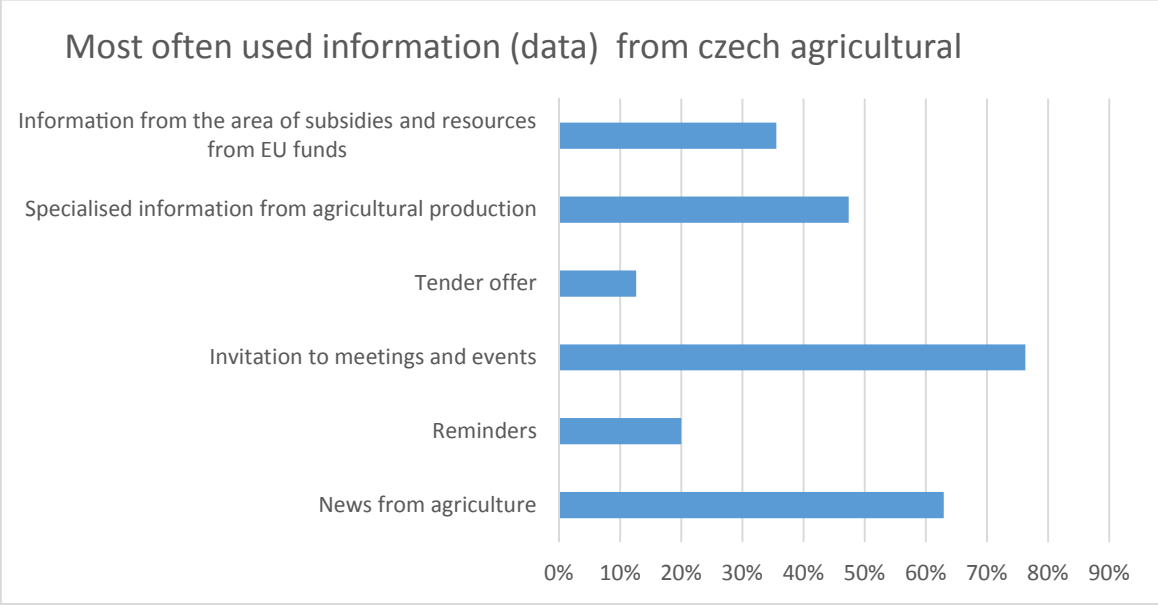


Chart 1. Most often used information from czech agricultural (2013)

(Source: Grant project of IGA PEF Czech University of Life Sciences Prague of the Czech Republic No. 20131038)

The chart above indicates what information (data) are mostly used in the agricultural sector. Because the community-led rural development is closely related to agriculture, we can assume the need the similar repertoire of information and data for such development. Such informations (data) could then bring following benefits:

	Drive Revenue through multiple areas	Cut Costs and Drive Efficiency	Generate Employment and develop future-proof skills
Benefit to Government	▪ Increased tax revenues though increased economic activity ▪ Revenues through selling high value added information for a price	▪ Reduction in transactional costs ▪ Increased service efficiency through linked data	▪ Create jobs in current challenging times ▪ Encourage entrepreneurship
Benefit to Private Sector	▪ Drive new business opportunities	▪ Reduced cost by not having to invest in conversion of raw government data ▪ Better decision making based on accurate information	▪ Gain skilled workforce

Fig. 1. Economic benefits of open data to government and private sector

(Source: Capgemini Consulting Analysis)

Open Data published on the Internet must be

- comprehensive,
- easily accessible,
- machine readable,
- standards using the freely available specifications,

- accessible under clearly defined conditions of use with minimum restrictions,
- available to users while incurring the minimum possible cost (Chlapek, 2014).

The governments and public organisation publish additional data sources at increasing rates, either as a result of a public pressure towards higher transparency, or as an economic stimulus to the knowledge economy (Taggart and Peltola, 2011). In practice, this means not only present their activities by providing information, but also through a set of data that describe them.

The theme of open data closely corresponds to the information and data need. This need depends not only on the place of its use (the decision making point), but also on the experiences and knowledge of the management entity (Říhová, 1996). The nature of information, which is a subject of this need, possibly summarizes the best the system approach definition, which specifies that "information represents the meaning that the human subject assigns to data throughout the conventions used for its presentation" (Rosický, 2009). Based on this definition, a relationship of information to data, as well as knowledge can be defined as:

DATA ➔ INFORMATION ➔ KNOWLEDGE.

The information and data need of each realized activities relates to following types of information (data):

- *technological information* – describe mainly the matters of what was done, and how it was done,
- *value-assessing information* – express the financial burden of realised activities,
- *dynamic information* – relates to the time properties of these activities (Mlejnek, 2010).

Specific information and data need in the area of rural development exists because:

- many of the development activities are affected by the significant lack of available experts or other information sources,
- many of the problems that accompany these activities require timely and qualified decision.

3 Results and Discussion

As already mentioned, the one of the preconditions of the community-led rural development is then complete transparency of the realized activities. NN LAG CR operates the relatively high quality web portal and within this portal presents information and data about the implemented development activities. This portal is continuously developing from the complexity point of view, and gradually aspiring the top level, the full-fledged www portal that is, which can be characterized by a relative openness.

The drawback, however, is that this portal offers the relatively little detailed data for these activities. Just this data can provide valuable support in the strategic issues of the rural development. It should be noted, however, that the mere data for this purpose will not be enough. It is in the interest of the NN LAG CR to make the data available to all parties with as low legal and licensing restrictions as possible and also in the highest possible technical quality. If the data are accessible in real time through a well designed API, the number of interested subjects will be probably higher than in the case where the data are incomplete or only in basic Excel sheets.

Chosen way publication of open data must satisfy the following conditions:

- t*ransparency*, ie. cataloging data sets in a searchable format (.xls, .mdb),
- *legal openness*, ie. publication of data under an open license,
- *technical openness*, ie. publication of data in a standard machine-readable format
- *comprehensibility expression*,
- *availability and originality*, ie. to publish individual data sets as a whole and unaltered (ie. rather than statistics, but data on which statistics can be realized (BERG et al,2012)
- *possibility of the aggregation* of partial data.

To increase the potential of open data will be appropriate to publish this data in a transparent form. Very a suitable then in this context can be a presentation in the form of interactive maps.

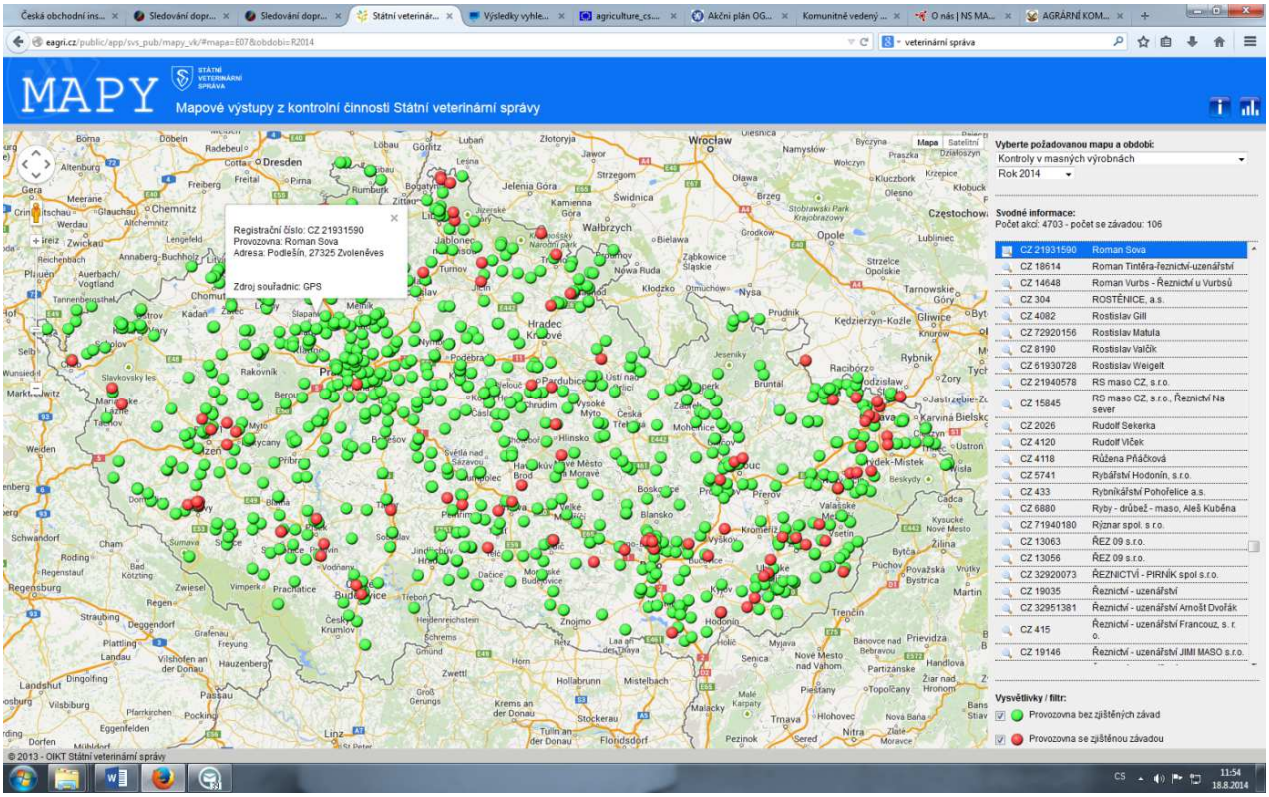
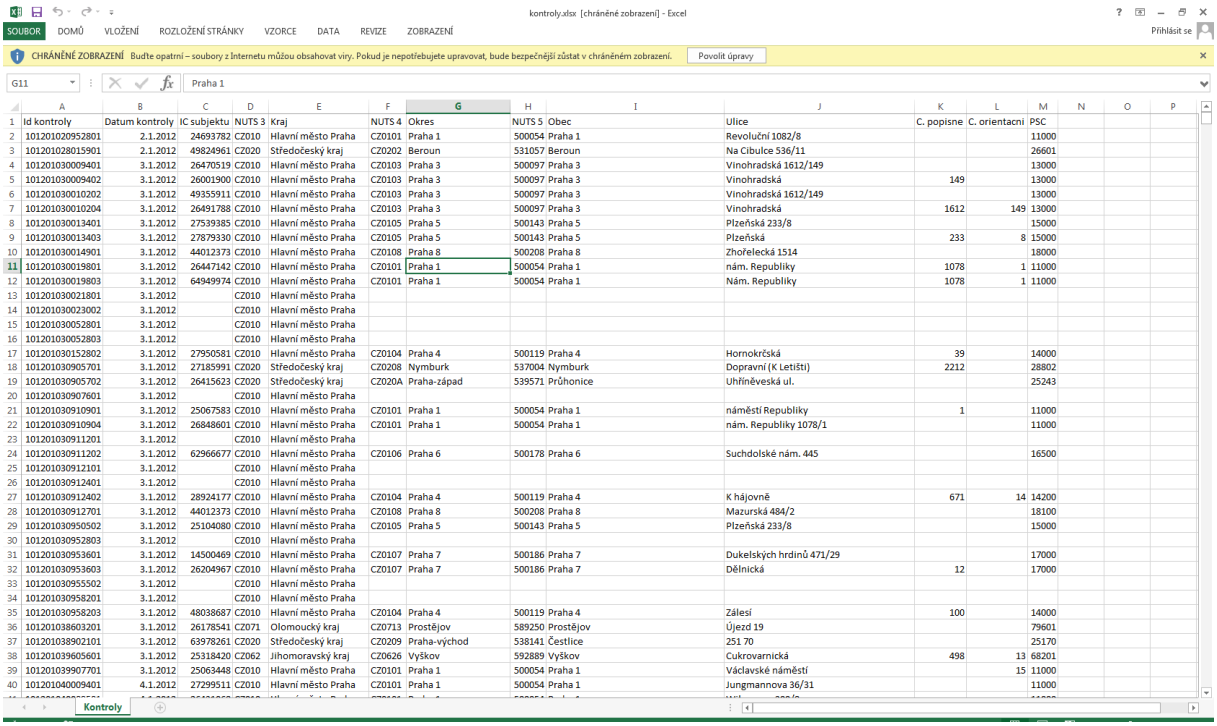


Fig. 2. Example publishing of open data in the form of interactive maps

(Source: http://eagri.cz/public/app/svs_pub/mapy_vk/#mapa=E07&obdobi=R2014)

If they have an open data fulfill its purpose in the community-led rural development, must be published in an acceptable form. For this purpose, then is available variety of suitable formats:

- format xlsx,

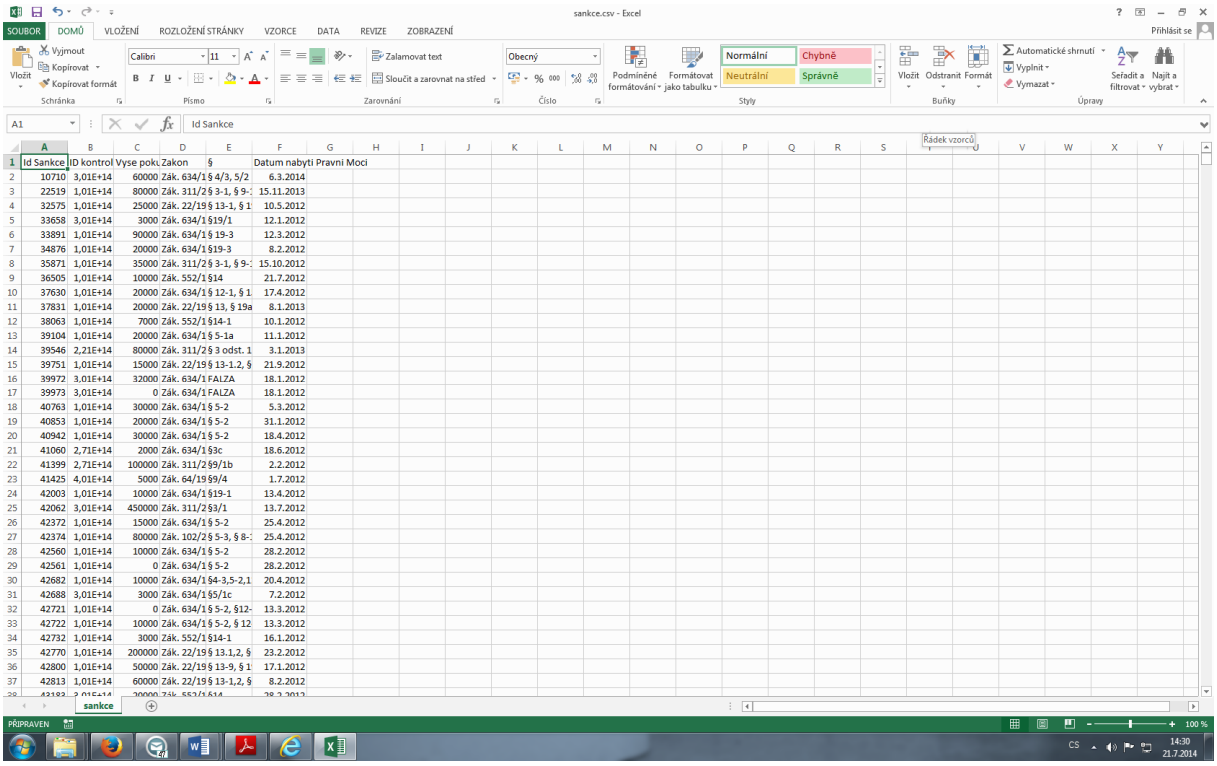


Id kontroly	Datum kontroly	IC subjektu	NUTS 3	Kraj	NUTS 4	Okres	NUTS 5	Obec	Ulice	C. popisne	C. orientacni	PSC
101201020952801	2.1.2012	24693782	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	Revoluční 1082/8			11000
101201028015901	2.1.2012	49824961	CZ020	Středočeský kraj	CZ0202	Beroun	531057	Beroun	Na Cibulce 536/11			26601
101201030009401	3.1.2012	26470519	CZ010	Hlavní město Praha	CZ0103	Praha 3	500097	Praha 3	Vinohradská 1612/149			13000
101201030009402	3.1.2012	26001900	CZ010	Hlavní město Praha	CZ0103	Praha 3	500097	Praha 3	Vinohradská	149		13000
101201030010202	3.1.2012	49355911	CZ010	Hlavní město Praha	CZ0103	Praha 3	500097	Praha 3	Vinohradská 1612/149			13000
101201030010204	3.1.2012	26491788	CZ010	Hlavní město Praha	CZ0103	Praha 3	500097	Praha 3	Vinohradská	1612	149	13000
101201030013401	3.1.2012	27539385	CZ010	Hlavní město Praha	CZ0105	Praha 5	500143	Praha 5	Plzeňská 233/8			15000
101201030013403	3.1.2012	27879330	CZ010	Hlavní město Praha	CZ0105	Praha 5	500143	Praha 5	Plzeňská	233	8	15000
101201030014901	3.1.2012	44012373	CZ010	Hlavní město Praha	CZ0108	Praha 8	500208	Praha 8	Zhořelecká 1514			18000
101201030019801	3.1.2012	26447142	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	nám. Republiky	1078	1	11000
101201030019803	3.1.2012	64949974	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	Nám. Republiky	1078	1	11000
101201030021801	3.1.2012		CZ010	Hlavní město Praha								
101201030023002	3.1.2012		CZ010	Hlavní město Praha								
101201030052801	3.1.2012		CZ010	Hlavní město Praha								
101201030052803	3.1.2012		CZ010	Hlavní město Praha								
101201030152802	3.1.2012	27950581	CZ010	Hlavní město Praha	CZ0104	Praha 4	500119	Praha 4	Hornokrčská	39		14000
101201030905701	3.1.2012	27185991	CZ020	Středočeský kraj	CZ0208	Nymburk	537004	Nymburk	Dopravní (K Letišti)	2212		28802
101201030905702	3.1.2012	26415623	CZ020	Středočeský kraj	CZ020A	Praha-západ	539571	Průhonice	Uhříněveská ul.			25243
101201030907601	3.1.2012		CZ010	Hlavní město Praha								
101201030910901	3.1.2012	25067583	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	náměstí Republiky	1		11000
101201030910904	3.1.2012	26848601	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	nám. Republiky 1078/1			11000
101201030911201	3.1.2012		CZ010	Hlavní město Praha								
101201030911202	3.1.2012	62966677	CZ010	Hlavní město Praha	CZ0106	Praha 6	500178	Praha 6	Suchdolské nám. 445			16500
101201030912101	3.1.2012		CZ010	Hlavní město Praha								
101201030912401	3.1.2012		CZ010	Hlavní město Praha								
101201030912402	3.1.2012	28924177	CZ010	Hlavní město Praha	CZ0104	Praha 4	500119	Praha 4	K hájovně	671	14	14200
101201030912701	3.1.2012	44012373	CZ010	Hlavní město Praha	CZ0108	Praha 8	500208	Praha 8	Mazurská 484/2			18100
101201030950502	3.1.2012	25104080	CZ010	Hlavní město Praha	CZ0105	Praha 5	500143	Praha 5	Plzeňská 233/8			15000
101201030952803	3.1.2012		CZ010	Hlavní město Praha								
101201030953601	3.1.2012	14500469	CZ010	Hlavní město Praha	CZ0107	Praha 7	500186	Praha 7	Dukelských hrdinů 471/29			17000
101201030953603	3.1.2012	26204967	CZ010	Hlavní město Praha	CZ0107	Praha 7	500186	Praha 7	Dělnická	12		17000
101201030955502	3.1.2012		CZ010	Hlavní město Praha								
101201030958201	3.1.2012		CZ010	Hlavní město Praha								
101201030958203	3.1.2012	48038687	CZ010	Hlavní město Praha	CZ0104	Praha 4	500119	Praha 4	Zálesí	100		14000
101201038603201	3.1.2012	26178541	CZ071	Olomoucký kraj	CZ0713	Prostějov	589250	Prostějov	Újezd 19			79601
101201038902101	3.1.2012	63978261	CZ020	Středočeský kraj	CZ0209	Praha-východ	538141	Čestlice	251 70			25170
101201039605601	3.1.2012	25318420	CZ062	Jihomoravský kraj	CZ0626	Vyškov	592889	Vyškov	Cukrovarnická	498	13	68201
101201039907701	3.1.2012	25063448	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	Václavské náměstí		15	11000
101201040009401	4.1.2012	27299511	CZ010	Hlavní město Praha	CZ0101	Praha 1	500054	Praha 1	Jungmannova 36/31			11000

Fig. 3. Example publishing open data in the format .xlsx

(Source: http://www.coi.cz/cz/spotrebitel/open-data-databaze-kontrol-sankci-a-zakazu)

- format csv,



Id Sankce	ID kontrol	Vyse poku	Zakon	§	Datum nabyti Pravni Moci
10710	3,01E+14	60000	Zák. 634/1	§ 4/3, 5/2	6.3.2014
22519	1,01E+14	80000	Zák. 311/2	§ 3-1, § 9-	15.11.2013
32575	1,01E+14	25000	Zák. 22/19	§ 13-1, § 1	10.5.2012
33658	3,01E+14	3000	Zák. 634/1	§19/1	12.1.2012
33891	1,01E+14	90000	Zák. 634/1	§ 19-3	12.3.2012
34876	1,01E+14	20000	Zák. 634/1	§19-3	8.2.2012
35871	1,01E+14	35000	Zák. 311/2	§ 3-1, § 9-	15.10.2012
36505	1,01E+14	10000	Zák. 552/1	§14	21.7.2012
37630	1,01E+14	20000	Zák. 634/1	§ 12-1, § 1	17.4.2012
37831	1,01E+14	20000	Zák. 22/19	§ 13, § 19a	8.1.2013
38063	1,01E+14	7000	Zák. 552/1	§14-1	10.1.2012
39104	1,01E+14	20000	Zák. 634/1	§ 5-1a	11.1.2012
39546	2,21E+14	80000	Zák. 311/2	§ 3 odst. 1	3.1.2013
39751	1,01E+14	15000	Zák. 22/19	§ 13-1.2, §	21.9.2012
39972	3,01E+14	32000	Zák. 634/1	FALZA	18.1.2012
39973	3,01E+14	0	Zák. 634/1	FALZA	18.1.2012
40763	1,01E+14	30000	Zák. 634/1	§ 5-2	5.3.2012
40853	1,01E+14	20000	Zák. 634/1	§ 5-2	31.1.2012
40942	1,01E+14	30000	Zák. 634/1	§ 5-2	18.4.2012
41060	2,71E+14	2000	Zák. 634/1	§3c	18.6.2012
41399	2,71E+14	100000	Zák. 311/2	§9/1b	2.2.2012
41425	4,01E+14	5000	Zák. 64/19	§9/4	1.7.2012
42003	1,01E+14	10000	Zák. 634/1	§19-1	13.4.2012
42062	3,01E+14	450000	Zák. 311/2	§3/1	13.7.2012
42372	1,01E+14	15000	Zák. 634/1	§ 5-2	25.4.2012
42374	1,01E+14	80000	Zák. 102/2	§ 5-3, § 8-	25.4.2012
42560	1,01E+14	10000	Zák. 634/1	§ 5-2	28.2.2012
42561	1,01E+14	0	Zák. 634/1	§ 5-2	28.2.2012
42682	1,01E+14	10000	Zák. 634/1	§4-3,5-2,1	20.4.2012
42688	3,01E+14	3000	Zák. 634/1	§5/1c	7.2.2012
42721	1,01E+14	0	Zák. 634/1	§ 5-2, §12-	13.3.2012
42722	1,01E+14	10000	Zák. 634/1	§ 5-2, § 12	13.3.2012
42732	1,01E+14	3000	Zák. 552/1	§14-1	16.1.2012
42770	1,01E+14	200000	Zák. 22/19	§ 13.1,2, §	23.2.2012
42800	1,01E+14	50000	Zák. 22/19	§ 13-9, § 1	17.1.2012
42813	1,01E+14	60000	Zák. 22/19	§ 13-1,2, §	8.2.2012

Fig. 4. Example publishing open data in the format .csv

(Source: http://www.coi.cz/cz/spotrebitel/open-data-databaze-kontrol-sankci-a-zakazu)

- format ods,

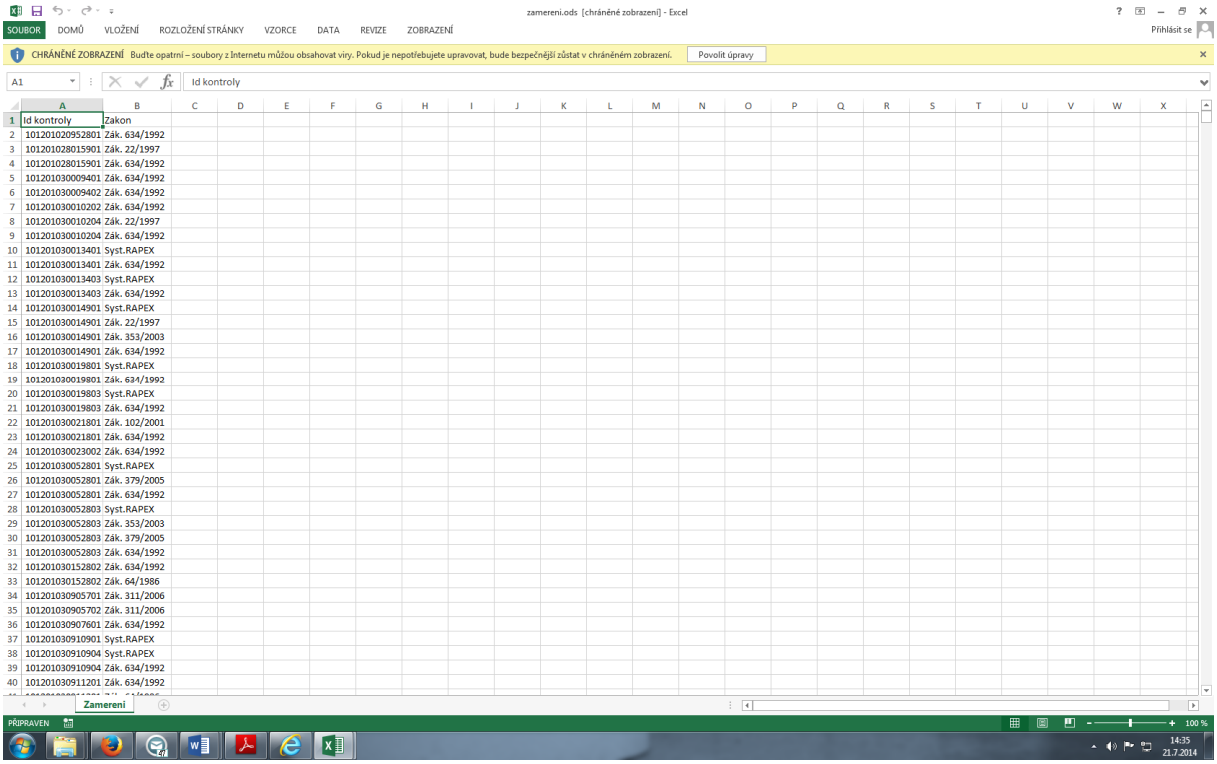


Fig. 5. Example publishing open data in the format .ods

(Source: http://www.coi.cz/cz/spotrebitel/open-data-databaze-kontrol-sankci-a-zakazu)

- format rdf.

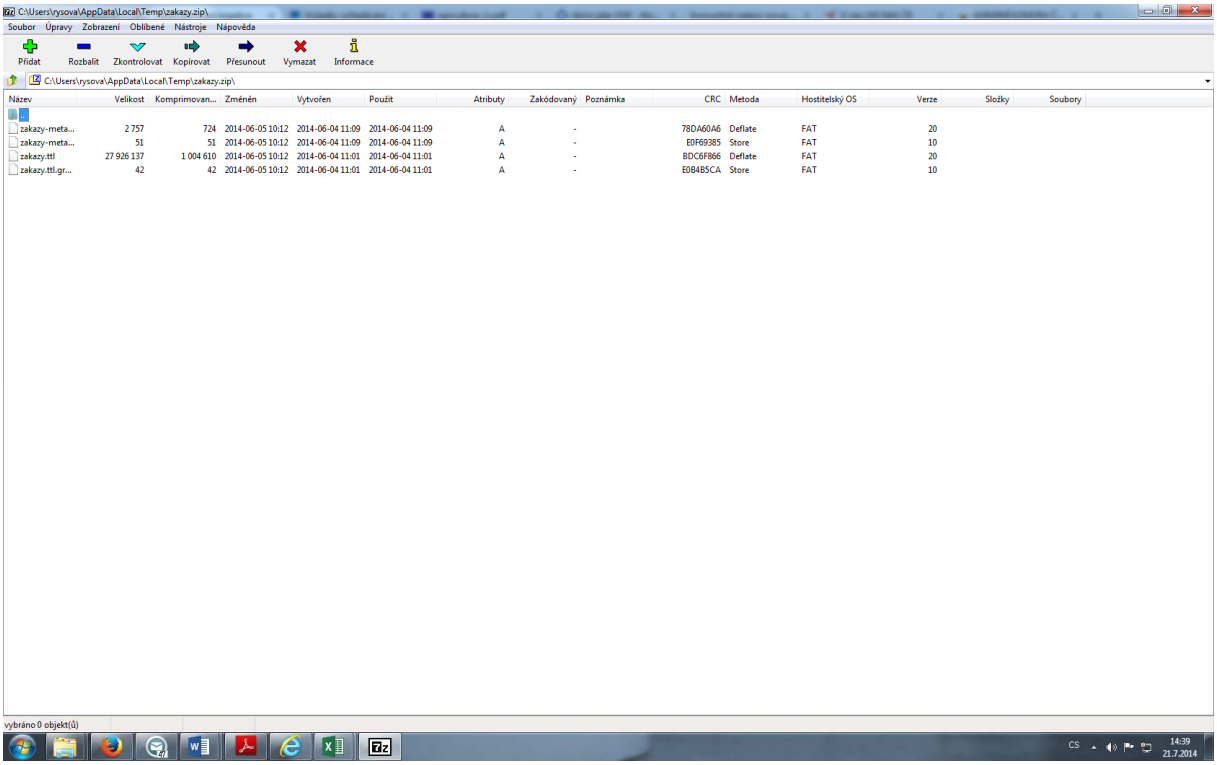


Fig. 6. Example publishing open data in the format .rdf

(Source: http://www.coi.cz/cz/spotrebitel/open-data-databaze-kontrol-sankci-a-zakazu)

The chosen format of open data significantly predetermines so-called *degree of openness.* In this context it should be noted that the chosen format must be available to the provider and recipient of open data.

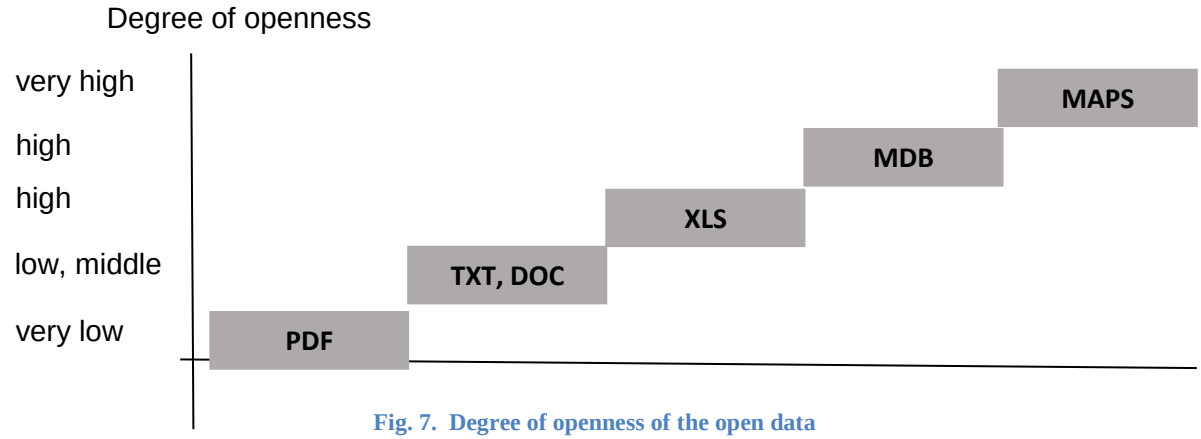


Fig. 7. Degree of openness of the open data

(Source: Hausenbach M. 5 star Open Data, http://5standarda.unfo/)

Own potential of open data in community-led rural development (POD_{CLRD}) can be defined as

$$POD_{CLRD}=f(C,DP,RD,WB,SA,HW)$$

where *C* is *content* (ie. presented data set),

DP is *provider of open data*, (ie. his experience, skills, qualification, computer literacy),

RD is *recipient of open data* (ie. his experience, skills, qualification, computer literacy),

WB is *web browser* (ie. the its type, quality, version),

SA is *software amenities* of the provider and recipient open data (ie. the its type, quality, version, development tools for web development, and Tools for Promoting accessibility, (X) HTML validators, CSS validators.),

HW is *quality and level HW* on part of the recipient.

4 Conclusion

It is absolutely indisputable that open data met all expectations in the state administration and it is expected that it will be similar in the business sector. Making full use of the potential of open data in community-led rural development assumes a good answer to the following questions:

- How can the transparency of open data help the rural communities in their development activities?
- Which data should be published?
- What quality must meet these data?
- How to efficiently make this data available in electronic form?
- How to educate the interested persons to be attracted to open data?

- How to solve the dilemma between the publication of open data and the protection of strategic and personal data (Kučera and Chlapek, 2014)?
- How to support the Czech countryside to take part in open data?

If the above questions are successfully answered, the following benefits of the open data for the community-led rural development can be expected:

- transparency of the rural communities and their activities,
- relevant information support for their strategic and tactic decision making.

The Community-led Rural Development is closely linked with the development of operating Agriculture. If the open data will the benefit for the agricultural sector, will then benefit for the Community-led Rural Development. The supposed savings in the Community-led Rural Development. can represent only the first step of the economic benefit of open data. The prosperity of the economic subjects and the whole sector can be enhanced by activities that will bring new values (i.e. data with added value) that the users will be willing to pay for. It is in the interest of the relevant ministry to make the data available to all parties with as low legal and licensing restrictions as possible and also in the highest possible technical quality. If the data are accessible in real time through a well-designed API, the number of interested subjects will be probably higher than in the case where the data are incomplete or only in basic Excel sheets.

Acknowledgements

The paper is supported by the grant project of IGA PEF Czech University of Life Sciences Prague of the Czech Republic No. 20141036 "Analýza a přístupy k řešení informačních a znalostních potřeb v resortu zemědělství v kontextu zemědělského eGovernmentu" and by the grant project of IGA PEF Czech University of Life Sciences Prague of the Czech Republic No. 20131038 "Analýza a návrh hodnocení kvality e-služeb v sektoru zemědělství."

References

Berg, M. (2013) *Otevřená data a jejich byznys modely*. Datablog 2013. Available at: http://www.datablog.cz/clanky/byznys-modely

Berg, M., Boček, J., Bouchal, P., Mrázek, J. and Nečasný, M. (2012) *Otevřená data ve státní správě: Nová éra rozhodování.* PW Print Teplice 2012, ISBN 978-80-87110-24-9

ČOI, (2012) *Česká obchodní inspekce. [Online]*. Available at: http://www.coi.cz/cz/spotrebitel/open-data-databaze-kontrol-sankci-a-zakazu/

Chadwick, A. and May, C. (2001) ´Interaction between states and citizen in the age of the Internet: E-government in the United states, Britain and the European Union´, *Governance*, Vol.16 No 2, pp. 271-300.

Chlapek, D. (2014) *Otevřená data veřejné správy,* Fakulta informatiky a statistiky,VŠE Praha, ISSS 2014 Hradec Králové. Available at: *http://www.isss.cz/archiv/2014/download/prezentace/vse_chlapek.pdf*

CHui, M., Manyika, J. and Van Kuiken, S. (2014) *What executives should know about open data. 2/2014.* ROBERTSON ASSOCIATES. http://www.robertson-associates.eu/blog/2014/1/16/what-executives-should-know-about-open-data.

Kučera, J. and Chlapek, D. (2014) ´Benefits and Risks of Open Government Data´. *Journal of Systems Integration*, 2014, vol. 5, no. 1, pp. 30-41. ISSN 1804-2724

Lewis, H. (2012) ´Governments looking for economic ROI must focus on open data with business value´. *RADAR 2013/02*. http://radar.oreilly.com/2013/02/roi-open-data-economy-value.html

Mlejnek, P. (2010) *Informační potřeba středního manažera*. VŠE Praha, Fakulta informatiky a statistiky. Dostupné z: http://www.mulen.eu/img/mlejnek_bakalarska_prace_informacni_potreba_stredniho_manazera.pdf

MMR, (2014) *Stav přípravy evropských fondů a Dohody o partnerství*. Available at: http://nsmascr.cz/content/uploads/2014/03/Semin%C3%A1%C5%99_12032014.pdf

Rosický, A. (2009) *Informace a systémy*. Oeconomica Praha. ISBN 978-80-245-1629-5.

Říhová, Z. (1996) *Informační zabezpečení a organizační změny*. VŠE Praha, 1996. ISBN 80-7079-535

Taggart, Ch. and Peltola, V. (2011) ´OpenCorporates: why we're crying out for this database of companies´. *The Guardian.* Retrieved 11 November 2011.

POLITICS, PSYCHOLOGY, REGIONAL DEVELOPMENT

CLLD – bottom-up regionalization? A case study of LAG Pohoda venkova

Jaroslav Čmejrek[1], Jan Čopík[2]

[1]Department of Humanities, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6
cmejrek@pef.czu.cz

[2]Department of Humanities, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6
copik@pef.czu.cz

Annotation: This paper deals with the possibilities of researching whether, and to what extent territories defined in the context of CLLD correspond with other regional and administrative bodies in the area. The topic is conceived as a case study of LAG Pohoda venkova. Since its foundation in 2005, the definition of its area has undergone a remarkable development, which directly raises the question of the relationship of this action group with the administrative structure of the country, and with other regional bodies in the area. In 2007, the LAG was joined by eight municipalities involved in the Voluntary Associations of Municipalities of the Novoměstsko Region - historically belonging to the political district of Nové Město nad Metují (the district ceased to exist in 1949 via a merger with the district of Dobruška, which was created only after the Second World War). The Novoměstsko Region was established in 2004, among other things as a communication platform for municipalities falling within the jurisdiction of Nové Město nad Metují as municipality with extended powers. This paper attempts to clarify these relationships and uncover the background of changes within the definition of the development area of the LAG. The aim of this paper is to verify the possibility of researching the mutual effects of top-down regionalization, induced by public administration reform, and bottom-up regionalization, which is the result of the actions of CLLD.

Key words: Rural region, LAG, bottom-up regionalization, defining area, case study.

JEL classification: R2, R3.

1 Introduction

One of the most important steps for the successful implementation of CLLD is defining a development area. Documents dealing with CLLD emphasize not only defining the boundaries of the development area, but also later modifications and adaptations of these boundaries (see Guidance on CLLD 2014, pp. 18, 24 f., 64 ff.). Projects based on CLLD are a great example of bottom-up regionalization, as has been the case in the Czech environment since the 90s in the creation of rural micro-regions, voluntary municipal associations, etc. In contrast to this type of regionalization, the classic form of regionalization, i.e. regionalization in terms of geography is applied, which deals with marking regions, or in other words the dividing-up of locations or areas forming territories into regions according to certain criteria which reflect the purpose of regionalization. In this case, this means top-down regionalization.

A region can be defined in terms of physical geography, socio-geographically, demographically, economically, in terms of infrastructure, environmentally, socio-culturally, historically and administratively. The administrative aspect is particularly important in public administration reform, i.e. the division of the territory for the purposes of state and local government administration. The administrative viewpoint, however, also reflects other aspects, such as physical geography, as the region has a considerable influence on the formation of administrative territorial units, as well as the ethnic aspect, the social structure aspect, etc. Administrative territorial division has considerable inertia and often "survives" profound political changes. As an example, in 1918 the Czechoslovak Republic essentially took over the administrative division that existed within the Austro-Hungarian Cisleithania. A

radical reform of administrative division in the Czech lands didn't happen for another 30 years, in 1949. Over a certain period of time, administrative territories penetrate into wider public awareness which identifies with the relevant division. The building of an infrastructure that is managed by the regional structure also contributes to this.

Above all, however, it is necessary to point out the terminological problems associated with the concepts of region and regionalization. Hardly any term is so contradictory to interpret, but at the same time interchangeable, as the term "region". Czech legislation – Act No. 248/2000 Coll., on Regional Development Support – knows "cohesion regions", which correspond to NUTS II level and are composed of one to three self-governing regions. The same act also mentions "regions with concentrated state support," which according to the act are further divided into "structurally disadvantaged regions," "economically weak regions" and "rural regions". These regions were defined in the Regional Development Strategy, primarily at the district level. However, the National Development Strategy for the Czech Republic for the period of 2014 - 2020 instead talks about "state-supported regions", and these are not defined at the district level, but rather at the micro-regional level, which is represented by territorial districts of municipalities with extended powers.

In addition to regions that are part of the administrative structure of the country, there are regions that arise from the activities of local government units and other parties involved in regional development. Typical examples are Euro-regions, which patronize various forms of cross-border cooperation, and territorially they may include very large areas. In terms of size and organizational structure, the other extreme are so-called rural micro-regions, which were created in the 1990s under the Rural Renewal Programme. Their essence is a combination of several municipalities that implement joint projects, e.g. water supply systems, sewage treatment plants, landfills, development of tourism, building of bike paths, etc. Micro-regions may only include several municipalities, but they may be more extensive, as was the case in the investment support pilot programmes for micro-regions Haná and Jeseníky in the year 2000. In addition, Micro-regions are sometimes connected to micro-region associations, which may already be truly extensive. Their organizational structures can be very open, but even these formations should be considered as regions. An example of a vast region is the North Bohemian Associations of Municipalities, into which entered 150 municipalities, including the major cities of the Ústí nad Labem Region. From a terminological point of view, it is important that the term micro-region may refer to a region created from below, i.e. a voluntary association of municipalities and a region which is part of the administrative structure of the country, as in the case of a territorial district with extended powers.

The term regionalization is used in a similarly ambiguous way. Firstly, the term is associated with the spatial or geographical organization of society, and with the administrative structure of the country. In addition to socio-geographic regionalization, it is possible to encounter the use of the term of regionalization in the context of "denationalization of governance," that is the shifting of decision-making powers from the national level of a sovereign state both upwards, i.e. to the European Union, WTO and other supranational structures, and down to the regional and local level. M. Woods (2005), for example, similarly speaks of the "denationalization of rural politics." In terms of the growth of the importance of regions in decision-making, the concept of regionalization can be encountered in political discussions related to the European integration process and the EU institutional construction. For example, in the programme document of ODS from 2001, we find wording that says that "it is necessary to reject another fashionable theory – the dissolution of nation states downward via their 'regionalization', which is also interpreted as a 'progressive historical process'" (Manifest of Czech Euro-realism, p. 8).

In terms of our topic, the crucial issues are associated with the mutual effects of regionalization pressures or vectors oriented contradictorily top-down and bottom-up. In the Czech Republic, top-down regionalization was carried out with territorial public administration reforms. A huge regionalization problem was dealing with the issue of higher territorial self-government units (VÚSC). The decision to create 14 NUTS 3 regions (13 regions and Prague) in 1997 was criticized by some experts due to the small dimensions and potential weakness of regions, and also in view of the significant differences between them. In an expert discussion, it was emphasized that the reason for adoption of these regions was more related to the regional interests of the individual Members of Parliament, rather than a genuine interest in a quality public administration reform. Similar moments were also reflected in defining territorial units managed by municipal authorities with extended powers, to which part of the responsibilities of the dissolved district offices were transferred in 2003.

M. Hampl (2005: 99) talks about the erroneous procedure during the transformation of public administration, and its lack of systematism: "Instead of coherent and cohesive solutions, time-separated partial changes were implemented, which became the object of rivalry between political parties." On the other hand, Hampl considers the interaction of opposing regionalization tendencies or pressures in the 90s as useful: "While the districts established in 1960 were improperly identified and egalitarian-wise size-determined 'from above,' in the creation of the current regions and administrative level III districts, interests from "below" were significantly taken into account (from the various regional initiatives in regions to the mapping of the attitudes of local community representatives, and in contentious situations of all citizens in level III districts). An important result was therefore a much higher approximation of the administrative structure to real regional differentiation in the democratic process of its formation" (Hampl, 2005: 100).

What is the scenario in terms of bottom-up regionalisation? Are there also pressures induced from opposite regionalization, in this case top-down regionalization? What impact has the administrative division of the country had on regional projects and their effectiveness? The interaction of politics and administration directed from the national level down and local and regional initiatives aimed upward is a serious problem, which, among others things compelled since the year 2000 a number of legislative measures to be taken (amendments to municipal and regional systems, amendments to the Act on Regional Development Support, a new concept of the regional development strategy for 2014-2020, etc.). How do the different types of regionalization relate to each other?

2 Materials and Methods

This paper deals with the possibilities of researching whether, and to what extent territories defined in the context of CLLD correspond to other regional and administrative bodies in the area. The topic is conceived as a case study of LAG Pohoda venkova. Since its foundation in 2005, the definition of its area has undergone remarkable development, which directly raises the question of the relationship of this action group with the administrative structure of the country, and with other regional bodies in the area. This paper attempts to clarify these relationships and uncover the background of changes within the definition of the development area of the action group. The paper is based on a study of the documents of local governments, the LAG and other parties involved in regional development. Additional information was obtained via semi-standardized interviews with representatives of the municipality and the LAG.

LAG Pohoda venkova was established in 2005, and since its inception it had the legal form of a civic association (a registered association from 1 January 2014) and was located in the

village of Val u Dobrušky. The name of the LAG consists of the initial letters of the area of interest - Podpora Orlických Hor, Opočenska a Dobrušska (Support of Orlické Hory, Opočno and Dobruška Regions). When it was established, 23 municipalities were part of the LAG Pohoda venkova. In 2007 Deštné v Orlických horách left, but eight municipalities from the Novoměstsko region joined (currently a part of Dobrovolny svazek obcí Novoměstsko - Voluntary Associations of Municipalities of the Novoměstsko Region). In January 2014, Deštné v Orlických horách returned to Pohoda venkova, and another four municipalities also joined. In 2014 the LAG Pohoda venkova acts on the territory of 35 municipalities. As of 27 March 2014 the LAG had a total of 46 members. Of these, 18 were from the public, 11 non-profit and 17 from the business sector (websites and annual reports from the LAG Pohoda venkova).

More than 30 thousand residents live in the territory of the member municipalities of the LAG Pohoda venkova. Within the implementation of its Leader strategic plan via the projects of individual applicants, the LAG announces invitations for applications for grants. The total amount determined to support the recommended projects is several million CZK annually. For example, in 2008 it was over six million, in 2012 over three million and in 2013 over six million. The project submitters are businessmen, local governments and local associations. The LAG also participates in the activities of the Association of Regional Brands and in other activities (websites of the Local Action Group, annual reports of the LAG Pohoda venkova).

3 Results and Discussion

When setting out the development territory of the LAG, it was originally assumed that it would include most of the territories of the present district of Rychnov nad Kněžnou. However, mutual agreement could not be reached and eventually two entities were established in the district. In addition to Pohoda venkova, the SPLAV Association was created slightly prior to this. It was established in 2004 with its headquarters in Skuhrov nad Bělou and offices in Kostelec nad Orlicí. The SPLAV civic association includes the area of Orlické hory from the municipalities Liberk and Orlické Záhoří to Bartošovice v Orlických horách and Rokytnice v Orlických horách. The development area of the LAG Pohoda venkova includes the municipalities from Deštné v Orlických horách to Česká Čermná. A smaller part of the District of Rychnov nad Kněžnou, which includes municipalities in the lowlands, became part of the LAG NAD ORLICÍ.

The progression of the development territory of the LAG Pohoda venkova and the neighbouring SPLAV Association begs the question why the dividing line between the two civic associations was set up this way? When seeking an answer, it is necessary to focus on two sets of questions:

1. The administrative tradition of historical development of administrative structure in the given territory.
2. The consequences of the reform of the territorial public administration from the end of the 1990s.

A comparison of the development territories of both the Local Action Groups and the map of the administrative structure of the area of Orlické hory and their foothills shows that almost exactly between the two local action groups is a boundary of two administrative districts of municipalities with extended powers - Dobruška and Rychnov nad Kněžnou. This was also more or less the form of the historical boundary between two districts - Nové Město nad Metují and Rychnov nad Kněžnou. Today, however, the dividing line between the two historical areas is slightly skewed in favour of the Rychnov Region, as the position of Nové Město as a regional administrative centre was somewhat weakened after the Second World

War. The former Nové Město nad Metují district was first divided into two – the Nové Město district for the municipalities for the judicial district of Nové Město nad Metují and the Dobruška district for the municipalities of the judicial district of Opočno. In 1949 Nové Město nad Metují lost the character of a district centre and the city became part of the Dobruška district. In another administrative reform in 1960, the Dobruška district ceased to exist and was divided between the districts Náchod (the municipalities of the former judicial district of Nové Město nad Metují) and Rychnov nad Kněžnou (the municipalities of the former judicial district of Opočno – Dobruška) (annual reports, websites of Pohoda venkova and SPLAV, interview with the manager of the Pohoda venkova Local Action Group, Tomáš Vidlák from 14.8.2014).

Moreover, a certain disorder of the area in terms of determining the regional administrative centre was also reflected in the territory of the present Pohoda venkova Local Action Group. In 2007, one of the founding municipalities, Deštné, left its area of interest and joined the SPLAV Local Action Group. In 2014, however, it again returned to the LAG Pohoda venkova. The mayor of Deštné, Alena Křížová, is also the chairperson of the Voluntary association of the municipalities of the Orlické hory Region. The municipalities of this association are part of both the LAG Pohoda venkova and SPLAV. Most of these municipalities lie within the territorial jurisdiction of Pohoda venkova.

According to representatives of Pohoda, the reason for the return of Deštné to the original LAG was good experience from previous years, as well as closer cooperation and understanding with entities (including municipalities) involved in the activities of the Pohoda venkova Local Action Group. However, there may have also been the subconscious reason of the historical administrative-territorial affiliation of the municipality with the area of the Dobruška – Novoměstsko Region, as Deštné v Orlických horách was part of the district of Nové Město nad Metují since its establishment in 1850 (later, therefore, of the Dobruška district as well) (website of DSO Orlické hory, interview with the manager of the Pohoda venkova Local Action Group, Tomáš Vidlák from 25.8.2014). This opens another topic: historical spatial memory and its influence on shaping development areas.

When evaluating the impact of the territorial public administration reform on development areas created within CLLD, it should be borne in mind that the contemporary administrative areas of municipalities with extended powers and authorized municipal office are established only for state administration (so-called transferred powers of municipalities). They thus do not have any direct relationship with local self-governments, i.e. nor with the municipality development. In some cases, the local governments of municipalities belonging to the same districts with extended powers (or authorized municipal offices) also feel the need for cooperation in this area. An example might be the Voluntary association of municipalities of the Novoměstsko Region. The association was established in 2004 and the aim was to establish an association consisting of the municipalities falling within the administrative jurisdiction of Nové Město nad Metují as a municipality with extended powers. Among other things, the association should help in creating solidarity of the belonging municipalities with their “small district,” in informal communication between community representatives, in overcoming a certain democratic deficit and certain coordination in the area of independent powers. The initial impetus for establishing the association came from the council and management of Nové Město nad Metují. In the beginning, some representatives of the municipalities belonging to the administrative area of Nové Město nad Metují were not particularly interested in establishing a municipal association with Nové Město nad Metují. As an argument they used, in particular, the population of Nové Město compared to the number of inhabitants of other municipalities. According to a census from 2001, 10,074 inhabitants lived in Nové Město nad Metují, while in all twelve municipalities in its

administrative area together there were only 4,182 people. Many of these municipalities have also participated in the activities of other municipal associations. There was particularly the Metuje municipal association, which was founded in 1999, and in the same year the 1866 Municipal Association was also created. Gradually, however, the representatives of all of the municipalities decided to actively participate in the establishment of the Novoměstsko Region. Many communities that do not fall within the jurisdiction of Nové Město nad Metují even became members, and in 2014 the association had 30 members. In the past, however, member municipalities not under the current administrative district of Nové Město nad Metují were part of the political district of Nové Město nad Metují. The chairman of the voluntary association of municipalities is the representative of Nové Město nad Metují (website of DSO Novoměstsko, interviews with community representatives of Nové Město nad Metují, Černčice, Nahořany, Provodov-Šonov, Slavoňov, Sněžné, Vršovka from 2006). Seven municipalities in the Novoměstsko Region (including Nové Město nad Metují), were not part of any Local Action Group, and in 2007 these municipalities joined the LAG Pohoda venkova. The initiative came from local action group (interview with the manager of the Pohoda venkova LAG, Tomáš Vidlák from 14.8.2014).

4 Conclusion

Defining the development area of the LAG Pohoda venkova, which we called regionalization from below, it shows frequent connections to historical development of administrative structure of a given territory, as well as to the public territorial administration reform, particularly with its 2nd phase, which led to the creation of the administrative jurisdictions of municipalities with extended powers. Regarding the development of administrative structure, probably the most important factor seems to be a certain ambivalence and uncertainty regarding the regional centres. The administrative boundaries between different centres, which historically increased in importance and then lost it again, are reflected, with minor variations, in the present-day boundaries between developments areas created on the basis of CLLD. Changes to the development territory of the given LAG and relationships to the Novoměstsko Region suggest the existence of a certain spatial memory that has historical roots and, at the same time, likely corresponds to the current development needs of the region.

Acknowledgements

The authors are grateful to the Foundation of the Faculty of Economics and Management (Project IGA 20141049) for their financial support of their research.

References

Dobrovolný svazek obcí Mikroregion Novoměstsko. Available at http://www.novomestsko.cz/

Guidance on Community-Led Local Development for Local Actors, May 2014.

Hampl, M. (2005) *Geografická organizace společnosti v ČR: Transformační procesy a jejich obecný kontext*. Praha: UK v Praze, Přírodovědecká fakulta.

LAG Pohoda venkova. Available at http://www.pohodavenkova.cz/

Manifest českého eurorealismu (dokument k ideové konferenci ODS, duben 2001).

Woods M. (2005) *Contesting Rurality. Politics in the British Countryside.* Aldershot, Barlington: Ashgate.

Local self-governments as actors in local development - a perspective of inhabitants of the Warsaw suburban area

Nina Drejerska, Mirosława Braja[1]

[1]Department of European Policy, Public Finance and Marketing, Warsaw University of Life Sciences, 166 Nowoursynowska Street, 02-787 Warsaw, Poland
nina_drejerska@sggw.pl, miroslawa_braja@sggw.pl

Annotation: Metropolitan areas are perceived as engines of socio-economic growth. It could be noticed that suburban areas are very diversified. They can really contribute to core cities development or they can sometimes be not able to catch up with challenges. Moreover, suburban areas in Poland had been previously (not so long ago), rural areas and they have been still places of dynamic functional changes. In the Polish conditions, local self-governments have legal and economic instruments to increase territorial competitiveness and as a result support local development.

The aim of the study is to evaluate local self-governments from a perspective of inhabitants of the Warsaw suburban area, which is the largest metropolitan area in Poland. It refers to results of research in households, which members were asked about advantages and disadvantages of the municipalities taking into account geographical, institutional as well as social factors. Cross analyses were used to identify relations between opinions on local self-governments and municipality localization towards the core city (Warsaw).

A role of local self-governments was displayed both as a positive but also a negative one for local development. Respondents from municipalities located in longer distance to Warsaw generally more significantly stressed a role of local self-governments, both positive as negative, for development. Those living closer to the core city did not see local self-governments as very important advantage or disadvantage for their municipalities. On the other hand, municipalities located farer away from Warsaw are not under such a pressure of new inhabitants inflow; social relations are stronger there and also identification with local self-government is more noticeable.

Key words: local development, self-authorities, institution, competitiveness, Warsaw, suburban area, municipality

JEL classification: O18, O43

1 Introduction

Metropolitan areas are perceived as engines of socio-economic growth. Main cities in Poland and their surroundings have been a place of significant transformations. It could be also noticed that suburban areas are very diversified. On the one hand they really contribute to core cities development, on the other some of them seems not to be able to catch up with challenges. This differentiation can be explained partly by some geographical characteristics as a distance from a core as well as accessibility to transport routes. However, as McCann (2014) pointed out it has become widely accepted that ability of an institutional system to facilitate growth and development is dependent on the ways in which all of the system's actors, stakeholders, and interested parties interact with each other.

From the perspective of suburban areas in Poland, in the analyzed Warsaw suburban area also, it is important how institutions operate on the lowest level of self-authorities. This level in the Polish conditions is associated with municipalities (LAU level 2, formerly NUTS level 5), where local self-governments can use legal and economic instruments for territorial competitiveness enhancement and as a result for local development.

A local or regional development level depends undoubtedly on competitiveness of respective territories. At the beginning of 21st century, the crucial task of all the economic actors became being competitive. The term of competitiveness is nowadays devoted to both all entities operating within economy and economy as a whole, too. Originally concerning the national economy, now competitiveness is also extended to other actors at different levels of analysis: a single firm (microcompetitiveness), sectors, branches and regions (mezocompetitiveness), economy (macrocompetitiveness) and group of countries (megacompetitiveness) (Flejterski 1984, Skawińska 2002). This means serious problems in defining this term and also in pointing out the factors that determine it, too.

Competitiveness is also a complex characteristics. It means that the entities at different levels of analysis will influence the level of competitiveness at other points of analysis, i.e. companies located in the region (micro level) will influence the competitiveness of region (mezo level) and country (macro level). What is more, the economic competitiveness is also influenced by the social and political factors (i.e. Meyer-Stamer 1996, Lubiński 1995a; Wierzbołowski 1995; Gorynia 1996; Szentes 2003; Misala 2003; Misala 2005). For the purpose of this study, we can understand competitiveness in general as an ability to produce goods and services which would fit the market needs and at the same time – ability to ensure the sustainable constantly improving standard of life for inhabitants (d'Andrea Tyson 1992).

Being competitive became also an important task to the regions and local self-governments. Polish Ministry of Regional Development (for the purpose of National Cohesion Strategy 2007-2013) defined the regional competitiveness as a set of characteristics that decide on the region's attractiveness from the perspective of both locating investments and place to live. It is also an expression of technological advantage or lower costs of goods and services produced within the region and in comparison to the other regions.

The competitiveness of a region is influenced by different groups of factors which also influence the competitiveness of a country. These factors are defined in methodology of EU Regional Competitiveness Index, prepared for all the regions of European Union since 2010. These groups of factors, so called RCI pillars (Annoni and Kozovska 2010), are as follows:

1. Institutions
2. Macroeconomic stability
3. Infrastructure
4. Health
5. Quality of Primary and Secondary Education
6. Higher Education/Training and Lifelong Learning
7. Labour Market Efficiency
8. Market Size
9. Technological Readiness
10. Business Sophistication
11. Innovations

In fact, regional competitiveness means the ability to create the conditions for business activity and living, which would fit the expectations of its users as a whole (firms, inhabitants, tourists) of an analyzed area (municipality, county, region etc.). According to the list of RCI pillars presented above, the institutions are treated like a separate factor of competitiveness. However, in fact institutions stimulate and create all of the 11 pillars of regional competitiveness (i.e. quality of education or health issues).

Institutions are usually defined as "the incentive systems that influence human interaction" (North 2003). They stimulate or destimulate human activities and give them a strict direction. The most important task of institutions in a changing and uncertain surroundings is that they

have to regulate and clarify connections between the objects operating in some defined environment. As the research conducted by Rodrik et al. prove, institutions play more significant role in the context of development than for example localization and openness of the economy which were mentioned before as ones of the most important factors of economic growth (Rodrik, Subramanian, Trebbi 2004).

Local self-governments are also examples of institutions which operate and develop economic environment of some certain area. They create the environment for local activities, influencing the investments (and also investing on their own), stimulating the improvement of quality of life for their inhabitants. These are also the basic tasks of local self-governments in line with the subsidiarity rule.

The principle of decentralization is a key rule of local self-government in Poland. It is rooted in the 15th article of Polish Constitution. What is more, the Constitution gives the legal personality and ownership of property rights to local self–governments in Poland (Constitution 1997).

Following the changes of Polish Constitution, in 1999 the reform of Polish administration has been undertaken. Since that time administrative division of Poland has been organized into three levels: 16 regions (voivodships), 379 counties (poviats) and 2 478 municipalities (gminas).

Each of these units has its tasks divided in accordance with the subsidiarity rule and these aims are clearly defined within the law[16]. The residual competences that are not assigned to the other levels of administration lay in the municipalities which are the crucial level of local self-government. According to Polish law, the local authorities at the level of gminas are responsible for several issues crucial for the inhabitants, such as:

- transport (i.e. local public transport);
- social welfare;
- primary health services;
- family support and foster care system;
- public areas (parks, cemeteries etc.);
- housing;
- culture (promotion, management of municipal libraries and other cultural institutions);
- education (kindergartens and elementary education).

Poviats are responsible for these activities that cannot be transferred to gminas, as they fulfill needs of inhabitants of more than 1 municipality, such as fire protection, geodesy and cartography, civil protection, flood protection, sports, employment etc. At the same time, voivodships are responsible for such activities like: rural areas development, telecommunication, economic development, defense and consumer rights protection.

After the 1999 reform, Poland has gained a high level of decentralization. According to the Decentralization Index, the level of decentralization in Poland is relatively high. Poland gains score of 48 which locates this country above the average. Poland gains high score in political decentralization, functional decentralization and decision making autonomy (respectively 6th , 9th and 9th rank). Strong distribution of tasks between the local self-governments means that the institutions of local self-government play a crucial role in the economic development of the whole country. And in fact they are an important factor that influences the general condition of their areas (BAK Basel Economics, 2009)..

[16] The acts that define tasks of local self-government at different levels of administrative units are as follows: The Act on Municipalities of 1990, the Act on the three-tier division of the country of 1998, the Act on Regions of 1998, the Act on counties of 1998.

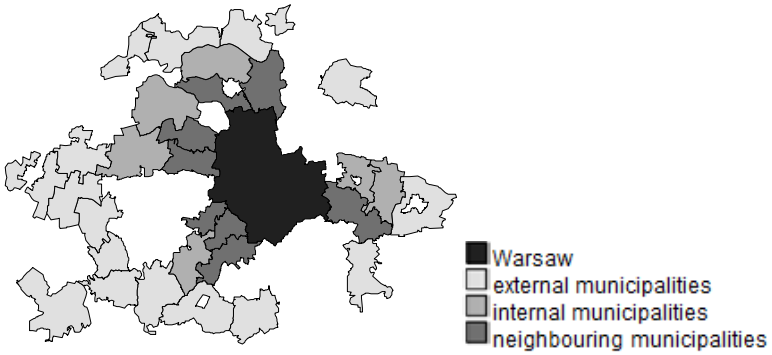
The aim of presented work was to indicate the significance of local self-governments in stimulating local and regional development from the perspective of inhabitants of the Warsaw suburban area. The field research was conducted as a part of the project entitled "Economic and social determinants of rural areas development of the Mazovia region in the suburban and external zone of Warsaw", No N N114 145240, financed by the National Science Centre (Poland).

2 Material and method

The aim of the paper is to evaluate a role of local self-government from a perspective of inhabitants of the Warsaw suburban area, which is the largest metropolitan area in Poland. It is elaborated as a part of the project entitled "Economic and social determinants of rural areas development of the Mazovia region in the suburban and external zone of Warsaw", No N N114 145240, financed by the National Science Centre (Poland). The main purpose of the whole research was to identify and deeply characterize economic and social processes observed in rural areas of the Warsaw suburban zone. Specific objectives included for example determination of a role of local self-government and other institutions in fostering and promoting entrepreneurship in rural areas and evaluation of local self-government activities in applying for and using the European Union support (Drejerska, Chrzanowska and Pomianek 2014). The empirical research was conducted in rural households, enterprises and local self-governmental units in 30 rural and rural-urban communes around Warsaw, which were identified as the Warsaw suburban zone basing on the methodology of Korcelli and Śleszyński (2011) as well as Bański (2009). Finally, the research included questionnaire interviews in 800 households (2215 adult participants), 221 micro and small enterprises as well as postal questionnaire in 30 local self-government offices.

Research results show that the analysed suburban communes of Warsaw are an area of an intense socio-economic transformation. However, the multi-threaded nature of these changes makes the authors present a reduced general background of the changes. This study refers to results of research in households, which members were asked also about advantages and disadvantages of the municipalities taking into account geographical, institutional as well as social factors. Cross analyses were used to identify relations between for example opinions on local self-governments and municipality localization towards the core city (Warsaw) (fig. 1).

Fig. 1. Investigated communes according to their localization to Warsaw

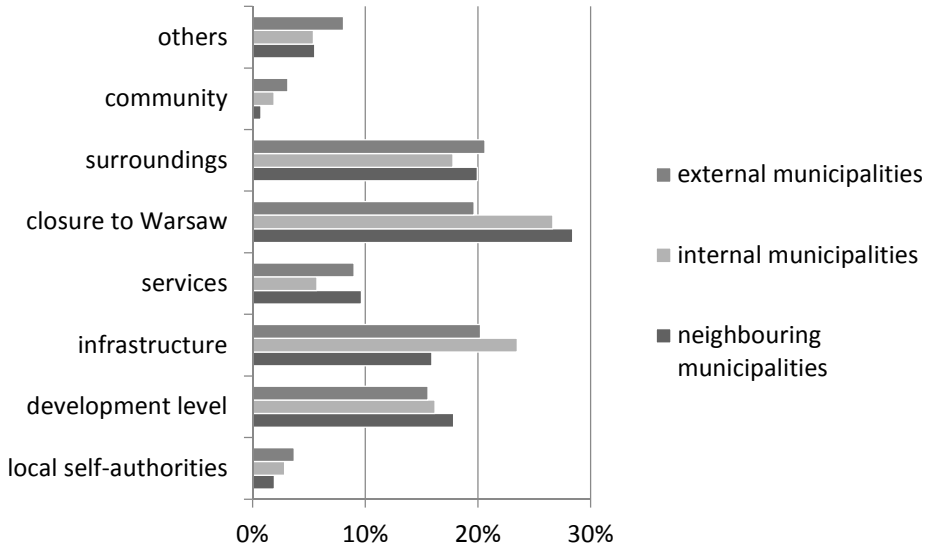


Source: own elaboration.

3 Research results

As it was mentioned referring to determinants of territorial competitiveness, institutions can play a significant role in local development. In the Polish conditions local self-governments have real possibilities for supporting growth processes. From this perspective it is especially interesting how a role of local self-governments is perceived by inhabitants of the Warsaw suburban area. Are they really strong actors playing for local development or is it enough for them only to follow development processes which widespread because of the capital neighborhood? Answers for the question about main strengths of the researched municipalities (fig. 2) display that inhabitants are far from an opinion on a significant positive role of local self-governments.

Fig. 2. Municipal strengths according to inhabitants' opinion

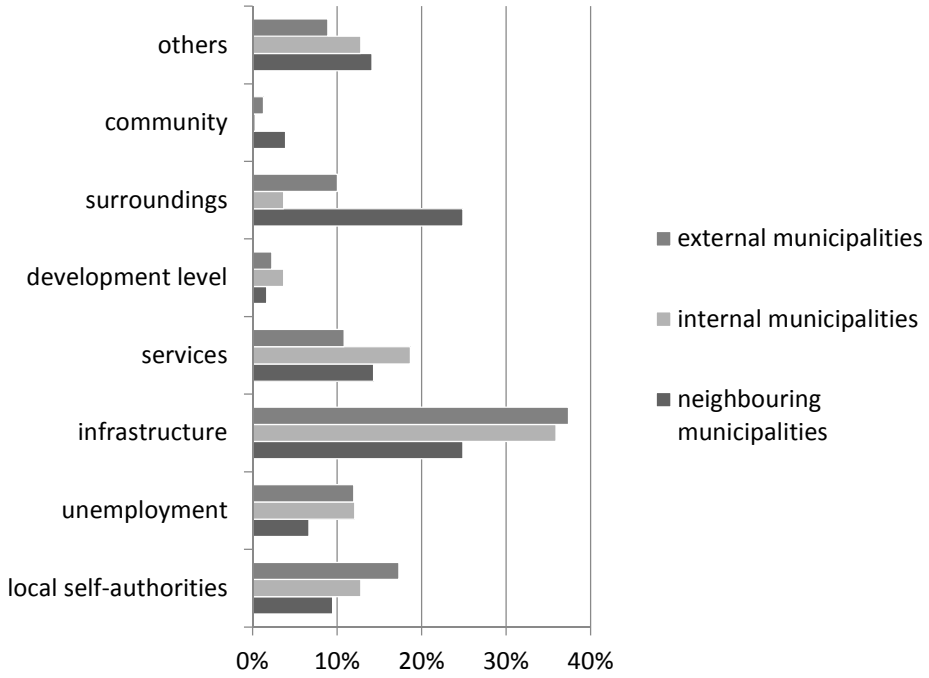


Source: own elaboration.

Generally only 3% of the investigated group perceive local self-governments as municipal strengths. What is also important, the positive role of these institutions is slightly better seen in the external researched municipalities. This could be caused at least by two factors. Firstly, the development pressure is not so strong at the edges of the Warsaw suburban areas comparing with direct neighboring municipalities. So the role of institutions can be more significant or simply easier to notice in external municipalities. Secondly, municipalities neighboring directly with Warsaw can be characterized by a higher proportion of new inhabitants, not connected with local conditions. For example they often only sleep in their new houses but work and use majority of services in the capital city. That is why they do not pay attention to what is local, they rather focus for instance on closure to Warsaw as a main strength of their place of living.

Taking into account that theorists indicate a potential role of institutions as a factor stimulating competitiveness and contributing to territorial development, it is especially worth noticing that local self-authorities more often were perceived in the research as municipal weaknesses (fig. 3).

Fig 3. Municipal weaknesses according to inhabitants' opinion



Source: own elaboration.

It is important to stress that this negative opinion was also more often in external municipalities. Again it can be explained as in the previous case: inhabitants of external municipalities, as people who often have their family origins in their place of living, can be more conscious what happens around them and pay more attention to activities of local institutions. On the other hand, it has to be noticed that on this local level, sometimes personal factors can play a role; as a result this can lead to a negative opinion on general activities of local authorities.

4 Conclusions

A role of local self-governments and their offices was displayed both as a positive but also a negative one for local development in the group of investigated inhabitants of the Warsaw suburban area. Respondents from municipalities located in longer distance to Warsaw generally more significantly stressed a role of local self-governments, both positive as negative, for development. Those living closer to the core city did not see local self-governments as very important advantage or disadvantage for their municipalities. It can lead to a conclusion that it can be difficult to implement community-led local development through such agents as representatives of local self-governments on the areas very close to Warsaw. It could be a real problem from a perspective of building of urban-rural partnerships postulated within the regional policy of the European Union. On the other hand, municipalities located farer away from Warsaw are not under such a pressure of new inhabitants inflow; social relations are stronger there and also identification (both based on positive as well as negative reasons) with local self-government is more noticeable.

5 References

d'Andrea Tyson, L. (1992) Who's Bashing Whom?: Trade Conflict in High Technology Industries, Institute for International Economics, Washington.

Annoni, P. and Kozovska, K., (2010) EU Regional Competitiveness Report, JRC Scientific and Technical Reports, EC Joint Research Center and Institute for the Protection and Security of Citizen, Brussels.

BAK Basel Economics, (2009) From Subsidiarity to Success: The Impact of Decentralisation on Economic Growth. Part 1:Creating a Decentralization Index, A study commissioned by the Assembly of European Regions (AER), Brussels-Strasbourg, May 2009.

Bański, J. (ed.) (2009) *Analiza zróżnicowania i perspektywy rozwoju obszarów wiejskich w Polsce do 2015 roku*, Warsaw: Studia Obszarów Wiejskich vol 16, PTG, IGIPZ PAN.

The Constitution of the Republic of Poland of 2nd April, 1997 (published in Dziennik Ustaw, no.78, item 483).

Drejerska, N., Chrzanowska, M. and Pomianek, I. (2014) *Strefa podmiejska Warszawy. Wybrane zagadnienia*, Warszawa: Wydawnictwo SGGW.

Flejterski, S. (1984) *Istota i mierzenie konkurencyjności międzynarodowej*, Gospodarka Planowa, nr 9.

Gorynia, M. (1996) *Międzynarodowa konkurencyjność polskiej gospodarki a polityka ekonomiczna*, Ekonomista, nr 3.

Korcelli, P. and Śleszyński, P. (2011) 'Stan przestrzennego zagospodarowania kraju 2010 – mapy diagnostyczne', in *Koncepcja Przestrzennego Zagospodarowania Kraju 2030 – projekt z 25 stycznia 2011 roku*, Warsaw, Ministry of Regional Development.

Lubiński, M. (1995) *Konkurencyjność gospodarki czy przedsiębiorstwa?*, Gospodarka Narodowa, nr 6.

McCann, P. (2014) 'Schools of Thought on Economic Geography, Institutions and Development', in Fischer M.M. and Nijkamp P. (ed.) *Handbook of Regional Science*, Berlin Heidelberg: Springer-Verlag.

Meyer-Stamer, J. (1996) *Konkurencyjność systemowa*, Gospodarka Narodowa, nr 3.

Misala, J. (2003) *Współczesne teorie wymiany międzynarodowej i zagranicznej polityki ekonomicznej*, wyd. SGH, Warszawa

Misala, J. (2005) *Wymiana międzynarodowa i gospodarka światowa. Teoria i mechanizmy funkcjonowania*, wyd. SGH, Warszawa

North, D. C. (2003) *The role of institutions in economic development*, Discussion Papers no. 2003.2, UN Economic Commission for Europe, Geneve, Switzerland

Rodrik, D., Subramanian, A. and Trebbi, F. (2004) 'Institutions rule: the primacy of institutions over geography and integration in economic development', *Journal of Economic Growth*, Vol. 9 Issue 2.

Skawińska, E., (2002) 'Reakcje na zmiany a konkurencyjność przedsiębiorstw', in Skawińska E. (red.), *Konkurencyjność przedsiębiorstw – nowe podejście*, wyd. PWN, Warszawa-Poznań.

Szentes, T. (2003) *World Economics 2. The Political Economy of Development, Globalisation and System Transformation* (The Political Economy of Underdevelopment – Revisited), wyd. Akadémiai Kiadó, Budapest.

Wierzbołowski, J. (1995) 'Państwo jako aktywny uczestnik kształtowania międzynarodowej konkurencyjności', in Lubiński M., Smuga T., *Międzynarodowa konkurencyjność gospodarki Polski – uwarunkowania i perspektywy*, Instytut Rozwoju i Studiów Strategicznych, Raport nr 35, Warszawa.

“Status quo strategy” in rural development

Jiří Hrabák [1], Lukáš Zagata[2]

[1]Department of Social Geography and Regional Development, Faculty of Science
Charles University in Prague
hrabak@natur.cuni.cz

[2]Deparment of Humanities, Faculty of Economics and Management, CULS in Prague, Czech Republic
zagata@pef.czu.cz

Annotation: This proceeding is focused on the paradoxical approach of municipal representatives, who – for various reasons – apply a local development strategy with the goal of retaining the current status, without any ambition to improve the situation of their municipality. It appears that this strategy is implemented mostly by small municipalities, with non-professionalised administration and with a lack of capacities for the preparation and realisation of new projects. It is striking that this status quo strategy does not necessarily have to be related to a deterioration of these municipalities, since development on the local level is indeed often carried out by other means, such as social capital.

Keywords: endogenous development, social capital, local action group, CLLD, community-led local development

JEL classification: R58

1 Introduction

Regional policy for the 2014-2020 programming period introduced CLLD (Community-led Local Development) as a new tool to facilitate the engagement of local stakeholders in planning processes and the realisation of a local development strategy. This tool thus directly follows on and elaborates the LEADER method applied by Local Action Groups (LAGs). The application of CLLD is framed by an integrated strategy of the locality that includes priorities and measures aimed at the general improvement of the inhabitants' quality of life and local environment. In practical terms, each LAG prepares what is known as the "integrated area strategy" to evaluate the problems and potential of the given locality and to outline future development by designing specific measures. The CLLD principle implies a need to include the views of local stakeholders on the problems and needs of their locality during the planning process.

This proceeding draws on the experience of the preparation of the area strategy of one LAG for the following programming period, and offers an insight into the approaches of official representatives of municipalities (mayors), who belong among the local political elites and who are mainly responsible for the design and implementation of local development strategy. This view is particularly interesting due to the large differences in the approaches and goals set by mayors. These differences are also present in localities which otherwise have many socio-geographic features in common. It is thus clear that the strategies of the municipalities are affected by different factors, including the personal and social factors of their political representatives.

The main goal of this paper is to provide an insight into the strategies of municipalities in selected regions, from the mayors' perspective. In contrast to studies which aim at the

innovative approaches of local representatives (Lostak *et al.*, 2014), this study focuses on situations in which mayors partly refuse to set new goals, with their main aim being to maintain the current state. This approach has been (based on empirical study) conceptualised as a "status quo strategy". The basic features of this approach and the circumstances under which the strategy is implemented are further defined. In the final section, the consequences of this approach and its evaluation within the context of regional development are outlined.

2 Theoretical background

Conditions in the countryside are greatly affected by the settlement structure. Czech rural space is typical of a dispersed settlement structure with a large number of small settlements (Ryšavý, Bernard, 2013). This structure is also reflected in rural development strategies. In theory, two basic streams are distinguished, based on the resources that are used – exogenous and endogenous. These have recently been coupled with what is called the "neo-endogenous" approach (Ward *et al.*, 2005). Many studies have provided evidence of a shift from the exogenous towards the endogenous and the neo-endogenous approach (Gkartzios and Scott, 2013), the latter which is supposed to provide and transmit both (exogenous as well as endogenous) forces together (Ray, 1999). This shift is also present in the current research (Bernard, 2011). If we take a look at the methods used, we can see that, in the Czech context, quantitative methods are more often used (e.g. Cudlínová *et al.*, 2012; Bernard, 2012) in the research of local development processes. However, examples of the qualitative approach (c.f. Woods, 2012) are also being seen more often. The qualitative approach generally enables a deeper understanding of problems in rural areas, with the potential of including the perspectives of actors engaged in the preparation and realisation of development processes in their locality.

The endogenous approach is based on the utilisation of different forms of local potential (Bernard, 2011), with local actors differing in their abilities to utilise this potential. An important aspect of this potential is the ability to cooperate and coordinate collective actions on a local level (Bernard, 2011). All the different combined potential can be considered as the local social capital. The social capital is a precursor for satisfying the lives of local communities (Jančák *et al.*, 2010). Also included among other endogenous factors are common culture, civic society, identity and shared attitudes of rural inhabitants (Chromý *et al*., 2011). The ability to use this endogenous potential is one of the differentiating factors of municipalities. Such differentiation is further influenced by size category and geographic position (Perlín *et al.*, 2010). On the national level, one can observe a specific dual differentiation, related to the development centres and poles, and problematic areas (Novák *et al.*, 2011). Regarding the differences in potential, it is possible to assume a significant differentiation on the local level as well.

Methods

The results presented in this paper are based on a qualitative research of the approaches exerted by municipal representatives. The field work was conducted at the beginning of 2014 within the preparation of the integrated strategy of a Local Action Group. Mayors of the municipalities located in the LAG's area became objects of the study. The name of the Group, as well as the names of the villages in this process have been anonymised in accordance with the ethical standards of qualitative enquiries.

The main purpose of the study was to map out the problems and needs of the municipalities and to describe the approaches of the mayors towards local development. The qualitative research used in the study enables insights to be gained into the practices of people and their

social definitions of situations. The study employed an inductive approach which enabled the conceptualisation of the new findings. Data collection was based on semi-standardised interviews conducted in April 2014. Data were collected from the entire area, which included a total of 25 municipalities. Two villages did not take part in the study. Each interview lasted for 45 – 60 minutes. The vast majority of the interviews were recorded. These audio recordings, together with the field notes, became the major data source. Data were analysed with the use of standard qualitative strategies.

3 Results

3.1 Description of the region

The region affiliated to the Local Action Group has a favourable position in relation to the regional centre, showing good performance in basic socio-economic indicators, but, at the same time, requiring local inhabitants to commute longer distances to work. The regional economy is not able to generate sufficient employment and commuting to work is seen as a major regional problem, with many negative consequences. There are a large number of small municipalities and two smaller towns, which provide the necessary services for the other municipalities. However, many services are carried out in the places to which people commute for their daily employment. This reduces their demand for services in the regional towns.

The area is typical of a dispersed settlement structure, which is partly caused by the natural conditions. The region is located in rugged landscape, partly rising into uplands, with a well-preserved environment. There are a large number of small municipalities (with less than 200 inhabitants). This feature determines another potential of the region. The large number of small municipalities implies higher costs for public transport (due to the low efficiency of providing services for a large number of small settlements) and also difficulties with the water infrastructure (distances between settlements, terrain morphology). These small municipalities are often managed by mayors who are not professional (i.e. they keep their normal jobs and municipal administration is done in their free time). All these aspects, as we later argue, are reflected in the observed approaches towards local development.

3.2 Classification of local strategies

Qualitative analysis showed that the municipalities in the region differ in their developmental needs. These differences are derived not only from the structural features of the relevant municipality (such as the number of inhabitants, geographic position, socio-demographic structure, natural conditions, etc.), but also from the approaches of their mayors. On this basis, the municipalities differ in their ability to set out and achieve specific aims for local development. The analysis suggests that there is a specific hierarchy of needs which shapes the strategies of mayors with regard to local development.

The hierarchical structure appears to be as follows: municipalities firstly attempt to provide basic services and maintain municipal property; secondly, they try to gain investment subsidies for further development; the next step – once they succeed in implementing development projects – is that they try to stabilise their population. The approaches of mayors can be typified in the following way: (1) status quo strategy; (2) utilisation of external sources strategy; (3) social responsibility strategy.

During field work in the relevant region, we identified the following three types, with their distribution among the municipalities being about the same.

(1) **The status quo strategy** focuses on maintaining the locality, with the basic aim of retaining the current state. This is the reason why we have called this approach the "status quo strategy". A detailed description of this approach is provided below in a separate subsection.

(2) **The utilisation of external sources strategy** is based on the ability to utilise subsidy opportunities for further development of the municipality. Despite the fact that implementation of such projects relies on internal sources as well, the main driving forces of development have their origins outside the locality. Mayors of the villages are primarily focused on finding suitable opportunities for new projects. Many representatives of the municipalities have managed to gain enough experience in the past decade to implement this strategy successfully. Municipalities which implement this strategy are heterogeneous. Generally, these are active municipalities, which respond to project calls with respect to their current needs and select those calls which fit the context of their local development. At the same time, they are more likely to respond to the "offers" provided by the project call, rather than to exert a clear future vision for the local development of their municipality.

(3) The **social responsibility strategy** – the last of the identified strategies – is a combination of the previous two strategies and, at the same time, it includes new goals related to social responsibility. Municipalities that utilise this strategy aim to ensure complex local development, without having to deal with the issues of upkeep and investments in basic infrastructure, since these aims have already been achieved. Municipalities thus become socially responsible, which means that they try to stabilise the population of inhabitants by creating new jobs, setting up areas for new houses and other activities. The new jobs are typically created within the tourism biking tourism. The social responsibility strategy also takes into account social services for senior citizens. The activities of municipalities therefore have a significant environmental impact (one example is in the town of Spálené Poříčí). The projects carried out by municipalities industry, which is supported on a local level. Another opportunity for creating jobs is related to the creation of new accommodation opportunities and also positively affect the accumulation of social capital. Altogether, this strategy is mainly carried out by active municipalities that have a high absorption capacity for the utilisation of various projects funded by external subsidies.

3.3 Status quo strategy

The status quo strategy was identified in the group of municipalities whose mayors are focused on the upkeep and are not starting any investment projects. These mayors are mostly those who carry out the administration in combination with their civilian jobs, and typically in municipalities with a limited number of inhabitants. Despite the fact that the municipality could have a means for co-financing larger projects subsidised by external funds, they do not use this opportunity, because they are concerned about the administrative work that seems too difficult for them. This view is held not only about the necessary pre-financing of projects, but also about the co-financing of projects. These concerns are often coupled with some limitations related to the fact that local representatives are not able to prepare and submit these projects on their own and need to use a service organisation. Mayors are also concerned about difficulties with competitive tendering, sustainability of the projects (once the funding period is over) and other unexpected circumstances that may affect the successful administration of the projects and their financing. This is particularly difficult in the case of large projects, such as reconstructing local infrastructure. Small-scale projects aimed at the upkeep of the settlement are then carried out without external support. As was mentioned in

an interview: "(.) whitewashing the chapel can be done on our own." This group of mayors states that the main barrier to their work are the burdensome administrative tasks that need to be done, while in full-time employment, and not having the time to work on project proposals.

For the above-mentioned reasons, these municipalities maintain a passive strategy. Some localities then enter a downward spiral related to the shortage of financial resources, the inability to maintain basic public services, an aging population and a decline in the number of inhabitants. Such a negative trend can be aggravated by the remote location of the settlement in relation to the microregional core. In this situation, the status quo strategy is basically an effort to avoid this declining pathway and to retain what has already been achieved. Priority is typically given to the maintenance of the municipal office and other public property, local roads and public areas. Some mayors view this maintenance as a priority, which needs to be continually carried out, thus preventing them from implementing large projects.

This strategy has been recognised (in ideal-typical forms) in municipalities, which (1) belong to the smallest size category, (2) are administered by non-professional mayors, (3) are sceptical of subsidy policy, (4) consider administration of the project difficult and consequently (5) withdraw from competing in project calls.

The status quo strategy thus stands out in sharp contrast to other strategies. The ability to maintain the assets of the municipality is based on the utilisation of endogenous sources (particularly social capital), which is often related to interaction with local NGOs, as is shown by the following excerpt:

> *"If we have a problem that needs to be solved quickly, then we make a deal with the Volunteer Firefighters Group."* (Interview No. 1)

Local development by means of the status quo strategy is not viewed as a realisation of large investment projects in economic terms, but as the maintenance and upkeep of the already existing assets. Despite the fact that some villages would welcome economic development through new investments, the costs of maintaining current assets are too high, therefore they cannot give any priority to new projects, as illustrated by the following quote:

> *"Firstly, we need to keep up what we have here."* (Interview No. 2)

4 Discussion

The status quo strategy in local development might imply a passivity of actors, or even a lagging behind, because the localities are not creating anything anew, there is no "growth". Mayors who uphold the status quo strategy represent the opposite of the "project class", as was described by Kovach *et al.* (2006). Such an evaluation would not be accurate for several reasons. The status quo strategy does not have to lead to deterioration of the locality. The goal of this strategy is indeed to keep up the existing quality of life and the environment. The main sources for the realisation of the strategy are not external, but internal, namely the social capital associated with a collectivity. It can be concluded that the creation and accumulation of social capital is not reserved only for successful villages and towns in terms of local development, but also for those which, from this perspective, appear less successful.

Using the social capital that can bond and bridge actors in the locality (Putnam 2000; Hudečková *et al*., 2003), municipalities are able to organise different social, cultural and sporting events, which, in other localities, are carried out only if there are available funds from development programmes. This indeed appears to be an advantage of these localities. On the other hand, the municipalities are disadvantaged in situations when the organisation of

events (besides the economic capital) also requires other resources. Then the lack of financial funds becomes more urgent, since it cannot easily be substituted by other means.

We would like to argue that the key means for the realisation of the status quo strategy is social capital. It seems that municipalities enter the downward spiral only at the moment when they cannot maintain the current state and when, at the same time, social capital is absent. This process is analogous to the theory of cumulative causes, describing (with the use of the circular cumulative causation concept) positive and negative responses to changes that are occurring on the regional level (Myrdal 1957 *cit.* in Blažek and Uhlíř, 2002). In the case of negative changes, a vicious circle is created which is not easy to break (Müller, Musil, 2008). The chain of negative causations can be broken, for example, by an inflow of new creative groups of inhabitants in the locality (Ouředníček, Feřtrová, Špačková, 2011).

5 Conclusions

The empirical study identified several strategies implemented by municipalities in local development processes. According to these strategies, municipalities were classified as those who either pursue the status quo strategy, the utilisation of external sources strategy, or the social responsibility strategy. The status quo strategy, which is implemented by a large number of settlements, gained a specific position in this context. This strategy represents a paradox of rural development. The aim of this strategy is "only" to maintain the current state without any (or with a very little) effort towards the development of the locality. However, it appears that this strategy does not have to be a symptom of failure, since these municipalities often carry out other developmental activities. Their realisation is based on the social capital available in the locality, as this source is, to a certain extent, able to substitute for a lack of financial resources.

References

Bernard, J. (2011) ‘Endogenní rozvojové potenciály malých venkovských obcí–obtížné hledání a měření jejich vlivu‘. *Sociologický časopis/Czech Sociological Review*, vol. 47. no. 4, pp. 745–775.

Bernard, J. (2012) ‘Prostorové vzorce rozvinutosti venkovských obcí Česka‘. *Geografie*, vol. 117, no. 1, pp. 72–94.

Blažek, J. and Uhlíř, D. (2002) *Teorie regionálního rozvoje. Nástin, klasifikace, kritika*, Prague: Karolinum

Cudlínová, E., Faltová Leitmanová, I., Klufová, R., Rolínek, L. and Jílek, M. (2012) ‘Characteristic of the Czech Countryside Development Based on Local Population Activities and Attitudes‘. *Journal of Landscape Ecology*, vol. 5, no. 2, pp. 54–71.

Gkartzios, M., and Scott, M. (2013) ‘Placing Housing in Rural Development: Exogenous, Endogenous and Neo-Endogenous Approaches‘. *Sociologia Ruralis*, vol. 54, no. 3, pp. 241–265.

Hudečková, H and Lošťák, M. (2003). Social capital in the change of the Czech agriculture. *Zemědělská ekonomika-Agricultural Economics*, vol. 49, no. 7, pp. 301-309.

Chromý, P., Jančák, V., Marada, M. and Havlíček, T. (2011) ‘Venkov–žitý prostor: regionální diferenciace percepce venkova představiteli venkovských obcí v Česku‘. *Geografie*, vol. 116, no. 1, pp. 23–45.

Jančák, V., Chromý, P., Marada, M., Havlíček, T. and Vondráčková, P. (2010) Sociální kapitál jako faktor rozvoje periferních oblastí: analýza vybraných složek sociálního kapitálu v typově odlišných periferiích Česka. *Geografie*, vol. 115, no. 2, pp. 207–222.

Kovách, I. and Kučerová, E. (2006) 'The Project Class in Central Europe: The Czech and Hungarian Cases'. *Sociologia Ruralis*, vol. 46, no. 3, pp. 3–21.

Müller, J. and Musil, J. (2008) 'Vnitřní periferie v České republice jako mechanismus sociální exkluze'. *Sociologický časopis/Czech Sociological Review*, vol. 44, no. 02, pp. 321–348.

Novák, J. and Netrdová, P. (2011) 'Prostorové vzorce sociálně-ekonomické diferenciace obcí v České republice'. *Sociologický časopis/Czech Sociological Review*, vol. 47, no. 4, pp. 717–744.

Ouředníček, M., Feřtrová, M. and Špačková, P. (2011) 'Změny sociálního prostředí a kvality života v depopulačních regionech České republiky'. *Sociologický časopis/Czech Sociological Review*, vol. 47, no. 4, pp. 777–804.

Perlín, R., Kučerová, S. and Kučera, Z. (2010) 'Typologie venkovského prostoru Česka'. *Geografie*, vol. 115, no. 2, pp. 161–187.

Ryšavý, D. and Bernard, J. (2013) 'Size and Local Democracy: the Case of Czech Municipal Representatives'. *Local Government Studies*, vol. 39, no. 6, pp. 833–852.

Ward, N., Atterton, J, Kim T. Y. et al. (2005) *Universities, the knowledge economy and 'neo-endogenous' rural development* [Online], Newcastle: Centre for Rural Economy, Newcastle University, Available at http://www.ncl.ac.uk/cre/publish/discussionpapers/pdfs/discussionpaper1.pdf [26. 8. 2014].

Woods, M. (2012) 'New directions for rural studies'? *Journal of Rural Studies*, vol. 28, no. 1, pp. 1–4.

Community-led Local Development as an Opportunity to Strengthen the Position of Schools within the Czech Rural Areas

Helena Hudečková[1], Jakub Husák[2]

[1]Department of Humanities, Czech University of Life Sciences Prague, Faculty of Economics and Management, Kamýcká 129, 165 21, Czech Republic
hudeckova@pef.czu.cz

[2]Department of Humanities, Czech University of Life Sciences Prague, Faculty of Economics and Management, Kamýcká 129, 165 21, Czech Republic
husak@pef.czu.cz

Abstract: The paper is focused on the specific activities, which are performed for rural citizens – particularly is focused on educational activities with missions to manage local development, to protect local environment and carefully handle with its natural and cultural heritage and to know how to cooperate and transmit the protected values to children. The paper is also focused on critical reflection of topic, if community-led local development (CLLD) gives opportunity to renaissance of rural education (with tradition of prestigious cultural and social institution within rural areas). If the rural education gets this opportunity, we are interested, how is this opportunity exploited. Timeliness of the topic is underlined by fact, that we could repeatedly see effort to abolish schools in small rural municipalities. The paper consists of the first results of sociological research, which combine techniques of document study and questioning. The results map situation of community education in rural areas in the Czech Republic with the main focus on Rural Community Schools and their positive and negative experiences regarding to their institutionalization. The first results of the sociological research have qualitative character and aim to typification of barriers which hinder the development of Rural Community Schools and problems of involvement of rural schools to local partnerships, which operate in terms of CLLD. The barriers of above mentioned educational activities are possible to divide to objective (related to the placement of educational organisations within the area and to amenities of the area or organisation) and subjective (attitude of local inhabitants to educational activities in general and particularly to educational activities with regard to community development; local capacity of lectors and teachers for Community Schools). Creation of local partnerships which operate in terms of CLLD regarding to educational activities is related mainly to involvement of rural schools do Local action groups (LAG). It is well known fact that resort of education is poorly represented within these associations. While LAG took initiative in the researched scope of activities during the last five years – instead of schools for rural renewal, which were the first bearers of these activities in rural development.

Key words: Community schools, education, local development, rural areas

JEL classification: R580, I250

Introduction

The concept which perceives urban and rural areas as equal partners in the efforts for quality of life has been known for almost 30 to 40 years (Kayser, 1990). Rural society, while competing in attractiveness as a place of residence for the contemporary population, has not yet found an authentic method for its development, to elevate it to the position equivalent to the social organisation of the urban type.

The LEADER approach, which has been implemented into the praxis of rural development since the beginning of the 1990s, began to use the above-mentioned method. The start of the

implementation of the LEADER approach within the Czech Republic has been postponed for one decade. This approach is linked to the Sapard programme. Experience with the LEADER approach has subsequently been gained since 2004. One of the authors of the paper is pursuing this issue, as is evidenced by numerous publications[17]. Experience with the LEADER approach was summarised for the purpose of the praxis of the rural development policy in the strategic document called "National Strategic Plan LEADER 2014+" (NNLAG, 2011) and supplementary to the document called "Community-led local development in the Czech Republic" (NNLAG, 2012). These documents were prepared by the National network of LAGs in the Czech Republic (NNLAG).

Since 2009, both authors of the paper have been intensively focused on the research of educational activities which are used by actors in rural development to obtain the capacities for fulfilling the mission target – to ensure that rural areas and rural society become equal partners to urban areas and urban society in regional development. This specifically concerns education for local development both within the LEADER approach and outside of it (project supported by the Internal Grant Agency of FEM CULS in Prague in 2010 – 2011, 2012 – 2013 and 2014 – 2015). The newest of the projects "Appreciation of Natural and Sociocultural Potential of Rural Areas through Activities Contributing to Social Inclusion" mainly accentuates the social inclusion of the rural population (as a broad social category) in the urban type of global society, by mastering their own development with positive impacts on increasing the quality of life in a broad sense (see Acknowledgement).

Aim, Material and Methods

We raised the question whether rural education (formerly a prestigious cultural and social institution) would once again have the opportunity within community-led local development (CLLD) to attain this position. The question subsumes the aim to specify barriers to this objective and to clarify cooperation with actors of CLLD in rural municipalities.

As a background, on the general level, we chose essential documents on educational policy (Guidelines Strategy of Educational Policy to 2020 (MEYS, 2013a), Information Material to Guidelines Strategy of Educational Policy to 2020 (MEYS, 2013b)). On the particular level, we chose specific documents, both on lifelong learning (The Strategy of Lifelong Learning in the CR (MEYS, 2007), Implementation Plan of the Strategy of Lifelong Learning in the CR (MEYS, 2008)) and community education (Strategy of National Network of Rural Community Schools to 2020 (NNRCS, 2012), Analysis of Readiness of the Czech Republic and Possibilities to Development of Community Schools (Lauermann, 2008)). These documents are based on expert analyses carried out by the Ministry of Education, Youth and Sports of the Czech Republic for its internal needs. These documents are confronted with documents which conceptualise and implement CLLD in praxis (Integrated Regional Operational Programme (MRD 2014), National Strategic Plan LEADER 2014+ (NNLAG, 2011), Community-led Local Development in the Czech Republic (NNLAG, 2012)). Our analysis views documents on education from the perspective of CLLD in rural areas.

The findings thus obtained are complemented by findings from the authors' field researches, which are focused on education for rural development. From 2010 to 2011, we first of all paid attention to education as an emerging need for leading rural development, using the "bottom-up" approach. Between 2012 and 2013, we conducted a case study on the creation and the initial experience of the establishment of a network of rural Community Schools within the

[17] e.g. publications by Hudečková and Lošťák in Agricultural Economics between 2003 and 2010

Pilsen Region. We researched this as a specific project in cooperation with LAG Pošumaví (thus without direct connection to the Education Department)[18].

Currently we are researching the issue of community education within the project (2014 – 2015; field research has not yet taken place), focused on the inclusion of rural society in the current global society. Within this project, we are combining a quantitative and qualitative research approach, because it is not a completely unexplored issue.

The paper has the characteristics of critical reflection, which

a) points out the barriers (researched with the use of both secondary and primary research) on the pathway to the renaissance of rural education through a share in local development;

b) clarifies the issue of creating a partnership for the development of community education in rural areas, in accord with the principles and framework of CLLD.

The results, which we are building on, have shown several essential findings. The first finding is related to Schools for Rural Renewal (SfRR) as specialised organisations dealing with education in rural areas. There are 45 SfRRs in the Czech Republic. The time of the formation of SfRRs is possible to be reached back to 1997, when the first SfRRs were established, and 2007, when the last SfRRs were established. It is possible to label those 10 years as the "golden age" due to one of the priorities of the Rural Development Programme. As results from our researches mentioned above, there is an evident decrease in the role of SfRR in education for rural areas and an increasing role of Local Action Groups (LAG) in this field. This shift of educational activities from SfRRs to LAGs is connected with the transfer of the support of central authorities towards LAGs and integrated rural development[19].

The second finding is related to the focus of educational activities in rural areas. Activities of SfRRs and the educational activities of LAGs are possible to be divided into three types – administration of educational projects, consultancy in realisation of educational activities and realisation of educational activities (training, courses, etc.). Realised educational activities of SfRRs and LAGs are focused especially on technical or processional education (e.g. how to prepare a project or how to raise funds for projects), with less attention paid to the strengthening of the local and regional identity of the rural population. Particularly among the most common educational activities of SfRRs and LAGs, it is possible to initiate seminars focused on rural development, support of rural educational centres (these are possible to be considered as precursors of Rural Community Schools in the Czech Republic) and the support of the establishment of museums and expositions with a regional focus.

The third finding is directly related to Rural Community Schools (RCS) in the Czech Republic. There are 38 RCSs in the Czech Republic. Considering the definition of RCS in the Czech Republic, RCS could be defined as an educational facility which is located in a municipality of less than 5000 inhabitants, with a prescribed legal form (NGOs, municipal contributory organisation, secondary economic activity of the local school), which offers lifelong education to adult residents of the catchment area, and regularly participates in community development activities and community life, managing its own budget and

[18] Both completed projects used a qualitative research approach and combined techniques of document study and semi-structured interviews with a low level of standardisation. The interviews contained a common part and a variable part, according to the type of actor in rural development (according to their education):
2010 – 2011: 15 interviews, representatives of SfRRs and LAGs, representatives of the Association for Rural Development of the Czech Republic, project managers
2012 – 2013: 21 interviews, community coordinators, mayors and deputy mayors, project coordinators, project managers

[19] For more details see e.g. Husák, 2011

respecting the principles of financial self-sufficiency and sustainability (NNRCS, 2014). Another significant fact is the strong relation of RCSs to the LAGs that are often bearers of the grant projects used for the establishment of RCSs. The main specific feature of RCSs in the Czech Republic is also connected to the relationship between LAGs and RCSs – there is significantly only a minimal connection of RCSs to schools in rural municipalities. It is quite unusual from the perspective of the general conceptualisation of community education and Community Schools abroad (see below).

Theoretical Background and Sources of Inspiration

Place-based development is also a key term of the Agenda for a reformed cohesion policy, which is also known as the "Barca Report" (Barca, 2009). The development thus named emphasises the basis of local needs and the integration of local potential, which are used to resolve needs by joining the forces of local actors. It is possible to infer that this kind of development respects the requirement of authenticity.

The theoretical background for place-based development is formed by institutional regional development theories (Hudson, 2007; Morgan, 2007; Amin and Thrift, 1995), especially by concepts which emphasise the elements of the sociocultural environment of locality (mainly ties in the network of contacts and embeddedness in the locality) as development resources (Granovetter, 1985; Atterton, 2007). They argue that these resources are able to generate tacit knowledge (Hudson, 1999). This type of knowledge is not possible to codify and this is the reason, according to some authors, (Maskell and Malberg, 1999; Lam and Lundvall, 2006; Lundvall and Nielsen, 2007) that tacit knowledge is a scarce resource, because it results in original innovation linked to local potential. Then the question arises as to what an effective method is of learning to support the creation and reproduction of tacit knowledge. The answer to this question is offered – community education using social learning of new approaches within collective communication, cooperation and coordination in network structures (Lee *et al.*, 2005; Shucksmith, 2000; Lam, 2002).

We consider that it is possible to create an effective linkage between the need for a close, inner, local world and the respect for the requirements of a remote, external, global world, so that community education in the rural areas

- benefits the local community, as well as its relations within the broad social environment;
- maintains and promotes confidence in its actors in the rural areas, as a result of repeating the transactions after a positive experience with community education.

From the history of community education and schooling, it basically follows that community education is referred to as a modernisation of classical education, which extends:

- its socialisation function (not only educates but also rears);
- its social function (searches for multiple partnerships, facilitates involvement in social networks, enhances social capital);
- its socio-political function (mitigates social exclusion, removes barriers in access to education);
- its temporal dimension (full-day effect);
- its demographical dimension (acts as lifelong learning, connects education of parents and children).

The concept of community education has been spread since the 1960s. This is the reason for its inconsistent conceptualisation and diverse applications in specific countries. There is a constantly applicable common basis – the involvement of people from outside the school and close links between the school and local community. Heers *et al.* (2011) state practically verified assumptions of the reciprocal positive benefits both for the school and local community. Coleman (1987) emphasises the social capital which is reproduced and strengthened during collaboration between the school and local community. Sanders (2003) points out the diversification of community elements in education, but explicitly emphasises the collaboration of the school with local entrepreneurs, with social services in the locality and also with universities. A diversity of applications of community elements in education respects the specific sociocultural climate and educational systems of specific countries.

Nevertheless, the above-mentioned authors agree on some common features of community education:

- at the outset, the concept was applied in towns; within rural areas, it is applied as a result of infiltration of urban elements into rural areas;

- increasing the development potential of the locality is a secondary, but significant product value added to the educational process carried out within the locality.

Due to repeated discussions whether disturb rural schools (in relation to the low number of pupils and insufficient equipment for the educational process), we started to be deeply concerned about this secondary mission of Rural Community Schools. This idea was also underpinned by the practical knowledge gained.

It is possible to summarise two main shortcomings which are possible to be solved by the use of community education:

- readiness of stakeholders in rural development for qualified (i.e. complex and integrated) procedures for the creation of medium-term development plans related to the necessity for the use of systematic "soft" information from shareholders, control of time management, team cooperation and complex administration (here it is possible to find the potential opportunity of cooperation with universities);

- education is considered as one of the horizontal topics, which is often appreciated as an important need for solution (here it is possible to situate the opportunity of obtaining positive effects from the interconnection of school and local community).

Results and Discussion

As indicated by the available information, institutionalisation of RCSs in the Czech Republic is not well developed. The year 2005 was an important milestone, when the National Network of Rural Community Schools was established, aspiring to nationwide operation. The network has its headquarters in the Vysočina Region, where the highest number of RCSs are situated (more than three times the number of those in other regions)[20].

Newly prepared strategic documents for the development of the Czech Education Policy up to 2020 do not include any reference to community education in rural schools[21]. However, the

[20] From the outset, authors of the paper monitor the process of institutionalisation of RCS in the Pilsen Region, where the number of RCSs is the second highest.

[21] These are specifically two publicly available documents of the Ministry of Education, Youth and Sports of the Czech Republic (MEYS), which follow on the long-term strategic document of 2001 (called the "White Book"). In January 2013, public discussion began on the document: "Guidelines Strategy of Educational Policy to 2020". "Information Material to Guidelines Strategy of Educational Policy to 2020" was published in September 2013

requirement to develop various opportunities for lifelong learning, together with the support of active citizenship (as one of the aims) is emphasised in these documents. It is also stated that schools are lagging behind other institutions in the public and private sectors with regard to the training of "soft" skills (critical thinking, decision making, self-management, cooperation, leadership and the ability to be led, be empathic and flexible). In such learning, new content and form can be utilised, made possible by the development of information and communication technologies and by network sharing. This entails the "opening up of the school to the world outside the school", by modernisation of the content and form of curricular activities. However, the wording of the text does not mention a connection to CLLD, despite the fact that it could be expected according to the significance of the above-mentioned facts.

Older documents ("The Strategy of Lifelong Learning in the CR" of 2007 and "Implementation Plan of the Strategy of Lifelong Learning in the CR" of 2008) were prepared in the same manner, but are also essential to us. It is possible to develop a wide platform in further education[22] of cooperation of schools, employers and other sectors of the public and non-profit organisations. This complex system of further education, *inter alia*, meets the needs of the formation of learning communities and active citizenship.

Content analysis of the above-mentioned documents indicates:

- a strong accent on education for the labour market;
- the requirement to coordinate further education by MEYS;
- non-participation of organisations outside the school in this kind of education;
- a low level of involvement of learners.

Strong barriers exist to the demand for adult education – mainly financial, information and barriers regarding its form and methods. The supply has weaknesses in structure (in relation to the needs of the labour market and needs of groups of people endangered by social exclusion), quality and evaluation. Opportunities for development are the interest of various groups of people in education for leisure activities and the capacities of schools for teaching. However, pedagogical staff suffers from the lack of readiness for variability in study programmes and educational methods for special target groups. There is a noticeable strong departmentalism – starting with the incohesion of policies (e.g. Educational Policy, Employment Policy, Active Social Protection, Support of Entrepreneurship) and continuing with errors in coordination of management and operation of further education both at regional and local levels. The phrases "community education" and "Community School" are absent from the above-mentioned documents.

A special study dealing with community education in the Czech Republic was prepared in 2008 (Lauermann, 2008). It is based on 40 case studies of Community Schools, of which 7 (17 %) could be classified as RCS. The case studies consist of establishments registered in the network of schools (i.e. with close connection to MEYS), which also adds further education (e.g. for community development) to early education. There is the criticism that the community method of learning in the Czech Republic is focused either only on children or only on adults. Results of the study accentuate the roles of directors and pedagogues of local schools (in the best case scenario, the director/pedagogue is also the community coordinator),

---

as a basis of this discussion. It is also stated that the Act governing what is known as "further education" (the Act No. 179/2006 Collection of Law) is sufficient and potential changes are possible to be solved by its amendment.

[22] Further education follows early education, which consists of primary, secondary and tertiary education. Further education is intended mainly for adults.

cooperation with parents, initiating and coordinating role of the school in community education and multisource funding.

However, the real situation often differs – on the one hand, the local community does not accept the school as initiator and coordinator of community education (these results are also confirmed by our research); on the other hand, pedagogues are reluctant to participate in community education, because they do not want to be under the control of partners and they are also not interested in cooperation with partners.

Connection with CLLD is evident within the document of the above-mentioned NNRCS[23] – the basis are local needs, focused on cooperation and education, and place-based development is supported by these methods. The vision is processed systematically and contains the necessary institutional linkages – creating and sharing information within networks, training of professionals for rural community education, creating partnerships within rural communities and outside of them with public authorities and the non-profit sector, including foreign organisations operating within lifelong learning, cooperation within European structures and projects, multisource funding.

The analysis indicates that NNRCS is successful in creating its own capacities and offering services for RCSs (models of RCS, content of programmes and courses for RCS, professional education of contact persons – community coordinators, management of database of RCS and utilisation of multisource funding). However, the problem is rather to meet these capacities within rural areas (by promotion, raising awareness of stakeholders in local development, methodological assistance, operational management, creation of a network of contact points and centres with facilities for RCS) and also within the global environment (participating in tenders and professional contests, providing services for "intermediary" organisations, e.g. Labour authorities).

Regarding CLLD, it is necessary to state that cooperation with LAGs and other rural development initiatives are repeatedly mentioned within the above-mentioned SWOT analysis, but this cooperation has not been successfully fulfilled. The low participation of organisations and initiatives from the educational sector with members of LAGs, or as recipients and project leaders within the LEADER approach (specifically, 6 out of 38 RCSs in the Czech Republic are members of LAGs) is also mentioned.

Our primary research was focused on the establishment and the first experience of RCS in the Pilsen Region, where RCS were established within a specifically focused project connected with LAG Pošumaví[24]. There is a significant connection of established RCSs to NNRCS. Promotion of RCSs within LAG Pošumaví through NNRCS could be considered as an opportunity. Other strengths are the possibility of integrating citizens' initiatives and the communal learning of parents and children within a particular locality. However, this is conditional on the use of the opportunity to increase the interest in RCS at the municipal council. A general lack of interest in RCS and the prevailing nescience about community education are the main weaknesses. This results in the dependency of local RCS on one particular person.

[23] The material called "Strategy of National Network of Rural Community Schools to 2020" was prepared in 2009 and updated in 2012. The update was so processed that specific measures are taken stock of as the basis of the SWOT analysis, which are associated with eight priorities of the vision. In 2014, another update will take place.

[24] The above-mentioned SWOT analysis prepared by NNRCS is focused on a broader context (the Czech Republic). Its results indicate where the general (the Czech Republic) and specific (Pilsen Region) levels meet; similar factors as in the SWOT analysis prepared by us.

The fact that the network of RCSs within the Pilsen Region has been established as the basis of one particular project connected to LAG Pošumaví, has both positive (initial financial support of RCS; professionally educated community coordinators by NNRCS) and negative effects (initiation of the project is not considered in half of the cases as a solution for the own needs of localities; RCS is not considered as a potential coordinator but rather as a competitor in existing initiatives for place-based development).

It is not obvious that RCS is connected with the local school (only 18 RCSs in the Czech Republic and 2 RCSs in the Pilsen Region are connected). Opportunities for connection are mainly technical facilities which the school could provide for community education. On the contrary, mainly personnel resources are considered as threats to this connection – community coordinators are usually not on the staff of the local school. Pedagogical staff are also not active as RCS lecturers. These connections will be the subject of our ensuing research.

The latter result is particularly interesting to compare with the praxis of RCS abroad. The Anglo-Saxon model (applied in the United Kingdom and the USA) mainly emphasises collaboration of the school with the local community and involvement in the school activities. The basic and indisputable assumption of a direct connection between Community School and local municipal school is found not only within this model (but also in France, Netherlands, Germany and Sweden) (Heers *et al*., 2011). In the United Kingdom, the concept exists known as "extended schools". Implementation of Community Schools in the United Kingdom is carried out with full government support and the agenda is based on legislation. Concepts are prepared for the support of the expansion of services provided by schools in reaction to the demand by the local community.

Therefore there is clearly an evident secondary mission of Community Schools, which consists of increasing the development potential of the locality. Strong partnerships are created between schools and local organisations – each of them contributing to the improved functioning of schools. Attention is also paid to cooperation, interaction and the transfer of experience among all Community Schools. This is essential for the whole system and the fast commissioning into praxis.

Several models of Community Schools exist in the USA and there is also an effort for the establishment of a network of Community Schools. Community Schools in the USA stress the partnership between school and local residents to enrich school activities. Community Schools are also focused on the education of parents and other adults in the community. According to the special needs of each community, Community Schools offer services in various kinds of education and awareness (Lauermann, 2008). The focus on the development potential of the locality is accentuated in the USA, probably most of all the researched foreign examples. There is an evident synergy effect of community education of children and other members of the community and the support of local development.

Conclusions

The basis of this paper is the reasoning that one of the possibilities is that the rural society could become an equal partner to the urban society for intelligent and sustainable development. This supports inclusion and is aimed at economic, social and territorial cohesion, which are investments in lifelong learning within the CLLD framework. This effort is declared in the Integrated Regional Operational Programme (IROP) for the programming period of 2014 – 2020 (MRD, 2014).

How this possibility is reflected by MEYS (responsible for the educational system) was researched by the use of a document study technique and comparison of strategic documents

of both MRD and MEYS; by studying the documents by other professional organisations operating in the relevant field and also by field research. Basically, we sought to answer the general question of how the creation of learning communities through community education is implemented in praxis. The existence of learning communities is seen as an option for the reproduction of tacit knowledge. Original local innovations for the appreciation of local potential may arise on this basis. Special attention is paid to the position of rural schools and their cooperation with other local actors on behalf of community education for local development.

The MEYS documents on the Education Policy clearly express the needs for modernisation of the contents, methods and form of education in lifelong learning processes. However, community education in the context of CLLD is neither explicitly mentioned nor markedly included implicitly. The documents are markedly focused on lifelong learning for labour market requirements. The contrary creation of local identity for place-based development through education is mentioned only declaratively. The documents of NNRCS, as a special professional organisation for rural community education, result in the confirmation of the insensitivity of MEYS in the creation of an enabling environment for strengthening the role of schools in CLLD. The special MEYS document devoted to the issue of community education mentions a reluctance of pedagogical staff to create the partnerships for the development of community education, due to concerns regarding public control. We assume that so-called "departmentalism", which demonstrates little willingness to create learning communities, as well as mistakes in the art of cooperation by representatives of MEYS, local administration (including self-government) and other possible actors, is in the background of the situation described above.

This situation is possible to be considered as the main contextual barrier to the development of rural education for the appreciation of local potential. That it is not a marginal issue is shown by the fact that education in general (according to representatives of municipal councils) ranks among the so-called horizontal topics which are necessary to be solved – and not only its technical aspects.

Therefore, it is possible to reach the following conclusions:

1) Community Schools should be established upon the fulfilment of certain objective conditions – geographic location and accessibility (the Community School should meet the selected educational needs of residents of the catchment area); demographic structure of the population (this shows the parameters of the target population's education); potential participation given by the existence of a local school and local societies (the Community School works towards the final solution of creating local partnerships);

2) It is consequently necessary to eliminate the subjective barriers to the development of Community Schools. This starts with the support of their existence by the general legislative and promotional framework as a basis of cooperation between MEYS and MRD. It should continue (at mezzo level) with the support of decentralised government authorities and self-government authorities. Solution at the lowest level is also of the same importance – cooperation of rural municipalities within the framework of CLLD.

CLLD is officially supported by IROP. Local partnership is promoted on the basis of LAGs. Rural schools are among infrequent partners as members of LAGs. A low level of involvement of educational organisations in general within LAGs is documented. This is seen as something to be improved. Common praxis of community education abroad testifies that the local school is the main partner. There is no need to be concerned or to doubt whether this could also be similar in the Czech Republic. In this context, IROP supports the creation of technical capacities. MEYS should demonstrate its support aimed at the creation of capacities

for new contents and methods, which comport with local needs. It should show its support of community education through Community Schools and of the creation of personnel capacities (both focused primarily on the reproduction of tacit knowledge, strengthening local identities and local social capital).

Acknowledgements

The paper was supported by the project of the Internal Grant Agency of FEM CULS in Prague, No. 20141027, entitled "Appreciation of Natural and Sociocultural Potential of Rural Areas through Activities Contributing to Social Inclusion".

References

Amin, A. and Thrift, N. (1995) 'Institutional Issues for the European Regions – from Markets and Plans to Socioeconomics and Powers of Association', *Economy and Society*, vol. 24, no. 1, pp. 41-66.

Atterton, J. (2007) 'The Strength of Weak Ties: Social Networking by Business Owners in the Highlands and Islands of Scotland', *Sociologia Ruralis*, vol. 47, no. 3, pp. 228-245.

Barca, F. (2009): Agenda for reformed cohesion policy. Available: http://ec.europa.eu/regional_policy/archive/policy/future/pdf/report_barca_v0306.pdf, [18 Aug 2014].

Coleman, J. (1987) 'Families and Schools', *Educational Researcher*, vol. 16, no. 6, p. 32-38.

Granovetter, M. (1985) 'Economic action and social structure: the problem of embeddedness', *The American Journal of Sociology*, vol. 91, no. 3, pp. 481-510.

Heers, M. et al. (2011) Community Schools Unfolded: A Review of the Literature, Tier Working Papers no. 11/04. Maastricht, pp. 1-36.

Hudson, R. (1999) 'The Learning Economy, the Learning Firm and the Learning Region: A Sympathetic Critique of the Limits to Learning', *European Urban and Regional Studies*, vol. 6, no. 1. pp. 59-72.

Hudson, R. (2007) 'Rethinking Local and Regional Development – Implications for Radical Political Practice in Europe', *European Urban and Regional Studies*, vol. 14, no. 2, pp. 99-113.

Husák, J. (2011) ‚Knowledge Dynamics within the Rural Areas of the Czech Republic', Agrarian Perspectives – Proceedings of the 20th International Scientific Conference. Prague, pp. 319-324.

Kayser, B. (1990) *La renaissance rurale (Sociologie des campagnes du monde occidental)*, Paris: Armand Colin

Lam, A. (2002) 'Alternative societal models of learning and innovation in the knowledge economy', *International Social Science Journal*, vol. 54, no. 171, pp. 67-82.

Lam, A. and Lundvall, B. A. (2006) *The Learning Organization and National System of Competence Building and Innovation*, In: Lorenz, E., Lundvall, B.A. (eds.) How Europe's Economies Learn: Coordinating Competing Models, Oxford: Oxford University Press, pp 109-139.

Lauermann, M (2008) Analysis of Readiness of the Czech Republic and Possibilities to Development of Community Schools. Available: www.msmt.cz, [11 Aug 2014].

Lee, J. et al. (2005) ‘Networking: Social Capital and Identities in European Rural Development’, *Sociologia Ruralis*, vol. 45, no. 4, pp. 269-283.

Lundvall, B. A. and Nielsen, P. (2007) ‘Knowledge management and innovation performance’, *International Journal of Manpower*, vol. 28, no. 3/4, pp. 207-223.

Maskell, P. and Malmberg, A. (1999) ‘The competitiveness of firms and regions: ubiquitification and the importance of localized learning’, *European Urban and Regional Studies*, vol. 6, no. 1, pp. 9-25.

MEYS (2007) The Strategy of Lifelong Learning in the CR. Available: http://www.msmt.cz/uploads/Zalezitosti_EU/strategie_2007_EN_web_jednostrany.pdf, [11 Aug 2014]

MEYS (2008) Implementation Plan of the Strategy of Lifelong Learning in the CR. Available: http://www.msmt.cz/uploads/VKav_200/Implementace_SCU/I_plan_SCU.pdf, [11 Aug 2014]

MEYS (2013a) Guidelines Strategy of Educational Policy to 2020. Available: http://www.vzdelavani2020.cz/images_obsah/dokumenty/strategie-2020_web.pdf, [11 Aug 2014].

MEYS (2013b) Information Material to Guidelines Strategy of Educational Policy to 2020. Available: http://www.vzdelavani2020.cz/images_obsah/dokumenty/podkladovy_dokument_kulaty_stul.pdf, [11 Aug 2014].

Morgan, K. (2007) The learning region: Institutions, innovation and regional renewal, *Regional Studies*, vol. 41, no. supp.1, pp. S147-S159.

MRD (2014) Integrated Regional Operational Programme for the programming period 2014 – 2020. Available: http://www.strukturalni-fondy.cz/getmedia/efbf37b5-1ff3-4b17-87c2-f79e07d1b996/PD-IROP-09072014.pdf, [18 Aug 2014]

NNLAG (2011) National strategic plan LEADER 2014+. Available: http://nsmascr.cz, [11 Aug 2014].

NNLAG (2012) Community-led local development in the Czech Republic. Available: http://nsmascr.cz, [11 Aug 2014].

NNRCS (2012) Strategy of National Network of Rural Community Schools to 2020. Available: http://www.branaprovenkov.cz/images/dokumenty/strategie/strategiensvks_aktualizace2012.pdf, [11 Aug 2014].

NNRCS (2014) National Network of Rural Community Schools. Available: http://www.branaprovenkov.cz/komunitní-skoly/seznam-komunitnich-skol, [18 Aug 2014].

Sanders, M. G. (2003) Community Involvement in Schools – from Concept to Practice, *Education and Urban Society*, vol. 35, no. 2, pp. 161-180.

Shucksmith, M. (2000) Endogenous Development, Social Capital and Social Inclusion: Perspectives from LEADER in the UK, *Sociologia Ruralis*, vol. 40, no. 2, pp. 208-218.

An inquiry into the epidemiological conception of cross-cultural differences

Ludek Kolman[1], Ludmila Natovova[2], Hana Chylova[3], Richard Selby[4]

[1, 2, 3]Department of Psychology, [4]Department of Management, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol

kolman@pef.czu.cz; natovova@pef.czu.cz; chylova@pef.czu.cz; selby@pef.czu.cz

Annotation: The paper deals primarily with a new methodological conception on the study and applications of cross-cultural differences in management. As is show in the paper the approach proposed could be used in a wider area, including the role of social and work groups' differences, as well. It goes without saying that the community-led local leadership depends on the quality of mutual communication of the subjects (individuals, work groups and social groups) involved. The conception described in the paper was developed to just this end, originally in the cross-cultural context. Its enlargement brought about by the present authors might be successfully applied to the group differences, as well. That way, it seems the present paper is highly relevant to the CLLL field.

The paper is an inquiry into the possibilities of the epidemiological conception of culture differences. The paper aims to develop this approach by measuring one of its essential variables, cultural representation centrality. The conception is introduced and described in the paper and its importance for the theory and practice of management discussed. The method to measure the variable mentioned is founded on a factor analytical model. The measure described might be thought of as rather crude, however it might help to study cross-cultural phenomena, as well as differences in social and work groups. The procedure proposed might help to widen the scope of available methodology to study the phenomena specified.

Key words: cultural representation; measure of centrality; cross-cultural differences; social group differences; management.

JEL classification: M16 ; M53.

1 Introduction

The paper tries to develop further the theory of cross-cultural differences based not on the differences in value preferences, as e.g. Hofstede (Hofstede et al., 2010) or Schwartz (Schwartz, Bardi, 2001), but on the cognitivist conception of meta-representations, specifically its derivative called by Zegarac the epidemiological conception. This development might be useful in management studies and also in practice. The value-based conceptions make it possible to describe general characteristics of a national culture, however they are lacking in detail. As an example we could use Hofstede's dimension of "Uncertainty Avoidance". According to Hofstede, Hofstede and Minkov (2010, p. 197), strong uncertainty avoidance is associated with speeding and surpassing speed limits on the highways. Germans are rather strong on uncertainty avoidance, the same as are several other Middle European nations (Kolman, et al. 2003). The behaviour of Germans on the highways differs from that of other Middle European drivers, though. The same holds as regards punctuality, which is associated with the same cultural dimension. Germans are punctual, Greeks are not (at least not to the same extent). To understand why manifestations of the same characteristic might differ in different nations would need a new approach. The present authors try to help in its development by proposing a way to measure one key phenomenon of Zegarac's conception, the cultural representation centrality.

The epidemiological conception was developed by Zegarac (2011) as an offshoot of, as he calls it, the cognitive pragmatic perspective on communication and culture. This conception is an advance based on its predecessors in cognitive theory and the study of human interaction (see Goffman, 1964; Sperber, 2000). Zegarac deals with cross-cultural differences and inter-cultural communication in a more general conception of the study of social situations as contexts of social communication and interaction. This aspect of Zegarac's theory is important for the present study as its results point to the applicability of the idea to a wider field than just the cross-cultural area. Such an enlargement of the conception discussed could be assumed quite easily, as Zegarac himself defines a culture in rather broad terms. He (Zegarac, 2011, p. 4) notes that the terms "Cultural" and "Social" are almost synonymous and that he would call "cultural" the things which are relatively stable and widespread. This broad definition is useful for the inquiry we try to present in this paper, as the material we use concerns differences between groups and not differences of culture. Because of this wider understanding it is applicable to community-led local leadership, as well.

The epidemiological conception might be described as an attempt to model ways in which social communication develops the specific character of a culture. The basic idea behind the conception is meta-representation. A meta-representation is a mental representation of another mental representation or, more specifically, a mental representation of some subject, object, event or a state of affairs to which a belief is associated. To present an example, we might start with a political situation in some country. A person living in this country acquired some knowledge of it, and this knowledge is her mental representation of the state of the political affairs in the country in question. The person might like the present situation, or she might hate it, or be afraid about her future because of its consequences. Any one of these beliefs, when associated to the mental representation, will make a meta-representation out of it. Such meta-representations might be shared by several people in a society by people speaking one to the other, writing blogs or papers, making proclamations, etc. This way the beliefs and corresponding meta-representations spread through the populace and are perpetuated there. If the number of people who uphold a specific meta-representation for some non-negligible period of time is large enough, it will make a cultural representation.

For the purpose of this paper we will leave the questions concerning how large is "large" and how long a meta-representation should be upheld to be thought to be "stable" presently. Instead, we would like to point attention to the way in which a cultural representation spreads through a society. It propagates, as Zegarac (2011) describes it, in a similar way to an infection. As flu spreads through the populace, many people are infected, but not all of them. Those, who are infected, suffer diverse degrees of illness. Some are only slightly affected, others suffer badly. In an analogous way a cultural representation is present in individual minds of people sharing a common culture with diverse strength or clarity. It means that even if a cultural representation is an integral part of a specific culture, not all the people recognised as members of the cultural unit concerned will be "affected" by a cultural representation to the same degree. Just this is an important part of the Zegarac's conception. The older theories, e.g. Hofstede's conception (Hofstede, Hofstede, Minkov, 2010), described cultures by characteristics which were expected to be the same for all the members of a cultural group. Zegarac's theory might deal with the same problem in greater detail and, presumably, with greater precision. While in Hofstede's theory a culture is described by means of an aggregate of measures of its positions on culture dimensions, it do not allow for the scatter and dispersion of the individual differences inside the cultural group. Zegarac's conception seems to make possible to study the variety behind the aggregate. The present paper tries to find ways to achieve this end.

As mentioned above, meta-representations differ in the number of cultural/social group members who share them and in their stability in time. These differences might be useful in distinguishing cultural representations to those applicable only to specific social groups. Clearly, cultural representations will be shared by more people and be more stable. Besides these differences Zegarac (2011) introduced another characteristic which seems to be crucial for communication inside and outside of a cultural/social group. This characteristic is centrality of a meta-representation.

As Zegarac (2011) puts it, a cultural representation is central for a culture group, if it is causally efficacious over a large segment of society. As an example he mentions religious beliefs and fashions. Religious beliefs might be very central to the thoughts, feelings and behaviours in a society, whilst fashions are often short-lived and restricted to only a specific socio-cultural domain. The centrality of representation is important as it plays an important role in intra- and inter-cultural communication. The more representations members of a social/cultural group share, which are central to all or most of them, the easier will be their intra-cultural communication and the less easy might become their communication with people outside their group. As an example one might consider the difficulties which sometimes arise for members of professional communities when they try to communicate with the lay public.

Because of its importance in human communication and interaction, centrality of a representation might serve as an important variable in research. However, Zegarac gives no hint as to how and whether the centrality of a representation could be measured. This paper attempts to propose a way to do it. The approach to the centrality measurement put forward here is based on a model example described in the following paragraphs. Its most important aim is to show that centrality could be measured. Better and more feasible procedures to measure centrality, than the one proposed here, might be devised later. Until this happens, the procedure described here might be useful.

The proposed procedure is derived in this paper by means of a model. As it is described in the following paragraphs, the model employs a social group difference instead of culture group difference. So, it deals with a phenomenon which hardly could be called “cultural representation centrality”. Perhaps, it would be proper to call it “a group-difference representation centrality”. However, it is shown below that it is homologous (it takes on the same form) to the Zegarac’s notion. That way the demonstration of the possibility to measure a representation of a group difference establishes a possibility to measure the concept of Zegarac’s theory. Thus the model enables not only to demonstrate a way how Zegarac’s concept might be measured, but to generalize it and to make it applicable to a wider field.

It should be noted at this place, that the tern “representation” is used in more than one context. Zegarac’s cultural representations are employed in a wider theoretical sphere, as mentioned above. Their study is based on the analysis of communication processes, and it is mostly done by qualitative methodology (Zegarac and Spencer-Oatey, 2013). Besides this there are social representations which are dealt with in the older theory of Moscovici (1984) which is based on analysis of linguistic behaviour. Both the conceptions, cultural and social representations have found their use in a wide area of cultural and social group behaviour studies. To name just a few, they were found useful in the study of marketing (Humphreys, 2013); mental health (Harpin, 2013); and in political science (Ching Wan et al., 2010). However, it seems, they were not used in management studies much. Representation is, of course, a general concept and so, in even the narrow sense of what human beings hold in their minds, it could be encountered in different theoretical contexts (see, e.g., Hornbeck and Barrett, 2013) besides those mentioned above.

2 Materials and Methods

Let us assume there is a meta-representation which is to a high degree central to some specific cultural/social group of subjects and, at the same time, not central at all to another group of subjects. If it would be possible to identify and differentiate subjects who belong to one or the other of these groups, a study of differences in centrality of a meta-representation would be possible. The difference between high degree and (almost) no centrality is rather crude as a measurement procedure, however it is a measurement. The procedure to measure centrality of a meta-representation proposed in this paper could be said to be practicable, if the above mentioned assumptions would be met in a real situation.

In the research described the differentiation of the two groups was done by the factor analytical method. Factor analysis enables one to describe differences between individuals and groups by means of coefficients and scales. In this way it might help to describe and analyze differences in centrality of a meta-representation between two or more groups. In the case presented here the groups will be defined by differences in centrality of an efficacy disbelief meta-representation.

2.1 Building a model – a case of disbelief in efficacy

It is generally assumed that efficacy at a work-place is important both for the employer as well as for the employee. However, in our surveys we have identified subjects who seem not to believe that to be efficient makes sense (Michalek et. al., 2006; Kolman et. al., 2011, 2012). This phenomenon we have dubbed efficacy disbelief. In this paper the efficacy disbelief meta-representation will not be analysed in greater depth (a comprehensive discussion of the term will be given in a separate paper later). However, this meta-representation seems useful to this paper's aims. The argument is as follows: If there are subjects who believe and others who do not believe in the worth of efficacy at a work-place, it is possible to select groups of subjects which differ in their meta-representation of this characteristic.

2.2 The survey

The items used to construe the problem described above were part of a method designed by the present author and his collaborators (Kolman, et. al. 2011, 2012). The items were applied as part of a survey dealing with work motivation and work-related values and attitudes.

The survey sample size was N=512. The sample structure, as goes about socio-demographic characteristics, approximated a representative sample of the general population of subjects in their productive years in the country at large: There were the same number of men and women; the ages of subjects were: 29% in 21 to 30; 60% in 31 to 50 and 10% were older. 60% were high school and 26% University graduates (see Table 1).

Table 1: Ages and education of subjects

Ages of subjects	Highest education level reached		
Below 21	8	---	---
21 to 30	148	Below high school	71
31 to 50	307	High school	306
51 and above	49	University	133

The research instrument mentioned was designed to measure attitudes to work in general (Kolman, et al., 2012). Three of its items are relevant to the present model development. In all the three cases the question started with "How probable it is that …". These items were, as follows:

- var00025: if an employee works exceedingly well, the manager would not notice it;
- var00027: if an employee is on good terms with her manager, her co-workers will be wary of her;
- var00031: if somebody is good on the job, it will be a benefit to those who are not as good.

These three items might be used to build a scale which we dubbed "a disbelief in efficacy scale".

3 Results and Discussion

Table 2 shows the results of a factor analysis (FA) of the survey data concerned, in which only structure coefficients (factor loadings) larger than 0.3 are presented. The FA was implemented as a principal component analysis followed by a Varimax rotation. The three items introduced above form together the second factor. So, the efficacy disbelief scale could be identified with the second factor derived by the analysis, as presented in Table 2.

Table 2: Results of factor analysis

Factor	1	2	3
Var00023			0,847
Var00024			0,673
Var00025		0,603	
Var00027		0,681	
Var00028			0,496
Var00029	0,689		
Var00030	0,663		
Var00031		0,611	
Var00032		0,764	
Var00033	0,666	0,337	
Var00034	0,713		

In the second factor, three variables may be found with structure coefficients higher than 0.6, and one variable with a structure coefficient slightly higher than 0.3. The first three variables are the items which were introduced above and all of them, if answered positively, would convey a negative understanding of efficacy. The fourth variable of a lesser structure coefficient (0.337) acquired a much higher structure coefficient in the first factor and thus it could be left out in the description of the efficacy disbelief scale, as discussed in this paper.

In general, FA results in finding new (latent) variables called factors. The original variables could be used to form a scale on which a latent variable could be measured. In the present case the FA resulted in finding three latent variables. The second latent variable (the second factor) is a combination of the three items which are introduced above in connection with the efficacy disbelief. If it could be demonstrated that the efficacy disbelief is a meta-

representation, it will mean that the efficacy disbelief scale which was extracted as a second factor in the analysis of data, as described above, could be used to measure the centrality of this meta-representation. This demonstration could be provided in the way as follows:

Proof: Efficacy at a work-place is a representation of a state or an event in the environment. Disbelief is a belief connected to it by a group of subjects. A meta-representation is a representation plus a belief connected to it. Because of it efficacy disbelief is a meta-representation.

The belief is strong in subjects who score at one pole of the scale and the opposite holds for subjects scoring at the other pole of this same scale. It follows, that groups of subjects who score on the opposite poles of the scale differ in the strength of their belief and, consequently, in the centrality of the aforementioned representation.

Zegarac's approach might remind one on social representations of Moscovici (1984), especially as it goes about his description of the ways by which cultural representations spread in a society. However, there are fundamental differences between the two conceptions in methodology. Žegarac aims at the study of cultural phenomena function both in cognitive and communicative acts. In his conception, in the difference to the older approaches, Zegarac stresses the importance of situation and context in which these acts happen. On the other hand, study of communicative acts and of use of words, as was the case with Moscovici's approach, might lead to better understanding of meta-representations in general and of cultural representations specifically. So, both the approaches might be combined and used together. Perhaps the study of the phenomena mentioned might even lead to other methods of measurement of cultural (social group) representation centrality than the one proposed in this paper.

4 Conclusions

The paper deals with an attempt to widen the scope of the methodology of the research on management and organizational behaviour. Methodology in general and measurement procedures specifically seem to be the most important devices to gather and organize new knowledge (Aguinis et al., 2009). Cultural representations of Zegarac might add to the prospects of research on management and organizational behaviour in studying cultural, as well as social groups' differences. The same, as present authors hope, might hold for the method proposed in this paper.

Measurement of a representation centrality might be a useful tool for a more detailed analysis of cross-cultural differences. In the conceptions like those of Hofstede (op. cit.) and Schwartz (Schwartz & Bardi, 2001) the whole of a society is considered to bear some kind of character and it is hardly possible to discern the differences inside the society. Measurement of a representation centrality might help to study the diversity inside a cultural group. Another problem in dealing with how the measurement of a representation centrality might help concerns the analysis of diverse manifestations of similar (general) cultural characteristics in behaviours, feelings and thoughts of nationals of different countries. Some nations are more similar than others in general cultural character, however this similarity might, as it seems, manifest itself differently. That this really is the case was exemplified in the introduction to this paper.

Actually, the approach discussed in this paper might be useful not only in the understanding of differences between two or more cultural and/or social groups, but might also help in understanding intra-group diversity. The model we have used to demonstrate the possibility of measurement of centrality is based on findings which show that in the case described, there

exists diversity in understanding a specific characteristic of a group of subjects. To know more about the role and functions of intra-group diversity would be useful both in theory and practice of management, as it might be a decisive factor in the intra-group dynamics. Intra-group dynamics may be assumed to play an important role in any group development, whether in growth or decline. It is important, as well, in understanding of teams' functioning, and thus in management of teams.

The interpretation of the research results presented in this paper seems are in accord with Zegarac's description of meta-representations, and his epidemiological conception of cross-cultural differences. Zegarac's approach and the use of meta-representation as a conceptual tool appear to be useful instruments not only in analysis of cultural and sub-cultural differences, but also in analyses of differences of groups of other kinds. Studying and understanding social and work-group differences is for management and other practical purposes as important as the study of cross-cultural differences. Because of this, the method proposed in this paper might be found to be useful even for other purposes.

References

Aguinis, H., Pierce, C. A., Bosco, F. A. and Muslin, I. S. (2009). 'First decade of Organizational Research Methods: Trends in design, measurement, and data analysis topics.' Organizational Research Methods, 12, 69–112.

Albero, R. and Pievi, N. (2013). Semiotic methodology for the analysis of the cultural and individual dynamics of social representations: A view from cultural psychology. Papers on Social Representations. 22 (2), 1 – 29.

Ching Wan, Kim-Pong Tam, and Chi-Yue Chiu (2010). 'Intersubjective cultural representations predicting behaviour: The case of political culture and voting. Asian Journal of Social Psychology. 13 (4), 260 – 273.

Goffman, E. (1964) 'The neglected situation'. American Anthropologist, 6 , 133-136.

Harpin, A. (2013). Revisiting the puzzle factory: Cultural representations of psychiatric asylums. Interdisciplinary Science Reviews. 38 (4), 335 – 350.

Hofstede, G., Hofstede, G. J. and Minkov, M. (2010). Cultures and Organizations. Software of the Mind. New York: McGraw Hill.

Hornbeck, R. G. and Barrett, J. L. (2013). 'Refining and testing "counterintuitiveness" in virtual reality: Cross-cultural evidence for recall of counterintuitive representations.' International Journal for the Psychology of Religion. 23(1), 15 – 28.

Humphreys, A. (2013). Framing the game: Assessing the impact of cultural representations on consumer perceptions of legitimacy. Journal of Consumer Research.40 (4), 773 – 795.

Kolman, L. (2007). 'Cross-cultural research and reliability.' In: L. Kolman (ed.) Komunikace mezi kulturami. [Cross-cultural communication]. Praha: Alfa, 201-212.

Kolman, L. and Chylova, H. (2011). Work motivation theories: A semiotic analysis. Agrarian Perspectives. September 13 – 14, 2011. CULS: Prague, 217 – 222.

Kolman, L., Noorderhaven, N. G., Hofstede, G. and Dienes, E. (2003) 'Cross-cultural Differences in Central Europe.' Journal of Managerial Psychology, 18, 76-88.

Kolman, L., Rymesova, P., Chylova, H. and Gralton, L. (2012). Motivace, produktivita a zpusob zivota [Motivation, productivity and ways of life]. Praha: Linde.

Michalek, P., Chamoutova, H., Kolman, L., Chamoutova, K. and Rymesova, P. (2006). Motivace pracovni cinnosti a kvalita zivota pri praci na ceskem venkove – cast II. [Work motivation and working life quality in the Czech countryside – part II]. Psychologie v ekonomicke praxi, 41, 185-191.

Moscovici, S. (1984). 'The phenomenon of social representations.' In: R. M. Farr, S. Moscovici (Eds.), Social representations. Cambridge: Cambridge University Press, p. 76.

Schwartz, S. H. and Bardi, A. (2001). 'Value hierarchies across cultures: Taking a similarities perspective.' Journal of Cross Cultural Psychology, 32, 268-90.

Sperber, D. (ed.), 2000, Metarepresentations A multidisiplinary perspective. Oxford: Oxford University Press.

Zegarac, V. (2011) 'A cognitive pragmatic perspective on communication and culture.' In: D. Matsumoto (ed.): APA Handbook on Intercultural Communication. Washington, D.C.: American Psychological Association, 3 – 22.

Zegarac, V. and Spencer-Oatey, H. (2013) 'Achieving mutual understanding in intercultural project partnerships: Cooperation, self-orientation, and fragility.' Intercultural Pragmatics. 10 (3), 433 – 458.

Rural Development, Multifunctionality and Agriculture: The Perspective of Czech Farmers

Ondrej Konecny[1]

[11]Department of Regional Development and Public Administration, Faculty of Regional Development and International Studies, Mendel University in Brno, třída Generála Píky 2005/7, Brno, 613 00, the Czech Republic
ondrej.konecny@mendelu.cz

Annotation: Although the agriculture/farmers cannot be seen as crucial sector/actors of rural development, their importance is not negligible. Currently, some popular concepts of the development of the transforming rural space – concept of the OECD (2006), bottom-up approach of community-led local development and implemented LEADER method - understand farmers as important factor of rural development and emphasize the need of connection of the key actors in the rural areas and the need of their own participation and initiation of the development of rural areas. The changing position of agriculture and the differentiated rural areas is also reflected in the theoretical approaches trying to explain this transformation with agriculture seen as one of the sectors and industries in the rural areas which can ensure the sustainability of rural households and the quality of life in rural areas through combination of agriculture and other activities (tourism or other services) in the frame of multifunctionality concept. Therefore the present paper opens the questions of how Czech farmers reflect their position in the rural areas (particularly in the context of multifunctionality) and whether they understand this issue only through the narrow sectoral focus (agricultural development) or whether they perceive it as a complex dimension connected to rural development. To answer these questions, the presented sample research was conducted in the autumn of 2013 among 73 farmers when 30% of participating farmers cultivated an area smaller than 50 ha, while only 21% of the respondents reported 80% of captured agricultural land. Based on the sample research findings, farmers are largely familiar with a comprehensive view of the Czech rural space in the context of multifunctionality in agriculture. They reflected position in the broader socio-economic and environmental context of the area where farms are localized. On the other hand, acceptance of their own agricultural activities in relation to the primary function of agriculture in connection with multifunctionality - the production of agricultural commodities, was identified as a very strong too.

Key words: Agriculture, farmers, rural areas, multifunctionality, rural development, the Czech Republic

JEL classification: R58

1 Introduction

Development in rural areas shows that the social and economic situation of these areas is only partially related to the development of agriculture. Although a farmer still remains the most important user of rural land, as well as a decisive factor in the landscape maintaining and protection of the environment (Bednaříková, 2009: 41), the number of people employed in agriculture has been gradually declining in the last twenty years. Therefore, farmers are seen not only as food producers, but also as rural entrepreneurs involved in the management and maintenance of the landscape.

Thus, the creation of links between economic (agricultural and non-agricultural), social (sense of belonging and needs of the rural population) and the natural environment (landscape and ecology)(Pělucha, Viktorová and Bednaříková, 2009: 56) and connecting of individual actors of the rural space should be seen as a condition for successful rural development. These preconditions are already reflected in the introduced paradigm of rural development by the OECD (2006: 14-15) emphasizing the role of local actors in rural areas (residents, entrepreneurs, farmers, representatives of public administration and local government) in the

development of the area, the LEADER method applied under the Rural Development Programme (Binek et al., 2011) and community-led local development (CLLD) supported by European Union in the current programme period (2014-2020)(Soto and Ramsden, 2014).

In analogy to the theoretical approaches concerning rural development mentioned above, concepts focusing on development of agriculture reflect the changing position and importance of agriculture. Following the concept of productivism and post-productivist transition (Bowler and Ilbery, 1998), multifunctional mode/transition/period is formulated to explain the observed changes, especially in the agricultural system (Wilson, 2001; Wilson, 2008). Some authors extended it to describe the changes in the rural area in the frame of multifunctionality (Holmes, 2006; Marsden and Sonnino, 2008; Renting et al., 2009; Wilson, 2010). Discussion of the multifunctionality could be understood as a framework for the ongoing trend of rationalization and intensification of agricultural production driven by production-oriented policy and trade liberalization (Cairol et al., 2009), but also occurring with post-productivist practices, supported by agricultural policy.

The multifunctional agriculture is therefore seen as agriculture not only producing food and raw materials for industry, but also as tools for maintaing a sustainable countryside, renewable natural resources, protecting biodiversity, creating jobs and contributing to the vitality of rural areas (Potter and Burney, 2002; Cairol et al., 2009, Renting et al., 2009). Therefore, in the frame of this concept, agriculture is considered as one of the sectors and industries in the rural areas, which can ensure the sustainability of rural households and the high quality of life in rural areas through combination with other activities (for example tourism or other service).

Therefore, the present paper opens the questions of how Czech farmers reflect their position in the rural areas[25] (particularly in the context of multifunctionality) and whether they look on this issue only through the narrow sectoral focus (agricultural development) or whether they perceive their agricultural activity in a more complex point of view of rural/local development. To answer these questions, the research was conducted in the autumn of 2013 with 73 participating respondents (farmers).

2 Materials and Methods

Opinions and attitudes of Czech farmers to multifunctionality in agriculture were captured by sample research which was managed as a component of the long-term work and interest of the author in this field of study (see eg. Věžník and Konečný, 2011; Konečný, 2013; Konečný, 2014). The sample research was conducted in October 2013 applying the following procedure. The author of the article prepared a set of questions composing three research topics: multifunctionality in agriculture (1), changes in farming and factors determining the changes (2) and the importance of the Common Agricultural Policy for agriculture (3). Appropriateness of interview questions was first tested upon the answers of four relevant respondents in the pilot research. Based on the findings, the answer sheet was finalized into a form that was used for the collection of attitudes and opinions of Czech farmers in the research.

Since the data collection was organized in the framework of the educational training of students of the course “Marketing in Regional Development” (study program Regional Development and Entrepreneurship at Mendel University in Brno), the questionnaire and

[25] In presented article, rural space is simply understood as opposite to city (rather as a social construct) and as an area distinguished in many strategic documents (for example RDP) and therefore rural area is not strictly defined by statistical and other indicators in this paper (see Svobodová et al., 2011).

sample research was introduced to students which were trained in the method of recording and questioning (personal interview) and in the selection of respondents. Participating respondents were selected by students (i.e. research cannot be indicated as representative), however, the selected respondent was required to fulfill these criteria – the respondent had to represent a person employed/active in the agricultural sector, either as a representative of the legal entity or as a private farmer. Agriculture had to represent the respondent´s sole or main activity (main income), or it could be their secondary activity generating at least 30% of their income. Except the vineyards, the respondent had to cultivate at least 5 ha of agricultural land.

All students who enrolled to this sample survey (participating of students in the research was voluntary), conducted it in October 2013 and handed in two completed record sheets with the names indicating the agricultural subject (this identification was used only for verification of the respondent – the survey results are summarized and survey is anonymous). Based on the verification of the fulfillment of the given criteria, answers of 73 respondents were analyzed (7 respondents were excluded).

The present article is based on three questions focusing on the farmers´ perception of multifunctionality in agriculture:

1) Stating the four words/phrases which the farmer connotes to the term of multifunctionality in agriculture (in case they did not know the term, they could leave the relevant field blank).
2) Nominal question with 16 options (respondent could mention unlimited number of characteristics, which connect with multifunctionality in agriculture).
3) Opinion question on a 1-to-5 bipolar scale showing the degree of agreement/disagreement with 12 prescribed statements (1 standing for definitely agree and 5 definitely disagree; 3 standing for indecision).

Based on the analysis of the identification questions, the set of respondents can be described via the following characteristics:

- Respondents farmed more than 60 thousand hectares.
- 30% of participating farmers cultivated an area smaller than 50 ha, but 21% of respondents reported 80% of captured agricultural land.
- 33% of cultivated land was located in some of the less favoured areas (LFA) for agriculture.
- 82% of the land of farmers was represented by the arable land and 15% of respondents possessed vineyards due to the fact that half of the respondents were localized in the South Moravia Region.
- However, respondents were situated in eight Czech regions.
- Half of the participating subjects had a status of legal person.
- 92% of respondents reported agriculture as their sole or main activity.
- At least one head of cattle was mentioned by 48% of respondents.

3 Results and Discussion

The sample survey among agricultural subjects revealed that the term of multifunctionality is probably known, since only 4 of the 73 respondents did not provide an express of any association. Respondents could indicate a total of 292 connections with the term (each respondent could mention 4 connections), when unfilled boxes remained only in 55 cases

(19%). The analysis could not count with a 38 connections/words that were not classified and accounted because vague assertion or „nothing saying password“. A total of 199 word/phrases association with the term multifunctionality in agriculture were evaluated in analysis.

3.1 Associations with the term multifunctionality

The word associations with the term multifunctionality in agriculture were first classified into 20 categories that clustered closely those words and then these narrow categories were grouped into 6 basic "broad" categories. Evaluating first the more numerous groups, the most significant associations with the multifunctionality in agriculture recorded were landscape maintainance (12% of captured phrases), associations linking agriculture and rural development were mentioned in 11% of cases and the perception of multifunctionality as an expression of sustainable and organic farming with emphasis on the environmental aspects of farm activities were reported in 20 cases.

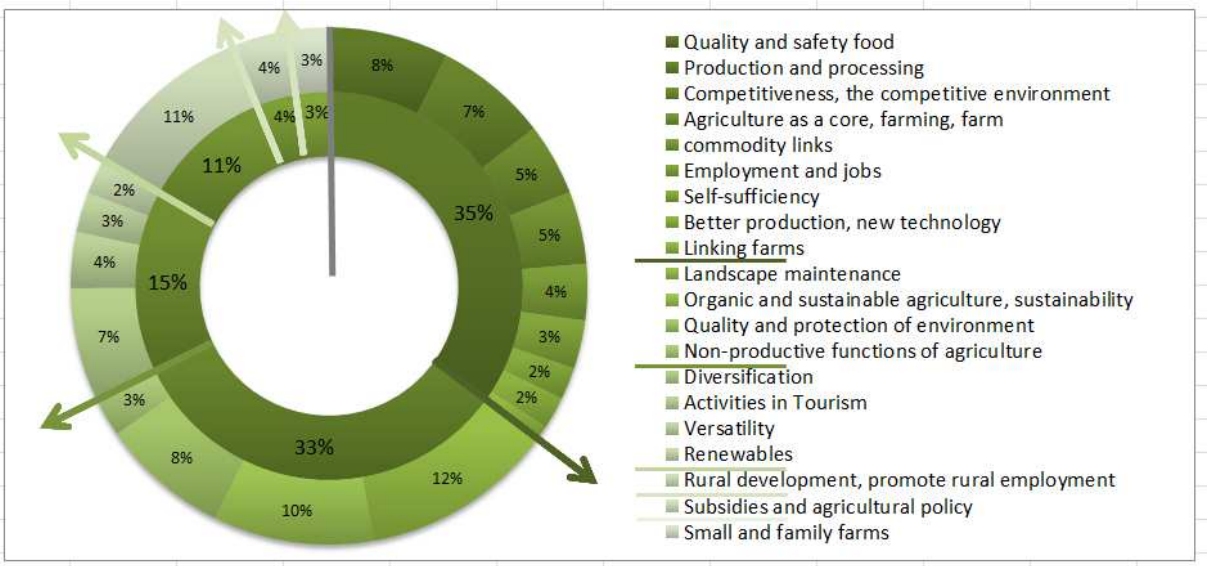


Fig. 1 Perception of the multifunctionality in agriculture according to farmers (based on stating words or connections associated with this term)

Although the connection between the production of quality and safe food and multifunctionality was captured as the fifth most frequent category, in a more general perspective more than one third of word connections could be associated with persistent focus on basic agricultural activity - the production of commodities and the effort to succeed in the market. The second third of the associations emphasizes environmental aspects of farming and sustainability not only in agriculture, but also in the case of the landscape maintenance and the environment. Promotion and expansion into other activities accounted for 15% of associations with the term of multifunctionality in agriculture.

These findings were confirmed even in cases when the respondents were asked to choose an unlimited number of options which they connect with the term of multifunctionality in agriculture. Landscape maintenance appeared in the responses of more than four fifths of the farmers and at least two thirds of respondents also linked term to rural development and production of quality food.

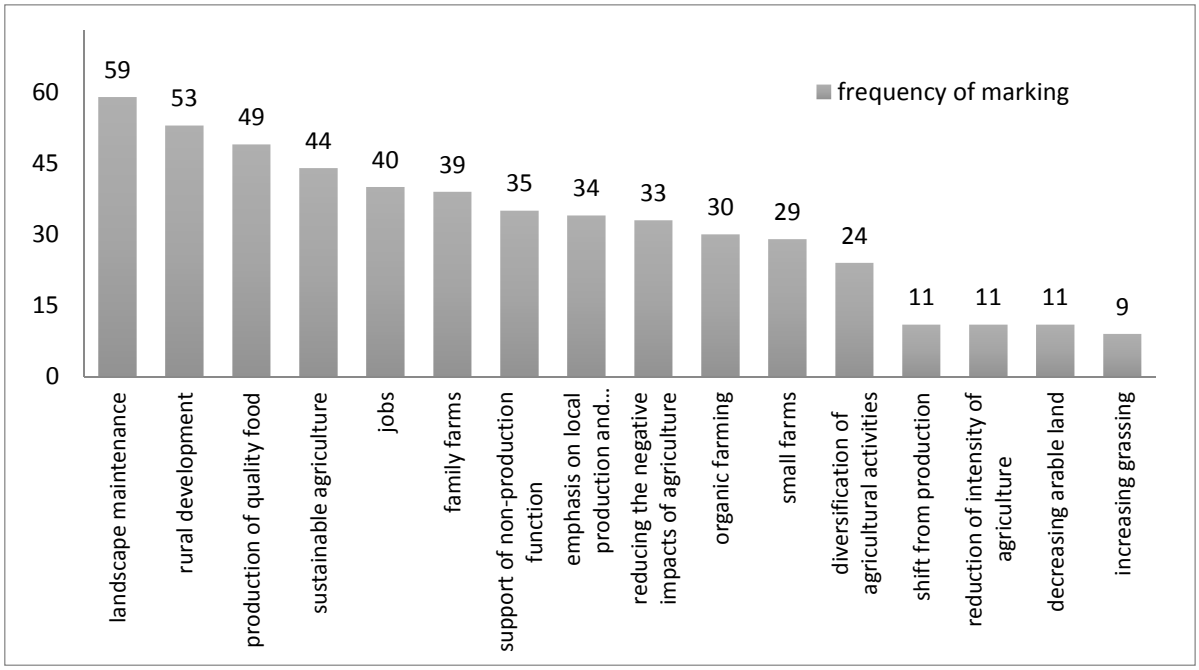


Fig. 2. The connection of predefined arguments to the term of multifunctionality in agriculture according to farmers (based on the selection of an unlimited number of characteristics)

Awareness of the importance of farming for the respondents is also evident from the high frequency of connection with the creation of jobs, and vice versa from the low representation of responses such as the shift from production, reduction in intensity of agriculture and increasing extensification expressed in changes in the land use (decrease of area of arable land, increase of grassing) - those statements were identified by less than one fifth of the respondents.

3.2 Perception of rural development and agricultural activity

In relation to rural development and to the farmers´ own reflection of their position as important actors of the development of this area, it can be mentioned that in the view of 34 farmers, multifunctionality in agriculture can be connected with the development of the local economy through local production and consumption. With regard to the above mentioned findings (first question), high level of association of multifunctionality with family farms seems surprising. It was stated mainly by representatives of private farmers – more than two-third of farmers named it, while in the case of legal persons only 20% of this group of respondents selected this opportunity.

The emphasis on agricultural activity is most apparent in the level of agreement of the respondents with the prepared statements. Almost an absolute agreement was reported in relation to the statement that multifunctionality in agriculture stands for the production of quality food (1), a way of maintaining the importance of agriculture within the Rural Development Program (2) and maintaining jobs in the rural areas (3). Significantly favourable opinion was captured in the case of identification of multifunctionality as multifunctional agriculture which might explain the high degree of agreement on the above mentioned point no. 2 – since multifunctional agriculture is strongly supported by Rural Development Program. High average values and thus approving opinion can be further observed again in the case of environmental aspects of agricultural production.

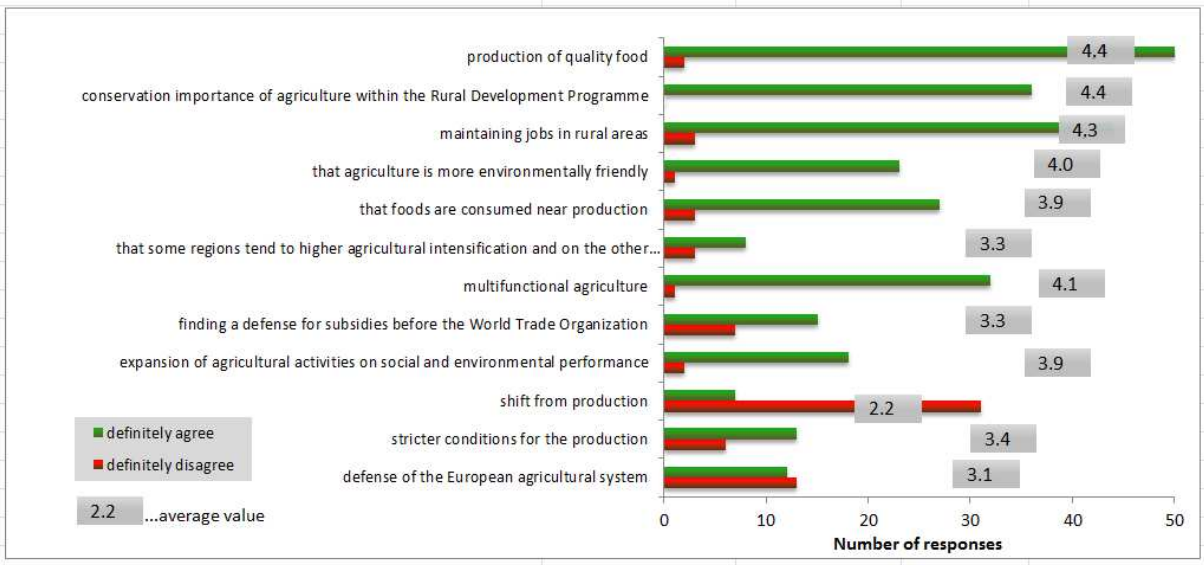


Fig. 3. The degree of opinion with the statement relating to the term of multifunctionality in agriculture according to farmers (marked on the five-point scale; the extreme position and average value is showed).

The most obvious disagreement is clear in the case of the statement that multifunctionality in agriculture means *"the shift from production"* - the answer *"definitely disagree"* 4.4-fold exceeded the number of extremely favourable opinions. Another such prevalence of dissenting opinions was identified in the case of the statement that multifunctionality in agriculture means *"defence of the European agricultural system"* .

4 Conclusion

Nowadays, farmers are not already considered as crucial, however important actors in rural development, with rural space being increasingly described as a multifunctional space with different functions (Svobodová et al., 2011). Therefore, agriculture is seen as one of industries strengthening and maintaining viable rural economy by ensuring jobs linked to the production of agricultural commodities (OECD, 2006; Soto and Ramsden, 2014) and at the same time it is credited for landscape maintenance. These assumptions form a partial basis for a discussion concerning multifunctionality in agriculture, or more precisely in the whole rural area, which many authors set as a framework for explanation of observed changes in farming systems and rural areas (for example Holmes, 2006; Wilson, 2008; Cairol et al., 2009).

Therefore, some questions suggest themselves – e.g. how farmers define their own function in the context of promoting of the multifunctionality in agriculture, how they perceive this term and whether they connect it with the rural area, or whether they remain deeply rooted in production practices affecting their view of multifunctionality as a way to support agriculture production function or production itself.

The present contribution cannot provide an unequivocal answer to these questions, however, the sample survey results reveal that the three pivotal connections with multifunctionality in agriculture according to the farmers' perception were the following - perception of multifunctionality as maintaining of the importance of farm production through the production of quality and safe food securing existence of farm(1), accentuating the environmental aspects of production (e.g. landscape maintenance) and the emphasis on the sustainability of agriculture (e.g. organic farming)(2) and as a way of engaging in rural development for example through diversification of the rural economy by extending its offer or providing job opportunities for local inhabitants(3). Farmers were aware of their position as

actors of rural development which can be documented for example in perception of multifunctionality in agriculture in connection with strengthening of the local economy through local production and consumption and the aforementioned environmental functions of agriculture forming a rural area.

Acceptance of their own agricultural activities in relation to the primary function of agriculture in connection with multifunctionality - the production of agricultural commodities, was also reported as very strong, which supports the opinion of a number of authors that the discussed issue of multifunctionality is appropriate since this concept does not deny the existence of productivist practices of a number of farmers and regions oriented to intensive agricultural production and their gradual strengthening (eg. Walford, 2003). This assumption opens the question whether even in the Czech Republic, the polarization between regions with weak and strong multifunctionality in agriculture could be observed, and justifies further research in this field of study focusing on regional differentiation of agriculture development in the Czech Republic.

Acknowledgements

The research "Multifunctionality as an approach to the development of differentiated rural areas" was supported by the Internal Grant Agency (IGA) of Faculty of regional development and international studies of Mendel University in Brno (2014).

References

Bednaříková, Z. (2009) 'Vývoj a nástroje politiky rozvoje venkova v České republice', *Regionální studia*, vol. 3, no. 1, pp. 34–42.

Binek, J., Svobodová, H., Chabičovská, K., Holeček, J., Galvasová, I. and Martének, J. (2011) *Paradoxy rozvoje venkova – Kritické zhodnocení bariér, nástrojů a šancí rozvoje venkova*, Brno: GaREP.

Cairol, D., Coudel, E., Knickel, K., Caron, P., A. and Kruger, M. (2009) 'Multifunctionality of Agriculture and Rural Areas as Reflected in Policies: The Importance and Relevance of the Territorial View', *Journal of Environmental Policy & Planning*, vol. 11, no. 4, pp. 269-289.

Holmes, J. (2006) 'Impulses towards a multifunctional transition in rural Australia: Gaps in the research agenda', *Journal of Rural Studies*, vol. 22, pp. 142-160.

Ilbery, B. W. and Bowler, I. R. (1998) *From agricultural productivism to post-productivism*. In: Ilbery, B. (ed.): The geography of rural change. Essey: Addison Wesley Longmann Limited, Essex. 57 – 84 p.

Konečný, O. (2013) 'Multifunkcionalita: geografie, venkov, zemědělství'. Proceedings of *Výroční konference České geografické společnosti: Nové výzvy pro geografii*, Brno, pp. 182-189.

Konečný, O. (2014) 'Geographical perspectives on agritourism in the Czech Republic', *Moravian Geographical Reports*. vol. 22, no. 1, pp. 15-23.

Marsden, T. and Sonnino, R. (2008) 'Rural development and the regional state: Denying multifunctional agriculture in the UK', *Journal of Rural Studies*, vol. 24, pp. 422-431.

OECD (2006) *The New Rural Paradigm – Policies and Governance*. Paříž: OECD Publications.

Pělucha, M., Viktorová, D. and Bednaříková, Z. (2009) ‘Možnosti nastavení efektivní politiky pro rozvoj venkova v Evropské unii’, *Acta oeconomica pragensia*, vol. 2009, no. 5. pp. 53–69.

Potter, C. and Burney, J. (2002) ‘Agricultural multifunctionality in the WTO - legitimate non-trade concern or disguised protectionism?’, *Journal of Rural Studies*, vol. 18, pp.35-47.

Renting, H., Rossing, W. A. H., Groot, J. C. J., Van Der Ploeg, J. D., Laurent, C., Perraud, D., Stobblelaar, D. J. and Van Ittersum, M., K. (2009) ‘Exploring multifunctional agriculture. A review of conceptual approaches and prospects for an integrative transitional framework’, *Journal of environmental management*, vol. 90, pp. 112-123.

Soto, P. and Ramsden, P (eds.), (2014) *Guidance on community-led local development for local actors*, European Commission.

Svobodová, H., Konečný, O., Binek, J., Galvasová, I., Chabičovská, K., Holeček, J., Věžník, A. and Hynek, A. (2011) *Synergie ve venkovském prostoru*. Brno: GaREP.

Věžník, A. and Konečný, O. (2011) ‘Agriculture of the Czech Republic after Accession to the EU: Regional Differentiation’, *Moravian Geographical reports*, vol. 19, no. 1, pp. 50-60.

Walford, N. (2003) ‘Productivism is allegedly dead , long live productivism. Evidence of continued productivist attitudes and decision-making in South-East England’, *Journal of Rural Studies*, vol. 19, pp. 491-502.

Wilson, G. A. (2010) ‘Multifunctional “quality” and rural community resilience’, *Transactions of the Institute of British Geographers*, vol. 35, no. 3, pp. 364-381.

Wilson, G. A. (2001) ‘From productivism to post-productivism ... and back again? Exploring the (un)changed natural and mental landscapes of European agriculture’, *Transactions of the Institute of British Geographers*, vol. 26, no. 1, pp. 77-102.

Wilson, G. A. (2008) ‘From “weak” to “strong” multifunctionality: Conceptualising farm-level multifunctional transitional pathways’, *Journal of Rural Studies*, vol. 24, pp. 367-383.

Measures of a General Nature in Selected Areas

Renata Korcová[1], Sylvie Kotásková[2]

[1]Department of Law, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
korcova@pef.czu.cz

[2]Department of Humanities, FEM, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6 – Suchdol
kotaskova@pef.czu.cz

Annotation: A general measure represents the institute, which was established in the Czech legal order by Act No. 500/2004 Coll., Administrative Procedure Code (hereinafter "the Administrative Procedure Code"), based on international experience and on the Building Act, or on the territorial planning documentation regulated by it. A typical example of a general measure is a spatial plan. A spatial plan is the most common conceptual instrument for spatial planning, it establishes the basic concept of the development of the municipality, the protection of its values, its area and spatial arrangement (so-called "urban concept"), layout of the landscape and concept of public infrastructure with an emphasis on the security and development of the human system. The selected municipality that was examined for the purpose of this article is Prachatice, i.e. in accordance with the Constitution of the Czech Republic. The purpose of this paper is to characterize the institute of measures of a general nature and to describe particular forms of its use in selected area which is one municipality in the South Bohemian Region. This form of public administrations activity is an instrument which regulates certain situations with indefinite amount of subjects and is to be announced by a public notice by the administrative authority. This paper also deals with the Czech judicature connected to this legal area.

Key words: genereal measure, spatial plan, public administration, municipality

JEL code: K23, R58, H83

1 Introduction

A general measure represents the institute, which was established in the Czech legal order by Act No. 500/2004 Coll., Administrative Procedure Code (hereinafter "the Administrative Procedure Code"), based on international experience and on the Building Act, or on the land-use planning documentation regulated by it. This is a public administration measure which is not an abstract act from a legal regulation, or a particular act through a decision. For abstract acts, it is characteristic that they regulate type-determined things relating to non-individualized persons, or both apply. In contrast, specific acts, i.e. decisions and contract-called other administrative acts are characterized by a specifically designated subject, directly intended recipients, or both. However, this does not apply for general measure, as evidenced by the provisions of Section 171, Administrative Procedure Code, in which a negative definition of this institute is contained, and in which it is stated that the general measure "is not a legal regulation or a decision." A general measure thus represents a mixed administrative act with a specifically designated subject, and with a generally defined group of addressees. In foreign literature we encounter the term "general measure", which has the form of an abstract-specific act.

The Administrative Procedure Code is dealing with general measure in its Part Six, i.e. in the provisions of Section 171 to 174. This institute is also mentioned in Act No. 150/2002 Coll.,

Code of Administrative Justice, in its provisions of Section 101a, Section 101b and Section 101d. For general measure the statutory regulation in the case of very terse, and therefore judgements also includes characteristics of general measure, in particular judgment of the Supreme Administrative Court of 27 September 2005, File No. 1 Ao 1/2005 – 98.

The general measure proposal is dealt with by an administrative body with the authorities concerned, which are both authorities for which a special law is laid down, and for administrative authorities and other public authorities competent to issue a binding opinion or expression that is the basis for the decision of the administrative authority. Proceedings for a general measure proposal are always written, unless a special law stipulates otherwise, or if the administrative authority's decision determines that it will hold a public discussion regarding the proposal.

A typical example of a general measure is a spatial plan. A spatial plan is the most common conceptual instrument for spatial planning, it establishes the basic concept of the development of the municipality, the protection of its values, its area and spatial arrangement (so-called "urban concept"), layout of the landscape and concept of public infrastructure with an emphasis on the security and development of the human system. Furthermore, it defines built-up areas, areas and corridors, in particular buildable areas and areas defined for a change in the existing built-up area, for restoration or reuse of degraded areas (so-called "surface reconstruction") for public works and measures, and for land reserves, and sets out the conditions for use of these areas and corridors. It creates conditions for building and sustainable development of the territory. A spatial plan is drawn up and issued for the entire territory of the municipality. It is issued in the form of a general measure pursuant to the Administrative Procedure Code.

The selected municipality that was examined for the purpose of this article is Prachatice, i.e. in accordance with the Constitution of the Czech Republic.

The purpose of this paper is to characterize the institute of measures of a general nature and to describe particular forms of its use in selected area which is one municipality in the South Bohemian Region. This form of public administrations activity is an instrument which regulates certain situations with indefinite amount of subjects and is to be announced by a public notice by the administrative authority. This paper also deals with the Czech judicature connected to this legal area.

2 Materials and Methods

General measure represents the institute which was implemented in the Czech Legal Order by Act No. 500/2004 Coll., Rules of Administrative Procedure (hereinafter "the Regulations"), on the basis of foreign experience and the Building Act, or the approval of zoning planning documentation stipulated by this Act. The Rules of Administrative Procedure came into force on 1 January 2006; the previous Rules of Administrative Procedure from 1967, did not know this institute.

This is a measure of public administration, which is not a law as an abstract act, or a decision as a particular act, but rather it is a transitional form. For abstract acts, it is characteristic that they govern type-determined things, relate to non-individualized entities, or both apply at the same time. Adversely, specific acts, i.e. decisions and so-called other administrative tasks (i.e. statements, certificates, notifications and other similar acts of administrative authorities) are characterized by a specifically designated subject, directly determined recipients, or both. However, this does not apply for general measures, as evidenced by the provisions of Section

171 of the Rules of Administrative Procedure, which contains a negative definition of this institute, which states that a general measure "is not a legal regulation or a decision." This is confirmed by the explanatory report to the government draft of the Rules of Administrative Procedure (Parliamentary Document No. 201), which characterized general measures as "*a special type of action of an administrative authority toward an unspecified number of affected people, which lies on the border between the decision and the legal regulation."* The aim of this new legal regulation was that "*the persons concerned are guaranteed minimum procedural rights also if the action of the administrative authority regards their interests, although the parties cannot be specifically identified."* In addition to inspiration in foreign legal regulations, the explanatory report states that the incentive for implementing general measures also arose from the fact that *" it already appears under other names in specific legal regulations, and that the modern understanding of public authorities being bound by the law tends to lead to the persons concerned having guaranteed minimum procedural rights also if the action of the administrative authority regards their interests, although the parties cannot be specifically identified."* The actual draft of the law then contained its definition of a general measure, which stated that *"the general measure is an act of an administrative authority in a particular matter which directly affects the rights, obligations or interests of an unspecified group of people."*

Via Act No. 50/1976 Coll., on Land-use Planning and Building Order (Building Act) as amended until 31 December 2006, (hereinafter the "Old Building Act"), the land-use plan (here the land-use plan of a municipality) was defined as a document that "defines the urban concept, deals with acceptable, unacceptable or conditional functional use of spaces, their organization, determines basic regulation of territories and specifies the borders of the development areas of the municipality" (Section 10, paragraph 1). In the provisions of Section 29, the Old Building Act distinguished between binding and indicative parts of the land-use plan. The binding part of land-use plan contained the fundamental principles of the organization of territories and its usage limits, expressed in regulations, and it was a binding basis for preparing and approving related land-use planning documentation, and for decision-making in territories; the indicative part was defined as a supplement to the binding part.

General measures represent a mixed administrative act with a specifically-intended subject and with a generally-defined group of addressees, i.e. the area between the two traditional forms of unilateral administrative acts: the normative (abstract) and individual (specific). In foreign literature we encounter the term "general measures," which has the form of an abstract -specific act.

The Rules of Administrative Procedure discuss general measures in their sixth part, i.e. in the provisions of Sections 171 to 174. Act No. 150/2002 Coll., Code of Administrative Justice, also talks about this institute in its provisions of Section 101a, Section 101b and Section 101d. The legal regulation in the case of general measures is very reserved, and thus rulings also include characteristic of general measures, in particular the Judgment of the Supreme Administrative Court of 27 September 2005, Ref. No. 1 Ao 1/2005 – 98, which states that *"a general measure is an administrative act with a specifically designated subject (i.e. applies to a specific situation) and with a generally-defined group of addressees. If an act is only formally designated as a general measure, but from a material perspective does not meet the terms of its conceptual features (concreteness of subject, generality of addressees), the Supreme Administrative Court will cancel it upon the petitioner's objection (Section 101d, Paragraph 2 Code of Administrative Procedure)."* The same decision also states that *"a general measure cannot replace a sub-statutory law creation nor can it impose new obligations over and above the law; it serves only to specify the existing obligations under the law, and not to impose new obligations which the law does not contain."*

This institute therefore constitutes an act sui generis - a special type of act that can be carried out by an administrative authority, i.e. executive authorities, municipal or regional bodies or other authorities and other bodies, individuals or legal entities when carrying out powers in the area of public administration. General measures cannot impose obligations on their recipients over and above the law. This has a major impact on national security, protection of the population to cope with various risks and threats (Kavan et al., 2014, p. 10).

The proposal of general measure is discussed by an administrative authority with the affected bodies, which are both bodies set out by a special law, as well as administrative authorities and other public authorities competent to issue a binding opinion or statement that is the basis for the decisions of the administrative authority. The proceedings on the proposal of a general measure are always in writing, unless a special law sets out otherwise, or an administrative authority decides that a public hearing of the proposal will take place. *"A public hearing is then usually ordered if the proposal deals with subject of regulation by a general measure for which there is public interest in regulating it, or if it is appropriate and expedient due to its nature."* The proposal is served via a public notice published for at least 15 days, and the relevant persons are also invited to comment or object on the proposal. It applies that general measures cannot be appealed; only within a review procedure can the compliance of the general measure with legal regulations be assessed. According to the Rules of Administrative Procedure, the resolution of the initiation of the review procedure can be issued within 3 years from the time when the general measure becomes effective. The reason for the impossibility of lodging an appeal is the nature of the general measure, which is different from other administrative acts and the process of issuing general measures, which is different from issuing a decision or any other administrative act.

The issue of cancelling a general measure or part thereof is regulated within Act No. 150/2002 Coll., Code of Administrative Procedure. Within administrative justice, to these proceedings are competent regional courts. In their decisions they asses the compliance of the general measure with the law, and whether the entity who issued it proceeded within the limits of its powers and jurisdiction, and whether the general measure was issued in a manner determined by law.

An appeal against the decision of the regional court is a cassation complaint on which the Supreme Administrative Court decides.

According to the aforementioned ruling of the Supreme Administrative Court from 27 September 2005, References No. 1 Ao 1/2005 – 98, the procedure of the court review of the general measure takes place via the following steps:

- review of the powers of the administrative authority to issue a general measure,
- review of whether during the issuing the administrative authority did not exceed its powers set out by law,
- review whether the general measure was issued via a procedure set out by law,
- review of the content in terms of the variance of the general measure, or part thereof, with the law,
- review of the content of the issued general measure in terms of its proportionality.

A typical example of a general measure is the land-use plan. According to Section 18 of Act No. 183/2006 Coll., on Land-use Planning and Building Regulations (Building Act), the aim of land-use planning is *"to create conditions for construction and sustainable development of a region, consisting of balanced relationship of conditions for a favourable environment, for economic development and cohesion of the residents of the community of the territory that meets the needs of the present generation without compromising life conditions of future generations."* This provision further states that *"land-use planning provides a basis for the*

sustainable development of the territory via systematic and comprehensive solutions for the efficient use and spatial organization of the territory, with the aim of achieving a general beneficial compliance of public and private interests in the development of the territory. For this purpose it monitors the social and economic potential of development." The land-use plan is the most common conceptual territorial planning instrument. It establishes the basic concept of the development of the territory of the relevant municipality, the protection of its values, its area and spatial arrangement (so-called "urban concept"), arrangement of the countryside and the concept of public infrastructure. It further defines built-up areas, spaces and corridors, in particular buildable areas and areas designated for changes to the existing buildings, the restoration or reuse of a devalued area (so-called "redevelopment areas") for public works and measures, and for land reserves, and it also sets out the conditions for use of these areas and corridors. It creates conditions for construction and sustainable development of the territory. The land-use plan is drawn up and published for the entire territory of the municipality. It is issued in the form of a general measures according to the Rules of Administrative Procedure.

3 Results and Discussion

The selected municipality which was examined for the purpose of this article is the town of Prachatice, i.e. in accordance with the Constitution of the Czech Republic, a municipality which is located in the Southern Bohemian Region. The town of Prachatice is situated near the south-western border of the Czech Republic and consists of 8 cadastral territories (the cadastral territories of Prachatice, Staré Prachatice, Libínské Sedlo, Perlovice, Kahov, Oseky, Volovice, Stádla). The surrounding area of the town consists of foothill highlands with the dominant peak Libín (1096 m above sea level). The Živný creek flows through the town Prachatice, and the Blanice river and Husinecká dam are located west of the town. As of 31.12.2013 the town of Prachatice has a total of 11,219 inhabitants. This is a municipality with an authorized municipal office and a municipality with extended powers. Prachatice has a non-binding document called the Strategic Development Plan of Prachatice for 2010-2014, which includes a systematic, long-term and comprehensive approach based on the consensus of local officials and citizens, and which is based on a shared vision of a common future. It optimizes the use of human and financial resources via the long-term monitoring of a pre-defined goal. Prachatice has been involved in the strategic planning of its development since 1996. The specified strategic plan sets out the town's development priorities, a joint development vision and resulting measures. The strategic plan also includes an intended new land-use plan for the municipality.

There are 21 council members in Prachatice. During the regular municipal election in 2010, 221 people ran for office in the council. A total of 11 candidate lists were created, and with the exception of "Suverenita-blok J. Bobošíkové," all of the candidate lists were fully occupied (i.e. had 21 candidates). The voter turnout in Prachatice was 48.16%, which corresponds to the national average. The highest number of votes was received by the Czech Social Democratic Party (24.76%); it received six mandates. The Civic Democratic Party won 17.78% of the vote and four mandates. The "Pro (for) Prachatice" association of independent candidates also received four mandates with 14.74% of votes. Ing. Martin Malý of the Civic Democratic Party was elected the mayor of Prachatice for the term of office 2010-2014. Ing. Bc. Robert Zeman of the "Pro Prachatice" independent association was elected deputy mayor.

The land-use plan for the settlement unit of Prachatice was publicized via a general measure. It was approved by the town council on 31 October 1994 for part of the cadastral territory of Prachatice and Staré Prachatice. Since its approval in 1994, the land-use plan has been

updated six times. The power of the authority of the land-use plan within the organizational structure of the Municipal Office of Prachatice is ensured by the administrative department of construction and regional development. Via a general measure, the town council issued a determination of the built-up territory of Prachatice. The proposal included built-up building plots, building vacant lots, parts of roads from which there are entrances to other land plots of the built-up territory, as well as other public areas and other land plots that are surrounded by other land plots of the built-up territory, with the exception of vineyards, hop fields and gardening land plots.

The legal definition of a land-use plan is specified in Act No. 183/2006 Coll., on Land-use Planning and Building Order (Building Act), where in Section 43 it is stated that a *"land-use plan sets out the basic concept for the development of the territory of a municipality, the protection of its values, its area and spatial arrangement (hereinafter the "urban concept"), arrangement of the countryside and public infrastructure concept; definition of a built-up area, areas and corridors, in particular buildable areas and areas defined for a change in the existing built-up area, for restoration or reuse of degraded areas, (hereinafter "surface reconstruction") for public works and measures, and for land reserves, and sets out the conditions for use of these areas and corridors. Matters of supra-local importance which are not addressed in the territorial development principles can be part of the land-use plan, unless the regional office rules it out in its statement pursuant to Section 50, paragraph 7, for reasons of substantial negative effects extending beyond the boundaries of the municipality."* The land-use plan of Prachatice sets out an urban municipality concept, permissible or impermissible functional use of individual areas and their arrangement, and provides basic regulation of the territory. The land-use plan includes a proposal for transportation solutions, solutions for technical equipment for the territory containing in particular a proposal for water and power facilities. It also provides conditions for the protection of all natural, civilizational and cultural values of the territory.

The most relevant goals that have already been implemented and that are proposed in the land-use plan are as follows:

- Revitalization of the former barracks for housing and commercial purposes,
- Reconstruction of the former District Construction Company and its surroundings,
- Expansion of the Prachatice wastewater treatment plant,
- The industrial area near Krumlovská Street

Goals proposed in the land-use plan to be implemented include, of example:

- Building of family homes in the Pod Cvrčkovem locality,
- Completion of the Šibeniční vrch housing development,
- The industrial area near Těšovice,
- Reconstruction of the Sv. Markéta (St. Margaret) Spa and Kandl's Mill,
- Completion of the northern part of Vodňanská Street,
- Construction of a new wastewater plant for Staré Prachatice and Ostrov.

4 Conclusion

This paper dealt with the acts of administrative authorities that do not represent the issuing of legal regulations of territorial administrative units, or issuing of decisions. These are acts that have various legal effects and consequences. They do not directly affect the spheres of

subjective rights and responsibilities of specific persons; for general measures the sphere of such persons concerned is not specifically designed. Checking is carried out via administrative judiciary. This paper dealt with regulation via general measures in a selected municipality, the Southern Bohemian town of Prachatice.

Acknowledgements

This paper was supported by the grant project IGA 20141049 - "Politické a správní aspekty rozvoje venkova v novém období regionální politiky (2014-2020)", governed by the Czech University of Life Sciences.

References

Hendrych, D., et al. (2012) Správní právo, obecná část. C. H. Beck, ISBN: 978-80-7179-254-3.

Kavan, Š. Et al. (2014) Bezpečnost společnosti v podmínkách Evropské unie. 1. vyd. České Budějovice: Vysoká škola evropských a regionálních studií, 179 s. ISBN 978-80-87472-72-9.

Ondrouš, R. (2005) Správní řád, nový zákon s důvodovou zprávou. Linde, ISBN: 80-7201-523-0

Act No. 150/2002 Coll., Code of Administrative Procedure, as amended.

Act No. 500/2004 Coll., Rules of Administrative Procedure, as amended.

Act No. 183/2006 Coll., Land-use Planning and Building Order (Building Act), as amended

Ruling of the Supreme Administrative Court from 27 September 2005, Ref No. 1 Ao 1/2005 – 98, published in the Collection of Decisions of the Supreme Administrative Court No. 1/2006; Decision No. 740.

Strategic Development Plan for the Town of Prachatice for 2010 to 2014, Prepared by the Prachatice Town Council, administrative department of construction and regional development, Novmeber 2009.

Officail website of the town of Prachatice, [online] available at: http://prachatice.eu/ [cit. 15. 8. 2014].

Parliamentary Document No. 201. 201, Parliament of the Czech Republic, Chamber of Deputies 2003, 4th election period, [online] available at: http://www.psp.cz/sqw/text/tiskt.sqw?o=4&ct=201&ct1=0 [cit. 15. 8. 2014].

Land-use plan of the Town of Prachatice, [online] available at: http://mesto.prachatice.cz/n_mu_up.html [cit. 15. 8. 2014].

Cultural dimensions and institutionalized values in rural communities development

Růžena Krninská[1]

[1]Department of Management, Faculty of Economics, University of South Bohemia in České Budějovice, Studentská 13, 370 06 České Budějovice, Czech Republic
krninska@ef.jcu.cz

Annotation:

This article aims to find shared values in communities, which may manifest as institutionalized features of societies associated with „rules of the game" existing within these communities and try to define them by means of cultural dimensions and to analyse their significance in the rural societies development. In the South Bohemian Region there were selected two villages with similar fundamentals of cultural traditions, but with different socioeconomic characteristics. They differed significantly in the state of material security and municipal infrastructure. In both villages a quantitative research was conducted by means of a questionnaire method to determine a state of the local communities. In addition a qualitative research using the Test for colour semantic differential (TBSD) was conducted. It can be modified to reveal shared values in the community. The article is based on research conducted within the research project *Socioekonomický vývoj českého venkova a zemědělství* registered with the Ministry of Labour and Social Affairs under registration number 1J016/0-DP2 in relation to particular aspects of the project *Studium ekonomiky rozvoje venkova na JU v Českých Budějovicích* registered with the Ministry of Education under registration number GB .1.07/2.2.00/07.0178.

Key words: Rural communities, cultural dimensions, shared values, institutionalized values.

JEL classification: R19

1 Introduction

The quality of human resources in the community, especially its management, which should be aware of the links between regional, natural and cultural conditions in relation to sustainability, has a decisive influence on the development of the region. The knowledge economy, associated with the transformation of labour to the human capital, brings connection between economic, social, and environmental culturological aspects to the development of the regions. It is also called an integrated or holistic approach.

The reason for this approach is the globalizing world of the third millennium. The contents of the revolutionary tendencies of globalization can be compared to the changes that took place during the Industrial Revolution. The world is entering a new phase - the education or the „knowledge economy", which accelerates the ability to transform knowledge into a new context, understanding knowledge and skills of people as „human-" and then as an „intellectual capital", which has become a driving force for further development (Truneček, 2004).

In the approach of rural development, stability and sustainability of regions is desirable that in development of rural communities it was worked with a wide variety of approaches to knowledge. Education in relation to the development of human capital should be related to areas of professional training and development of personal potential, but also to understanding of the cultural traditions of the region. The significance of the functionality of rural communities is for example associated with multi-level governance, or with multi-level model of management of natural resources, which is considered by many contemporary scholars to

be more sustainable than previously enforced state or private solutions (Holátová, Krninská, 2012).

One of the academics who was promoting new approaches was Professor Elinor Ostrom of Indiana University in the USA, who was awarded, along with Oliver Williamson, with Nobel Prize for economics. This Economist takes the approach that – „Institutions matter“. These institutions can be understood as „rules of the game“ (resp. limitations) that regulate interpersonal interaction. Institutions are distinguished: they can be formal - laws (starting with the constitution), social norms – and casual: emerging spontaneously and historically - such as customs, traditions, conventions, morals, ethics, language, money, market. Institutions influence actions of individuals and can largely shape their expectations and goals (Holátová, Krninská, 2012). The method she had developed Ostrom (2003) - the method of institutional analysis - became the basis for a new school of thought - i.e. Institutional ecological economics.

According to Mlčoch in Hudečková, Lošťák, Ševčíková (2006) institutional arrangements inside and outside of the society have a direct impact on regional development from the perspective of regional economics. Social institutions are connected with the local culture, customs, traditions and other established ways people interaction that get an institutionalized form as a family, various clubs, associations, etc. The way regional authorities work, in other words which cultural norms are embodied in institutions in a particular area (for example people consider it normal to work without a contract), gives a space to the institution of illegal employment or to the black market, underground economy, etc. What is the role of family and what are the positions and activities of NGOs, of the civil society, all of it affect the development of the region.

The effectiveness of institutional structure of certain region or of the whole country is becoming more and more recognized as an important factor for regional development. This factor has at least the same effect on the development of the region as traditionally presented material factors such as infrastructure (Hudečková, Lošťák, Ševčíková, 2006).

If a responsibility for regional policy is to have a real chance of success in post-communist countries, it is necessary to create institutional and structural assumptions. It is associated with the creation of natural communities and support their development, whose absence hinders the possibility of shifting in a new direction (Krninská, Duspivová, 2013).

2 Materials and Methods

Both quantitative and qualitative research was conducted at two villages in order to determine the state of the local communities and shared values manifesting in cultural dimensions selected by Hofstede (1994).

The first village is a *larger one*, it has about 1 500 residents, lies about 30 km from the German border on the international highway connecting the capital of the Czech Republic with a major border crossing. The village belongs to the historical territory of Prácheňsko. It doesn’t belong to communities near the border, which have been significantly colonized by Germans in the past. The village is accessible to all the usual types of transportation - bus and rail. There is also an industrial production. In addition, the village has a relatively good infrastructure (including sidewalks and a waste water treatment plant). The size of the village is related to existence of a primary school with lower and higher levels of education and to existence of a kindergarten. The village provides a permanent GP.

The second village is smaller, it has fewer than 500 residents, it has important cultural traditions and is located at a distance of 20 km from the regional capital, where sources of

employment opportunities can be found. Insufficient number of bus lines is focused only on the county seat. Due to its smaller size, this village has an insufficient amount of funding to ensure good technical infrastructure. The village has a school with only lower level of basic education. Medical care is associated only with a doctor's field office during certain hours and days of the week. The selection of the sample for the quantitative research was conducted by random sampling of households. The size of the selected sample was adequate to the size of the complete sample. Questionnaires were distributed to selected households. And their return was 34.8% in the smaller village and 25.8% in the larger village.

A qualitative research using the Test for colour semantic differential (TBSD) has been also conducted in both villages. It can be modified to reveal shared values in the community, which are a prerequisite for the institutional aspects in a society. TBSD is included among the methods used in the Czech psychological diagnosis. TBSD can be effectively used in all fields of psychology, where it is necessary to diagnose personality. And can be used especially for capturing the social relationships of man, including his individual value system. With TBSD one can evaluate the hierarchy of values, both conscious and unconscious aspects of individuals and society (Ščepichin et al, 1992). It is therefore useful in the social and culturological sphere in identifying shared values in societies (community), which are the basis of the institutional aspects. For the processing of data obtained from TBSD a VADIM computer software and a TBSD Result Appraisal 2.0b have been used. With their contribution the most often associated symbols (stimulus words) in society have been found, which express commonly shared values of the community.

3 Results and Discussion

3.1 The results of the research of cultural dimensions at the local level in municipalities in connection with institutionalized aspects.

The research used the distribution of cultural dimensions by Hofstede (1999), in which he included the identified shared values expressed in the corresponding stimulus words - symbols. In this framework it has come to concretization of prevailing institutional aspects in the two mentioned communities (municipalities).

The order of (1-60) shared values (associated symbols) in the community of the larger village is shown in the Chart 1. In the smaller village, the order of shared values (symbols) is illustrated in the Chart 2. The charts are used to describe a hierarchy of shared values within the cultural dimensions of Hofstede (1994).

Large power distance versus low power distance

Symbolic stimulus words representing power are perceived rather positively in the greater village compared to the small village where they are perceived rather negatively. In the larger village within the stimulus words representing of power distance within the value order is the word power highest in ranking. In the smaller village is institutionalized low power distance with the institution of trust, which is for them very high in the ranking order.

Individualism versus collectivism

In the larger village the individualism is rather institutionalized. In contrast, in the smaller village the society (community) is oriented to collectivism. It is demonstrated by following stimulus words: society, love, friends and cooperation, which are very positively shared by the community and are also very positively perceived at the very top in the hierarchy of values in the following order: friends, society, love, cooperation. A stimulus word company is in the first place in the ranking order of shared values, therefore it is the most shared symbol

of the community. A stimulus word friends is also in the first place in the ranking order of shared values.

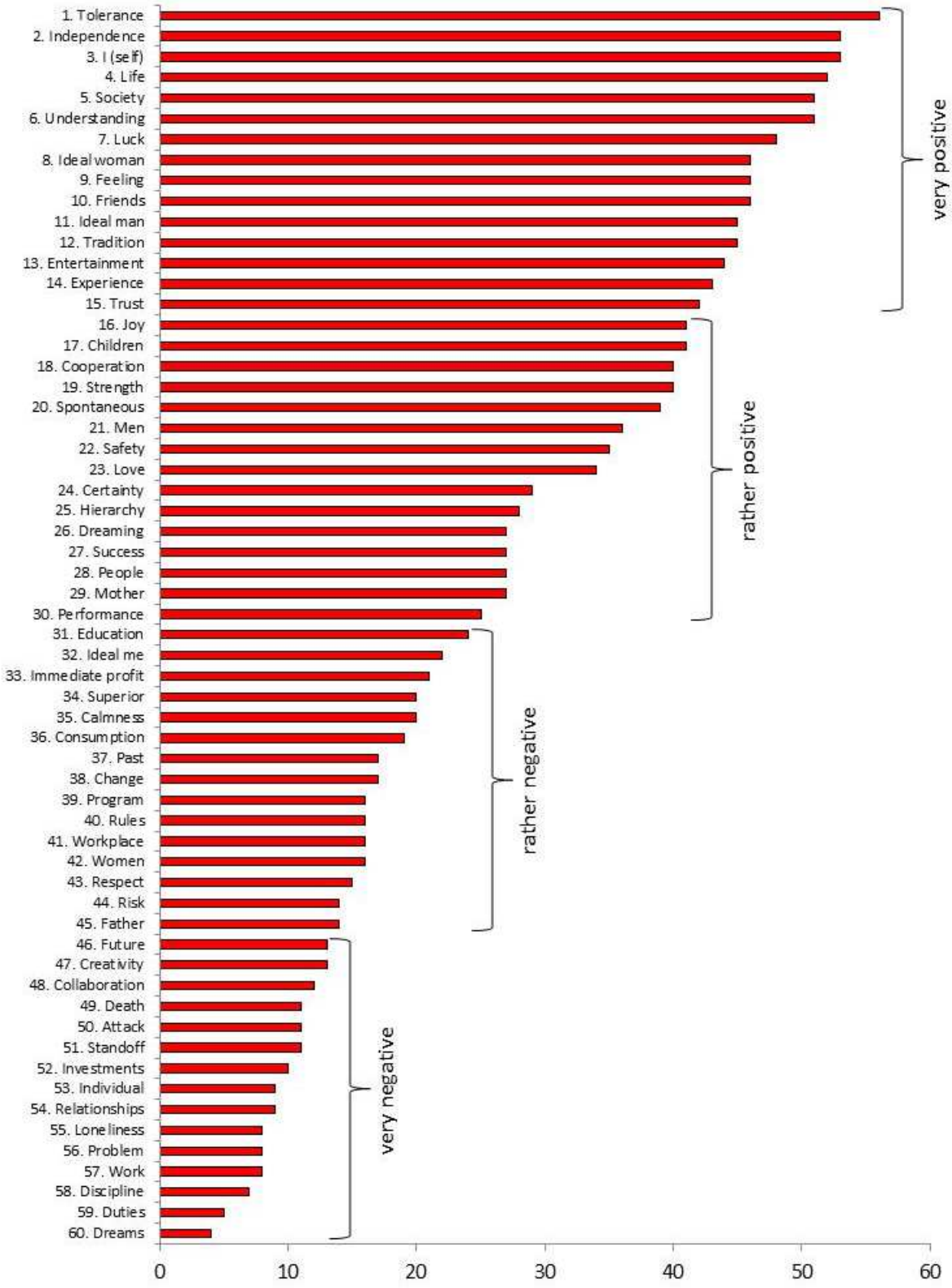


Chart 1 The order of shared values (associated symbols) in the community of the larger village

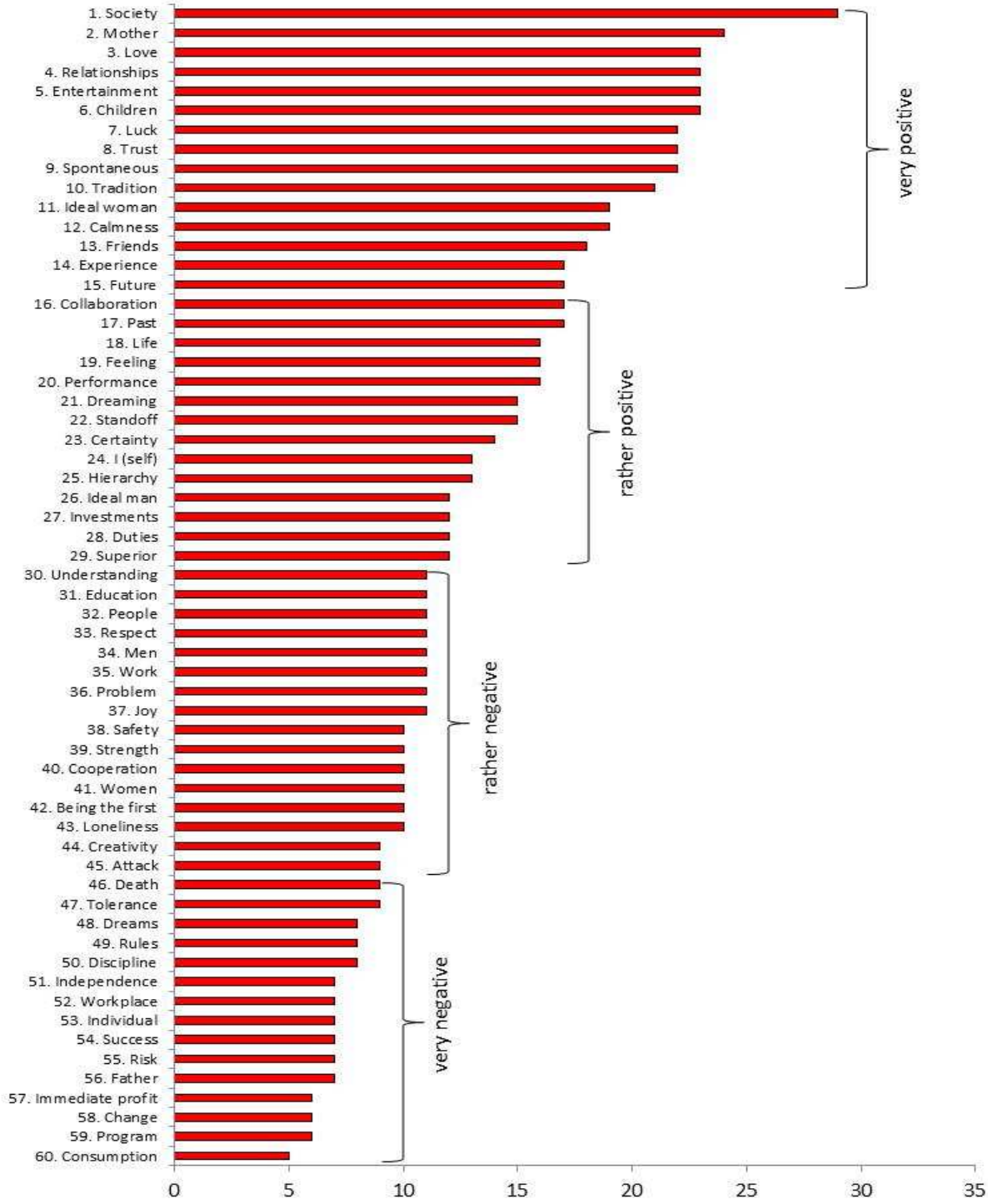


Chart 2 The order of shared values (associated symbols) in the community of the smaller village

Masculinity versus feminity

The larger village could be described as a community presenting itself as a tolerant, rather masculine society. The smaller village acknowledges feminine values much stronger and also gives less importance to masculine values. In the smaller village there is feminine cultural dimension institutionalized. Very surprising is the finding that the village once famous for the

miraculous painting of the Madonna is still sharing and experiencing the symbol of mother (after the word society it is the most shared symbol), which is thus institutionalized in this community.

Short-term orientation versus long-term orientation

Both societies in both villages are rather long-term oriented, more significantly the smaller village. The small village community is strongly institutionalized to long-term orientation dimension. The results show a surprisingly unambiguous conclusion, that a strong link with the traditions predetermines a long-term perspective of life in the future. It confirms the reality of this village that the community lives very intensely in the area linked to strong millennial traditions in connection to the natural order and the natural environment (which the results of the survey confirm).

Strong uncertainty avoidance (certainty) versus weak uncertainty avoidance (risk)

In the larger village a cultural dimension of certainty is rather institutionally accepted. But taking risk is not strongly negatively avoided. In a small village it is specific to reject risk in the sense of mere risk-taking, along with the rejection of restrictive rules that would suppress creativity, which opens to the community a suitable way to solve a problem. It's kind of a proven good middle way, where through creativity it is possible to accept changes and solve problems when at the same time rejecting major risk and rigid rules.

3.2 The results of the survey by questionnaire method to determine the objectivistic state of the communities in the surveyed villages.

Interview conceived all major areas of rural life. The introductory part contained identification data, followed by seven thematic areas: mobility of human resources, employment, education, civic amenities, including transport services, interest in culture, satisfaction with the appearance of the village and interpersonal relationships in the village.

Table 1 Summary of factors of socioeconomic characteristics of selected villages

Selected factors of socio-economic characteristics of municipalities	**Rating of the factor strength[1)]**	
	Smaller village	**Larger village**
Job opportunities in the village	insufficient	sufficient
Transport services	weak	sufficient
Technical Infrastructure	insufficient	sufficient
Civic amenities - education	weak	sufficient
Civic amenities - Medical Care	insufficient	sufficient
Satisfaction with interpersonal relationships	weak	weak
Link to the traditions	weak	weak
Link to the natural environment	weak	sufficient

Source: processed data of Popeláková (2009)

Table 2. Evaluation of human relationships in communities

Rating	**Results in percentage**	
	Smaller village	**Larger village**
Very good	18	0
Rather good	65	48
Rather bad	7	23
Bad	0	14
I'm not interested	10	25

Despite the smaller village suffers all the drawbacks of material-technical elements, its residents are much happier with interpersonal relationships (Table 2).

Benefit of this research is the finding that the connection of culture, traditions and natural environment with interpersonal relationships is significant and has an overall stabilizing effect on rural communities. The smaller village suffering of poor material-technical factors becomes due to the strong cultural traditions more stable than the larger village with sufficient material and technical base. Old folk customs unite the people, improve interpersonal relationships and are transferred to the village sociality, because the culture is an accumulated experience of the social whole and acts as a controlling component of any social system.

4 Conclusion

In summary, the community of the larger village has rather large power distance with the institutions of power, then there is individualism institutionalized. The community of the larger village lies rather in at the interface between the more feminine and the more masculine cultural dimension (masculinity is associated with tolerance and understanding). Then there is institutionalized the dimension of rather long-term orientation and cultural dimension of certainty. The institutionalization of rather large power distances and individualism may explain the dissatisfaction with interpersonal relationships, which among other things result in tendencies of the inhabitants to leave the village, though all material values including good infrastructure are secured in the village. In contrast, in the smaller village, where ensuring of material values and provision of infrastructure is missing, its residents do not think about moving from the village. The community of the smaller village has institutionalized a small power distance with the institution of trust, collectivism with institution of society sharing and strongly institutionalized feminine society (trust and understanding), strongly long-term oriented, with the institution of traditions. Refusing cultural dimension of risk in the form of rules is associated with strongly perceived creativity as it is a way leading to certainty. Tradition and old folk customs shared throughout the society of the whole community unite the residents, improve interpersonal relationships, and shape the community of the village and its link to the natural environment. Community cohesion is more important than material deficiencies. Residents of the smaller village are not thinking about leaving the village as opposed to residents of the larger village.

The survey results show that the importance of lived cultural traditions in rural areas emerge in the context of cohesion of its societies (communities) and they act as a stabilizer of social and economic development (also of the communities) and its sustainability in the particular area.

References

Hofstede, G. (1994) VMS 94 - manual (english) [online]. [cit. 2013-08-16]. Cited from: < http://feweb.uvt.nl/center/hofstede/manual.html >.

Hofstede, G., Hofstede, G. J. and Minkov, M. (2010) Cultures and Organizations: Software of the mind. 3. vyd. New York: McGraw-Hill, ISBN 978-0-07-166418-9.

Holátová, Krninská et al. (2012) Lidské zdroje v rozvoji venkova. Praha: Alfa nakladatelství.

Hudečková, H., Lošťák, M., Ševčíková, A. (2006) Regionalistka, regionální rozvoj a rozvoj venkova. Praha: PEF ČZU, ISBN 80-213-1413-3.

Krninská, R., Duspivová, M (2013) Corporate Culture in Management of Small and Medium-sized Enterprises. Zagreb: Innovation Institute. Konference Global Business Conference, Opatija.

Ostrom, E., Ahn, T. K. (ed.), (2003) Foundations of Social Cupital. Cheltenham: An Edgar Reference Collection, ISBN 184064-827-9.

Popeláková, L. Kulturologické aspekty rozvoje lidských zdrojů a stabilizace venkovských regionů. České Budějovice: Jihočeská univerzita.

Ščepichin, V. Ščepichinová, J. and Kolářová, H. (1992) Test barevně sémantického diferenciálu. České Budějovice: Nakladatelství Vadim.

Truneček, J. (2004) Znalostní podnik ve znalostní společnosti. Praha: Professional Publishing, ISBN 80-86419-35-5.

Community Clues: Investments and Products

Zdeněk Linhart[1], Vladimír Hönig[2]

[1]Deparment of Management, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6, Czech Republic
linhart@pef.czu.cz

[2] Deparment of Chemistry, Faculty of Agrobiology, Food and Natural Resources, Czech University of Life Sciences Prague, Kamycka 129, 165 21 Prague 6, Czech Republic
honig@af.czu.cz

Annotation: Use of many small and cheap member's instruments (Ie) developing innovations (In) have improved community performance over institutional (Io) investments and business (b) offers according to equation Ie + In > b + Io. Okazaki's (2010) finding that soft-sell (SS) ads appear more often than hard-sell (HS) is used for draining of purchase power by b usually. Here, Ie promoted by HS arguments hidden in SS testimonials (T) was found in stressful situations of booming wastes and lacking resources in seven observed cases of In projects beneficial. HS arguments were derived from cognitive framework of entrepreneurs, consumers, communities and receivers of social support through five step process proliferating attitudes from cognitions according to independent influences hypothesis (IIH).

The most repeated T formulation had trainees implementing Ie of open source software (OSS) in projects, which were competing with distribution channels and adapting metrology to local biodiversity and energy sources. The highest Ie potential had impersonal source of bio-butanol and blast technology for water regulation. T has not sound formulation due to global competition of oil industry and Io flood damage compensation. The highest number of members moved (M) in community of OSS. Standardisation through aggregated projects common denominator of environmental impact and impact of two groups of of understanding to recent and future fears has potential to select more beneficial projects in project tenders.

Key words: Community, institution, instrument, mobility, advertising, brand, testimonial

JEL classification: **O220**

1 Introduction

Szymura and Lapczynski (2012) have found both local isolation and global connectivity beneficial studying three factors of human networking (NET), internationalisation (INT) and innovation (INN). Community is geographically bounded for different purposes than market can solve. Communication about environmental issues in territory of community was studied as common denominator of both global market and local life in seven projects: water, climate, energy, metrology, open source software, biodiversity and diplomacy. Evaluation of environmental impact of any project on nature have set minimum standard or border. Aggregation of projects according Io dominated recent fears (water, biodiversity, diplomacy and metrology) and Ie, In and b future aspirations (climate, energy and open source software) have set minimum standards for border with understanding of individual to own fears and aspirations, which can be efficiently promoted.

Objectives and Methodology

The objective is to shorten time of project acceptance by promotion of environmental needs to community.

2 Materials and methods

2.1 Environmental issues

Pratt (2010) recommends re-balancing policy and academic concern to the intrinsic value of the cultural and creative field. Positivist thinkers advance a philosophy of law that legitimates the laws in question (McGinley, 1981). But, professing to reestablish markets, policies have rather shaped market failures: (1) in the market for land and production assets, through wholesale *in natura* restitution, and the archaic, one-sided stress on property rights as the key input in agricultural production and (2) in the farming staples market, through its indirect support to processing monopolies (Stryjan and Linhart, 1994). Similarly, EU political support of bio-fuels, photovoltaic, bio-gas and other policies have ended due to evidence about bad impact of emissions and recently distorted competition. Not all arguments were wrong and topic of lacking resources will return back soon. Therefore, research question how to re-evaluate habitual and legal barriers when new values of priorities appear was selected. Reestablish trust of public according to Kirchberg and Kagan (2013) have replaced top down approach by found several initiatives housed at the Centro Sociale (such as bike self-repair, veganism and intercultural exchanges), which contribute to sustainable community development from bottom up. Dianoux and Linhart (2007) have tested the contents of communication in function with the Czech or French context. Differentiated impersonal advertising in both countries was confirmed. Other example with suspended replacement of fuels and lubricants by bio-fuels from 10 to 5% shows lost image of renewable source in EU but, but for many companies and consumers not. Opposed to suspended targets for biofuels Hönig (2013) have stressed intrinsic improvements of fuels and engines in period of declined interest in bio-fuels and booming interest and support of biogas and fotovoltaic renewable energy sources. But also biogas production equipment preserving organic matter from farm yard manure with straw in soil and improving yields (Linhart, 1983) is not considered even if its results were competitive with recent technology of liquid based biogas installations destructing biomass. Politicians promote only desired output names but performance values of innovations matter for markets only.

2.2 Cognitive and attitudinal constructs discovered and used

Consumers' attitudes toward an ad (Aad) have offered a critical theoretical construct since 1981, with the publication of two influential articles (Mitchell & Olson, 1981; Shimp, 1981). Following these seminal articles, various studies were dedicated to demonstrating the effects of Aad on brand attitudes and purchase intentions (e.g., Gardner, 1985; MacKenzie, Lutz, & Belch 1986; McKenzie, & Lutz, 1989). Other studies show that Aad notably depends on attitudes toward advertising in general (Muehling, 1987; MacKenzie & Lutz, 1989; Mehta, 2000). AG Muehling (1987) have defined on three items as"very general semantic-differential item pairs" (p.33): My attitude toward advertising is Good/Bad, Favorable/Unfavorable, Positive/Negative). Okazaki et al (2010) shows that international identical advertising campaigns are more oriented around soft-sell (SS) communication than hard-sell (HS) communication. In other words, that means AG is not always a strong predictor of AG toward a specific type of advertising and that we need to measure Attitude toward specific advertising in general (ASG). To measure attitude toward specific advertising in general, we have taken in account:

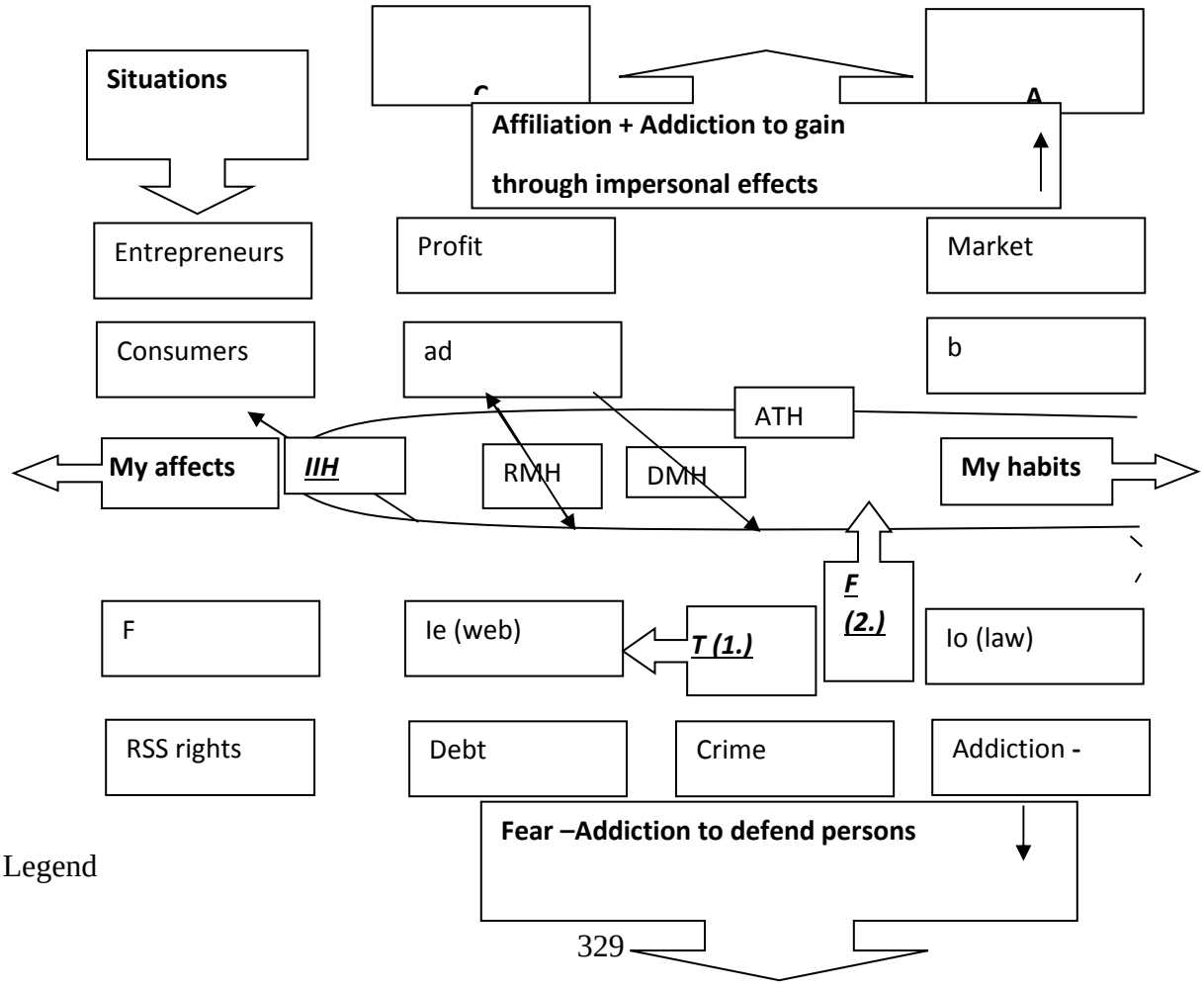
The attitude toward advertising in specific media (Tan, Chia, 2007) and adapted Pollay and Mittal's scale to the billboard media which is studied in this paper (e.g. Overall, I consider billboard ads a good thing).

The attitude toward soft-sell and hard-sell advertising (Okazaki et al., 2010) and we have retained the following items: “In general, how likely do you like or not billboard ads which are (7-point scale: I like very much=7; I totally dislike=1). The attitudes for hard-sell appeal are concrete (Thinking dimension); feature centered (Fact dimension); informative (Fact dimension) and instructive (Explicitness dimension). The attitudes for Soft-sell appeal are entertaining (Image Dimension); visually oriented (Image Dimension); emotional (Feeling Dimension) and abstract (Feeling Dimension). Attitude toward the ad was adapted according to both Okazaki et al. (JA2010 and JIM2010) and the believability and irritation measures (Bhat, Leigh, and Wardlow, 1998): “For you, this ad is rather: (7-point Likert scale with surely disagree=1 and surely agree=7): boring (reversed), irritating (reversed), disturbing (reversed), credible, good, interesting. Moreover we have added the item by MacKenzie, Lutz, and Belch (1986): “To what extent do you like or dislike this ad: (7-point Osgood scale with Like=7; not like=1)” for the experimental ads and for four real ads. These scales were part of training of moderator, who have collected answers and filled table 1.

Research context

Three approaches test ability to develop further or accept projects; firstly, HS and SS form of broadcasted message; secondly wastes and lacking resources as common denominator of projects and thirdly, share of both institutional investments (Io) and instrumental creative destruction (Ie) and business offers (b). Moderator assisting data collection had to know standards and details from all three points of view; for example effects of bio-butanol decreasing polyaromatic hydrocarbons and particles in fuels from wastes on both cognition (C) and attitudes (A) of each of evaluated projects. These standards and details are not presented in this article due to maximum length of seven pages.

Scheme 1: Semantic differential quantifying C and A relationship in communities



Legend

C – Cognition is intent to use broadcasted message for change

A – Attitude is repeatable acceptance or consumption without thinking of it

Io – Advertising considered as Institution. In community, Clarks and rules of institution are maximising collected taxes through punishments, obligatory investments and central and community redistribution

MNC– competing Multinational Corporation

b – Brand is creating image or maintaining loyalty causing repeated purchases

ad – advertisement is information about competitive advantage of competitor

RSS - receivers of social support (kids, retired and non-adaptable)

Ie – instrument is tool making person competitive

T – trust in testimonial is personal experience with Ie advice for SS audience or F

F – community followers are co-operating to fight exclusion

ATH - The affect transfer hypothesis

DMH - The dual mediation hypothesis

RMH - The reciprocal mediation hypothesis

IIH - The independent influences hypothesis says that advertised messages are mostly ignored. But, addiction to synergy effect of ideologies are everlasting. Addictions provoke high performance of individuals until the threshold of collapse is exceeded. Addicts fell out of scheme 1 in right bottom corner. The threshold of bearable addictions with extremely high performance is important outer source of IIH.

AG – attitude general are everlasting affects originating in output feelings, expectations or affiliations (Good/Bad, Favorable/Unfavorable, Possitive/Negative). Orientation of AG on consequences should be replaced by testimonial T to community followers F.

SS – soft-sell ad message with personal arguments (2. – scheme 1) promoting A towards Io

HS – hard-sell ad message with impersonal arguments. HS promotional message causes instrumental C through Ie.

HS through SS promotion exceeds noise strengthenning C (1. – scheme 1) that complement others through Ie T if F reaches M replaces Io and b.

M – movement is measured by number of Ie projects

3 Results and Discussion

Presented answers in framework of Table 1 and 2 were derived from oral and written coaching during development of several projects.

Table 1: ‘Recent’ water, biodiversity, diplomacy and metrology related projects

Select!			Formulate!
A to projects solving fears	C of affiliation stimuli:		T for M
	Io + b	In + Ie	LA / SS, LI / HS
Water, …	Bottled and insurance (b), pipelines (Io).	Root system (In) Runoff/Precipitations (Ie)	Banned mobility of people calls for best of Ie, Io and b solutions.
Personal anchor on taboo – talent scale (LI and LA is the anchor on this scale)	Flood prevention in millions of EUR of invested subsidies (Io - taboo) Collective territorial approaches replacing “greening” CAP rules (b - talent)	Water retention in hills, underground runoff and optical evidence of it (In - taboo) Well-built root system in potted shoots, span for blowing air later (Ie - talent)	LA: of politician: I propose Volume decreased CAP subsidies by volume of flood damages in territory. LA of farmer: I will accept polluter pays principle pointing on rewards or punishments derived from change of downstream damage investing to In. LI: of small farmer: Labor hours are causing competitive both plant and me with farming corporations. LI: Our insurance company reward retention volume of blasts, pools and ponds in comparison with fallen precipitations using Ie.
HS value of impersonal factor in T	Io name is water shed with value of sewage investment and damage compensations. (b) name is “greening” with value of saved costs for recirculation, sorted and sold poisonous sediments	Ie: Indices for happy cycle, cow, farmer and consumer In: Software connecting treatment with optical evidence and prognosis of diseases for multiple purposes of Ie.	SS message for grant agencies: Market research may give better answer then hydrological research even if researcher lobby for techniques they know HS message for operators: Blasts will replace tractors. Get ready and sell them first as price will decrease!

Table 2: ‘Future’ climate, energy and open source software projects

Select!			Formulate!
A to projects solving fears	C of affiliation stimuli:		T for M
	Io + b	In + Ie	LA / SS, LI / HS
Climate, …	Indicators of Kioto protocol (Io) Carbon capturing, nuclear or solar energy (b)	Differentiated levels of subsidies for energy sources (Ie) Purposely biased data (In)	Energy and climate issues are merged in ads
Personal anchor on taboo – talent scale (LI and LA is the anchor on this scale)	GHG values, ILUC principles (Io - taboo) CO2 equivalent savings (b – talent)	Blending of energy sources (Ie) Hydrogenation or bio-butalonol adaptation of bio-wastes into bio-fuels (In)	LA: I am healthy due to HOLL and bright due to PUFA, LI: Bio-butanol blending fills tank of my car by wastes, not by food.
HS value of impersonal factor in T	Mass balance for consumption and production of wastes for bio-butanol or hydrogenation (Io) GMOs, bio-technologies (b)	Carbon capturing in t (In) Price changes due to new markets calculation and implementation to development of co-products (Ie)	HS: Detection and blending facility in car fuel system. SS: Swiss cook with two bottles

Scalloping, technological stairs like, biological life cycle and stable developmental curves may generate questions explaining answers for forecasting. Human assistance can be replaced by impersonal coaching through calculoid.com, which is instrument answering according to semantic differential and table 1 and 2 framework. Letters of intent of Ie developers of In will stimulate followers to sign letters of acceptance changing community into network this impersonal assistance is repeatedly used.

4 Discussion and Conclusions

The framework decreasing impact of environment by enhanced understanding of T hidden in message with HS content about relation between Ie bottom up, Io top down, b transfers out and In transfers in SS was derived. Ie substitutes Io and b by accepted In in both future and recent oriented project topic if accepted as SS message. The b, Ie, Io, In, F and R feedback framework starts internally from Io to Ie. F will replace governance in future when b engaged by Io drain income power. Then, members will have to serve themselves using Ie for their household procedures. Trust to Ie equipped developers with competitive results is based on diminishing of A and strengthening C in standardized process:

Firstly, C development of T:

Io: How both C and AG was replaced by trust in testimonial (T) in SS ad changing Aad, Ab and PI?

Ie: Champion development: How outer knowledge was absorbed by Ie competitively with MNCs and IO? (Reversely to X the SS - name of person or agenda was replaced by instrumental HS with dosage reaching best performance.

CT: Resulting value of developed market: How topic (water) was replaced or connected with other topic (climate warming)? Letter of intent with constructs developing market for project.

Secondly, A development of F:

A: Project spin off team development through integration of followers by letters of acceptance: Experience with complementarity of implementations.

AF: Resulting product value from accepted letters of intent with constructs developing both community movement and market for project.

Aggregation of seven observed projects according to single environmental issue and two recent (R) or future (F) oriented challenges have complemented process standardisation. C occurs if impersonal HS are transferred through T to personal SS arguments cause integrating F, which is fixing productive A. Observed projects have really developed Ie, but T of champions was either rejected or bought by b. We argue that rural communities would 'buy' rejected projects if its T developer strengthens M.

References

Durvasula, S., Lysonski, S. and Mehta, S. C. (1999) "A Cross-Cultural Comparison Of Cognitive Responses, Beliefs, And Attitudes Toward Advertising In General In Two Asian Countries", *Journal of Marketing Management*, Vol. 9 No. 3, pp. 48-59.

Gardner, M. P. (1985) „Does Attitude Toward the Ad Affect Brand Attitude Under a Brand Evaluation Set?", *Journal of Marketing Research*, Vol. 22 No. 2, pp. 192-198.

Hönig, V. (2013) Fuels and Lubricants analysis, Prague: ČZU.

Kirchberg, V. and Kagan, S. (2013) „The roles of artists in the emergence of creative sustainablecities: Theoretical clues and empirical illustrations", *City, Culture and Society* 4, 137–152

Linhart, Z. (1983) *Equipment for biogas production*. Czechoslovak patent document 233690/B/. Filing application date: 17 Feb 1983 (No.1064/83). 6p

MacKenzie, S. B., Lutz, R. J. and Belch, G. E. (1986) "The Role of Attitude Toward the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations", *Journal of Marketing Research*, Vol. 23 No. 2, pp. 130-143.

MacKenzie, S. B. and Lutz, R. J. (1989) „An Empirical Examination of the Structural Antecedents of Attitude Toward the Ad in an Advertising Pretesting Context". *Journal of Marketing*, Vol. 53, No. 2, pp. 48 - 65.

McGinley, G. P. J. (1981) „An Inquiry into the Nature of the State and Its Relation to the Criminal Law". Osgoode Hall *Law Journal*, vol.19, no. 2, 267-300. http://digitalcommons.osgoode.yorku.ca/ohlj/vol19/iss2/4

Mehta, A. (2000) „Advertising Attitudes and Advertising Effectiveness", *Journal of Advertising Research*, Vol. 40 No. 3, pp. 67-72.

Mitchell, A. A. and Olson, J. C. (1981) „Are Product Attribute Beliefs the Only Mediator of Advertising Effects on Brand Attitude?" *Journal of Marketing Research*, Vol. 18 No. 3, pp. 318-332.

Muehling, D. D. (1987) „An Investigation Of Factors Underlying Attitude-Toward-Advertising-In-General“, *Journal of Advertising*, Vol. 16 No. 1, pp. 32-40.

Okazaki, S., Mueller, B. and Taylor, C., R. (2010) „Measuring soft-sell versus hard-sell advertising appeals“, *Journal of Advertising*, 39, no. 2 (Summer), 5–20.

Pratt, A. C. (2010) Creative cities: Tension within and between social, cultural and economic development,City, Culture and Society, 1 (1) pp. 13–20

Schumpeter, J. A. (2008). *The Concise Encyclopedia of Economics*. Library of Economics and Liberty (2nd ed.) (Liberty Fund). 2008.

Shimp, T. A., (1981) „Attitude Toward The Ad As A Mediator Of Consumer Brand Choice“, *Journal of Advertising*, Vol. 10 No.2, pp. 9-48.

Stryjan, Y. and Linhart, Z. (1994) Co-operatives in the Transformation of Czech Agriculture: Problems and Prospects. *Plunkett Foundation*. Oxford.

Szymura-Tyc, M. and Lapczynski, M. (2012) Internationalisation and Innovation in Networks. *Proceedings of 20th Conference on M+B for CEEC.* Vienna UEB, Institute for Export Management, p. 289-301, ISBN 978-3-9503290-1-8

Survey of consumer and pro-environmental behaviour of rural and urban households in the Czech republic

Radka Procházková[1], Marie Prášilová[1], Adriana Laputková[2]

[1]Deparment of Statistics, FEM, Czech University of Life Sciences in Prague, Kamýcká 129, Prague 6, 165 21, Czech Republic

[2]Department of Languages, FEM, Czech University of Life Sciences in Prague, Kamýcká 129, Prague 6, 165 21, Czech Republic

prasilova@pef.czu.cz, prochazkova@pef.czu.cz, laputkova@pef.czu.cz

Annotation: Restructuring of Czech economy or its integration into the EU are not the only key factors contributing to the development of the environment in the CR, changes in lifestyle and in standards of living also play their role in the process. On a daily basis, Czech households influence the environment by doing their shopping, consuming and using various kinds of products and services, the way they spend their leisure time, by commuting to work and travelling in general and, last but not the least, by producing waste. Both the location and the size of the household significantly influence the environment as well. Apart from the positive effects, which are reflected in the relative improvement of the quality of life, the way households satisfy their needs directly influences many environmental problems. Among them are global climatic changes, air, soil and water pollution, excessive usage of natural resources and loss of biodiversity. 30 to 40 % of environmental problems are caused by households. Nevertheless, there are ways to mitigate this negative impact through lower consumption or using eco-friendly products and services, which will enable people to save water and energy. Primary data are the source when searching for differences in consumer and pro-environmental behaviour, while taking into account the household lifestyle and the size of the urban area, where the household members reside. The aim of this paper is to analyse expenses of rural and urban households, to interpret the discovered differences and to assess rural and urban households in terms of their activities and attitudes towards the environment. The primary sources for the analysis of consumer and pro-environmental behaviour are as follows: research into family account statistics conducted by the Czech Statistical Office, surveys carried out by the Transport Research Centre, the Centre for Waste Management, as well as the Public Opinion Research Centre at the Institute of Sociology of the Academy of Sciences of the Czech Republic. The underlying data were processed using methods which analyse qualitative dependent variables. The results gathered have shown a positive turnaround in the relationship of Czech households to the environment, which is influenced by economic, social and technological changes.

Key words: Household, rural area, urban area, consumer behaviour, pro-environmental behaviour, ecological footprint, lifestyle.

JEL classification: Q59

1 Introduction

It was Aristotlés of Stagira who said: *„Some are thrifty as though they would live forever, others are extravagant as if they were going to die the next day* (Hartl, 1997)*."* For a long time it was assumed that the increase of negative impacts on the environment and the society will be solved by new technologies. It was in the 1990s when it became evident that these technologies are unable to remedy our growing desire to consume more and more. Therefore, at the beginning of the twenty-first century, social and environmental impact of unconditional following of economic growth became apparent. The current trend and the way how to extricate from the threatening problem of human society are represented by global effort into sustainability. Unlike the idea of sustainable development which is focused mainly on

companies, sustainable consumption is a task for us, consumers, in particular. Kolářová (2006) defines it as *„consumption based on consuming products and services which provide basic needs of society and the quality of their life, and at the same time take into account the same needs of future generations"*. Koudelka (2006) defines consumer behaviour as one of the levels of human behaviour. It comprises the reasons which lead consumers to using a particular product, as well as the ways in which they do this, including the impact this process is accompanied by. Consumer behaviour means consumers' behaviour when shopping, using and selling goods, and each person's substance is reflected in it. This is partially conditioned by genetics and partially influenced by the environment in which we live. Generally speaking, why and how consumers use the products. Consumer behaviour cannot be taken out of its connection to other aspects of human behaviour (Koudelka, 2006). Consumers' attitudes are characterized by Schiffman and Kanuk (2004) as a learned tendency to act both positively and negatively with regard to a particular product.

Sustainable consumption in terms of shopping behaviour can be defined as a preference for locally produced products, preference for organically farmed produce, preference for recycled products or products made from recycled materials, but this generally concerns decreasing consumption as such as well. This is a really complex issue, because, as Lindstrom (2009) states, consumers' behaviour often does not have logical or definite explanation. "Neuromarketing", which by means of analysing brain activities studies sensorimotor, cognitive and affective reactions of consumers to particular stimuli, constitutes great progress. Lindstrom (2009) states that majority of our decisions to buy something are not conscious. 85% of our brain activity is automatic, it operates e.g. by means of somatic markers or mirror neurons. Although we mostly try to be guided by our brain, research shows that what really influences us are mainly emotions. These represent one of the most powerful vehicles which lead us to a particular purchase.

The cost as well as the degree of satisfaction which follows are very important criteria which influence our final choice. Naturally, each consumer tries to gain as high profit as possible at the lowest possible cost. The correct choice might also be influenced by a number of limited factors which either can or cannot be measured using numerical quantities. We can distinguish measurable quantitative factors (price, warranty period, etc.) and qualitative factors, which usually cannot be measured (post warranty service quality, origin of the product or its pro-environmental character). Evaluation of alternatives is always rather subjective.

As Kušková (2009) states, 70 – 90 % of household income is spent on consumption.

Family is the primary unit where household economics takes place. In this regard, superior groups (a household sector in the national economy, or social and community groups) can be understood as units, which do have some common features influenced by analogous factors; however, their economics might be defined as the total or average, but not as a compact economic unit, in which a mutual coordinated decision-making process about consumption takes place. Except for the family, no other social group carries this characteristic (Bárta and Bártová, 2012). As Prášilová and Varvažovská (2012) suggest: „In the developed world, 30 to 40% of environmental problems can be attributed to households." Households influence the environment directly as well as indirectly. The direct impact is set by the lifestyle of households, that is by their activities, way of living, eating and transport habits. The indirect influence is connected with acquiring the needed recources, energy consumption while processing, distributing and eliminating waste, land occupation for construction of roads, shops, etc (Kušková, 2009).

The impact of households on the environment can be quantified in two ways. Firstly, using the ecological footprint indicator, and secondly, using the equation model for environmental pollution. The ecological footprint is an indicator which quantifies the natural capital used by households and compares it with the total capital available on earth. The following data are used for calculation: consumption, which is converted to the amount of biologically productive land and water areas necessary to produce the given resources and to assimilate them while using given technologies (Rázgová, 1999). The equation for environmental pollution is given by the product of three variables: the size of the population, the impact of production technologies and consumption (Librová, 2003). Household lifestyle is closely related to the number of its members, technologies available to each household, ways of spending leisure time and shopping, which again influences production of goods and technology of services. Lifestyle and consumption positively influence the enforcement of energy-efficient home technologies, and have impact on the restriction of foreign products, on the support of home manufacturers, and on the changes in the volume of consumption of goods and services while minimizing inputs and outputs (Librová, 2003). Bárta and Bártová (2012) suggest that social learning takes place in each household which has an important impact on consumer behaviour. Within the family, eating habits are acquired, hygiene habits are adopted, social behaviour and norms are learnt, basics of economics are created, aesthetic opinions and morals are formed.

The most frequent type of lifestyle in the Czech Republic is the one with a family o for a family. On the other hand, rural lifestyle is on the decrease. Garcia-Montiel et al. (2014) implies that it is necessary to understand human attitudes and behaviour with regard to socio-economic possibilities and their environmental education. This provides an opportunity to disseminate environment-related information based on the support strategy for sustainable consumption and waste management. Large part of research (Peattie, Gadgil and Liverman, 2010) has focused on areas with the most significant impact on the environment, namely on households and their management, mainly their choice of food and other forms of pro-environmental behaviour, such as transport behaviour while daily communing to work, spending free time and habits while travelling during holidays. Pro-environmental behaviour is a process which is strongly influenced by consumer values, norms and customs.

2 Materials and Methods

2.1 Sources of data

The primary sources for the analysis of consumer and pro-environmental behaviour were as follows: research into family account statistics conducted by the Czech Statistical Office, surveys carried out by the Transport Research Centre, the Centre for Waste Management, and the Public Opinion Research Centre at the Institute of Sociology of the Academy of Sciences of the Czech Republic.

In order to verify hypotheses about conclusive impact of the factors which influence consumer and pro-environmental behaviour most significantly, data from a questionnaire survey conducted in May 2013 by the Public Opinion Reasearch Centre were used. Access to the data matrix was enabled to the authors with the agreement of the Sociological Data Archive. The survey was conducted by means of a personal interview of an interviewer with the respondent. 1062 respondents older than 15 participated in the survey. Gender, age and education were the quota variables of the respondents. Territorial representativeness of the population was complied with by the interviewer network set-up, where the size of the place of residence and of regions are the monitored attributes.

The parameters of population correspond with the population structure in the Czech Republic when they were divided according to socio-demographic characteristics (gender, education, age) as well as to the territory. Overall, we may note that the respondent population is representative, because it corresponds to the basic population (tolerating minimal deviations).

In total, the questionnaire contained 24 questions, which were thematically divided into 4 sections. The first two were devoted to attitudes and knowledge concerning the environment, the third part to consumer and pro-environmental household behaviour, and questions in the fourth part were strictly identifying. Association techniques and preference questions were used in the questionnaire, namely statements describing certain attitudes to the examined topic which were evaluated using the Likert scale.

551 women (51.9%) and 511 men (48.1%) participated in the survey. In this paper we focus on verification of hypotheses about consumer and pro-environmental behaviour of households in connection with selected socio-demographic characteristics of the population.

For the analysis of the questionnaire survey itself, one- and multi-dimensional tools for statistical categorical data analysis were used. The basic analysis of individual values of variables derives from frequency distribution and calculation of descriptive attributes. The principles for the analysis of dependence of two variables were described based on the contingency table. The table values often lead to conclusions about dependence or independence between two variables. The contingency table forms the basis for testing dependence and for calculating dependence intensity rates (Řezanková, 2007).

2.2 Analysis of the qualitative phenomena (attributes) relationships

The relationship between the qualitative statistical data may be referred to as association or contingency. Association concerns the relationship between alternative statistical variables assuming two values (varieties) only. Contingency analyzes the relationship between qualitative attributes of which at least one is of multiple (non-alternative) nature. When relationships between the qualitative statistical attributes are being examined, the data available usually come from sampling. It is then good to find out whether they are related and whether generalization of the results obtained from the sample upon the original population is possible. Such questions can be answered using testing procedures where statistical significance of the relationship between two qualitative attributes under study is verified. In the present solution $\chi 2$ test has been used. The test is based on null hypothesis assuming independence of the two attributes. The test criterion is defined in general by:

$$\chi^2 = \sum_{i=1}^{k} \sum_{j=1}^{m} \frac{(n_{ij} - o_{ij})^2}{o_{ij}} \qquad (1)$$

or,

$$\chi^2 = \sum_{i=1}^{k} \sum_{j=1}^{m} \frac{n \cdot (n_{ij})^2}{n_{i\bullet} \cdot n_{\bullet j}} - n \qquad (2)$$

where: n ……size of the sample,

n_{ij} ……observed frequency,

o_{ij} ……expected (theoretical) frequency,

$n_{i\bullet}$, $n_{\bullet j}$ ….. marginal frequencies,

i = 1, 2,…, k, where k is the number of varieties of one attribute,

j = 1, 2,…, m, where m is the number of varieties of the second attribute.

Theoretical frequencies are obtained as the product of the corresponding marginal frequencies over the total population size. The χ^2 test criterion has χ^2 distribution at [(k–1).(m–1)] degrees of freedom. In the case, χ^2 test criterion value obtained exceeds the χ^2_α critical value at α significance level and [(k–1).(m–1)] degrees of freedom, null hypothesis of independence between the two attributes can be rejected at α level of significance or, alternative hypothesis assuming a significant relationship (correlation) between the two attributes can be supported. Probability of the assumed correlation then is $(1–\alpha)$.

2.3 Measurement of the degree of the relationship between qualitative attributes

Measurement of the degree of a statistical dependence between qualitative statistical attributes can be performed using either χ^2 coefficients or the prediction measures. Considering the nature of the survey and its organisation, the analytical part of research has used measures based on the χ^2 method. In order to measure the degree of the relationship in the association table, V coefficient of association has been used:

$$V = \sqrt{\frac{\chi^2}{n}} \qquad (\mathbf{3})$$

where the χ^2 coefficient is defined from (**1**) and n is the sample size.

The coefficient of association has identical properties as the coefficient of correlation. It assumes values within the $\langle -1;\ 1\rangle$ limits and in case of total dependence it is equal to ± 1, in case of independence it is equal to 0.

In general contingency tables, the degree of the relationship is assessed using the coefficient of mean square contingency C (Pearson contingency coefficient):

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}} \qquad (\mathbf{4})$$

where the χ^2 quantity is again defined by (**1**) and n is the sample size.

The Pearson coefficient of contingency assumes zero value in case of total independence between two qualitative statistical attributes, and it approaches the unity limit in case of total dependence.

The degree of the relationship in a contingency table has also been measured using Cramér V coefficient:

$$V = \sqrt{\frac{\chi^2}{n\,(h-1)}} \qquad (\mathbf{5})$$

where $h = \min(k, m)$.

If a 2x2 contingency table is available, it is also possible to use different statistics to calculate the dependence ratio – the odds ratio, which includes the relationship between associated frequencies. The odds ratio can reach any nonnegative value. What applies is that the odds ratio equals 1 when the observed variables are independent. Values in the interval between 0

and 1 signal negative association and values between 1 and +∞ positive association (Pecáková, 2008).

To test statistical hypotheses, the importance level α=0.05 was chosen. Statistical calculations were carried out in the STATISTICA software, version 12.

3 Results and Discussion

3.1 Differences in lifestyle and consumer behaviour between rural and urban households

In terms of the size of the area where the family members live, differences in household lifestyle are reflected in the results of the survey of the personal account statistics. As the data from the Czech Statistical Office imply, the average level of nett expenses in 2012 in small villages (population of fewer than 2 thousand people) amounted to 10,137 CZK per person per month. In large towns (population of more than 50 thousand people), it reached 12,656 CZK, which is 2,519 CZK more. A lower level of average expenditure per person in households in small villages is also caused by their lower average income. This is connected with generally lower level of work-related income. What also influences this is the fact that households in smaller villages and towns on average have more members, and there are also more children, who have no income. The size of the urban area also significantly influences the structure of consumer expenses of households. In towns, housing and energy consumption, which exceed 20%, constitute their largest part. In large towns with population of more than 50 thousand people, they amounted to almost 25%. On the contrary, households residing in the villages with population of fewer than 2 thousand people, the proportion did not exceed 18%, and it became the second most important item on the expenses list. In large towns, housing and energy consumption expenses added up to 5,655 CZK per household on average, which is 40% more than in rural households with low population. There are also significant differences in the composition of overall housing expenses. Households which reside in smaller villages, where family houses prevail, spend nearly three quarters of their total housing expenses on energy consumption. Whereas in large cities housing expenses represent the biggest financial burden, in small villages expenses on food and non-alcoholic drinks are the most important items in the household expenditure structure. In 2012, these amounted to 21.3%, which is 2.3 percentage points more than those of households residing in large cities. Concurrently, in absolute terms, households in small villages spent on average 1,903 CZK per person per month on food and non-alcoholic drinks, which is not as much as households in large cities, whose expenses added up to 2,064 CZK per person. It is also representative of the households in small villages that they have more favourable conditions to utilize their own homestead. The number of animal and plant products which are free of charge is often twice as high in the villages with population of fewer than 2 thousand people as in households in the cities with population of more than 50 thousand people, in some cases this is even eight or ten times higher. This fact is reflected in real life in that households in small villages do not need to buy such a range of foods as households in big cities. The differences in transport expenses are also apparent: 9.6% in large cities and 12.7% in small villages, where people must commute to work, school, or are forced to travel due to problems with availability of some goods or services. If we compare other areas of consumption expenditure, the differences in the structure in terms of the size of the urban area do not seem important. Average household expenses connected with the acquisition or renovation of housing, which are no longer included in the so called consumption expenditure, are

disproportionately higher in households in large cities with population higher than 50 thousand people. Over the recent years, they have been approximately twice as high as in the households residing in villages with population of fewer than 2 thousand people.

3.2 Attitudes of Czech households to the environment

The questionnaire survey conducted by the Public Opinion Research Centre has revealed the real attitude of households towards pro-environmental behaviour. It examined attitudes of the Czech public towards the environment. The questions focused on pro-environmental behaviour. Namely, it investigated whether people are interested and have sufficient information about how to treat the environment in an eco-friendly way, as well as the frequency of selected pro-environmental activities. More than two thirds of people (70%) expressed their interest in the information about how to be pro-environmental, while 17% declared strong interest ("I am definitely interested"). On the contrary, more than one quarter (28%) of the population older than 15 is not interested in such information.

Further data analysis (testing in contingency tables) afterwards enabled identification of a relationship between interest in the information about how to be pro-environmental, and sociodemographic characteristics of the population. The answer "I am definitely interested" is statistically more frequently selected by university graduates (21%) and persons with good living standards (21% against 9% of those declaring poor living standards). On the contrary, interest in information is less frequent among those who have completed only mandatory education.

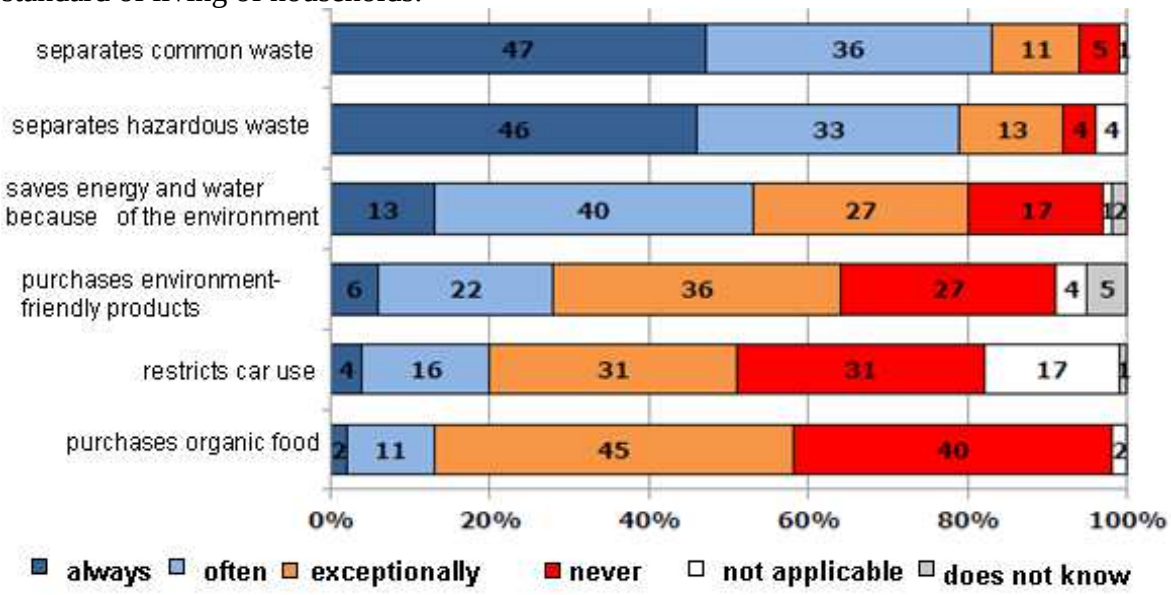
Dependence between interest and information about how to treat the environment in a pro-environmental way and standards of living of households based on the $\chi 2$-test can be marked as statistically important and according to the contingency coefficient value (C=0.129) as weak.

Perception of sufficient or insufficient amount of information about how to treat the environment in an eco-friendly way is to some extent conditioned by one's interest in this type of information. People who, according to their own words, are interested in such information, considerably more often declare sufficient amount of information about this area. University graduates (74% in total think that they definitely or rather have sufficient information) as well as those who declare good living standards (73% state that they rather or definitely have sufficient information) more often consider themselves informed.

Another set of questions focused on everyday household operations. Four categories of pro-environmental activities were analyzed: sorting waste, saving water and energy, shopping behaviour and restriction of car use. The survey shows that the most popular form of pro-environmental behaviour is waste sorting (graph 1). 83% of the respondents stated that they separate common waste, 47% (i.e. almost half of the adult population) declare that they always do this. Likewise, 77% of the respondents in total answered that they sort hazardous waste, while 47% always do this. Dependence between standards of living of the household and willingness to sort waste cannot be marked as statistically important, but weak (C=0.178). In total, more than half of the population (54%) state that they save energy and water. Nevertheless, statistically important dependence between saving water and energy because of the environment and standard of living of the household was not proved by the $\chi 2$-test. Other forms of pro-environmental behaviour are relatively less frequent. More than one quarter of the people (27%) declare that they buy eco-friendly products. Approximately one fifth of the

respondents (22%) state that they restrict car use. Buying organic foods is popular with just under one fifth of the population (15 %).

The χ2-test showed dependence of purchasing environment-friendly products, pro-environmental attitude to using car transport as well as purchasing organic food on the standard of living of households.



Source of data: PORC

Fig. 1. Pro-environmental behaviour of households (%)

The data analysis shows that sorting common and hazardous waste is more frequent among those who declare good living standards and are university graduates. There was no significant statistical difference between rural and urban populations. Similarly, sorting common waste is also more often declared by the people oriented towards the right-wing political spectrum and by women. Those who declare good living standards, are university graduates, are oriented towards the right-wing, and women at the same time to a greater extent buy environmentally friendly products and save energy and water because of the environment. The same is also valid for restriction of car use and purchasing organic food.

Table 1 brings an overview of development in opinions between 2002 and 2012. After 2002, the number of people who separate common and hazardous waste increased, however, this increase stopped approximately in 2008. Over the recent years, there have been no significant changes in behaviour. The change in the restriction of car use between 2005 and 2006 was caused by the expansion of the answer scale with the “not applicable” option.

Table 1. Behaviour of households – time comparison (%)

	2002	2004	2006	2008	2011	2013
	+/-	+/-	+/-	+/-	+/-	+/-
separates common waste	56/42	67/32	76/23	81/18	82/18	83/16
separates hazardous waste	57/36	70/26	71/18	71/21	74/22	79/17
saves energy and water because of the environment	40/56	42/54	48/46	48/48	49/48	53/44
buys environment-friendly products	43/44	26/61	32/54	29/59	27/64	28/63
restricts car use	16/75	15/76	17/57	12/61	17/65	20/62
buys organic food	-	-	-	12/82	12/85	13/85

Source: PORC

Note: Plus marks the total of answers "always" and "often", minus marks the total of answers "exceptionally" and "never". The remainder to 100% includes answers "does not know", from 2006 also "not applicable".

Further analysis of the data shows that purchasing organic food and environment-friendly products is more frequent among university graduates, and among people with good standards of living (on the other hand, buying such products by people with bad standards of living is less frequent). The same positive connection between education and standards of living is partially present with separation of hazardous and common waste. Furthermore, both purchasing organic food and separation of common waste is more frequently associated with women than men. Saving energy and water is more frequent with the age group of over 60 years old people, while it is less frequent among younger people between 15 and 29 years of age.

4 Conclusion

Urban and rural households continuously show different levels in the amount and in the structure of their expenditure. It is pleasing that rural households preserve certain characteristics, nevertheless, no statistically important difference has been confirmed between rural and urban population in terms of pro-environmental behaviour. The results have pointed out the turnaround in the relationship of Czech households towards the environment, which is strongly influenced by economic, social and technological changes. In the Czech Republic, family and pro-family lifestyle still predominate, with the most frequent type of household being a complete family. Single and other non-traditional households are evidently on the increase, the number of which will be continuously increasing. The ecological footprint of the household calculated per capita is connected with this. As Dalíková's study (2010) suggests, while higher social class includes aspects of sustainable consumption into their lives based on trends, this type of behaviour is more natural with the middle class – through understanding the issue. Her research also implies that we might assume future positive relationship of new generations to sustainable consumption. However, it is necessary to create conditions and a suitable climate to integrate sustainability into our everyday life. These conclusions fully correspond with the above mentioned results of the analyses.

Kušková (2009) in her study also mentions that the global trend of healthy lifestyle is increasingly more evident in consumer behaviour in the Czech Republic. Her research implies

that one third of respondents feel better if they consider sustainability in their lives. Urban and rural households try to participate in protection of the environment particularly by sorting their waste, saving energy and water, and using environmentally friendly products. This is owed to the following facts: the idea of saving family finances, access to information about the state of the environment guaranteed by law, as well as educative programmes and community activity in the region.

Acknowledgements

The information introduced in this paper resulted from the solution of the IGA project no. 20131036, at the Faculty of Economics and Management, Czech University of Life Sciences in Prague, "Involving citizens of rural communities in public life."

References

Bárta, V. and Bártová, H. (2012) H*omo spotřebitel,* Praha: Nakladatelství Oeconomica.

Dalíková, P. (2010) *Spotřební chování generace Y v kontextu udržitelné spotřeby,* České Budějovice: Inproforum Junior.

Garcia-Montiel, D. C., Verdejo-Ortiz, J. C., Santiago-Bartolomei, R., Vila-Ruiz, C. P., Santiago, L. and Melendez-Ackerman, E. (2014) "Food sources and accessibility and waste disposal patterns across an urban tropical watershed: Implications for the flow of materials and energy", *Ecology and Society*, vol. 19, no. 1, pp. 37- 48.

Hartl, B. (1997) *Věčný inspiromat,* Praha: Nakladatelství Svoboda.

Kolářová, M. (2006) "Gender and Globalisation: Labour Changes in the Global Economy", *Czech Sociological Review,* vol.42, no. 6, pp. 1241-1257.

Koudelka, J. (2006) *Spotřební chování a segmentace trhu,* Praha: Vysoká škola

ekonomická a management.

Kušková, P. et al. (2009) *Češi ve spotřebitelském ráji (!?): Vývoj spotřeby českých domácností v posledních dvaceti letech,* Praha: CENIA.

Librová, H. (2003) *Vlažní a váhaví: (kapitoly o ekologickém luxusu),* Brno: Doplněk.

Lindstrom, M. (2009) *Nákupologie. Pravda a lži o tom, proč nakupujeme,* Brno: Computer Press.

Peattie, K, Gadgil, A. and Liverman, D. (2010) Green Consumption: Behavior and Norms, *Annual Review of Environment and Resources*, vol.35, no.10, pp. 195-228.

Pecáková, I. (2008) *Statistika v terénních průzkumech*, Praha: Professional Publishing.

Prášilová, M. and Varvažovská, P. (2012) A residential area citizens´ attitude towards environment of living in the domestic and european context, *Acta universitatis agriculturae et silviculturae Mendelianae Brunensis,* vol. LX, no. 7, pp. 225-232.

Rázgová, E. (1999) Ekologická stopa: velikost „pastviny"potřebné k uživení ekonomiky, *Vesmír*, vol. 78, no. 8, pp. 445-447.

Řezanková, H. (2007) *Analýza dat z dotazníkových šetření*, Praha: Professional Publishing.

Schriffman, L. G., Kanuk L. L. (2004) *Nákupní chování*, Brno: Computer Press.

Gluten-free dining options in the Czech Republic

Daniela Šálková, Marta Regnerová[1]

[1] Department of Trade and Finance , FEM, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Prague 6 – Suchdol, Czech Republic
salkova@pef.czu.cz, regnerova@pef.czu.cz

Annotation:
The primary aim of this paper is based on the general and specific goals of the project: to map and objectively analyze the proportionality of consumer demand and the range of foods offered in select public dining facilities for this specific group of customers-consumers requiring a gluten-free diet, along with the financial impact of this manner of dining based upon the research carried out.
Since gluten-free products affect the health of a specific group of consumers, there is considerable opportunity here for corporate social responsibility programs of companies providing dining services, companies seeking dining options for their employees or health insurance companies for this group of citizens. Corporate Social Responsibility (CSR) is a concept where a company is not only concerned with its economic interests, but also voluntarily integrates a social and ecological perspective in its activities. This means operating with a view to the triple-bottom-line, where the company not only concentrates on economic growth, but also the environmental and social aspects of its activities. A company is not isolated from the surrounding world, but rather is directly connected to it. Generally speaking, we may use the definition of McElhanney (2011) that CSR is using business to create a better world.
The information presented in this paper resulted from work at the Faculty of Economics and Management Czech University of Life Sciences Prague on IGA project no. 20141033, "Availability of dining for celiacs (with a gluten-free diet) in hospitality establishments in the CR and their social responsibility towards the monitored group of consumers".

Key words: consumer - celiac, gluten-free diet, hospitality, supply, corporate social responsibility (CSR)

JEL classification: F1

1 Introduction

Consumers with autoimmune illnesses of the small intestines are not able to process the protein gluten, which presents a lifelong problem in terms of dining. This illness is most commonly known as celiac disease, or sometimes gluten allergy or Duhring-Brocq disease. Celiac disease is even one of the world most broadening lifelong diseases (Fasano, Troncone, Branski 2008). Individuals afflicted with this autoimmune disease produce greater amounts of antibodies to the enzymes and proteins which are in gluten, as shown by Klener et al. (2006). Basically this is a chronic illness of the small intestine mucosa which requires a diet containing no gluten or only very small concentrations of gluten. However, gluten is found in most common foods containing wheat or rye flour. Therefore, celiacs have to radically change and modify their diet to avoid foods which contain gluten, although they can eat foods with very small concentrations of gluten as specified in EC Regulation no. 41/2009 of January 20th, 2009 concerning the composition and labeling of foodstuffs ("GLUTEN-FREE", VERY LOW GLUTEN CONTENT") suitable for people intolerant to gluten, which establishes uniform European rules for the composition and labeling of foods with respect to gluten content (special dietary foods intended for people intolerant to gluten). When working on IGA PEF ČZU project no. 20121027 (11210/1312/3106) "A survey of suitable retail food supply for customers with gluten intolerance) carried out from 2012-2013, a number of respondents and others involved with the project reflected upon group dining for celiacs and

their experiences with the availability (or lack thereof) of gluten-free foods in dining facilities. This gave rise to the idea of continuing research in this area through a related IGA project: "Availability of Suitable Dining for Celiacs (with a gluten-free diet) in the Hospitality Sector of the CR". This project has been underway since April 2014 and not only examines the foods offered, but also the availability of dining options for consumers on a gluten-free diet in dining facilities in the Czech Republic. Generally, deglutenized products (raw ingredients) are very expensive and it's necessary to find a structured and evidence-based economically balanced range of processed products in the hospitality industry, taking into account the buying power of this group of consumers. The project will create an overview of the foods offered for a gluten-free diet and examine the significance of select factors which most greatly affect the purchase of these foods by the particular target group.

It is estimated that there are about 3 million people with celiac disease. „The new epidemiology of celiac disease is now characterized by an increase of new cases in the historical celiac disease areas (northern Europe and the United States) and more interestingly in a spread of the disease in new regions (Asian countries). A significant change in diet habits, particularly in gluten consumption as well as in infant feeding patterns are probably the main factors that can account for these new trends in celiac disease epidemiology" (Catassi et al. 2014). In the Czech Republic have autoimmune disease of the small intestine and are not able to process the protein gluten 50 – 120 thousand people. Expressed in percentages, this is 0.5 – 1.2% of the population. Of this number, only 10-15% are treated, the rest have not yet been diagnosed. This is basically a chronic illness of the mucosa of the small intestine most commonly known as celiac disease, or sometimes gluten allergy or Duhring-Brocq disease. „In addition to the gastrointestinal system, celiac disease can also involve other body systems and cause conditions including short stature, osteoporosis, and iron-deficiency anemia" (Moreno 2014). People with this disease must eat foods which do not contain gluten or contain only small concentrations of it. Yet, gluten is in most regular/conventional foods. The causes of this disease may be varied, as demonstrated by Saeed (2013) in his study of the relationship between celiac disease and rickets in children. The disease may appear in childhood or adulthood, most commonly among younger people, and there may be multiple triggering factors – a sudden change in life, birth, operation, an infectious disease, stress, and it may appear after an intense mental or physical experience or other exceptional events (Kohout, Pavlíčková, 2010).

There continue to be more and more people with this disease, which cannot be entirely cured, and the greatest problem is early detection and especially proper diagnosis of this disease (ČT24 Studio 6, 12.03.2013).

From a dining perspective, it is necessary for gluten-intolerant people to avoid all types of grains with a high gluten content (wheat, barley, rye). In genetically susceptible people, the sub-proteins of gluten generate a disproportionate response of the immune system, which continues to create autoantibodies.

If gluten is not eliminated completely from the diet, then after some time the immune system becomes exhausted, illnesses affect other organs and related autoimmune disease arise along with numerous complications, most of which are life-threatening as shown by Možná L. (2008). As a feasible alternative to wheat products, it is possible to consume corn, millet, amaranth, soy beans, chestnuts, buckwheat, rice, nuts, vegetables, potatoes, fruit, meat, caviar, milk and milk products as presented by Bass et al. (2013).

The general determinants which define and significantly impact the health and quality of life of every individual and thus the specific group of consumers with gluten intolerance include the following:

- biological and genetic predisposition
- health care system (medicine)
- lifestyle including diet
- and environmental impact.

This paper primarily examines the determinant of diet (a gluten-free diet), which consumers can control themselves with their dining choices. The other determinants are objectively given, scientifically examined, and their impact on the quality of life of a particular individual can hardly be influenced by the individual.

A change in lifestyle including a proper diet can lead to improved work performance and social standing. Of the factors determining quality of life, it is a proper diet which is most easily understood and achievable by gluten-intolerant consumers.

For the quality of life of this specific group of citizens/consumers to be comparable to that of other citizens, the manner of their dining must be adapted to their specific needs and their diet must exclude foods, including ready meals, which contain gluten. Maintaining a gluten-free diet requires not only buying suitable foods, the availability of which is very irregular according to a previous survey of the Czech market, but also selecting dishes which do not contain gluten when eating out, because even a small amount of gluten can cause considerable problems for celiac consumers.

2 Materials and Methods

The aim of this paper is to map and objectively analyze the proportionality of the range of foods offered in select public dining facilities for this specific group of customers/consumers requiring a gluten-free diet, along with the financial impact of this manner of dining. It was therefore necessary to conduct field research and map the supply and demand of foods (menus) for a gluten-free diet in select hospitality establishments along with prices and consumer preferences of specific groups of customers requiring gluten-free diets in relation to select factors which are the primary determinants in shaping their demand and making decision about purchasing food at restaurants.

The following methodological approach was used:

1. Study of available literature and professional articles concerning this issue and the options and availability of dining for customers requiring a gluten-free diet and the behavior of these consumers when purchasing such food.
2. Compilation of a literary overview using descriptions and citations from scientific text.
3. Evaluation of the results of primary research based upon surveys conducted at 3 select types of hospitality establishments (offering or not offering customers gluten-free foods).
4. Evaluation of the responses to the questionnaire titled “Dining preferences of consumers requiring a gluten-free diet”
5. Construction of a proposal with recommendations to improve the availability and range of foods offered for customers requiring a gluten-free diet in select types of hospitality establishments. These recommendations will use logical deduction and synthesize the partial research results to consider corporate social responsibility in monitored factors along with the consumer preferences of specific groups of consumers.

Since gluten intolerance disease (celiac disease) occurs primarily in younger people who are in school or working and therefore mostly eat out, the aim of research in select types of hospitality establishments in the CR was to map and assess the foods offered for this specific group of customers, and to propose possible recommendations to improve the current state in individual types of facilities.

Celiacs must eliminate rye, barley, wheat and oat flour and all food components which contain gluten (sauces, beer, soups, pasta, etc.). The present state of the assortment of gluten-free foods offered at hospitality establishments was monitored and analyzed and is evaluated in this paper. At the same time, we examine the relationship between the assortment of gluten-free foods offered at select dining facilities and the decisions of celiac consumers with respect to the social responsibility of these companies and the consumer preferences and behavior of these consumers.

3 Results and Discussion

The field research of foods offered for consumers with gluten intolerance (gluten-free diet) was carried out during February and March 2014. Second-year students at the Business Operations and Economics Department (FEM, Czech University of Life Sciences Prague) actively participated in the research. A total of 226 dining facilities were visited and classified into the three categories most often frequented by young people:

1. fast food restaurants and stands,
2. classic sit-down restaurants with wait staff
3. institutional dining facilities such as school cafeterias, canteens, factory cafeterias, and dining facilities in retirement homes, in the army, and in prisons.

These dining facilities were located in 43 predominantly urban and rural areas in the South Bohemian, South Moravian, Liberec, Olomouc, Pardubice, Pilsen, Prague, Central Bohemian, Ústi nad Labem and Vysočina regions.

At the same time, a survey was conducted of consumer preferences and needs among gluten intolerant consumers when making food purchasing decisions, and their purchasing power was gauged. The survey titled “Dining preferences of consumers on a gluten-free diet” was conducted in the first half of 2014.

The respondents/celiac were selected randomly by asking whether they would be willing to answer a few questions in our survey. This survey showed how many celiacs are living among us, as well as people without celiac disease who choose to keep a gluten-free diet, and how complicated dining can be for them at school or in the workplace.

Field research findings to date

Fast food (all research was carried out in urban areas or at gas stations with overnight parking lots)

At these places, when there was no menu it was necessary to ask the staff about what kind of food would be good for a gluten-free diet. This type of dining generally offers sandwiches combining meat, vegetables and dressing in white bread rolls. It was not possible to modify the food to make it gluten-free because gluten-free bread was not available and the sandwich ingredients were set. The most frequently suggested gluten-free options were vegetable salads and french fries. While vegetable salads are part of a healthy diet and french fries less so, neither is sufficient as a main course.

Also included among fast food establishments was the Soup Shack (Polífkárna) in Prague 4 which specializes in soups (cups or bowls), and where the menu always includes one gluten-free soup and an assortment of light lunches. The advantages of this restaurant is that the food is cheap and fast.

Another exception to the rule in Prague was the Indian fast food restaurant Bombay Express. While they do not list any food for celiacs on the menu, there's no problem if the customer wants to have rice instead of bread with his chicken in tomato sauce. The prices are firmly set at 135 CZK for 200g portions.

During field research, the only fast food restaurant which listed allergens found in particular dishes was McDonald´s. At a number of these facilities the staff was willing to serve a cheeseburger without the bun. But even so, celiac customers had the unpleasant experience of a Caesar salad with grilled meat which was declared to be gluten-free but which contained several croutons which were not gluten-free (the question remains whether this was a mistake or simply due to the ignorance of kitchen personnel).

Prices ranged around 100 CZK, depending on the size of the portion.

Eating daily at such establishments would make for a very monotonous diet, since the daily choice of foods offered at such places is always the same.

A number of the fast food establishments we visited had never heard of celiac disease or what it meant. For example, at KFC (Prague-Chodov) the person at the counter was not familiar with celiac disease and had to call the restaurant manager, who had a good understanding of the condition and tried to find a suitable combination of foods (main course and side). Yet, despite her efforts, the only suitable food remained a salad without dressing.

Sit-down restaurants (research was carried out in both urban and rural areas and on roadsides)

Unlike fast food restaurants, the staff of these restaurants were relatively well prepared with respect to offering suitable food for customers/guests requiring a gluten-free diet. In a number of restaurants, guests could select more than one suitable dish from the daily menu, or modify dishes to make them gluten-free (e.g. changing side orders), or it was possible to prepare certain dishes normally containing gluten in gluten-free versions. Some restaurants labeled gluten-free dishes on the menu with a crossed grain symbol. The staff and waiters of the restaurants we visited were generally well acquainted with a gluten-free diet and could knowledgeably advise customers in their selection of food.

An example of one such restaurant which takes good care of celiac customers is Potrefená husa, where gluten-free dishes are listed on the menu with a crossed grain symbol. In most cases, the restaurant serves dishes without sides, so it's no problem for the diner/celiac to order a suitable gluten-free side. Of course, this is all reflected in the prices, which for gluten-free food is truly high: marinated cheeses (200 g) from 89 CZK up to 395 CZK for entrecote steak (500 g). It would obviously not be possible for the average celiac to eat at this restaurant every day.

A unique approach to this problem was found at Švejk Restaurant U Karla, which has combined traditional Bohemian cuisine with gluten-free dining. The staff is helpful and is very informed about the issue. This is the third year that the restaurant is offering a gluten-free menu, a change which came about when celiac disease appeared in the family of the restaurant's owner. All foods including desserts are made from scratch at the restaurant from basic ingredients. The restaurant offers a full gluten-free menu including soups, appetizers,

main courses with all kinds of meat, and desserts. They even offer gluten-free beer. The prices are a bit higher than in regular restaurants with wait staffs, but they correspond to the quality and freshness of the food. For example, there is beef consommé with gluten-free noodles, meat and vegetables (300 g) for 55 CZK, or beef tenderloin in a cream sauce, homemade gluten-free dumplings and cranberry sauce (150 g) for 145 CZK.

Both these examples of sit-down restaurants with positive attitudes towards celiac guests are located in Prague. In our field research, we also visited a number of restaurants outside the capital (in Beroun, Benešov, Pelhřimov etc.); or even roadside restaurants (at major road intersections, gas stations with overnight parking lots, etc.), where guests on gluten-free diets could choose from multiple dishes on the daily menu or combine suitable foods for a meal.

Celiac diners encounter problems when trying to eat in small towns or villages. If a restaurant is not heavily frequented or there are few local inhabitants, then it typically offers one or two hot meals with a soup, not always gluten-free, or short orders or cold food, which is usually served with bread. In such case, the celiac consumer has no choice but to buy gluten-free food at a shop and eat at home.

Institutional dining facilities (research was conducted in urban and rural areas)

We visited dining facilities such as school cafeterias, university canteens, Eurest eateries, the canteen at Czech Radio, factory cafeterias, cafeterias at a retirement home and prison, etc.

The menus of these types of dining facilities do not list gluten-free foods. The one exception among the facilities we visited was the FOOD GARDEN- the cafeteria for Česká spořitelna, where gluten-free dishes are visibly labeled with the crossed grain symbol.

In all the places we visited where food is cooked and served, the personnel were relatively helpful to celiac diners and willing to combine dishes to make them suitable for celiacs. The most willing staff were at the cafeterias of schools and pre-schools. If there happened to be a single student at the school who required gluten-free food, the school cafeteria personnel were prepared to cook a single dish to suit this diet – or at least a suitable gluten-free side. Here, cooperation between the school and parents is important (for example, whether there is any surcharge for gluten-free food), so that the school is aware that the student is a celiac; and when the parents prepare a gluten-free boxed lunch for the child, they warm it up at the school cafeteria without any problem.

In many cases, food for factory dining halls comes from a single high capacity plant and is then only dispensed at the given institution (factory, retirement home, agricultural plant, etc.). The staff dispensing the food then cannot advise or influence the diner's selection. In this case, this is usually food chosen from a menu, and the celiac customer can only guess if nothing on the menu is listed as gluten-free.

The prices in these types of institutional dining facilities for gluten-free food do not vary much from other foods, since the schools and employers partially subsidize these meals for their students and employees respectively. If in such facilities a customer makes a special request, then he/she pays the full price for the food.

In our survey work with the questionnaire titled "Dining preferences of consumers on a gluten-free diet" which will be evaluated while working on the IGA project, we found a pressing desire of celiac customers for a greater assortment of food in dining facilities, since they often have to make do with simply cooked meat and potatoes or a vegetable salad. Customers would gladly pay more at all types of dining facilities for an expanded assortment of gluten-free foods such as gluten-free dumplings, pasta, crepes, fruit dumplings, desserts,

cakes, pizza, potato pancakes, meat loaf, battered cauliflower, broccoli, and mushrooms, soups, and also traditional Czech cuisine including beer.

4 Conclusions

The results of the first part of our field research at select types of dining facilities showed great irregularity in the availability and assortment of suitable foods offered to consumers on a gluten-free diet. From this perspective, the situation on the Czech market is not satisfactory. Despite the growing number of people who require a gluten-free diet or desire to eat that way for health reasons, the majority of dining facilities have not yet sufficiently addressed the situation. Of course, these facilities follow the rule that "where there's no demand, there's no supply". Reasons may include ignorance of the issue, the economic situation in the hospitality sector, or a lack of professional training for staff, etc.

Dining options for gluten intolerant customers are significantly affected by the location of the dining facility. The smaller the town, the smaller the assortment of gluten-free food that is offered. In rural areas, the dining options for celiacs in restaurants are very limited, and they often have food delivered by companies which provide this service.

Corporate social responsibility towards this group of citizens on a gluten-free diet should always be part of the business strategy of every company which plays a part in providing dining services (including insurance companies – with additional payments for the dining of people diagnosed with celiac disease), but also companies seeking dining services for their employees. It is in the interest of the company itself to be socially responsible. Responsible behavior of the company towards its employees and surroundings positively affects work productivity, employee loyalty, the company's reputation, creates a competitive advantage for the company and fosters long-term sustainable development.

Acknowledgements

Our thanks go out to the Department of Trade and Finance for letting me use the findings of IGA PEF ČZU project no. 20141033 "Dining options for celiacs (on a gluten-free diet) in hospitality establishments in the CR and the social responsibility of these establishments towards the monitored group of consumers".

We would also like to thank the second-year students at the Business Operations and Economics Department (FEM, Czech University of Life Sciences Prague), who actively participated in the field research for their meticulous work, insightful opinions, and various suggestions in References.

References

Bass, S., Bock, A., Gálity, P. and Máhr, S. (2013) *Celiakie. Úspěšná léčba nesnášenlivosti lepku.* First edition. Prague: Jan Vašut, 54 s. ISBN 978-80-7236-839-6.

Catassi, C., Gatti, S, Fasano, A. (2014) *The new epidemiology of celiac disease*. J Pediatr Gastroenterol Nutr., Jul;59 Suppl 1:S7-9.

Fasano, A., Troncone, R. and Branski, D. (2008) *Frontiers in celiac disease.* Basel: Karger, 222 s. ISBN 978-3-8055-8526-2.

Klener, P. et al. (2006) *Vnitřní lékařství.* Prague, Galén a Karolinum. [cit. 2014-06-20**].** Available at: http://celiak.cz/o-nemoc/alergie-na-lepek

Kohout, P., Pavlíčková, J. (2010) *Otázky kolem celiakie.* Prague: Forsapi. 128 s. ISBN 978-80-87250-09-9.

Moreno, M. (2014) *Celiac Disease in Children and Adolescents,* JAMA PEDIATRICS Volume: 168 Issue: 3 Pages: 295-295 Published: MAR 2014

Možná, L. (2008) *Bezlepkářům od A do Z.* First edition. Ostrava: Ringier Print. 186 s. ISBN 978-80-566-9107-3.

Saeed, A. (2013) *Celiac disease presenting as rickets in Saudi children.* Ann Saudi Med. 2013 Jan; 33(1): 49-51. doi: 10.5144/0256-4947.2013.49. SCOPUS.

Foods for special nutritional needs intended for people with gluten intolerance [cit. 2014-06-30]. Available at: http://www.bezlepkovadieta.cz/potraviny-domaci-legislativa 1/2032-3/oznacovani-potravin-z-hlediska-obsahu-lepku-plati-od-1-1-2012

Prevention is the foundation of health. (2012): Právo, year 22, no. 57, p. 6. ISSN 1211-2119.

72 written reports from the investigation of foods for gluten-intolerant consumers in select hospitality establishments (dining services) in the CR.

441 questionnaires titled “Dining preferences of consumers on a gluten-free diet”

Opportunity for Citizens to Influence Public Action

Pavla Varvažovská[1], Martina Jarkovská[2]

[1]Department of Humanities, Czech University of Life Sciences Prague, Kamycka 129, Prague 6, 165 21, Czech Republic
varvazovska@pef.czu.cz

[2]Department of Languages, Czech University of Life Sciences Prague, Kamycka 129, Prague 6, 165 21, Czech Republic
jarkovska@pef.czu.cz

Annotation: Public sector is often defined as space between a citizen, market and state. Citizens form associations which can influence public action and cooperate with other actors of public affairs. Municipalities should and in most cases do cooperate with the public sector, which leads to the fact that citizens have a sense of belonging to a particular place and feel satisfied there. The aim of this paper is to propose efficient possibilities of influencing public action by citizens of a selected region in Central Bohemia. The first partial aim is to elicit opinions of the public and other actors on the issue of civil society and possibilities of influencing public policy. Application of simple statistical methods both confirmed and refuted hypotheses of variables independence, or the strength of their dependence. The second partial aim was reached by a qualitative approach using semi-standardised interviews with actors of public action in the region of Central Bohemia. Through the research in the region it can be stated that non-profit organisations are in a friendly relationship with representatives of lower and higher territorial authorities. They are highly regarded by local administrations which often request their opinion on a problem. Therefore it is necessary to build mutual support and confidence between citizens and representatives of the state and non-profit organisations because only then the participation and involvement of the citizens and their representatives in various forms of non-profit organisations will grow together with their involvement in public policy.

Key words: administration representatives, civil society, communication, cooperation, influence on a decision-making process, non-profit sector, public policy

JEL classification: Z18

1 Introduction

Public sector is commonly referred to as space between a citizen, market and state. Citizens form associations which have influence on public action and cooperate with other public affairs actors. Müller (2008) sees the motive of a civil society in an effort to seek and find guarantees of a democratic development in a society whose aim is to discover potential risks and their origins and succeed in preventing them and predicting their consequences together with an effort to reduce and mitigate them (Müller, 2008, 50). Parkosová (1998) assumes that public organisations present certain mechanisms capable of a well-timed alert to non-preservation of democratic principles within and outside the state (Parkosová, 1998, 4).

Thanks to its legislature and policy, the state gives its population space for freedom as well as opportunities to associate. It adjusts legal and tax environment which the civil society needs for its existence (Rektořík, 2007). The largest space of influence is designated by a relation to the state and its policy, or to the state and local administration representatives. As influencing public policy we understand any pressure spent on enforcing certain changes or preventing certain changes in public policy (Frič, 2000: 21). Besides mutual cooperation, actions are often controlled by public organisations whose members can express their attitude towards public issues and democratic behaviour is thus fully manifested. Potůček (2005) focuses on

the relation between the state and third sector and their mutual influence. In our country, the public sector has an irreplaceable role which should be supported by the state's policy and motivate others to become involved. While Skovajsa (2010) contemplates on civil society as part of a democratic state, reasons for its evolution and its relation to the state as a political system, Frič and Goulli (2001) observe a non-profit sector from within, as activities and correct functioning of its organisations stem from internal qualities and nets forming the sector. In his analysis, Rikman (2014) pursues the development of a public sector in six selected countries of Central and Eastern Europe, including the Czech Republic. He concentrates on the level of public sector organisation and changes in social actors' roles and cooperation. He reflects on the reinforcement of partnership and different models of public sector development. The fact that the state – municipality – recognizes and cooperates with the public sector leads to people's sense of belonging to a place where an organisation exerts its influence and where they are satisfied. Arikan and Ben-Nun Bloom (2014) see a link between political and social psychology as they discuss public opinion on welfare and contentedness. Social values call for government responsibility. They mention an interesting fact that right-wing oriented citizens are capable of much stronger support than those with left-wing orientation. Their findings present evidence about the significance of social context and shared values affecting an attitude to welfare.

Stachová (2008) characterizes the 20th century as social changes in forms of private volunteering which gave way to public sector organisations (Stachová, 2008, 10). Rather than on the development of non-profit organisations, Turnerová's publication (2007) focuses on their administration and human resources development, regarding these two components as the basis of a successful 21st century organisation. Nowadays competition exists even in the public sector and it is its members who present a permanent advantage in the competition (Turnerová, 2007, 7). The role of the public sector is tightly linked to a political situation and regime. The public sector plays an indisputable role in preserving social stability and creating the environment of confidence. A civil society is vital for democracy and its political system as a place for the enforcement of both civil and political rights and as a place for entities where citizens can advance their interests. Last but not least, it conducts surveillance on public power performance.

The aim of the study is to propose efficient opportunities for citizens' public action influence in a selected Central Bohemia region. The first partial aim is elicit opinions of the public on the issues and condition of the civil society, the role of the sector and opportunities in connection with public policy. The second partial aim is to elicit opinions and experience of actors from selected public sector bodies in the involvement of their organisations in public policy and corresponding consequences.

2 Materials and Methods

The main objective of the paper was to find out the position, significance and role of a public sector in public policy of selected regions. The first partial aim was to elicit public opinions in two selected regions on the issue and state of public society, the role of the sector and possibilities in its relation to public policy. This was achieved by comparing the age of respondents, size of the municipality they lived in or their achieved education. The second partial aim was analysing actors' experience in selected organisations of public sector in the region and their share in public policy and related circumstances. Correspondingly, their mutual relation to the public was analysed, regarding manifestations of interest in their activity, be it personal or financial, as well as relation to other non-profit organisations of a similar or same orientation in the level of mutual cooperation. The first partial aim was

reached by a quantitative approach using questionnaires among the public. Based on simple statistical methods, hypotheses on the independence of variables, or their force of independence, were either confirmed or refuted. The second partial aim was reached by a qualitative approach using semi-standardised interviews with public action actors in the Central Bohemia region (3 non-profit organisations in Benešov region, 3 non-profit organisations in Příbram region, Regional Office of the Central Bohemia region, Příbram Municipal Office and Benešov Municipal Office). In the end the elicited data were analysed and discussed.

A general problem to be tackled in the paper was the public sector, particularly its non-profit organisations, and their relation to population, public opinion on their credibility, possibilities of influencing public policy, and their active participation in this area. Upon realizing the problem, it was necessary to define work hypotheses which could be characterised as certain statements that anticipate an existing link between two or more variables. The hypotheses also determine which information in a quantitative research should be focused on and which should be ruled out entirely. They also assist in the selection of a correct manner of information collection. They are helpful in eliciting whether the research can be carried out or not (Disman, 2002, 79, 85-87).

For the quantitative research these hypotheses were stated: The higher the age of the respondent, the higher the probability that he/she will financially participate in non-profit organisations. The larger the municipality is where the respondent lives, the lower the probability that he/she will become a member of a non-profit organisation. The more are the respondents involved in non-profit organisations, the more they believe in their transparency. The older the respondents are, the more they avoid radical forms of influencing public policy. The higher the respondent's education, the higher is their belief that non-profit organisations can influence local administration in issues concerning public policy. Generally, the selection in the survey was performed pursuant to a multi-level random choice, where 2 districts in the region of Central Bohemia region were selected at random. Further, 2 municipalities were randomly selected where 100 respondents in each district were addressed. To reach a necessary sample of 200 respondents, 228 had to be addressed (i.e. 28 refused to be interviewed, mostly due to lack of time).

The respondents were selected by a random choice of a district in the region of Central Bohemia. Consequently, two municipalities (Benešov and Příbram) were chosen at random where a hundred respondents were addressed. It was necessary to classify the collected data, perform their analysis and summarise the findings. The qualitative research was performed using a semi-standardised interview in six non-profit organisations. The interview covered the following areas: relation to the public, relations in the organisation itself and relations to administrative bodies and other institutions.

3 Results and Discussion

3.1 Quantitative research - Příbram

Due to a limited length of the paper it was not possible to place all calculations, tables and graphical illustrations in the text. The paper contains one example of individual hypotheses evaluation only and research findings are described in a verbal commentary.

Hypothesis: The higher the age of the respondent, the higher the probability that he/she will financially participate in non-profit organisations. The respondents' age was recorded together with respondent's activities in non-profit organisations, either personal or financial, (where

he/she is not a member). The table below presents actual frequencies derived from the quantitative research (Table 1).

Table 1 Actual frequencies

Age category	18-40	41-60	61 - older	Total
Involved	9	32	21	62
Not involved	10	24	4	38
Total	19	56	25	100

Source: Authors' research

The table reveals that from 100 respondents in Příbram region 62 were financially or personally involved (as non-members) in non-profit organisations, while remaining 38 were not.

62 respondents out of 100 were financially involved in public sector activities last year, 14.5% in the age category between 41-60 and 33.9% in the age category 61 and older.

The table expressing the actual frequencies was then transferred to the table of theoretical frequencies (Table 2).

$$n_{oj} = n_i . n_j / n \quad (1)$$

Table 2 Theoretical frequencies

	B1	B2	B3
A1	11.75	34.72	15.5
A2	7.22	21.28	9.5

The table shows that 20% theoretical frequencies were not smaller than value 5. Therefore it was possible to proceed to the calculation of quantity (Table 3).

$$\chi^2 = \sum\sum (n_{ij} - n_{oj})^2 / n_{oj} \quad (2)$$

Table 3 Calculation of quantity χ^2

0.644	0.213	1.952
1.070	0.348	3.184

$\chi^2 = 7.411$ $\chi^2_{0.05\,(2)} = 5.991$

A calculated value of the test criterion (7.411) is higher than the critical value (5.991). On the level of significance 0.05 the hypothesis of independence can be refuted. The respondents' age corresponded with their support in civil society.

It is further possible to determine the force of independence using Pearson's contingency coefficient.

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}} \quad , \tag{3}$$

$$C = 0.263$$

As for normalisations, tables will show value $C_{max\ (n)}$, where n is a number of feature permutations with fewer permutations 0.7071.

$C_n = C / C_{max}$ $C_{n\ (2)} = 0.372$ – dependency can be assessed as weak.

The questionnaire survey investigated the size of municipalities where respondents lived and whether or not they were non-profit organisations members. Of 100 respondents 48 were members while remaining 52 were not. Of the total number of respondents 37 lived in the second category of municipalities based on size. The respondents' participation in non-profit organisations corresponded with the place of their domicile.

The more are the respondents involved in non-profit organisations, the more they believe in their transparency. This was connected with their membership in non-profit organisations. Whether citizens became actively involved in radical forms of influencing public policy (strikes, petitions, referenda etc.), was influenced by age.

The higher the respondent's education, the higher is their belief that non-profit organisations can influence local administration in issues concerning public policy. The confidence in non-profit organisations corresponded with the height of their education.

3.2 Quantitative research – Benešov

The higher the age of the respondent, the higher the probability that he/she will financially participate in non-profit organisations. The age of the respondents did not correspond with their support of civil society. The participation of the respondents as profit-organisation members did not correspond with their domicile either.

The more are the respondents involved in non-profit organisations, the more they believe in their transparency. In order to verify or refute the hypothesis it was necessary to elicit opinions (their strength) on confidence in and transparency of the non-profit organisations. The fact that the respondents had confidence in the transparency of non-profit organisations corresponded with their membership in a non-profit organisation.

The quantitative research provided the information whether citizens actively participated in radical forms of public policy influence (strikes, petitions, referenda etc.). Of 59% inhabitants who took part in radical forms of influence, it was citizens in the age group 41-60. The involvement in radical forms of influence was affected by age.

The higher the respondent's education, the higher is their belief that non-profit organisations can influence local administration in issues concerning public policy. The respondents were rather of a negative opinion, i.e. 30 in total, or they had no opinion what so ever, i.e. 15 citizens in total. The confidence in non-profit organisation corresponded with education.

It can be recommended to the public sector in Příbram to become more active in public policy issues, convince the citizens about its significance and, thanks to its activities, persuade the non-members about its transparency. Only then their support, especially in a financial form, will increase. Last but not least, it is necessary to pay attention to a greater involvement of

non-profit organisations in big cities. The situation in Benešov region is contrary. 2 independence hypotheses out of 5 were refuted only. The respondents' opinions thus in more than one half of all examples neither corresponded with respondents' age, the size of the municipality where respondents lived, nor with their education. What can be positively assessed is the citizens' involvement in public sector activities, be it members or donors only. Also their confidence in non-profit organisations is prevailingly positive. However, it must be taken into account that to obtain more precise data a wider sample of citizens would be needed. There opens a possibility to continue in the quantitative research and perform more detailed qualitative research.

3.3 Qualitative research

All six addressed public sector organisations concurred in opinions on their public policy role. They prefer non-violent forms of policy influence, such as communicating with administration and other institutions representatives, good mutual relations and informing on organisation activities. Thanks to the nature of their activities, the most interested in influencing public policy (excluding applications for subsidies) are associations and other forms of non-profit organisations for nature conservation which, however, are not always successful due to the lack of professionals or white-collar workers' indifference. Findings show that entities with numerous members and long history, which are appreciated by both companies and city representatives, stand the greatest chance to be involved in public policy. They are well aware of the fact that such organisations are greatly supported by the society and any indifference towards them would lead to the outflow of their voters. Probably most organisations, and also other than those submitted to the research, thrive to persuade local administrations to provide them with the highest subsidies possible as the decision lies solely in the hands of the administrations representatives, although certain rules are already beginning to shape up. Most associations are prevented from gaining higher financial subsidies by rampant bureaucracy and sometimes also necessary financial involvement in selected projects, which particularly small organisations cannot afford, especially when applying for financial means from the European Union. Their relation to citizens is very positive – there are frequent cases of cooperation among non-profit organisations, high financial support of citizens and trade organisations without whose gifts the public sector would not make do especially if it does not generate profit from its own activity. This, however, was not the case in the research.

Cities and regions are accepted as important components of the society. Yet they are not regarded as equal players and final decisions are being left to be made by authorities.

3.4 Discussion

The development and level of non-profit organisations will definitely be affected by the following significant facts: the impact of the new Civil Code, new subsidy policy and/or the issue of enforcing non-profit sector interests.

Recent changes in this sphere were contributed to by the new Civil Code (Act 89/2012 Coll.), in effect as of 1 January, 2014. The most radical changes await civil associations. Their current legal definition was very poor. It totally lacked the definition of their membership rights, administration rights or provisions providing a greater level of transparency. What changes will the associations face? First of all it is necessary to change or rather restore their original name "guild" (there are some exceptions where this does not apply). A new concept has also been established – branch associations, which are organisational units with derived legal entity. The recording of these entities in public registers will be conducted by registration courts. Within given statutory time, guilds will also have to adapt their provisions

to new legislature and provide the register with data that will not be automatically transferred from the list of public associations.

In June 2013, the government approved the change of "Government principles of providing subsidies from the state budget of the Czech Republic to non-government non-profit organisations by government authorities". These are binding for central authorities that have been providing subsidies from the state budget to the third sector already since 2001. Newly approved changes respond to the need for the synchronisation of the principles with the so-called anti-corruption amendment to budget rules. For that it is also necessary to publish information on providing subsidies and their providers. The principles also react to the changes concerning non-profit organisations contained in the Civil Code, in effect beginning 1 January, 2014. The aim is to ensure smooth subsidy management after the changes have been made. In September of the same year the government approved "The main areas of state subsidy policy towards non-profit sector for 2014", proposed by the President of the Government Council for NGOs. On their basis the space for state subsidy policy in non-profit sector is determined and realised by means of subsidy programmes which will be introduced by individual ministries for 2014 and 2015. Actors of the third sector are thus informed about the type of subsidy they can apply for, which will be useful in their planning future activities. The findings from the qualitative research show that the selected organisations were mostly involved in applying for subsidies although they complained about the high level of bureaucracy, necessary financial cooperation on projects and time-limited possibility to make use of the money.

As in previous years, also in 2014 the public sector is actively cooperating with state offices, lobbying and organising civil initiatives. Organisations of non-government non-profit sector have their representatives in advisory bodies and committees of central and local authorities (government, ministries, and regions). The scope of their involvement varies. It depends on the type of founder and active participation or passive fulfilling formal rules only. Even this year the organisations became part of various inputs leading to the enforcement of their interests in policy creating.

4 Conclusion

For more accurate evaluation of the public sector, local governments and public opinion, a more extensive survey can be recommended, which, however, is beyond the scope of this work. Based on the findings, only a very general evaluation of the situation in the third sector can be derived from its representatives, citizens, and local government representatives. Accordingly, recommendations to the selected non-profit organisations can be made.

Using our findings, we can derive a general assessment of the situation in the third sector from perspectives of its representatives, citizens and administration representatives and we can provide the selected non-profit organisations with recommendations. The public sector presents an important part in lives of people in a democracy. It carries specific features, such as spontaneity, voluntarism, variability, public interest and civil environment, which make it different from other parts of national economy, such as state, market and households. Within these sectors there is a mutual communication and developmental changes occur. In an ideal situation they all complement one another. The relation between the state and third sector usually has the nature of mutual support based on communication and good relations. The situation between these entities is largely affected by history and political leadership(s) applied in the country. Public policy is performed by actors whose effort is an interest in a process and a consequent result. One of the reasons for the establishment of the present public sector was its involvement in public life, in a sense of its participation in applied policy. The

aim of this involvement should lead to influencing decision-making processes of administration representatives in a peaceful form. To obtain such power necessary for this activity, the public sector should not be regarded as a sole supplement in places where there is no state activity. Entities should mutually define their goals and possibilities so that non-profit organisations could take their opportunity to influence public policy. Pursuant to the elicited data, none of them created pressure situations. The reason can be found in their financial dependence and personal support of municipality and region representatives as well as in the dependence on subsidies from European Union funds often first discussed by local governments and their would-be reluctance to cooperate in mutual activities. Organisations tend to focus on their primary activities and succumb to public policy rather than actively influence it. What can be assessed positively is how the non-profit organisations view citizens who come forth with both financial and moral support which, however, is not sufficient enough to sustain their activity. The interest in an organisation is to an extent affected by the kind of activity the entity performs. The more the activity relates to citizens, the higher is their support. The quantitative research in both regions revealed that the respondents' attitude towards the public sector was rather positive, which was obvious from a number of its members or donors representing all age categories and all municipality sizes.

Acknowledgements

The information introduced in this paper resulted from the solution of a project of IGA No. 20131036, Faculty of Economics and Management, Czech University of Life Sciences Prague, "Involving citizens of rural communities in public life."
The authors of the paper wish to thank Ms. Schneider for making their contact with several organizations possible.

References

Arikan, G. and Ben-Nun Bloom, P. (2014) *Social Values and Cross-National Differences in Attitudes towards Welfare,* Political Studies, 8 JAN 2014, [Online], Available: http://onlinelibrary.wiley.com/doi/10.1111/1467-9248.12100/full [28 June 2014]

Disman, M. (2002) *Jak se vyrábí sociologická znalost (How sociological knowledge is created).* Praha: Univerzita Karlova Praha.

Frič, P. (2000) *Neziskové organizace a ovlivňování veřejné politiky (Non-profit organisations and influencing public policy),* Praha: AGNES.

Frič, P. and Goulli, R. (2001) *Neziskový sektor v České republice (Non-profit sector in the Czech Republic),* Praha: Eurolex Bohemia.

Müller, B. K. (2008) *Evropa a občanská společnost (Europe and civil society),* Praha: Sociologické nakladatelství.

Parkosová, D. (1998) *Občanský sektor. Fakta pro každého. (Public sector. Facts for everyone),* Praha: Informační centrum nadací a jiných neziskových organizací.

Potůček, M. (ed) (2005) *Veřejná politika (Public policy),* Praha: Sociologické nakladatelství.

Rektořík, J. (ed) (2007) *Organizace neziskového sektoru. Základy ekonomiky, teorie a řízení (Non-profit sector organisations. Basics of economics, theory and management)*, Praha: Ekopress.

Rikman, E. (2014) Civic *Sectors in Transformation and Beyond: Preliminaries for a Comparison of Six Central and Eastern European Societies*, [Online], Available: http://apps.webofknowledge.com.infozdroje.czu.cz/full_record.do?product=UA&search_mode=GeneralSearch&qid=1&SID=Y2tE7Jr8KXqLgJjnMyq&page=1&doc=2 [28 June 2014].

Skovajsa, M. (ed) (2010) *Občanský sektor (Public sector)*, Praha: Portál.

Stachová, J. (2008) *Občanská společnost v regionech České republiky (Civil society in regions of the Czech Republic)*, Praha: Sociologický ústav AV ČR.

Turnerová, J. et al. (2007) *Cesta ke skrytému bohatství neziskové organizace (A path to hidden wealth of non-profit organisations)*, Praha: Spiralis.

Content

ISBN 978-80-213-2545-6