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The adaptability of stakeholders to new approaches in rural development in the Czech Republic

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Abstract

The paper deals with the adoption of new approaches in the practice of rural development. Major attention is paid to the LEADER approach, with the objective of evaluating the implementation of the principles in the activities of actors associated with Czech LAGs. Techniques of content analysis and interviews with selected representatives, mainly with managers of LAGs, were used for sociological empirical research. The results analyse concrete clashes between the hierarchic structure and the principle of network co-operation, which is starting to develop successfully at state-wide and international levels. Next, the results point out the failures in the implementation of the LEADER approach in the Czech Republic which have been overcome (linked with the principles of recourse from locality, decentralised management and financing, partnership) and, on the contrary, those which are still ongoing (linked with principles of integration of sectors, innovativeness). In the Conclusion, research questions for further solution are formulated.

Key words

Countryside, development, territorial governance, stakeholder, LEADER

Anotace

Článek sleduje osvojování nových přístupů v praxi venkovského rozvoje. Zaměřuje hlavní pozornost k přístupu LEADER a cílem je zhodnotit stav implementace jeho principů v jednání aktérů, sdružených v českých MAS. V sociologickém empirickém výzkumu byly využity techniky obsahové analýzy a rozhovorů s vybranými reprezentanty, povětšinou manažery MAS. Výsledky analyzují konkrétní střety mezi hierarchickou strukturou a principem síťové spolupráce, která se začíná úspěšně rozvíjet na celostátní i mezinárodní úrovni. Výsledky dále poukazují na dosavadní nedostatky, které jsou při implementaci přístupu LEADER v České republice překonány (spojené s principy východiska z lokality, decentralizovaného řízení a financování, partnerství) a naopak, které trvají (spojené s principy integrace sektorů, inovativnosti). V závěru jsou formulovány výzkumné otázky pro další řešení.

Klíčová slova

Venkov, rozvoj, územní vládnutí, stakeholder, LEADER

Introduction *

The LEADER initiative ceased in 2006 and examples of its practice demonstrated conjunction with the general objectives of the EU, especially with competitiveness and sustainability, as they were declared in the (revised) Lisbon and Göteborg Agendas. The intangible results of the LEADER initiative, i.e. how the initiative contributed to a higher level of rural administration, are considered as equally important. Such benefits of the LEADER initiative were formulated during the final LEADER+ Observatory Conference, which took place in Évora in Portugal in November 2007 (for more about this Conference, refer to [18]).

* The paper is part of IGA 11190-1312-3134 ("Local actors and their capability for implementation of new approaches in rural development") and VZ MSM 6046070906 ("Economics of resources of Czech agriculture and their efficient use in frame of multifunctional agri-food systems").

The LEADER initiative continues in a transformed version. In the period 2007 – 2013, it has advanced as a unique approach to new European rural development programmes. The basic feature of such an approach is its target orientation on establishing regular territorial administration. The success of this target is dependent on the quality of local partnerships and networks, local development strategy, executive structures and the framework of the systems of regional and state-wide administration. Local identity, multi-sectoral partnership, social inclusion, creation of social capital and sustainable exploitation of public and private resources play important roles in this quality. These statements were also made at the conclusion of the above-mentioned Conference [18]. From a theoretical point of view, we can regard this orientation by contemporary paradigm of rural development as a dual socio-ecological process of local resources re-establishing ("territorial capitals") and simultaneously as a widening and deepening of interaction with the wider environment of national and international economies [20].

The new approach to rural development represented by the LEADER approach is connected with voices of hope and apprehension at the same time. The apprehension is related to a disruption of vertical co-operation and the principles of centralised government and the merging of the actors of Local Action Group (LAG) type with these structures. In this case, the principles of LEADER would be cancelled and LAGs would become a part of the rural elite, instead of the initiators and mediums in a balanced partnership which creates space for all potential actors [18]. The same apprehension was pronounced by the authoress in the conclusions of her paper at the Agrarian Perspectives XVII scientific conference. [12].

The observed dilemma is embedded in the framework created by more theoretical concepts. The wider, contextual concept deals with the contemporary stage of social evolution, called the "network society". From the end of the 20th century, scientific discourse has proceeded and its participants demonstrate two different attitudes. The optimists guide a "discourse of freedom" and place their hopes in the "network society" to overcome the failures of the "organised modernity" stage. The pessimists guide a "discourse of control and surveillance" and do not share these hopes. The concept of a "network society" is outlined by J. Keller [14] by paraphrasing the opinions of U. Beck, L. Boltanski, M. Castells, E. Chiapello, R. Nisbet and others (for more on this topic, see [12]). The authoresses sum up from the narrower concept, i.e. the concept of rural administration in the way of decentralised political co-ordination at regional and local levels, which helps to demonstrate how regional and local policies can be created efficiently and effectively [2]. New social initiatives and movements, which emphasise rural identity and point to post-materialism, are important actors in such an organised policy [8]. The model of rural development which is built on this principle [20] plans on the creation of networks of diverse actors acting in rural areas and on these networks arranging social events [1]. They enable multi-layered democratic participation [7], so we start to notice fluid and polycentric assemblies which administer rural territory [8].

It is precisely the LEADER approach which reflects the situation of an incoming "network society" in rural development. According to the opinion of specialists, it seems to be an effective tool for rural administration [2], [3], [9], [15], [24]. New member countries of the EU still have not had enough experience with this new model of territorial (rural) development. Old member countries have experienced it for 20 years already, new member countries have only gone through this experience for 5 years. That is why there are some questions to consider by those who are studying the given dilemma in new member countries (i.e. M. Halamska, I. Kovách in [21]). The common denominator of these questions is the success of the implementation of new approaches in rural development, if this implementation is organised by the experience of old member states.

Meanwhile, original scientific essays on the implementation of new models of rural development in the Czech Republic are rare. Numerous authors are concerned with the practical methodology for the implementation of the LEADER approach in the administration of the Czech countryside (O. Čepelka, T. Havránek, A. Lehmannová, K. Matoušková, J. Martínek, P. Pelc, etc.). Others present partial results of empirical investigation on LAG´s activities in the Czech Republic (G. Červená, H. Hudečková, L. Ježdíková,

Z. Kroupová, M. Lošťák, G. Pavlíková, etc.). This paper ranks among the latter group.

The authoresses of the paper address two particular spheres of questions with reliance on the above-mentioned theoretical bases:

- integration of farmers into activities of rural development within the LEADER approach;
- experiences of stakeholders in rural development with co-operation within LAGs, in comparison with other forms of co-operation in rural development.

One of the authoresses has been following the first sphere of questions for three years. This paper reassumes the already published essays of H. Hudečková and M. Lošťák in Agricultural Economics 2008 [10], [11], which analysed the participation of farmers in LAGs, which had succeeded with submission of the Integrated Territorial Development Strategy and had been supported by the Ministry of Agriculture of the Czech Republic for its realisation in 2004 – 2006 (LEADER+, LEADER ČR). The purpose of this paper is the exploration of the hypothetical conclusions which arose from the previous survey – the integration of farmers into rural development activities within the LEADER approach does not imply the fulfilment of endogenous elements and essential characteristics of this approach, more likely the integration of farmers operates as an additional external source (exogenous element) for the development of their farmsteads.

The second sphere of questions was not examined until the year 2009 and the second authoress of the paper pursues it in preference. The objective is to find out how the stakeholders of rural development, who participate in the LEADER approach, judge this co-operation and this partnership, in comparison with other forms of co-operation in rural development with which they have experience. The intersection of these two spheres is the evaluation of the co-operation of rural development stakeholders of non-agricultural and agricultural origin within the LEADER approach and other development programmes.

Within the examined issue are relevant stakeholders who are experienced, not only in co-operation within LAGs, but also in other forms of co-operation within rural development (see below for a sampling of interviewees).

Data and methods

The solution to the first given sphere of questions proceeded in the first phase through a technique of documentary study and content analysis. Materials used for this analysis were:

publicly accessible documents on the LEADER approach and its implementation in the practice of the rural development policy in the Czech Republic;

cards of LAGs which fulfilled two conditions – they involved farmers (and consequential processors) as their members and were approved for financing in the 2004 – 2006 period;LEADER+ Magazine (years 2005 – 2007).

Materials No. 2 and 3 were analysed according to the quantitative method of B. Berelson. The results of this analysis allowed the formulation of the hypothesis previously mentioned, and the comparison of the short Czech experience with the situation in old EU member countries (which was presented in the special magazine – No. 3). The formulated hypothesis could be verified in 2009 by field research.

In randomly chosen NUTS III Regions of the Czech Republic where the LAGs can operate (Regions NUTS III Karlovarský kraj, Plzeňský kraj, kraj Vysočina, Pardubický kraj, Olomoucký kraj and Moravskoslezský kraj—thus in the smaller half of the complete set), two LAGs in every NUTS III Region were chosen by non-probabilistic sampling, called snowball sampling. The LAGs were chosen according to the "success" criteria from 2004 up to the present time. The success of the LAGs was measured by a) the number of submitted projects (1 – 6), b) the number of projects approved for support (1 – 4). By this method, a set of 12 LAGs was chosen, ranging from the greatest success (5 approved projects out of 6 submitted projects) to the least success (1 unapproved project). These criteria arise from the assumption of the diversity of attitudes to reviewing the LEADER approach with regard to acquiring support within this approach. These 12 chosen LAGs create 4 groups according to the measure of design success – the first group is created by the most successful LAGs and involves

3 LAGs, the second group contains 2 LAGs, the third group is created by 5 LAGs (the highest number) and the fourth is created by the least successful LAGs and contains 2 LAGs.

Interviews with the managers of the selected LAGs were conducted during July and September 2009. These interviews were arranged and explained in advance. In total, 15 interviews were conducted with an average duration of 90 minutes. Apart from the interviews with managers, 3 other interviews with competent representatives (the Head and the Chairman of the LAG) were conducted. In order to obtain the most precise record and to ensure the validity of the data obtained, two or three researchers always participated in the interviews. For the same reason, the records were completed (in cases of ambiguity and inconsistency) by ex-post electronic questioning. The record sheet for these interviews with a low level of standardisation contained 10 general questions. Three of these refer directly to the integration of farmers in LAGs and another four questions are related indirectly to this topic. One question is aimed specifically at other forms of co-operation within rural development. At the same time the results for the second topic which was determined for this paper, can be obtained from five questions.

Results and Discussion

There are 155 Local Action Groups in the Czech Republic according to the bulletin, LEADER – budoucnost venkova 2009 [19]. But the database on Local Action Groups and the Leader approach [25] registers 160 Local Action Groups. Some Local Action Groups, which had not succeeded in LEADER+, ceased their activities, but did not log out of the database. That is why there is a difference in information about the number of LAGs. For the purposes of this paper, we will use data from the National Network of LAGs (155 Local Action Groups). The LAGs cover an area of 56 133 km2 (71,2 % of the territory of the Czech Republic) and represent 4 154 489 inhabitants (39,6 % of the total number of inhabitants).

In the area of Bohemia, 86 Local Action Groups operate (out of this number, 80 Local Action Groups are still active, 6 LAGs are stagnant) and, in the area of Moravia, 69 still-active LAGs operate.

The largest number of Local Action Groups operates in the NUTS 3 Region – the Olomoucký kraj (18 LAGs) and Středočeský kraj (17 LAGs). On the contrary, the smallest number of LAGs is located in the Karlovarský kraj (only 5 LAGs). The number of LAGs is influenced by the size of the given NUTS 3 Region. For example, Karlovarský kraj is the second smallest NUTS 3 Region in the Czech Republic with the smallest number of LAGs (we do not take into account the Region of Prague, because Prague can not participate in the Leader approach). But the Olomoucký kraj occurs in the middle of the table of Regions in the Czech Republic, according to size, and the largest number of LAGs is located in this Region.

When considering the legal identity of LAGs, the two most common legal identities are the Civil Association (102 LAGs are Civil Associations) and the generally useful company (50 LAGs). Only 3 LAGs are interest associations of legal entities.

LAGs which have been supported (approved for funding from the Rural Development Programme (RDP) of the Czech Republic) for realisation of the Strategic Plan LEADER (SPL) are represented in Table 1.

Twelve LAGs, selected in the above-mentioned manner, entered in research in the field. They were established from 2002, mainly in 2004 and 2006. Farmers are present in all the LAGs, with private farmers, agricultural companies and co-operatives equally represented. It is important to note that the basic data on the agricultural stakeholders obtained directly in the field do not correspond to the data published in the LEADER bulletin– budoucnost venkova 2009—which was issued by the Ministry of Agriculture of the Czech Republic during the same period in which the survey was conducted.

It is not an exception that the entrepreneurs who participate in the LAGs are mostly represented by agricultural entrepreneurs. Not only from our survey, but also from other studied resources, we are able to conclude that the level of participation of farmers in LAGs is increasing. However, it was confirmed that this participation remains on a formal level and that real activity is not considerable. When we analysed the projects of the observed LAGs in detail, we did not arrive at any

Region/Kraj	Number	Share of the total (%)
Moravskoslezský	8	100,0
Královéhradecký	12	91,6
Plzeňský	8	88,8
Jihomoravský	9	81,8
Jihočeský	12	75,0
Zlínský	12	75,0
Pardubický	7	72,7
Olomoucký	12	66,6
Středočeský	11	64,7
Liberecký	5	62,5
Karlovarský	3	60,0
Vysočina	9	56,2
Ústecký	4	50,0

Table 1: Successful LAGs within LEADER 2007 – 2013 (N = 112, i.e. 72,3 % of the total).

different results from those which we had arrived at in our previous papers – farmers participate in roughly one third of the total projects (this reality is also typical for old member states, although, from the analysis of the LEADER+ Magazine, a slightly increased activity of farmers in project submitting is noted [10]. The managers of LAGs do not perceive any other features in this attitude of farmers than those which are generally valid for the corporate sector which participates in the LAGs. There exists the prevailing opinion that entrepreneurs, including farmers, do not see their place in the LEADER programme (in comparison with other EU programmes). Other problems, which apply to farmers more than to other stakeholders participating in LAGs, are: the seasonal character of their work, which does not allow for regular co-operation; the current situation, which does not allow farmers to think about development, but rather to maintain the conditions; heavy performable demands for project sustainability. Farmers (but also entrepreneurs in general), more than other stakeholders, have an aversion to being subject to administrative acts.

On the other hand, positive signals were also registered which overcome the generally predominant opinion that "farmers require only money, but they are not interested in co-operation". Such signals (albeit always only in isolated cases) are: the initiative of the LAG´s establishment, active co-operation in creating SPL, position in the decision-making bodies of LAGs and informative and advisory activities incidental to this position for other members of LAGs, handing over of the information on experience in acquiring subsidies from other programmes, electronic communication for the fulfilment of the LAG´s activities.

However, the projects of farmers are rarely aimed at spheres other than the technical and technological modernisation of farmsteads (the building of a tourist infrastructure constitutes an exception). Within these projects, they are considering impacts on maintaining the level of employment, improving working conditions, animal welfare, nature preservation and building in accordance with the landscape. Projects which reflect innovativeness and specific thematic orientation, with regard to farmers in co-operation with other local actors, i.e. projects aimed at increasing the value of local products, are absent.

We can conclude for this sphere of thinking (for more general reflection and new questions see the next part of the paper) that the fulfilment of endogenous elements and other essential characteristics of the LEADER approach (integrated and partnership features) occurs in the activities of farmers participating in LAGs less commonly (elements of this approach are more fulfilled by stakeholders such as municipalities and their associations; these elements are slowly advanced through network co-operation among particular LAGs). That is why the second sphere of empirical observation is focused on the questions of experience with varied forms of co-operation in rural development (bodies and organisations of hierarchic structure, voluntary co-operation within various associations) and the comparison of them with co-operation within LEADER.

Co-operation of LAGs with bodies and organisations of hierarchic structure is related to the Ministry of Agriculture, State Agriculture Intervention Fund, regional authorities of the NUTS III Region, the Institute of Agricultural Economics and Information and municipal authorities (usually the locally relevant municipal authority according to the seat of the LAGs).

The necessity for co-operation with the Ministry of Agriculture (MA) arises from the fact that the Ministry of Agriculture is the managing authority for the Rural Development Programme (RDP) of the Czech Republic for the years 2007 – 2013. However, this co-operation is affected by the negative experiences of managers of LAGs and subsidy applicants with the Rules of RDP for Axis IV – LEADER. These rules are too strict, because they specify precisely i.e. acceptable costs, which influence the activity of LAGs and their pursuit of innovativeness. According to the managers of LAGs, the Ministry of Agriculture does not demonstrate the will to fight for LAGs and to arrange for some exceptions. Thanks to these exceptions, LAGs would not be forced to realise projects which they do not need to realise, and they would be able to realise projects which are really important for the development of a particular area. Co-operation with the MA from the aspect of providing information is also seen as problematic by managers.

The State Agriculture Intervention Fund (SAIF) is the paying agency of RDP and belongs to the competence of MA. For this reason, the experiences of co-operation with SAIF are interconnected with experiences with MA. The negative experiences with SAIF concern controlling and administrative activities connected with project applications. The process of administration within RDP is very demanding and time-consuming. This is why some stakeholders do not try to prepare projects and submit project applications. Some managers consulted the methodical regulations of PRG with SAIF (or its regional departments), but the information obtained was not useful. Frequent changes of the Rules for Axis IV of RDP and a lack of transparency in project evaluation were criticised not only in connection with SAIF, but also with MA. These aspects also discourage possible subsidy applicants. Nevertheless, positive experiences were also mentioned regarding consultation and co-operation with employees of SAIF and its regional departments. This means that the success of consultation with SAIF is dependent on the individuals more than on the hierarchic structure.

Co-operation with regional authorities of NUTS III Regions takes different shapes. The establishment of one selected LAG was initiated precisely by the particular regional authority, because the territory of region NUTS III has to be covered by a higher number of LAGs. It is important to mention that, after failure of the SPL application, the LAG ceased its activity (even though it is still registered as an active LAG). However, regional authorities (or its Department of Regional Development), in three cases, represent the bodies which are asked by LAG for assistance or necessary information.

The Institute of Agricultural Economics and Information is the allowance organisation which co-operates with LAGs mainly on the vocational training of managers of successful LAGs. Managers regard this training as useful and point out that, thanks to this training, they have established many contacts with other managers.

Voluntary co-operation of LAGs with various associations in the Czech Republic is represented by co-operation among LAGs, co-operation of LAGs and the voluntary associations of municipalities, the National Network of Local Action Groups in the Czech Republic and other associations, as well as international co-operation.

Local Action Groups can co-operate with other LAGs on two levels. The first is based on the exchange of experience and information about the LEADER approach, mutual assistance with administrative activities and visits of LAG representatives, mainly to hand over the thus named "good practice" within the implementation of the LEADER approach. Not only do unsuccessful LAGs visit successful LAGs, but visits between successful LAGs also often take place. This level of co-operation is of a rather informal nature. The second level of co-operation among LAGs is represented by the co-operation project within measure IV. 2. 1. of RDP, which is called the Realisation of Co-operation Projects. This co-operation is formalised by the conditions of particular measures. The National Network of Local Action Groups constitutes another form of co-

operation among LAGs in the Czech Republic and will be specified later.

Co-operation of LAGs with voluntary associations of municipalities (also called microregions) arises from the fact that the territory where the LAG operates is identical with the territory of the voluntary association of municipalities, which is a member of LAG, or the territory of LAG is created by the territories of several voluntary associations of municipalities which are members of LAG. That is why it is crucial to co-ordinate the activities of both the Local Action Group and the voluntary associations of municipalities, in order to prevent the duplication of activities and the waste of human and monetary resources. The representatives of microregions (most frequently the Chairman of the Association, i.e. the Mayor of one of the member's municipalities) in some cases play important roles in co-operation within the LAG (the Mayors of other members' municipalities also fulfil these roles). These stakeholders (Chairmen of microregions, Mayors of municipalities) are very active and are able to cope with the administrative demands of subsidy applications within the RDP. The initiative of the establishment of LAGs arose from the activity of voluntary associations of municipalities in 5 cases of 12 observed LAGs.

The National Network of LAGs of the Czech Republic merges local action groups operating within the territory of the Czech Republic. According to our research, expectations which were placed in the National Network of LAGs by particular LAGs have not so far been fulfilled. This could be influenced by the fact that the National Network of LAGs is at the beginning of its activities. Some respondents claimed that the National Network of LAGs should fight more against the MA and SAIF because of administrative demands on submitted applications. One manager considers the National Network of LAGs as merely another level of co-operation for which it is again necessary to pay membership fees. The National Network of LAGs operates not only in the territory of the whole State, but there are also Regional Networks of LAGs which act in the particular NUTS III Region (i.e. Regional Network of LAGs Moravskoslezsko) and which create the National Network of LAGs.

International co-operation can be realised within measure IV. 2. 1. of RDP (Realisation of Co-operation Projects), because a condition of this measure allows LAGs to co-operate not only with other LAGs in the Czech Republic, but also with LAGs abroad. Other options for the realisation of international co-operation are the particular operational Programmes of Cross-border Co-operation within the third objective of European Regional Policy – European Territorial Co-operation. Our research showed that Czech LAGs rather utilise operational Programmes of Cross-border Co-operation. Besides common project realisation, LAGs from different countries also exchange experience, information and "good practice", just as the Czech LAGs do. Projects of cross-border co-operation are created by LAGs from the Czech Republic and Poland, Slovakia and Germany. This co-operation often originates in historical bonds among regions which are now separated by state boundaries. Italy and Spain are other countries which participate in international co-operation with the Czech Republic. Co-operation on the basis of the exchange of experience and "good practice" is realised with Ireland, France, Austria and Slovenia.

Co-operation with other associations is based on providing information and the coordination of activities leading to rural development. In this context, 10 various associations at most were mentioned by the interviewed managers.

Synthesis of Results and Discussion

M. C. Maurel [21] deals with the implementation of the LEADER approach in the Czech Republic, Poland and Hungary. The authoress starts from the 20 years of ongoing changes in territorial governance in these countries. She states that, within the process of decentralisation and widening of local autonomy, territorial governance was given greater room to manoeuvre, in which a wider spectrum of stakeholders could operate. These are urgently required to be able to coordinate and integrate activities which are included in local self-government. On the basis of the new structure of distribution of property and the creation of a diversified rural economy, these stakeholders have to adopt new models of action to be adaptable to new approaches in territorial governance and can succeed with them in the open space created by

globalisation and the market economy. In this sense, the authoress places emphasis on the art of actively engaging in contemporary communication and information networks and on the innovative handling of specific local potential. There is the question posed in the overtone of this paper whether the implementation of the LEADER approach can be successful in new member states when it is implemented on the basis of the experience of countries with a different social environment.

The results of our research also deals with this question, compared with the papers of other authors.

The activities within Local Agenda 21 and the voluntary associations of municipalities (microregions) belong among the new approaches by which stakeholders in rural development learn to co-operate in territorial governance within the bottom-up principle, partnership principle and principle of integration [6], [22]. These stakeholders have longer experience, mainly with microregions (from 2000), but in this case their spectrum does not include farmers and other entrepreneurs. This is one of the reasons why the representatives of municipalities and associations of municipalities are the initiators of the LAG´s establishment and activities, more often than other stakeholders participating in LAGs. Entrepreneurs, including farmers, have gained more experience with thematically oriented programmes in which they individually participate.

Clashes between the hierarchic structure and the principle of network co-operation, as we mentioned generally in the Introduction, were confirmed by empirical research 2009 (in compliance with [12], [16], [4]). Determined rules (and the related need for information and consultation) and controlling activities (and the related transparency of project evaluation and allocation of funds) are the focus of these clashes. The consequences of the given lack of co-operation between superior bodies and LAGs are reflected in the lower possibility of the use of the essential principles of the LEADER approach—to solve in the locality only those problems necessary to be solved and to do that innovatively. The final impact is thus the limited capacity building of social capital, because the trust in view relationship is declined. According to results, a competitive relationship among LAGs is established (instead of network co-operation) as a consequence of the non-transparent actions of central bodies during project evaluation and the allocation of means. These negative experiences weigh against cases of positive experiences addressed to bodies of hierarchic structure on state-wide and regional (NUTS III) levels. Therefore, the lower level is more often related to positive experiences.

Functional network co-operation among LAGs on state-wide and international levels is confirmed by the results of research 2009 (in compliance with [17], [4]). It concerns concrete advisory activities of more successful LAGs to less successful LAGs and more general activities of the exchange of experiences of “good practice” of LAGs (for more see [23]). Co-operation between LAGs and microregional associations from the same territory is entirely common. It is interconnected by common stakeholders; LAG also can be established on the basis of these associations. Co-operation of LAGs with other rural development initiatives is relatively widespread – these initiatives operate in the same territory, exchange information and experience and co-ordinate activities. The following findings are opposite in nature. There are people among members of the LAG management who do not comprehend why different stakeholders such as municipalities, NGOs and entrepreneurs, participate in LAGs. When LAGs submit projects of international co-operation, they rather prefer operational programmes of Cross-border co-operation than Axis IV of RDP.

The results of research 2009 in comparison with other papers [23], [12], [5] allow for the speculation of some main errors in the implementation of the LEADER approach to the practice of rural development in the Czech Republic. The primary incorrect role of LAG (to be the regional grant rural agency) has already been replaced by the required role of LAG (to be an association of diverse partners co-operating in the promotion of local identity, the revival of the rural community and the diversification of the rural economy). These stakeholders participate in the creation and correction of territorial development strategies more often than they did in the beginning of the implementation of the LEADER approach, when the greater role was played by external experts. The

main starting point and recourse for these strategies in specific local potential are still absent, known in the economics dictionary as the competitive advantage of region. The implementation of the innovative principle in the solution of specific local needs also remains in the background. The innovative principle often has to be linked with the principle of integration of various sectors into a mutual partnership co-operation to achieve the above-mentioned specific potential. This is also absent. Another error, which is still continuing, is the insufficient institutionalisation of support in communication, co-operation and coordination in order to advance the practice of the LEADER approach from a small number of enthusiastic active participants to a qualified, numerous and multiple partnership co-operation. This failure is mainly solvable by social education which can manage to restore trust in collective action and to implement the model which highlights the reciprocity of profit in collective action instead of one-sided own profit.

Final Evaluation and New Questions

Six years of experience with the LEADER approach in the Czech Republic have pointed out both the achievement of new approaches in territorial governance and lasting failures. New questions, which we consider as important to be resolved, have arisen from these failures:

1. To what extent are these failures solvable within the hierarchic structure, whose heritage is carried by LEADER, although it crosses this structure, and to what extent is it possible to rely on social education in new approaches within collective communication, co-operation and coordination in network structures?

   A concrete question, which is summarised in the general one, is the request for the position of the National Network of LAGs in the Czech Republic. Its position could be situated on the contact surface of horizontal and vertical structures and the role of bridging the two diverse functional structures (therefore on the principle of equal partnership and subordination) should correspond with it.

   This general question is posed because the observed findings testify to a certain paradox – the effect of vertical structure limits the application of the LEADER approach in practice. The concrete question about the National Network of LAGs is posed because the observed findings are inconsistent – one person has great expectations of the National Network, another does not trust it and has greater expectations of the hierarchic structure.

2. The second general question is not entirely new, but its solution will have long-lasting effects. It deals with the evaluation of the success of the LAG. There is the prevailing opinion that measuring the success of LAG by indicators, such as the number of submitted and supported projects and the amount of allocated financial means, is not relevant enough. There is also a prevailing awareness about the need for monitoring of the long-term impacts of LAG´s activities in regions via indicators of quality of life but, at the same time, it is unknown how these observed impacts are affected by other developmental elements. The practice has developed to ensure the assumptions of the long-term positive impacts of LAG´s activities by creating utilities for improving their activities [23], [17], [5], which serve as an endogenous model of development. The authors M. Lošťák and H. Hudečková work on the suggestion of methodology for monitoring the effectiveness of LAGs by using the principles of the LEADER approach to publicise the activities of LAGs [13]. The content analysis of media statements is used as research technique. Meanwhile, 169 articles on LAGs have been analysed which were published in regional newspapers and regional enclosures of state-wide newspapers. An article about this is being prepared for the scientific journal, Agricultural Economics, with the prerequisite for publication in the current year.

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The Impact of Foreign Investments on the Achievement of Economic Growth

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Abstract

This article deals with the analysis of the positive side of the foreign direct investments in the World´s economy. The importance of this research is derived from the significant role that can be played by foreign investments in industrialized and developing countries. Some countries are still hesitant to attract the foreign investments despite its human and physical potentialities. The foreign investments are mainly influenced by political and economical factors. Foreign direct investments to developing countries are growing very rapidly. In the past, these investments were limited to raw material sectors, nowadays the current investments involve more sectors than ever before. These investments have implications of trade and integration. The revival of foreign investments implies that the risks to private investments have been lowered mainly because of specific policy changes and of improvements of governance more generally. In this research we have mainly used the descriptive methods on the basis of data collection.

The paper was processed within the framework of the Research Project of MSM 6046070906 Economics of resources of Czech agriculture and their efficient use in frame of multifunctional agri-food systems.

Key words

Foreign direct investment, global economy, international economy, developing countries, multinational companies, economic growth.

Anotace

Tento článek se zabývá analýzou pozitivní stranky přímých zahraničních investic na celém světě. Význam tohoto výzkumu je odvozeno od významné úlohy, kterou mohou hrát zahraniční investice ve vyspělých i rozvojových zemích. Některé země stále váhají podporovat vstup zahraničních investorů i přes existence lidského a fyzického potenciálu potřebného pro ekonomický rozvoj svých ekonomik. Příjem zahraničních investic je omezován politickými i ekonomickými zásahy vlád dotyčných zemí.

Přímé zahraniční investice do rozvojových zemí rostou velmi rychle. V minulosti byly tyto investice omezeny na odvětví surovin, ve srovnání s milnulostí jsou současné investice směřovány do více oborů. Tyto investice mají dopad jak na obchod, tak na integraci. Oživení zahraničních investic znamená, že rizika pro soukromé investice byly sníženy, především z důvodu konkrétních politických změn a zlepšení správy veřejných statků obecně.

V tomto výzkumu jsme použili především popisné metody na základě sběru dat.

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Klíčová slova

Přímé zahraniční investice, globální ekonomika, mezinárodní ekonomika, rozvojové země, nadnárodní společnosti, hospodářský růst.

Introduction

The foreign investments have participated in establishing and developing of economic infrastructure in many countries particularly in the developing ones. This has lead to mutual cooperation and formation of economic groups and the emergence of new competitors in global economy mainly among the developing countries with China and India ahead.

The foreign investment phenomenon has clearly shown it self and largely spread after the World War II. It has participated in solving a lot of economic and social issues after the collapse due to this war which had completely demolished the political and the economic relationships with awful consequences. Within this limited research, we are attempting to study the foreign direct investment conception and how far it affects the global economy from within the multinational companies.

Firsthand Foreign Investments

Economic experts declare that more than 45% of the individual income increase in industrialized countries is ascribed to the increasing manipulation of modern technology in industry. Therefore, investment in technological research has achieved the highest investment revenues in comparison to other investment activities.1

Nowadays, the international economy during years of strong competitors rise that affects the stability of actually achieved growth rates, as it threatens its existence in this regard due to many factors among which are: the end of the United States Housing Bubble, Credit Crisis resulting form such development, devalued dollar against main currencies and continuing degraded global economy and oil prices increase.2 Table (1) shows the actual worldwide rate of growth between (2001-2006).

Foreign direct investment has played a vital role during the second half of past century in supporting of economies in the developing countries particularly during the last two decades that witnessed a large notable increase in investment flows. It also accounts for the changes at the global economic structure and the march towards market economy in most of the developing countries and the release of trade and investments regulations in addition to increase of participations of these countries in global economy integration. This kind of foreign investment has pushed the economy for binding capital stock markets and manpower markets and caused an increase of wages and productivity of capital stock in host countries. And with the emergence of an international diverse relation network, there has been a huge trading activity where multinational companies has increasingly adopted global type strategies to make use of abundance resulting from such allotments and activity distribution.

The first hand investment is defined as "Long Term Investment" and includes a common interest and dominating of a resident entity on cooperation with a project related to another economy.3 This continuous mutual interest means long term strong relationship between the investing parties and a notable level of influence on the management of both parties. The foreign direct investment includes the preliminary dealing between the tow parties and that all other subsequent financial relations with other members in relation to investing parties, either a company or otherwise.4

The foreign direct investments are diverse in activity, such as construction of a new project; own of assets of an existing corporation or through merge and ownership. The international foreign investment fund is defined as firsthand when the investor owns (10%) or more of the shares of one of the operated institutions provided that the ownership is linked to the authority to influence of the institution.5

From the above two definitions, it is obvious that the foreign investment is an actual long term investment in productive assets and means that the foreign investor is practicing some sort of influence on the management of the project. Economists

[1] *United Nations Development Program, Arabic Humanitarian Development Report (2003) page 99.*

[2] *Horizons of 2008 and Status of Global Economy, UN, N.Y 2008, p.1*

[3] *Hanaa Abdel Ghaffar "Direct Foreign Investment and Global Trade (China Model), Byit Al Hikma, Baghdad, 1st edition, 2002, P.14*

[4] *United Nations, "Guide to Global Trade statistics in Services", issue No.86, 2006, P.15.*

[5] *Hassan Khidr, (Foreign Firsthand Investment), Arabic Institution for Planning, Kuwait 2004. P.*

consider the decrease of the economic development and the slow process of economic development goes back to a number of essential factors ahead of which what is known to be the gap of financing "Investment Gap" which is the outcome of local savings needed for investments to support the growth of economy. This gap is the most important problem that faces the economy of developing countries.

Therefore, political decision makers were oriented to abridge such gab through promotion of local savings and stimulating of the local and foreign investment within preparation and improvement of investment procedures. This is known as overall economic status, trends, political, legislative, and administrative atmosphere that might affect the attraction and activation of investments. The factors affecting the investment environment are not

Year	2001	2002	2003	2004	2005	2006
World	2.5	3.1	4	5.3	4.9	5.4
Advanced Countries	1.2	1.6	1.9	3.3	2.5	3.1
United States	0.8	1.6	2.5	3.9	3.3	3.3
Euro	1.9	0.9	0.8	2	1.4	2.6
United Kingdom	2.4	2.1	2.7	3.3	1.9	2.7
Japan	0.2	0.3	1.4	2.7	1.9	2.2
Canada	1.8	2.9	1.8	3.3	2.9	2.7
Other advanced States*	1.7	3.3	2.4	4.1	3.2	3.7
Asian recent industrial countries●	1.2	5.4	2.5	5.8	4.7	5.3
Australia	2.1	4.1	3.1	3.7	2.8	2.7
Developing countries and other emerging economy markets♦	4.3	5	6.7	7.7	7.5	7.9
Africa	4.4	3.7	4.7	5.8	5.6	5.4
Eastern and Central Europe•	0.2	4.5	4.8	6.6	5.5	6
League of Independent Countries	6.3	5.3	7.9	8.4	6.6	7.7
Asian Developing Countries	6.1	7	8.4	8.7	9.2	9.4
China	8.1	9.1	10	10.1	10.4	10.7
India	4.1	4.3	7.3	7.8	9.2	9.2
Middle East	3	3.9	6.5	5.6	5.3	5.7
Western Globe Countries••	0.5	0.3	2.4	6	4.7	5.5
Brazil	1.3	2.7	1.1	5.8	2.9	3.7
Mexico	-	0.8	1.4	4.2	2.8	4.8

Table 1: The World's real rate of growth between (2001-2006).

References: Common Arabic Economical Report, Arabic Monetary Fund, Abu Dabi.2007

* Advanced counties include : Australia - Cyprus - Denmark - Ireland - New Zealand - Norway - Sweden - Switzerland

● Recently Industrial Asian Countries are : Hong Cong - South Korea - Singapore - Taiwan.

♦ Developing Countries and Other Emerging Countries: Africa - League of Independent States - Asian. Developing Countries - Middle East - Eastern Globe.

• Eastern and Central Europe : Albania - Bulgaria - Croatia - Czech - Slovakia - Estonia - Hungary - Latfia Macedonia - Malta - Poland - Romania - Slovenia – Turkey.

•• This group includes the Eastern part of the globe, Latin America : Argentine - Antigua - Barbuda - Al Bahamas Bleas- Barbados - Bolivia - Brazil - Chilly - Columbia - Costa Rica - Dominican Republic - Mexico - Nicaragua - Panama- Paraguai - Peru - Suriname – Uruguay - Venezuela - Trebnda and Tobago.

Statement	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Number of countries adopting the changes in their systems with relation to foreign investments	49	64	65	76	60	63	69	71	70	82	101
Number of amendments in regulations	110	112	114	151	145	140	150	208	248	244	271

Amendments more suitable for direct foreign investments*	108	106	98	135	136	135	147	194	236	220	235
Less compatible amendments for direct foreign investments●	2	6	16	16	9	9	3	14	12	24	36

Table 2: National amendments in regulations (1994-2004).

* Includes actual Amendments includes or those looking for the support of the market besides increase of promotions.
● Changes that aims at increase of observation besides limitations of promotion.
Reference: UNCTAD, Foreign Investment Report, 2005, P.15.

subject to the recent situations only but may extend to the future prospective related to it.6

There could be some link to bind the concept of investment environment with the collective economic polices by defining the stable urging and attractive economic environment at the collective economy level. Various countries are still adopting laws and new regulations to accommodate its economical environment for investors. Amount to 271 changes which are related to foreign direct investments that have been adopted in 2004 there are 235 one related to pave the way before new files for foreign direct investment in parallel with issuing of prompting procedures (see table No. 2).

Firsthand foreign investment has many and various forms. This is evident in type and degree of relative importance against a set of considerations, part of which is related to the investing party, and the other to the political system adopted by the host country and the nature of the economy herein.

Therefore, the selection of a foreign investor is governed by several factors beyond his reach. It is commonly known that categorization of foreign investments into activities related to the property and ownership of assets in the host country, and other activities that do have assets.7

The first type of foreign direct investments: The investor posses a direct influence through his complete ownership or against a share that ensures his dominance on the management of the project and it comprises the following sub-types:

1. Incorporating of new companies at the host country by the foreign investor alone, and owned by him or in equal shares with the local participants at the host country.
2. The investor buys a national public project or shares and debenture.
3. Incorporations of the companies (limited company, joint venture, subsidiary, or joint stock) related to the overseas companies to conduct the firsthand foreign investment at the host country.
4. Investment in free zones and assembly projects.

The second type of foreign direct investments: This typ of investment has many forms such as: ″Subcontracting, turn key, administration contracts, hand delivery products delivery, market contracts, and participation in production contracts, privilege rights, licensing contracts, and marketing contracts″.

Open policy of global economy, and follow up of free economy systems in promoting the flow of capital stock and products inside and abroad which supports the investors trust in economy increases the rate of transfer of products, capital stock and transfer of modern technology between countries.

It is worthy of mention that phenomenon of increase of the company's activities of multinational companies unbind to assets, particularly at the beginning of the eighties since last century, as its inherited authority and ability to gain profits and share investment risks particularly in developing countries with unstable political and economical situations.

The foreign investments and transfers of expatriates are regarded as main financing resources and helped in pushing the progress wheel and

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[6] *Tarek Ahmded Nowair, International Trails for improving the Investment Environment, Egypt,the Cabinet,Development Studies Sector. 2004*
[7] *Hanaa Abdel Ghaffar "Direct Foreign Investment and Global Trade former ref, P.16*

development in a large scale which participated in the rise of participation of covering the imports of commodities, services as developing countries as a group from (66.4%) in the year 2005 up to (71.4%) in 2006.8

Governments that promote their national companies investments in other countries are looking for achieving their political and economical interests; this means that these investments are governed by mutual interests between the investing parties. Experiments have proved that the importance of the foreign investments and the role that can be played in achievement of important interests to those host countries. Some of them are:

- Provide uninterrupted resources in good terms to obtain foreign currencies and capital stock for financing the development programs.

Participate in local ownership development and increase the rate of private sector participation in the national outcome, and creation of a new sector of businessmen by means of social responsible individuals to participace in investment projects and updating of the new projects supporting foreign projects.

Provide of the facilities for host countries in modern technology, and advanced methods for some industries.

Provide new chances of employment, beside support of the development and training and human resources in host countries.

Support of competition between national companies, which is accompanied by a lot of interests represented by the decrease of monopoly and promotion of companies on improvement of the quality of services and products.

Support in open of new markets for exporting, particularly, multinational companies are fully equipped to penetrate the export markets with its high marketing skills.

Participation in improvement of the balance of payment by increase of export and decrease of import The release of economy in parallel with progress in the field of communication, and means of transportation to the increase of the integration of the international markets and services and capital stock.

The firsthand foreign investments have stimulated the process of integration by supporting the link between the markets and act in the way of increasing the respective wages and productivity of the companies in the host countries. The multinational companies have adopted strategies of international trait base on a large portion of privatization and potential activities to profit from the abundance that are achieved through these strategies.9

Multinational companies strategies differ in determination of the investment territory and status of competition, particulars of the host country. In this regard we could distinguish three main strategies:10 **looking for natural resources, horizontal strategy (market strategy), vertical strategy (cost minimization).**

Therefore, and in spite of continuous trials of the different countries to attract the foreign investments to threir markets, there are several political, economical, administrative factors that act as repulsion, such as:

- **Instability of total economy:** leads to retreat of the stimulus of the investors for the execution of new projects or more expansion in existing projects. More investments depend on how stable is the total economy, rate of exchange, monetray policy and the retreat of inflation and unemployment.
- **Restrictions on capital stock movement:** some countries may issue restrictions on movement of the capital stock and companies profits transfers to limit the investors, particularly foreign ones from investing in these countries.
- **Difficulty in obtaining the credits:** governments are narrowing private sectors

[8] *Hassan Khidr, (Foreign Firsthand Investment) former ref. P.1, 11*

[9] *Same above ref. p.14*

[10] *Naji Husain, "evaluation of the Investment Environment in Algeria", Jandul Magazine, 3rd year, Issue 24/2005.*

chances to obtain credits by limiting resolutions which may be required for obtaining of credits.

- **Unclear tax structure:** will lead to minimizing the ability of the investor on deciding the tax category he is subject to, in addition the governmnet can increase the taxes on companies.
- **Unskillful manpower:** is regarded as one of the restrictions of investments and may be the reason why poor countries with lack of educational facilities are becoming more poor.
- **Strict economy**: leads to minimizing of diversity of funding resources, and lack of export potentiality for the new investing companies, and limitations of the outside markets before these countries.
- **Multi resources of legislative authorities organizing the investment:** leads to less transparency and clarity in addition to the absence of laws related to the copyrights.
- **Complications of the administrative procedures:** and diversity of the authorities the investor has to deal with, and corruption suffered by the investors that will lead to more costs.
- **Unavailability of information**: about absence and investing potentialities available in several countries particularly the developing ones.

Multinational companies and their role in conduction and steering the foreign direct investments.

The financial crisis which has started during the third quarter of 2007 has revealed the increasing risks that the global economy is facing. The crisis did not only reveal the absence of sufficient observations and automation in work organization of the local capital stock markets, but revealed an increasing risks of infection in the frameworks of international market tending to be more integrated, at the time of becoming more obscure. In addition, the crisis has shed light, once again, on the problem of total economy at international level.11

The international output of these companies, financed by the foreign investment, is one of the main phenomenon in international economic activities. It includes a large portion of openness and integrity between the economies, which constitutes a mutual dependence of deep impact on progress both in developing and industrialized countries.12

Multinational companies are known to have, manage and practice, with direct ways, or indirect ones, an investment activity (marketing, services and others), outside its local and national borders.13

European countries and the Unites states and Japan (location for 85 companies) of the multinational type, to total 100 leading companies in 2004, and there are five states (Germany, France, UK, USA, Japan), the homeland of (73) of (100) leading companies. Whereas (53) of it are in the EC. This companies gain the lion share of the foreign investment. The (100) leading over national companies which are in the top are (General Electric, Vodafone, and Ford), which has 19% of the total of the assets of the (100) companies assets and dominated the car industry, pharmaceuticals and then communications.

This did not mean no developing progressive development of the companies, (particularly government owned companies), for the economies. Foreign firsthand investment has reached (133) milliard $ by 2005, that means 17% of the cash flow in that year, and this new resources would be of great importance to the host countries characterized by less national revenues.These several developing economies companies have become investment companies in several countries of less development. UNCTAD showed that the firsthand foreign investment, in southern states has expanded quickly within the last 15 years. Total flow has raise to 4 milliard $ between 1985, and to 61 millard $ in 2004, most of which has been directed to the developing and transitional economies.

From the table we notice that the asian group has occupied the first class among other developing countries in attracting the firsthand foreign investment, as it reached : 220.9 milliard $, in 2006

[11] *International economical status and horizons, UN, NY, 2008, P.3*

[12] *Hanaa Abdel Ghaffar " Direct Foreign Investment and Global Trade, former ref 2002, P.135*

[13] *Hassan Khidr, (Foreign Firsthand Investment), former ref. P.12*

compared to 177.7 millard $ in 2005, with an increase of : 24.3%. And, China, Hong Kong and Singapore, Turkey, Thailand are the most attractive for such investment.

The Latin American countries and Caribbean, comes second to above. Investment reached 83.8 mill. $ in 2006, compared to 75.5 mill.$ in 2005, with an increase of 10.9%. Brazil, Mexico, Celli are considered the most attractive in this group.

Third category comes arab countries, with 62.4 milliard $ in 2006, compared to 45.8 milliard $ in 2005, with an increase 36.2%. But the total share of the arab countries of the international firsthand investment stayed at 4.8%. As for the African continent, it witnessed retreat in firsthand investment as: 12 mill. $ in 2006, with a collapse to 21% from 2005. The firsthand Foreign Investment was mainly directed to two countries: Nigeria and Equatorial Guinea. Whereas the independent group of countries reached: 69.3 milliard in 2006,

	Company	**Origin**	**Industry**
1	General Electric	USA	Electronics,electrical
2	Vodafone Group plc	USA	Communications
3	Ford Motors	USA	Vehicles
4	General Motors	USA	Vehicles
5	British Petroleum	UK	Oil exploration, refinery
6	Exxon Mobil	USA	Oil exploration, refinery,
7	Royal Dutch / shell Group	UK & Holland	Oil exploration, refinery,
8	Toyota Motors	Japan	Vehicles
9	Total	France	Oil exploration, refinery
10	France telecom	France	Communication
11	Volkswagen	Germany	Vehicles
12	Deutsch telecom	Germany	Communication
13	RWE Group AG	Germany	Water, Electricity, gas
14	Suez	France	Water, Electricity, gas
15	E.on	Germany	Water, Electricity, gas
16	Hutchison Whampoa	Hong Kong China	Miscellaneous
17	Siemens AG	Germany	Electronics/ electrical
18	Nestle SA	Switzerland	Food and beverage
19	Electricte de France	France	Oil exploration, refinery
20	Honda Motor CO.LTD	Japan	Cars
21	Vivendi Universal	France	Miscellaneous
22	Chevron Texaco	US	Oil exploration, refinery
23	BMW AG	Germany	Cars
24	Daimler Chrysler	Us & Germany	Cars

Table No. 3: The top 24 over nationals companies, non-financial, in the world in the order of the foreign assets as of year 2004.

Reference: ONCTAD, Foreign Investment Report, 2005, P.10

Countries	**incoming cash flow**				
	2004	**2005**	**2006**	**Rate of change %**	**Share %**
World	742.1	945.8	1,305.90	38.1	100
Advance states	418.9	590.3	857.5	35.3	65.7
EC	204.2	486.4	531	9.2	40.7
UK	50	193.7	139.5	-28	10.7
USA	135.8	101	175.4	73.6	13.4
Independent states	40.3	41.2	69.3	68.3	5.3
Federal Russia	15.4	12.8	28.7	125.1	2.2
Romania	6.5	6.5	11.4	75.8	0.9
Developing Countries	283	314.3	379.1	20.6	29
Africa	11	15.2	12	-21	0.9
Nigeria	2.1	3.4	5.4	60	0.4
Equatorial Guinea	1.7	1.9	1.7	-11.6	0.1
Asia	153	177.7	220.9	24.3	16.7
China	60.6	72.4	69.5	-4.1	5.3
Hong Kong	34	33.6	42.9	24.6	3.3
Singapore	19.8	15	24.2	61.3	1.9
Turkey	2.9	9.8	20.1	105.2	1.5
India	5.8	6.7	16.9	152.9	1.3
Thailand	5.9	9	9.8	8.9	0.7
Latin America	94.3	75.5	83.8	10.9	6.4
Brazil	18.1	15.1	18.8	24.7	1.4
Mexico	22.4	19.7	19	-3.5	1.5
Chilly	7.2	7	8	14.3	0.8
Arab countries	24.7	45.8	62.4	36.2	4.8
Saudi Arabia	1.9	12.1	18.3	51.2	1.4
Egypt	2.2	5.4	10	86.8	0.8
UAE	10	10.9	8.4	-23.1	0.6
Sudan	1.5	2.3	3.5	53.6	0.3
Tunisia	0.6	0.8	3.3	323.5	0.3
Jordan	0.7	1.5	3.1	103.7	0.2
Bahrain	0.9	1	2.9	177.9	0.2
Morocco	1.1	2.9	2.9	0	0.2
Lebanon	2	2.8	2.8	0	0.2
Algeria	0.9	1.1	1.8	66	0.1
Qatar	1.2	1.2	1.8	55	0.1
Libya	0.4	1	1.7	67.1	0.1

Table No. 4: Firsthand foreign investments flows into regions of the world between 2004 -2006 , (Billions of dollars and percentage terms).

Ref. Common Arabic Economical Report, Arabic Monetary Fund, Abu Dhabi, 2007, Statistical Apendix

compared to 41.2 mill. $ in 2005, with notable increase of 68.3%.

The economical growth has been maintained in the developing countries during 2007 (6.7%), and accelerated growth for those transitional countries (8%), due to rise in prices of essential materials and strong demand in locally.14

The other type is decentralized, which has full freedom of issuing his own decisions in accordance to actual requirements. This type is catheterized by multi national owners, and geographically

[14] *Report about the economical statues in the world (2008), UN, N.Y, 2008, P. 2*

spreading in practicing activities and operations in worldwide bases.

European countries and the Unites states and Japan (location for 85 companies) of the multinational type, to total 100 leading companies in 2004, and there are five states (Germany, France, UK, USA, Japan), the homeland of (73) of (100) leading companies. Whereas (53) of it are in the EC. This companies gain the lion share of the foreign investment. The (100) leading over national companies which are in the top are (General Electric, Vodafone, and Ford), which has 19% of the total of the assets of the (100) companies assets and dominated the car industry, pharmaceuticals and then communications.

This did not mean no developing progressive development of the companies, (particularly government owned companies), for the economies. Foreign firsthand investment has reached (133) milliard $ by 2005, that means 17% of the cash flow in that year, and this new resources would be of great importance to the host countries characterized by less national revenues.These several developing economies companies have become investment companies in several countries of less development. UNCTAD showed that the firsthand foreign investment, in southern states has expanded quickly within the last 15 years. Total flow has raise to 4 milliard $ between 1985, and to 61 millard $ in 2004, most of which has been directed to the developing and transitional economies.

From the table we notice that the asian group has occupied the first class among other developing countries in attracting the firsthand foreign investment, as it reached : 220.9 milliard $, in 2006 compared to 177.7 millard $ in 2005, with an increase of : 24.3%. And, China, Hong Kong and Singapore, Turkey, Thailand are the most attractive for such investment.

The Latin American countries and Caribbean, comes second to above. Investment reached 83.8 mill. $ in 2006, compared to 75.5 mill.$ in 2005, with an increase of 10.9%. Brazil, Mexico, Celli are considered the most attractive in this group.

Third category comes arab countries, with 62.4 milliard $ in 2006, compared to 45.8 milliard $ in 2005, with an increase 36.2%. But the total share of the arab countries of the international firsthand investment stayed at 4.8%. As for the African continent, it witnessed retreat in firsthand investment as: 12 mill. $ in 2006, with a collapse to 21% from 2005. The firsthand Foreign Investment was mainly directed to two countries: Nigeria and Equatorial Guinea. Whereas the independent group of countries reached: 69.3 milliard in 2006, compared to 41.2 mill. $ in 2005, with notable increase of 68.3%.

The economical growth has been maintained in the developing countries during 2007 (6.7%), and accelerated growth for those transitional countries (8%), due to rise in prices of essential materials and strong demand in locally.15

The other type is decentralized, which has full freedom of issuing his own decisions in accordance to actual requirements. This type is catheterized by multi national owners, and geographically spreading in practicing activities and operations in worldwide bases.

In fact there are 4 principals affecting investment resolution: search for markets, efficiency and resources (and all are methods for exploiting the assets), search for updated assets (strategy for increasing the assets).16

Studies assure that the main motive of these companies is looking for markets inside the territories and inside the developing countries, and the second one, is that looking of efficiency. And this investment centers around some industries like (electrical, electronic, textiles).

Electrical and electronic investment will concentrate regionally, whereas the foreign direct investment will be in textiles and in wide range. Generally speaking they are all after markets and assets of the corporations available to the national ones which is less important in developing countries, and not expected to spread in developing countries.There has been two changes in development dynamics especially after 2000.17

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[15] *Report about the economical statues in the world (2008), UN, N.Y, 2008, P. 2*

[16] *UNCTAD, World Investment Report 2006,p 32.33*

[17] *Report about the economical statues in the world (2008), UN, N.Y, 2008 . p. 24*

First: international development during the last five years dominated by the increasing developing economies which participated by China, in almost 25%. Whereas China, India, Russian has participated by 50%, and all the growing economies participated by 2/3 of the global growth compared with the seventies of 20th century.

Second: continuous growth in the importance of the rising and developing economies. It participates with 1/3 of the total international Trade and more than ½ of the increase in the imports by 2000. Moreover, pattern of the trade has witnessed a change in other developing countries, by increase in the trade with Asia.

There are four main factors affecting attraction and helping in understanding how companies are rushing to developing counties and are:

First: factors related to the market are very strong that pushed the companies in the developing countries outside their homeland or attract host counties. In case of Indian companies, there are the needs for finding clients for promotion of the Special Products (Techno, and Information Technology).

Second: the most important is the costs of production in the original country (particular manpower), which is very important to Multi National companies in East and South, Korea, Singapore, Malaysia, and also Morehouse (which has standing industries depending on the welfare of manpower and directed to export, like textile industries.). though these costs are of no importance as for China and India as tow sources for Firsthand Foreign Investment.

Third: pressure of competition on the developing countries companies that restrict expansion of these companies outside. Such as producers of low cost productions, particularly owner of actual industries in East and South.

Fourth: the policy of the official government in host countries on the resolutions related to Firsthand Investment outside.

The Chinese regulations in this regard are very good and help the globalization of their operations. On the other hand, it pushed the Indians in the same directions as there are motives supporting the host countries form India, in additions to reasonable regulations in both investment and competition. South Africa and others indicates that there is a transparent management, and they invest in the infrastructure, and manpower, and they have stable patent rights, and exchange rate system which is stable. Most important is the emancipation of the host economies that crest several chances for investment.

Multinational companies are important channel for the appearance to the technology subordination through investment in giant values projects, particularly if these countries continue there developing attitude in looking for technology progress.

Information technology has led to separation among stage of the production phases. So, the companies distribute these operations on geographical bases according to the site features.

This means decimalized production and centralized in some functions related to finance and updating of the technology which is concentrated in Multi National companies.18

Foreign countries have got a lot of activities and research in host countries that will reflect the increase in the globalization of the research and development. By 1995-2002, expenses on research and development rise from 30 Milliard $, to 67 Mill. $.

Conclusion

1. Though there is a big role played by the firsthand foreign investment in economical development to different countries, but several other contrives in the world are still restricting, intentionally or deliberate, the access of foreign investment to it.
2. Developing countries are still holding the property of the great wealth, but they lack political control, long term economical planning, required for such development.Still the share of the developing countries of the foreign investment are devalued.
3. Developing countries has to adopt polices towards export policy, which participates in

[18] *UNCTAD, World Investment Report 2006 ,Page. 32*

creation of new markets for newly emerged investment and of marketing chances for investments so as to be able to trade their products therefore increase profits.

4. Expansion in contracting activities for ensuring the investment among the developing countries with the advanced ones which will lessen the risks and create a reasonable investment environment.

5. Arrange for mutual visits with the foreign investors and show them the available facilities that the government provides for the investors and characteristics of investing in the national economy. And held contracts to stand against the double tax among countries.

6. Cooperate with international institutions who are involved in investment and providing of investment services.

We noticed the big role played and practiced by the foreign investment in affecting the different countries economy around the world and by their dominance on the Multi National Companies on the Production Process for the most important products, particularly the Food Stuff Commodities and electronic products and car industry. We can say that the multi national companies control all the hinges of the global economy and have the final decision in this regard.

Therefore, the different countries through the world has to full social, economical and political methods reasonable to gain the required benefits, and to try to transfer technology and scientific recognition available to foreign investor, and to use it in uprising their economy as they have manpower, and only need honesty to manipulate such potentialities.

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What is the structure of the coffee market: Can the real poor benefit from the coffee trade?

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Abstract

This article deals with the trade with coffee. The primary aim of the paper is to analyse the international coffee trade. Because coffee belongs to the cash crops we have focus on the production. We have analysed the structure of the trade concerning the green (not roasted) coffee, roasted coffee and coffee extracts, essences or concentrates. The analyses of production show enormous differences between developed and developing countries on the supply side. Dissimilarity appeared in the price system. Our results show that developing countries (especially least developed countries) cannot fully benefit from the international trade because they are placed just on the lowest level of the production vertical line. The results prove that there must exist strong influence of the supply chains. This is connected with the export of roasted coffee and import of the green coffee.

Pieces of knowledge introduced in this paper resulted from solution of an institutional research intention MSM 6046070906 „Economics of resources of Czech agriculture and their efficient use in frame of multifunctional agri-food systems“.

Key words

Coffee market, international trade, prices, supply chains, developing countries

Anotace

Předkládaný článek se zabývá obchodem s kávou. Primárním cílem bylo analyzovat mezinárodní obchod s kávou. Protože však káva patří mezi tzv. „cash crops“, analýza se zaměřila převážně na produkci. Součástí provedeného rozboru byla nezpracovaná káva, pražená káva a kávové extrakty, esence a koncentráty. Výsledky jasně prokazují výrazné rozdíly mezi rozvojovými a rozvinutými zeměmi na straně nabídky. Rozdílnost panuje i v rámci cenového systému. Výsledky poukazují na fakt, že rozvojové (a speciálně nejméně rozvinuté země) nemohou plně využívat výhod z mezinárodního obchodu, protože se nacházejí pouze na nejnižší úrovni produkční vertikály. Provedené analýzy rovněž naznačují nezanedbatelný vliv dodavatelských řetězců, kdy většina zemí exportuje praženou kávu a importuje kávu surovou.

Poznatky prezentované v článku jsou výsledkem řešení výzkumného záměru MŠM 6046070906 „Ekonomika zdrojů českého zemědělství a jejich efektivní využívání v rámci multifunkčních zemědělskopotravinářských systému.

Klíčová slova

Obchod s kávou, mezinárodní obchod, ceny, dodavatelské řetězce, rozvojové země.

Introduction

It is widely known truth that many developing countries depend just on few agricultural commodities and due to that; they are vulnerable to the crises at the international markets. Several of these commodities are cash crops and their price fluctuation is one of the well documented at the international market. Coffee belongs to the group of cash crops.

Coffee probably originated in Ethiopia from where it spread to Sudan and Yemen. Originally, the Arabs had very strict policy not to export beans suitable for reproduction. Due to that no other state could grow coffee.

The situation in the present days is rather different. Coffee is being grown in almost 50 countries and nearly 25 millions of small farmers and their

families depend just on this one commodity, which is widely used all around the world. These farmers are mostly small holders.

For example in Indonesia the small holders produce nearly 96 % of the overall productions of coffee when Indonesia produces 6,6 % of the coffee production in 2004 (Brata, 2007). Barret (2008) found out that the majority of the smallholders producing cash crops are net buyers of the food crops. Also these farmers depend on the off-farm employment to be able to purchase the food crops. On the other hand Goetz (1992) studied the possible change between cash crops and food crops in Singapore and on the base of his result it is possible to say that the structural change is rather complicated due to the limited financial resources. Azam and Besley (1991) analysed the impact of the price rise on the rationed peasant farmers producing cash crops and "normal" crops. They found out that the market for food plays an important role in examining the reaction of rationed peasant farmer to a rice of price of his crop. Most of these farmers, their families but also their home countries were significantly hit by the fall of the prices at the end of the last century. Coe (2006) mentioned the problem of participation in market authorities as a way to increase the prices. Niederhauser et al (2008) called attention to the fact that the price of most agricultural commodities shows a long-term trend to decline. Chosen set of commodities shows a general price decline of 1–3 % per year.

Raju and Melo (2003) say that these major booms and falls happen every ten years. The impact of falling down of the prices caused major problems to the stability of developing and especially least developed countries (LDC). The International Coffee Organization (2003) documented the economic and social effect of the falling prices on the group of producing countries (such us Nicaragua, Costa Rica). Tucker et al (2009) researched the perception of farmer to the risk of the price instability and weather. They did not consider the later one as a risky factor compare to the former one which is perceived as particularly stressful. However, even this awareness does not push the farmers to change their production.

There also exist increasing concert about the substantiality of the coffee production. Barbier (1989) pointed out that cash crops are increasingly grown on the more fertile lands and are pushing food production, especially subsistence cultivation, on to marginal areas. However, the volumes of coffee that is cultivated under the environmentally friendly or labour friendly condition remains relatively low. Bacon (2005) highlights the fact that also the share of the commodity chain relating to the Fair trade or organic commodity farming remains relatively low. Valkila (2009) examined the difference between the fair trade price and price of conventional coffee in the mainstream markets in Nicaragua.

Aim and methodology

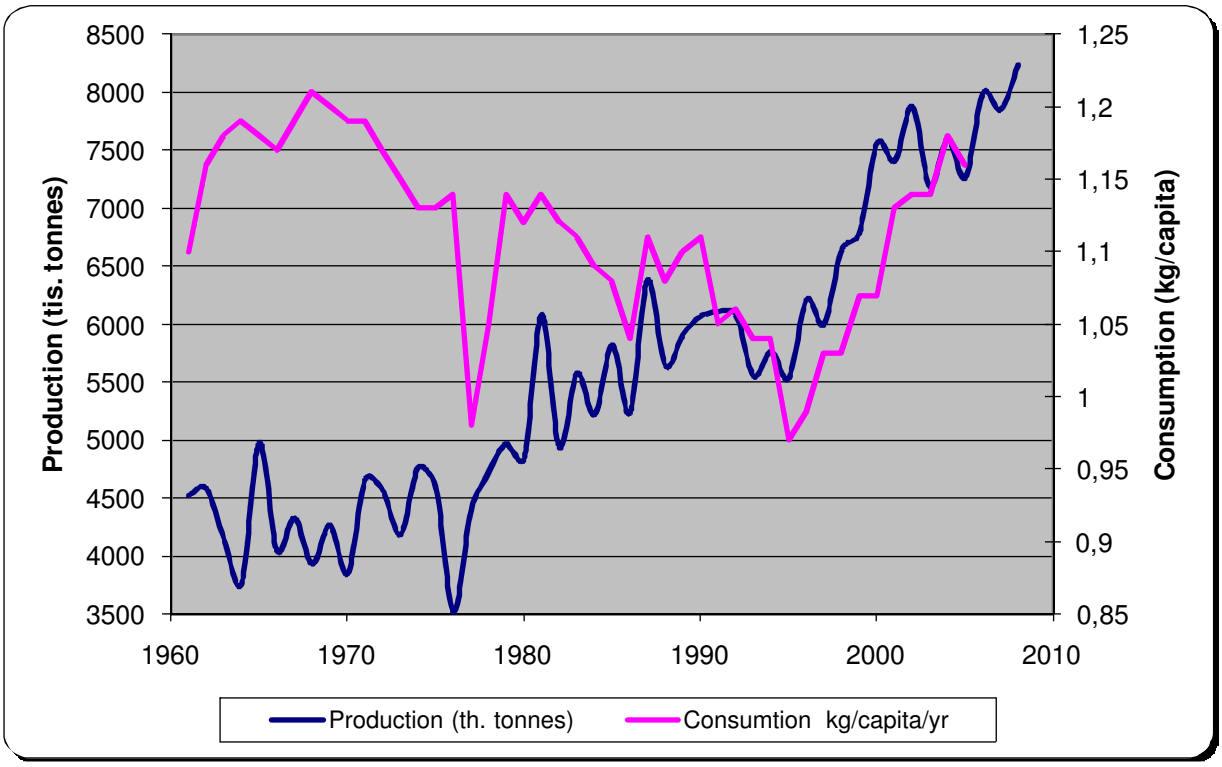
We have decided to analyse the market with coffee that belongs to the cash crop commodity. The aim of this paper is to analyze the structure of the coffee market with reference to the different types of traded coffee. Our fundamental premise is that coffee trade should show the difference between developed, developing and the least developed countries. We can expect that there will be different structure of the merchandise trade with coffee. The least developed countries together with the developing countries would trade higher volume with lower value due to the products with lower value added and vice versa with the developed countries.

Analysing the structure of the market can help us to understand the influence of the coffee supply chains. This analysis is also important to show the value added which should be the primary source of economic growth.

We also use revealed comparative advantage indices for our analyses. The original RCA index, formulated by Balassa (1965) can be written as:

$$\mathbf{RCA = (xij / xit) / (xnj / xnt)} \qquad \mathbf{(1)}$$

where x represents exports, i is a country, j is a commodity, t is a set of commodities and n is a set of countries. RCA I measures a country's exports of a commodity (or industry) relative to its total exports, and to the corresponding exports of a set of countries, e.g. the world.A comparative advantage is "revealed", if RCA I > 1. If RCA is less than unity, the country is said to have a comparative disadvantage in the commodity/industry. It is argued that the RCA I index is biased due to the



Source: Authors calculation based on FAO

Figure 1: Production and consumption of coffee.

omission of imports especially when country-size is significant.

For the analyses of the production and consumption of coffee between the years 1960 – 2007, we have used the FAO database. Data from the Standard International Trade Classification Revision 3 commodity nomenclature (COMTRADE data) will be used for more detailed analyses of the structure of trade.

The basic facts

Production of the coffee beans has been increasing over the decades. As is evident from the chart 1 the production has doubled since 1960. However, we cannot talk about standard growth.
The production fluctuates significantly. During the monitored period the lowest peak was reached in the year 1974 comparably the highest production was in the last monitored year 2008. The trend of consumption does not copy the pattern of production in all years, especially from the year 1960 until the year 1985. (However, we have to take in consideration that we are talking about green coffee.)Very significant drop is between the years 1975 and 1976 in both production and consumption that can be connected with the oil crises and due to that the coffee crises. Durevall (2007) explains this drop of the consumption by the sharp increase in price.

Since the year 1986 the same pattern exists between both production and consumption. We cannot prove relation between the consumption and production. Mostly the producers do not react to the increasing consumption by the increasing production. On the other hand, consumers are able to consume nearly all-available production. In 2005 the highest consumption of coffee can be found in Europe (4,67 kg/person/yr) and surprisingly in Oceania (4,07 kg/person/yr), Americas are on the third position.

As is evident the production can be explained by two main factors. One of them is yield per hectare and the second one harvested area. The yields doubled between the years 1960 and 2008. When we compare the evolution of the harvested area, we can say that fluctuation exist during the monitored period (Figure 2).

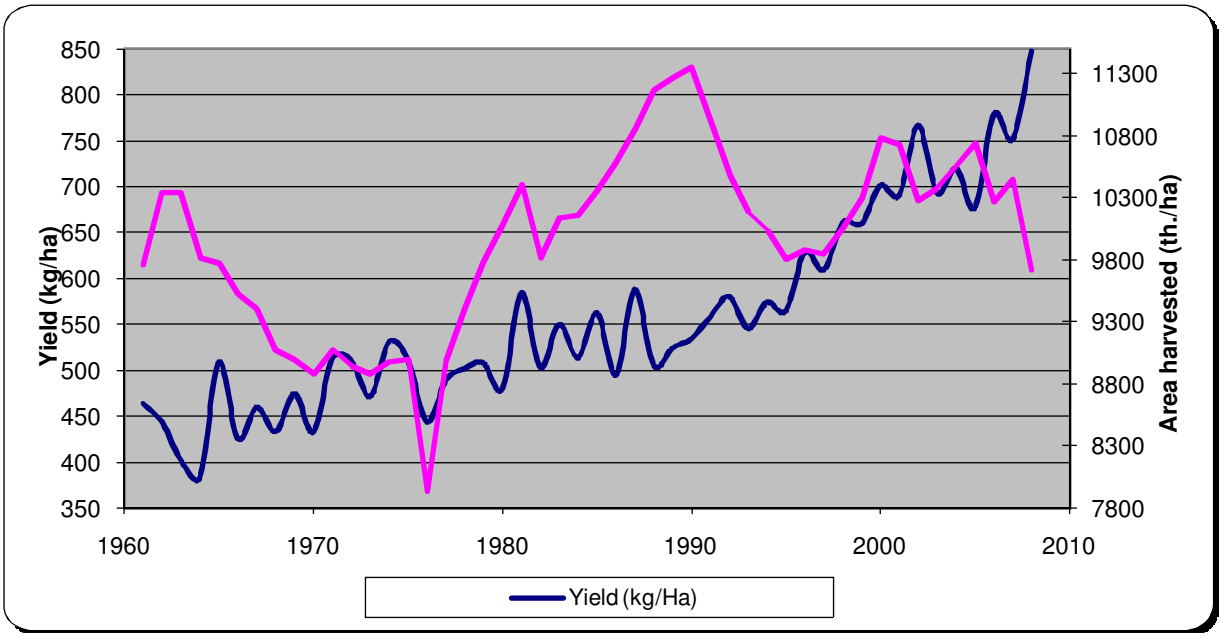
However, the area in the year 2008 is nearly the same as in the first year. The minimum size of the

harvested area was in the year 1976 with contrast to the year 1991 when the harvested area was the largest. When we take in consideration the relation between production and yields we can say that the yields have witnessed the same evolution like the production of the green coffee. This founding is rather important because it means that developing and least developed countries do not react to the changes in the international market just by the changes of the production area. It means that they behave rationally. This founding support the idea of Maxwell and Fernando (1989) who stressed the stability of the cash crops harvested area in comparison with the food security plants. This is also a reaction to the long growing cycles of coffee tree. Lewis et al (2004) stress the problematic planning of the production in the long cycles of some cash crops (tea, coffee, etc.).

The harvested area play less important role in explaining the overall production of coffee (table 1), it is explained just from 39 %. Compare to that the yields explained the changes from 92 % and very strong dependency exists (Table 1). We can say that the production of the green coffee has beenmore influenced by the yields than by the harvested area. It means that producers cannot react to the changes in the international market by increasing the harvested area.

The international trade

Data analysed in this section comes from the FAO database. The international trade has few really



Source: Authors calculation based on FAO

Figure 2: Yields and harvested area of coffee.

		Production	Area	Yields
Pearson Correlation	Production	1,000	,632	,963
	Area	,632	1,000	,404
	Yields	,963	,404	1,000
Sig. (1-tailed)	Production	.	,000	,000
	Area	,000	.	,002
	Yields	,000	,002	.

Source: Authors calculations based on FAO

Table 1: Correlations.

important export commodities. Oil is the first one and coffee is the second most essential article of trade. Coffee is an important product in many economies especially for the financial system of the least developed countries. Coffee exporters contribute to the national income. Many authors (Otero, 2000; Bacon, 2004; Nestel, 1995) stress the fact that coffee is the main source of the foreign exchange, employment and value added. For some countries, coffee is one of the most valuable products of the agriculture.

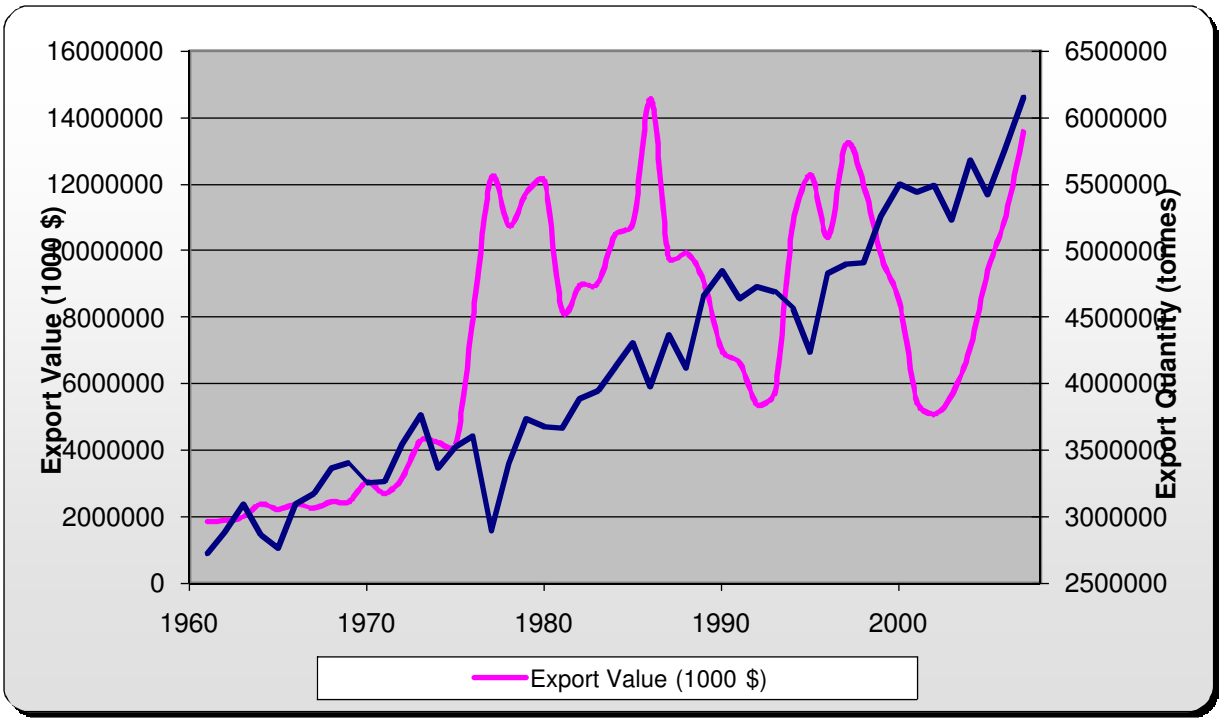
The trade with coffee can be divided by different criterion. One of the divisions depends on the species of coffee – in this case, we are talking about coffee Arabica and coffee variant Robusta. Robusta forms 90 % of world production. Arabica (9 % of the world production) is more valuable due to the finest flavour (Kemsley et al, 1995). However, for our analysis is necessary to distinguish between green (or not roasted) and roasted coffee and also to take into consideration the coffee substitutes containing coffee in any proportion.

As is evident from the chart 3 the export of coffee doubled during the monitored period. The growth was quite stable. This is in contrast with the situation of the value of the export. Even if the final value of the export is higher than the initial one the course of the curve is very irregular with many considerable fluctuations.

The trend of the export value exactly shows the coffee crises connected with the downfall of the prices. This trend is not evident for roasted coffee. The value and amount of trade of the roasted coffee witness significant growth in this case. On the base of the previously mentioned facts, we can say that producers are mostly badly hit by the decline in the prices. The huge fluctuations are also evident and this is exactly what makes the producers of the cash crops so vulnerable at the international market.

Bacon (2005) mentioned that this vulnerability depends on many factors – location, access to assets etc. The stable evolution of the prices of the roasted coffee gives us an idea that difference between products with no or very low value added and higher value added exist.

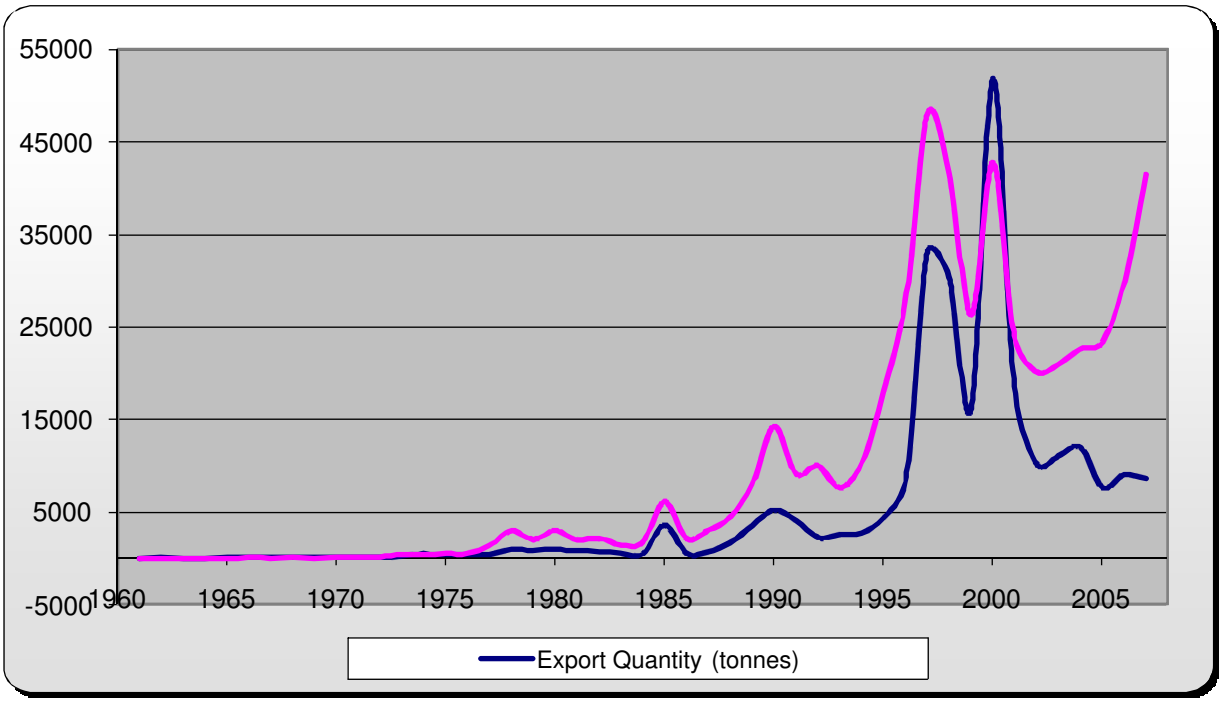
In this case we should have supposed that the same situation would have appeared in the market with coffee substitutes containing coffee in any proportion. Nevertheless, the situation is different (Figure 4). Trade with these substitutes of coffee became more important in the eighties of the last century. Big upsurge is evident between the years 1996 – 1997 and again few years later.



Source: Authors calculations based on FAO

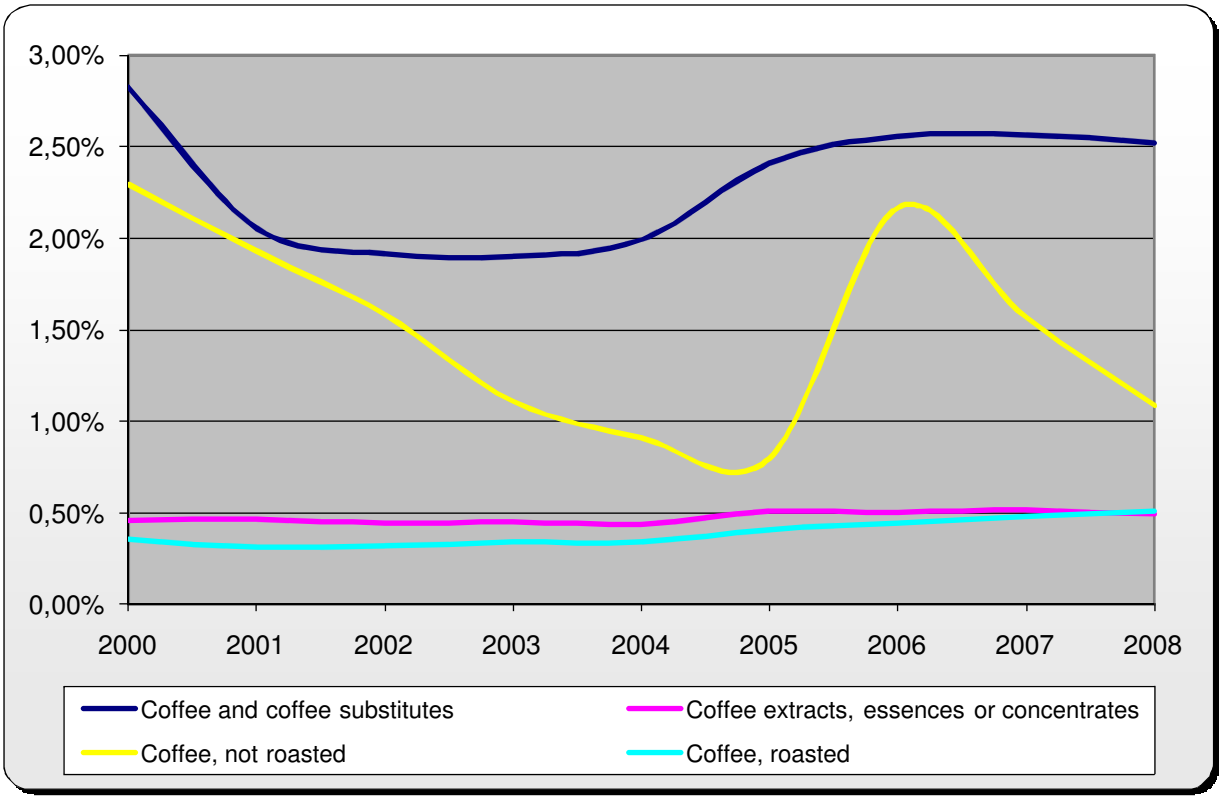
Figure 3: Export of green coffee

The trend of the production either in tonnes or in value is nearly the same. We could not prove any relationship between productions of green coffee, roasted one or substitutes of coffee.



Source: Authors calculation based on FAO

Figure 4: Export of Coffee Substitutes containing coffee.



Source: Authors calculation based on FAO

Figure 5: Share of selected groups in the agricultural trade.

As we are mostly able to define what caused the changes in the export of the green coffee, we are unable to say what is behind the oscillations in the export of the coffee substitutes containing coffee in any proportion. When we take in consideration the situation of the developing countries, where most of the populations depend on the some kind of cash crops, and compare it with results of the previous analyses we cannot expect that developing and especially least developed countries would be able to plan their production with regards to the international market. The high fluctuation between monitored years makes any long-term plans very difficult to fulfil.

The structure of the international trade

Data analysed in this section comes from the COMTRADE database. Between the years 2000 - 2008 the share of green coffee in the agricultural trade (Figure 5) was gradually declining till the year 2005 when it reached its minima (0,8 %). The annual growth between year 2005 and 2006 was nearly 150 % and in year 2006 it reached 2,17 %. The significant drop again followed this increase. Conversely, the export of the green coffee has increased during the monitored decades. The share of not roasted coffee (the equivalent of green coffee in FAO database) shows significant drop. The share of these products of coffee in total trade is marginal.

Forty percent of the not roasted coffee has been produced in low income food deficit countries and 16 % in least developed countries (LDC´s) though these countries export just 7 % of not roasted coffee. On the other hand, Germany that does not have any single coffee tree exports 6 % of the not roasted coffee. There exist nine most important producers of not roasted coffee: Brazil, Viet Nam, Colombia, Indonesia, Germany, Belgium, Guatemala, Peru and Ethiopia which share is over 4 %. The first three count for 53 % of the overall trade with not roasted coffee. The order in the trade value nearly corresponds to the order in weight.

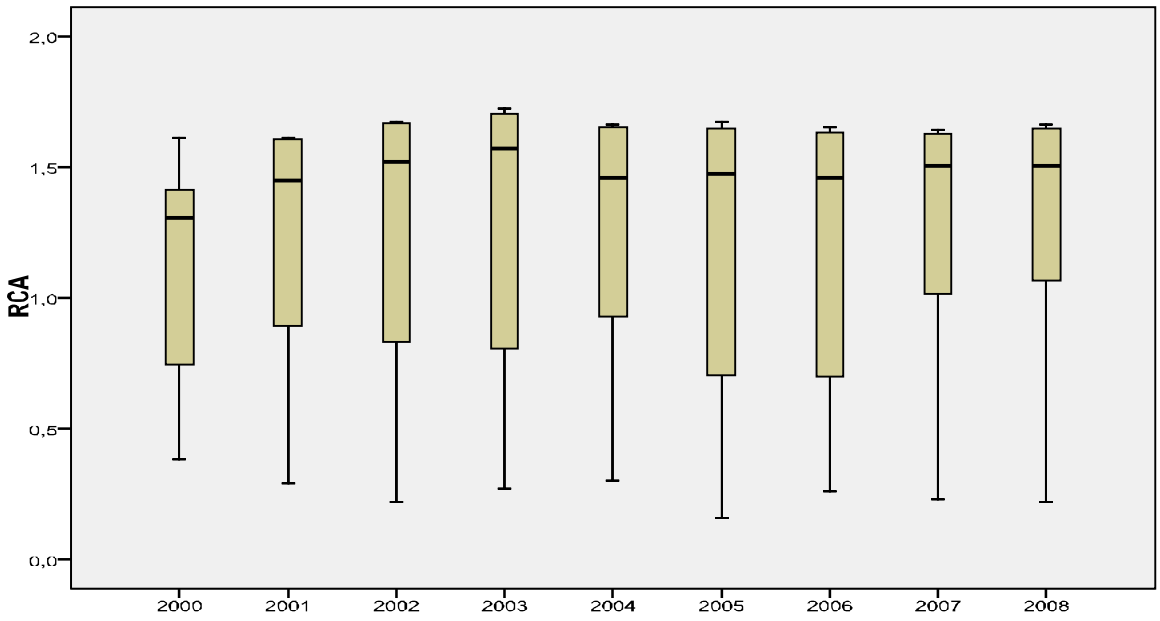
It is well-documented fact that just few international firms exist in the coffee production industry. On one side they behave like a buyers of the green coffee on the other hand they are producing the processed coffee as is evident in the case of Germany.

When we put side by side the comparative advantage as measured by RCA indices for 20 biggest exporters of not roasted coffee huge differences exist (Chart 6). The boxplot shows us the distribution of RCA. While the box represents 50 % of the ordered data stretching between the lower and upper hinge, the median line is situated at the top of the box that means that some asymmetry between the analysed data exists and the data set is negatively skewed as more cases follow under the median line. It means that most of the countries do not reach the median value of the RCA indices. This is rather interesting because the lowest level of RCA was reached in 2005 when the RCA of Ethiopia was only 0,16. Quite the opposite situation happens to Rwanda, Uganda, Peru and Guatemala. Their RCA indices reached 1,7 in the year 2003 and during the whole monitored period this is the highest level of RCA.

When we compare the situation concerning the level of RCA we can see that USA, Spain, Germany, Belgium, China are unable to reach comparative advantage for not roasted coffee in the long term. However, these countries are still on the market. We can say that even obvious comparative disadvantage does not clear the market. India and Cote d´Ivore fluctuate around 1. The rest of the countries have the level of RCA above 1 and we can say that these countries have comparative advantage. The highest comparative advantages have Peru, Rwanda, Viet Nam, Uganda, Guatemala, Costa Rica or El Salvador. It means that developing countries have higher comparative advantage in not roasted coffee than developed countries.

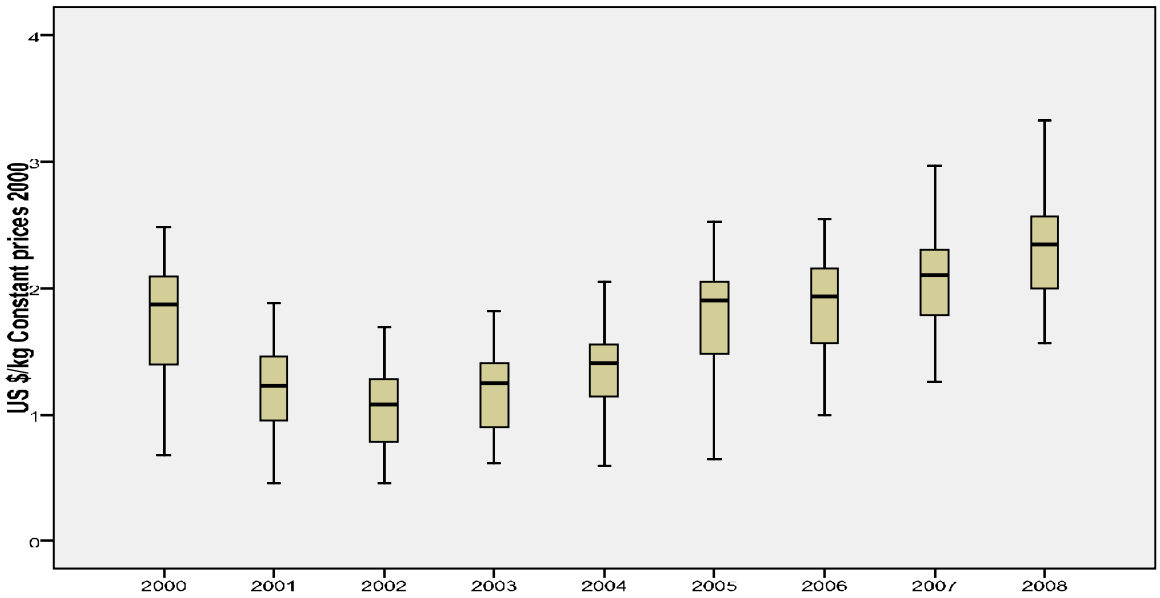
Different situation appear in the trade with roasted coffee. The highest producers of roasted coffee are developed countries, especially Italy, Germany, Switzerland, USA, Belgium, Netherlands and France. When we compare the top twenty exporters of the roasted coffee, which represent over 90 % of the production, we got different results than in the previous case. We can find just Brazil as a developing country in the whole dataset that has the trade share around 1 %. In this case Brazil also has very low RCA indices (0,04) and due to that cannot be competitive at the international market. Except of United Kingdom the rest of the countries have comparative advantage in roasted coffee.

Coffee extracts, essences or concentrates make up the last group of coffee products. The top twenty producers compromise of 86 % of the international trade. The highest producer is Germany, which produces 19 % of the whole production. The distribution of production is slightly different compare to the previous group of products. Developing countries are producing thirty five percent of the production (Brazil, Colombia, India, Singapore, Malaysia, etc.). However, there is no single producer from the least developed countries. Nearly all the analysed states have rather high comparative advantage in coffee extracts, essences or concentrates. We cannot say that the comparative disadvantage is equally distributed just between developing countries. Even developed countries such as USA or Belgium have comparative disadvantage.



Source: Authors calculation based on COMTRADE

Figure 6: Distribution of the RCA indices for top twenty exporters of not roasted coffee.



Source: Authors calculation based on COMTRADE

Figure 7: Distribution of prices of not roasted coffee.

The prices at the international market

Different situation is with prices. The prices of the exporting countries depend very much on the quality of the coffee that can change over time (for more details see Krivonos, 2004). The average price of not roasted coffee reached its minima in 2002 as is evident from the median line and since than the median is increasing. It means that the price is increasing as well. The price is more or less equally distributed. In the year 2008 the minimum price was the same as the level of highest 25 percentile in 2002.

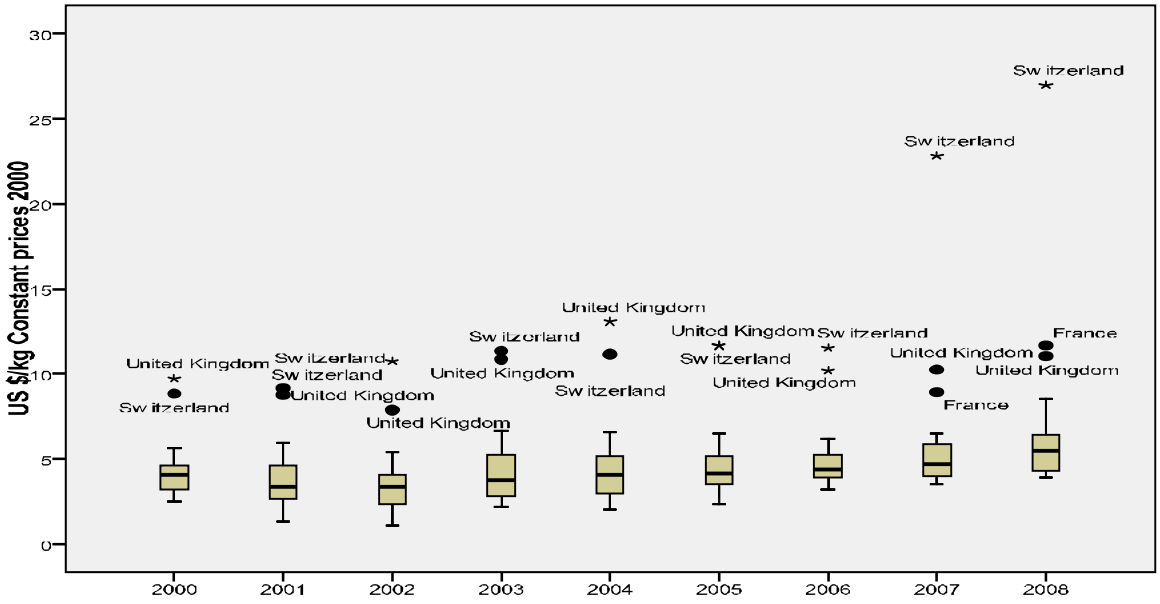
Different situation appears with the prices of roasted coffee. As is evident from the following chart (No. 8) the highest prices have Switzerland, United Kingdom and France and none of these countries belongs to the developing countries. Workman (2007) suggests that the higher price in Switzerland is given by the steep premium for gourmet roasted Swiss coffee beans. The value of medium is slowly increasing over the monitored period; however, higher differences in prices exist than in the previous case.

The last chart (no. 9) illustrates the evolution of prices of Coffee extracts, essences or concentrates. The median line is slightly increasing and during the last three monitored years is situated in the bottom line of the box that means that most of the prices are under the median line.

When we compare the prices of the above mentioned products, we can say that the lower price of not roasted coffee and higher prices of roasted coffee and coffee extracts, essences or concentrates is typical for products with lower and higher value added. It also illustrates the difference between producers when producers of primary products mostly comes from developing countries. The difference between the prices can be also explained by the influence of supply chains.

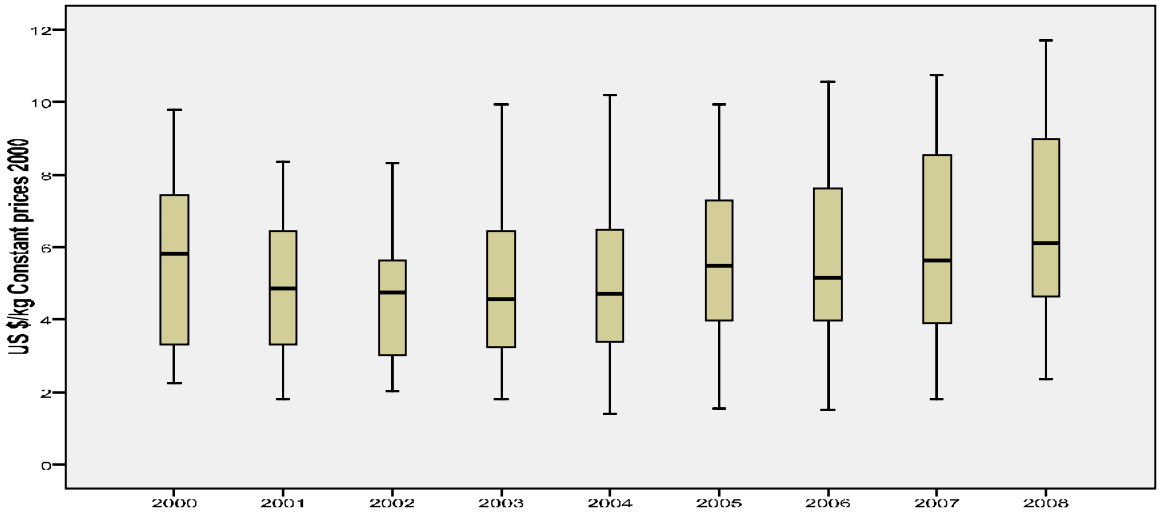
Conclusion

As is evident from the above mentioned facts the international coffee trade does not support the developing or least developed countries. The green (or not roasted) coffee is mostly produce in developing countries on the other hand most of the primary producers do not manufacture the roasted coffee. It means that developing countries mostly do not put in any added value for their products and because of that they cannot expect economic growth. Germany is a country that even exports green (not roasted) coffee.



Source: Authors calculation based on COMTRADE

Figure 8: Distribution of prices of roasted coffee.



Source: Authors calculation based on COMTRADE

Figure 9: Distribution of prices of extracts, essences or concentrates.

The price of these commodities is also different. The price of primary product – in this case not roasted coffee is much lower than the price of coffee extracts, essences or concentrates. Switzerland has the highest prices for roasted coffee. Of course, this all means that money from the added value do not stay in the country of origin primary product but due to the price transmission flow more to the other countries. We can say that most of the countries that act as a buyer of green coffee are also producers of processed coffee.

The current situation when the process of adding value is unequally distributed between countries cannot help the poorest countries to improve their situation.

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Food Tracing and Interoperability of Information Systems in the Hungarian Meat Industry

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Abstract

The manufacture, distribution and retailing of foodstuffs became an extraordinarily complex business activity. The complete food chain must provide for the implementation of the strictest quality standards and safety regulations. Problems of food safety can be solved by keeping (and enforcing) applicable regulations, by introducing modern quality assurance systems, by making possible the traceability of products and their identification. The safety of product lines and tracing of products cannot be solved without using information systems of a certain level. During our research, it came to light that, generally, agrarian traceability struggles with many more problems. Companies try to live up to expectation, but they often apply different solutions with totally different approaches, while serving several different market aspects, depending on their customers. The conception of the Digital Business Ecosystem (DBE) has come, to build an Internet-based environment in which businesses will be able to interact with each other efficiently. The DBE solutions based on community philosophy are able to create applications, which can solve most of food traceability problems.

Key words

Quality management, information systems, meat industry, food tracing, Digital Business Ecosystem.

Introduction

Increasingly, consumers tend to worry about the safety and origin of foods. Recent scandals related to the safety and origin of foods, sometimes overreacted to by the press, have fundamentally shaken consumer confidence in foodstuffs available at shops (Lakner et al., 2005). The manufacture, distribution and retailing of foodstuffs became an extraordinarily complex business activity. This extraordinary complexity makes it necessary to develop overall controlling processes that are indispensable if we want to safeguard the quality product of safe and excellent foodstuffs (Lang and Heasman, 2004). With a background like this, the complete food chain must provide for the implementation of the strictest quality standards and safety regulations. Therefore, in every phase of the food chain, from the purchase of raw material through manufacture, distribution and sales, whether we examine a retail shop or a supply unit, the quality demands up to the actual products, processes and handling methods should be fulfilled. At the same time, since consumers do not really have an overlook of the technology and circumstances of product, only confidence in a manufacturer can help in choosing his food. Problems of food safety can be solved by keeping (and enforcing) applicable regulations, by introducing modern quality assurance systems, by making possible the traceability of products and their identification - beyond any doubt. The safety of product lines and tracing of products cannot be solved without using information systems of a certain level (Schiefer, 2008). In any case, one could greatly improve the level of food safety and the information supply by installing the newest technologies and informatics facilities at every participant in a product line in the meat industry. For SMEs it is very difficult to keep up with challenges of the mentioned problems. The agri-food companies especially the SMEs are underprivileged. In commodities and especially in food commodities, the establishment of tracking and tracing capabilities meets many barriers that have prevented their broad based use beyond what is legally required (Fritz and Schiefer, 2009). The conception of the Digital Business Ecosystem (DBE) has come, to build an Internet-based environment in which businesses will be able to

interact with each other efficiently. The DBE is supported by the new hardware and software technologies, network topologies. The open source and component-based software, the collaborative environment, development and the popular and quick developing network technologies can establish the extensive use of DBE.

Objectives

Our research focused on the IT support and development of quality management systems in the Hungarian meat industry (as refers to meat industrial product enterprises, the poultry industry is also involved) especially food tracing systems, utilized identification systems and those which may become applicable in the future. We also studied information technology tools and examined the establishment of domestic meat industry enterprises. On the basis of the results of our examinations, we set out to elaborate a cost-efficient device and to offer a system that might assist meat industrial enterprises to choose an applicable quality system, while ensuring effective product identification and tracing, taking into consideration the advantages of introducing such a device. More specifically, the aims of our research were:

Regarding to regulations, standards referring to product qualification and product identification, we set the following targets: to treat and systemize the standards and specifications applied primarily in meat industrial product chains, as well as to determine which of these are relevant. First, we considered which of the composite Hungarian and EU standards, directives and orders are pertinent to our areas of study. We assumed that the up-to-datedness of the applied quality control system must be connected with the economic development of the company, its place in the product chain and its market position.

The types of identification technologies and their supporting technological systems may differ within a specific product chain, depending on the nature of e.g. manufacturing from raw materials to the point in time when one has produced a finished article. Moreover, the ways such technologies may be applied might be influenced by any number of factors. These include the environment, economic factors, the quantity of to-be-stored information connected to the product or e.g. systems of product and manufacture. Our objective is to explore, systemize and analyze those identification technologies applicable for meat industrial product lines which may serve as the basis for further research.

As a next objective, we wished to explore the requirements of product tracing, the levels of tracing, its organizational-economic background and its realization at the various steps of the meat industrial product line. Of the steps on the product line, we wish to focus first of all on the following phases: tracing of forages, questions of livestock tracing and the area of processed products. Among all these, we primarily wish to analyze meat plants, based on questionnaires, personal visits at plants and deep interviews.

Among our objectives, we developed a research portal on the Internet connected in part with the above-mentioned areas of interrogation, and in part with the aim of gathering information and publishing the results for use by plants and experts. Furthermore we created a conception of DBE application which can support the companies in their food traceability methods.

The research portal

In the framework of our research, we developed a research portal that is meant to support research work applied in the meat industry, specifically pertaining to planned modern quality control and tracing systems and to the publication of the knowledge base connected with the topic (http://nodes.agr.unideb.hu/kutatas/fi/).

In preparing a portal, we had quite a few aims. On the one hand, we wanted to summarize at one place the most important knowledge concerning the topic- especially that which is difficult to access in Hungary or which otherwise would require significant research in the literature and in the Internet. On the other hand, the questionnaire which we compiled and sent to meat industry enterprises could be filled in an electronic way through the portal. Indeed, the results of the survey can be viewed there, too.

On the portal, information can be found in many topics:

- **Technologies.** Under this menu, we gathered the most relevant articles

concerning identification techniques (one part of it is available only in English, unfortunately) as well as information materials, companies dealing with the solutions, and a further collection of professional portals in the field of identification.

- **Issues.** A collection of publications and literatures referring to the topic. By means of the presented books, anyone can access detailed information about quality management, tracing, food safety and modern identification techniques. Selecting among the publications is assisted by a short summary of every literature item, located next to the basic data.
- **Publications.** On this site, we listed the publications of the Department of Economics and Agricultural Informatics issues in this subject, as well as the papers and thesis handed in to scientific students' conferences.
- **Regulations**. A site comprising a collection of standards, orders and regulations. Here can be found links necessary to cognition of compulsory, voluntary respectively commercial standards referring to meat industry and references to pages comprising detailed descriptions.
- **Links.** It comprises of the availability of organizations and authorities acting in domestic and international meat and food safety.

Identification technologies in meat industry product chains

A full traceability of products can be realized by the adaptation of numbering and bar code systems, as well as by electronic and biological marking systems, on the basis of their appropriate combination. The regulations of identification provide for the continuity and reliability of tracing among independent partners (a common language and compatibility of information are necessary). In order to assure that the tracing from producers to consumers effectively works at each step, the information referring to the product must be forwarded together with other attaching information. Through the quick development of computer technology, a number of new and innovative methods have been elaborated to solve this problem (Podgornik et al., 1994).

In the course of our questionnaire, we also examined product identification technologies that are most often a factory number or a series or bar code. There was no undertaking with radio frequency identification among those replying (although I know of a company using this technology); therefore, we draw the conclusion that incidence of the technology is low at present.

In order to compare the identification technologies, we have to consider several factors. While there are numerous advantages and disadvantages for each solution in comparison with the other techniques, we still cannot unanimously choose the one that conforms to the requirements of the meat industry product chain the best, as there are different challenges on each step of the product chain. We performed the comparison of the identification technologies on the basis of different characteristics (Figure 1). Of the examined technologies, the figure does not feature Bokode- (Mohan et al., 2009) and DNS-based systems, because we cannot call these fully- developed technologies - they are only at an experimental level.

Spreading of the new identification technologies are set back by two major factors:

- One of these is the obviously high cost. The price of biological identifiers RFID and of DNS-based identifiers decreased in a significant way in later years. The cost of identifiers per product (sometimes per kg) would allow for their usage, but meat industry enterprises are often unable to pay the required investments connected with them beyond the costs of identifiers attached to the products. Therefore, we also need decoding of information and the development of an infrastructure able to decode, and to prepare the information systems and develop human resources. Consequently, with respect to the present income relations of the branch, the investment return time is too long.

	Linear bar codes (EAN/UPC)	Multi-dimensional (2D) bar codes	RFID labels (active)	RFID labels (passive)
Price	Very low	Relatively low	Very high	High
Operational costs	Low	Low	High	Relatively high
Writing tolerance limit	High	Average	Cannot be interpreted	It cannot be interpreted
Reading tolerance limit	High	Average	None, or possibly at some frequencies	None, or possibly at some frequencies
If the scanner is damaged	Cannot be restored	It can be restored by using an error-correcting algorithm	It cannot be restored (although it is well protected)	It cannot be restored (although it is well protected)
Things necessary for scanning	Any visual scanner	CCD scanner	Antenna, scanner, energy source	Antenna, reader
Size of ID to be stored	Relatively small	Small	Large	It depends on the given type
Database dependence	The information cannot be interpreted without the database	The information cannot be interpreted without the database	Automatically transmitted information	Directly available information
Level of standardization	Totally standardized	128 characters (ISO 646)	There are currently several standards	There are currently several standards
Main areas of usage	In all areas of the supply chain	Mainly in industrial fields	Mainly for identification systems	In many fields, in theft protection
General costs	Relatively small	Relatively low	It is currently very high	It is currently very high

Figure 1: Comparison of identification techniques (based on Erabuild, 2009).

- On the other hand, modern identification techniques allow significant advantages over traditional solutions, if their usage accompanies the whole product chain. At present, the most different solutions are being used on those steps of the chain which are mostly incompatible. The systems cannot be harmonized or only difficultly, and often there is a need for a new coding.

New standards are needed. The modern identification techniques have to increase the efficiency of processes in a way that the fit the information systems of both the enterprise and its partners. Currently, there could even be several parallel standards for a given ID. The penetration of these techniques greatly depends on the uniformization of standards, which would make interoperability through the entire product chain possible.

The integration of mobile and wireless technologies is important (Szilágyi and Herdon, 2006). Mobile phones and other portable devices greatly help RFID technology becoming widely known. By using a wireless connection, we can always accurately log and – if needed – modify product information (by scanning an RFID label or a bar code), no matter where we are in the product chain.

Tracing foods

To be able to withdraw the product in question from a market in the case of a food problem, one has to dispose of appropriate information, referring to each ingredient and the manufacturing processes. In the course of a questionnaire, we examined what kinds of data Hungarian enterprises have about their products (Figure 2). The results show us that the largest defect in the re-traceability chain is in the traceability of forages, 29 per cent of the inquired firms do not dispose of any information about forages of the livestock. A FeedTrace system could

help to reduce the lack of information (Cebeci at al., 2009). During our research, it came to light that, generally, agrarian traceability struggles with many more problems. In the cases of the other ingredients, one can talk about the present levels, since an effective product withdrawal only exists if every participant in the product chain has a clear picture about the origin of his products.

The number of product withdrawals increases towards the end of a product chain (Table 1). This is nevertheless not a surprising result. On the one hand, problems with a foodstuff can be sensed most often by the consumers; on the other hand, the more ingredients a certain product has, the more manufacturing processes it has undergone and, therefore, the greater the chance of various problems is.

We came to an interesting result when we defined the depth of tracing data. 53 percent of Hungarian firms dispose of traceability data displayed for certain products, the registration of which is without any doubt the most expensive, but a product withdrawal can cost much less since one only has to withdraw those products with a problem from the market and not a greater amount. However, in my experience, this number may be fairly high, so the question has not been understood properly.

Information systems at meat industry enterprises

It becomes clear from our survey done in Hungarian meat industry enterprises that integrated management systems may only be affordable for companies with high revenues. The licensing and introductory budget of these (e.g. infrastructure, training shaping) in most cases cost 10 Million Hungarian Forints. Obviously, this is practically unaffordable for small companies and would mean an extremely long cost recovery period. It is univocal from our survey how many from the total meat industry enterprises use individual and/or integrated systems (Figure 3). We can see that companies using part modules and island solutions are in the majority. This is why I considered it important to analyze the quality management, tracing and information systems of small enterprises.

We examined how, in Hungary, the usage of information systems at meat companies changes according to revenues (Figure 3). Based on the results, less information systems will be used in the category of least revenues, 63.6 percent of companies do not have a system at all. In companies above 1 Billion Hungarian Forints, this number hardly exceeds 10 percent; in such cases, integrated company management is used to a great extent (half of the repliers). In the other groups, mixed results were obtained, but generally we can state that using individual island solutions is frequent in various types of companies. These will rather be used in the fields of stock economy and finances. For usage of integrated company management, the picture is fairly complex, too. Mainly Microsoft Navision and CSB systems are characteristic, while some run programs they themselves developed. From other systems, one can mention one or two examples.

The domestic agriculture economy urgently needs innovation processes, as well as fundamental and supporting innovation processes that would improve its positions among competitors, which have shattered in the last few years. Dealing with the topic is repeatedly reasoned by the fact that the 2007-2013 development policy of the EU may decisively influence the long term result of the race among nations and community of nations (Husti, 2007). This is the reason why we inquired how much the enterprises spend from their yearly revenues on the improvement and maintenance of their informatics systems, and if they are planning such investments, what the volume of the investment is.

Solutions for interoperability

Interoperability is one of the key concerns in the enterprise domain. It is a multidimensional problem that can concern different layers of the enterprise. One of the difficulties enterprises are facing is the lack of interoperability of systems and software applications to manage and progress in their business. Organizations are looking for new methods of work and business relationships, and the exchange of information and documents with new partners is often incapable of being executed automatically and in an electronic format. This is mainly due to problems of incompatibility in the information representation and in the software application methods adopted (Jardim-Goncalves at al., 2006). Several approaches have been developed

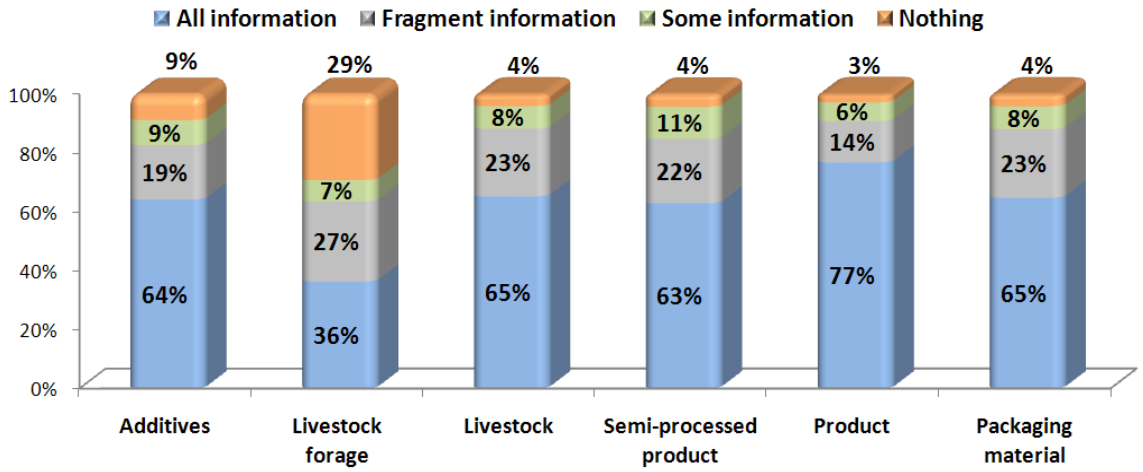

Figure 2: Available information of meat products.

	Stock-raising	Livestock buying up	Slaughtering	Food processing	Distributing of owen ready products
Never	71,43%	66,67%	72,22%	56,94%	35,29%
Sometimes	28,57%	29,17%	25,00%	40,28%	58,82%
Several times	0,00%	4,17%	2,78%	2,78%	5,88%

Table 1: Proportion of food withdrawals at certain levels of a product chain in meat industry.

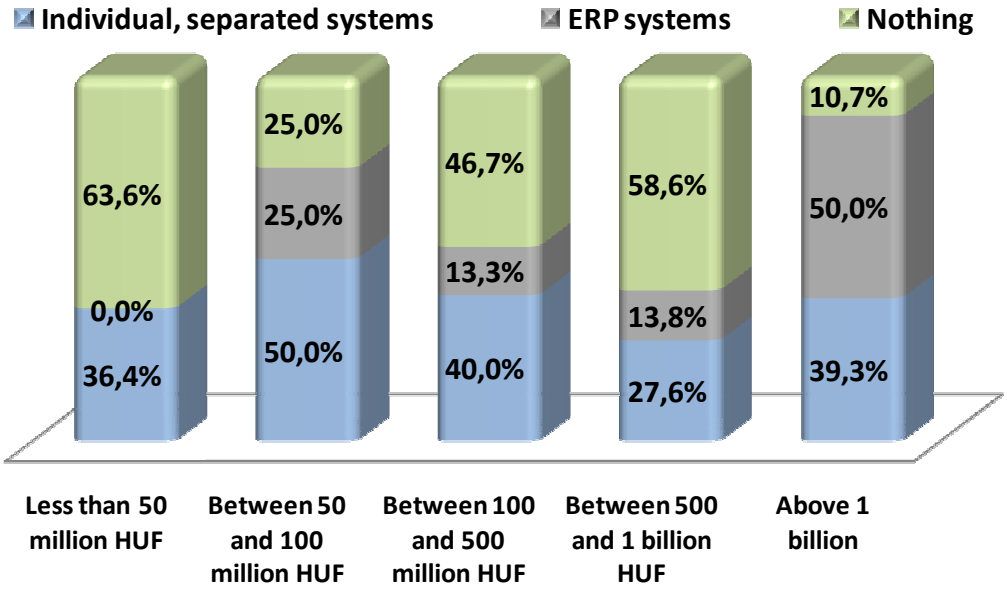

Figure 3. Usage of information systems according to revenues.

for collaborative network. However, their focus is mainly on technical aspects related to inter-organizational communication. The service-oriented architecture (SOA) as ‘‘a set of components which can be invoked, and whose interface descriptions can be published and discovered’’ does not consider the services architecture. Technical interoperability concerns technical issues related to e-communication, e.g., issues on linking applications and services addressing aspects related to: interfaces; ICT platforms; information integration; exchange and accessibility; security, standards; services. But this is not enough in the business applications. Information /knowledge interoperability has to focus the following aspects: information/knowledge representation and management, learning ability, rights to access information, knowledge sharing, aspects related to the adaptation and recombination of knowledge in a collaborative network during its life-cycle (Chituc at al., 2009).

The Framework for Enterprise Interoperability (FEI), currently under standardisation (CEN/ISO 11354) defines a classification scheme to categorise knowledge for interoperability according to three dimensions: interoperability barriers, interoperability approaches, and enterprise levels (Naudet at al.). The technical architecture of KodA is based on SOA and subsequently consists of the three basic layers: business process management layer, business services layer, business application layer. The KodA focuses on the supply chain for processing food products which was communicated and discussed at different forums. This has resulted in establishing the agriXchange group that has the objective to harmonize agricultural data exchange at a European level (Wolfert at al., 2009).

The Digital Ecosystem Concept

The DE is: unlike a client-server architecture, where the communication is centralized and which acts as a command and control environment; unlike a Peer-to-Peer architecture, where, at any time, each agent has a well defined role, i.e. can only be client or server, but not both; unlike a Grid architecture, which stitches partners together for resource sharing but cannot avoid counter free riding; unlike a Web service network, where brokers are centralized and service requesters and providers are distributed in a hybrid architecture that does not guarantee trust and QoS. A Digital Ecosystem instead is an open community, and there is no permanent need for centralized or distributed control or for single-role behavior. In a Digital Ecosystem, a leadership structure may be formed in response to the dynamic needs of the environment. An agent in a Digital Ecosystem can be a client and a server at the same time. In the same message, agents may offer a service to others as a Server and request help as a Client. There is no centralized control structure or fixed role assignment. There is no preconfigured global architecture, where the communication and collaboration is based on swarm intelligence: Unlike traditional environments, digital ecosystems are self-organizing systems which can form different architectural models through swarm intelligence, where local interactions between agents determine the global behavior.

A prototype tracing solution based on DBE Consept and Toolset

IT solutions of the food chain traceability could be based on DBE solutions. One of the most important properties of this method that all data is stored in the owner database and the data is served if it is requested by the authenticated DBE server. All connected nodes have own database are stored in their own database server. Forasmuch many organizations have exiting information system (ERP) , where they store the neccessary data . We assure possibility to connect other existing systems to the DBE by XML technology (Figure 4). (We use the portability property of the XML).

The database structure is available for download and use. In case of the traceability the XML file contains the following information: Company name, TRU (Traceable Resource Unit) identification number, Output id., Input id. In addition, we need a web server where the portal software is running. The portal prepaired with open source tools according to DBE principles. The prototype system is suitable for both top-down and bottom-up tracking and traceing. The working methods are the follows:

Top-down: You can see a text field on the website. You can type or scan the barcode by the help of a barcode scanner. The web server can identify the producer by the barcode. Certainly, it works only if the company has joined the community and their barcodes are stored in the database. We can reach

```
<?xml version="1.0" encoding="ISO-8859-2"?>
<product>
<productname>húspép</productname> /*name of the ingredient*/
<tru>12434567889</tru> /* Traceable Resource Unit id*/
<inp>kz ltd</inp> /* Supplier company id*/
<outp>xy company</outp> /* Customer company id*/
</product>
```

Figure 4. Portable data in XML.

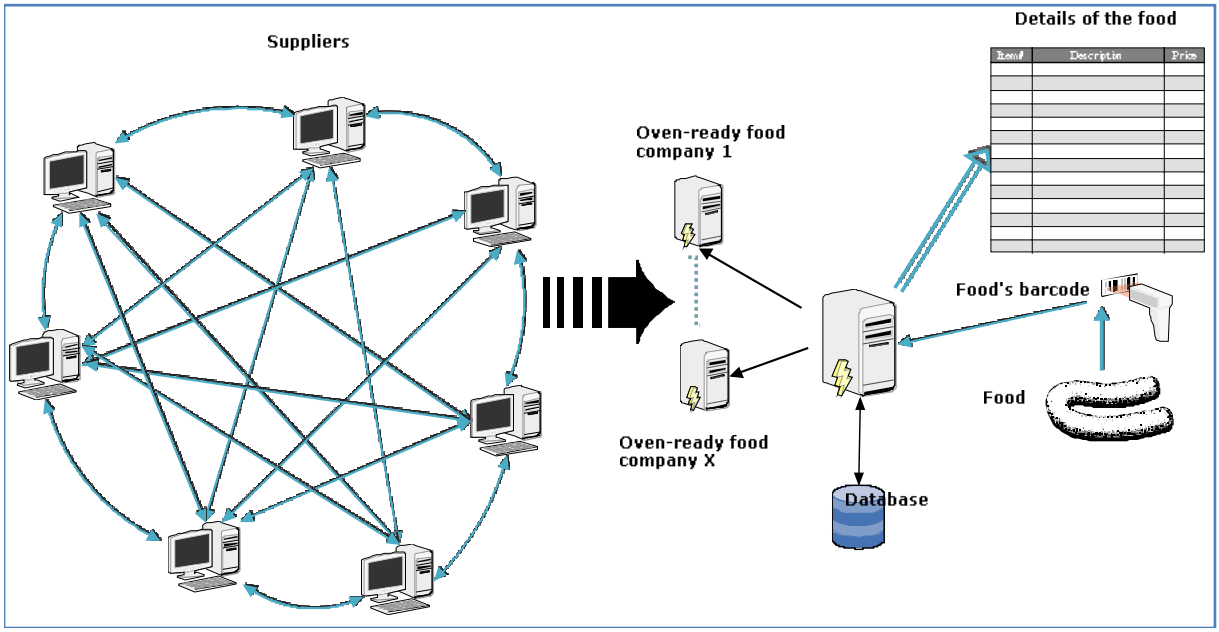

Figure 5. DBE community.

the data wich are strored in the ERP system by the product‘s barcode. The data show us the ingredients of the product. Inputs displayed on this page, so that the input supplier of the database searches the details of ingredients and send to the server for further processing and display, and then recursively to the product suppliers to get the similar information. We can reach the bottom level of the supply chain. It looks like a tree-structure.

Bottom-up: The knowledge of the barcode of lowest level of basic ingredient we can get besides of the basic details we can know the place of the deliveries as well. Then,either of the products manufactured by the companies which are on the N-1st level will be choosen which contain the ingredient of the company on the Nth. level. This goes on, until we reach the top level. Where we get the oven-ready products, which contain the basic ingredient.

With this prototype We have an opportunity to trace the full path of life of the product, if only all participant have been joined to the community (Figure 5). The above solution can greatly facilitate the precise monitoring the flow of substances occurring in food. Thus, the appearance of any food safety hazard we have opportunity to achieve rapid and efficient product recall.

Conclusions

The use of quality management systems does not show any great fluctuation in the given areas, except for ISO, GXP and the systems used in trade, which depends on the levels of product processing. The bar code technique is currently the absolute leader in the sector. Although modern solutions provide numerous advantages, their profitable application is not possible for the time being. Our results provide a suitable basis for the participants of the product chain to get to know and select the

technology suitable for them. We drew the following conclusions in relation to the penetration of identification technologies: Hungarian enterprises most often use some serial number, lot number or bar code; The high cost level needed for building up the whole infrastructure puts obstacles in the way of the introduction of new technologies (RFID, DNS); The penetration of these techniques greatly depends on the uniformization of standards, which would make interoperability through the entire product chain possible. The biggest rupture of the traceability chain exists in the tracing of forages, 29% of interviewed enterprises have no information about the feeding of live animals. Companies try to live up to expectation, but they often apply different solutions with totally different approaches, while serving several different market aspects, depending on their customers. The special needs arising in the food industry can only be satisfied by an integrated ERP system, as it is important to cover each step of the sector and not to have holes in the production chain. We established that enterprises spend less than 1% of their income on information technology investments (the average of the entire food sector), which is a very little amount spent on the implementation of developments and modernization. For this very reason, partial solutions are rather frequent at enterprises, while the ratio of using new technologies is low. One of the main problem is the lack of capital in this sector that is why the open source technologies might help to implement new solutions in the meat industry.

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Evaluation of data box introduction process in the Czech Republic

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Abstract

One of base building stones of eGovernment development in the Czech Republic is so called Data boxes which were introduced to unify communication and to increase efficiency in public administration. The aim of a study carried out by the Department of Information Technologies was to analyze the implementation procedure and to use data boxes. The questioning took place in December 2009, i.e. c.6 weeks after introduction of duty to use a data box.

Obtained results are important above all because the development process of eGovernment still does not end. The suggestion from data box implementation can significantly facilitate introduction of basic registers and other applications.

Key words

eGovernment, Data box, 300/2008 Col., 111/2009 Col., Basic registeres.

Anotace

Jedním ze základních stavebních kamenů rozvoje eGovernmentu v České republice jsou tzv. Datové schránky, které byly zavedeny za účelem sjednocení komunikace a zvýšení efektivnosti ve veřejné správě. Cílem studie prováděné Katedrou informačních technologií bylo analyzovat postup implementace a využití datových schránek. Dotazování probíhalo v prosinci 2009, tzn. cca 6 týdnů po zavedení povinnosti datové schránky využívat.

Získané výsledky jsou důležité především z důvodu, že proces rozvoje eGovernmentu ještě nekončí. Ponaučení z implementace datových schránek tak může významným způsobem usnadnit zavedení základních registrů a dalších aplikací.

Klíčová slova

eGovernment, Datová schránka, 300/2008 Sb., 111/2009 Sb., Základní registry.

Introduction

„eGovernment can be defined as a set of processes leading to a performance of state administration and self-government and use of civil rights and duties of individuals realized by electronic means“ (Štědroň, 2007). At present, the main electronic mean is the internet and a number of internet users is just one of informatization indicator (Vaněk, 2010). It indicates to which degree the given country uses information technologies and which it has prerequisites for use of eGovernment.

Electronic public administration is not only a service for citizen and firms, but it should facilitate and fasten negotiations even in frame of the public administration itself. To remove caretaker bureaucracy it is necessary to transform internal processes. Without it the eGovernment will not be able to provide quality services (Jupp, 2003). The eGovernment introduction can also help to remove bribes which still more and more appear in the public administration. Within transparency in the public administration people are also more interested in public matters and thereby their participation in creation of democratic process grows (Liikanen, 2003). In this sense it is spoken about e-democracy (Maria, 2005), so citizen acts directly on the state management. With this also a term eCitizenship is connected which is used from a

point of view of a citizen as a user of public administration services using his/her rights and an active participant of public life. However, the simplification of internal processes can not be achieved only by the eGovernment but it is necessary to start a re-engineering of work process and subsequently to create an adequate legal regulation (Davison, 2007). Legal regulations are the principal documents in the area of eGovernment because without them eGovernment can not be developed (Mayer, 2006).

One of the main building stones of eGovernment development in the Czech Republic are so called Data boxes which were introduced to unify communication and increase efficiency in the public administration. They are determined for individuals, self-employed individuals and legal entities, and for public power bodies (PPB), and PPBs have to use it compulsorily, other persons can choose the way of communication. The communication with PPB is free of charge, the communication among PPB mutually is covered from the state budget, and the price for sent message is roughly by half lower against a letter mail strictly private. The Law No. 300/2008 Col., on electronic operations and authorized document conversion, by which the data boxes are introduced, had been amended still before coming in force by the Regulation No. 190/2009 Col. Further, public notices No. 193 and 194 from 2009 set details about implementation of authorized conversion and about a practice of data box information system. The original law came in force on 1.7.2009, but the amendment introduced a transitive period, so use of data boxes was officially started on 1.11.2009.

By the law, the data box is an electronic store serving for delivery by authorities of public power and execution of acts towards public power bodies. PPBs are for these purposes state authorities, bodies of territorial self-government units, the Land Fund of the Czech Republic and other state funds, health insurance companies, Czech Radio and Czech Television, self-government chambers found by law, notaries and legal executors. The data box has to be compulsorily found by PPBs and legal entities entered in the commercial register. A data box can be installed to individuals and self-employed individuals on request. Tax consultants and lawyers can found a data box voluntarily, however, compulsorily from 1.7.2012. PPB has to use the data box compulsorily in communication with other PPB and all persons which have found a data box. Vice versa, individuals, self-employed and legal entities can choose whether they will use for communication with PPB a data box or a classical form of letter.

Originally, a data box could not be used in communication between individuals and legal entities mutually. However, it was enabled by an amendment – from 1.1.2010 to 30.6.2010 it is possible to send invoices and calls for payment by means of data boxes; from 1.7.2010 also all documents whose character enables to send them electronically. Such a document is not e.g. an identity or other cards, plans, maps, and also a document containing secret information. An official schedule of data box introduction procedure is represented in the table 1.

The Data Box Information System (further only „DBIS“) is an information system of public administration which contains information about data boxes. DBIS governs information about when, to whom and who sent something, but it can not register a record about the content of communication. DBIS administrator is the Ministry of Interior of the Czech Republic; the DBIS operator is Česká pošta, s.p. (Czech Post).

Methodology

The aim of study realized by the Department of Information Technologies was to analyze the implementation procedure and use of data boxes. The questionning took place in December 2009, i.e. c. 6 weeks after introduction of duty to use data boxes. The research was carried out by form of anwers to questions:

1. Implementation procedure of data boxes (DB) in an organization (training, instalment, electronic signature,...)
2. Way of work with DB.
3. Electronic circulation of records in the organization.
4. Positives of DB use in the organization.
5. Negatives of DB use in the organization.

It was monitored 63 organizations (50 from the area of public administration and 13 entrepreneurial subjects) from NUTS South-West.

Term	Content
1. 5. 2009	Start of pilot verification of DBIS in chosen authorities and organizations.
1. 6. 2009	Start of opened interface for DBIS users for testing purposes.
1. 7. 2009	Start of DBIS operation.
1. 11. 2009	Latest date of activation of data boxes found by law.
1. 1. 2010	Opening of commercial communication among data boxes of individuals, self-employed individuals and legal entities mutually, only for invoices and similar calls for payments.
1. 7. 2010	Opening of commercial communication among data boxes of individuals, self-employed individuals and legal entities mutually, without limitation.
1. 7. 2012	Latest term of activation of data boxes of lawyers and tax consultants.

Source: Ministry of the Interior of the Czech Republic, 2009

Table 1.: Schedule of data box introduction.

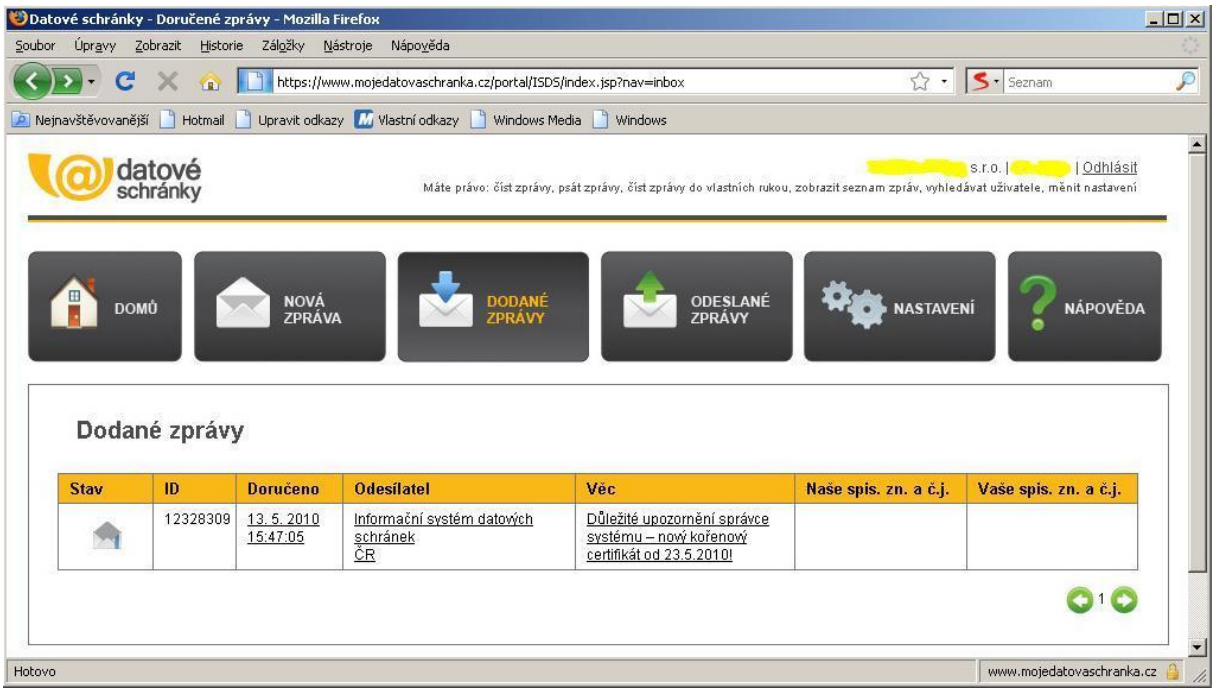

Figure 1: Sample Data boxes (Jarolímek, 2010).

Within results analysis, a method of description, comparison and induction is used.

Results and discussion

From the obtained data, 5 crucial points characterizing the introduction of data boxes was defined:

introduction of data boxes was not unified

Within introduction of in the same extent wide eGovernment project in the future, a unified procedure has to be ensured and ordered an obligatory test period. Everybody explained data boxes for oneself; particular employees passed training in various rate and in some organizations there was no test period at all, therefore the employees could not be able to use the data boxes properly.

an appropriate time was not delimited for their implementation

An optimal time for implementation of a new system, which requires a change in internal norms, is 9 – 12 months. However, in case of data boxes an amendment of law was made in June and the system should have been fully functional already in

November. It means only 4 months for preparation which is insufficient. Therefore, above all large organization did not managed all in time and the data box service is not used efficiently.

the data box application is not sufficiently technically and user elaborated

The work with data box was made difficult partly just by the impossibility to try it and partly by technical problems which are removed during the own use. So, in the test period, there should have been a consultation of the service producer with people who will regularly use it so that the service would be as much efficient as possible. The work would be certainly faster, if there were a possibility of creation of own directory because to find out addressee´ data box lasts even tens of minutes now. The directory would be available only after registration and it could contain addresses at which records are sent the most often because PPBs communicate the most with persons and PPBs in its sphere of action. After a choice of address from the directory there would be only a check whether the data box was not locked up.

preservation of documents/records received in a data box is costly

If the government wants the system of data boxes to be enlarged also among individuals, it should ensure a free of charge or subsidized service for archiving of electronic documents because at present, individuals are discouraged by the fact that they will have to have converted the documents received in a data box for a fee and the supplied specialized software is relatively expensive (as many as tens of thousands crowns per months).

Another solution would be to cheapen the own conversion when for example one time fee 50 CZK for one „visit“ in Czech POINT would be paid in disregard of the number of converted documents and their pages.

ambiguous legislative treatment complicates data box development among individuals

The legislative matter of fact has to be solved up so that some statements will not be able to be impugnable (Mayer, 2006). The public has fears at present how the data report will be probative after expiration of electronic signatures and time stamps. In PPBs the formulation „if the character of documents enables“ is problematic. It is not clear from it what is and is not possible to send by the data box. In the same way it is not known, when and what should be converted. In connection with this an information campaign and training for employees of public administration should be ensured.

Further a possibility of creation of more data boxes for one organization with more branch office should be considered. At present, it is possible to found more boxes only for territorially self-government units. Hereat, large organizations with many branch offices have one data box from which messages for the branch offices are re-sent. Thereby, the communication is protracted and moreover, there is a risk of breach of integrity of the message because it can be send by unsafe channel.

Conclusion

The achieved results are important first of all for the reason that the process of eGovernment process does not still end. On base of the law 111/2009 Col. implementation of Basic registers is presupposed. The extent and difficultness of this change of public administration functioning is manifolds bigger than in case of data boxes. So, the lesson from the data box implementation can in a significant way ease the introduction of basic registers.

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Best practices of GIS applications in the Hungarian agriculture.

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Abstract

Information and analysis produced with the use of GIS applications efficiently support the work of the users of the software and decision makers irrespectively of they are a single person or the Hungarian Government. We primarily discuss the major agriculture applications – Land Parcel Identification System (LPIS) and National and Regional Planning Information System (TeIR) – from the aspect of the sector which may save time, energy and money for its users.

LPIS is exclusive national land parcel identification system of the procedures of agricultural subsidies. The data of this identification system can be used in the applying of European Union subsidies which are available in a geographical information system.

TeIR can help such organizations, which deal with planning and developing activity and controlling at a sector level in decision making in connection with regional development and land use planning.

Key words

Land Parcel Identification System, Integrated Administration and Control System, orthophotos, physical block, land development, Internet.

Introduction

We would like to show two geographical information systems from Hungary in connection with agricultural lands. First is the LPIS which helps the farmer and the government to reach the area-based financial subsidies. This system was created because it was compulsory for Hungary for the accession to the European Union. Member states of the EU so Hungary as well (from 2004) had to create a controlling system in order to administer agricultural subsidies. This was the Integrated Administration and Control System (IACS). LPIS is one of the most important pillars of the IACS.

Second system is the TeIR which can be widely used at the aspect of geographical data. TeIR can help such organizations, which deal with planning and developing activity and controlling at a sector level in decision making in connection with regional development and land use planning.

The Integrated Administration and Control System

We joined to the European Union in 2004, but the previous period of preparing for the accession was a significant charge on our country's economy.

The European Union (EU) supports the farmers with financial aid, if they produce useful crops. In order to get this payment, the farmers have to declare their parcels area. These declarations have to be administrated and controlled. To control the farmers' declarations, the EU Commission asked the member states to set up an Integrated Administration and Control System (IACS). The requirements on the IACS were expanded to graphical applications by regulation amendments (Internet1; Oesterle – Hahn, 2003). Nowadays the system shall contain five elements (EUR-Lex, 1992):

1. a computerized database;
2. All data contained in the aid applications lodged by farmers have to be recorded in this data base. This data base must allow

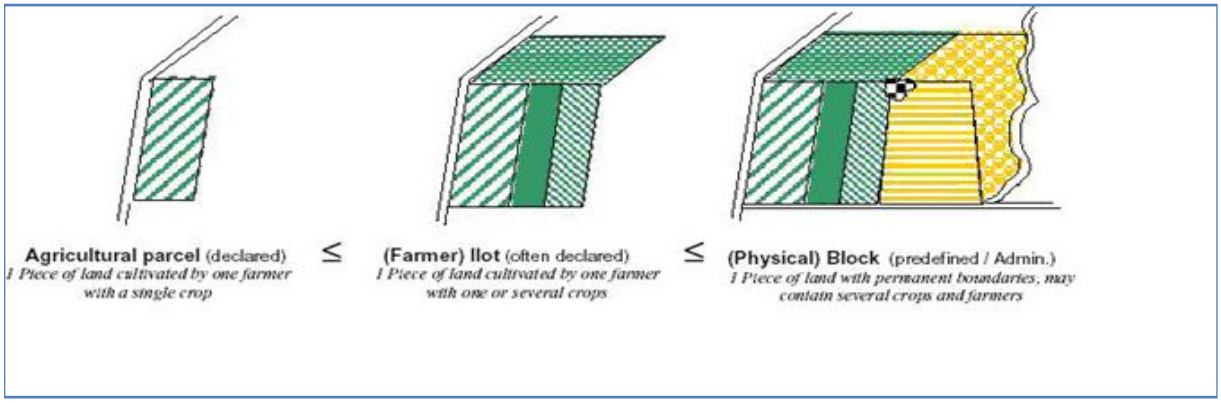

Figure 1: Methods used for the identification of reference parcels (JRC, 2001).

Figure 2: Physical blocks in the LPIS (Internet2).

3. direct and immediate consultation by the competent authority of the Member State.
4. an identification system for agricultural parcels;
5. This system is established on the basis of maps or land registry documents or other cartographic references. Computerised geographical information system (GIS) techniques are used, this means that all fields are numbered and their images (taken by satellites) or orthophotos (taken by airplanes) are digitised. All these images are included in a geographical information system, which also contains the boundaries of the reference parcels and their (eligible) area.
6. a system for the identification and registration of animals;
7. aid applications;
8. In the application for aid, the farmer declares (normally by the application deadline of the 15th of May) all agricultural parcels of the holding (indicating all the reference parcels of the

Land Parcels Identification System), the number and amount of payments entitlements, along with any other information required (e.g. the type of crop, if appropriate). If the checks reveal incorrect declarations, reductions have to be applied to the aid.

9. an integrated control system;
10. Firstly for the EU's payments we needed to identify agricultural parcels clearly. Generally there are three types of possible references (Fig. 1.):

- Directly identifying Agricultural Parcel.
- Identifying Ilots (or farmer block), grouping together a number of neighbouring agricultural parcel cultivated by the same farmer.
- Identifying Blocks (or physical block), grouping together a number of neighbouring agricultural parcels cultivated by one or several farmers and delineated by the most stable boundaries.

The Land Parcel Identification System in Hungary

The LPIS is the obligate nationwide land identification system of the EU's agricultural subsidies in Hungary (the data from this system can only be used for the subsidies). LPIS is one of the most important pillars of the IACS, which is compulsory for the granting of the CAP (Common Agricultural Policy) payments (Csekő – Csornai, 2003; Inan – Cete, 2007; Internet2).

LPIS system in Hungary is based on physical blocks with natural boundaries (Fig. 2.), which was found to fit the best to the country's agricultural utilization characteristics. Approximately 300 000 physical blocks cover the entire area of Hungary. The average size of the blocks is about 32 acre, including all land cover categories.

The red lines mean the boundary of the physical blocks. Inside the blue lines there are the not aided area (trees, buildings, wasteland, etc.) which have to be subtracted. Every physical block has its' own identity (example: C1U75-X-08; the last two number show the date when the orthophoto was taken) and its' measure (example: 27.56 acre) which we can see in the black circle.

A physical block, which is bigger than the land parcels, is the reference frame of parcel. This is because in Hungary the user of lands, the cultivated plants and the border of cultivation can change year by year so the registration per parcel is unthinkable. In the yellow circle on the third figure we can see the variety of the land use. Because of these fact in Europe are used such units which are bigger than parcels and their border are not so changeable. Institute of Geodesy, Cartography and Remote Sensing (called FÖMI in Hungarian) has identified the physical blocks in Hungary.

Requirement of the orthophotos

These orthophotos is from 2005 which was programmatically covering Hungary. The program will be carried out according to the parameters of aerial photography of Hungary 2000. It means, that the scale is 1:30 000; High = 4500 m; ground resolution of scanned images 0.60 m. Due to GPS navigation the coordinates of focal points of aerial images will be the same as in year 2000 with accuracy about 50 m.

The LPIS database digital orthophotos maps must be less than five years old because of the EU regulation. The maps are continuously updated every year approximately 1/3 of the surface (Internet1).

Internet browser for subsidies declaration in Hungary

A recent study in Hungary (TNS-NRC InterBus 2009) examines computer and internet access at homes. The result is that 50% of the households has computer and 43% of the households is connected to the internet in Hungary at least one time a month.

There are almost 200 000 registered farmers in Hungary. According to a survey conducted among the registered farmers, less than a half of them use computer at a regular basis (at least one time a week), and only 39% of them have access to the internet (Herdon – Csótó, 2009).

Farmer can require area-based payments in connection with Single Area Payment Scheme (SAPS), Top-Up and in connection with those lands with unfavourable conditions relating (KAT) and

Figure 3: Frittered Agricultural Parcel in a physical block (Csekő – Csornai; 2004).

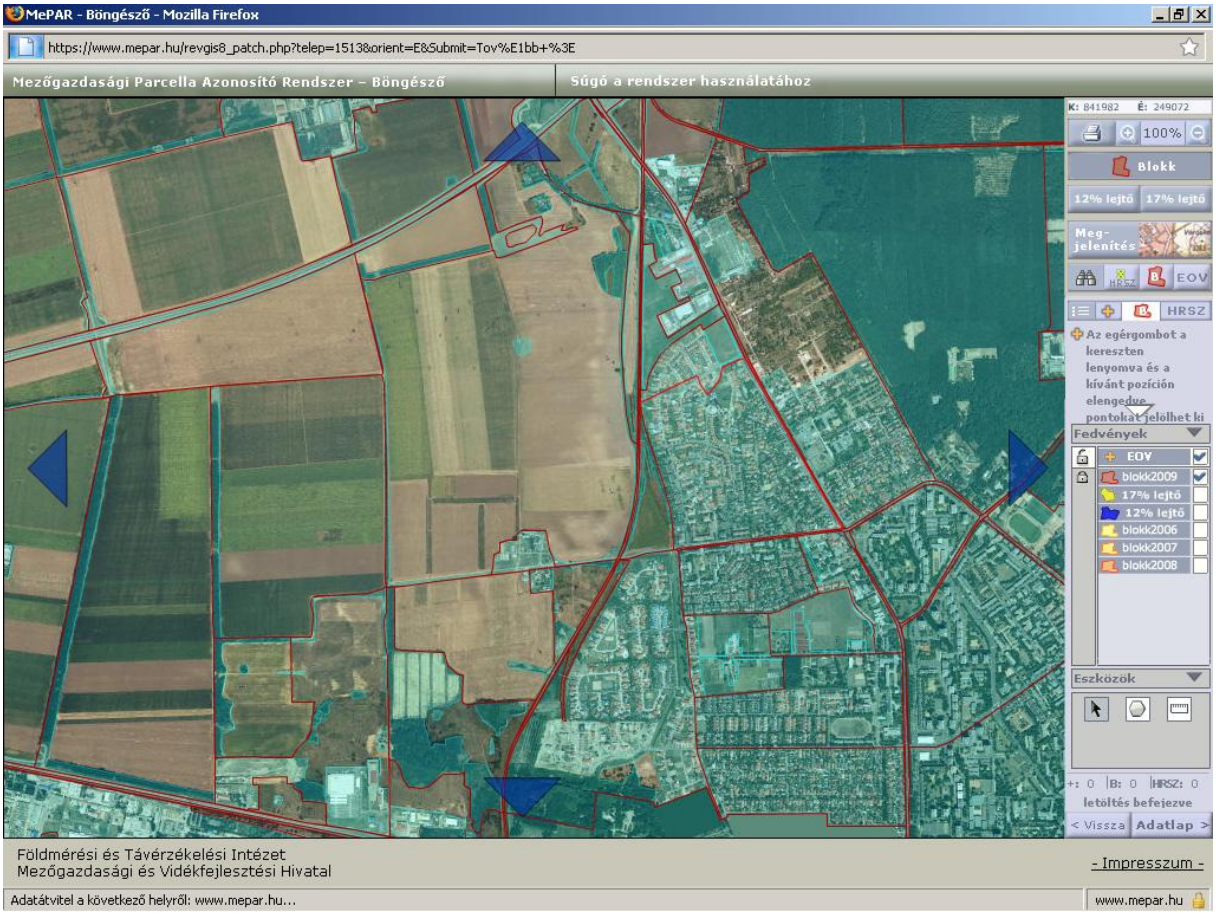

Figure 4: LPIS system in the Internet (Internet1)..

the Agro-environment Management Programs (AKG) through the electronic form submission system (hereinafter referred to as e-admission). Every client (about 200 000 farmers) had the possibility to create and submit his/her application for area payment electronically with a PC (Szénás – Herdon, 2008).

FÖMI established a web browser based on the database of LPIS to relieve the identification of physical blocks. This Internet browser is available at branch offices of Hungarian Chamber of Agriculture and the Agricultural and Rural Development Agency (ARDA) (Mezőgazdasági és Vidékfejlesztési Hivatal, MVH in Hungary) and Central Agriculture Office (CAO) (Mezőgazdasági Szakigazgatási Hivatal; MgSzH). Farmers – who have entitlement – have the opportunity to use this Web services in the Internet (Fig. 4). These farmers can complete aid applications on the Internet without GIS knowledge or GIS desktop software. The Web services allow farmers to identify, edit, or create field units based on aerial photographs and cadastral data, enabling them to complete their aid applications from the local farm office. Farmers can only modify the data of his land parcels after registration and sign-in with password (Herdon – Csótó, 2009; Internet1; MVH, 2007).

95% of the farmers (183 764 of 200 000) used the electronic service in 2008. According to the low internet penetration among them, it is a really good result, and unique in Europe. The reason of this success was that the farmers had the possibility to call the advisors' and counsellors' (private and state network as well) help in the application process. Advisors and counsellors can submit the forms with the authorization of the farmers.

Control of the declaration

In the EU system, the applications for area-based agricultural subsidies consist of tabular forms and block maps with the drawing of agricultural parcels inside the physical blocks. Scanning of the claims and alphanumerical data input is carried out by ARDA. The remote sensing control of the selected claims (dossiers) is the task of FÖMI. FÖMI digitalize the parcel drawings into GIS and use satellite images to control the declared parcel – the latter is called Computer-Aided Photo-Interpretation (CAPI). The aim of CAPI is to observe the declared crop in the parcel, and analyze whether the declared area is correct. High resolution (HR) image time series are used to determine crops, while the very high resolution (VHR) images are used to control exact area measurement. The fulfilment of Good Agricultural and Environmental Conditions (GAEC) are also checked. The results of control are delivered to ARDA. ARDA carries out some follow-up checks based on the control results before the final decision on the acceptance or rejection of a claim (Internet2; MVH, 2007). The overview of the control procedure is shown in Fig. 5.

National Land Development and Land Management Information System

The TeIR is such an electronic information system which was create according to the 1996/XXI. regulation about land development and land management in Hungary. VÁTI (Hungarian Public Non-profit Limited Liability Company for Regional Development and Town Planning) which is a non-profit organization worked out this system and in 1998 the nation level was ready, in 2002 the county level as well and from 2002 services and data are enriching (Barkóczi, 2000; Internet3).

With help of this system users can make diagrams, cartogram, which is a thematic map which shows statistical data of geographical land, analysis based on informatics, they can collect data (Barkóczi, 2000).

Aim of the TeIR is to supply the land development and management offices and the public too with a digitalized mapping data placed in an authentic and up-to-date database. This database contains the different regions and settlements of the country and the member states of the EU demographical, economical and the status of the environment. TeIR ensure effective tool to process this database (Barkóczi, 2005).

Single areas can be illustrated with different colours, so they can form several statistical value limits. The system facilitates the activity e.g. in planning, development, research and decision-preparation.

The TeIR is an informatics system based on geoinformatics which have a uniform nationwide

database and guarantee the web services in order to access and process data.

Of course documents connected with areas developing and managing are available for everybody and in addition to this with the help of professional website meta database of the system and basic data on the web are accessible as well. Identification of users passes to Client Gate of Central Electronic Service System.

The TeIR database contains numerical and topographical data in these issues (Szűcs, 2009):

- Areal economical processions;
- Areal demographical processions;
- Technological Infrastructures' spatial post;
- Status of the natural and built environment;
- Land Management:
- Institution, administration,
- Support System,
- Documentations, plans;
- Area settlement.

The main map of the information system is the scaled of 1:30 000 Digital Geography Main Map which integrate the geographical – that scale is 1:100 000 – database of the National Land Database. With the help of GIS application we can load digital maps compiled in different themes. We can also make enquires and generate unique maps with option of the order of layers. The surface of application of geoinformatics is similar in all cases; there are difficulties merely in connection with content of data. The surface consists of 3 parts: on the left site is a toolbar, in the middle is the actual map and on the right site there are the layers of the map and the notation in connection with the map which is shown Fig. 6 (Internet3).

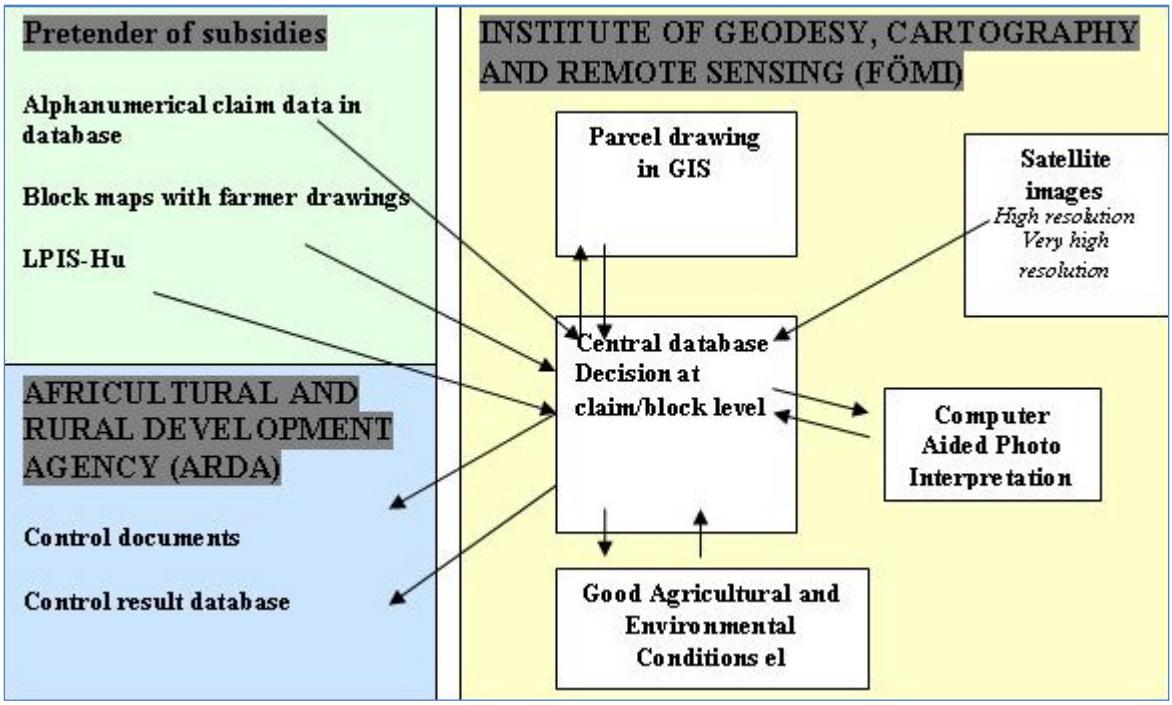

Figure 5: Basic Elements of Area-based Subsidy Control by Remote Sensing.

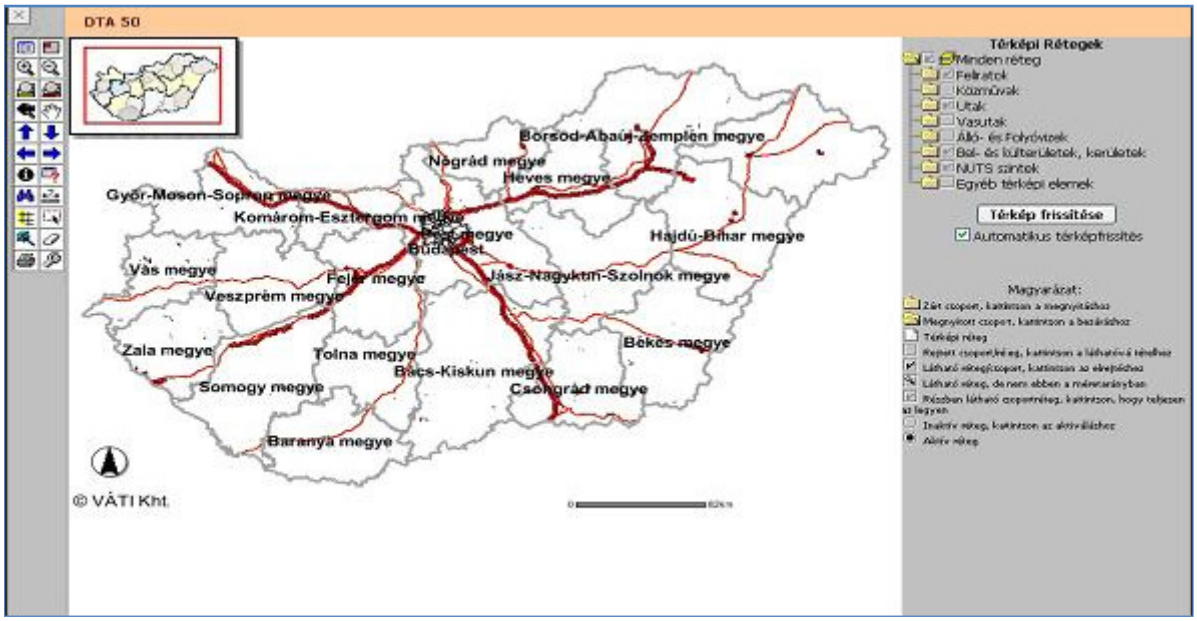

Figure 6: Construct of the GIS application in the TeIR (Internet3).

Summary

Due to the wide range of GIS application we can see improvement in the agriculture and land development. These types of applications help that the map database of TeIR is widely used. The continuous development generated the opportunity of electronic filling and submission of area-based subsidies. This Internet service which started in 2008 was really successful, despite the low internet penetration among the Hungarian farmers.

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