APSTRACT

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Editors' welcome

Applied Studies in Agribusiness and Commerce is the official periodical of the International MBA Network in Agribusiness and Commerce for the discussion and dissemination of applied research in agricultural economics, agribusiness and commerce done within the International MBA Network. Universities belonging to International MBA Network expose students to the latest theoretical and applied knowledge about international politics, economics, sociology and law. Participants develop management skills grounded in finance, organizational behaviour, negotiation skills, project management, and strategy. Prospective managers are given the opportunity to directly apply these skills in relevant professional settings. Managers must be able to use business management knowledge and skills appropriate to the distinctive setting of their institutions.

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Editors of Applied Studies in Agribusiness and Commerce want to make theory and practice come together and feel privileged to have access to them. The Editors hope Applied Studies will be a forum to evaluate the impact of life sciences and modern technology on business strategies in the food chain. Applied Studies will exchange views, develop strategies and evaluate the impact of changes taking place throughout the integrated food chain, and provide an opportunity to establish priorities in the development and direction of the global food system.

Editors of Applied Studies in Agribusiness and Commerce would recommend this journal to anyone who wants to better understand the agricultural economy and international trade. They want to access information on food quality, food production and manufacturing practices. Editors of Applied Studies in Agribusiness and Commerce discuss important issues of food and agribusiness and improve communication with colleagues in food and agribusiness programs throughout Europe.

Editorial Board

In search of clusters

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Abstract: The aim of this article is to present the 'regional cluster quick scan' as an efficient and objective tool to scan a region of interest for the presence, nature and development phase of regional clusters. The 'tool' developed in this research is based on the relations between the state of cluster development in regions, competitiveness, and economic growth. First, a theoretical model is developed and then this model is applied to a real case to test the validity of the model. The results indicate the possibility of identifying regional clusters and their competitiveness by using Shift and Share analysis.

Keywords: regional clusters, cluster lifecycle competitiveness, economic development, shift and share analysis, quantitative analysis

1. Introduction

Since the 1990 publication of "The Competitive Advantage of Nations" by Porter, regional policy practitioners and academic researchers alike have been captivated by the promise of regional development through improved business competitiveness. The book and Porter's later work on competitiveness, innovation and industry clusters contains the premise that regional development can be ensured by the development of regional clusters that improve the competitiveness of a region. Improved competitiveness in turn leads to increased economic growth of the regional economy. The promise of economic growth through cluster development has not only been noticed by academic researchers from a wide ranging field of different sciences. A vast amount of governmental and non-governmental agencies is concerned with regional clusters to improve regional economies.

Countless qualitative studies have been performed on the formal theory building of regional clusters. These, however, have not led to a concise body of common agreement on cluster theory. Although numerous methods are used to analyse and measure the size and importance of regional clusters, there is no commonly accepted method of cluster determination and measurement (*Brown,* 2000). By adding quantitative analysis, the concept of clusters and their effect on the regional economy becomes clearer.

The objective of this article is to establish a cost and time efficient objective method to first of all determine the presence of regional clusters; second, to determine the sectors constituting the cluster; and finally to determine the development phase of the clustering of economic activities in regions. Such an objective and efficient tool allows regional development practitioners and academic researchers to identify potential clusters in an effective manner. Furthermore, this method allows for the screening of a region of interest for potential clusters. The 'regional cluster quick scan,' as designed in this research, is a first screening tool for the presence of regional clusters.

The approach chosen in this research relies on quantitatively established relations between clusters, competitiveness and economic growth.

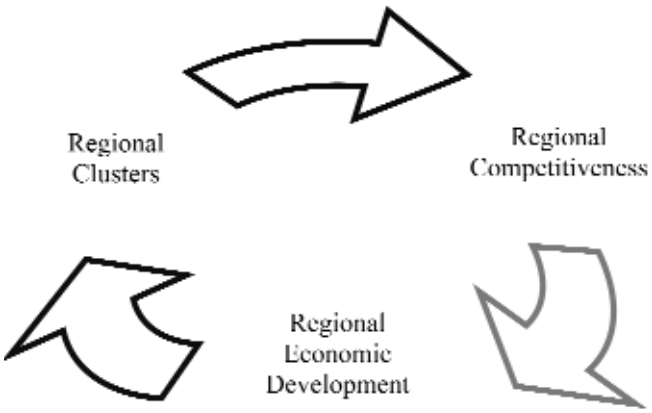

Figure 1: Theoretical framework of the regional cluster quick scan

Correlation and regression analyses are performed, for which the causality of clusters leading to competitiveness and competitiveness, which in turn leads to economic growth, is assumed, as this is needed to construct the framework *(Figure 1).* The most important definitions used in this article are:

Clusters

"Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or a region"

(Porter, 1990).

Competitiveness:
The degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term" (National Competitiveness Council, 2001).

The strength of clusters is determined by using data provided by the Global Competitiveness Report 2004/2005. To provide an average overview of cluster strength on the national level, an average of the scores was taken and the countries were re-ranked according to this average score. National level data on competitiveness is provided by the same report. Regional level competitiveness on NUTS-1 level is provided by the Huggins Institute for the year 2004 (*Huggins,* 2004). National and regional employment data are provided by Eurostat for the European data. In the specific Dutch analyses, data were used from Statline. Data from Eurostat are collected for the years 1999 as the base year and 2004 as the final year of analysis.

2. Materials and Methods

Regional clusters: The use of Porter's definition of the concept of regional clusters is a pragmatic choice, which allows for the distinction of two different characteristics of clusters that are, in our opinion, important. The first part of the definition states that clusters are regionally concentrated; the second part indicates that clusters are networks among different participants in the economic process. The first part, the regional co-location of industries, can be quantitatively observed using a wide range of tools available to regional economists (amongst others: location quotients, and Shift and Share analysis as a more dynamic approach and used in this report); uncovering the networks constituting the clusters is still relying on qualitative approaches. The regional cluster quick scan as designed here relies on this regional co-location of industries.

Although the definition does leave much room for discussion on the exact contents of clusters, it is the most widely recognized definition for clusters. The debate on the exact definition for clusters is by no means ended. Martin and Sunley, for example, have catalogued 10 different ways to define the concepts of industry clusters (*Cortright,* 2006). Cortright suggest a more pragmatic approach among scientists to accept the concept of clusters to be an "umbrella" concept, suitable for relevant policy formulation. By this, he proposes to not exactly define the concept, but rather to look at the commonly shared characteristics of clusters instead.

Theories on clusters: Recently, the most important concepts related to regional clusters have been: labour market pooling, specialized supplier, knowledge spill-overs, entrepreneurship, path dependence and lock in, culture and local demand. (*Cortright,* 2006). These terms are closely related to both Neo-classical Economy when dealing with labour pooling and scale and scope advantages, primarily in terms of costs of production; and New Economic Growth theory or Endogenous Growth theories. New Economic Growth Theory is a heterodox stream of economics that arose from the 1970s onward, and has challenged Neo-Classical growth models on the assumptions and practical applications. Heterodox theory, like New Growth theory, provides a framework for analysis, pinpointing essential elements of economic activity previously ignored by Neo-Classical economists. Eventually, these thoughts construct a framework providing a rationale for regional clusters.

Growth Theories, Neo-Classical approaches: The earliest economic growth models, i.e. those created by Swan and Solow, represent economic growth by an aggregate production function where capital and labour accumulation are the determinants of growth. It is factor accumulation that matters in these models (*Aghion et al.,* 1998). All the models assume diminishing returns to both capital and labour. In the long run, there is no growth possible expect for growth induced by technological change. This technological change is however not incorporated into the model, but rather perceived as something that occurs outside of the scope of economics. In Harrod-Domar's growth models, capital accumulation matters most for economic growth. Saving and capital accumulation by the public or by the state could be used as the key ingredient to economic growth. Technology came upon the industrial sectors like manna from heaven and, although technology gave certain advantages to growth, these are regarded as exogenous to the economic processes (*Shaw,* 1992). The equilibrium growth rate in the model is when economic growth measured in output is equal to the marginal propensity to save and the capital-output ratio together. New Economic Growth theories oppose the view of diminishing returns to capital and labour and an eventual steady state of economic well being. The most important factors for economic growth in the New Growth theory are not so much labour and capital, but rather the efficient and effective use of these factors. Furthermore, technology development is no longer considered to be exogenous to the economic model. Rather than being influenced by technology, the economic actors are seen as shaping the technological development. The most important contributors to endogenous growth theories are Lucas, Aghion and Howitt and Grossman and Helpman (*Kemfer,* 2002).

The Institutional Environment and New Growth Theories: The institutional environment comprises all formal and informal rules that delineate the room to manoeuvre for economic actors. Davis and North (1970) define the institutional environment as: "A set of fundamental political, social and legal ground rules that govern economic and political activity". In this vision the institutional environment is not something fixed but is a situation that develops and changes over time. "The institutional environment contains taken-for-granted social and cultural meaning systems or norms that define social

reality" (*Handelman and Arnold,* 1999). According to North et al. (1976), efficient economic organization is the key to growth.

According to Porter, competitiveness and the resulting growth are the consequences of private sector activities. The diamond figure represents the importance of embeddedness of these private economic activities in their economic environment. The economic environment of business activities is created by interplay of relations with associated industries, the demand side of the firm, the inputs needed for production, and the appropriate context for production that improves business competitiveness. The importance of the government is the impact a government can have on the four conditions for a competitive private sector.

Observing regional clusters: Geographical concentration of industries is by no means a new and revolutionary concept in economic geography. Economic geography evolves around the questions: what economic activities are located where and why are they located there? Co-location of industries, or industries residing in a geographically concentrated area, was already observed. Marshal observed the co-location of industries into industrial zones in England (*Martin and Sunley,* 2001). The concentration of these industries in so-called industrial districts was, according to Marshall, rather based on knowledge and knowledge spillovers, the relationship between the industries, and the supporting institutions (*Andersen,* 1996). "The mysteries of the trade become no mysteries; but are as in the air" (*Andersen,* 1996). Von Thünen, Weber, Christaller and Lösch were the first and most important economic geographers that determined location decisions of economic activities with the help of models. Perroux noticed that economic growth was not a fluent process and that different regions experienced different economic growth rates. Based on this finding, Perroux concluded that there must exist something which he called growth poles. There are centres of economic growth, whereas other regions lagged behind. (*Andersen,* 1996) While these theories focus on the input side of the economic process, attention was also given to the output side. Hotelling was the first to recognize the concentration of competitors. The rationale for competitors to co-locate is according to Hotelling found in the demand side of the economy. Instead of locating as far away from the competitor as possible, the location is better chosen close to the competitor. In this way, distance between consumers and sellers is no longer a hindering factor for sales.

Because the approach chosen in this thesis report is based upon dynamic rather than static approaches, i.e. the Institute for Strategy and Competitiveness of Harvard (ISC): Cluster Mapping; and the VINNOVA approach, a clearer picture of the three topics and their relation can be provided. The Shift and Share analysis is dynamic in nature as it measures relative changes in employment overtime. The location quotients as used by the ISC and VINNOVA are static, as they only consider the status quo at a given time. One of the most important shortcomings of these static approaches as presented by the ISC and VINNOVA is that sector scale matters for the detection of regional clusters. Sector scale is important in regional analysis, as small scale sectors can be easily overlooked by statistical analysis (*Brown,* 2002). When employment indicators are used to find clusters in static approaches, it is very likely that their importance to the regional economy, measured in terms of value added, is underestimated, as employment levels are low. Relative labour extensive sectors, such as biotechnology, have a high value added per worker, and thereby contribute relatively well to per capita value added and economic growth. However, the absolute employment is small.

Dynamic analysis of the growth in employment over a longer period of time can reveal the relative importance of these labour extensive sectors in terms of stronger employment growth. Cluster mapping approaches, such as those of the ISC and VINNOVA, rely on an industry classification standard. The problem is that these standardizations only allow for one classification of the firm. The multitude of possible activities and relations the firm has is therefore underestimated by focusing only on one activity of the firm, rather than looking at all its activities (*Cortright,* 2006). Because employment development is used in the regional cluster quick scan, the limit of only one classification code will be less constraining. Because employment is measured at sector level, the firm cannot belong to more than one sector. Yet, because this sector scaling includes a wider variety of activities, the constraint is reduced. In order to test the robustness of the findings, it is possible to look at employment development within different sector classifications.

3. Competitiveness

Competitiveness is a much sought after concept among policy practitioners and academic researchers alike. The promises of economic development through competitiveness appeals to everyone, but the exact content is very hard to pinpoint. Two very distinct approaches to observe competitiveness can be identified: the ex-ante and ex-post measures of competitiveness. On the one hand, a vast amount of competitiveness rankings is produced where the state of competitiveness is estimated by indicators that enhance competitiveness. This approach is used e.g. by the World Economic Forum (WEF); The Council on Competitiveness and The Competitiveness Program. Ex-post measures are not concerned about the specific indicators that lead to a perceived competitiveness level. These ex-post measures are identifying the revealed effect of competitiveness. If competitiveness is indeed increasing economic development, this should be observed by looking at economic development. The indicators that reveal e.g. ex-post competitiveness are among other added value, GDP per capita, exports and imports.

The construction of competitiveness indices is a complex task involving a vast amount of data. Special about the WEF approach is that quantitative and qualitative data are combined in order to give a precise measurement of

competitiveness. Together with 'hard' economic statistical data, the WEF issues a survey to business representatives in the countries. Global competitiveness is based on 3 pillars of importance for the competitiveness of nations: Basic requirements, Efficiency enhancers and Innovation factors. The topics included in these indicators are: institutions, physical infrastructure, macro stability, security, basic human capital, advanced human capital, goods markets efficiency, labour market efficiency, financial market efficiency, technological readiness, openness and market size, business sophistication and innovation. The growth competitiveness index is a smaller version of the global competitiveness index, including only those indicators that are perceived to be most directly linked to economic growth performance.

If indeed competitiveness is the capacity for regional or national economies to compete on larger markets, the revealed effects of competitiveness are the results from the sales on those markets. Competitiveness than can be measured by the effects of competitiveness; the increase in added value (*Cook and Bredhal,* 1991), in sales on non-regional or national markets, i.e. by exports (*Feenstra* et al., 2006), in the increase in the procurement of inputs, and increase in employment. The last relation, between competitiveness and employment, is less straightforward. However, employment can be used as a substitute for value added as employment data is usually more easily obtained.

4. Economic growth

Shift and Share analysis: The Shift and Share analysis has been a commonly used tool among economic geographers for a long time. (*Houston,* 1967). The effect of changes in employment and the associated competitiveness are calculated to identify the source of competitiveness for regions. From the literature, it becomes clear that the shift and share method is used to find the growth of a region's economic performance by either the structure of the economy or by the region specific components that make the region competitive. The relative components of the shift and share analysis are taken into account, to allow for an inter-regional comparison of the contribution of the components to competitiveness. The shift and share results used in this research are:
Where:

$$\text{RAS} = \frac{\sum_i W_{ijt} - \frac{W_t}{W_0}\sum_i W_{ij0}}{W_{ij0}}$$

$$\text{RDS} = \frac{\sum_i \left(W_{ijt} - \frac{W_{it}}{W_{io}} W_{ijo}\right)}{W_{ijo}}$$

$$\text{RPS} = \frac{\sum_i \frac{W_{it}}{W_{io}} W_{ijo} - \sum_i \frac{W_t}{W_o} W_{ijo}}{W_{ijo}}$$

W_{ij0} = Employment sector $_i$ in region $_j$ in year 0
W_{ijt} = Employment sector $_i$ in region $_j$ in year $_t$
W_{i0} = Employment per sector total economic area in year 0
W_{it} = Employment per sector total economic area in year $_t$
(*From Heijman,* 2002).

Relative shifts: The actual total shift shows the change in employment per sector of the region relative to the change in employment per sector on the national level. The relative actual shift is measured by taking the total economy growth factor in employment and relating this to the employment development of the region. This shows whether the region has grown faster or slower in employment compared to the total economy. The relative actual shift is composed of two components: the structural component shift and the region specific shift.

The structural component of the Shift and Share analysis, also called the relative proportionality shift, explains how the industrial structure of the regional or national economy contributes to overall employment growth performance. It indicates the growth of employment in the region, relative to the development in employment on the national level, to estimate the contribution of fast growing industries to the regional economic development. A negative industry mix component suggests the county has employment concentrated in sectors which are growing more slowly than the overall national economy. This structural shift tells us something about the competitiveness of the region, as derived from the type of economic activities represented there. A fast growing sector that is relatively well represented in the region increases regional development.

The region specific component, also called the relative differential shift, describes how firms in the country or region perform relative to national averages for firms in those same industries. This relative differential shift is also known as a region's measurement of competitiveness. To calculate the competitive share component, base year employment in each local industrial sector is multiplied by the margin between the local sector growth rate and the national average growth rate for that sector. If this shift is positive, it means that the region has attracted relatively more activity in the sector than the national economy. If this growth is negative, the region has not done well in attracting economic activity. This relative differential shift is the component of competitiveness that indicates the regionally specific elements that contribute to its competitiveness. If the relative differential shift is positive, there is something pulling economic activity to that specific location. Without saying anything about the specific indicators that pull the economic activity, it is clear there are positive indicators contributing to regional economic development.

Employment and economic growth: Although employment development is a much used indicator for Shift and Share development, it may not be the best indicator to represent economic growth. Growth is associated with increased productivity resulting in increased income. Added value, regional exports and market shares (*Houston,* 1967; *Esteban,* 2000) provide useful information on the position of the regional economy on larger markets. In this study, the Shift and Share method is applied to employment data because of the availability of reliable data in time-series for many regions. The directions employment development take, as represented by Shift and Share analysis in relation to competitiveness, are verified by the direction of the relation between competitiveness of countries and the GDP per capita in purchasing power parities in both a static and dynamic approach. It is clear that the direction of the relative proportionality shift in employment on the national level is the same as the direction of the growth in GDP per capita.

5. The cluster lifecycle, competitiveness and the Shift and Share pattern

Practical applications: Policy practitioners commonly use and acknowledge the idea of regional clusters being subjected to a so-called 'cluster lifecycle'. (*Solvell et al,* 2003; *Cortright,* 2006a). Regional clustering is a dynamic process which occurs over time, where a cluster goes through different phases of development from embryonic to growth to maturation and eventually to a state of declining strength. Reviewing the Italian experience with industry clusters, Bianchi, Miller, and Bertini divide clusters into three broad groups: embryonic, consolidated, and mature. Because of continual changes in markets, competition, and technology, clusters tend to evolve continually, with some clusters ebbing or dying even as new ones form and grow (*Cortright,* 2006a). In this study, the four stages approach was chosen, following among others *Cassidy* et al. (2005) and the Cluster Policy White book (2004).

Academic applications: An upsurge in interest for the cluster lifecycle also occurred in science. The first lifecycle to be considered is the product lifecycle (*Levitt,* 1956). Sales of products are perceived to be low in the initial introduction phase, followed by rapid increase, declining increase and finally decrease of sales. If products are experiencing periods of rapid sales increases, following by a slowdown and eventual decrease in sales, the industries involved are influenced by this product lifecycle in terms of output and sales revenue. If regional concentration of industries around certain product occurs, the regional economy is experiencing the same stages of boom and decline. (*Rees*, 1979)

The notion of the industrial lifecycle as an important new concept of innovation was first made by Klepper, as he states that "There is accumulating evidence supporting the idea of a 'prototypical' industry lifecycle" (*Audretsch* et al., 1996). The industry lifecycle is most commonly considered in terms of the quantity of firms involved in production. In the initial phase of a newly introduced product, the number of independent producers tends to be large and increase. Over time, a 'shake out' effect occurs, where many new firms cease production. The conclusion is that clustering of economic activities is influenced by innovation subjected to industry lifecycles (*Klepper,* 1992). *Brenner* (2000) obtains the same results on the firm population and four stages of the industry lifecycle. Regional clustering is influenced by the industry lifecycle, as clustering, or regional concentrations of entering businesses is strong at the beginning of the industrial lifecycle, and at first increasing but later declining again. *Dalum* et al. (2002) conclude that technological lifecycles are greatly influencing the existence of regional clusters. "New 'disruptive' technologies may initiate the emergence of new regional industrial clusters and/or create new opportunities for further development of existing ones. However, they may also result in stagnation and decline of the latter". In the light of technological innovation, the different lifecycles seem to provide a more dynamic approach to regional clusters. A cluster often passes through different lifecycles, and it is the cluster's capacity to withstand technological change that determines the evolution of the cluster.

The cluster life cycle and employment development: In this report, the cluster lifecycle approach is the foundation for the regional cluster quick scan. The importance of the clustered sector in the regional economy should be observable through an increase in the number of entrances of new companies, as Audretsch (1996) observes. It is therefore hypothesised that employment is also positively associated with the different phases of the cluster lifecycle. In the initial phases of cluster development, when there are increasing but later declining numbers of new entering firms in the regional economy, this should be made visible by looking at the development of employment levels in the region.

6. Results

Cluster strength and Competitiveness: National level: The first relation is the link between the state of cluster development on the one hand, and the competitiveness of the economy on the other hand. Quantitative analysis *(Table 1)* shows a positive correlation coefficient of 0.836 with a significance of the 0.000 level between the strength of clustering in national economies and the global competitiveness ranking of these countries. The growth competitiveness ranking, a less complicated version of the global competitiveness ranking, gives a correlation coefficient of 0.752 with a significance of the 0.000 level. The more competitive a nation, the more likely it is there is stronger clustering of economic activities.

Table 2 provides the results of the regression analysis as performed in this study. The estimated directions and strengths of the relationships are all significant and strong.

Table 1: Correlation between the state of cluster development ranking and the global competitivenss ranking on the national level

		Growth Competitiveness ranking	index
State of cluster development	Pearson Correlation	0.752(**)	0.836(**)
	Significance (2-tailed)	0.000	0.000
	Number of observations	58	58

** Correlation is significant at the 0.01 level (2-tailed).

Table 2: Regression analysis of the state of cluster development ranking (Y_1) and the competitiveness rankings on the national level

$Y_1 = \alpha + \beta X_1, \quad Y_1 = \alpha + \beta X_2$	α	β	Significance	R^2 (adj.)
Global competitiveness rank (X_1)	7.424 (3.169)	0.686 (11.384)	α 0.002 β 0.000	0.69
Growth competitiveness rank (X_2)	9.945 (3.568)	0.606 (8.528)	α 0.001 β 0.000	0.57

Table 3: Correlation between the competitivenss ranks and the Shift and Share analysis national level data

	Correlations	RDS	RPS	RAS
Global Competitiveness Rank	Pearson Correlation	-0.106	-0.747(**)	-0.219
	Significance (2-tailed)	0.630	0.000	0.316
	Number of observations	23	23	23
Growth Competitiveness Rank	Pearson Correlation	-0.057	-0.626(**)	-0.153
	Significance (2-tailed)	0.797	0.001	0.484
	Number of observations	23	23	23

RDS=Relative differential shift, RPS=Relative proportionality shift, RAS=Relative actual shift, ** Correlation is significant at the 0.01 level (2-tailed).

Table 4: Regression analysis of the global competitiveness ranking (Y_2) and growth competitiveness ranking (Y_3) and the national Relative Proportionality Shift (X_3)

$Y_2 = \alpha + \beta X_3, \quad Y_3 = \alpha + \beta X_3$	α	β	significance	R^2 (adj.)
Global competitiveness rank (Y_2)	22.184 (8.361)	-641.309 (-5.141)	α 0.000 β 0.000	0.54
Growth competitiveness rank (Y_3)	22.037 (8.771)	-433.982 (-3.674)	α 0.000 β 0.001	0.36

Table 5: Correlation between NUTS-1 level competitiveness ranks and the results of the Shift and Share analysis (full data set) and correlations between the NUTS-1 level competitiveness and the results from the Shift and Share analysis (with outlier analysis)

	Huggins Rank		Huggins Score	
	Pearson Correlation	Significance (2-tailed)	Pearson Correlation	Significance (2-tailed)
RAS (N=51)	0.474(**)	0.000	-0.451(**)	0.001
RDS (N=51)	0.551(**)	0.000	-0.538(**)	0.000
RPS (N=51)	-0.572(**)	0.000	0.622(**)	0.000
RAS (N=44)	0.628(**)	0.000	-0.578(**)	0.000
RDS (N=44)	0.697(**)	0.000	-0.662(**)	0.000
RPS (N=44)	-0.567(**)	0.000	0.618(**)	0.000

** Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis and the regression analysis both indicate that the state of cluster development is closely and significantly interrelated with the level of competitiveness of nations. In more competitive nations, it is more likely that strong clustering of economic activities can be observed.

Competitiveness and the Shift and Share analysis: national level: The second relation is the relation between competitiveness on the one hand, and the relative Shift and Share analysis on the other hand *(Table 3).* On the national level, it is the relative proportionality shift that indicates competitiveness with a correlation coefficient of –0.747 and –0.626 with a significance of 0.000 for the global competitiveness rank and the growth competitiveness rank, respectively. The strongly negative relation indicates that the stronger the relative proportionality shift, the stronger the structure of the economy and the more competitive the country is.

On the basis of the national level analysis, it is clear that the relative proportionality shift yields the only strongly significant results for further analysis. The relative actual and the relative differential shift seem to have no important connection. *Table 4* shows the relation between the relative proportionality shift and the global competitiveness rankings.

One remark that has to be made in this case is that the number of observations, 23 countries that were used is rather small for reliable statistical analysis. It is used in this report merely as a first indicator rather than a source of strong conclusions.

Competitiveness and the Shift and Share analysis: regional level

Finally, the relation between the Shift and Share analysis and the regional competitiveness index was estimated. This allows for a much more detailed analysis for regional development and allows for more cases to be entered. On the regional level, competitiveness is significantly determined by all three shifts: the strong and negative relative proportionality shift, and the strong

and positive relative differential and relative actual shift with correlation coefficients of –0.572; 0.551 and 0.474, all significant to the 0.000 level *(see Table 5).* The same correlation analysis was performed with the more expanded analysis. This more expanded analysis was performed to test for the disturbance of some divergent observations in the dataset. Here, the Relative proportionality shift scores –0.567 and the relative differential- and the relative actual shift score 0.697 and 0.628, respectively, all significant to the 0.000 level.

Table 6 shows the relations between the regional competitiveness level and the relative actual shift. *Table 7* shows the results from the regional competitiveness related to the relative differential and relative proportionality shift. *Figure 2* shows the directions of the relations between the relative differential and relative proportionality shift. From the analysis, it is clear that the two shifts are indeed strongly and significantly related to the competitiveness of the region.

Competitiveness and GDP per capita: National level: Employment development as represented by the Shift and Share analysis correlates with competitiveness significantly and negatively on the regional level. More competitive regions experience less growth in employment than less competitive regions. Because these results were not expected beforehand, as it was expected that stronger regions in terms of competitiveness will have more economic growth, the results were checked for consistency with GDP per capita growth in the same countries with an addition of 7 countries, in the same period (1999–2004).

Table 8 presents the correlations between the global and growth competitiveness indices the GDP per capita, both in a static and a dynamic picture. The correlations estimated are not as strong as the Shift and Share results are in relation to competitiveness, but the picture they represent is still concise. Competitiveness and

Table 6: Regression analysis of the Regional Competitiveness Rank (Y_4) and Regional Competitiveness Score (Y_5) and the Relative Actual Shift (X_4)

$Y_4 = \alpha + \beta X_4, \quad Y_5 = \alpha + \beta X_4$				
RAS	α	β	significance	R^2 (adj.)
Regional Competitiveness Rank	43.913 (14.549)	266.737 (5.224)	α 0.000 β 0.000	0.39
Regional Competitiveness Score	102.605 (15.431)	-516.413 (-4.591)	α 0.000 β 0.000	0.32

Table 7: Regression analysis of the Regional Competitiveness Rank (Y_4) and Regional Competitiveness Score (Y_5) and the Relative Differential Shift (X_5) and the Relative Proportionality Shift (X_6)

$Y_4 = \alpha + \beta X_5, \quad Y_5 = \alpha + \beta X_6$					
RDS; RPS	α	β	γ	Significance	R^2 (adj.)
Regional Competitiveness Rank	46.275 (17.438)	217.759 (4.793)	-601.027 (-2.726)	α 0.000 β 0.000 γ 0.009	0.54
Regional Competitiveness Score	96.844 (17.352)	-396.977 (-4.154)	1599.692 (3.450)	α 0.000 β 0.000 γ 0.001	0.54

Table 8: Correlation between the GDP per capita in a static and dynamic representation and the competitiveness ranks national level data.

		Global Competitiveness rank score		Growth Competitiveness rank score	
GDP 2004	Pearson Correlation	-0.685 (**)	0.688 (**)	-0.674 (**)	0.668 (**)
in ppp	Significance (2-tailed)	.000	.000	.000	.000
% change	Pearson Correlation	0.333	-0.355	0.365 (*)	-0.374 (*)
in GDP per capita	Significance (2-tailed)	0.072	0.055	0.047	0.042

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed). N = 30 for all correlations.

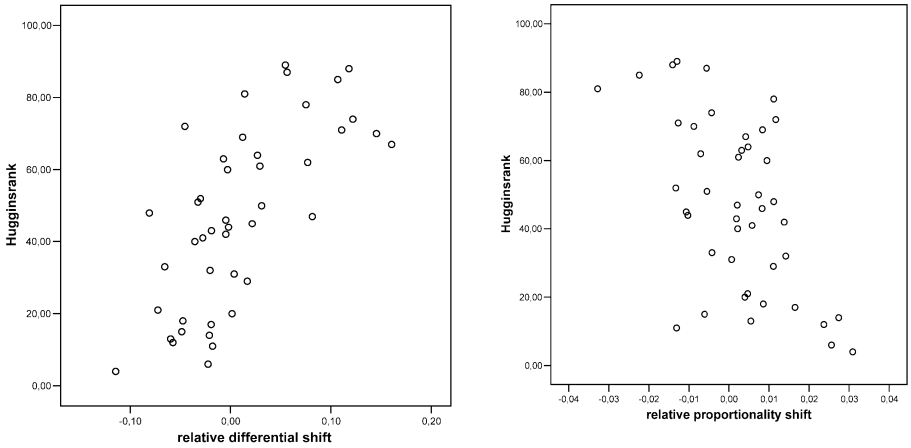

Figure 2: Scatter diagram of Huggins rank and relative differential shift (left panel) and relative proportionality shift (right panel)

GDP per capita are related in a positive way when the level of GDP per capita in 2004 is taken into account. The global competitiveness rank and the growth competitiveness rank give a correlation coefficient of –0.685 and –0.674, respectively, at the significance level of 0.000. The stronger the competitiveness of the country is, the higher the GDP per capita. A more dynamic approach where the GDP per capita in purchasing power parity growth is taken in to account, does give a less concise yet important result. The weaker but very significant relation between the growth competitiveness index and the GDP per capita growth over a five year period shows that GDP per capita growth and competitiveness are negatively correlated with a correlation coefficient of –0.374 and a significance of 0.042. GDP growth per capita seems negatively correlated to competitiveness, indicating that more competitive countries experience slower GDP per capita growth.

The same results have been identified by the ETLA institute. The ETLA conclusion is that *"Experience has shown that a strong ranking in competitiveness indices does not guarantee favourable economic growth in subsequent years* (*Vartia and Nikinmaa,* 2006)*"*. And: "*An even stronger positive association is found with backwardness. It is easier for economies to grow fast when they are catching up from a long way behind. But it would be perverse to include being backward as a competitive strategy* (*Hawkins,* 2006)." From these results, on the relation between GDP per capita in PPP and the employment development on the one hand, and competitiveness on the other hand, it can be concluded that for both GDP and employment, the growth rates slow down with increasing competitiveness.

7. Designing the regional cluster quick scan

Shift and Share analysis and the cluster lifecycle: In the previous section, the estimation of the relations between the strength of clusters, competitiveness and employment development were estimated. Statistical data analysis shows that there are indeed significant and strong relations between the concepts. Stronger clusters do indeed have a higher competitiveness level. Higher levels of competitiveness do correlate to a faster employment development in the proportionality shift and slower employment development in the differential shift on the regional level analysis. Based on these statistical analyses and the theory on the cluster lifecycle (see also section 2), the final step in this empirical theoretical part of the research is taken. Based on the relations between cluster development and competitiveness; and competitiveness and the results of the Shift and Share analysis on employment development of regions, the regional cluster quick scan is developed. In the regional cluster quick scan, the employment development as represented by the Shift and Share results are representing unique patterns of cluster development.

The objective is to identify the unique pattern of Shift and Share analysis in every phase of the cluster as it develops according to the cluster lifecycle. Although the ideal method is to identify the different Shift and Share patterns for one cluster over time, this approach was not chosen due to data availability issues. There is no time series data on the development of regional clusters. The unique patterns of Shift and Share analysis and the associated levels of competitiveness of one cluster are identified by a cross-section of regions: by comparing many regions with different levels of competitiveness and different results on the Shift and Share analysis, it is possible to determine the cluster development of a region based on the cluster lifecycle. It is hypothesised that clusters grow through different phases of development and decline, and that these different phases of cluster development can be identified through Shift and Share analysis.

Descriptive statistics of the Shift and Share analysis and the cluster lifecycle: For a more detailed overview of the scores on the Shift and Share analysis of the 25% best performing regions, the most competitive regions were compared to the 25% of those regions that scored lowest on the competitiveness rank. *Table 9* presents the Shift and Share pattern for these 11 most competitive and the 11 least competitive regions. The 11 best performing regions all have a relative differential shift of at least 0, but 10 out of the 11 score below 0. The relative proportionality shift is mostly positive or 0; only in two cases the relative proportionally shift is negative. Although the number of observations is rather small, these results are inline with the correlation and regression analyses as presented in the previous section.

Second, a more precise estimation of the boundaries of the different stages of the Shift and Share analysis on the cluster lifecycle is given by an analysis of the percentiles in the data set. Although these observations and the boundaries are dependent on the data set, they do allow for a first analysis of the possibility of unique Shift and Share patterns for the cluster lifecycle phases.

The relative differential shift shows the highest spread in the observations, ranging from a score of – 0.11 up to + 0.16, and also shows the lowest correlation to the competitiveness rankings. The relative proportionality shift shows a much more concise picture: the extreme boundaries of the relative proportionality range from – 0.03 to + 0.03. The relative proportionality shift therefore shows a more consistent picture. 12 shifts are 0.00; 13 shifts are –0.01 and 12 shifts are +0.01. Only 7 shifts deviate more from 0 than an absolute

Table 9: Comparison of the 25% most competitive and the 25% least competitive regions and the results from the Shift and Share analysis

	25% best performers	*25% worst performers*
Relative differential shift	10/11 negative, 1/11 zero	10/11 positive, 1/11 negative
Relative proportionality shift	7/11 positive, 2/11 negative, 2 zero	7/11 negative, 3/11 positive, 1 zero
Relative actual shift	7/11 negative, 2/11 positive, 2 zero	9/11 negative, 2/11 positive

value of 0.01. Therefore, the average score of the positive proportionality shifts is only 0.02 and the average score when the proportionality shift is negative is -0.01. In those rare cases where the proportionality shift is either stronger positive and stronger negative, the distribution of these stronger shifts is as expected. The two cases where the proportionality shift is smaller than –0.01 are both in the 25% worst performing regions and reversely, the strongest positive proportionality shifts are also found in the top 25% regions. The boundaries of the percentiles, as can be observed given the available data set, are presented in *Table 10.* The boundaries of the different phases of the cluster lifecycle are calculated by the observed percentile scores of the regions in the data set.

The regional cluster quick scan: The analytical model that represents the cluster development in regions is represented by figure 3. The slope of the curve shows the relative changes in employment over time when the cluster develops. *Table 11* shows the direction and the strength of these changes in employment.

In the initial stages of cluster development, when the cluster is still weak in competitiveness, the relative differential shift is strong and positive. The relative proportionality shift shows the reverse picture. The structure of the economy is weak and employment development in region as a result of this structure is lagging behind in comparison to the larger economic unit. As the cluster develops and the competitiveness increases, the relative differential shift is decreasing, indicating slower employment development in the region. In the developing phase of the cluster lifecycle the employment development is however still relatively large. The relative proportionality shift is still weak, but the structure is gaining importance, represented by a still negative, but less strong relative proportionality shift in the developing phase of the cluster lifecycle. When the cluster is maturing the shifts change in direction. In the mature and declining phase of cluster development the relative differential shift becomes negative, with an increasing strength. Employment development in the region will fall behind the employment development of the larger unit of comparison. However, the structure of the regional economy as represented by the relative proportionality shift will be positive with increasing strength. The relative actual shift, indicating the relative total employment development of the region in comparison to the larger economic unit is not taken into account in the regional cluster quick scan because of the high multi colinearity between the relative actual shift and the relative differential shift.

Table 10: The boundaries of the cluster lifecycle as given by the unique pattern of the Shift and Share analysis (based on the percentile scores of the regions in the data set)

	Embryonic phase	Developing phase	Mature phase	Declining phase
Proportionality shift	< -0.01	> -0.01, < 0.00	>0.00, <0.01	>0.01
Differential shift	> 0.03	< 0.03, > 0.00	<0.00, >-0.03	>-0.03

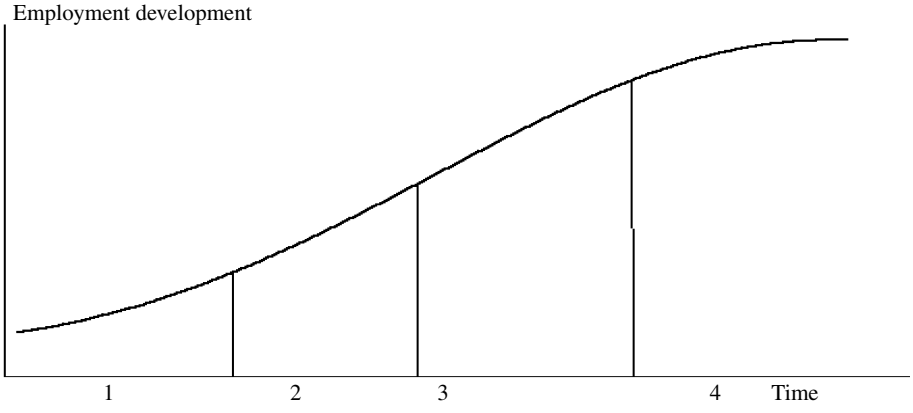

Figure 3: The four phases of the cluster lifecycle and employment development

Table 11: The boundaries of the cluster lifecycle as given by the unique pattern of the Shift and Share analysis (less dependent on the data set as used in this research)

	Embryonic Phase	Developing Phase	Mature Phase	Declining Phase
Relative Proportionality Shift	< 0	< 0	> 0	> 0
Relative Differential Shift	> 0	> 0	< 0	< 0

9. Conclusions

The regional cluster quick scan is a time and cost efficient and objective tool for policy practitioners and academic researchers to screen their region of interest for potential clusters. Based on quantitative data analysis the relations between clusters, competitiveness and employment development are established and used to design the regional cluster quick scan.

Because clusters and competitiveness go hand in hand, it is possible to determine the presence of potential regional clusters by observing regional competitiveness. More competitive regions are more likely to have clustered economic activities in multiple sectors. Competitiveness of the European regions is measured at NUTS-1 level only; the preferred scale of measurement may be much smaller. This is why employment development of the region in relation to European average employment development is taken as a determinant of competitiveness through Shift and Share analysis. In general, more competitive regions experience slower employment development in comparison to less competitive

regions; in other words, less competitive regions have a higher employment growth than more competitive regions. The composition of this growth in employment as analysed by applying the Shift and Share analysis is even more interesting. More competitive regions have a slower overall employment development, caused by the negative relative differential shift. Yet, this negative relative differential shift is moderated by a positive relative proportionality shift. The structure of the economy contributes positively to competitiveness; the region specific elements are impacting competitiveness negatively.

Second, because clusters in different phases of the cluster lifecycle and with different levels of competitiveness show distinguished employment development patterns represented by the Shift and Share analysis, the phase of cluster development can be determined. Generally speaking, clusters in the early stages of the cluster lifecycle are fast developing in the relative differential shift, the shift indicating the region specific elements for growth, whereas in these early phases growth caused by the structure of the economy, as represented by the relative proportionality shift is still slow. In more mature and even declining clusters, these patterns of the relative differential and relative proportionality shift change. In the final stages of the cluster lifecycle, the structure of the economy is stronger and contributing positively to employment development. However, the region specific elements contribute negatively to employment development.

Finally, because the employment development per economic sector is taken into account, the sectors in these potential clusters can be identified. Those sectors that experienced relative high employment development in a given time period are considered to be the competitive sectors. These are the sectors that performed well in comparison to the larger economic unit to which employment growth is compared.

Interviews with experts on regional cluster development, on the role of development agencies and governments in the cluster development process, yield interesting suggestions for policy towards the development of strong regional clusters. Conclusions of the analysis of the interviews suggest that cluster formation cannot be enforced by government agencies. Clusters arise and thrive because of private sectors interest and private sector involvement. Government policies are however important for facilitating the initial stages of clustering and by providing the appropriate business climate for clusters to arise and thrive. In different phases of the cluster lifecycle, different facilitating activities can be performed by the non-private sector to enhance and improve cluster development and to keep the clusters strong and competitive.

The regional cluster quick scan, as designed in this study, shows potential regional clusters based on employment development in certain sectors per region. Still, the fact that clusters are by definition geographically concentrated does not necessarily mean that clusters are bounded by these regional borders: it is possible that clusters cross regional borders. The question that remains unanswered is whether or not regional clusters that cross these borders can be detected using this approach. For clusters that do affect the regional economy greatly, the multi-regional problem is not applicable, but the method does underestimate the importance of clusters that cross regional boundaries and that do not therefore affect employment development in one region in particular.

Furthermore, there is the issue of multiple clusters in one region. A region can experience multiple cluster development as more industries tend to cluster, but these industries are not related in the same network. These clusters are not necessarily in the same stages of cluster development, some may be still in the initial phases of cluster development, whereas others may be in the final stages of development. Our research does not clarify how these different clusters and their effects on employment development, as represented by the Shift and Share analysis, work out on the regional cluster quick scan.

Further research is needed into the exact boundaries of the cluster lifecycle and employment development as indicated by the Shift and Share analysis. A larger data set can give more reliable boundaries to the Shift and Share results and the cluster lifecycle. Furthermore, time series data on cluster development in competitiveness and employment development can further justify the hypothesis that clusters go through certain phases of cluster lifecycles and that these phases can be quantitatively known.

The data used for the Shift and Share analysis, the employment data in countries, regions and the European Union as a whole, is chosen because of the availability and reliability of the data. It would however be adding to the credibility of the conclusions drawn in this research if the employment data were not taken into account, but the added value of the different sectors would be taken instead. Added value data offers a more insightful approach to the Shift and Share results and competitiveness because added value is directly linked to economic growth, whereas employment development is a proxy for this growth. The immediate danger of taken employment data instead of added value data is the underestimation of automation of economic sectors. In these cases, employment development may be slow, but the added value directly contributing growth may proof to be important.

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The economic value of grassland products

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Summary: The economic value of grassland products is not always clear. In addition to demonstrating the social benefits of grassland products, the objective of the present study is to present the value of their diverse forms of utilization and their definitions in practice. This study groups marketable and non-marketable grass products and introduces a new category, the animal husbandry value of grasses. Among other factors, economists differ from researchers in other areas of science, as they are basically motivated by three issues The first question economists always raise is: "What can it be used for?", the second is: "What is it worth?", and the third is: "How can it (its value) be determined?" Any answers to any further questions are subordinated to the answers to these three.

Keywords: glassland utilisation, replacement value, value of grass in animal husbandry

A wide range of grassland farmers try to define the social benefits of grasses. Social benefits can be of a very wide scale, as they are basically related to the question "How useful are they for humans?". The approaches of economists and grassland farmers are not contradictory; in fact, they complement each other well. To answer the three questions raised by economists, grassland farmers need to determine the details of major grassland uses and the interdisciplinary correlations of their benefits. In exploring what the major factors of **grass utilization** are, we first studied their benefits by looking at how they are utilized.

The benefits of grasses can be classified as follows:

a) They provide forage for grazing animals and thus make vegetation suitable for human consumption. Animals transform vegetation and produce e.g. milk, meat and wool for human consumption and use.
b) They have developed a natural environment of vegetations where medicinal plants and herbs can be collected and used for human consumption.
c) Their surface cover protects life-giving soils and croplands from the harmful effects of natural disasters and human intervention, erosion and deflation.
d) They provide a natural environment for smaller-larger animal species living on them, maintaining and ensuring the potentials of biodiversity.
e) They keep not only surface soils, but croplands in suitable conditions, as well. Grasses are specially related to soils: dead plant residues generate humus, which promotes the formation of different soil structures. The fibrous root system of grasses directly advances the formation of soil structures.
f) In our direct human environment, they contribute to "human aesthetics" and relaxation. A beautiful lawn enhances the friendliness of our environment, the value of the scenery that we directly see.
g) They are natural areas for doing sports, recreation activities (e.g. football fields) by the construction of man-made sports grounds in urban areas or by transforming the natural environment (golf courses).
h) In the form of a naturally generated "biomass" or established culture (energy grass), they are renewable energy sources for humans.
i) They directly ensure numbers of entrepreneurs (enterprises) enough to live on, as entrepreneurs produce (grass) seeds or give advice on grasses.

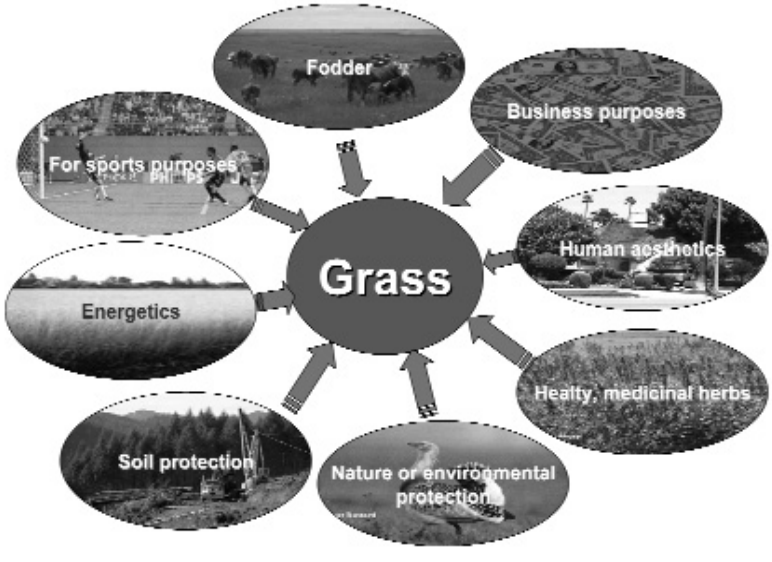

Figure 1: Areas of grass utilization

The list of social benefits derived from grasses is far from complete (e.g. they bind carbon dioxide and dust particles or produce oxygen), but here only those benefits are highlighted, which are related to well-definable (economic) areas of utilization. *Figure 1*. presents the areas of grass utilization

The more concrete forms of these areas of utilization are the following:

1. **Animal nutrition**
   Animal nutrition is one of the "most ancient" areas of grass utilization closely related to human history. Besides natural grasses, grassland products are cut green for forage in the vegetation period from areas established subsequently; after the vegetation period, they are used as hay or haylage.
2. **Health care, medicinal plants (herbs)**
   The use of herbs and medicinal plants gathered from meadows and pasturelands is still traditional and characteristic in Hungary. Their special, individual use is in health care, where not only medicinal raw materials, but fitness and wellness cures involve grassland products, as well.
3. **Soil protection**
   Grasses are of high significance for their products (forage-medicinal plants-herbs) and for their special "protective" characteristics. In areas subjected to soil erosion, deflation caused by wind and in areas of planted orchards and vineyards we utilize the traits of grasses that they physically protect and improve soils, preventing weeding and protecting soils from desiccation.
4. **Nature and environmental protection, biodiversity**
   Soil protection implies that plant communities can survive and provide places for animals to live, nest and hatch on grasslands. Grasses receive protection and care, to ensure that they can maintain species utilizing them as nesting grounds. Our pristine grasslands are botanical curiosities and they are individual zoologically, as well as a result of their multiple natural interactions. Specific plant communities form specific eco-synoses and thus they maintain the biological diversity of animal life. Biological diversity means a single function of several components: the number of occurring species, the richness of species, their genetic variability within species, the diversity of ecosystems, and the occurrence of species among other species and the balance of their occurrence.
   Functional diversity expresses the biological roles of species or species groups in a specific ecosystem and those ecological processes, which are performed by certain organisms, populations and communities. In a broader sense, biodiversity includes the metabolism capacity of ecosystems (*Kátai 2004; Jávor* et al., *Molnár* et.al., 1998).
5. **Pleasant human environment**
   A special area of grass utilization can be the provision of a "human aesthetics" i.e. making our direct residential areas more semi-natural. Parks in settlements, grasslands around community houses, ornamental gardens around private houses directly determine the general impressions of humans. Their overall importance has oftentimes some significance beyond themselves as compared to other possibilities for their use.
6. **Utilization for sports**
   This is a highly significant utilization of grasslands. If we only consider the size of football fields, their calculated area exceeds 1000 ha in Hungary. From the viewpoint of benefits, sports utilization of grasslands belongs to the wide range of uses for developing pleasant human environments, but due to its functional speciality, it is worth mentioning it separately. The maintenance of grasses, and the related labour costs, can be more complex than the most intensive plant production sectors.
7. **Energetics**
   Surveys on renewable, renewed and non-renewable energy resources made the general public realize that the termination of fossil energy utilization is within alarming proximity worldwide. However, the exhaustion of carbon and petroleum oil resources, the reduction of natural gas reserves directed the attention of researchers, developers and analysers towards the utilization of renewed energy. In addition to the utilization of solar, water and wind energies, that of "bio" energy has come into the limelight. One of its areas is "energy grass", a specifically new potential not only for those who possess grasslands, but for those farmers who have plough lands and who perform their activities under less favourable circumstances. To our present knowledge, energy grass is a "novelty" heading for a specific career, which can transform our earlier, related ideas on the potentials of grassland utilization.
8. **Business profitability**
   None of the experts of grassland management speak or want to speak about the fact that this "area" is excellent for making a living and performing business activity. However, if these are not taken into consideration, the scope of grass utilization cannot be regarded complete. The most natural elements of profitability are seed-grain production (including cleaning and selection), technological development, improvement, and also the market sale or simply the selling of all these products. Moreover, profitability can manifest in a land owner's leasing his pastureland if he will not perform farming activities. A lease is the periodical letting (transfer) of grassland products, which is compensated. Compensation can be of many kinds, but the most widespread form is when it is compensated through payment.

Following the revision and definition of the most significant areas of utilization, the second question can be raised: How much the product of utilization is worth for us in terms of money? Can this benefit be expressed and measured in money? The answer is yes. The products of grassland do have their values (prices) in terms of money, as e.g. seeds, forages, medicinal plants and herbs are not inexpensive. However, are these benefits of identical values? The answer is inevitable: they are naturally not. The third baseline question is: Are these benefits of identical values? Is there a pattern, or perhaps the applied methods are different from each other? The answer here is also evident and can be worded

immediately (even if we do not consider economics): there cannot be only a single pattern; it would be all too simple.

In the following part of the study, we explore the key area of our study: what grasses are worth and how their value may be defined.

Table 1: Evaluation of the utilization potentials of grasslands on the basis of their marketability

Product/Name	Marketable	Non-marketable
Forage for own use		+
Forage for sale	+	
Medicinal plant, herb	+	
Soil protection		+
Nature and environmental protection, diversity		+
Pleasant human environment	+	+
For sporting purposes	+	
Energetics	+	
Business utilization	+	

From own sources

Relation of demand and supply

First of all, we start from the economic principle that the price (value) of a product is determined by **the relation of demand (buyers) and supply (vendors)** according to current market conditions. In the case of low supply, high demand raises the price. On the contrary, the same product, if supply is high and demand is low, is worth an insignificant amount or more precisely, can be sold at a lower price. This correlation is true of both grasses and grassland products. If there were no other influences, the question could be answered: the value of grasses is determined by the relation of current demand and supply, i.e. the value evaluation of market is dominant, there is no need for further investigation. **It is worth as much as it is paid for.** The problem is merely the fact that in the case of grasses, buyers are usually vendors as well! Grassland products, taking especially domestic conditions into consideration, do not provide or hardly provide market commodity supply that is why they are called "non-marketable" products. Direct commodity supply can include seeds (grass and lawn mixes) or rarely baled hay or grass meal. The majority of grasses are used in animal husbandry as "own" forage, where "clear market" conditions are difficult to find. The solution of the problem is further complicated by the fact that a clear demand-supply principle is not valid for the few marketable grassland products, as disturbing elements can emerge! (E.g. the price diverting potentials of companies in monopolistic positions or the effects of the market regulating measures of the state itself or perhaps the price influencing potential of products from foreign trade). The problem is more complicated as it seemed for the first sight, so the subject matter needs more detailed study.

Evaluation of non-marketable and marketable products

When determining the value of grasses, we start from the potentials of utilization and we sum up grassland products again. Which are marketable and non-marketable grassland products? *(Table 1.)*

In the case of marketable utilization, the price of grassland products can be determined relatively simply. **The relation of demand and supply is dominant; however, the basis of price determination is the cost of production.**

Cost of grasses as the baseline of selling price

When costs are calculated, it is advisable to separate expenditure related to natural grasslands, pristine grasslands, artificial or planted grasslands.

In both cases, costs should be divided in two large groups, which are the following:

In the case of planted grasses, the costs of establishment and the expenditure of annual utilization are separated *(Tables 2., 3.)*

Table 2: Costs of grassland establishment (1EUR=260 HUF)

Name of technological operation	Cost (HUF/ha)	Cost (EUR/ha)
Soil preparation	8 000 – 35 000	31-135
Cost of fertilizers	4 000 – 12 000	15-46
Cost of seed-grains (40 kg/ha):	36 000	138
Sowing:	4 000 – 8 000	15-31
Weed control, mowing for cleaning	4 000 – 12 000	15-46
Total:	56 000 – 103 000	215-396

Table 3: Costs of grassland utilization (hay) 1 EUR=260 HUF

Name of technological operation	Cost (HUF/ha)	Cost (EUR/ha)
Mowing (1-3 occasions):	4 000 – 12 000	15-46
Swath management	2 000 – 6 000	8-23
Baling + transport	5 000 – 25 000	19-96
Total:	12 000 – 43 000	46-165

Source: Lapis M. 2004.

If the grassland product is forage for sale, the starting point is the cost of production for forage. Here, we can use the cost calculation well-known in accountancy. The direct costs of product production (materials, e.g. fertilizers, personal costs, divided mechanical services, accounted depreciation, other direct costs and standard, indirect or general costs) are to be taken into consideration.

This can be the basis for the determination of selling price. The production cost of the product is also influenced

Table 4: Production costs of grassland products

Name	Production cost of hay value	
	Irrigated	Non-irrigated
Grass for grazing	100	117
Hay (small bale)	139	161
Hay (large bale)	152	173
Haycock	183	207
Haylage	163	185

Source: Marselek, 1997.

by the applied technology. *Table 4.* presents the production costs of grassland products conserved in different ways as compared to pastureland grasses.

Type (1), production cost of hay value (2), non-irrigated (3), irrigated (4), grass for grazing (5), hay (small bale) (6), Hay large bale (7), haycock (8), haylage (9)

Furthermore, the relation of demand and supply can be an influencing factor for product price. If demand is low, producers can only sell products at a price about the production cost (e.g. baled hay). If demand is high, the producer can gain extra profit above his accounted expenses, as he can sell his products at much higher prices than his expenditures.

How can we determine the price of other marketable products?

Medicinal plants and herbs can be included in the marketable category of products if collected products are sold. In this case, the calculated personal-type surplus costs of picking-collecting are added to the annual costs of the applied production technologies. The starting point of selling can be the calculated production cost, but in this case, demand will be the decisive factor in price calculation.

The category of business benefits includes leasing lands, which in turn also belongs to the marketable category of products. In the case of leasing non-products, the gold crown value of the land is decisive. Naturally, this value is also affected by the relation between supply and demand. If there is great demand for leasing, prices can be raised. Today the rent for a grassland of 1 ha is 1500–6500 HUF. With area payments valid for grasslands (see later), the rent is likely to rise.

Determining the prices of non-marketable products

Several grassland products are included in the non-marketable category, e.g. nature, soil, area and environment protection, human aesthetics, utilization for sports and primarily animal forage (as own-produced forage). The economic value of non-marketable utilization can only be calculated approximately. The literature of economics knows two kinds of approaches: the first is the method of deducting from the marketable end-product produced as a result of "produce", and the second is the method based on so-called replacement value. As we have already mentioned in relation to marketable utilization methods, production cost or production cost can be the starting points here as well. Therefore, the products of non-marketable utilization should yield as much as their production in terms of money cost.

The determination of grassland value is specific in the case of nature, soil and area protection. The rate of damage caused by nature can only be calculated, e.g. profit lost in eroded or deflated areas or surplus weed killing and soil cultivation costs in grasses between the rows of orchards, vineyards. The effect of grasses as products is the most difficult to calculate in nature protection, as it is highly complicated. This effect may include issues of botany and animal protection, as grasslands occasionally provide living spaces for rare, protected plants and also animals, thus facilitating the sustenance of the widest possible range of biodiversity. The latter two characteristics can only be expressed in terms of tangible values only highly figuratively; we can only determine or calculate theoretical value.

Similarly, the determination of price-value needs thorough circumspection to provide human environment, landscape, to facilitate relaxation, to enhance our human aesthetics in the case of grasses or lawns in home gardens or around residential areas. The basis of value determination is also the cost of establishment, which is subsequently raised by the value of positive externalities calculated in terms of money, such as e.g. the value of spare time spent by the owner of a home garden in a peaceful environment. This can also be expressed in terms of money only highly figuratively, by methods already developed in environmental economics. One of these methods is the method of "travel cost", when the investigated issues are: how much travel to the nice holiday or recreational area costs and how much the user pays for the time spent there.

The determination of grassland utilization value for sports purposes is also specific, as a massive, dense, homogenous and extremely tramping-resistant, quality grass surface is to be developed. This increases the establishment costs and production costs in itself as the starting prices for the determination of actual economic value. At the same time, the price influencing effect of demand and supply can already be felt in this method of utilization. Consider the case of the cost of purchase for sports fields of equal size and quality in Budapest or Hortobágy, Wimbledon or in the deserts of Mongolia. Naturally, in the event of utilization for sports purposes, the enhanced expenses of maintenance are to be taken into consideration as well.

Figure 2. sums up the cost factors to be considered in the event of certain methods of utilization, *Figure 3.* shows what factors are to be considered when the marketable prices of grasses are calculated.

We have not mentioned the forage value of grass, as this figure is detailed below.

Forms of utilization (1)	Costs of establishment, renewal (2)				Annual cost of maintenance (3)						Ground-rent, taxes (12)
	Material(4)	Personal costs (5)	Service (branch work)(6)	General (7)	Material (4)	Personal (8)	Service (9)	Depreciation (10)	Other (11)	General (7)	
Forage (new, establishment, renewal) (13)	+++	+++	+++	++	+	++	++	+	+	+	+ ?
Forage, own (existing) (14)					+	++	+++	+	+	+	+ ?
Forage for sale (15)					+	++	+++	+	+	+	+
Human aesthetics (16)	+++	+++	+++	+	++	+	++	++	+		
For sporting purposes (17)	+++	+++	+++	+	+++	+++	+++	+++	+	++	
Medicinal effect collection, sale (18)					+	+++	+++	+	+	+	+
Soil protection (19)	+++	+++	+++	++	+	++	++	+	+	+	
Leasing (20)											+++
Sale (21)											+++

Note: the number of + relates to the volume of costs; +++ very high, ++ high, + arising

Figure 2: Costs of grasses in different forms of utilization

Grassland products as the value of forages, definition of value

If grassland products are sold e.g. as hay, they are worth as much the market is ready to pay for this marketable forage. This figure may be higher than the production costs, but it may be lower as well. If producers use their own products as types of forage, their values can be determined in two ways.

1. *Deducting from products:* for non-marketable forages, a solution is when the basis of calculation is the marketable end-product, which has been produced by using the previously-mentioned forage. In other words, the value of grassland is calculated from the produced and sold volume i.e. from the value of animal products, meat, milk and wool. The value of grassland cannot be determined precisely, but the other expenses in the course of producing a product can be calculated, e.g. those for other forages, wages, dues or accounted depreciation and their costs and prices. Therefore, when this method is applied, first we calculate the costs without grassland expenditures. This calculation is presented on *Table 5.* Deducting this calculated cost from the return of sales, we get a result which is corrected with the so-called income requirement, from which we get the value or price of grassland deducted from grassland products. It can be expressed in a formula as follows:

Forms of utilization	Value of forage		Value of medicinal effect	Life performance of animals	Estate value	Value of protected area	Subsidy	Human aesthetics, positive externalities	Extra profit	Nature protection
	Non-marketable	Marketable								
Forage for own use	+++		+	++			+			
Forage for sale		+++					+		++	
Human aesthetics					+++			+++		+
For sports					++			+	++	
Medicinal effect, collection, selling			+++				?+		+	
Soil protection						+++	+			+
Leasing					+++		+		++	
Seed-production							+		+++	
Sale					+++		+		++	

Note: the number of + relates to the volume of values; +++ very high, ++ high, + considerable

Figure 3: Factors influencing the value of grasses in different utilization methods

Price and value of grasses = *Á-TK-J* where:

Á = the return of sales from products (meat, milk, wool) HUF/EUR
TK = accountable costs of animal husbandry **not affecting** grassland management (HUF/EUR)
J = expected income need (HUF/EUR)

Table 5: Costs of animal husbandry products without grassland costs

Material costs (1)
Out of this :
– forage costs **excluding grass (2)**
– energy costs (3)
– material costs of artificial insemination (4)
– medicine, nutrition, premix costs (5)
– costs of used water (6)
– other material costs (7)
Personal type expenses(8)
– wages (9)
– contribution to be paid after wages (10) Divided costs: (11)
– tractor costs (12)
– lorry costs (13)
– service costs (14)
– other divided costs (15)
Accounted depreciation (16)
Other direct costs (17)
General costs (18)
Total costs of animal husbandry excluding grass (19)

The determination of grassland product value deducted from products can be extremely precise, but several problems emerge in relation to the generalization of this value. If this is deducted from other end-products, grassland values can be different. The determination of income need can be calculated on the basis of the user's subjective decisions. Therefore, the values and prices of grasslands can be different. If grassland value is calculated on the basis of merely a single end-product with constant profit requirement, it approximates the actual market price.

2. Determination of the forage value of grass on the basis of replacement value

Replacement value can be calculated if grasses substitute or supplement other forages. The basis of calculation in this event is the prices of replaced forages, considering their inner content and animals' nutrient needs. Logically, the calculation is extremely simple. It answers the question, how much HUF/EUR value of other (marketable) forages grasses can replace or supplement through their inner content. In addition to logical simplicity, the determination is much more complicated, as several elements are to be considered simultaneously. Determination is facilitated by linear programming long time well-known in programming. In an LP model, the following dependent and independent variables are to be taken into account:

- nutrient needs of animals
- nutrient content of forages
- costs and area needs of forages
- biological and technological restricting factors,
- the volume of expectable alternative income,
- the nutrient content of grasses.

All these elements affect the complex economic value of a grass product, for example, hay. The calculation of complex economic value is based on shadow price analysis,

Given a normal LP model:

$$\begin{aligned} x &\geq 0 \\ A_1x &\leq b_1 \\ A_2x &= b_2 \\ A_3x &\geq b_3 \end{aligned}$$

$$Z = \sum_{j=1}^{n_1} x_j p_j \rightarrow \max.$$

The solving matrix is the following:

	x_1	⋯	x_j	⋯	x_n	
u_1	a_{11}	⋯	a_{1j}	⋯	a_{1n}	b_1
u_2	a_{21}	⋯	a_{2j}	⋯	a_{2n}	b_2
⋮	⋮		⋮		⋮	⋮
u_i	a_{i1}	⋯	a_{ij}	⋯	a_{in}	b_i
⋮	⋮		⋮		⋮	⋮
u_m	a_{m1}	⋯	a_{mj}	⋯	a_{mn}	b_m
	p_1	⋯	p_j	⋯	p_n	z

$p_j > p_1, p_2, \ldots p_n$

$$\frac{b_i}{a_{ij}} > \frac{b_1}{a_{1j}}, \frac{b_2}{a_{2j}}, \ldots \frac{b_m}{a_{mj}}$$

$$\tau = a_{ij}$$

$$\delta_1 = \frac{a_{1i}}{a_{ij}}, \delta_2 = \frac{a_{i2}}{a_{ij}}, \ldots,$$

$$\delta_0 = \frac{b_i}{a_{ij}}$$

After the first iteration the result is:

	x_1	u_j	x_n	
u_1	$a_{11} - \delta_1 a_{1j}$	$- \tau a_{1j}$	$a_{1m} - \delta_n a_{1j}$	$b_1 - \delta_0 a_{1j}$
u_2	$a_{21} - \delta_1 a_{2j}$	$- \tau a_{2j}$	$a_{1m} - \delta_n a_{1j}$	$b_2 - \delta_0 a_{2j}$
⋮	⋮	⋮	⋮	⋮
x_j	δ_1	T	δ_n	δ_0
⋮	⋮	⋮	⋮	⋮
u_m	$a_{m1} - \delta_1 a_{mj}$	$- \tau a_{mj}$	$a_{mn} - \delta_n a_{mj}$	$b_m - \delta_0 a_{mj}$
	$p_1 - \delta_1 p_j$	$- \tau p_j$	$p_n - \delta_n p_j$	$z - \delta_0 p_j$

As we can see if the x_j variable inside the basis is x_j, the shadow price of x_n variate can be formulated with the formula of $p_1–\delta_1 p_j$, or $p_n–\delta_n p_j$.

Let us assume that after " i" iteration we get the optimum solution and the x_n source (variable) does not get into an optimal structure.

In that case the shadow price of x_n is :

$$p_{n_{i-1}} - \left(\delta n_i \cdot p_{j_{i-1}} \right)$$

It can be formulated where :

p_{ni-1} = after the i-1-iteration the x_n sources' target function

δ_{ni} = after the i iteration the row of the generation element's n-type adequate

p_{ji-1} = after the i-1 iteration the column of generation element's target function

How is the x_n germane shadow price modified if we increase the target function with constant L?

It is unambiguous that x_n germane shadow price also is modified by constant L because its value is directly affected by the original target function:

$$p_n \rightarrow p_n - \delta_n p_j .. \rightarrow p_{n_{i-1}} - \delta n_i \, p_{j_{i-1}}$$

$$p_n + L \rightarrow P_n + L - \delta_n p_j .. \rightarrow p_{n_{i-1}} + L - \delta n_i \, p_{j_{i-1}}$$

If we choose the dual variable $p_{n_{i-1}} - \delta n_i \, p_{j_{i-1}}$ to constant L, in that case the shadow price will be equal with 0 (zero) which means an alternative optimum solution.

If the

$$L \geq p_{n_{i-1}} - \delta n_i \, p_{j_{i-1}}$$

then variable x_n can also get into the basis. Ensuing from this point, it can define the initial x_n germane target function value, which above the variable can get into the optimal structure. Therefore, we can add the shadow price of germane x_n variable to the initial target function.

In animal feeding, the target function of LP models is the minimalization of the cost per area. In such a case, the initial value of the target function and distinction of the shadow price of variables (which are not in the optimal solution) can show us the limit value in under which the variable can get into the optimal structure.

That is to say, an animal fodder which is not in the optimal structure can get into the optimal solution if its initial target function is:

$$p_n - \left(p_{n_{i-1}} - p_{j_{i-1}} \right)$$

less than the above distinction.

It follows that if we want to know the limit price of fodders, the initial target function should be increased to an extremely great value. This means that the fodder has no chance to get into the optimal solution, which means at the same time that it has a shadow price as well. The limit price can be determined by the distinction of the extremely great value and the shadow price.

The value of target function in a feeding LP model differs depending on cost or area minimalization. In cost minimalization the value of target function is the price of the fodder (Ft/kg, or EUR/kg). In area minimalization, the target function value is the specific area's demand of a fodder. (m^2/kg).

The limit price of the grass product is the distinction of the value of target function and its shadow price. The cost effect of a grass product (K_h) shows the distinction of the limit price and factual price (P_{ne}) of a grass product.

$$K h = \left(p_{n_1} - p_{n_{i-1}} - \delta n_i \cdot p_{j_{i-1}} \right) - p_{n_0}$$

K_h = Limit price – Factual price (cost)

The unit of the K_h is Ft/kg, or EUR/kg. If the value is positive the grass product has a fodder cost reducing impact, if negative, then it has a fodder cost increasing effect. The effect of exemption areas for a grass product is the release value. The release value can be calculated by a similar method as the limit price (cost), namely: the release value (T_h):

$$T h = p_n - p_{n_{i-1}} - \delta n_i \cdot p_{j_{i-1}}$$

T_h = Grass target function value – Grass shadow price

The only difference compared with the cost effect is the divergence of the target function value, namely, the target function value is the specific area demand of fodders. (P_n unit is m^2/kg).

After determining the release value, the economic effect of exemption areas for a grass product can be calculated.

A simple way to get a better understanding is to study an average (expected) income from field crops.

$$T_{ge} = T_h \cdot I$$

where:

T_{ge} = economic effect of exemption areas for a grass product (Ft/kg or EUR/kg))

T_h = release value of a grass product (m^2/kg)

I = average field income (Ft/m^2, or EUR/ m^2)

The amount of Complex Economic Value of grassland product is the sum of cost effect and economic effect of exemption areas. $\left(K_{ge_n} \right)$.

$$K_{ge_n} = K_h + T_{ge}$$

All these factors are presented in *Figure 4.*

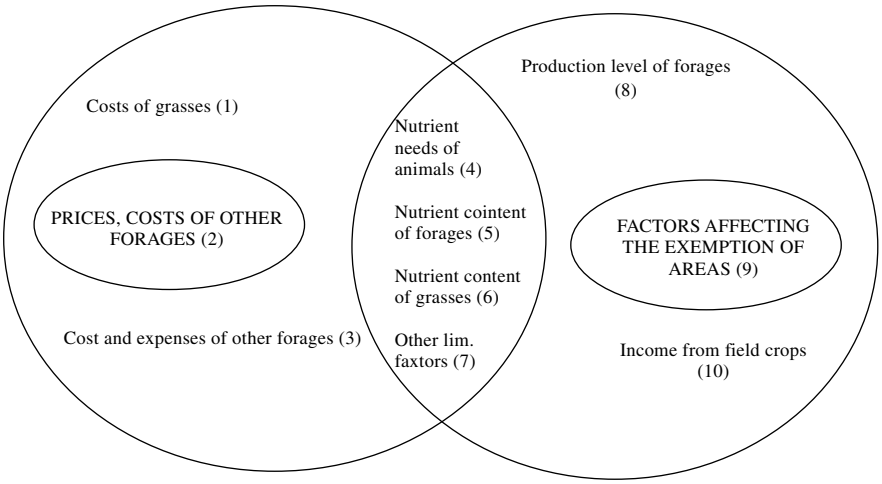

Figure 4: The feeding value of grasses

We present the results of the two model calculations to determine the so-called economic value by the above mentioned method. In the first case, the economic value of grasses was examined in the event of foraging ewes in three age groups, in 5 body mass categories. This is presented in *Figure 5*. It can be clearly seen that the nutrition needs of animals also influence the economic value, which varies in the range of 8.7–9.3 HUF/kg in for ewes. (3–3,5 Eurocent)

The same calculation was performed for the forage portion model of finishing cattle in three body mass categories, taking 5 days' body mass growth into consideration. It can be seen that the **complex economic value** of **grasses** for grazing varies in the range of 4.8–9.0 HUF/kg in the event of feeding feeder cattle (1,8–3.4 Eurocent) – *(Figure 5.).*

The determination using replacement value has its evident advantages and disadvantages as well. Its advantage is that it determines the economic value of grassland products relatively precisely, but for merely in the given animal species and way of utilization, for which the LP model was developed. Therefore, an exact price for further generalization cannot be determined either, and the economic value can only be expressed in intervals. A further hindrance of the method is that a linear programming model has to be developed, which is a complicated task for farmers in practice.

The animal husbandry value of grassland products

This study has mentioned the way of determining the value of various grassland products and their areas of utilization several times, and we have demonstrated two methods to determine their foraging value. The question can be raised: is this the single value of grasses in animal husbandry and foraging? The answer "no" has been given earlier as several other value increasing effects can be taken into consideration. They are presented on *Figure 6.*

The animal husbandry value of grasses is determined by the nutritional value of grassland product itself. This is different in the case of green grass, hay, silage, haylage, and straw or grass meal. Generally, it can be concluded that grasses are the cheapest and the most natural forage varieties for ruminants. Their use can replace other main forages to be produced perhaps in plough lands, so the area-exempting effect of grasses has to be considered as well. Focus on the area-releasing effect was presented in the description of LP model *(Figure 4.).*

The effective economic benefit of area-exemption is that through a different way of utilization, alternative income can be generated in the saved areas. Hungarian grassland products, which are mostly utilized by foraging, are highly rich in minerals and medicinal plants that improve the

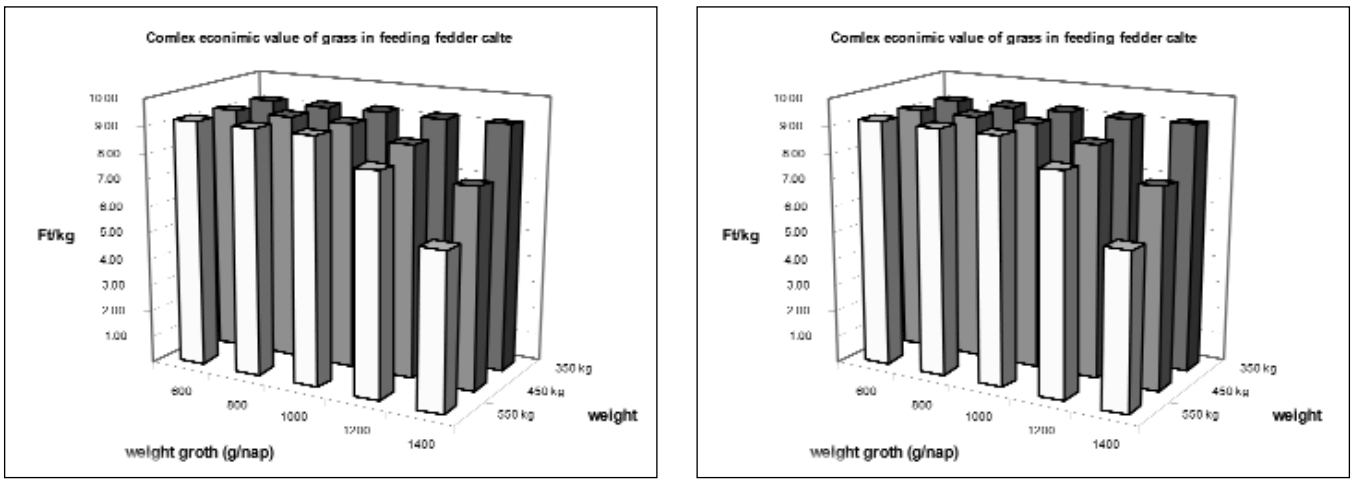

Figure 5: The complex economic value of grasses for grazing in feeding ewes and feeder cattle. (On the basis of Szöllősi's calculations 2004)
Feeding ewes (1), weight (2), until 3-month pregnancy (3), until 3 month pregnancy (4), lactating ewes (5), beef cattle (6), weight gain (7)

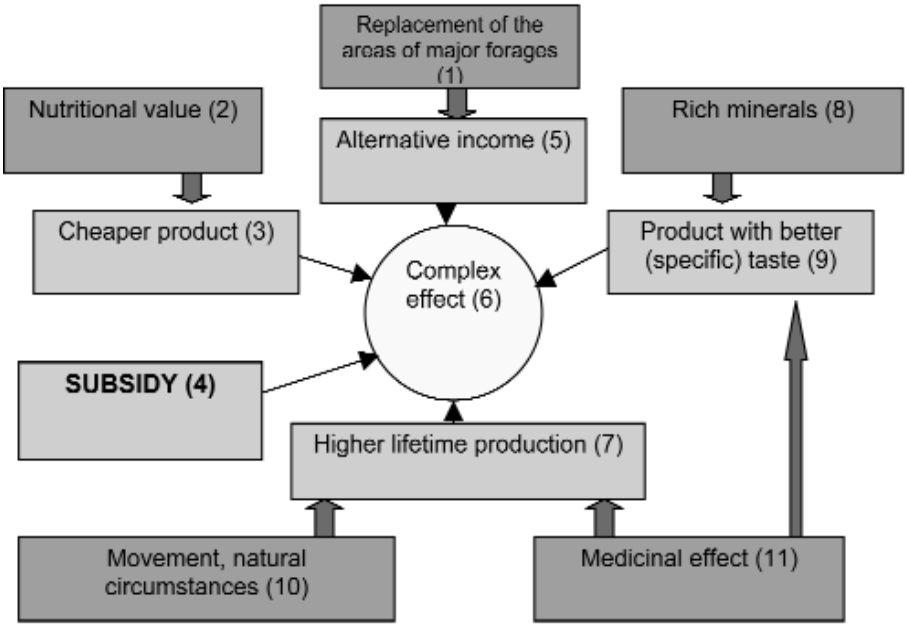

Figure 6: The value of grass in animal husbandry

health of grazing animals, therefore enhance the animals' life performance and the resulting product will become more suitable for human consumption (*Stefler-Vinczeffy* 1998).

It is also worth mentioning the plant communities that have developed on our natural grasslands, provide nutrition of full value for animals. Therefore, they are cost effective because animals do not need to be fed with separate premixes and additives. A primary advantage of keeping grazing animals is that as a result of movement and natural circumstances, these animals' life performance is greater, and they are healthier. It has double consequences. Greater life performance decreases losses due to selection; moreover, diseases, which abruptly emerge in the event of barn arrangement, do not manifest. When determining the animal husbandry value of grasses, subsidies must be regarded as well. This study highlights merely two forms of subsidy that provide grazing animal farmers with income. The first is the so-called area aid (Single Agricultural Payment System), given to each grassland user (producer or leaseholder) in a simplified method of payment.

Its volume is 68 Euro/ha. The second form of highlighted subsidy is the support invited in the tender of the Agro-Environmental Management Program of the National Agriculture and Rural Development Plan. The agricultural and environmental management measures of grasslands include so-called target programs of grassland management, ecological grassland management and sensitive natural areas. The first target program contains the management of grassland habitats and the transformation of plough land species into grasslands of multi-species, as a separate subsidized area. Those farmers can participate in the target group of grassland habitat management, who possess a minimum of 1 ha grassland and an animal stock of at least 0.2 animal unit/ha. In the case of grazing, animals can feed for the maximum of ten days in an area, and foraging takes place in the form of herding or periodically. Pesticides and under seeding cannot be applied in these areas, farmers cannot control weeds chemically and cannot fertilize lands, and neither can they irrigate grasslands. If they do not utilize their areas under the grassland habitat program through grazing but mowing, the concerned regulation stipulates that mowing is banned under wet conditions and mowing machines have to be equipped with an alarm chain for games.

The rate of annual subsidy for the participants in this target-program is further 58.82 Euro/ha, which is equivalent to 15.000 HUF/ha. The subsidy rates for grassland management target programs are presented in *Table 6.*

As was mentioned in the introduction of the present study, the animal husbandry value of grasslands, taking the above mentioned factors into consideration, is wide-ranging, complicated and complex. It is affected by feeding value related to grassland utilization, greater animal life performance, specific end-products due to the rich nutrient supplies of grasses, and last but not least, the effects of provided subsidy as well. On the basis of all these factors, we can draw the conclusion that grasses as forages are worth much more than the value we can characterize by their inner content.

The study highlighted the fact that the survey of certain utilization potentials is far from being complete, although methods to explore them are available. However, several areas of utilization have not yet been explored, so there might be hidden potentials for grassland farmers and professionals of economics to work them out in details.

Table 6: Grassland management target programs

Target program	Subsidy HUF/ha	Subsidy €/ha
B.1. Grassland management target programme		
a) maintenance of grassland habitats	15 000	58.82
b) change from tillage to multi-species grasslands (14)	74 000	290.20
B.2. Ecological grassland management target programme	15 000	58.82
B.3. Grassland management in sensitive area target programmes		
B.3.1.Habitats for great bustard	32 000	125.49
B.3.2. Habitats for corncrake	28 000	109.80
B.3.3. grassland management with development of habitats	25 000	98.04
B.3.4. Establishment of grasslands on sensitive natural areas	75 000	294.12

This study strived to answer three questions. The first was how grasslands and their products can be utilized. The second, how much utilization is worth and the third, how its value could be determined. On the basis of the above mentioned we have answered quite a few questions but there are still some problems to be solved and answered by others.

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Learning for the Knowledge Society

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Summary: With sustained use and creation of knowledge in the centre of the economic development process, an economy essentially becomes a Knowledge Economy. A Knowledge Economy (KE) is one that utilizes knowledge as the key engine of economic growth. It is an economy where knowledge is acquired, created, disseminated and used effectively to enhance economic development.

Keywords: knowledge society, *knowledge economy index, innovation systems, education*

It can be argued that the knowledge economy differs from the traditional economy in several key respects:

- Economics is not of scarcity, but rather of abundance. Unlike most resources that are depleted when used, information and knowledge can be shared, and actually grown through application.
- The effect of location is either
  1. diminished, in some economic activities: using appropriate technology and methods, virtual marketplaces and virtual organizations that offer benefits of speed, agility, round the clock operation and global access can be created.
  2. or, on the contrary, reinforced in some other economic fields, by the creation of Porter's clusters around centres of knowledge, such as universities and research centres having reached world-wide excellence.
- Laws, barriers and taxes are difficult to apply on solely a national basis. Knowledge and information "leak" to where demand is the highest and barriers are the lowest.
- Knowledge enhanced products or services can command price premiums over comparable products with low embedded knowledge or knowledge intensity.
- Pricing and value depend heavily on context. Thus the same information or knowledge can have vastly different values to different people or even to the same person at different times.
- Knowledge when locked into systems or processes has higher inherent value than when it can "walk out of the door" in people's heads.
- Human capital – competencies – are key components of value in a knowledge-based company, yet few companies report competency levels in annual reports. In contrast, downsizing is often seen as a positive "cost cutting" measure.

These characteristics require new ideas and approaches from policy makers, managers and knowledge workers (Wikipedia).

It has been found that successful transition to the Knowledge Economy typically involves elements such as long-term investments in education, developing innovation capability, modernizing the information infrastructure, and having an economic environment that is conducive to market transactions. These elements have been termed by the World Bank *(Chen and Dahlman,* 2005) as the pillars of the Knowledge Economy and together they constitute the Knowledge Economy framework.

More specifically, the four pillars of the Knowledge Economy (KE) framework are as follows:

- An *economic incentive and institutional regime* that provides good economic policies and institutions that permit efficient mobilization and allocation of resources and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge.
- *Educated and skilled workers* who can continuously upgrade and adapt their skills to efficiently create and use knowledge.
- An *effective innovation system* of firms, research centres, universities, consultants, and other organizations that can keep up with the knowledge revolution and tap into the growing stock of global knowledge, assimilate and adapt it to local needs.
- A *modern and adequate information infrastructure* that can facilitate the effective communication, dissemination, and processing of information and knowledge. The Knowledge Economy framework thus asserts that investments in the four knowledge economy pillars are necessary for sustained creation, adoption, adaptation and use of knowledge in domestic economic production, which will consequently result in higher value added goods and services. This would tend to increase the probability of economic success, and hence economic development, in the current highly competitive and globalized world economy.

Comparison of V4 Countries with the use of Knowledge Assessment Methodology

The Knowledge Assessment Methodology (KAM) was designed by the World Bank Institute to proxy a country's preparedness to compete in the knowledge economy using more then 80 structural and qualitative variables. The comparison is undertaken for a group of 128 countries, which includes most of the OECD economies and more than 90 developing countries. To allow for a flexible cross-country comparison, each variable is available in both actual and relative value (normalized on a scale from zero to ten relative to other countries in the comparison group.)

The unique strength of the KAM methodology is its cross-sectoral approach, allowing the user to take a holistic view of a wide range of relevant factors rather than just focusing on one area. The variables serve as proxies for the **four pillars of the Knowledge Economy framework**:

- An economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship;
- An educated and skilled population to create, share, and use knowledge well;
- An efficient innovation system of firms, research centres, universities, consultants and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs and create new technology;
- Information and communication technology to facilitate the effective creation, dissemination, and processing of information.

Several variables are included in the KAM that track the overall performance of an economy. These variables help to illustrate how well an economy is actually using knowledge for its overall economic and social development.

The KAM offers several pre-set display modes for the simple visual representations of a country's readiness for the Knowledge Economy. A country can be assessed and compared with others on the aggregate performance of each KE pillar or the overall Knowledge Economy and Knowledge indexes for 1995, together with the most recent available year. The KAM also makes possible customized country analysis and cross-country comparison on the indicators hand-picked by the user. This allows for capturing various aspects of a country's ability to generate, diffuse and apply knowledge for economic development.

The KAM Knowledge Index (KI) measures a country's ability to generate, adopt and diffuse knowledge. This is an indication of overall **potential** of knowledge development in a given country. Methodologically, the KI is the simple average of the normalized performance scores of a country or region on the key variables in three Knowledge Economy pillars – education and human resources, the innovation system and information and communication technology (ICT).

The Knowledge Economy Index (KEI) takes into account whether the environment is conducive for knowledge to be **used effectively** for economic development. It is an aggregate index that represents the overall level of development of a country or region towards the Knowledge Economy. The KEI is calculated based on the average of the normalized performance scores of a country or region on all four pillars related to the knowledge economy – economic incentive and institutional regime, education and human resources, the innovation system and ICT.

For the purposes of calculating KI and KEI, each pillar is represented by three key variables:

The Economic Incentive and Institutional Regime

- Tariff & Non-tariff Barriers
- Regulatory Quality
- Rule of Law

Education and Human Resources

- Adult Literacy Rate
- Secondary Enrolment
- Tertiary Enrolment

The Innovation System

- Researchers in R&D
- Patent Applications Granted by the US Patent and Trademark Office
- Scientific and Technical Journal Articles

These three variables are available in two forms: scaled by population and in absolute values. Thus, both KI and KEI are also available in "weighted" and "unweighted" forms. In innovation, absolute size of resources matters, as there are strong economies of scale in the production of knowledge and because knowledge is not consumed in its use.

Table 1: Comparison of V4 Countries – Knowledge Economy Index

VARIABLE	POLAND		SLOVAKIA		HUNGARY		CZECH REPUBLIC	
	actual	normalized	actual	normalized	actual	normalized	actual	normalized
GDP growth(%)	3,08	3,07	4,08	5,04	3,9	4,96	3,14	3,39
Human Development Index	0,858	7,3	0,849	6,83	0,862	7,38	0,874	7,54
Tariff & nontariff barriers	2	7,04	2	7,04	2	7,04	2	7,04
Regulatory Quality	0,64	6,64	1,15	7,97	1,22	8,12	0,97	7,5
Rule of Law	0,51	6,41	0,49	6,33	0,85	7,58	0,69	6,95
Researchers in R&D / million	1468,57	5,35	1706,82	6,05	1473,07	5,47	1466,6	5,23
Scientific and technical journal articles / mil. pop.	148,65	7,32	177,54	7,48	243,35	7,72	256,46	7,87
Patent applications granted by the USPTO / mil. pop.	0,5	5,78	0,93	6,56	5,16	7,81	3,14	7,66
Adult literacy rate (% age 15 and above)	100	8,19	100	8,19	99,36	7,32	100	8,19
Secondary Enrolment	101,27	8,28	89,46	6,17	103,6	8,52	95,81	7,34
Tertiary Enrolment	59,51	8,48	32,11	5,6	44,09	7,12	33,66	5,76
Telephones per 1,000 people	917,6	6,48	1022	6,95	1251,6	7,73	1390,7	8,52
Computers per 1,000 people	191	6,83	294,6	7,5	150,1	6,42	239,6	7,25
Internet users per 10,000 people	2334,57	6,48	4209,36	7,97	2746,4	6,8	4693,92	8,12

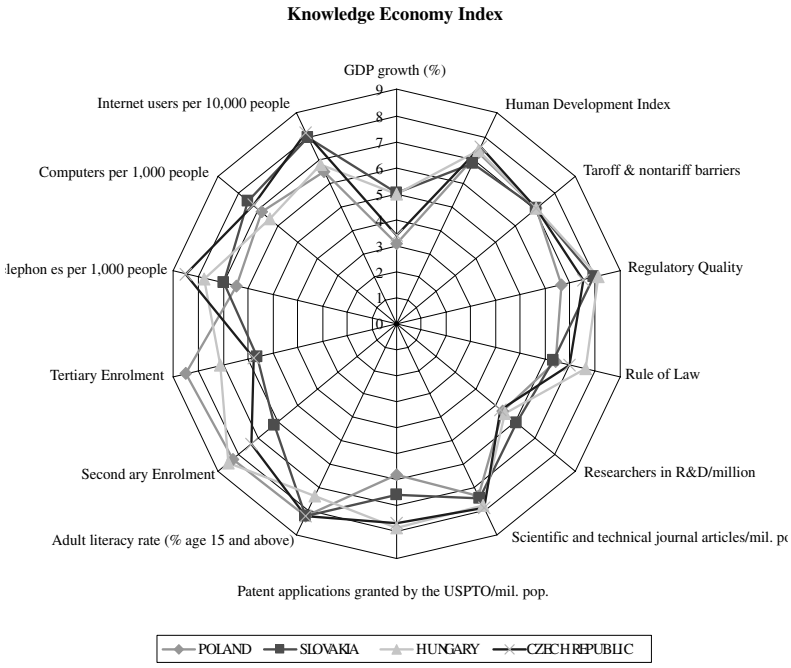
Information and Communication Technology (ICT)

- Telephones per 1,000 people
- Computers per 1,000 people
- Internet Users per 10,000 people

The scorecard also presents two variables related to the overall economic and social performance.

Overall Performance of Economy

- Average Annual Gross Domestic Product (GDP) Growth, 1994-98 and 2000–2004 (%) (DDP). Annual GDP growth is a good indicator of a country's overall economic development.
- Human Development Index (HDI), 2003 (UNDP Human Development Report 2005). HDI is a composite measure of three components: longevity (measured by life expectancy); knowledge (adult literacy rate and mean years of schooling); and standard of living (real GDP per capita in purchasing power parity). The HDI provides information on the human development aspect of economic growth.



Graph 1: Comparison of V4 Countries – Knowledge Economy Index

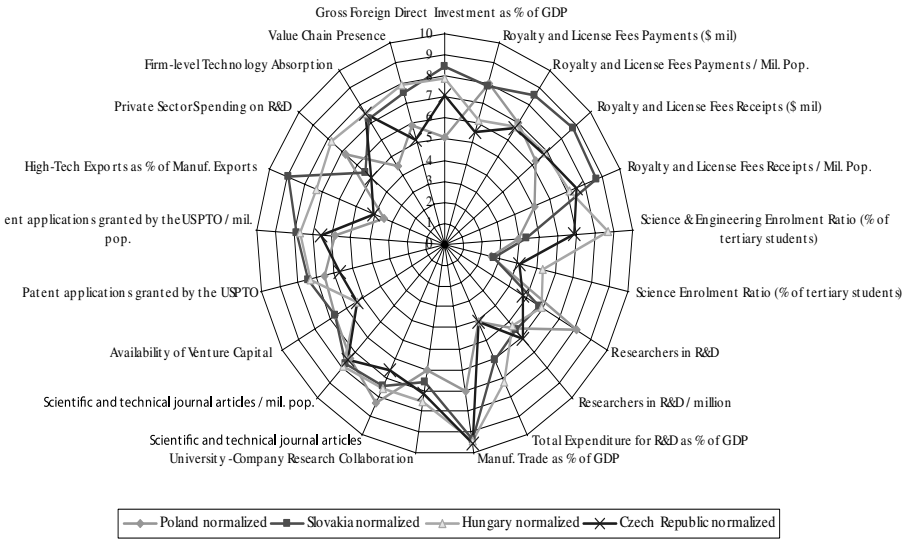
The above comparison shows very much similar patterns for all countries in comparison. This can be most likely accounted to similar historical development of all four countries. Following comparisons focus in more details onto selected pillars of knowledge economy: innovation systems, education and ICT.

European Initiatives to Enhance Knowledge Economy

The creation of a Europe of knowledge has been a prime objective for the European Union since the Lisbon European Council of March 2000. Subsequent European Councils, particularly Stockholm in March 2001 and Barcelona in March 2002, have taken the Lisbon objective further forward. To implement the Lisbon agenda, the European Union has embarked upon a series of actions and initiatives in the areas of research and education. One example is the European area of research and innovation, to achieve which fresh perspectives have been already opened up and, in this context, the objective to increase the European research and development drive to 3% of the Union's GDP by 2010. (EC, 2003)

In the area of education and training, the following achievements are worth mentioning:

- European area of lifelong learning,
- the implementation of the detailed work programme on the objectives of education and training systems,
- work to strengthen the convergence of higher education systems, in line with the Bologna process,
- and vocational training systems, in line with the Copenhagen declaration.



Graph 2: Comparison of V4 Countries – Innovation systems

Table 2: Comparison of V4 Countries – Selected pillars

VARIABLE	Poland		Slovakia		Hungary		Czech Republic	
	actual	normalized	actual	normalized	actual	normalized	actual	normalized
INNOVATION SYSTEMS								
Gross Foreign Direct Investment as % of GDP	3,69	5,04	8,1	8,38	6,33	7,86	5,32	7,01
Royalty and License Fees Payments ($ mil)	875	7,96	857,9	7,86	175,9	6,12	91,2	5,53
Royalty and License Fees Payments / Mil. Pop.	22,91	6,89	84,94	8,54	17,24	6,7	16,92	6,6
Royalty and License Fees Receipts ($ mil)	27	6,26	508,5	8,69	50,3	6,87	49,7	6,77
Royalty and License Fees Receipts / Mil. Pop.	0,71	5,05	50,35	8,59	4,93	7,07	9,2	7,47
Science & Engineering Enrolment Ratio (% of tertiary students)	20,06	3,86	20,97	4,34	30,71	8,67	26,56	6,87
Science Enrolment Ratio (% of tertiary students)	6,46	2,53	6,76	2,65	10,27	5,3	8,67	4,1
Researchers in R&D	58595	8,02	15180	5,81	15809	5,93	9626	4,77
Researchers in R&D / million	1468,57	5,35	1473,07	5,47	1466,6	5,23	1706,82	6,05
Total Expenditure for R&D as % of GDP	0,59	4,1	1,01	6,02	1,3	7,23	0,59	4,1
Manuf. Trade as % of GDP	46,57	6,95	94,59	9,32	95,99	9,41	113,84	9,49
University-Company Research Collaboration	3,2	6	3,3	6,55	3,9	7,55	3,5	7,09
Scientific and technical journal articles	5686	8,35	2479	7,4	2622	7,56	955	6,61
Scientific and technical journal articles / mil. pop.	148,65	7,32	243,35	7,72	256,46	7,87	177,54	7,48
Availability of Venture Capital	3,6	6,64	3,6	6,64	3,3	5,36	3,3	5,36
Patent applications granted by the USPTO	19	6,56	52	7,42	32	7,27	5	5,7
Patent applications granted by the USPTO / mil. pop.	0,5	5,78	5,16	7,81	3,14	7,66	0,93	6,56
High-Tech Exports as % of Manuf. Exports	3,07	3,48	25,63	8,87	13,23	7,3	3,72	4
Private Sector Spending on R&D	3,5	6,82	3,2	5,45	3,9	7,73	3,1	5
Firm-level Technology Absorption	4,5	4,43	5,2	7,17	5,3	7,45	5,3	7,45
Value Chain Presence	3,9	5,85	4,7	7,45	5	7,92	3,8	5,19
EDUCATION								
Adult literacy rate (% age 15 and above)	100	8,19	99,36	7,32	100	8,19	100	8,19
Average Years of Schooling	9,84	8,7	9,1	7,17	9,48	8,26	9,27	7,39
Secondary Enrollment	101,27	8,28	103,6	8,52	95,81	7,34	89,46	6,17
Tertiary Enrollment	59,51	8,48	44,09	7,12	33,66	5,76	32,11	5,6
Life Expectancy at Birth (years)	74,6	6,88	72,6	5,55	75,2	7,19	73,4	5,94
Internet Access in Schools	4,1	5,82	5,1	7,36	5,2	7,55	4,9	7,18
Public Spending on Education as % of GDP	5,6	7,48	5,1	6,52	4,2	4,52	4	3,91
Prof. and Tech. Workers as % of the Labor Force	25	6,67	27,08	7,44	29,4	8,46	28,68	7,82
8th Grade Achievement in Mathematics	n/a	n/a	529	7,71	520	7,29	508	6,46
8th Grade Achievement in Science	n/a	n/a	543	8,54	539	8,33	517	6,04
Quality of Science and Math Education	5,1	7,73	5,3	8,73	5,7	9,45	5,2	8,18
Extent of Staff Training	3,8	5,45	3,8	5,45	4,5	7,45	4,1	6,36
Availability of Management Education	4,4	5,45	4,7	6,64	4,9	7,09	4,2	5,18
Brain Drain	3,4	5,55	3,6	5,82	4,1	6,73	3,2	4,73
INFORMATION AND COMMUNIACTION TECHNOLOGY								
Telephones per 1,000 people	917,6	6,48	1251,6	7,73	1390,7	8,52	1022	6,95
Main Telephone Lines per 1000 People	318,5	7,11	363,9	7,42	337,4	7,19	231,3	5,78
Mobile Phone per 1,000 People	599,1	6,56	887,7	8,28	1053,3	9,69	790,7	7,42
Computers per 1,000 people	191	6,83	150,1	6,42	239,6	7,25	294,6	7,5
TV Sets per 1,000 People	422	6,8	475	7,42	538	8,12	409	6,56
Radios per 1,000 People	523	6,41	690	7,5	803	8,36	965	8,83
Daily Newspapers per 1,000 People	102	5,57	162	7,09	n/a	n/a	131	6,08
Internet Hosts per 10,000 People	70,5	6,32	492,13	8,32	376,13	8	226,33	7,04
Internet users per 10,000 people	2334,57	6,48	2746,4	6,8	4693,92	8,12	4209,36	7,97
International Telecommunications, Cost of Call	1,79	5,92	0,79	8,03	0,83	7,76	0,79	8,03
E-Government Services	2,2	2,99	2,87	5,36	2,73	4,85	2,87	5,36
Extent of Business Internet Use	3,9	6,04	4	6,23	4,6	7,45	3,8	5,57
ICT Expenditure as % of GDP	4,5	2,75	6,1	5,65	n/a	n/a	5,3	3,77

The role of universities

As Wiwczaroski writes, the "21st century will surely see an increasingly interdependent world"...and although "the Bologna Declaration sets out key tasks, the most challenging of which include the adoption of a common framework," many products of universities "are simply untranslatable in their present forms and contexts" (2005, 211). If European universities are to play their full role in the creation of a Europe of knowledge, European universities must face a number of challenges.

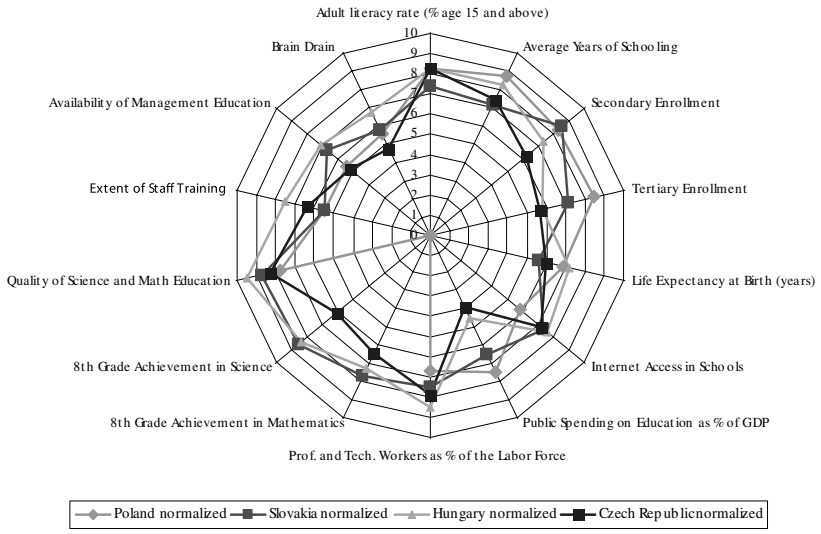
- **European higher education is fragmented** into (what are often) small national systems and subsystems, without effective links and bridges between them;
- **National regulations are too often over-detailed**, and this diminishes universities' responsiveness to changing learning and research needs emerging from markets and society;
- **Europe's universities have a tendency to uniformity within each system/subsystem** which has led to a good average level, but has limited access and failed to enable enough world-class research;
- **Universities under-use the knowledge they produce** because they and business still inhabit largely separate worlds;
- **Many universities are insufficiently prepared** for the coming competition for students, researchers and resources in an increasingly globalising world.
- Most importantly, **funding for universities is far too low** compared to our major competitors, both in education and in research, due mainly to much smaller contributions from private sources.
- Furthermore, **access rates to higher education are still lower in Europe** than in many other leading world regions, especially for adult learners

What does the Commission propose to do about the problem?

- **Break down the barriers around universities in Europe** There

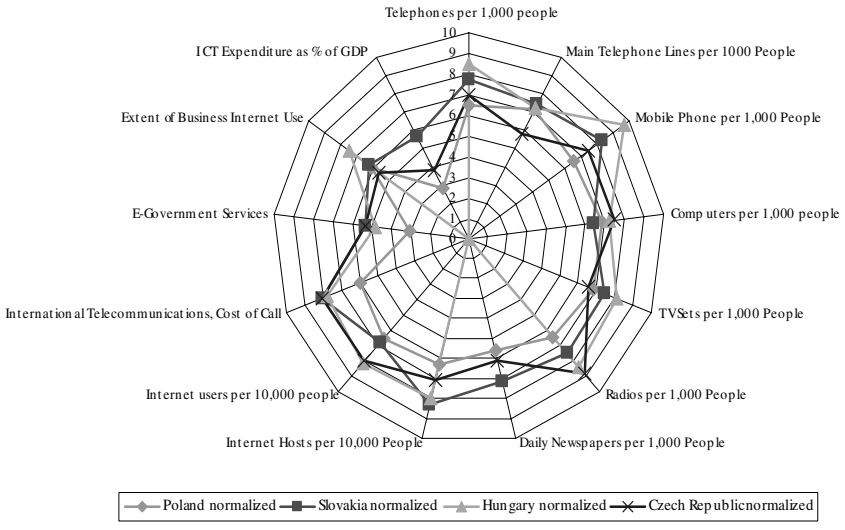
should be a major effort to achieve the core Bologna reforms by 2010 in all EU countries. These are:

- universality of the BA/MA/PhD structure;
- flexible, modernised curricula at all levels; and
- trustworthy quality assurance systems.
- **Create real autonomy and accountability for universities.** Member States should draw up a framework of rules and policy objectives for the higher education sector as a whole. Such rules would cover, for example, issues such as performance assessment, cost transparency, recruitment procedures, staff promotion mechanisms and tenure systems. Within this context universities should have the freedom and the responsibility to set their own missions, priorities and programmes in research, education and innovation; to decide on their own organisation and on the bodies necessary for their internal management and the representation of society's interests; to manage their own physical, financial and intellectual assets for research and education, their budgets (including fundraising) and their partnerships with academia and industry; to recruit and set the compensation rules for their permanent and temporary staff and to target their collective efforts towards institutional priorities in research, teaching and services. In doing so, universities need to accept that they are fully accountable to society as a whole for their results, including the cost-efficiency with which these are achieved. Member States should build up and reward management and leadership capacities within universities. The Commission suggests this could be done by establishing national bodies dedicated to university management and leadership training and using EU support to create strong linkages of them at European level.
- **Provide incentives for structured partnerships with the business community** Member States should support universities to develop incentive mechanisms to improve the use of knowledge and the wider sharing of research results, including intellectual property rights, patents, licensing and the creation of innovative spin-offs. Universities should build up lasting partnership with the business community, in particular by working with local and regional partners (research laboratories, science parks, start-ups and SMEs), for example by creating "clusters for knowledge creation and transfer". Universities should also be encouraged to establish university-industry research partnership offices at the interface between the two sectors.



Graph 3: Comparison of V4 Countries – Education

- **Provide the right skills and competencies for the labour market** The current pressure for uniformity – or even conformity – in much national regulation for universities does not enable sufficiently differentiated programmes geared towards the needs of different types of learners and regional/local actors. Member States should value and reward diverse university profiles, including thorough differentiated regulatory and funding systems. Programmes should be designed to enhance the employability of graduates. Research candidates should have the opportunity to acquire skills in IPR management, communication, networking, entrepreneurship and team-work in addition to research techniques. While university education and research pursue much broader ethical, cultural and social goals than "employability"



Graph 4: Comparison of V4 Countries – ICT

alone, labour market access should be used as one indicator, among many, of the quality of university performance. Universities will soon be faced with the consequences of an ageing population, with a dwindling potential pool of graduates. By providing more courses open to students at later stages of life, they will be better prepared to meet this challenge.

- **Reduce the funding gap and make funding work harder in education and research** There is a significant funding gap in Europe compared to its major competitors. In simple terms, to close the funding gap with the USA, Europe would need to spend – on average – an additional EUR 10,000 per higher education student per year. However, the bulk of this would need to come from non-public sources, i.e. from households, industry and donations. To tackle this gap, Member States should adopt the target that within a decade total funding for a modernised higher education sector should not be less than 2% of GDP. Universities will not be able to make their full contribution to growth and to the Lisbon strategy with less. University financing should be comprehensible and transparent. It should be based on what universities do and not what they are. Universities should take greater responsibility for their own long-term financial sustainability, through working with industry, foundations and other private sources. Member States should critically examine their current model of student finance and support for efficiency and equity.
- **Enhance interdisciplinarity and transdisciplinarity** Teaching and research agendas should reflect new developments in existing fields and emerging areas of inquiry. This will require an approach that brings together various disciplines that have an impact on a specific research domain, for example renewable energy or nanotechnology. It would also imply closer links between related or complementary fields, such as humanities, social sciences or business studies. This necessarily implies a more open approach to staff management, evaluation and funding criteria, teaching, curricula and research.
- **Activate knowledge through interaction with society** As Europe moves towards becoming a knowledge society, society in general needs to be a part of the process. Therefore universities should consider how they interact with the society within which they operate, whether locally, regionally or nationally. This can be done through greater emphasis on lifelong learning, but also by communication through open door days, placements, forums for dialogue and community service.
- **Acknowledge and reward excellence at the highest level.** All Member States should review their provision at postgraduate levels (master and doctorate, including postdoctoral opportunities) and the disciplines concerned, in the light of their strategic objectives for higher education, research and innovation in the national and European context. In this way, each university would be encouraged to identify a limited number of fields where it can achieve excellence. Financial support should be made available on European level to develop excellence at graduate/doctoral schools and networks meeting key criteria such as:
  - critical mass,
  - trans- and inter-disciplinarity,
  - a strong European dimension,
  - backing from regional/national authorities and from industry,
  - identified and recognised areas of excellence, and
  - provision of post-doctoral opportunities.

  Competition for excellence should be strengthened through the European Research Council: the European Research Council (ERC) will promote a European champions' league in "frontier research" by opening up competition among Europe's best and brightest.
- **Make the European Higher Education Area and the European Research Area more visible and attractive in the world** There should be serious effort to market European universities abroad. The Commission has begun this process, through the highly successful Erasmus Mundus and Marie-Curie programmes. Both are oversubscribed and should be expanded. A single Europe-wide internet portal already exists for researchers. A similar one should enable students to search across all EU countries to find and compare courses per specialisation, level and language. (*COM,* 2006).

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Agri-environmental management and rural development: Hungary after EU accession

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Abstract: In Hungary, similarly to developed countries, the share of agriculture in the GDP has declined. Even so, preparation of the sector's long term strategy is crucial, as the role of agriculture exceeds the results represented in the GDP**.** Environmental and social functions of agriculture are revaluated in developed countries, and consumers at the end of the food chain actually govern the entire process. This is why information plays an increasingly important role, and gives signals (*Verbeke,* 2005) to the actors in the economy and society. This research area is diverse (including agricultural policy, environmental policy, rural development and sustainable development), and so I applied an interdisciplinary approach and conducted an integrated examination. The results show that in recent decades, the pressure of agriculture on the environment has been lower in Hungary than in the EU-15 and agri-environmental measures have taken hold in all types of land-use systems, even though they are more important in protected areas. Although this development provides a good basis for a long term strategy social capital has lost strength (*Csath,* 2002), so fostering the creation of internal and external rural networks – one instrument for this could be the Leader programme – is essential for sustainable rural development.

Keywords: agri-environment, leader, rural development, social capital, sustainability

Introduction

The aim of the dissertation,[1] out of which this paper presents some important results, was to confirm the hypothesis that the application of multifunctional agriculture determined by the Common Agricultural Policy (CAP) – with a supportive political background – could be a promotional factor for the Hungarian national economy.

Sustainability is a horizontal principle in the EU, which means that it must be considered in agriculture as well. Environmental, social and economic pillars have to be analysed jointly. In general, the three pillars of sustainable development are transformed into five factors, which are *(Fig. 1):* the natural, human, social, physical and financial ones. Besides financial and physical factors – which are more emphasised along development – natural, human and social factors have to be taken into consideration.

In June 2005, the European Council (EC), with regard to the proposal of the European Commission in July 2004, and with certain adjustments, adopted regulation 1698/2005/EC on the support for rural development by the European Agricultural Fund for Rural Development (EAFRD). This regulation forms a new basis for the EU's rural-development policy. The new regulation builds rural development policy on four axes, as follows:

Axis 1: Improving the competitiveness of the agricultural and forestry sector

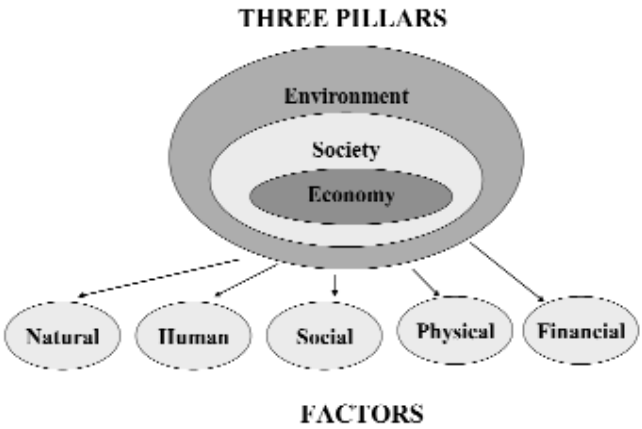

Figure 1: One possible illustration of sustainable development
Source: Olsson et al. (2004:5) Own complementation on the figure is the addition of the five factors for the detailed investigation of the three pillars

Axis 2: Improving the environment and the countryside

Axis 3: Quality of life in rural areas and diversification of rural economy

Axis 4: Leader

The regulation determines what percentage of the EARDF should be reserved for different axes *(Table 1).* Leader becomes a key element of rural development programming and implementation.

[1]Carried ű under the Doctoral School of Interdisciplinary Social and Agricultural Sciences. Supervisor Prof. Gábor Szabó, DSc.

Table 1: Framework of rural development financing for the period 2007–2013

		Regulation 1698/2005/EC
Competitiveness	Axis 1	min. 10%
Land management	Axis 2	min. 25%
Diversification	Axis 3	min. 10%
Leader	Axis 4	EU-15 min. 5%
		EU-10 min. 2,5%
Latitude for states*		EU-15 50%
		EU-10 52,5%

Source: Council of the European Union (2005:7) * own complement

Agriculture contains the elements of the three pillars of sustainable development, and a parallel between the axes in the new rural development regulation and the three pillars of sustainable development can be drawn (environment – axis 2, society – axis 4 and 3, economy – axis 1 and axis 3).

The structural, institutional, technical and technological regulation of Hungarian agriculture – preparing for the new tasks – has not overtaken the participation in the competition of the single market. It is crucial that Hungary itself manages this process for itself. Regarding Hungary's natural and social conditions, it is of common interest to create a long term strategy for agriculture, which has been missing for years. In the dissertation, natural and social resources, as basic factors for sustainable rural development, were examined. Although Hungary is a country with an open economy, it is vital that it ensures sustainable development in agriculture besides financial and physical factors the adequate evaluation of natural, human and social factors, as part of national wealth, and their proper management.

Materials and methods

Regarding methodology, an interdisciplinary approach was applied. First, as a consequence of the review of the literature on the CAP, relationships of agriculture, in the form of a logical model (*Csáki-Mészáros,* 1981), were demonstrated.

The effects of accession to the EU were examined. In Hungary, as well as in other new member countries, the reallocation mechanism of the EU's budget and the common regulation of agricultural and structural policies have brought significant changes. These changes were observable mainly in the support system. Conclusions were drawn regarding the main methods of support for agricultural policy. From the three support methods – price support, direct payments and rural development schemes – rural development schemes were analysed. The four axes of the rural development regulation of the EU for 2007–2013 (1698/2005/EC) gave a guideline for the analysis of Hungarian rural development payments.

Examinations related to the environmental factors have two main groups. Firstly, from statistical-mathematical methods a graphic figure was applied to illustrate how indicators carry information and how the general decline of the national economy after the changed regime affected agriculture from an environmental aspect. Among graphic figures a polar coordinate was used. Secondly, data of the National Agri-environmental Protection Programme (NAPP) between 2002 and 2003 were analysed. The Ministry of Agriculture and Rural Development gave unrestricted access to the whole anonymous database, containing more than 5000 applications, for the two years Programme. This was an enclosed database as the NAPP was concluded and its measures were carried on in the National Rural Development Programme (NRDP). Comparative evaluation was used to examine the results of the NAPP at different NUTS (Nomenclature des Unités Territoriales Statistiques) levels. The available data were analysed from different aspects and on different territorial levels with the help of statistical and mathematical-statistical methods. For data processing Excel programme was used whilst the spatial statistical analysis was done using ArcView 3.2. Programme. The relationship between the NAPP's processed data and the selected factors from the available dataset of the Hungarian Statistical Office (HSO, 2005) were examined by correlation evaluation (*Szűcs,* 2002).

Finally, studies conducted on Leader Programme – as a possibility for strengthening social factors – was overviewed and the introduction of the Programme was examined through empirical analysis.

Discussion

1.1 Linkages of agriculture

The changes along the development of the CAP can be observed at a global level, as well. The role of agriculture has a broader base. Today, agricultural activity means not only the production of agricultural and industrial commodities; the multifunctionality of agriculture includes also the production of non-commodities (positive externalities*) (Fig. 2).*

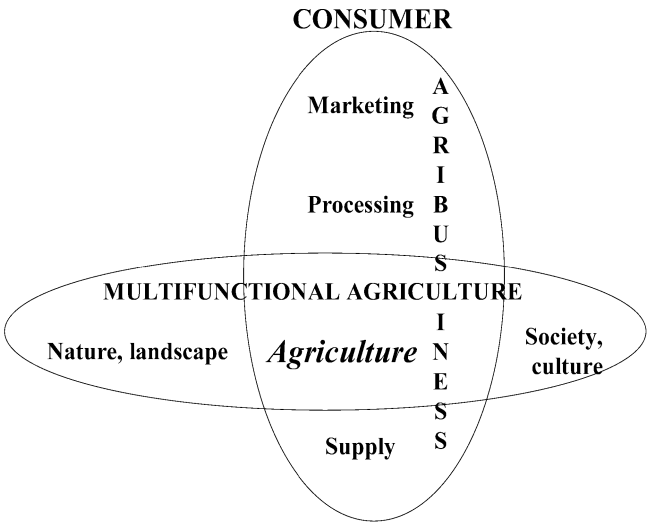

Figure 2: Linkages of agriculture (own illustration)

Agricultural payments are made in three main groups, from which market and direct payments are closely tied to agribusiness while rural development payments to multifunctional agriculture. The price and payment systems are the strictest regulations of the CAP, hence the EU's agricultural payment system in Hungary was analysed. As a result of the accession negotiations, the distribution of payments among these groups alters between the EU-15 and the EU-10. While in the case of the EU-15 the ratio of market, direct and rural development payments, financed from the European Agricultural Guidance and Guarantee Fund, is approximately 2:7:1, respectively, in the period 2000–2006, for Hungary, in 2005, this was 1.2:5.3:3.5. New member states will reach the EU-15 direct payment level presumably only in 2013.

In the dissertation, among agricultural payments, that for rural development was analysed closely. The measures of Special Accession Programme for Agriculture and Rural Development (SAPARD), Agricultural and Rural Development Operative Programme (ARDOP) and Hungarian National Rural Development Plan (NRDP) – these programmes formed the basis for rural development payments from the EU funds in Hungary – were set along the axes of the new rural development regulation. The results show that in Hungary, according to the present rural development payments, measures related to the first axis play the leading role. In the future the enhancement of the third and fourth axis is also important.

1.2 Environmental factors

1.2.1. Pressure of agriculture on the environment Hungary related to the EU-15

Indicators at the EU level can be classified into three groups: indicators related to environmental policy, sectoral policy and sustainable development. The role of different groups has changed in connection with the transformation of European policy. Indicators for environmental, sectoral and sustainable development policy have been developed after each other but in close relation.

Indicators in the EU developed for agricultural sector primarily monitor the environmental pillar. Agri-environmental indicators are placed in the DPSIR (driving forces – pressure – state – impact – response) model (European Commission, 2000:13). Indicators which form part of the driving force groups inside the DPSIR model were examined. In this way, the pressure of agriculture on the environment in Hungary, compared to the EU-15, could be illustrated, considering a system which is accepted at the EU level. To illustrate the changes polar coordinates, which made the transparency between statistical data and the monitoring of the process between 1980 and 2000 were used. The data *(Fig. 3)* show that in recent decades the pressure of agriculture on the environment was lower in Hungary than in the EU-15, as a result of the decreasing intensity and the reduction of input use, which was harmful to the environment.

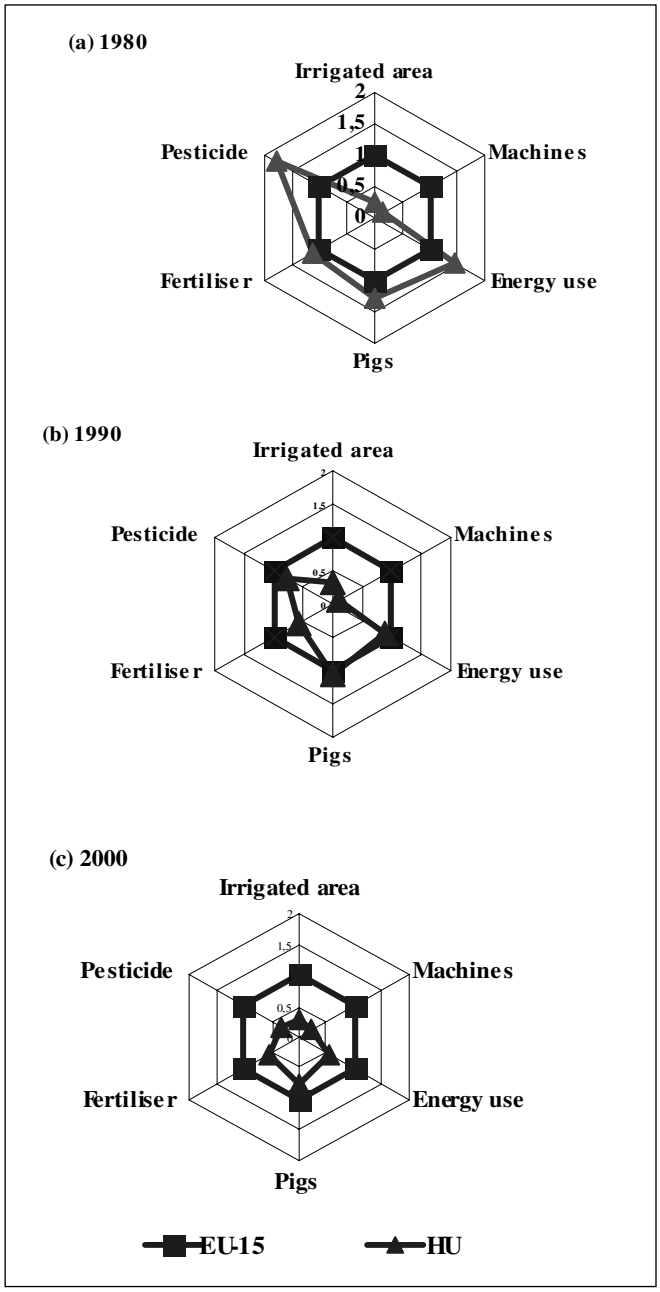

Figure 3: Agricultural pressure on the environment in Hungary related to the EU-15 average in (a) 1980, (b)1990, and (c) 2000 (own illustration)

1.2.2. Agri-environmental measures

The National Agri-environmental Protection Programme (NAPP) provided EUR 10 and 18 million in 2002 and 2003 respectively for farmers taking part in NAPP. In 2003 the Programme covered 4% of the total agricultural area of Hungary. The data for NUTS IV level were defined as the response indicator of agricultural DPSIR model *(Fig. 4).* Different analyses were carried out to examine the environmental and natural relations of the NAPP. Spatial statistical analysis was used to examine the NAPP's territory ratio under different land-use zones. The digitalized version of Ángyán's land use statistic map (*Ángyán* et al., 2001:183)

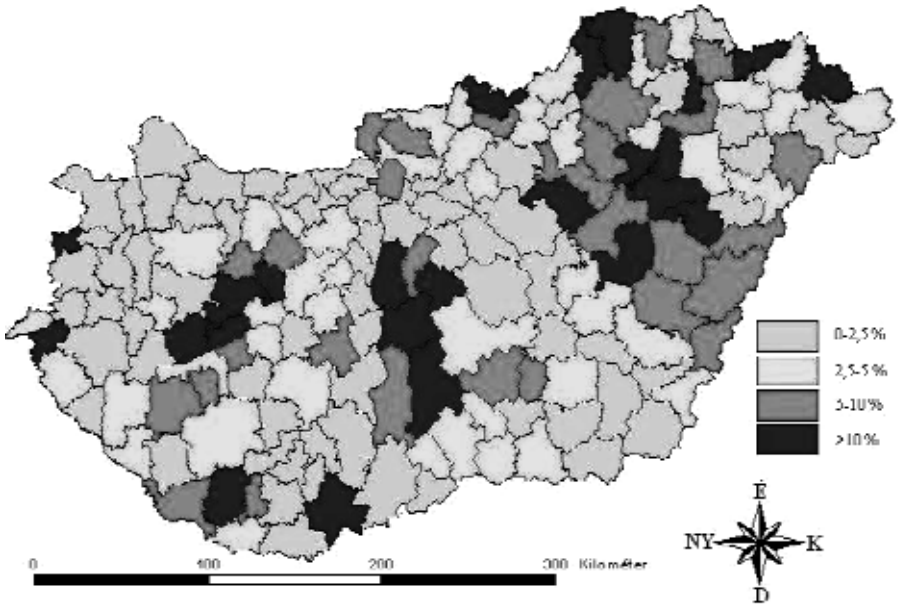

Figure 4: Percentage of utilised agricultural areas involved in NAPP at the NUTS IV level in 2003 (own calculation by P. Takács, J. Kovács Katona)

was overlapped with another database, which contained the location of all settlements that applied for the NAPP. The results of the spatial overlapping showed that 49.1% of the NAPP's area was covered by extensive, 42.1% by intensive and 8.8% by naturally protected area. 9% of the protection zone's agricultural area, 5% of the extensive zone's agricultural area and 3% of the intensive zone's agricultural area took part in the NAPP. This means that agri-environmental measures in Hungary are now grounded in all types of land-use systems, but they are more important in protected and extensive areas. This statement was underlined by estimating the correlation between the ratios of county areas involved in NAPP and the ratios of county areas (HSO, 2005:147) under natural protection on NUTS III level. The value of the correlation coefficient (at a significance level 0.95) was r=0.55, which shows a positive relation.

These statements support the guideline of the EU that rural development measures should be built on different axes, as different measures strengthen certain pillars of sustainable development. For example, agri-environmental measures play an important role in connection with the environmental pillar.

Relative to the National Rural Development Plan, areas under agri-environmental protection have increased to over one million hectares – which meant EUR 176 million in payments in 2005. In view of the experiences in connection with SAPARD and ARDOP it can be expected that for the period 2007–2013 the first and the second axis of the new rural development regulation will get those payments which are not fixed along the axes (52.5% of the total amount). The first version of the National Agriculture and Rural Development Strategy[2] – for the period 2007–2013 – allocates 40 and 45% to the first two axes, respectively.

1.3 Social factor

The outcomes of the dissertation have drawn attention to the fact that the social pillar of sustainable development is not taken into consideration in national rural development plans. A great problem is that *social capital* – understanding as relation of trust, respect for norms and association (willingness to cooperate) (?tulhofer A., 2000) – has lost strength as a consequence of the social-economic progress after the change of regime in Hungary. Trust, which is the basis of social relations and social cohesion, has weakened. The findings of international studies (Putnam, 1993; Wolz et al., 2004) suggest that actors in rural areas and their inside and outside networks are basically essential for sustainable rural development.

Leader, started as a Community Initiative in 1991 in the European Union, has positive results in rural development (*Pylkkänen-Hyyryläinen,* 2004), especially on social capital. It is important to emphasize that rural development plans have to be prepared on local level, and Leader funds are available only for those groups who are able to bring together different partners from the region. Following the principles of the Leader Programme – area-based approach, bottom-up approach, local partnership, innovation, multi-sectoral integration, inter-territorial co-operation and networking as well as decentralised management and financing – we can find more principles which are in connection with social capital. More publications (European Commission, 2002; ÖIR, 2004; Pylkkänen-Hyyryläinen, 2004) highlight the role of this measure in strengthening social capital. The effect of Leader on social capital is demonstrated in an Austrian publication (ÖIR, 2004:57) *(Fig. 5),* where the Leader Programme and classical rural development programmes were examined.

The outcomes of the ÖIR research demonstrate that at the beginning Leader-type programmes need higher expenditure and are cost-effective in the long run. From the social capital aspect, they have a positive effect already at the beginning, and this impact should only strengthen over time.

Considering the above mentioned factors, the Leader Programme might assist in solving problems related to social capital in Hungary. The EUR 8.8 million per year, which is available for the programme on a yearly basis during the period 2004-2006, should be increased and Hungary should also consider the 5% of total payment allocation, as it is for

[2]From the webpage of the Ministry of Agriculture and Rural Development www.fvm.hu

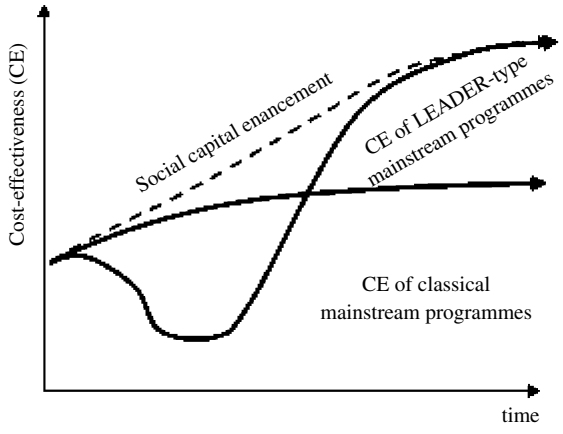

Figure 5: Slingshot pattern of cost-effectiveness in Leader-type mainstream programmes (Source: ÖIR, 2004:57)

the EU-15 after 2006. This is important also for the reason that Hungarian LAGs will get their first payments only in 2006.

Enhancement of social capital is very important. Without it, economic development cannot be achieved. During the first phase of the LEADER measures, in July 2005, 186 Local Action Groups (LAGs) were established in Hungary, which include 2332 settlements (75% of Hungary's settlements) where 34% of the population lives. 108 LAGs were invited to the second phase (Paszternák, 2005). Finally, 70 groups were selected and were given the possibility to start their projects with a EUR 400,000 per group resource in 2006. Other groups were rejected because of the lack of funds. It can be stated that the Leader programme covers the whole country. The number of settlements in individual LAGs ranges from three to 48. Following the process of Leader application, the first outcomes show that Leader itself is only one step forward and it will not solve all the problems, as social capital is a complex feature. It would be important to inspire these 186 LAGs which have already been established to continue their cooperative efforts, as there are other calls for regions which could be more effectively applied for if such collaboration persists.

Acknowledgement

Agriculture plays an important role in preserving the landscape, nature, the environment and in preserving the material and cultural heritage of rural society. The more developed a country is, the less is the proportion of agricultural production inside agribusiness. On the other hand the importance of multifunctionality increases. In a consumer society the statement that consumers determine the future of producers is also true for agriculture. Therefore, it is vital to properly inform the consumer – who is at the end of the food chain – how products are fulfilling the aims of multifunctional agriculture. The better consumers are informed, the more and better the influence they can have on supply.

Agri-environmental measures can be considered as the common group of environmental, agricultural and rural policy, so the multiplied effect of expenditures on the agri-environment should be taken into account. With supports, the positive environmental externalities will be internalised. Analysis of NAPP underlines the EU's guideline that, in the future, supports for rural development have to be distributed along different axes. Agri-environmental measures alone cannot solve the problem of rural areas, while this measure primarily strengthens the environmental pillar.

The future and sustainable development of Hungary strongly depends on how national resources are used. Agricultural areas form of the determinative parts of Hungarian natural capital. Another important fact is, in regard to the changes in EU policies, that agricultural activity is as vital for a sustainable countryside as a living countryside for agriculture. Unfortunately, Hungary has notable problems, both in agriculture and with its rural economy. New approaches have to be followed in the preparation of a national agricultural strategy, which will take into consideration a careful revaluation of agriculture's environmental and social functions.

Experiences gained from SAPARD, ARDOP and NRDP, show the dominance of axes for competitiveness. Experiences gained through research demonstrated that if the right balance among the four axes is not achieved, and if Hungarian conditions are not taken into consideration, neither a proper functioning, nor a sustainable rural economy, can be achieved. It is very important how national latitudes – which are approximately 52.5% – along the four axes will be transferred.

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Examination of leader communication in agriculture

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Abstracts: My doctoral and research topic was significant in the examination and analysis of leader activities in the framework of a functional, modularly constructed empirical research program of the Department of Management Sciences. I could make statements and correspond about leader activities; these exercises and the influential factors on these activities were studied by the examinations and analyses of leader communication. In this article, I will demonstrate the research I made in on agricultural communication, as a Ph.D. student in the Department of Management Sciences.

Keywords: agricultural organisation, leader communication, interactioin examinations

Programmes

- The aim of my doctoral dissertation is to examine the factors influencing communication in agricultural organisations, on the basis of professional literature and my own observations.
- My aim was to define and explain the idea of leader communication using data from the literature and theoretical approximations.
- The aim of leader observations was to analyse and evaluate leader activities, the composition and the structure and rates of leader activities by the time-study and content analysis of communication. My aim was to form a research method by interaction examinations that can be suitable for making management examinations. Based on these data, I performed cluster analyses and possibility estimations.
- The final aim of my examinations was to analyse the influential factors of leader communications.

2. Literary overvie

Communication is not separated from management. Communication is management or more precisely, management is communication. If we want to lead people correctly, we have to communicate correctly (*D'Aprix,* 1982). It is evident that the realisation of management activities is possible by communication. If this is true, then we must accept as fact that the activities of managers can be examined by how they communicate. The statement that management is communication is too brief. Management is more than just communication, because it contains such elements as personality and style. It is obvious that these factors emerge in communication.

Communication skills are a fundamental part of every managerial activity. Many people think communication is simple because they communicate without conscious thoughts or efforts. However, communication is usually complex, and the opportunities for sending or receiving the wrong messages are innumerable (*Daft,* 1997). According to *Hackley* (2005) bad communication is the reason behind many negotiation mistakes, so it is important to learn to communicate in a way that we should reach the result we expected.

According to Mintzberg (1978), the greatest part of managerial activities is said to be verbal communications. Other examinations argue that the mean time of a leader is split between similar communication forms *(figure 1).* This division shows that listening to others is the most important part; minimally, it is the most substantial part of managerial communication. On average, a leader uses 75% of his communication time by speaking and listening (*Berde,* 2003).

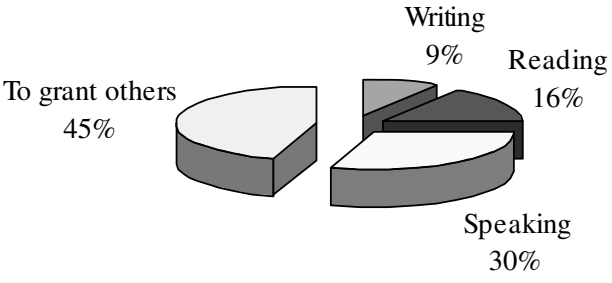

Figure 1: Leader's time division between communication forms Source: Berde (2003)

Roóz (2001) thinks the reason for the crucial importance of management in organisational communication is the high loss of information at different managerial levels *(figure 2).*

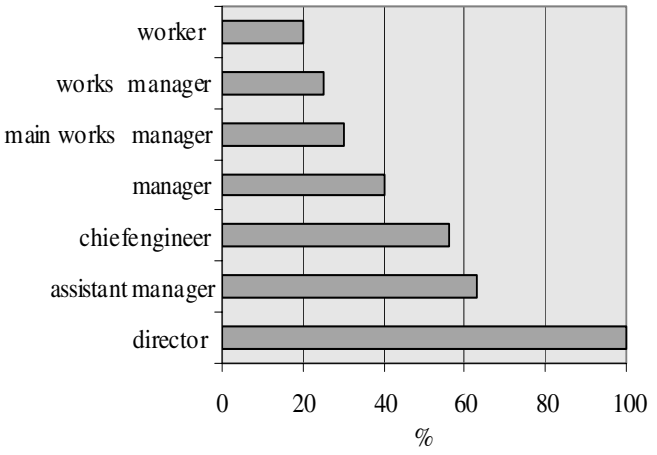

Figure 2: Information loss due to inadequate communication according to Roóz (2001)

Data in the chart show what an important role top managerial level has in the success of communication. Information filtering processes in downward and upward communication are equally relevant. We are neither perfect information senders nor perfect information receivers. Consequently, it is hard enough to receive and perfectly repeat a message when distributing it to other persons. We filter one part of the message and consciously or unconsciously add our prejudices. The same applies to downward communication in organisations, when information goes from the council of directors through assistant managers, CEO, factory directors, factory leaders to workers: communication loses 80% of its information content. Such a high rate of information loss endangers the activity of an organisation.

Different managerial levels have different information needs. The managerial pyramid can illustrate the flow of information between different levels. Anthony (1965) first introduced this model and it proved to be the most suitable approach, if we examine traditionally constructed organisations from a managerial viewpoint *(figure 3)*.

It seems obvious that by going up on this pyramid, required and provided information changes towards financial, business-political and marketing-political fields. At the same time, subfields should be continuously connected: this means a kind of informational integration.

We distinguish between inner and outer communication circles in corporate communication. Outer communication circles refer to corporate relationships outside the company. Inner communication circles are oriented to form relationships inside organisations and, in this way, they have great influence on coordinating the organisation's function (Gróf, 2001).

At the top managerial level, information cannot go into details. The widest connections should always be summarised into reports and main points should be highlighted by offering solutions for the given situations. The middle managerial level generally deals with more organisational units, groups. These require separated/ individual direction and information on coordination at the same time (Lawler and Rhode, 1976). Information received by middle level managers should be properly detailed and precisely reported. According to Dobay (1997) one cannot perform an intervening managerial activity from a late, wrongly formatted report. So the most important factor at this level is timeliness, planning and compliance with them.

Bottom level managers deal with directing direct subordinates. At this level, information supply should be adequate to solve production level problems on the spot.

Leader communication is a decisive part of organisational communication, in which the communicational specialities of realizing leader activities emerge. Since both internal and external information target managers, at the top manager it reaches its highest concentration. Therefore, the top manager is in the centre of both communicational systems *(figure 4)*. In the performance and direction of internal and external communicational processes, top managers and owners have a determining role.

Information for top managers has to be highly selected in the case of the efficient communication. In internal upward communication the concentration and elaboration of information are increasing as the information reaches higher levels of hierarchy, so information gets to the top manager in the most concentrated, most elaborated and selected form.

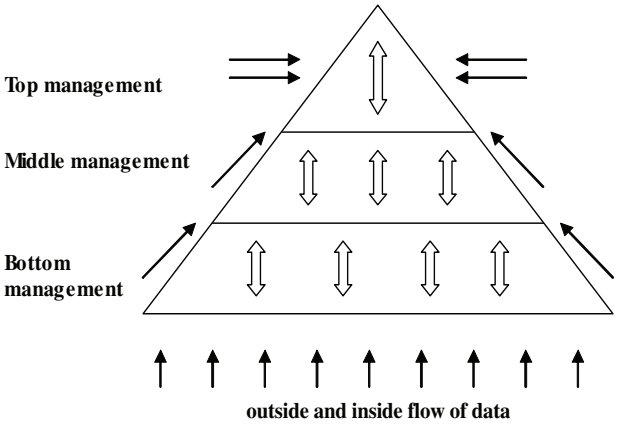

Figure 3: Managerial pyramid according to Anthony (1965)

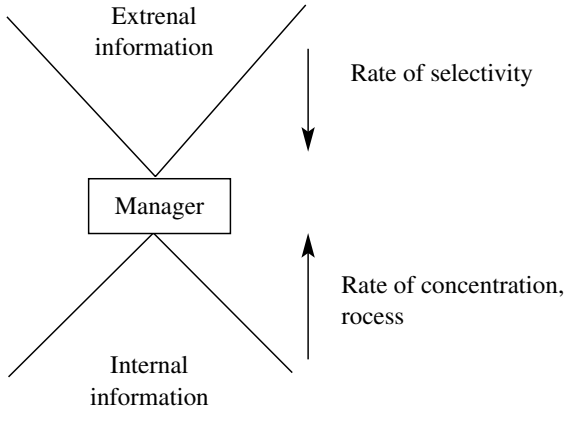

Figure 4: External and internal information concentrates on the manager

This selection is made by external communication channels on a low level, so it is practical to establish such an organisational part that monitors, collects and selects this information. Bigger organisations can employ internal staff or internal organisation for this function, but micro, small, and medium enterprises must use this as a service using external organizations.

According to Haire (1977), the most important and most trustful exercise is to realise and utilize communication systems. By communication, managers control the work of subordinates, define the aims of organisations and work-groups, and inform the subordinates on their expectations and on the instruments and resources they have. Effective and productive organisational function is unimaginable without adequate internal communication.

3. Precedents and applied methods

I did my research as part of the "Functional examination of agricultural corporate management" research programme, worked out by the Department of Management Sciences at University of Debrecen in 1994. My research area formed a part of investigations on organisational management, called organisational communication. I conducted surveys as a part of this theme about professional and leader communications.

I made my observations on leader communications in 6 six corporations in the North Great Plain Region, from 2002 to 2005. The selection of examined corporations was based on two points:

1. ***The Owner*** must be the superior leader of the organization. Of the studied organizations, five had just one owner and in one organization, the biggest part was lead by owners.
2. Another important viewpoint was the ***income***. As regards income and result, the examined corporations were medium sized corporations in the county. The income of the corporations almost reached or passed the 2 billion HUF.

The aim of the research is to show and analyse prime and subordinate managers' activities and management practices in the examined organisations by communication examinations on diversified managers.

The basis of my investigations was Mintzberg' study (1979), which observed all the activities performed by five leaders and recorded their time values. His research showed first of all that data could feature leader communication. Based on this examination, he defined and sorted leader functions. Therefore, we can make statements on the parts and exercises of leader activities by the observation and analysis of leader communication.

In leader communication examinations, I measured and analysed the time period of communication parts. The time periods were based on time-work studies.

In the observations, my aim was to examine the prevalence of communication activities by the time value analyses and time period analyses of communication parts. I made my time period analysis with both superior and subordinate leaders for five workdays. The total observation time was 36 359 minutes, which is more than 600 hours.

Grouping the communication elements by time period does not give a good chance to examine leader activities realized by communication. Thus, I realized the analysis of all communication interactions by the data of workday recording. I called this "interaction examination". The aim of these examinations was to identify the most important realized activities by the observed leaders, to make conclusions that could be used to make leader activities more rationalized and more effective. Through my observations, I identified 4797 interactions in the six corporations.

Preparation and analysis based on leader communication examinations:

- With descriptive statistical methods: time value analysis on superior leaders' communication, time value analysis on subordinate leaders, comparative analysis of time value in superior and subordinate leaders' communication, characterization of interactions by superior and subordinate leaders, comparison of the number of interactions in superior and subordinate leaders' communication.
- I made feasibility evaluations by log-linear methods and I created the next models from my examination: a model set up for communication modes and leader types, a model for communication modes and leader types regarding organizations, a model for interactions and leader types, a model for interactions and leader types regarding organizations.

Due to the nature of my research and the applied examination methods used, I collected different data about different models with different methods. I had to use diverse mathematical and statistical research methods because of the character, the nature, the grouping and evaluating potentials of the collected data. The data collected in leader communication examinations were evaluated with cluster-analysis and log-linear evaluation.

Log-linear analysis

I made interaction examinations by leader communication observation, time study and leader communication content analysis. I tried to find the answer as to how often different leader activities appear in leaders' work. I based the log-linear analysis on collected interaction data. I analyzed the time values of communication modes and the interaction data of observed organisations and leaders with the General Log linear Analysis method. I used LEM (Log linear and event history analysis with missing data using EM algorithm) software Vermunt (1997). The log-linear method is a multivariable frequency table analysis that can determine the probability of a factor getting into the cells of the table.

The main aim of the log-linear analysis is to find the best model suited for the mass of data, which is not much different

from a "full saturation" model. Generally, I used few variables in my models, so I used full saturation models where there was not any chance of limitation. This is why this method best suited my aims and revealed the relations I expected.

In addition to the log-linear analysis, I found it appropriate to forecast the cell frequency in case of the six organisations in the sample. My aim was to demonstrate the relative importance of different independent variables (communication mode, interaction) by the forecast of dependent variable values (hours spent on communication modes, number of interactions). The accuracy of models was tested by a reliability test method called „likelihood ratio test".

The log-linear analysis analyzes tables without the demand to give a dependent variable. The observed frequencies stand in the centre of the method, which is absolutely suitable for my research and establishes the accuracy and usage of the method. By the analysis we can demonstrate frequencies from the table with parameters that we can explain. The aim of the analysis is not to find and explain parameters that are not equal with zero.

The general form of the model:

$$\mathbf{Log}\ m_{ijk} = u + \lambda_i^A + \lambda_j^B + \lambda_k^C + \lambda_{ij}^{AB} + \lambda_{ik}^{AC} + \lambda_{ik}^{BC} + \lambda_{ijk}^{ABC}$$

where:

m_{ijk} is the frequency of the ijk cell of the table that consists of i * j * k cells

λ parameters belong to the effect of appropriate variables

u constant parameter

In case of leader communication examinations:

A communication modes and number of interactions

B type of leader

C examined organisations

The log-linear analysis is not a general method, because it can be established with special software and it is difficult to explain parameters, especially in SPSS. LEM is one of the most important types of software for probability estimations. In the model, we can set the number of variables (lab), how variables exist in the model (man), the number of variable categories (dim) and the model itself. The software calculates the conditional probability by these inputs.

The use of the log-linear analysis can be considered new in this research area; very few people performed this kind of examination in foreign and domestic studies. Domestic studies are mostly methodical innovations and they are accomplished in economic, biological and social research areas. I would say that in the area of management sciences until now, the log-linear method has not been used. I could not find traces of it in the technical literature.

4. The main conclusions

In leader communication examinations, I tried to find the answers for the importance and role of the communication in leader activities, the time values and different communication methods in leader activities.

The distribution of data and ranking by the average time value of the examined methods is shown in *Table 1*. The five days I spent on observing superior leaders were substantially longer than the observation time for subordinate leaders. The reason for this difference is that while subordinate leaders have fixed working time schedules, superior leaders have flexible working times. This means that superior leaders' working time is determined by the problems they have to solve. A daily 12–14 hour working time is average, but 23 hours were observed as well. The observed leaders worked

Table 1: Time values in superior leaders' communication

Unit: minute

Communication modes	Total minutes	%	In organisational dissociation						Par	Rank
			A1	B1	C1	D1	E1	F1		
Telephone (outgoing)	2175	11	441	515	132	353	298	436	363	4
Telephone (incoming)	698	4	110	81	157	112	90	148	116	7
Direct verbal communications (official-inside corporation)	7850	41	1284	713	1926	1514	998	1415	1308	1
Direct verbal communication (official – with client)	2605	13	364	757	181	376	529	398	434	2
Direct verbal communication (with other official organisations)	1177	6	199	265	125	219	239	130	196	5
Direct verbal communication (non-official)	536	3	102	45	120	95	72	102	89	9
Written communication (writing, electronic, fax)	362	2	40	97	43	54	72	56	60	10
To grant others	794	4	212	124	59	139	165	95	132	6
Reading	656	3	127	127	74	63	146	119	109	8
Statement without communication	2444	13	981	141	100	292	569	361	407	3
Totally:	19297	100	3860	2865	2917	3217	3178	3260	3216	

Source: Own examinations, 2002-2005

Table 2: Time values in subordinate leaders' communication

Unit: minute

Communication modes	Total minutes	%	In organisational dissociation						Par	Rank
			A2	B2	C2	D2	E2	F2		
Telephone (outgoing)	489	3%	54	95	96	83	69	92	82	7
Telephone (incoming)	254	2%	17	23	86	42	57	29	42	9
Direct verbal communications (official-inside corporation)	9147	54%	1693	1378	1395	1425	1658	1598	1525	1
Direct verbal communication (official – with client)	740	4%	0	232	136	112	198	62	123	6
Direct verbal communication (with other official organisations)	384	2%	80	90	23	54	39	98	64	8
Direct verbal communication (non-official)	1042	6%	0	108	522	85	189	138	174	4
Written communication (writing, electronic, fax)	1695	10%	297	471	80	368	185	294	283	3
To grant others	244	1%	45	32	79	42	31	15	41	10
Reading	1018	6%	141	180	188	195	135	179	170	5
Statement without communication	2049	12%	451	496	48	382	298	374	342	2
Totally:	17062	100%	2778	3105	2653	2788	2859	2879	2844	

Source: Own examinations, 2002-2005

an average of 3216 minutes a week; that means 10 hours and 43 minutes' working time per day. I presume that zeal for hard work is the result of possessing an owner's stake. Unofficial communication with subordinates inside organizations has the highest rate in the ranking of all the 6 leaders. It can be concurred with the theory that the highly important factor for superior leaders is to get information inside their corporation. Unofficial or official verbal communication with clients got the highest qualification in 5 organisations. Owner leaders show primary competency in the range of communications outside the corporation, and it is typical that these activities are delegated on a low level.

On the basis of the results, it can be concluded that the examined leaders spend the least time with written communication and non-official direct verbal communication. Having surveyed the pairs, it can be stated that they spend the third least time on reading. The examination of rates in organizational dissociation reading has the lowest rate in two organizations and incoming telephone calls have the lowest rate in three organizations.

For all subordinate leaders, "direct, official, inside-corporation" communication methods have the longest periods *(Table 2).* The next is "statement without communication". They spend the least time on "granting others", "incoming telephone calls" and "direct verbal communication with official organisations". They have official conversations with superior leaders. They spend most of their time on "communication with subordinates" and "statement without communication".

As my comparative examination shows, upper level leaders have fewer tasks, but their specific time usage for these tasks is much higher. Upper level leaders have problems that need more time to solve, but they are strategically important and significant from the aspect of the organisation. The activity of subordinate leaders is the reverse, meaning that they solve more problems, but their specific time usage is lower.

My time-study observations of leaders' tasks provided an opportunity to make interaction examinations on communications. A communication process can be defined as an interaction between participants. Having examined the subject of interaction, I could identify the types of leader tasks. Based on the results of these examinations, I demonstrated how often and how importantly leaders' tasks emerge in leaders' activities and the types of correspondences and differences in the activities of different leader levels.

As my findings suggest, there are low rates and numbers of interactions in the communication of upper leaders *(figure 5).* This means that they make relatively few decisions, but these decisions are very important for the organisation and tend to solve problems. The rates of subordinate leaders' interactions show that their competence is strongly limited to realize technological processes.

If we compare the interactions of leaders, we can state that official conversations have the biggest rate, more than 1/5, independently from assignments. We can observe the biggest difference in the comparison of the direction of information flow outside corporations, because it is four times higher for superior leaders than for subordinate ones. The ratio of meetings for superior leaders is five times more but the ratio of information flow inside corporations is more significant in the case of superior leaders as well. Non-official conversations have almost equal ratio in leader communication. The proportion of other interactions was

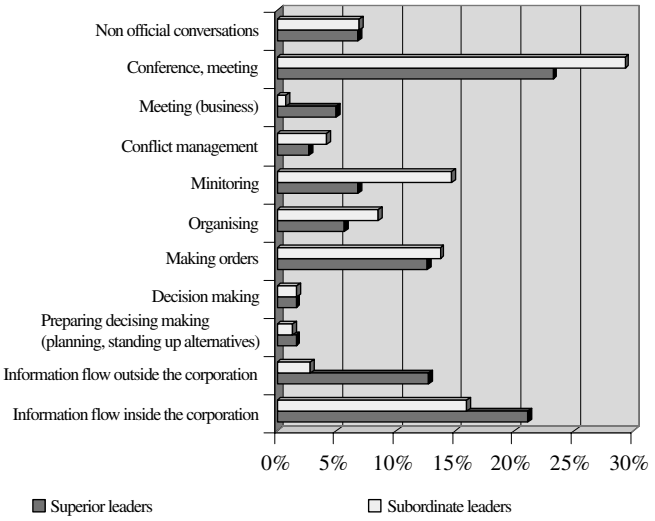

Figure 5: Comparison of superior and subordinate leaders' interactions

higher unambiguously for subordinate leaders. The biggest difference is observed in the ratio of monitoring, because it is two times higher for subordinate leaders than for owners.

I performed log-linear examinations on the basis of the data I collected from my leader communication examinations. My aim was to examine the probability of leader interactions in different assignment leaders in the six studied organisations. I analysed the number of interaction data for every observed organisation and leader by the method of General Log linear Analysis. With the LEM software I constructed a probability theory for interaction data. The program part of the model set up for interactions and leader types:

	where:	
man 3	A	the types of interaction (11)
dim 11 2 6	B	observed leaders (superior, subordinate) (2)
lab A B C	C	observed organisations (6)
mod B/A	B/A	connections between leaders and interactions, conditional probability

From the output of the running programme we can establish the probability percentage of interactions for different leaders. On the basis of the results, I made the following statements:

- Of the identified 11 interaction types, only two have higher probability ratios for superior leaders. The chance of receiving information outside the corporation is triple (74.14%), meeting has four times higher chances in superior leaders than in subordinate leaders.
- An observation on the chances of monitoring interactions shows they are the highest for subordinate leaders (77.32%); this means three times higher results than for superior leaders. Next is conflict management (71.02%) compared to organisations (70.51%). For these, the chances are two times higher than for subordinate leaders.
- Occurrence probability for other interactions is under 70% for subordinate leaders. The probability of meeting and sitting is 66.59%, order and disposal are 63.22%, decision making is 62.96% and non-official conversation is 61.63%.
- Information flow inside corporations and decision planning (56.52%) has the lowest ratio (54.52%), so the chance to identify these interactions for subordinate leaders is merely 4–6% higher.

The other model made for interactions and leader types was completed by organisations. The program part is:

man 3	*where*:
dim 11 2 6	B/AC is conditional probability in connection
lab A B C	between interactions and leaders considering
mod B/A	organisations, where AC means common occurring probability.

The running results of the programme show the occurrence probability of identified interactions by organisations and leaders. The log-linear analysis strengthens the results of descriptive statistical methods. On the basis of the analysis of the observed organisations, it can be established that the probability to find superior leaders at meetings or identifying information flow outside corporation occurred during a visit. The probability of organisational, monitoring and conflict management interactions is higher for subordinate leaders.

5. Summary

I made my own definition for the examined leader communication on the grounds of the literature and theoretical examinations. Leader communication is a determining part of organisational communication, in which the communicational specialities of realizing leader activities emerge. Leader communication is mainly important from the viewpoint of operating the organisation, because it has a central position in communication, in both incoming and outgoing information for leaders. Information reaches the highest concentration at the level of superior leaders. Superior leaders are in the centre of the two communications.

It can be established on the basis of the communication examination results on upper leaders that they are over-accused. Their average work time in the examination period was 10–12 hours. The reason for this situation is that they do not delegate their tasks or they do not divide their tasks properly. Their communication leader tasks are not differentiated suitably according to their positions, so they take care of each identified leader task on equal level. This means there is a tendency that they take over some tasks from lower levels of management, rather than delegate their own tasks.

It can be established that a communication activity which is absolutely the competency of superior or subordinate leaders does not exist. Based on the result of interaction examinations on superior leaders' interactions, the diagram is not in harmony with their activities. It can be concluded that

there is harmony between decision making, meeting and conflict management interactions and assignments for superior leaders. There is a contradiction in the ratio of getting information inside and outside corporations. The ratio of organisational, monitoring and order interactions is similarly high.

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Analysis of the expected income of several family types

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Abstract: In this essay, I deal with the problem of expected income of family holdings. Despite the fact that expected income is mentioned in numerous specialist publications and in political declarations, its definition and method of calculation are not detailed.
On the basis of my research, I define the notion of expected income and I determine its scale concerning different family types for the year 2006, on the basis of a survey I carried out among 198 agriculturists.

Keywords: income of family farms

Discussion

Although expected income is mentioned several times in numerous specialist publications and in political declarations, its definition and method of calculation are not detailed.

The General Conference of the National Labour Association (1944) accepted a recommendation about the security of incomes as a crucial element of social security. When evaluating the situation of profitability, a significant fact must be considered, namely that in reality, income includes a major share of personal income, as the actually accounted wage-like cost was 286 thousand HUF/year in individual holdings concerning one unit of workforce. (This is less than 24 thousand HUF monthly.) (AKII 1999)

Udovecz (2000) states that, in the last ten years, a disproportionately small amount of income was produced in Hungarian agriculture. This statement is valid for every sector and branch of agricultural production. Its degree of truth is credibly supported by the following facts concerning the last ten years:

- The GDP produced by agriculture in 1998 in an unchanged price did not reach three-quarters of that for the year 1990. The proportion of the GDP produced by the national economy is under 5%.
- The result *after the taxation falling to owned capital* in agriculture fluctuated between 3.7 and 4% until 1998. These numbers are half the average figures reflected in the national economy and one quarter of the average figures from the processing industry, i.e. they are 40% of the expected level. (In 1999, even this low capital profitability decreased by half.)
- The agricultural debt projected for all instrument values increased in this period from 27% to 44%.
- The gross average income lags behind the national average by 30%.
- In 1998, the volume of agricultural investments had still only reached 73% of the investments that had existed in 1990, after struggling at the level of 40–50%.

In the records of the meeting of The Committee of Environmental Protection of the Parliament (1999), those present named the level of expected income a strategic aim. Income security is supposed to be made evident with profitability, which is proportional to capital.

Among the aims of the Common Agricultural Policy (CAP), the creation of market stability can be found, which include the securing of the appropriate level of income for collective growers. *(Elekes,* 2001)

The sector of fruits and vegetables has traditionally created workplaces, which is why the expected income is higher than that in other agricultural sectors. (FVM, 2003)

In the course of the debate about Law XVI./2003 concerning agrarian market regulation, it was mentioned that the preamble of this law should contain the main aims, e.g. specific language on securing the opportunity to reach a reasonable income for growers and its practical application. However, it does not specify the quantity which the law would secure for the grower as the above mentioned. To reach a reasonable level of income is difficult to define, as in the confines of agrarian production, such a figure is always the question of regulations in the agrarian market and the conditions of support and competition. So if there are good support systems, good taxation politics, a good regulation of the agrarian market and a reasonable competition, then these few motives and the collective influence of these factors may result in a reasonable income for the grower. (*Glattfelder,* 2003; *Pásztohy,* 2003)

When defining reasonable agrarian income, it is expedient to make a distinction between the income of the agrarian producers and the income of those employed in agriculture because of the heterogeneous complexity of the

population it employs. In consideration of the fact that Hungarian law does not specify the definition of reasonable income, it is not suitable to connect the notion of reasonable income to the national average income concerning agrarian growers because of the peculiarities of agriculture; namely, that the significant equity requirements of agrarian production result in a reasonable demand of capital income. Moreover, when analyzing the reasonable income of agrarian growers, it is effective to pay attention to the fact that, due to the recession of the world economy and extreme weather conditions, the achievement of the agrarian sector has steadily decreased in recent years. The decrease which appeared differentiated concerning the sectors was naturally accompanied by the deterioration of income level that is why the growing amount of supports served the compensation of the lost income and the solution of acute problems year by year.

The income of the growers and the salary of the employed people show significant deviation, not just among agrarian sectors, but inside them as well. For these reasons, the reasonable income can be defined in consideration with the knowledge of concrete activities. In the case of holdings and growers who could gain ground in market conditions, the reasonable income has already been realized and its measure is continually developing. (*Németh,* 2004)

Owing to the changes emerging in the summer of 2006 concerning the order of taxation, the revenue office is obliged by the law to work out the expected indices of profitability in each profession. Those taxpayers who have their profitability indices below the established rate can expect strict control.

Presently, most ventures are showing deficits which go back several years, and they are exempted from the duty of paying partnership tax. In the future, all taxpayers obliged to pay partnership tax have to pay a partnership tax after their predictable profit minimally needed to survive economically. (The Government of the Hungarian Republic, 2006). According to *Kósa* (2006), the following factors can be problematic and serve as a basis for debate when evaluating the costs of agriculture: the calculation methods of indirect costs, innovative investments, capital costs and the estimation of expected income.

In my opinion, when defining the expected income of a family holding, we have to consider the income demand of the holding and the family.

Figure 1: The expected monthly net income needed for living and living standard

Family type	Living standard	Number	*(HUF)
1 adult without a child	Subsistence level	0	0
	Characteristic for the lower middle-class	3	92 000
	Characteristic of the middle-class	8	110 000
1 adult, 1 child	Subsistence level	7	107 000
	Characteristic for the lower middle-class	7	165 000
	Characteristic of the middle-class	0	0
2 adults	Subsistence level	0	0
	Characteristic for the lower middle-class	12	168 000
	Characteristic of the middle-class	8	182 000
2 adults, 1 child	Subsistence level	3	130 000
	Characteristic for the lower middle-class	35	204 000
	Characteristic of the middle-class	19	253 000
2 adults, 2 children	Subsistence level	2	175 000
	Characteristic for the lower middle-class	30	249 000
	Characteristic of the middle-class	12	297 000
2 adults, 3 children	Subsistence level	8	244 000
	Characteristic for the lower middle-class	4	303 000
	Characteristic of the middle-class	0	0
3 adults	Subsistence level	0	0
	Characteristic for the lower middle-class	14	243 000
	Characteristic of the middle-class	4	260 000
3 adults, 1 child	Subsistence level	0	0
	Characteristic for the lower middle-class	5	319 000
	Characteristic of the middle-class	17	321 000
Total		198	

*Average demand for income (HUF); Source: own research

Figure 2: Expected income for different family types in 2006

Type of household	Expected income (HUF)
The household of the active population	
1 adult	1 234 627
1 adult with 1 child	2 037 145
1 adult with 2 children	2 654 446
2 adults	2 160 590
2 adults with 1 child	2 963 110
2 adults with 2 children	3 580 411
2 adults with 3 children	4 074 266
2 adults with 4 children	4 568 121
3 adults	3 086 579
3 adults with 1 child	3 889 073
3 adults with 2 children	4 506 397
3 adults with 3 children	5 000 231
3 adults with 4 children	5 494 086
The household of pensioners	
1 person	1 111 156
2 persons	1 913 675
3 persons	2 716 169

Source: Own calculation

The expected income in the case of a family holding is the sum which remains for the family for securing the satisfaction of the family needs on an average level and a possible accumulation after the satisfaction of maintenance demands, regular renovations and all costs from all incomes of the year. The concrete measure can be defined only in a given period in a given area.

I carried out a survey among 198 growers to get to know the circumstances of farming and the living standard of the farming families. I asked about their opinions of their lifestyles and how much money they would need in ideal circumstances from farming and other resources in order to make a living. The summery of their answers can be seen in *Figure 1*.

On the basis of the answers, I considered 180% of the subsistence level to be the expected income for the year 2006, in the micro region around Nyíregyháza. On the basis of this, I summed up the predictable income for the different family types in *Figure 2*.

Securing the expected income can be connected to competitiveness. It can be stated that a family holding is competitive if – with supplementary incomes – it can secure the expected income for the family.

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Key aspects of investment analysis

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Abstract: This paper reviewed principally accepted methods applied to investment analysis. To describe every aspect of investment analysis fully would require far more space than available here, so we highlight only of few of its aspects.
This study collects several well-known bibliographies, contrasts them with each other and provides explanations for having done so. There are many questions about which authors and companies agree, including about how to apply certain methods, but on others there is disagreement.
Four dynamic methods (Net Present Value, Internal Rate of Return, Profitability Index, and Discounted Payback Period) are demonstrated from the viewpoint of application. Moreover, this study clarifies several sensitive questions, such as handling income taxes, inflation and uncertainty. Other examined issues are only mentioned at the end of this paper, and we will publish on these more thoroughly at a later date.

Keywords: net present value, internal rate of return, profitability index, payback period

Introduction

The capital investment analysis procedure is of primary importance in investment control. Once the investment has been made, it is largely a sunk cost and should not influence future decisions. The manager wants to obtain the maximum long-run cash flow from capital investments and to add further capital investments only when they will provide a net return in excess of the company's cost of providing the investment (*Anthony* et al., 1992).

Most proposals require significant amounts of new capital. Techniques for analyzing such proposals are described in many studies.

Different methods are used to analyse each type of investment because of differences in timing the expenses and their associated returns (*Kay – Edwards,* 1994).

In general, the most frequently used technique for large corporations is Internal Rate of Return (IRR) or Net Present Value (NPV) (*Ross* et al., 2005), (*Graham – Harvey,* 2001). According to Helfert (2001), the net present value (NPV) measure has become the most commonly used indicator in corporate economic and valuation analysis, and it is accepted as the preferred measure in the widest range of analytical processes.

An important point is that these techniques are in fact used in only about half of the situations in which, conceptually, they are applicable. There are several reasons for not using present value techniques in analyzing all proposals (*Anthony – Dearden – Govindarajan,* 1992).

- There is no feasible alternative to adopting the proposal. The necessity to comply with legislation is an example.
- The rationale for the proposal is something other than increased profitability. The need to improve employee morale or company image, or perhaps to meet safety regulations are good examples.

Companies usually have rules and procedures for the submission of capital expenditure proposals. These rules specify the approval requirements for proposals of various magnitudes and also contain guidelines for preparing proposals and general criteria for their approval (*Anthony* et al., 1992). Nevertheless, we have to say that in Hungary; only a few larger and developed companies have a working system for making investment decisions. Moreover, several firms do not use dynamic techniques, and in Hungary this statement is cumulatively true.

Discussion

When organizations evaluate the financial feasibility of investment decisions, the time value of money is an essential consideration. This is particularly true when a project involves cash flow patterns which extend over a number of years. This is called a discounted cash flow method. (*Budnick,* 1988) In order to discount all cash flows, an interest rate must be assumed for the intervening period. Frequently, this interest rate is an assumed minimum desired rate of return on investments. Sometimes this is a reflection of the known rate of return, which can be earned on alternative investments (e.g., bonds or money market founds). (*Budnick,* 1988) According to *Helfert* (2001), this rate is commonly based on a company's weighted average cost of capital, which embodies the return expectations of capital structure. From an economic standpoint, it should be the rate of return an inventor normally enjoys from investments of similar nature and risk. In effect, this standard represents an opportunity rate of return. In a corporate setting, the choice of a discount rate is complicated both by the variety of investment possibilities and by the types of financing.

The Net Present Value (NPV) method

The Net Present Value (NPV) of an investment is the present value of the expected cash flows, less the cost of the investment (*Ross* et al., 2005).

Cash inflows are treated as positive cash flows and cash outflows, including the initial investment as negative cash flows. If the NPV of all cash flows is positive at the assumed minimum rate of return, the actual rate of return from the project exceeds the minimum desired rate of return. On the contrary, if the NPV for all cash flows is negative, the actual rate of return from the project is less than the minimum desired rate of return (*Budnick,* 1988). While the NPV Rule has many advantages that have been explored in the literature, it also has numerous limitations. For example, the NPV Rule does not answer all our questions about the economic attractiveness of capital outlays. One of these is that the size of the NPV is affected by the size of the investment (*Helfert,* 2001), (*Warren,* 1982). The more central problem is that the concept of a NPV is awkward for a layman to understand. Most farmers have good ideas of what is meant by 'return on capital', but few will have a grasp of the implications of net present value. It is just that NPV is not a convenient yardstick. Ideally, we need an investment appraisal technique which will incorporate the discounting principle and yet give a percentage rate of return on capital, and such a technique is the IRR method (*Warren,* 1982).

Although this analysis allows one to determine whether a project satisfies the minimum desired rate of return criterion, it does not provide a measure of the exact rate of return. Methods for computing the actual rate of return are simple extensions of NPV technique (*Budnick,* 1988).

In the following, we present the most popular alternatives to NPV. "When it is all said and done, they are not the NPV rule; for those of us in finance, it makes them decidedly second-rate." (*Ross* et al., 2005)

The Internal Rate of Return (IRR) Rule

IRR is also called the marginal efficiency of capital or yield on the investment. (*Kay – Edwards,* 1994)

Naturally, the result of a given project will vary with changes in the economic life and the pattern of cash flows. In fact, the IRR is found by letting it become a variable that is dependent on cash flows and economic life. In the case of NPV and PI, we have employed specified return standard to discount the investment's cash flows. For the IRR, we switch the problem around to find the one discount rate that makes cash inflows and outflows exactly equal (*Helfert,* 2001). It is the discount factor that sets NPV to zero.

Once the IRR has been calculated, it can be compared with the cost of capital (*Warren,* 1982). Accept the project if the IRR exceeds the required return.

Unlike the NPV method, IRR can be used to rank investments which have different initial costs and lives (*Kay – Edwards,* 1994). Select alternative with the highest IRR.

As a ranking device for investments, the IRR is not without problem (*Brealey* et al., 2006), (*Fónagyet* et al., 2003), (*Helfert,* 2001), (*Katits,* 2002), (*Lee* et al., 1980), (*Ross* et al., 2005), (*Warren,* 1982).

- It does not distinguish between investing and borrowing.
- IRR may not exist or there may be multiple IRR, mainly not typical investments.
- Problems with mutually exclusive investments.
- The rate of return does not reflect the size of a project, it is the Scale problem.
- The timing problem. The NPV and IRR methods give conflicting ranking for projects.
- Assumption concerning the reinvestment rate

NPV versus IRR

Hardacer et al (2004) support the widespread recommendation by economists that NPV is the most appropriate investment criterion. When comparing investments with different time horizons, the corresponding recommendation is to use equivalent annuity as the choice criterion. This is simply the NPV averaged over the life of investment. In practice, the recommendation in favour of NPV is often not followed. Instead, the internal rate of return (IRR) is widely used in preference to NPV, mainly on grounds of ease if interpretation – this advantage is highlighted by *Ross – Westerfield – Jaffe* (2005) also –, especially for comparing investments of different scale. Hardacer et al (2004) mentioned also that the two criteria will not always rank alternative investments in the same order.

In general, NPV (ideally supported by the PI) is preferable on grounds of consistency, with IRR having values of convenience and ease of communication. (*Warren,* 1982) *Illés* (2002) emphasizes the disadvantages of NPV method and prefers IRR method. In deciding whether to use the IRR or the NPV method, it should be recognized that in most cases both give the same accepting or rejecting decision for a single project. The NPV method tends to be somewhat easier in terms of the computational procedures required. The IRR method has the advantage of expressing the result as a compound rate of return, which makes it easier to compare the project under consideration with financial instruments and other investment opportunities. In many cases where two or more projects must be ranked, it will be helpful to use both methods and draw a diagram of the results (*Lee* et al., 1980).

The Profitability Index (PI) method

In situations where a limited amount of capital is being allocated among several independent projects, it is sometimes helpful to rank them on the basis of the Profitability Index (*Lee* et al., 1980), (*Brealey* et al., 2006). After calculating the NPV of a series of projects, we might be faced with a choice that involves several alternative investments of different sizes. This choice is based on the same inputs, but differs in format, focusing on the relative size of the project (*Helfert,* 2001). There is no understanding

concerning the matter of PI. Contrary to other authors, according to *Brealey* et al. (2006), PI is NPV divided invested costs. It gives different explanation to this indicator. It has problems with mutually exclusive investments (*Ross* et al., 2005).

The Discounted Payback Period (DPP) Rule

The payback period of a project shows us the time it takes the project to "pay back" its initial investment, taking the time value of money account. This value is the number of years it takes before the cumulative forecasted cash flow equals the initial outlay. The payback rule says: only accept projects that "payback" in the desired time frame. This method is flawed, primarily because it ignores the timing of cash flow within the Payback Period, and the present value of payments after the payback period (*Brealey* et al., 2006), (*Ross* et al., 2005). It is a break-even condition in value creation. It is achieved at the specific point in time when the cumulative positive present value of cash benefits equals the cumulative negative present value of all the cash outlays (*Helfert,* 2001).

Handling income taxes

According to most authors, investments are better analysed using after-tax net cash flows; therefore all values should be on an after-tax basis in a practical application of methods. Whenever after-tax net cash flows are used, it is important that an after-tax discount rate also be used (*Kay – Edwards,* 1994), (*Lee* et al., 1980).

Although some companies evaluate projects on a before-tax basis, most find that the best analysis is on after-tax basis (Budnick, 1988). There are two things that must be considered when calculating after-tax cash flow: investment credit and depreciation. The interest of the credit increases cash outflows, so it reduces taxable income. Depreciation is not included in calculating net cash flows because it is a non-cash expense. However, depreciation is a tax-deductible expense which reduces taxable income and therefore income taxes (*Kay – Edwards,* 1994), (*Lee* et al., 1980).

Helfert (2001) not only emphasises the importance of depreciation as a tax shield effect in investment analysis, but considers accelerated depreciation possibilities and effects for return of investments as well. On the contrary, *Illés* (2002) emphasises the methodological problems of using after-tax cash flows; therefore, she puts before-tax cash flows forward.

Handling inflation

The most common error in investment appraisal is the calculation of the rate of return in real terms, i.e. not building inflation into cash flow or profit estimates, testing against a cost of capital (discount rate) expressed in nominal terms. The result is the rejection of many projects which would in fact have been worthwhile (*Warren,* 1982).

When accounting for inflation in capital budgeting, we should maintain consistency between cash flows and discount rate (*Ross* et al., 2005), (*Kay – Edwards,* 1994), (*Warren,* 1982), (*Brealey* et al., 2006), (*Helfert,* 2001). Thus, if no inflation is built into the basic calculation, the result should be compared with the cost of capital in real terms. In other words, if no inflation is calculated in cash flows, discount rate in real terms should be used, and conversely, if inflation is calculated in cash flows, discount rate in nominal terms should be used.

In many ways, this is the simplest solution to the inflation problem, as long as it can be assumed that the values of all inputs and outputs will rise in price at the same constant rate over the project life, and discounted by the nominal rate. In this way, we can take that situation into account also when costs are likely to rise faster than the prices of outputs. It is a common story in agriculture (*Warren,* 1982).

Handling risk and uncertainty

In most cases, the initial outlay can be estimated with reasonable accuracy. Estimates of the other cash flows are nearly always subject to some degree of uncertainty. It must be expressed consistently in developing the investment analysis (*Helfert,* 2001), (*Lee* et al., 1980).

Given the uncertainty that may exist about the future, it is often useful to make a sensitivity analysis, which asks a number "What if" questions. Such quesitons can be characterized thus: 'What changes in x will result from a given change in the level of y?', where x is a measure of profit, cash flow, capital or NPV and y is one of the components in that measure, such as input price, input volume, output prise, output volume, interest rate, and so on. This analysis involves changing one or more values in the net present value equation (called model) and the recalculation of not only the NPV, but other indicators as well (*Helfert,* 2001), (*Kay – Edwards,* 1994), (*Warren,* 1982).

The analysis will give an impression of the risk of the investment but, perhaps more importantly, it will also show the elements for which the balance is most sensitive. On the other hand, it is a technique which allows the manager to examine the likely effects of his worst, best, and most likely assumptions (pessimistic, expected, and optimistic cases) concerning the outcome of a project (*Warren,* 1982).

The problem with sensitivity analysis is that the underlying variables are likely to be interrelated, and we can not consider them properly.

There are other techniques to handle uncertainty (*Brealey* et al., 2006), (*Ross* et al., 2005), see them shortly below.

Scenario Analysis: Project analysis giving a particular combination of assumptions. It allows managers to look at different but consistent combinations of variables.

Simulation Analysis: Estimation of the probabilities of different possible outcomes. Monte Carlo Simulation is a tool for considering all possible combinations.

Break Even Analysis: Analysis of the level of any variable at which the company breaks even. Point at which

the NPV=0 is the break even point. It is calculated on a net present value basis, gives managers minimum targets.

Decision Trees: Allow us to graphically represent the alternatives available for us in each period and the likely consequences of our actions.

Further questions in connection with investment analysis

- Step for the analysis of investment, estimation of cash flows
- Handling investment financed by credits or other capital
- Comparing investment with unequal lives

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Land regulation in the European Union and Hungary

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Abstract: Land, as it constitutes one of the bases of agricultural production, has a special position in the economic-judiciary surroundings of states. In Hungarian history, land ownership has undergone many radical transitions. The decade starting from the political and land regulation reform is a short time in land tenure. In spite of it, there have been several important changes in land ownership structure. In the 1970s and 80s, large agricultural firms, especially co-operatives and state farms, were common in Hungary. State hegemony was typical of land ownership and use, with rather small, privately owned parcels. Since privatization began after 1989, this tendency has changed, with land owned by farmers. In the following article, I am going to review the laws regulating land ownership and land use in Hungary and in the European Union.

Keywords: land regulation, land law

Materials and methods

In this article, the following will be shown:

- Hungarian regulations which have an impact on the land structure in Hungary
- The regulations of the European Union
- The proposals of the World Bank.

In the course of my research, I studied the regulations and I used the literature on land law.

Discussion

Areas of regulations

There are two ways in which land is used:

- the private use by the owner,
- rented land.

According to this regulation, land use can be divided into two parts:

- regulations on entering into ownership of land,
- regulations on leasing land

When conducting research into land use, the regulations of both the European Union and Hungary have to be considered.

Land law in the European Union

The land law in the European Union controls:

- the freedomof settlement under the EC Treaty,
- the freedom of private entrepreneurial activity,
- the free flow of capital, with the exception that derogation in the field of land leasing can be initiated.

Direct regulation of land is a right reserved by each of the legislative bodies of the individual member states, and based on their individual historical, economic and social pasts. However, the regulations of the European Union must be taken into account.

Burger (1996) shows that, despite individual national regulations, there is a tendency in the land policy of the states: namely, irregardless of the individual national regulations of the member states concerning land ownership, there are similarities in the following areas:

- Limitation of the size of farms: Minimal and maximal sizes are determined by the regulations of the member states. These sizes reflect significant differences and they are often used for categorizing farm size by farm type.
- Limitation of the number of farms run by one farmer.
- Regulation of provisions for obtaining land ownership and settlement.
- Special inheritance laws in agriculture.
- Compulsory and supported land acquittance
- Obligation to maintain the productivity of the soil,
- Regulation on the extraction of parcels of land from agricultural production,
- Obligated agricultural land use in special areas.

Several forms of land use systems are used in the European Union, and the regulation of land leasing is harmonized to each country's system. In liberal states, the parties of the contract have the right to set land-hire conditions. In states where strict rules are applied (the

Netherlands, Belgium, Scotland, France), land leasing is regulated in the following areas:

- period of land lease,
- rental,
- limitation of the leaser's right to renunciation,
- payback for the rental's investment,
- regulation of sublet,
- regulation of right of pre-emption.

Regulations stipulating the acquisition and lease of the land used by the member states of the European Union are very different. The advantage of strict rules is that they facilitate the development of a stable land structure and provide security to renters, but they are bars for free capital-flow and for the development of a more efficient land structure.

Land regulation in Hungary

Since 1990, in Hungary, the following laws have impacted on the development of the presently-used land owner and land use conditions:

- law 1987/I. about co-operatives,
- law 1991/ XXV. about compensation,
- law 1992/XXIV. (second compensation law)
- law 1992/XXXII. (third compensation law)
- law 1992/IL. (fourth compensation law).
- law 1994/LV. (land law)

Sometimes, the price of compensation tickets fell to rather low levels, so those who bought the tickets at this low price had a great opportunity to gain a huge asset at a favourable price. All these resulted in the problem that often those who had acquired cheap lands did not work in agricultural sectors, or did not have skills in agricultural activities. As a consequence, this led to the frittering of lands.

To concentrate small farms and to clear the ownership of lands in joint ownership, the 'perpetuity for land' program was declared. Many statutory orders were a result of this program:

- Statutory order 210/2004.
- Statutory order 255/2002.
- Statutory order 115/2003.
- Statutory order 268/2005.
- Statutory order 325/2005
- Statutory order 38/2006.

The act of 1994/LV. about the land regulates:

- Acquisition of ownership
- Leasing
- Proceedings about creating field tables
- Use and protection of agricultural land.

The presently applied land law is not strict. A minimal period allowed for land leasing has not been set and "the maximum volume of land leasing is regulated by easily by-passable acts" *Tanka* (2000). During the treaty accession to the EU, Hungary requested the right to further enforce the act excluding foreigners from land acquisition. This prohibition for foreigners will remain for the 7 years following accession, i.e. from 2004, and may be prolonged by an additional 3 years. However, this lengthening of the exclusion provision may only be allowed if national land prices do not reach the average of prices for parcels of similar quality and size in the European Union.

Our land law violates the criteria of free flow of capital by limiting land use in time and in space and by excluding foreigners from buying agricultural lands.

Proposals of the World Bank for updating land leasing

According to the World Bank, "The owner of the land may be the person, who can afford to buy it". To ensure the free flow of capital, the proposals of the World Bank are the following:

- the right to get land ownership by legal entities must be guaranteed,
- the maximal size of land acquisition should be cancelled,
- the right to acquire land ownership by foreigners should be guaranteed,
- the freedom of contracting (without state interference) should be permitted during land leasing,
- law protection must be given for those who let out land in contrast to the EU's practice, which provides law protection to tenants.

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Opportunities for the inclusion of less-favoured areas in the Northern Great Plain region

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Abstract: Agricultural economics and its part, rural economics plays a determining role in Hungary. Most rural families perform self-sufficient farm production for a living. In the present conditions of infrastructure and human resources, there are regions where the only rural alternative for employment is agriculture. There are significant differences among the regions considering natural resources and equipment available for farm production, and these differences affect potential income (*Vörös* et al. 1999). The primary aim of the European Union is to reduce such differences among the regions.The new research program of the University of Debrecen tackles the fundamental questions of regional development through the research and management of social asymmetries by using economic and other relevant tools. This program also provides suggestions for facilitating the development of less-favoured areas.

Keywords: less-favoured areas, small regions in the northern great plain

Introduction

The common characteristics of regions defined as "country" emerge among widening social differences. We could say that wealth and poverty create such an asymmetric situation, the acceptance of which violates human tolerance and welfare efforts improving living standards. The new research program would like to create a scientific bridge by means of research carried out at small area level and socio-economic models based on these explorations. This bridge would make the mechanism of theoretical knowledge and practical realization permeable. The aims of the program are the following: to improve the opportunities for income for families and education; to maintain and improve physical and mental health and conditions; to develop conditions for self-improvement, progress in economic and intellectual improvement for settlements; to keep local population, to show the attractiveness of regions, to create conditions for capital acquisition and operations. (*Borsos* et al. 2005). These aims correspond with the basic aims of rural development which are the followings: the improvement of living circumstances, income opportunities for rural inhabitants, the natural sources of energy, maintenance of the balance and quality of agricultural economy and that of healthy, natural living styles and standards.

Materials and methods

This paper presents the position and performance of the Northern Great Plain region and its areas. In a further research study, I would like to analyze the resources and opportunities of the small areas in the region. On the basis of these results, I would like to create a model, which is practically applicable to increase the country's support potentials and prevents the influx of the population into cities.

Results

The backwardness of the North Plain region is well-known; therefore, it is highly important to study. The region encompasses 17.729 square kilometres (it is 19.1% of Hungary); the population is decreasing, last year it was less

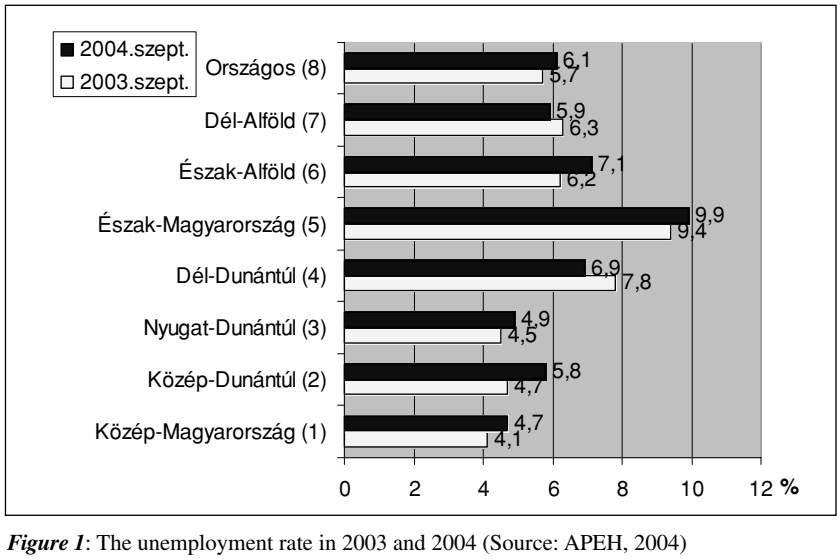

Figure 1: The unemployment rate in 2003 and 2004 (Source: APEH, 2004)
(1) (Central Hungary, (2) Central Transdanubia, (3) Western Transdanubia, (4) Southern Transdanubia, (5) Northern Hungary, (6), Northern Great Plain, (7) Southern Great Plain, (8) Avarege

than 1.5 million, 15% of the population of Hungary. The unemployment rate of the region is 7.1% *(Fig. 1).* This region provides 9.9% of the country's GDP per capita. Its GDP is 64.4% of the national average (APEH, 2004)

On *Fig. 2* we can see the spatial distribution of gross domestic product in the average of EU 15 percentage. This figure represents the difference among regions well. The value of the GDP in the North Plain region is 35%.

Comparing the regions in the Northern Great Plain region, we can conclude that 31% of them are most disadvantaged areas. Efforts to include these less favoured areas have not produced tangible results, so differences among the regions have prevailed. We can state that significant differences are among the regions and within regions. The consequences of these differences – like migration from these areas – are serious and irreversible. Therefore, the primary aim of the European Union is to reduce the differences among the regions.

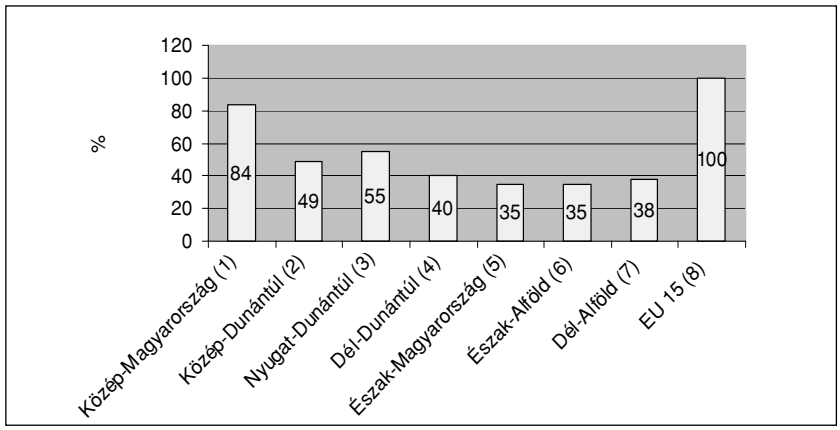

Figure 2: The spatial distribution of GDP in the average of EU 15 percentage
(1) (Central Hungary, (2) Central Transdanubia, (3) Western Transdanubia, (4) Southern Transdanubia, (5) Northern Hungary, (6), Northern Great Plain, (7) Southern Great Plain, (8) EU-15 Avarege
(Source: Harsányi et al., 2005) Regions (1), Percentage(2), GDP per capita(3)

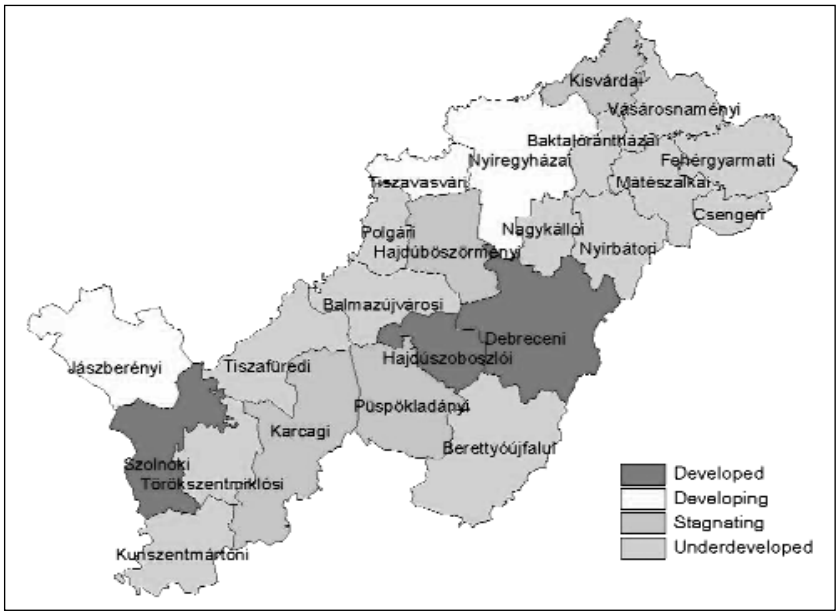

Figure 3: Small regions in the Northern Great Plain region according to development (Source: Faluvégi 2004)
As the Fig. 3 shows among the small regions of the Northern Great Plain region there are not dynamically developing areas. Among the 23 areas of the region 12 are under-developed.

Favourable natural endowments facilitate farm production, attract industrial output and tourism. The region is famous for its healing waters that are utilised in the thermal baths of Hajdúszoboszló and Hajdúnánás. The level, swampy areas and the „puszta" provide the characteristic face and natural assets of the Tiszahát and Hortobágy. The region is supervised by the Hortobágy National Park and it is a centre of rural tourism. The region is famous for its folk traditions. The area around Debrecen is renowned as an educational centre; it is without doubt the cultural, economic, transportation and conference centre of the Northern Great Plain. Its many historical monuments and architectural heritage provide visitors with ample reason to come and experience its variety. (*Dusek,* 2000)

These favourable endowments are just potentials because the shortage of cash hinders development.

The EU accession is a good chance to finance these developments. It is important that we should exploit the financial resources which could help to solve economic problems.

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Risk and risk management in Hungarian sheep production

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Abstract: The aim of this paper is to give an overview of the risk attitudes of Hungarian sheep producers regarding the changes they have had to go through since the political changes of 1989–1990. Moreover, the objective of this study is to strengthen the empirical basis for risk analysis by identifying the importance of farmers' risk attitudes. The results of a nationwide survey of over 500 sheep farmers presented a framework of risk attitudes, risk sources and applied risk management techniques of livestock producers.

Keywords: risk sources, risk management, sheep farming, EU accession, field survey

Introduction

It is acknowledged that risk and uncertainty play an important role in agriculture world-wide. Farmers and producers are exposed to the difficulties of the market environment mainly in countries with changing and developing market economies. The need to uncover the sources of risk and uncertainty in agriculture is an inevitable managerial task, and this was especially the case under the unregulated circumstances that emerged after the collapse of Hungarian agriculture in the 1990s. Farmers found themselves within new land, ownership, and tax conditions which required conscious entrepreneurial behaviour and thinking. Consequently, farmers had to confront new risk sources and uncertainties given by the new and special market environment in Hungary.

Additionally, the preparation for EU accession with its risk factors has emerged as a new challenge for the Hungarian farmer. Agriculture is also an open-air system, and it is therefore greatly exposed to unfavourable and uncertain physical environmental factors, such as weather and rain. Farmers deal with sensitive living creatures during their work, which is also a risk factor in their businesses.

After the political change, the Hungarian sheep sector went through a sharp transition from a regulated – but safe – so-called planned economy, into an unknown challenge: the so-called market economy. Farmers had to accept the new situation and adapt to its new economic rules. Agriculture as an industry lost a huge part of its assets by the collapse of co-operatives and state farms. The population of animal production decreased by 50% in all branches. Sheep production, a neglected sector, lost more than half of its sheep population, which was 2.2 million in 1987 and only 734 000 in 1997. (*Jávor* at al., 2001) Privatization was not able to solve the problems that emerged after the collapse. For example, concentration and population density have also became problems, because 52% of sheep farmers own less than 60 ewes, which is far from the economies of scale (350–400 ewes per farmer). Before the political change, thousands of ewes were bred on state farms. There was no remarkable diversification for different production purposes in the sheep sector, which means that 90% of the sheep population is made up of merinos, a trial purpose sheep variety, without eligible efficiency. The biggest difficulty was the lack of capital and subsidies after 1990, and it still exists in the sheep sector. The only asset which is definitely given is the grassland area of over 1.4 million hectares – which has an unfavourable ownership system. (*Jávor* at al., 2001/3) We also have to mention the human resource problem, its skills and qualifications. Due to exposed working conditions, becoming a shepherd is not an attractive carrier and no special shepherd training schools existed in the last 10 years in Hungary. Because of a lack of marketable goods, there was a notable decrease in our marketed sheep products as well, when the demand and quotas were increased, but the direction of marketing was not changed (Italy, Germany, Greece) during the 1990s. Unfortunately, domestic consumption was and still is very low, only 0,2–0,3 kg/capita, so sheep and lamb meat are not popular in Hungary, and these are also expensive goods.

On this basis, sheep farming is especially exposed to general and special uncertainties and risk factors in Hungary, so producers have to apply different risk management strategies, depending on the scale and purpose of their sheep production businesses.

In our paper, we tried to find out Hungarian livestock farmers' risk aversions and their ability to handle and manage risk in their businesses.

Data and method

The method was based on a representative national field survey involving 10% of sheep farmers and 80% of sheep farms in the Hajdú-Bihar Region (and makes up 1/3 of the Hungarian Sheep Population). The questionnaire as a tool of data collection including three main parts, adjusted according to the possible sources of risk, applied risk management techniques and property and personal information about farmers. Farmers involved in the survey were asked to evaluate risk factors and risk sources according to their importance for them. Another task for them was to suggest solutions and techniques to avoid or reduce risk in their production under the given conditions.

First, farmers were asked to evaluate 5 general and 32 special, most possible risk sources on a 5-scored Linkert-scale. These potential sources were listed according to categories in Table 1. In the second section, they had to choose from 32 listed management techniques which they applied to avoid or decrease risk in sheep farming. The applied techniques were also evaluated according to their importance in a 5-scored Linkert-scale. The listed sources of risk and risk management techniques were gathered from the literature (*Martin,* 1996) and from Hungarian national and geographical endowments. The grouping of risk sources and management techniques was also based on literature (Gabriel and Baker, 1980, Sonka and Patrik, 1984) *(Table 1.)* The third section of the questionnaire covered the main information about the person, land, animals, material and financial sources, costs and debt conditions of the farm. The evaluation of the gathered data was made by basic statistics (SPSS 10, MS Excel 5.0).

Table 1: Categories of Risk Sources and Risk Management Techniques

Business risk				Financial Risk	Risk Management Techniques
Production	Market	Institutional/ legal-social	Personal/ Human		
-type -technological and environmental conditions and circumstances	-prices of outputs and inputs -cooperation	-regulations -restrictions -laws -supports -information -contracting -insurance -security	-age -attitude -family -background -education and skills	techniques and methods of dealing with finance -debt and payment management -diversity of investment	- production - marketing - financial

On the base on Gabriel (1980) and Baker and Sonka and Patrik (1984)

Results and conclusion

Within the survey, we obtained 520 questionnaires and 516 were suitable for processing. Farmers were selected according to the number of ewes owned (as a measure of farm size). Distribution of the farms is shown on Chart 1. Only 6% of the sheep farmers own more than 300 ewes in a flock, which can set the limit for the economic size of sheep farming. This also means that sheep farming is, in most cases, only a part time job for farmers and retired farmers. Another interesting statistical datum is the average age of the farmers, which is 48 years. Additionally, most sheep farmers had already retired. 85% of the enterprises were private ones without any labourers and only 2% of them were operated in any kind of company or corporation.

Most of them had land and pasture as well. 80% of them hire the pasture and only 20% own it. 60% of farmers use less then 10 hectares of pasture and only 4% of them use more than 100 hectares. 92% of the farmers said that they had no debts.

Risk sources

Risk in sheep farming may emerge from a number of sources. These include mainly production (or technological) risk, financial risk, price risk and human risk as well. Production risk is the variability inherent in the production process itself. It can include unfavourable weather conditions, diseases, pest infestations, and of course the special characteristics of breeding animals. (*Hardaker* et al., 1998) This type of risk impacts on profit and yields. On the other hand, price risk is associated with fluctuations in the price of purchased inputs (feeding stuffs, transportation and veterinary services) and saleable outputs (lamb, mutton, milk, wool, breeding animals, dung), and impacts on profit through input costs and output prices. The combined risk from both of these sources is termed business risk, and tends to be reflected in variability in the net operating income (or net cash flow) of the farm business.

Producers' assessment of production risks was not quite uniform regarding the different production conditions. They made a differentiation according to the quality and the quantity of their pasture and production area, size and type of the flocks of their sheep.

Financial risk is essentially the risk being unable to meet prior claims with the cash generated by the farm, and is determined by the dispersion of net cash flows, the level of debt and other pools of financial resources. Producers evaluate the components of financial risk to be the most severe in their evaluations. The level of capital and debt might especially constitute the biggest problems for their businesses.

Marketing and price risk were also emphasized as main sources of risk in sheep farming, because of contracting practice and the uncertainty and fluctuations of lamb market prices. Furthermore, the information about prices and market trends influence a farmer's economic possibilities. The traditional view of risk, which divided sources of risks into production, price and financial risks allow the impact of each of these sources of risk on the farm operation. This can be clearly traced by observing the influence on yield, output prices, input costs and residual cash flows to the owners' equity. The risk associated with government policy slows down the pace of economic reforms and subsidies and leaves agriculture or the sheep sector in a relatively disadvantaged position, which

is likely to have implications on on-farm management decisions, as it occurred in Hungary in the 1990s.

Other less obvious sources of risk can also be envisaged. These include technological risk, legal risk and human risk. Although these additional sources of risk are less easily observed than the more familiar categories of production, price and financial risk, nevertheless they can have a crucial impact on the farm business. We can highlight the human factor, which is a big problem in sheep farming. It is very difficult to find skilled and reliable staff for sheep farms. The responsibility of staff involves taking care of newborn lambs and the quality of milking, which are both critical factors of income on a sheep farm. Human risks may come from the situation and changes in conditions of the farmer. Unexpected health problems, accidents, or changes in family situations may cause serious risk factors.

It was identified that rainfall and weather conditions are the main sources of risk for sheep farmers, as well as lamb and input prices. *Table 2* shows the importance of risk sources according to the farmers' evaluation. Rainfall and lamb prices had the highest average scores of 4.2 and 4.1. It was remarkable, but reasonable that lamb prices and output were highly mentioned by sheep farmers as risk factors in their production, because lamb is the main product of Hungarian sheep sector and it is highly exposed to the Italian market. Input prices had an average score of 3.9, which is the result of variable feed prices and the increasing energy prices during the accession period. Changes in Hungarian agricultural policy had also a relatively high score of 3.5, which also comes from the unstable subsidies and market regulations in agriculture during the last years. It was similar as in an unregulated agricultural system, but without reasonable product prices. Epidemics and theft were mentioned with an average of 3.5 score, which expresses their importance for sheep farmers and also means that protection against such occurrences is a remarkable cost. Relatively low importance was detected in risk sources regarding milk and wool. Wool is a by-product, so it may serve as extra income for several years, but generally this income hardly covers sharing costs. Milk is a good product with reasonable price and subsidy, but its quantity is so low in Hungary (1.5 million litre/year) that it cannot be a risk source for milking farmers. Breaking contracts and a lack of contracts are generally low scored factors. The reason for this is that unfortunately, contracting is accidental in the Hungarian sheep sector and it does not mean safe business for the farmers.

Table 2: Importance of Different Risk Sources

Risk Sources	% of Valid Answers	Mean	Std. D.
Rainfall during the year	99,2	4,2	1,0
Changes in lamb prices	96,7	4,1	1,0
Changes in input costs	98,4	3,9	1,1
Other weather conditions	99,4	3,6	1,1
Changes in sheep product prices	99,2	3,6	1,2
Changes in Hungarian Agricultural Policy	98,4	3,5	1,1
Epidemics	98,8	3,5	1,4
Theft	98,8	3,5	1,2
Accidents or health problems	99,0	3,4	1,3
Changes in Hungary's economic situation	98,4	3,4	1,1
Animal health problems	98,3	3,4	1,2
Unethical merchandise	98,8	3,2	1,2
Missing lamb selling contracts	88,4	3,2	1,4
Animal reproduction problems	98,8	3,2	1,1
Changes in wool prices	87,6	3,2	1,4
Changes in production yields	99,2	3,1	1,1
Changes in international policy and economy	98,1	3,0	1,2
Changes in local laws and regulations	98,3	2,9	1,1
Environmental regulations	98,3	2,9	1,2
Natural disasters	98,1	2,7	1,4
Operation of organizations in the sheep sector	98,6	2,6	1,1
Operation of Production Boards	98,4	2,6	1,2
Changes in land prices and rent costs	95,2	2,6	1,4
Lack of integration for producers	98,1	2,6	1,2
Missing sheep milk selling contracts	79,1	2,5	1,5
Changes in family situations	98,4	2,4	1,3
Missing breeding animal selling contracts	66,3	2,3	1,6
Breeding policy, hanging of animal breeds	98,4	2,3	1,3
Changing of keeping technology	98,1	2,3	1,3
Breaking of contracts	84,5	2,2	1,4
Changing of labour costs	95,7	2,2	1,3
Selling options for by-products	97,3	2,1	1,2
Changing of interest rates	87,8	2,1	1,4
Changes in sheep milk prices	67,2	1,8	1,3
Missing wool selling contracts	60,5	1,8	1,3

Consequently, producers cannot influence their main risk factors, such as prices and weather conditions or financial and production risk factors.

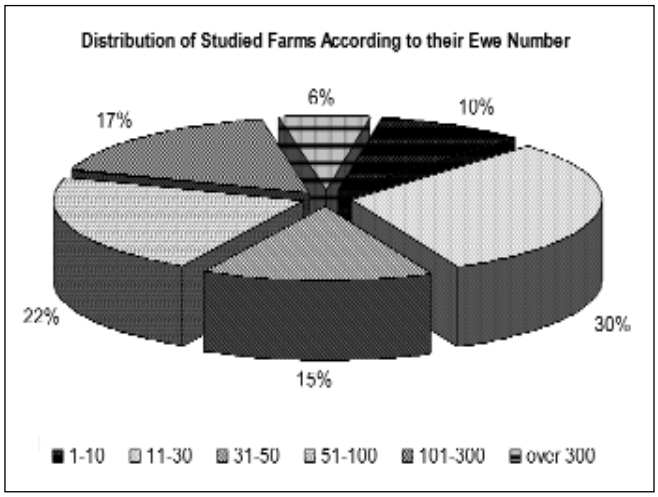

Chart 1: Distribution of studied farms according to their ewe numbers

Table 3: Importance of risk management techniques and the percentage of their use

	% Use	Mean	Std. D.
The most frequently used management techniques	≥50%		
Cooperation integration of producers	74,4	3,8	1,0
Maintaining feed reserves	73,6	3,5	1,0
Up-to-date market information	65,9	3,7	1,1
Monitoring of pest, diseases, crops, prices	63,4	3,7	1,0
Weather forecasting	60,7	3,6	1,0
Security, safeguarding	58,3	3,8	1,0
More crop varieties, breed or dual-purpose animals	58,1	3,5	1,0
The least frequently used management techniques	≤30%		
Upfront contracting	28,9	3,4	1,1
Long-term flexibility	27,9	3,2	1,0
Not producing to full capacity	25,8	3,6	1,0
Irrigation of crops and grassland	20,0	3,7	1,0
Off-farm investment in other industries	18,0	3,7	1,1
Debt management, monitoring,	16,3	3,6	1,0
Keeping debt low	16,1	3,5	1,0

Risk management

Risk management strategies, which can reduce risk, may incorporate production, marketing and financial responses. Production response includes selecting enterprises, fields or animals, which are known to have low yield capacities. Enterprise diversification may also be an appropriate way to reduce risk. Modification of technical and technological practices may serve also as a tool to reduce risk on the sheep farm. Selecting production aims (meat or milk production, dual purpose or trial purpose genotypes) to spread product sales over time.

Marketing responses may include contracting, selecting markets or merchants. Upfront contracting or negotiating on the future markets allow products and in some cases inputs to be priced before delivery.

Changes in financial management practice can also ameliorate risk. Responses can include maintaining additional liquidity by holding more liquid assets and matching the debt repayment structure with the income generating pattern of any purchased asset. Increasing the ratio of equity capital to total assets will also reduce the financial risk associated with the farm. (*Martin,* 1996.)

Although the wide range of risk-reducing strategies may be possible in principle, the number of strategies, which are actually available to an individual farmer, is likely to be much more limited in practice. Some strategy types may not be appropriate for a farm of a particular size or production-type, type of ownership structure, or may not be available in a particular region. Finally, the choice of an appropriate risk-reducing strategy is also likely to be influenced by the flows of production, marketing and financial information and managerial skills of farmers. In some respects, appropriate information collection and utilization might well be considered a risk reducing strategy in its own right or we can mention personnel connections, which are difficult to measure.

The most efficient combination of enterprises and selling options may be of limited value if their strategies for managing risk are perceived by producers less efficient than their ability to remain flexible with respect to enterprise selection and marketing decisions, to be able to respond to changing weather and price conditions very rapidly and opportunistically. Sheep farming is especially exposed to general and special uncertainty in Hungary, so producers have to apply different risk management strategies depending on the scale and purpose of their sheep production. Self-production and the maintenance of feed reserves instead of buying them, applying low cost production systems, keeping debt low and applying for the available government subsidies are the main risk management strategies in sheep farming. Variation exists between farmers in the importance attached to their marketing strategies, which is based on the quantity and quality of their products. However, contracting is considered an important risk management strategy of sheep farmers.

As a result of our survey, we found that sheep farmers try to apply risk management techniques under their given conditions whenever possible. Economies of scales and the lack of capital are difficulties to cope with. Table 3 contains the most and least used risk management techniques evaluated by sheep farmers. The most widely applied techniques were cooperation between farmers and joining to producer groups or integrations, which was applied by 74.4% of the farmers and scored to 3.8. Maintaining feed reserves got a score of 3.5 and was applied by 73.6% of producers. Gathering market information and monitoring were also highlighted by farmers as useable tools for decreasing risk. Security and safeguarding also obtained scores of 3.8. These techniques are in correspondence with the main sources of risks.

The least-used techniques (applied by 16% of the farmers) regard debt management and off-farm investment, which shows that most farmers are poor; have no equities and capital to resort debt or other investments. Irrigation and not producing to full capacity cannot be widely applied by Hungary in sheep production, where the average rate of lambing is 0.9 and irrigation is an extra cost. Therefore, farmers try to utilize all the sources they have at the lowest possible cost.

Conclusion

As a result of the survey, we realized that farmers were forced to re-evaluate the sources of risk which they face after the political and mainly economic changes. They try to take measures to protect their businesses against risks coming from new regulations. This is likely to result in changes to traditional patterns of risk aversions and management as sheep farmers have adjusted to the new farming environment. It is clear that the external environment sheep farmers and producers face is now fundamentally different to what it was 15 years ago, and this trend is likely to continue due to the EU accession and the changing economic environment. This was also demonstrated by this study. It was also revealed that sheep farmers are not so exposed to market regulations, because overproduction is not typical of this sector. Without production quotas, they have better survival chances than other ruminant sectors in Hungary. A possible aim for this sector would be to enhance quality meat and milk production competitiveness.

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„Green" Public Relations

Public relations in the sector of products and services for Polish agriculture

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Summary: The field of Public Relations has undoubtedly been assuming growing importance in Poland. Understood as an element of marketing communication or a function of company management, it has a significant impact on company's external and internal environment. According to Puls Biznesu[3] the value of the Polish PR market amounted to 250m PLN in 2005, which is a 20% increase as compared to 2004. According to the author Urszula Światłowska, "the turnover of PR agencies is growing and even smaller companies demonstrate their interest in the services". Considering this, it can be assumed that PR activities will soon be initiated by many smaller Polish companies, often connected with the agricultural sector. The change discussed by the authors of the article reflects the phenomenon of PR's growing importance among other communication channels in Poland.

Keywords: public relations, polish agriculture

Activities involving the creation and maintenance of a positive image, aimed at providing constant and consistent communication with the environment, are of crucial importance for companies, such as: Orlen, LOT, PZU or TP S.A. However, the observations made so far and the knowledge of the market allow me to claim that the sector of companies producing for agriculture is delayed in terms of development stage and range of PR activities as compared to other business areas, e. g. IT, pharmaceutical business, power industry, insurance or finance. What is the reason behind the situation? It might be the recent transformation in Polish agriculture following the accession to the European Union, or perhaps it is due to the lack of a certain need? Personally, I would concur with the second argument. In my opinion, EU accession marks the beginning of technological development of the Polish countryside. Obviously, an increased demand for these products and services has to be based on further efforts to improve farmers' awareness as to the need of taking advantage of civilization benefits. New technologies, modern machines, plant protection substances increasing quantity and improving production quality, knowledge on the subsidies system, structural programmes, investment resources, consulting services are only the main of these benefits. The factors enumerated here are in my opinion the basis for the growth of demand. This kind of growth results in increased volume of production as well as goods and services offered, leading to increased competition and the use of sophisticated marketing activities, necessary to support growth. Among the activities aimed to increase farmers' awareness of the need to benefit from the abovementioned factors are Public Relations. The transformation of Polish agriculture following EU accession has therefore caused a chain reaction, directly translating into activities of companies aimed to manage the growing demand *inter alia* by means of PR.

Analyzing the market sector in question, it is important not to ignore the end consumer of products provided by the companies discussed here, i.e. the agriculture. After EU accession agriculture gained quite a new character. The image of a rich EU farmer possessing modern agricultural equipment, benefiting from EU subsidies, will not scare Polish farmers anymore. Direct subsidies, structural funds and other forms of supporting agriculture have created opportunities for the development of numerous farms in need of capital and support. Until the end of 2006, owing to community policies and structural funds, Polish farmers received approximately 35 billion PLN. Moreover, it has to be noted that the initial subsidy to one hectare of land amounts to 25% of the EU rate (approx. 110 EUR). In 2013 these subsidies will be equivalent to 100% of the rate applied in the "old EU". If we also consider structural monthly pensions in the gross amount of 2500 PLN which can be obtained under special conditions by farmers who make over their farms to young farmers, the purchasing power of the group grows even more.

As time went by, farmers learnt to appreciate the subsidies, started making investments, thus increasing the demand on the market of goods and services for Polish

[3] Puls Biznesu, Supplement, *Branża rośnie jak na drożdżach (Mushrooming Business)*, Urszula Światłowska, 22.02.06, p. 2.

agriculture. Many investments are financed from EU funds, which amounts to transferring the financial burden onto the EU. The increasing demand, knowledge and increasing specialization of agriculture have caused the market to develop and competition to grow, companies have taken action to improve sales figures and effectively reach the Polish farmers with their offers. As one of the methods for improving sales, marketing has certainly been applied. It has to be noted, however, that in the age of globalizing economies, increasing competition of products and services on the markets and economic cooperation of countries, marketing perceived by means of mix functions (4P) appears to be insufficient to meet the requirements of today's market. Providing an offer based solely on the high quality of products, enhanced by an effective promotion, attractive price and easy purchase is not enough to persuade the consumer to buy a specific product or service. Each case has to be considered taking into account all that which cannot be determined in a clear, rational and obvious way, namely the irrational factor. The result is an internal picture, image and approach of the potential client to the company. It is the emotional factor, significant in supporting and complementing rational decisions, which creates a comprehensive picture of the company's communication with the group of its present and future clients. Summing up, in order to achieve the maximum reinforcement of their activities, companies should apply not only pure marketing tools, but also implement communication based on reliable public relations. This situation has existed for some time now. The only question arising at this point is: what kind of PR do the aforementioned subjects apply in terms of quality and quantity?

The essence of public relations

Referring to the article by Przemysław Kołak published on the business web portal Proto.pl[4], I would like to quote a well-known American journalist, Daniel Schorr, who would often say that in the mass media society you do not exist unless you exist in the media. We might argue in favour of or against this statement; one thing is sure, however, communication has always played and will continue to play a crucial role in the history of mankind.

The explanation of the essence of Public Relations proposed by Kołak seems most appropriate. He claims that "PR is a process of shaping communication by developing credibility of a company. As opposed to advertising, credibility cannot be bought; neither is it possible to develop PR in a short period. PR thoroughly examines and analyzes the needs of the environment both inside and outside the company. The implication of these activities is a competent response to these needs. A PR specialist serves as a "liaison" between the board and the public." Therefore, it is necessary to emphasize "credibility" as the main component of PR activities. Credibility cannot be bought, which is why it needs to be worked out. The implication of this statement is the assertion that if credibility cannot be bought and has to be worked on, PR is a long-term, uninterrupted, coherent and consistent process. It does not include activities, such as buying an ad in the newspaper or unfair practices involving paying journalists for publications. These are activities of one-time effect, which under no circumstances can serve to establish the credibility of a company.

The concept of credibility is strictly connected with ethics. As the author of the article rightly points out, "Perceiving Public Relations from the angle of credibility also means taking into account professional ethics. Lack or abandoning rules of ethics implicates undermining credibility and, consequently, loss of image. It is a very dangerous and crisis-triggering phenomenon, which we often have to deal with."

The above-described examples and phenomena are considered by the author on macro scale, with Public Relations serving a management function. However, there also exists a micro scale, which PR specialists most often deal with in their work.

Considering the micro scale, the author refers to a range of activities, the meaning of which is not less significant than the role of management. The activities include regular contact with the external and internal public, opinion leaders, monitoring and analysing media. Among these is also communication via the Internet and many other types of activities essential for an efficient operation of the company. All such activities require appropriate positioning and a well-thought-out strategy. Otherwise, claims Kołak, the saying: "you pay for advertising, you pray for Public Relations", will assume exaggerated importance and place quantity before quality. One of the board's basic mistakes is to evaluate the PR officer taking into account the number of media materials instead of their quality or usefulness. It also has to be noted that every institution possesses "Public Relations", whether they want it or not – however, not each of them knows how the tool should be applied.

Defining the term *Public Relations*

It is estimated that approximately two thousand definitions of Public Relations exist today. All of these undoubtedly expand the knowledge on the phenomenon, it is impossible however, to offer a comprehensive outline herein. To provide the Reader with a definitional picture of PR, I would like to present the most essential elements of world-acknowledged PR definitions as selected by Krystyna Wójcik[5]. "Public Relations is a system of activities in the scope of social communication, a social process in the form of a constructive dialogue, and therefore:

[4] **www.proto.pl,** Przemysław Kołak, *Public relations – sztuka skutecznej perswazji (Public relations-the art of efficient persuasion), 15.06.2006*
[5] Krystyna Wojcik, as above, p. 27.

- conscious, intentional/deliberate;
- methodical and systematic, planned, based on research and analyses, making use of the achievements of all sciences creating chances for effectiveness;
- permanent and long-term, since the nature of objectives requires continuation and longer periods of realization;
- oriented towards shaping the desired relations between an organization which undertakes such activity (business, non-business, institutional, association, etc.) and the part of the environment which is of mutual interest to the organization at present or in the future;
- the quality of these relations is expressed by values, such as: mutual understanding, trust, credibility, support, positive attitude and perception, limited contrariness of relations, balance of interests, society's welfare."

The above definition is most appropriate. However, it should be added that considering credibility as an attribute of PR and persuasion as a method of influencing the environment, "all sciences creating chances for effectiveness" quoted by Krystyna Wójcik should be thoroughly considered. Effectiveness cannot be based on the well-known assumption "The end justifies the means". Thus, effectiveness is the end but it has to be assumed that instead of manipulation, previously described persuasion will be applied.

Taking into account all existing definitions of Public Relations, it appears difficult to create one universal and overriding description. However, it is worth pointing out that communication based on PR activities should be that of permanent, continuous and regular nature. PR includes *inter alia* daily contact with journalists. Acting as a spokesperson of a given organization or company, we cannot allow PR communication to take seasonal form. We are the persons who will be addressed by journalists asking for information e.g. on anticipated entrance to the stock exchange. What will be the reaction of media not informed about such an event? Similar is the case with regularity, which enables us to affect the most permanent elements, such as: social and cultural transformations, change of behaviour patterns, attitudes and opinions.

Public relations as a management function or marketing mix component?

During the historic process of developing a definition of Public Relations, two basic trends emerged. The first one presents PR as a management function, the other as a marketing mix component (promotion element). Inclined to agree with the first approach, I think that PR should above all be seen as an element of a subject's communication with the environment. An element which works both ways. In this approach PR is seen as a mechanism collecting information from the environment to be passed to the company and providing the environment with information about the company. The process of information exchange is of strategic importance and is strictly connected with managing a company or organization.

Public Relations considered as a marketing mix component, a promotion element, significantly narrows the perception of the phenomenon, focusing only on the product or service included in the sales plan. Due to the popularity of this approach, however, it should not be ignored. Aneta Szymańska explains in her book[6]: "The role of Public Relations in marketing mix can be defined as follows: it consists in passing specific information to key target customers within the marketing chain, so as to influence their purchase decision".

It needs to be kept in mind that in this case PR functions in service of the product, directed by sales objectives. Consequently, it mainly concerns transaction processes between an organization and the environment. Therefore it is often referred to as *Marketing Public Relations,* located within the so-called marketing mix 4P (product, price, place, promotion) as the promotion-mix component. As can be easily noticed, the focal point is the product or service offer of a company, placed before company image. Certain Polish producers of plant protection substances, e.g. Bayer Crop Science can serve as an adequate example at this point. Farmers are familiar with particular brands, without associating the name Bayer with their producer. It is a typical example of the marketing approach to Public Relations.

The marketing approach to Public Relations is more and more common. Taking again the example of plant protection substances producers, such as Bayer Crop Science, BASF or Du Pont, it can be noted that the companies' main objective is to improve sales results or to perform an effective market launch of a new product. In such companies marketing and sales directors are usually responsible for Public Relations. Such persons analyse the results of PR activities basing on measurable effects, disregarding image aspects. PR is then perceived as a tool designed to bring countable results, obtained within a short period. These results are often expected to be shown in conjunction with sales results, which become the basis for evaluating PR activities. Not infrequent is a situation when the person supervising PR communication expresses a negative opinion on its results, quoting sales figures and the number of newspaper clippings lower than anticipated.

Many definitions underline that Public Relations is a management function, which helps define the objectives and philosophy of a company. It entails a process of communication with all groups in the environment, aimed to

[6] Aneta Szymańska. *Public relations w zintegrowanej komunikacji marketingowej (Public relations in integrated marketing communication).* Wroclaw 2005, p. 59

adjust corporate mission to public expectations. This approach to PR is often referred to as *Corporate Public Relations* (CPR).

Public Relations understood as a management function in my opinion most appropriately captures the essence of the phenomenon. In their work, Jarosław Œwida and Dariusz Tworzydło write[7]: "PR is a management function of a continuous and planned character, owing to which the organization gains and maintains stability, affinity and support of people, for whom it holds present or potential interest, by means of conducting opinion surveys about the organization, aiming for an optimal adjustment of its objectives and activities. Wide, methodical distribution of information aimed at improving cooperation with the society and an effective realization of own interests." The approach presented by the authors creates a picture of PR perceived as a certain philosophy of the corporation. This philosophy is based on the need to communicate and cooperate with the environment, realizing the interest of both parties with mutual advantage.

Drawing from my own professional experience, I can point out that also in this case it is possible to outline a profile of the person who sees PR as a management function in a given organization.

- usually a person or company department with a strictly defined role in the area of corporate PR (communication department, spokesperson, PR manager) – responsible to the board
- understands that marketing activities only support and complement PR strategy (within planned tasks, not strategic goals)
- perceives the strategy of PR activities as a long-term process, paying attention to the creation of image, trust and mutual positive relations with the environment.

It is therefore worth mentioning that CPR (Corporate Public Relations) is rather connected with the strategic aspect of corporate activity. It is closer to the helm than to the oar. In contrast, PR as a marketing mix component is in my opinion part of the whole strategy, a puzzle element which completes the picture. This whole picture comes under approaching PR as a management function. The ideal communication system could be presented by means of the following equation:

Ideal communication system =
PR as a management function + PR as a marketing mix component

Agricultural media market in Poland

Piotr Czarnowski, an authority in the field of PR writes[8]: „Historically speaking, in the socialist Poland, as in other Eastern European countries, no communication system was required; however, there existed a need for an efficient propaganda apparatus. What is interesting, specialist, professional, technical media – neutral politically, but much-needed in education, were very well developed at that time. The political transformation brought about very radical changes. For the media this meant practical disappearance of professional titles and the emergence of the new general press. However, since both the media and their journalists were newcomers, some essential rules of journalism were lost, such as the absolute requirement of verifying information or the necessity of separating the text from the commentary.

Further in his article Czarnowski points out the reason behind the changes. "Polish companies discovered advertising and came to the conclusion that it is a good method of communication. Advertising was also discovered by the media and once the euphoric perception of the media's great liberation mission faded away, it quickly turned out that another mission was introduced – that of obtaining advertisement in any quantity and for any price, even at the cost of misinforming the recipient." The increased importance of advertising, the loss of certain journalism rules and the reluctance to give objective information is in my opinion very characteristic of *inter alia* agricultural media. This opinion is based on the results of a survey, conducted among journalists, to be discussed further in this article.

A similar picture of the situation is drawn by Magdalena Bajer[9], Chair of the Media Ethics Council. According to her, "The standards of media have considerably deteriorated recently. It is due to the breakdown of a certain set of values which used to be universally applied. Today there is no common acceptance and recognition of particular norms and rules of behaviour. As an example, no general agreement exists as to whether it is always wrong to lie. It is considered justifiable in some circumstances." Similar to Piotr Czarnowski, the author is painting a rather sad landscape of the Polish media. This is well illustrated by the international study of corruption in media "Cash for News Coverage" (Institute for Public Relations, 2003), where the Polish media came out worst as compared to all media of Eastern Europe, including those in former Soviet republics. The research showed *inter alia* lack of media's respect for law and ethics as well as relatively poor specialist qualifications of journalists.

I do realize that my criticism is based on the supposition of an ideal media system characterised by high ethical

[7] Jarosław Świda and Dariusz Tworzydło *Public Relations.* Rzeszów 2003. p. 123

[8] Piotr Czarnowski, 2005. Text commissioned by Harward Business Review in April 2005. Withdrawn following editorial modifications changing the sense of the article. This is the original version, prior to editing.

[9] Magdalena Bajer. *Prawne regulacje nie poprawią jakości mediów (Regulations will not improve media quality).* Comment for Rzeczpospolita, 18.08.2006. p. B3

standards. Moreover, I am aware that this kind of system is rarely encountered in its pure form. I still think, however, that in order to discuss company PR in Poland, to be able to evaluate and analyse it, one first needs to define precisely the ground on which PR exists. It is sometimes said that "PR is a reflection of the media" and I have to admit there is a lot of truth in the statement. In the course of my professional activity I have often heard a journalist saying: "Indeed you have an interesting piece of information to convey, but please contact the advertising department first," or "Good morning, we have received you press release. We will be glad to publish it once you have bought an ad with us".

I perceive this as a media disease which has a destructive impact on the standards and quality of PR services in Poland. Unfortunately, it can also be noticed in the media relations of companies offering products and services for the Polish agriculture, which are the subject of this study.

Those with a green thumb, or: media dealing with agriculture

Contrary to what might be expected, the range of agricultural media in Poland is quite wide. Titles focused on agriculture can be found on television, radio, in the press and the Internet. Their subject area is very diversified, ranging from magazines targeting small garden owners to those addressing owners of large specialized farms with hundreds of hectares of land, from home gardens to mass-scale plant production, etc. In fact every person in any way connected to a branch of agriculture will find something interesting for himself, especially as regards specialized press. Less optimistic is the case with the television. At the forefront are TVP and TVP3 public television stations, which are obliged to deal with agriculture according to their mission. Other television channels fail to perceive farmers, especially the less affluent group, as potential advertising receivers, and therefore evince no interest in this area of business activity. They limit the range of information provided to the crucial issues, such as EU subsidies, natural disasters, etc.

To begin with I would like to quote results of the AGRIBUS research, conducted by ABM Agencja Badan Marketingowych (ABM Marketing Research Agency)[10]. The research revealed that out of all press genres, agricultural press is the most widely-read type. Nearly two thirds of farmers admit to reading specialist press (63%). The magazines read most regularly are: Top Agrar Polska (22%) and Farmer (21%). Agricultural press is read more often by farmers based in large farm (over 50 ha). Farmers value these magazines for their expertise (65%), that is reliability and accuracy of the subject matter. Price is most essential to 20% of readers.

As regards television, Tydzień (*Week*; 46% regular viewers) and Agrobiznes (40% of regular viewers) are programmes with the largest audience. 44% of farmers listen to the radio. 10% of farmers have access to the Internet and 4% of them have an e-mail account. The larger the farm, the bigger the possibility of its owner having access to the Internet.

According to my own observations, specialist press tends to focus on more advanced issues, such as: new technologies, agricultural machines, plant protection substances and all kinds of case studies, educational and scientific series, etc. Television programmes, on the other hand, deal with agriculture on a more general level, accessible to the viewer. The subject matter is connected with a farmer's day-to-day problems and is often addressed not only to large-area farmers, but also those running family farms, with less than 50 ha of land.

The market of agricultural media in Poland mainly consists of specialist press, television and radio programmes, and the Internet. There is a lack of strong regional titles or regionally profiled agricultural programmes on TVP. It is also worrying to observe commercial channels showing no interest in agricultural issues. Both TVN and Polsat mainly address big city audience, even though farmers constitute a large consumer group in Poland. As far as specialist press is concerned, in comparison to other business titles there is a striking orientation towards benefiting from the cooperation with companies. This attitude requires producers to "buy" articles and publications on the products and services they offer. Further in this article I will present the results of a survey conducted among journalists writing about agriculture. In some cases respondents complaint about companies which "have bad PR, since they buy no advertisements", but send press releases instead. Such statements give proof of the media's poor quality and low professional ethics. Reliable communication is not and cannot be based on the rule of barter "article in exchange for advertisement". This approach to communication necessitates PR activities which contradict PR ethics set forth *inter alia* in the Code of Good Practices by ZFPR (Association of Public Relations Companies), in the Code of Ethics by PSPR (Polish Association of Public Relations) and the Code of Journalism Ethics by the Association of Polish Journalists.

PR Knowledge

In an attempt to describe the specificity of the PR market in Poland, I will refer to an article by Piotr Czarnowski[11]. The author discusses a study conducted in December 2004 by the The Gdańsk Institute for Market Economics. Its results served as a basis for the report "Public Relations in Polish Economy". According to the report, 36% of Polish companies neither have a PR department nor a PR specialist. The PR market in Poland was valued at PLN 160 million, an

[10] AGRIBUS Research. Marketing Research Agency. 15.11–02.12. 2002

[11] Piotr Czarnowski, 2005. Text commissioned by Harward Business Review in April 2005. Withdrawn following editorial modifications changing the sense of the article. This is the original version, prior to editing.

amount which indicates growth as compared to the previous year, but is still less than in the case of much smaller markets – e.g. Czech or Hungarian. Most striking, however, is the the fact that the average share of the so-called income fee (remuneration for PR services) in company income amounts to 40–45% only. Real PR, according to Czarnowski, supports itself on income fee, the standing charge for PR services. Polish PR appears to live off something else. The author attempts to explain what constitutes PR companies' income: "In search of an answer, one has to ask about the most popular PR services. These include media relations (80%), event organization (77%), creation of communication strategy (36%) and crisis management (36%). In the Polish market, "media relations" include buying media (advertising), sponsored articles (a category elsewhere perceived as advertising), product placement." It can easily be concluded that Polish relations with the media are not equivalent to the media relations in PR category, recognized elsewhere in the world. Events, so popular in Poland (77%), normally serve as a marginal PR tool, never applied separately, and treated as one of many parallel PR activities. One might wonder about reasons behind the dissimilarity of the Polish PR market. Again I refer to Czarnowski's opinion: "Specific PR reflects a specific demand. Polish companies do not value and do not need communication. Even those companies which are eager to promote the concept of Corporate Social Responsibility – amounting to clear, transparent, but also advanced communication – are not able to communicate on a basic level. Polish companies are not interested in their own image, especially in the long term. This might be due to considerable turnover of management staff, less concerned about building a company which will be appreciated by the public, and rather focused on temporary economic results. Consequently, Polish companies are more determined to sell products than image, disregarding the growing importance of image in the sales process."

Criticizing the Polish perception of PR, the author continues: "According to the Polish interpretation, PR is a cheap substitute for advertising, an occasional activity aimed at achieving immediate results, used mainly to support temporary sales. PR in Poland is performed in campaigns and its basic tool is the so-called promotional "event". In Poland there is a general belief that corporate image does not depend on public opinion, but can be bought in advertising campaigns."

PR activities perceived in this way, as well as the picture of the market presented above, are to be used further as an interpretation tool, especially useful for pointing out weaknesses of PR activities adopted by agricultural companies in Poland.

Public Relations of companies offering products and services for Polish agriculture

In this section of the article I would like to present a summarized analysis of PR activities of companies which offer products and services for Polish agriculture. With reference to the thesis, I would like to prove that corporate PR in the sector discussed is still in its initial development stage, often failing to respect ethical standards and is in many cases simply underestimated.

The market of companies and institutions offering products and services for Polish agriculture is large and still growing. It is mainly a consequence of changes in demand. Farmers' needs become more and more sophisticated. It seems that a couple of years ago the mobile phone was a rare and expensive commodity in the countryside. The situation is different today. Country inhabitants, especially those who develop their farms, make investments, study, start matching city dwellers in terms of consumer needs. This in turn results in a rapid growth in the number of companies tailoring their offer to Polish agriculture.

In this work I decided not to analyse PR programmes of companies representing all economic sectors present in the countryside. This is due to the fact that the study and analysis of the PR phenomenon can be based on a selection of PR programme examples, representative for the whole group. It is not necessary to describe the specificity of each sector in the light of the subject of this study.

My analysis of the state of PR in the „green" sector in Poland was based on the knowledge on PR communication of two international companies – leading in area of sales of plant protection substances, two producers of forest, park and garden equipment, one of the leading banks offering products and services for farmers, an institution for companies producing plant protection substances and the biggest university educating young farmers and agricultural managers.

However, in order to give a complete picture of the phenomenon, both sides of the relation need to be discussed. On the other side are the media. Media and companies form one communication system, in which both sides affect one another and define one another's way of acting, also as regards PR activities. Therefore it is important at this point to present the media's opinion about the companies' actions and the development stage of the agricultural media market, conditioning these actions. In order to obtain the necessary information, I applied a research tool in the form of a survey, sent out to editorial offices of 25 most important agricultural magazines. These included the following titles: Agroserwis, Poradnik Gospodarski (*Farmer's Guide*), Owoce (*Fruit*), Warzywa (*Vegetables*), Kwiaty (*Flowers*), but also daily papers covering agriculture: Nasz Dziennik, Rzeczpospolita etc.

The purpose of my research was to obtain journalists' opinion concerning the quality, frequency as well as means and tools used in PR activities by companies offering products and services for agriculture. The questions included in the survey concerned the following issues:

- quality of contacts with the PR sections of companies operating in the agricultural sector
- frequency of using materials received from PR sections of companies operating in the agricultural sector
- quantity of press materials received from companies
- quality of press materials received from companies
- frequency of contacts on the part of the PR section by means of e-mail, phone or directly

- sources of information about companies offering products and services for agriculture
- flaws in PR activities of companies from the agricultural sector
- conformity of agricultural companies' PR with ethics
- general evaluation of PR activities of these companies
- examples of good practices of the companies under research

Evaluation of PR's condition based on an analysis of agricultural companies and journalist survey results

Materials and information obtained in the research from companies offering products and services for Polish agriculture allowed me to draw the following conclusions:

- **Low level of knowledge about the essence of PR**

Companies and their PR sections do not quite realize what PR really is. In most cases PR is perceived as "arranging" publication of articles about a new product, a supplement to advertising and promotion as well as a tool supporting sales plan performance. The situation is much better in corporations, as they operate also in other sectors of economy, where PR-based communication is much better developed. As an example I can take banks or chemical concerns, operating also in the pharmaceutical sector, where reliable Public Relations is the basis for communicating with the environment.

- **Absence of PR strategy – ad hoc activities adjusted to marketing and sales plans, occasionality of undertakings**

None of the companies under survey was in possession of a PR strategy designed especially for the agricultural market. In most cases PR activities are occasional and strictly connected with the marketing plan. Organization of a press conference in connection with the launch of a new plant protection product can serve as an example here. The tool is not further used for other purposes related e.g. to continuous communication with the media and the willingness to maintain close, direct relations with the media. As as result of the absence of a PR activities plan, it is impossible to plan in advance the cooperation with the media, which due to their publishing cycle or the nature of the planned undertaking (e.g. media patronage), need to take decisions about potential cooperation well in advance. Also the creation of corporate image due to its long-term character is usually based on a previously planned, continuous sequence of PR activities. According to the definition of PR, it does not include activities of seasonal nature, typical of promotion, advertising and other marketing mix tools.

- **Underestimation of PR understood as a management function**

Companies do not pay enough attention to their "reflection" in the environment. Instead of planning a long-term PR strategy, aimed at improving or maintaining a positive image, they focus on products, perceiving PR as sales support. As a result, the potential of PR lies fallow. Polish companies are more determined to sell goods than the image, completely disregarding the increasing role of image in selling the products. Considering the development of the products and services market, this situation has to be changed.

- **Gaps in corporate image policies**

Agricultural companies in Poland do not get involved in image-developing activities, such as e.g. CSR (Corporate Social Responsibility). Attention paid to natural, economic and social environment creates a positive corporate image in its environment, which is most naturally reflected in the sales results recorded by these institutions. Owing to image-developing activities, companies can gain credibility, trust and liking of consumers, to be followed by their loyalty and brand attachment.

- **Absence of coherent PR activities within one institution**

Initiated activities often lack coherence within one institution. The head office implements its own PR policy, while the branches have their own one. Lack of coherence and coordination of activities in the absence of a joint PR strategy for the whole institution can result in losing control over the communication, information chaos and the loosening of relations with the environment and the media due to lack of transparency.

- **Passivity, reactive PR policy and lack of ingenuity**

Some of the companies analysed made no effort to create information materials for PR purposes, which would take into account local specificity and media requirements. These companies try to draw media attention making use of ready-made materials received from head offices based outside Poland and translated into Polish. Many of these materials are of imitative character, which might discourage those potentially interested in the subject, at the same time resulting in the company receiving poor appraisal as regards quality of communication.

- **Lack of knowledge about PR tools or misuse of such tools**

Some companies analysed revealed lack of knowledge about basic PR tools. One of the companies, a producer of agricultural equipment, provided journalists with reprints of promotional leaflets labelled as "Press release". This proves

lack of expertise in the area of PR, and is certain to have a negative impact on the relations with media and the evaluation of corporate communication.

- **Absence of crisis communication**

None of the companies offering products and services for agriculture in Poland maintains crisis communication. None of the institutions analysed plans its strategy and procedures for crisis situations, there are no instructions on how to proceed in such cases, no training is organised for crisis team members and the management, there is no crisis management strategy, which would include supporting company management, internal and external communication, managing the website and contacting the media and customers. This results from the absence of a general communication strategy and focusing only on product communication. However, it should be pointed out that crisis can occur in any of these companies. Media crisis can happen to a plant protection substance producer if a product gets into food, or to a company selling a series of defective wood saws which can seriously injure users. Companies should always be prepared to initiate previously established procedures of crisis management.

If we add on top of the above the results of the survey sent out to journalists dealing with the area of agriculture, asked to evaluate the standards of PR activities applied by agricultural companies, we will see a complete picture of PR standards operating in Polish agricultural companies. The main conclusions are as follows:

- **Generally mediocre quality of contacts with the PR sections of companies operating in the agricultural sector**
- **Small or mean frequency of using materials received from PR sections by agricultural press and poor usefulness of such materials at work**
- **Small quantity of useful, high-quality materials sent by companies to agricultural press**
- **Shortage of communication with PR sections of companies by means of phone, direct contact and finally – electronic mail**
- **Internet and occasionally applied PR tools as a source of information about the company – weakness of daily, consistent communication of companies with the media**
- **Lack of knowledge about ethics in PR activities both on the part of companies and agricultural media**

Summing up, it can be stated that PR activities of agricultural companies are characterized by occasionality, poor quality, lack of knowledge as to the meaning and essence of PR and disregard for the rules of professional ethics. PR activities, rather resembling promotion or advertising, constitute one-way communication, making it impossible for the dialogue with the environment to occur. This leads me to assert that PR as a communication tool is either used inadequately or used in a limited way, without complete understanding. I do recognize vast, unused potential in the area of PR, which needs to be activated in the face of future development of the market of products and services for Polish agriculture.

The situation is not being improved by the agricultural media, which partly define the shape of PR activities applied by agricultural companies. Perceiving PR as malevolent activity aimed at publishing company “advertisements” free of charge, hinders reliable communication and requires companies to use unethical tools in order to achieve desired results.

First of all there is a need to educate the market of agricultural media and companies in the field of PR. Furthermore, I do observe shortage of specialists who would provide professional communication based on PR activities and adhere to the essential rules of professional ethics in journalism and PR.

To conclude, a question should be asked about the possible solution of the problem. It appears that only further education about PR and the increasing demand for diversifying communication tools can serve as a remedy to the existing situation. The problem is not connected with a shortage of staff, technology or other means. Problematic is the absence of

a certain awareness and the resulting necessity to include reliable Public Relations into corporate planning. It has to be noted that Polish agriculture is becoming increasingly demanding and beside the colourful leaflets could suddenly request to receive reliable information, more thorough education, and an opportunity of extending the scope of business activity of the company they are interested to cooperate with.

Marketing strategy at nestle foodservices

MBA thesis prepared by **Ágnes Nott**

Consultant: Prof. Csaba FORGÁCS

Summary

The catering business is a special branch of trade connected with hospitality and catering, and Nestlé Foodservices is a major player in this industry. My study explains the elements which constitute Nestlé Foodservices's turnover. I describe the vending, industrial and catering sectors, as well as the Nescafe Coffee project.

The catering business includes two main segments: social and commercial markets. Ninety percent of catering turnover comes from the social sector and only 10% from the commercial one. Yet, as I have illustrated using figures from my research, we have to focus on the commercial sector much more in the future, since this sector spends significantly more than the other on purchasing.

Its macro and microenvironments have been analyzed and I note that consumption is shifting towards fast food restaurants, and as a result, canteen-type consumption is decreasing.

I present our intermediaries and also our competitor, Knorr. I explain that in this market there is a continuous competition, and we can hardly speak about loyalty. Knorr is the market leader with a very aggressive sales strategy, and with bigger sales departments. They innovate easily and their reaction time is 6-7 months.

Market analysis based on 4P was carried out, the new development product process was explained, the product range was shown and all of them were represented in the BCG matrix. I refer to the importance of packaging and the services emphasize the role of prices.

The importance of the promotions is discussed and suggestions are made.

Finally I write about long term marketing strategies, list the key issues, and detail the price, product, promotion and distribution strategies. I present the detailed action plan with the marketing budget.

Business plan all – round connections

MBA thesis prepared **by Rubes Anikó**

Consultant: *István Szűcs PhD*

Summary

I prepared this business plan to introduce the relocation business to those unfamiliar with the relocation industry and who would like to know more about the services offered by ARC. In addition, my goal was to develop theories of how the relocation business should be run and to calculate possible results. I was also interested to check ARC's performance next year.

We learned that ARC emphasizes the way in which the company achieves great results. Every employee understands and works according to the company's Core Values and Principles and as a supplier partner to other Relocation Services, so ARC has a clear philosophy of operation. Moreover, the objective of this business is to concentrate on organic growth, to expand services with a co-operative reliable, quick and well-organised management and their constant development. ARC places particular emphasis on following the necessary laws and relevant rights of professional management for various procedures. This attitude is extremely important, because the company is unique in providing professional quality services as a principle, so as to build up long term international partnerships.

ARC is pleased to expand its current relationship with other companies, following the company's recent Cendant Award for being the best Destination Service Provider Company in 2002. Through Cendant, the relocation business is able to continue delivering relocation services to different multinational companies. In order to be able to carry out such activities, ARC has compiled a strategy detailing how it can best service the clients. The past successes could be acquired with hard work and integrity and with new objectives. A marketing campaign for the new year will be developed to expand business aiming at Japanese companies now present in Hungary. This campaign is an extra new goal to be achieved, and I therefore prepared the new marketing campaign to present my idea to attract new clients.

Ozonian[12] (2003) writes: "The entire business community today is under a great deal of pressure to decrease cost and increase productivity, primarily as a way to improve profit margins and net income." I agree with this statement as in this fast growing economy business we have not many opportunities to develop a certain financial plan and to get ready for the next year's potential revenue. However, considering that ARC has the office placed in the capital, market opportunities give more confidence to a successful business. We could realise from the survey that, geographically, Budapest and its surroundings form a dynamically developing area and have an important and particular role in the Hungarian economy. Therefore, the last objective of ARC, to show more profit in the year of 2003 and 2004, to be in harmony with ARC's marketing plan, shows that there is a great chance to increase revenue. As previously mentioned, ARC has an excellent opportunity because of operating in the capital of Hungary, and currently the economy seems to be on an upward turn. Managers will use all feasible business tools to improve and expand their positions in markets as a Relocation company.

All things considered, I can conclude that this business plan could reach its main goals, and I believe that ARC will still be popular among multinational companies regarding the new regulations in the relocation industry and can strengthen and expand its position in the markets as a relocation company.

[12] Ozonian, Steve (2003): Policy Review in Three Easy Steps. Mobility Magazine of the Employee Relocation Council,. 69. 16–19 p.

MBA education at Debrecen University Faculty of Agricultural Economics and Rural Development

András Nábrádi, László Kárpáti and János Lazányi

University of Debrecen Faculty of Agricultural Economics and Rural Development

Debrecen is the *capital* of the Great Hungarian Plain, the centre of many institutions, organizations and business companies just in the heart of Europe. It has provided an ideal setting for higher education since 1538. With this past of more than 450 years, the University of Debrecen is the oldest higher educational institution in continuous operation in Hungary based in the same city. Higher education in agriculture began in 1868, when the National Higher School of Agriculture was formed in Debrecen. The University of Debrecen has more than 26 000 students, and more than 1700 instructors teach at the University, which has 13 faculties, 2 independent institutions, 20 doctoral schools and offers the widest choice of higher education. This outstanding intellectual centre, with a vast research and development capacity, has a growing importance in the economic and social development, cultural progress of the region. It devotes special attention to serving the needs of a knowledge based society more efficiently, and it strives to become the knowledge centre of the region, which also preserves traditions and values.

The Faculty of Agricultural Economics and Rural Development is an administrative, democratic, organizational framework to co-ordinate the education of its students and it is widely engaged in scientific research and extension activities. The Faculty was founded in 2000 to integrate agricultural economics and rural development into the University of Debrecen and to strengthen training in agribusiness; agricultural rural development; agricultural public administration; computing, statistics and business planning. The Faculty co-ordinates the organization of education, supervises the departments, widens the fields of research and participates in basic and postgraduate education, further education and extension work. The mission of the Faculty is to develop high-quality educational, research and development activities in the region which meet the demands of the nation, and contribute to the augmentation of national and international results via its creative activities.

The Faculty of Agricultural Economics and Rural Development has the goal of improving the economic performance of the agro-food sector through research designed to enhance and better understand Hungarian trade performance and policy options. In meeting this goal, it brings together a critical mass of researchers; increases the capacity to deliver agricultural policy research through research projects involving graduate students, and contributes to an informed debate on policy issues. The research activity of the Faculty of Agricultural Economics and Rural Development is focused on the stimulation of strategic thinking across the food chain. Efficient food system is sensitive to the needs of consumers, safe, environmentally responsive and has a high level of business integrity. Bringing together top food and agribusiness executives, academics, policy makers and other concerned stakeholders, it provides high quality, value-added services to meet the needs of local people and addresses the many challenges and opportunities facing food chain participants through leadership and innovation. Program planning, development and implementation are accomplished through six departments, which provide educational programs, responsible for research and development projects and take part in extension activities and write articles.

Department of Agricultural and General Economics
Dr. Gábor Szabó, Professor
Department of Accounting and Finance
Dr. Zoltán Bács, Associate Professor
Department of Farm Business Management and Marketing
Dr. András Nábrádi, Professor
Department of Rural Development and Resource Management
Dr. Géza Nagy, Professor
Department of Management and Labour Science
Dr. Csaba Berde, Associate Professor
Department of Statistics and Agricultural Informatics
Dr. Imre Ertsey, Professor

The Faculty of Agricultural Economics and Rural Development has excelled in research, education and service in all parts of the food system from farm to fork. The core focus areas include economic education and knowledge transfer, effective food chain management, food safety and quality, contribution of technology to supply chains, economic and social development. Students come from all corners of Hungary, bringing a set of skills that helps their learning experience and creates a highly talented network whose alumni can rely on it as their careers progress.

Degree programmes offered by the Faculty of Agricultural Economics and Rural Development

The aim of our agribusiness degree is to train experts who are competent to manage, plan and organize agricultural and related activities and to control them economically and financially. Graduates are also capable of working in agricultural education and research. With their professional knowledge, they are also qualified to work as economists in non-agricultural fields. Students are also trained to become chartered accountants, foreign trade agents and real estate agents. Specializations are available in computing; English, German or French professional communication studies; agribusiness communication; commerce-marketing; English or German technical translation; finance-accounting; entrepreneurial organization. Since 2001, a 10-day-long special study tour has been organized for the students, in the framework of which they gain practical insight into the work of EU institutions in Belgium, the Netherlands and Germany.

The agricultural rural development degree provides students with versatile training in effective agricultural production, recognizing the importance of biological diversity and environmental protection. Our graduates gain an overview of the characteristics of rural society and circumstances, and are capable of utilizing rural resources on an international scope. Furthermore, they can successfully co-operate in organizing programs and bids, especially within the European Union. Rural catering and tourism; agribusiness communication; grassland and resource management; extension and rural development; game management; environmental protection are the main offerings of specializations.

The Agribusiness Informatics degree provides the students with practical knowledge in the fields of informatics, agribusiness and agronomy. The EU accession of Hungary requires experts with new approaches and mentalities. In agricultural economics and rural development, there is an increased demand for computing experts with a high level of knowledge in agronomy and agribusiness. Opportunities for employment are ensured by the demands of the government, public administration and enterprises in finance, agricultural economics, food industry and commerce. Students can choose between two majors, which provide them with differentiated computing skills in economics and rural development or in agronomy and environmental informatics.

Students in the Agricultural Public Administration degree course not only complete agricultural studies, but also study law, finance, budgeting, and the rules of special and public administration. Only experts with this kind of qualification and extensive legal knowledge can effectively perform public administration and work for local authorities and other administrative bodies. In the post-secondary degree in computing, statistics and business planning, students complete economic, computing, business and language studies. The offered subjects and training guarantee students a wide range of employment possibilities. They may also continue their studies at university level. The manifestation of interest for the course also shows that a need has grown for experts with economics and computing knowledge, and that the chances for employment are good.

The postgraduate degree course in Human Resource Management runs for 4 semesters. Course participants are equipped with high level skills related to human resources. There is a strong need for this course both in Debrecen and Budapest. This need is supported by the high number of participants and the positive feedback received from the labour market.

The degree course in Entrepreneurial Management is available only in Debrecen. The type of education is correspondent. Three majors are offered within the degree course. The majors in Commerce and Marketing and EU Studies last for 4 semesters, while the MBA lasts for 5 semesters. The continuously high number of applicants proves that the major in Commerce and Marketing and the MBA answers the real needs of the labour market. The major in EU studies was launched in September 2002. The importance of this major will increase with the accession of our country to the EU.

MBA Education

MBA training at Debrecen Agricultural University was initiated by 0257-91/1 Tempus Joint European Project Grant. The project was coordinated by the Netherlands Institute for Management (RVB) Maastricht, under Dr. M.S.S. El-Namaki‘s project co-ordination. Participating institutions include University College in Dublin, Agricultural University in Wageningen and Debrecen Agricultural University. Minimum requirements established were a BSc (or equivalent) degree, an English certificate of language proficiency and one letter of reference from work supervisors or former teachers. Application requirements included a completed application form, Curriculum vitae, a certified copy of degree(s), an official copy of language knowledge certificate, a letter of recommendation and the receipt of registration fee payment. The academic year began on 1 September 1991, and project studies were carried out in small groups. Practical experience that had been gained before enrolment was taken into account and after the successful completion of the requirements students were granted MBA degrees.

The First Debrecen Executive MBA offered students to take full advantage of a wide range of expertise and experience in business, commerce and the opportunity to study with other agribusiness professionals supervised by an international network of professors. The first term of the programs focuses on key business skills through the core courses of Accounting, Business Finance, Decision Models, Economics, Leading and Managing, Marketing, Operations, Statistics and Strategy. The second year offers more special courses that are pragmatic and application-based for students’ field of interest and goals, concentrating on Futures, Project Management, Food and Agribusiness

T***able 1:*** Programme of the first Debrecen Executive MBA

Date	Title	Partner	Credit	Lecturer
1991				
April	Basic English,	AUD	0	
April	Principles of Economics	AUD	0	László Kárpáti
April	Hungarian Accounting and Taxation I	AUD	0	András Kozma
May	Advanced English	AUD	1	László Hunyadi
May	Computer Application I.	AUD	1	László Mikecz
June	Basic Business English	UCD	1	Elisabeth Tierney
June	Advanced Business English	UCD	1	Elisabeth Tierney
June	Computer Application II.	AUD	1	Tibor Tarnóczi
July	Financial Accounting	UCD	1	Pearse Colbert
July	Managerial Accounting	UCD	1	Pearse Colbert
September	Industrial Economics	UW	2	Wim Heijman
September	Macro Economics	UW	2	Ekko van Ierland
September	Intro. International Economics	UW	2	Edwin Krouse
November	Financial Management	UCD	3	Philip Bourke
November	Organisational Theory	RVB	2	Albert Mills
November	Human Resource Management	RVB		Albert Mills
November	Decision Making	RVB		René Samson
1992				
January	Marketing Management	UCD	2	Anthony Cunningham
January	Communication 1.	UCD	1	Elisabeth Tierney
January	Communication II	AUD	1	Kálmán Rubovszky
March	Quantitative Methods of Firm Planning	UW	1	J. van Niejenhuis
March	Management Control	RVB	2	Kami Rwegasira
March	Management Information Systems	RVB	2	Suresh Ankolekar
May	Business Planning I.	UCD	2	E. Hession
May	Business Planning II.	UCD	2	Aidan Kelly
May	Hungarian Accounting and Taxation II.	AUD	0	András Kozma
June	Hungarian Accounting and Taxation II.	AUD	2	András Kozma
June	Hungarian Law	AUD	1	Katalin Sztipícs
July	International Business	RVB	1	Rene Satuson
July	International Marketing	RVB	1	Ger Bos
July	International Finance	RVB	2	Kami Rwegasira
September	International Law	UW	1	M. van der Velde
September	Economics of Natural Resources	UW	2	Jakob Krabbe
September	Technique of Foreign Trade	AUD	1	Gizella Zajácz
November	Economics of Entrepreneurship	AUD	3	
August	Hungarian Law	AUD	1	Katalin Sztipícs
August	Entrepreneur Law	AUD	1	János András
August	International Law	UW	2	M. van der Velde
October	Hungarian Accounting and Taxation	AUD	2	András Kozma
October	Technique of Foreign Trade	AUD	1	Gizella Zajácz
October	Banking and Trade	AUD	2	Gizella Zajácz
1993				
January	Field Attachment	RVB,		
February	Field Attachment	UCD,	8	
March	Field Attachment	UW		
May	Thesis and Final Examination			

One credit = 15 hours classroom or equivalent (1 week lecturing)
UW = University of Wageningen, The Netherlands
RVB = Netherlands International Institute for Management, The Netherlands
UCD = University College in Dublin, Ireland
AUD = Agricultural University of Debrecen, Hungary

Management, Small and Medium size Enterprises Management, and International Trade of Farming Products. The financial management course discussed revenue maximization strategies and tactics that improved the profitability of businesses. Marketing Management was focused on marketing decision-making of agribusiness firms, with emphasis on the formulation of strategic marketing plans. Marketing research and analysis were based on marketing plans. The course deals with the use of futures, options and other instruments for marketing, risk management and investment purposes. Emphasis was placed on the development and implementation of trading strategies and on the policy of corporate governance framework necessary to support effective risk management. The theoretical studies consisted of economics, production economy, business analysis and planning, business management, agricultural policy, market strategies, project planning and evaluation, methods of empirical social research. The courses were built on a strong analytical foundation, ensuring that students acquire the functional skills and tools required in business environment.

The First Debrecen Executive MBA was intended for personnel who have at least five years experience in the management of food or at an agribusiness company, and who have been identified as potential candidates for future top level management positions. The goal of the program was to provide a global view of issues, broad perspectives and management skills on analysis of economic and policy issues relevant for food and agribusiness management with emphasis on the economic and policy environment of the region.

The First Debrecen Executive MBA course was assessed on the dynamic relationship between strategy and competition. Food, agribusiness and other cases were used to explore the development and implementation of strategies requiring the application of conceptual, analytical, problem identification, and problem solving skills to develop organizational strategy. In addition, the program allowed participants to work on a supervised research project, which involved the completion of a bibliography, the organization of materials, the selection of suitable problems, an understanding of related literature, the selection of appropriate procedures, formulation of a plan, collection and organization of data, investigating and the

writing the thesis. The First Debrecen Executive MBA was implemented according to the time schedule provided in Table 1. Exams were held in different lecturing subjects and the names of participants are mentioned in *Table 2.* In the light of their excellent results, a second program was initiated with the same consortium to continue MBA training in Debrecen. From 1990 to 1994, with the financial help of Tempus Joint European Project Grant, 35 students received MBA degrees.

Table 2: Participants of the First Debrecen Executive MBA Programm

Zoltán Babos	Béla Bártfai	Miklós Bencze
Csilla Boros	András Csizmazia	Sándor Erdei
Ferenc Falucskai	Péter Fehér	László Kárpáti
István Lányi	János Lazányi	András Nábrádi
István Nádai	Lajos Nagy	Mária Ujhelyi

MBA training organised by the Centre of Agricultural Sciences

The University of Debrecen, Centre of Agricultural Sciences (UDCAS) has established the Postgraduate Training of Corporate Studies on 1 September 1998. This course still exists at the University. During this period, the curriculum has changed twice and its name has also changed to Postgraduate Training in Entrepreneurship. The University Council decided to continue this training in the future. It contains four specialisations: commerce and marketing management, human resource management, European studies and (Masters Business Administration) MBA. In 1998, the training started in Budapest, in a rented building managed by the International Organisation of Hungarian People, and the first graduating class received its diploma in June 2000. The total number of students receiving their diplomas was more than 100.

In the Budapest facility, there were 2 offices and 5 classrooms for students. The biggest classroom provided space for 110 students, four rooms for 50–60 students and the smallest one for 15 students. A theatre-room (for 250 persons) was also available for teaching. In the building, a canteen and a buffet were available for students. This place provided suitable relaxation and teaching conditions. It was enough for maximum 240 students, 4 full-time employees and guest lecturers. The library of the University of Economics and State Administration was available for students. Because of the Hungarian demographical situation and its labour market, the number of students has increased year by year. In its activities within the scope of this program, UDCAS assists in solving a social problem in Hungary, by giving a second diploma for those who cannot find gainful employment. The increased interest in this training could be related to the fact that graduated students were satisfied with the quality of the training.

The aim of this training was to provide knowledge for managers in economics, domestic and international marketing, finance, human resource management and EC management, so they would be able to work as experts in different fields of business. These tendencies met the requirements of international trends. The experience of the 5 academic years verified the success of the training, as did the fact that, in Hungary, several universities and 19 private schools began to offer this kind of managerial training. Originally, students came from different parts of Hungary to Budapest to study. And now, since 2005, they come to Debrecen for this program.

The managerial training course now situated at the Faculty of Agricultural Economics and Rural Development operates within the University of Debrecen, Centre of Agricultural Sciences. This Faculty guarantees the course sufficient financial direction and control. In this programme, we involve subjects, which have already proved themselves as high quality through their having been utilized in the graduate programme, and on the basis that the responsible lecturers of each subject are highly experienced. More than 50% of the lecturers are from the University of Debrecen, Centre of Agricultural Sciences and the remaining part are from other universities.

The aim of the training is to allow for graduated experts to have suitable knowledge in economics, marketing international business, finance, human resource management and EC management, so they will be able to work as managers in different fields of business. Students should be prepared to find good jobs, to modify jobs and to be able to come up to the changing requirements in the labour market.

Named qualifications in the diploma include the following:

- Certificated expert of corporate economics
- Certificated Postgraduate Training of Entrepreneurship with MSC.
- Basic certification
- Expert of corporate economics

Postgraduate Training of Entrepreneurship with college-level Basic certification, within one of the following specialisations:

- Commerce and marketing manager
- Human manager
- MBA
- European Studies

Conditions of participation in the program are university or college diplomas. The training period is 4+1 semesters. The minimum number of attended lectures for receiving certification is 500. Main education fields contain four specialisations: commerce and marketing management, human resource management, European studies and (Masters Business Administration) MBA. The number of subjects in each specialisation is as follows:

Commercial and marketing manager 20 subjects,
Human manager 19 subjects,
MBA 21 subjects,
European studies 20 subjects.

Requirements of the diploma: Thesis must be written, where theoretical knowledge is translated into practical life. The content and form of this work must meet the requirements for a university diploma.

Final examination: According to Hungarian regulations, the final exam includes a written thesis and its defence in the presence of a final examinations board. The precondition for taking part in the final exam is to fulfil the requirements and the obligations of the mid-term exams. The qualification of the certificate is determined by the mark given at the thesis defence and the average of all other examination marks. The result of the final examination is the same as the mark for the thesis.

Self assessment of the MBA executive training at UDCAS

The guidelines of self assessment, including requirements as regards content and form, were provided by the Hungarian Accreditation Committee. The self assessment of the business training at the University of Debrecen Centre of Agricultural Sciences Institute of Agricultural Economics and Rural Development was prepared on the basis of these guidelines. The institution began its educational activity in the 1998/99 academic year. It provides professional postgraduate training; postgraduate diploma is issued by the University of Debrecen, since this executive training is almost the same as the business studies course of the University being under an accreditation process at present.

Admission requirements to the MSc degree training. Duration of the training: 4 semesters. Type of training is correspondence, altogether 520–530 contact hours, 2 contact days per week. There are 5 specialisation possibilities in the 1st year: commerce and marketing management, human resource management, top management, economics. From the 2nd year, there is a possibility to choose the MBA specialisation as well. The teaching structure of the training is similar to that of the postgraduate course: "Corporate Management" of the former Debrecen Agricultural University, launched in 1977. Taking into consideration the current interests of students, there are three specialisations running at present: Commerce and marketing manageent, Human resource management and MBA.

Table 3: Number of contact hours and method of examination at MBA training
First year

Subject	Semesters				Total
	1.	2.	3.	4.	
Managerial communication + MIS	30 K				30
Microeconomics	30 K				30
Basic Methodology	30 K				30
Sociology	20 K				20
Macro- and International Economics		30 SZ			30
Managerial decisions + TQM		30 K			30
Advanced Econometric Methods		30 K			
Management		30 K			30
Corporate Finance			20 K		20
Human Resource Management			30 SZ		30
Marketing			30 K		30
Business Planning			20 K		20
Strategic Management			30 K		30
International Business				20 K	20
Applied Psychology				20 K	20
International Finance				20 K	20
Accounting, Taxation				30 SZ	30
Law				30 K	30
Project work			(20)	(20)	40
Total number of hours	110	120	130	120	480
Number of examinations	4	4	5	4	17
Optional:					
Basic Business English	20	20	-	-	40
Advanced Business English	-	-	20	20	40
Computing	20	20	-	-	40

A: Acceptance GY: Practical exam K: Normal exam SZ: Raised level exam

Table 3: Number of contact hours and method of examination at MBA training
Second year

Subject	1	2	3	4	Total
Psychology training	24 A				24
Managerial Communication	28 K				28
Microeconomics	24 K				24
Basic Methodology	24 K				24
Sociology	24 K				24
Macro- and International Economics		28 SZ			28
Managerial Decisions		24 K			24
Advanced Econometric Methods		20 K			20
Management		28 SZ			28
Law		20 K			20
Corporate Finance			24 SZ		24
Humanity			24 K		24
Marketing			24 K		24
Business Planning			20 GY		20
Strategic Management			24 K		24
International Business				24 GY	24
International Finance				20 K	20
Accounting , Taxation				24 K	24
EU studies				32 K	32
Public Speaking				24 GY	24
Project work		20 GY	20 GY		40
Total number of hours	124	144	136	124	524
Number of examinations	4	6	6	5	21
Optional:					
Basic Business English		24 GY	20 K	20 K	24
Advanced Business E.		20 K			60

A: Acceptance GY: Practical exam K: Normal exam SZ: Raised level exam

Course descriptions

Management Communication: helps students to attain the Basic forms, levels and models of communication in theory and practice, to develop their own communication abilities orally and in written form, to get acquainted with the difference between everyday communication and management communication and to get acquainted with the technical and tactical elements of the everyday communication forms. This subject builds on previous communication knowledge and existing practice.

Course outline:

- On the basis of the social field-theory: the development of communication
- Relationships, related to socialisation, developing a personality.
- Creating relationships, and content and communicational techniques.
- Rules and types of conviction and argumentation.
- Know-how of negotiation, types of two-, and many-sided negotiations
- Sources of conflict, conflict management possibilities and rules
- Structure of a speech, its content and rhetoric elements, rules
- Leading negotiation and the comparative utilisation possibilities of a talk
- Leaders' meetings, rules of leading conferences
- Media discussions, interviews, making report with leaders, rules of relations with the media.

Practices are built on the elaboration of lectures, presupposing that the student prepares for the practise on the basis of the material of the lecture. The proportion is 4 : 1 Control will be done during the lectures with the help of role-playing and public special scoring. Oral exam is compulsory if someone is not satisfied with the offered mark or if his/her given points are less than the minimum of 60 points. Final assessment: Oral exam, according to the points, written above.

Microeconomics: Through giving lectures on microeconomics, developing students may utilise their theoretical knowledge, to solve actual problems including

how to influence demand and supply, outcome and prices. The theory of demand and utility. Business organisation and income. Analysis of costs. The competitive supply. Imperfect competition: monopoly and regulation. Imperfect competition and antitrust policy. Income and the standard of living. The theory of production and marginality. Determination of input factors beforehand. Rent of lands and other natural resources. Wages, salaries and the labour market. Interest, profit and capital. Final assessment is through written exams, with marking between 1–5.

Advanced Econometric Methods: Examining the relations between the different fields of economic life by making models and to evaluate the results reliably. All the methods will be shown using computers. Course outline:

- Presentation and utilisation of multivariable methods.
- Econometric examinations with production functions.
- Utilisation fields of linear programming models
- Nonlinear programming case studies
- Network analysis case studies
- Utilisation possibilities of other econometric- and operations research methods (simulations, dynamic programming, game theory).

Final assessment: written exam

Basic Methodology: Basics of mathematics, statistics and operational research by practical examples. Building up Basic knowledge for the course of Advanced Econometric Methods.

Course outline:

- Basics of the theory of functions, review on the functions of examination methods
- Basics of probability calculation and statistics, Correlation and regression
- Essence of modelling, possibilities of creating and solving models
- Types of mathematical programming models
- Basics of network analysis
- Possibilities of acquiring information and their utilisation

Final assessment: written exam.

Sociology: The aim of the subject is to learn the methods of sociology (methods of epistemology) and the characteristics of theory development. It gives an opportunity to look into the social-historical conditions of the origin of sociology by reviewing schools of thought and significant personalities. In the middle of the semester, we will discuss the fundamental importance of social structure, which influences social change. At the same time, the theory behind how the institutionalizing process works is explained. The development of social inequality systems and the role of social inequality dimensions in Hungarian social history. In the second part of the lectures, students are acquainted with the sociological view of culture, with an emphasis on its integrating norm creating and norm interposition importance. Furthermore, the possibilities for using socio-cultural analysis for different statuses and roles existing in society are also discussed.

Course outline:

- The examination methods of sociology, societal view of sociology
- The history of sociology (schools, ambitions, personalities)
- The influence of culture on economic development (Károly Polányi and his economic integration, Max Weber about the Protestant ethic as the "ghosts" of capitalism)
- Social structure, structure opinions (theories of social classes and social strata)
- Social mobility and migration
- Institutionalizing processes of society, social institutions
- Inequality structure of society (status, income, cultural differences and inconsistency)
- Sexual (male, female) roles, role conception and their cultural interpretation
- Social importance of human lifecycle: childhood, old age – cultural interpretations
- The history of cultural thinking
- Culture theories: philosophic conception, anthropologic-, psychoanalytic- and sociological interpretations
- Following regulations, norms, values and patterns - tradition and innovation in culture

Final assessment: Oral exam (Commerce and marketing course, MBA) Written exam (Human Resource Management Course).

Humanity: Getting acquainted with the philosophic, psychoanalytic, anthropologic and sociological approach of culture, concepts and interrelations of social subsystems (politics, economy, culture)

Course outline:

- The concept of culture: different aspects of the concept of culture (ethnographic, symbolic, anthropologic, information, philosophic and psychoanalytic aspects)
- The "origin" of culture
- Socialisation, learning, tradition, selective patterns
- Social integration: socialisation, learning, tradition, following patterns

Final assessment: Oral exam.

Management Decision-Making: Students are acquainted with basic concepts and most important questions of this discipline. H. Simon (Nobel Prize winner) and P. Drucker played important roles in this discipline. Theory and practice of acceptable, good and optimal decisions. Decisions based on objective facts und intuitions. Managers' way of thinking. Distinction between acceptable, good and optimal decisions.

Final assessment: Oral exam

Law: Basics of the legal system, legal regulations and characteristics of an operating legal system. Overall knowledge enabling students to learn special areas of law and interpret legal problems.

Course outline:

- Elements of legal theory, categories of legal development
- Determination of the legal system, basic processes
- Elements of legal notions (effectiveness, validity, legal entity)
- Forms of legal responsibility
- Parts of the legal system
- Theoretical and political basics of constitutional law development for the Constitution
- Organisational forms of Constitution, legal frames of executive power
- Parliament, Government, President of the Republic, etc.
- Personal rights
- Other areas of common law (law of public administration, financial law)
- Basic categories of criminal law. Introduction to the general part, specialised parts
- Basic principles of criminal procedures. Organisations in criminal law
- Civil law I. System of civics, laws of individuals
- General characteristics of ownership and contractual law, family law
- Civil law II. Law of enterprises
- Sociological characteristics of administering law and legislation

Final assessment: Oral examination

Marketing: By the end of the course students will obtain an overall knowledge in marketing management and the basic methods of marketing planning

Course outline:

- Marketing and market conditions
- Basics of marketing:
- Product policy
- Price policy
- Channel management
- Advertisements
- Functioning of the marketing system
- Marketing information system
- International marketing
- Marketing strategy
- Theoretical and practical questions of marketing planning

Final assessment: Evaluation of the marketing plan. The marketing plan has to include a study on a real marketing activity of an existing company, thus vocational practice is obligatory

Business Planning: The basics of business planning will be introduced to students. Each student will prepare a business plan on a PC with the guidance of the course leader on the data of an existing company.

Course outline:

Theoretical and practical basics of planning, business plan Managerial summary
Overall introduction of the company
Connections of the company (environmental analysis)
Leadership and structure of organisation
Technological, organisational plan, products and services
Marketing plan, strategic plan on financial planning
Appendices to the business plan
Relevant analyses in connection with the business plan

Final assessment: Evaluation of the business plan

International Finance: to introduce the international statement of expenditures and its legal aspects, the balance of payment, international exchange rates to explain international money and capital market, international monetary institutions, the basics of EMU and EURO.

Course outline:

- convertibility, foreign exchange regulations, balance of payment – rate of exchange, related measures
- international money and capital market, credit system
- international statement of expenditures, methods of payment
- international monetary institutions
- European Monetary Union, introduction of EURO
- Types of foreign trade transactions
- Realisation of foreign trade transactions

Final assessment: Written examination

Rhetoric: Objectives of the course are to make students realise the theoretical and practical norms of particular Hungarian public parlance, word of mouth, construction and the sound of living speech and public standard. Furthermore, to make students realise and to accustom them to speaking to the public, special requirements of public communication arising from situations, the particular manner of speaking as regards partner/s and the subject of conversation, conscious manner of speaking and an appropriate attitude to partners' positions, social and scientific activities. This course provides both theoretical and practical knowledge that are necessary for people wishing to communicate with the public either in writing or oral forms.

Course outline:

- Rhetoric as a multidisciplinary and auxiliary science
- Basics of rhetoric and communication
- Language and speech
- Structural parts in public speech, preparation of speeches
- Principals of good drafting as regards sounding
- Main methods of oral and written communication, main requirements of oral presentations. Preparation of a presentation.
- Presentation of a speech, speaker on the speaker's platform, behind the microphone and camera.
- Up-to-date style of speaking. Speaking norms
- Basics of clear speaking

Final assessment: Practical mark in MBA specialisation

Master training in Agribusiness and Rural Development at the University of Zagreb

László Kárpáti

Faculty of Agricultural Economics and Rural Development, University of Debrecen

Project title and acronym: Agribusiness Higher EducAtion Development (AHEAD)
Specific objectives of the project: Curriculum Development for Agribusiness as well as Food Safety and Quality in Croatia Development of new BSc and MSc programmes and modernisation of their professional content Retraining of Teaching Staff in Croatia
Type and duration of the project: Curriculum Development, 3 years
Educational institution: University of Debrecen
Partner country universities involved: University of Zagreb

Summary of the main features of the project

The title of the proposed JEP project is: "Agribusiness Higher EducAtion Development" with the acronym AHEAD. This curriculum development project – in case of acceptance – will last for three years, from July 2005 and June 2008. The primary project site is the University of Zagreb, Croatia; the contractor and the co-ordinator institution is the University of Debrecen, Hungary. In the consortium, 3 further European universities (University of Hohenheim, Wageningen University and Scottish Agricultural College) will participate, from the Croatian side the Ministry of Agriculture, Forestry and Water Management and an additional 7 Croatian institutes will also be involved. The total number of members in the consortium is 13.

The main objective of the AHEAD project is to establish new BSc and MSc programmes in Croatia at two Faculties of the University of Zagreb. These are as follows: Agricultural and Rural Development, Food Safety and Quality Management and pilot MSc training in Agribusiness and Rural Development. These are preceded by faculty retraining programmes in food safety and quality management, as well as agribusiness and commerce within the framework of a MBA programme accredited by the International MBA Network.

The professional content of the project is a modernised curriculum and training palette that would be available by the end of this project at the University of Zagreb, serving not only the higher education of the country, but the demand of the Croatian national economy as well, in line with the basic principles of the European Union.

Table 1: Members of the consortium

First name	Surname	Function	Higher education institution:
János	Nagy	Rector	University of Debrecen
László	Kárpáti	Vice Dean	University of Zagreb
Josip	Juracak	Associate	
W. J. M.	Heijman	Professor	Wageningen University
Reiner	Doluschitz	Professor	University of Hohenheim
David	McKenzie	Vice principal	Scottish Agricultural College
Miroslav	Bozic	Assistant minister	Ministry of Agriculture, Forestry and Water Management
Josip	Gugic	Assistant	Institute for Adriatic Crops and Karst Reclamation
Anita Silvana	Ilak Persuric	Scientific assistant	Institute of Agriculture and Tourism
Marina	Miksic	Director's Assistant	Croatian Agricultural Extension Institute
Hrvoje	Pokupec	Assistant	"Agrokor" d.d.
Sandra	Tankosic	Associate	Croatian Chamber of Economy
Lidija	Horvatic	Director	Croatian Employers Association
Miroslav	Bajkovec	Secretary	Croatian Society of Agricultural Economists

Background of the project

The Bologna process offers new opportunities for the countries of Europe to think over the structure and professional content of their higher education. The new two-stage system of Bachelor and Master trainings gives an opportunity for countries all over Europe to redesign the orientation of trainings, the inner structure and the outcome of their educational activities. In the case of Croatia, it also gives her an opportunity to form new types of training in agriculture and related subjects.

The principal venue of the agricultural training is the Faculty of Agriculture at University of Zagreb, where there is a long tradition of various agriculture-related educational efforts for several decades. Their curriculum has been changed over the decades; however, it has been established that, in its present form, it does not fit the Bologna principles fully. Last year, there was a decision in Zagreb to change agricultural education and for this purpose a reform programme was started in agricultural training with the cooperation of Hohenheim and Vienna Universities, within the framework of a TEMPUS programme. This TEMPUS programme (TEMPUS JEP 17108/2002) opened a new way of thinking at the University of Zagreb, and on its basis, transformed, new Bachelor and Master programmes have been initiated.

In that TEMPUS project, a special emphasis was on the natural sciences and environmental aspects of agriculture. In can be stated, however, that business studies, and especially those which have a special importance for agriculture, did not receive enough emphasis within the programme. In the present situation, agribusiness is a very important part of agricultural training all over Europe, and during the last decade, this area did not receive enough attention in training at the University of Zagreb. Parallel with the accession of Croatia to the EU, more emphasis should be given to the knowledge of agribusiness areas.

Another important area is the food quality problem, which has become the number one question in Europe by now. Consumers want to know how the food that they consume is produced, who is responsible for its quality and especially how safe their food is. In addition to food processing and food technology knowledge and the general characteristics of quality, a special emphasis should be given to the knowledge targeting the evaluation of the critical steps of quality and safety issues of food production. Food quality assurance is also vitally important for the country's accession to the EU. Although the technical knowledge of and the training in these issues are quite developed at the University of Zagreb, it can be stated that so far such a special training was not offered for students.

Following discussions in early 2004 with the university staff of the University of Zagreb, the Faculties of Agriculture, Food Technology and Biotechnology, it can be said that these are the two new areas where more development would be needed. They are also significant due to the application of the Bologna process. Additionally, changes in legislation are certainly needed for Croatia's successful accession to the EU.

These preliminary discussions were fruitful and the decision was made in 2004 at the Faculty of Agriculture to start an Agribusiness and Rural Development Bachelor programme in 2005, and also a preliminary agreement was achieved together with the Faculty of Food Technology and Biotechnology in order to start a new BSc programme in 2006, in the field of Food Safety and Quality Management. This present TEMPUS application targets especially these two areas, which are full of possibilities not just for the higher education system in Croatia, but also for training experts in this field for the benefit of the whole country.

Rural development is an area which also needs more development in Croatia, since only a first step was made in the education in this field. In the future, this professional area may become one of the most important areas for the country. Knowledge of rural development can be successfully combined with knowledge of agribusiness and such business subjects as Management, Statistics, Mathematics and Operations Research, Marketing, which are very also useful in the field of Food Safety and Quality Management studies. There are also other novelties in the present TEMPUS application, such as cooperation among the Faculties of the University of Zagreb, which was unusual in the past. Another novelty is that some subjects of the Bachelor and Master programmes can also be taught in English, which provides an opportunity to attract foreign students to Zagreb, in addition to delivering up-to-date knowledge to Croatian students who can speak English at appropriate levels. Since the retraining of the University of Zagreb's staff has been a part of this programme and retraining will take place in English language, professional English language education is an embedded part of the programme. This takes place firstly in retraining programmes, and then the university staff will transfer this knowledge to prospective students.

Since the training of Agribusiness and Rural Development as well as Food Safety and Quality Management is quite new in Croatia, it can be stated that experts to be trained are vitally important for the national economy. It can be projected that this training will be prioritized by the government of Croatia. Experts who are badly needed for Croatia in the not too distant future are numbered in thousands, rather than in the hundreds. The establishment of more exact numbers of experts is a part of the programme with the cooperation of the relevant Croatian Ministries and other institutions dealing with this problem.

In summarizing the background of the project, it can be stated that on the basis of the previous TEMPUS project that started in 2003, and the present Council decisions of the University of Zagreb, the necessity of special experts for Croatian national economy in connection with especially the accession to the EU, as well as to the requirements of the Bologna process, show towards the same direction targeted in the present application. It means that the present application can be considered as the continuation of the previous TEMPUS JEP (17108/2002) and will strengthen the University of Zagreb's educational decisions and the human

resource development plans of the Croatian government as well, all serving the common goals of the European Union.

The Consortium consists of several Central and Western European universities with strong educational potential and wide-ranging international experience, as well as governmental and nongovernmental organisations throughout Croatia, with special expertise in different areas, representing various values that can contribute to the successful completion of the project. Such a composition of the Consortium would mean that the management of the project is not an easy task. However, if effective communication can be facilitated among the Consortium members, then the value that a certain Consortium Member can add to the project could guarantee the generation of a high quality outcome. It is planned, therefore, that an Internet-based communication platform should be set up to guarantee the effective cooperation among the different consortium members and this new method will make it possible to utilise the specific knowledge of each Consortium Member for the benefit of the entire project.

Project description

The main objective of the AHEAD project is to establish new BSc and MSc trainings in Croatia at the University of Zagreb, namely at two faculties: the Faculty of Agriculture and the Faculty of Food Technology and Biotechnology. The new trainings – that are based on the Bologna principles – are as follows: a 3-year BSc training in Agribusiness and Rural Development, starting in 2005, basically at the Faculty of Agriculture with the cooperation of departments from the other Faculty. The other BSc training, named Food Safety and Quality Management is planned to start in 2006, with the same arrangement as above.

In order to meet the requirements of the national economy of Croatia, a training needs analysis (TNA) is carried out from the beginning of the project: July 2005, in order to know how many experts are needed for these areas in the Croatian national economy in the medium and long runs, with the assistance of the Ministry of Agriculture, Forestry and Water Management as well as the other Croatian Consortium Members working in this field. The trainings are preceded by a retraining programme for the staff of the University of Zagreb. In case of agribusiness and rural development issues, retraining will take place within the MBA training in Agribusiness and Commerce, based on the principles of the International MBA Network. This retraining programme makes the Faculty members capable of teaching the Bachelor and later (in 2007) a pilot Master training in Agribusiness and Rural Development and related studies effectively at the University of Zagreb.

Food Safety and Quality Management training is also preceded by a retraining programme. This programme is provided by the EU university consortium members (Debrecen, Hohenheim, Wageningen, Aberdeen). This programme contributes to the personal professional development of the faculty members of the University of Zagreb and later makes them capable of teaching these subjects in English, as well. After finishing the MBA retraining programme in 2007, there are two tasks for the Faculty members of Zagreb in this direction. One is to accredit the MBA programme at the University of Zagreb by the International MBA Network Supervisory Board, and based on that to establish their own MBA programme in Agribusiness and Commerce in Croatia. At the same time, the University of Zagreb is starting a so-called pilot MSc programme which can later be a regular Master programme in Agribusiness and Rural Development at the University.

By the end of the AHEAD project, June 2008, there will be at least two new BSc programmes established at the University of Zagreb, Agribusiness and Rural Development, with two outcomes: Agribusiness and Rural Development branches. The decision has to be made during the project duration. The other BSc programme is the Food Safety and Quality Management programme, which can also be shared into two branches by the end of the project. This decision should also be made under the operation of the programme. The University of Debrecen organises the whole project on behalf of the Consortium members and provides English trainings for all the educational activities of the project with the cooperation of Wageningen, Hohenheim and Aberdeen universities in all the areas which were mentioned before.

The Croatian Ministry of Agriculture, Forestry and Water Management, together with the other Croatian consortium members, has a double role in the project. At the beginning of the project, from July 2005 to March 2006, they all work together in the training needs analysis for the Croatian national economy, especially in agriculture, agribusiness and food related areas. They also exercise professional supervision of all the programmes to be established at the University of Zagreb. Supervision regards the direction of the training, its structure, its subject composition as well as its inner content in case of each subject. It means that the requirements of the practice are always taken into account, in all the aspects of educational efforts, in addition to the requirements of the Bologna process and the internationally accepted standards of training and examination. Since the retraining and the MBA courses has been all carried out in English, it guarantees the opportunity to teach some subjects in the BSc and MSc programmes in English by the staff of the University of Zagreb. This can mean a better opportunity for the University of Zagreb to attract foreign students and connect to the European Union's Erasmus and other exchange programmes more effectively.

The coordination and financial arrangement of the entire programme is the responsibility of the University of Debrecen. Since the number of consortium members is quite high, altogether 13, and the tasks to be carried out are also quite extensive, an up-to-date and effective management tool has to be set up just at the beginning of the project execution. An Internet-based communication platform will serve for all the information exchange tasks in the project, including communication towards the Croatian government and the general public, as well. This communication platform itself will also be a great benefit for the whole project. Another

benefit is that – especially in the retraining parts and the MBA training – in addition to the Faculty members of the University of Zagreb, the experts of the Consortium Members of agribusiness and food processing firms can learn together. In this way, effective interaction between the so-called theoretical and practical experts can be guaranteed, which means a long-term benefit for the whole programme.

The equipment to be purchased would serve the trainings of this project and can also contribute extensively to the modernisation of the training in Zagreb. Most of the activities are carried out in Zagreb, but in a limited way the Zagreb staff members will visit the foreign consortium members, as well, in order to study their work on the spot, especially the methodology and examination of the specific subjects and the organisation of whole courses. The composition of the Consortium Members also serves the dissemination targets of the AHEAD project since these activities will be carried out in the middle, northern and southern parts of Croatia, which will ensure the effective dissemination of the results not just among the Consortium Members, but towards a larger professional general public as well. Since the information about the EU is included in many subjects, the dissemination of this knowledge throughout education directly contributes to the successful accession of Croatia to the European Union, as well. The cooperation between the previously accepted TEMPUS JEP (17108/2002) and this application can guarantee that the changes in agricultural training in a broader sense can achieve a "critical mass", moving from the so-called "traditional" training to newer ones targeting the possible future role of "multifunctional" agriculture. The professional content of the project is a modernised curriculum and the training palette that would be available by the end of this project at University of Zagreb serves not just the higher education of the country, but the demand of the national economy of Croatia, as well, in line with the basic principles of the European Union.

Dissemination

The principal venue of the dissemination activities is Croatia, but a lot of information will be available for the general public of the other participating countries as well. The principal language of information is Croatian; in the case of other countries English language communication is applied. All the dissemination activities are based on the centralised management information platform, via the Internet. The details of this system are described under the title "Project management" III.5.4. Some parts of this English language platform are available for the general public, which means that this is an automatic, but passive dissemination form. In addition, more active forms are planned using the Croatian language as the means of communication. The main means are as follows:

- Croatian language web sites
- Brochures of the planned study programmes
- Press conferences from time to time
- Participating in educational fairs
- University of Zagreb open days with strong cooperation by the participating faculties and special centres

Possible communication forms on behalf of the participating consortium members, especially:

- Ministry of Agriculture, Forestry and Water Management
- Institute for Adriatic Crops and Karst Reclamation (responsible for Southern Croatia)
- Institute of Agriculture and Tourism (responsible for the Northern part of Croatia)
- Croatian Chamber of Economy (nationwide organisation)
- Croatian Employers' Association (voluntary, nationwide organisation)
- Croatian Agricultural Extension Institute (nationwide, state-run organisation)

The combination of the so called "traditional" and "modern" (Internet-based) information technologies and the bilingual approach will guarantee effective information dissemination for the general public.

Sustainability

The long-term sustainability of the project results can be guaranteed by the fact that the trainings to be developed fulfil an existing educational gap in Croatia. This can be evaluated from two sides:

- Institutional sustainability: the trainings to be developed fully correspond with the efforts of the University of Zagreb. The launching of the Agribusiness and Rural Development BSc programme has already been decided there and the beginning of Food Safety and Quality Management BSc, as well as Agribusiness MSc programmes, are in the planning phase at the University of Zagreb. The appropriate Ministries fully support these plans, so their long-term sustainability is guaranteed in this way.
- Financial sustainability: in case of the trainings carried out at the University of Zagreb, the education – mentioned in the previous point above – will be supported by the Croatian Ministry of Education and Science. Business oriented courses, such as the MBA training, provide such an education form that does not exist in Croatia now. Its long term financial feasibility can be guaranteed by maintaining the quality of the training and the Croatian business community will certainly finance the maintenance of the course after the termination of the project.

Quality control and monitoring

Monitoring activities are carried out through an Internet-based management information system. It guarantees the constant tracking of the project. Every quarter of a year, an overall evaluation will take place as a part of the monitoring system. At the end of the first and the second years, a yearly report will be composed and at the end of the third year a final report will be created. Due to the constant supervision of advancement through the computer-based information system, quality control by the project management can be considered as a constant, internal task. The external evaluation of the project activities is carried out by different bodies:

- The MBA training is supervised and finally accredited by the Supervisory Board of the International MBA Network.
- The Bachelor and Master trainings developed will be accredited by the Accreditation Board of the Croatian Ministry of Education and Science.
- The professional content subjects and their suitability to international standards will be supervised by the Educational Committees set up by EU universities.
- The practical usefulness of the subjects will be evaluated by partly the Croatian institutional members of the project, their professional counterparts and especially the professional bodies of Croatian Ministry of Agriculture, Forestry and Water Management.

This combined quality assurance system will guarantee to both international standards and the requirements of the Croatian national economy.

Financing

The proposed total budget is 531698 EUR, with the contribution of the consortium members (cash and in kind) 31.700 EUR, and the requested Tempus grant is 499.998 EUR.

Part-time executive programme, quality manual

AGRIMBA team

An MBA course with an international perspective, designed for those who wish to develop their careers in an agri-business environment.
Taught at weekends on a part-time basis, by an international team using both the Local and English language.
An interactive teaching style with extensive use of case studies that gives a real feel of the business environment in which we all operate.

History

The International MBA Programme in "Agribusiness Management and Commerce" was originally launched in 1993 by a group of teachers from well-known European universities and other Higher Educational Institutions in the 1990s. This group had emerged from an EU supported TEMPUS project that fostered multinational collaboration around teaching programmes in Agribusiness. The development of the MBA was supported by an EU PHARE-TESSA grant. The original programme was developed and run at the Warsaw Agricultural University in Poland, and was taken up soon thereafter by the Czech University of Agriculture in Prague. Since then, a variant has been approved for Debrecen Agricultural University in Hungary, and others fostered in Kiev and Moscow.

The partners very quickly recognised the need to formalize the activities of the developing network, and an International Board was established for that purpose.

The Board of the MBA Network

The full Board of the Network is made up of the Executive together with any other interested parties or their representatives.

The Executive Board is composed of a Chairperson, a Vice-chair person and representatives of the Institutions that operate MBA programmes under its guidance, and of the partner institutions. Other members can be co-opted as necessary.

The Board exists to achieve the following objectives:

- To foster contacts between international providers of MBA programmes in Agri-business management and associated studies.
- To provide the oversight and accreditation of International MBAs in Agri-business management for those who wish to receive such accreditation.
- To spread international collaboration in the field of Agribusiness and Commerce by encouraging participation in the Network.

The phylosophy of the Board

Throughout, the Board has sought to encourage the development of the programmes under its accreditation. It has performed this by maintaining an approach to standards that set minimum requirements to which all must conform, and by instigating processes of Quality Management that ensure the progressive enhancement of the existing provision. Central to this organic process is the belief in local ownership and flexibility as the key to quality, together with the establishment of processes for reflective practice and self-development embedded in the accreditation, annual monitoring and periodic review standards that promote a culture of continuous improvement.

Operation

The Board meets annually to pursue its objectives. This meeting takes place at a different venue each year, hosted by one of the Board members.

At this meeting, the actions of the Executive on behalf of the Board are ratified and actions, in pursuit of its 3 objectives, for the year ahead are identified. The Board receives reports from groups of its members that have been tasked with various activities, from individual Board members who wish to bring matters to the attention of the Board, and from other parties invited by the Executive to take part. The agenda for the meeting is circulated 2 weeks before the meeting. Minutes of the meetings are posted on its website.

An important element of this reporting concerns accreditation and review of MBA programmes that wish to join or remain within the provision.

In addition, the Board receives Annual Reports from the MBA programmes that are being run under its accreditation and monitors their progression. The Board may designate actions that it requires of the programme providers as conditions under which the programmes can go forward, and it can withdraw accreditation where, in its view, any programme is in irredeemable difficulty.

Quality Assurance Processes

1. The Board approves an annual report of the validation, revalidation and annual monitoring of all its associated MBA programmes, which is subject to external scrutiny.
2. The Executive Committee prepares its annual report, summarising the reports it receives from its panels and sub-committees.
3. The Executive Committee constitutes a Panel(s) for the purposes to validate new proposals or reviewing and to revalidate existing programmes every 6 years. Such panels have a single remit and are made up of representatives of the Executive Committee (chair), of the wider Board (excluding any persons who have direct involvement in the programme under consideration) and of at least one External institution or organisation that is independent of the Board. This Panel undertakes the scrutiny of proposed or existing programmes to ensure that they conform to expected quality standards. The committee produces a report and recommendation to the Executive Committee.
4. The Executive Committee constitutes a standing Monitoring Sub-committee to receive and scrutinise annual reports from the various associated MBA programmes and submits recommendations to the Executive Committee regarding the health of those programmes.
5. New programmes prepare documentations for the Validation Panel regarding the proposed programme.
6. Existing programmes prepare annual reports and action plans for the Monitoring Sub-committee.
7. Existing programmes prepare review reports every 6 years for the Validation Panel.

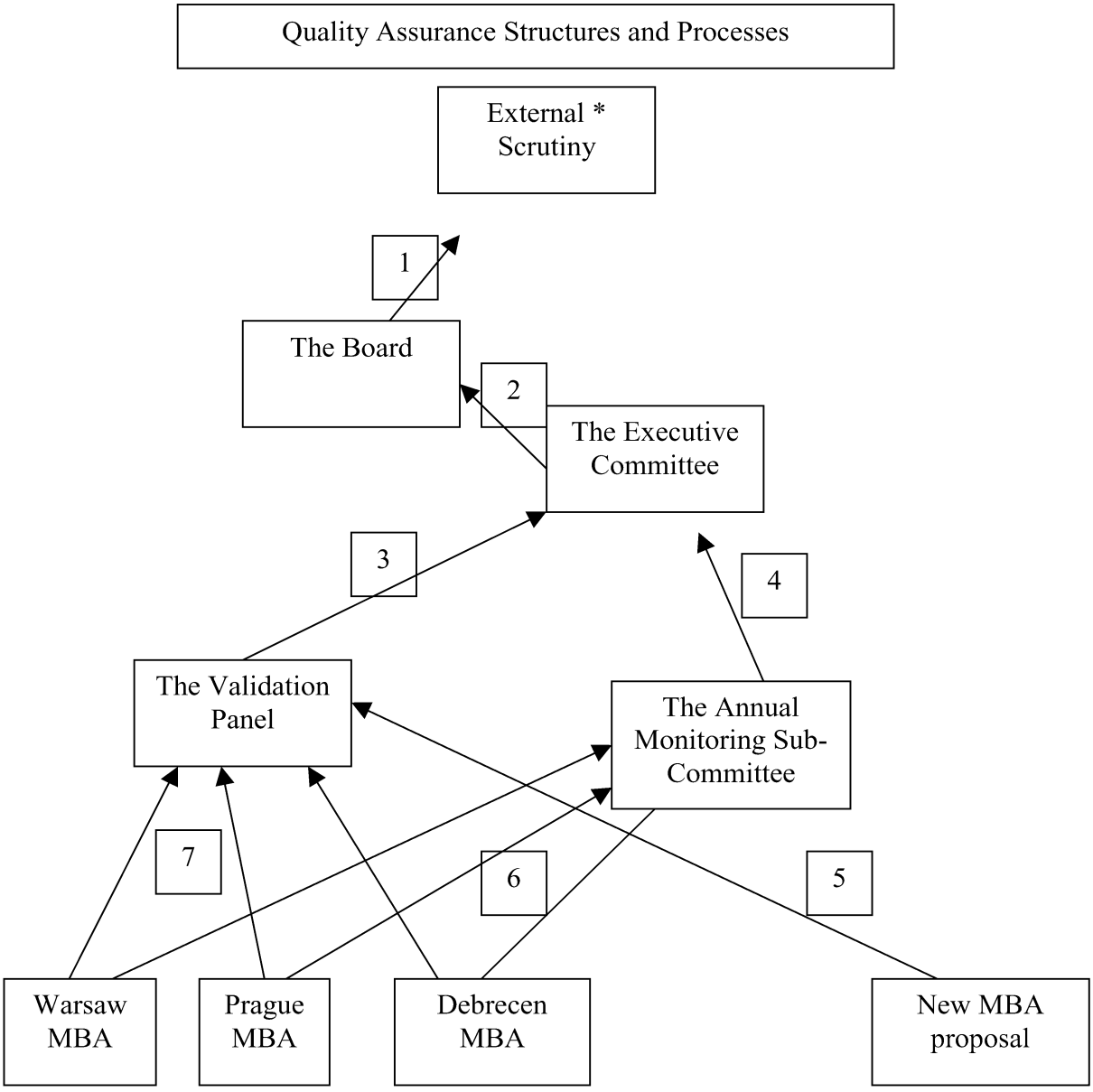

Figure 1: Quality Assurance Structures and Processes

Accreditation

Higher Educational Institutions are open to request recognition of the equivalence of their provision under the Board's portfolio of International MBAs in Agribusiness Management and Commerce. Applications (in English) should be prepared in writing by the MBA programme co-ordinator, accompanied by a letter of support from the relevant Higher Educational Institution, by a copy of the Course Handbook, by the Curriculum Vitae of the teaching staff and by an invitation for a Panel to visit the Institution (this invitation should indicate that all the associated costs of the visit will be born by the Institution).

When the Board is approached by such an educational provider wishing to offer an International MBA in Agri-business Management under its umbrella, the Board will, through its Executive, constitute a Panel to examine the proposal on its behalf. It will subsequently receive the recommendation of the panel and formally acknowledge accreditation in writing.

The Panel will consist of a minimum of 2 persons appointed by the Executive from amongst the membership, one of whom (the chair of the panel) will be a member of the Executive, together with a person external to the Network who has a suitable background and experience to provide independent advice.

Accreditation will be given to programmes that satisfy the Board of their suitability. They will demonstrate such suitability by meeting the minimum requirements of:

having the support of their own institutions for running the course.

Such support will take the form of an official document of the Institution granting permission for the programme to be run within its jurisdiction. It is not a requirement that such approval takes the form of a validation of the MBA award, but neither does it preclude this.

- Having a Course Handbook that conforms to the Board's standards;
- The Board does not insist that a uniform set of regulations pertain to all programmes, but that each local variant addresses the key components for running such a programme, as manifested in the requirements of the Course Handbook. However, minimum standards are specified under some sections to ensure that any particular MBA programme is generically part of the Network provision.
- Hosting a visit of the panel to the course in operation, including attendance at a Course Management Meeting;

The Board prefers to accredit programmes that are running, rather than those that are simply proposals. It is much easier to get a feel for something that is running and that can be observed. The visit will look at learning resources, teaching and learning strategies as well as programme management.

The Panel may recommend one of three courses of action:

- accreditation;
- or accreditation subject to a set of specific actions;
- or non-accreditation (under circumstances where the provider is unable or unwilling to implement the panel's recommendations).

Re-accreditation

Every sixth year in any MBA programme a review year will be held. A Panel will be constituted as above and will scrutinise a Review Report, which will replace the annual report for that year – and which will be presented one month before the date of the Annual Board meeting.

The Review Report shall be deemed satisfactory if it conforms to the standards set by the Board. The Panel may request an opportunity to visit the programme provider. The Panel may recommend one of three courses of action:

- continued accreditation for a further 6 years;
- or continued accreditation subject to a set of specific actions with a time frame;
- or withdrawal of accreditation (under circumstances where the provider is unable or unwilling to implement the action plan).

Annual Monitoring

Every year, the Programme Manager for each MBA Programme will submit an Annual Report to the Monitoring Sub-committee of the Board, 2 weeks before the annual meeting. Like the Accreditation Panel, the Sub-committee will be appointed for the year ahead by the Executive, and will consist of a chair (a member of the Executive) and 2 other Board members. The Sub-committee will scrutinize all the reports to ensure that they conform to the standards set by the Board for Annual Reports and that the programmes themselves are in health. The Sub-committee shall make recommendations to the Board. The Board will officially receive the reports and the recommendations, and may require certain actions to be taken by any programme provider, which, in the view of the Board, are deemed necessary to enhance the quality of provision, and which will be reported upon in the next Annual Report.

Documentation

Standards of the Course Handbook

The course handbook shall have the following sections and minimum requirements:

- Introduction including Management Committee membership.

- The Committee should meet at least annually and the minutes should appear as an annex in the Annual Report.
- Rationale
- This should make reference to the local recruitment market and career positions of prospective participants.
- It should also set down the minimum entry requirements to include a Bachelor's degree in any subject or its equivalent and an ability to communicate in English.
- Ideally, participants should also be post-experienced.
- Course Aims and Objectives
- Assessment
- This should include statements regarding the frequency and mode of assessments.
- There should be a minimum of one assessed presentation per year, excluding the defence of the dissertation.
- It should also give guidance upon retrieval of failure, extenuating circumstances causing absence or poor performance and appeal procedures.
- Attendance requirements
- Precise attendance requirements may be determined locally, but the minimum for any programme should be 400 contact hours (or equivalent) over two years.
- Minimum standards of attendance on taught elements should be set locally.
- Learning Methods

A statement regarding the mix of learning methods should include reference to use case-studies and to emphasise self-directed study.

There should be an international study tour.

- Resources
- The handbook should give clear guidance on students' access to learning resources, including internet and other Information and Communication Technologies that will be provided or required.
- Course Structure including Unit descriptions
- The course should be broken down into a number of Courses to be studied during the programme, and the Modules or Units into which they are sub-divided.
- It should indicate a minimum of core courses that must be studied (Economics, Finance, Marketing, Operational Methods and Management), the structuring and timing of optional elements or local requirements (including prescribed combinations).
- There must be a final dissertation that forms a significant element of the programme.
- Timetable
- Staff and Student responsibilities and rights
- It is desirable that a learning contract is available, but at the least there should be a statement of entitlement setting out the minimum support available to the student, and a statement of responsibility outlining minimum behavioural requirements of the student, including equal opportunities, harassment and health & safety regulations.
- Teaching staff
- This should include all staff who will teach in the programme, with their designated subject areas and a thumbnail description of their achievements.
- International teachers must be included in this list.

Standards of the Annual Report[13]

The Annual Report shall have the following sections:

- Review of Last Action Plan
- Every Annual Report should begin with a summary of the key issues that the report raises, together with a plan to address them, presented in a simple, tabular format.
- It follows that the first section of the Annual Report should detail the progress on the previous year's action plan.
- Curriculum – changes to content and organisation
- Teaching & Learning – enhancement of methods and staff development
- Assessment & Progression – student performance
- Learning Resources – acquisitions and new materials
- Quality Management & Enhancement – data gathering activities and responses to the issues identified
- Action Plan for the year ahead

The evidence upon which the issues discussed in the report are based should be provided in Appendices. Primary amongst these will be Student Evaluative feedback and Programme Management Committee minutes.

Standards of the Review Report

The Review Report shall have the following sections:

- Critical Review of the Provision – highlighting the themes contained in the 5 Annual Reports and the successes of managing the programme
- Proposed Changes with justification – potentially covering all aspects of the programme
- Resources – Teaching Staff's Research & Scholarship, library acquisitions and e-learning development.
- Quality Systems – the operation of continuous improvement over the previous 5 years.

[13] Action Plan – what needs to be done in order to enhance the provision of quality in the year ahead (e.g. changes to teaching methodology, staff development, curriculum, student support etc.)

Appendices

Report to the Board of the MBA Network on behalf of the Validation Panel

The Members of the Panel recommend that overall: (title of award & Institution)	Accredited ☐	Accredited subject to conditions ☐	Not accredited ☐
The Panel found the provision to have the described standards against the following Criteria:	Good	Satisfactory	Requires attention
Programme Management			
Recruitment and Admissions Course Aims and Objectives Assessment			
Attendance requirements			
Learning Methods			
Learning Resources			
Course Structure including Unit descriptors Timetable			
Staff and Student responsibilities and rights Teaching staff			
Internal Processes for Quality Assurance			

Signed …… Panel Chair Person

Date……

Risk Assessment of Genetically Modified Crops ans Foods in the European Union

Review by János Lazányi

Faculty of Agricultural Economics and Rural Development, University of Debrecen

Since the beginning of the 1990s, the marketing, processing and cultivation of genetically modified organisms and their use in animal feed has been regulated by Directive 90/220/EEC. This legislation has been strengthened by Regulation 97/258/EC, concerning foods and food ingredients. The regulatory framework for GMOs was amended and updated by the adoption of Directive 2001/18/EC, repealing Directive 90/220/EEC, and by two other regulations. One is related to GMOs in human food and animal feed (Regulation 1829/2003/EC) and the other to the labelling and traceability of GMOs (Regulation 1830/2003/EC). This paper is based on the process of legislation and examines the adventitious presence of GMOs, which is an important point to the Regulation and to the coexistence of GM and non-GM plants.

GMOs, for both human food and animal feed, are listed under European legislation according to an authorisation procedure, labelling and traceability. This risk assessment examines the expected or unexpected possible effects that the GMO is likely to have on health and on the environment. The procedure is based on scientific evaluation carried out on additives, flavourings and feed additives by the European Food Authority's Scientific Committees, and provides a single authorisation for all food and feed containing GMOs. Legislation is based on finding minute traces of GMOs in the DNA above the threshold criteria. As a result of deliberate release of GMOs into the environment, traces of GMOs in products are technically unavoidable, but will continue to be exempt from the labelling requirement unless they exceed the 0.9% threshold. This evaluation does not include the agronomic criteria for seed and we cannot exclude the adventitious presence of GMOs in traditional crops. This means that minute traces of GMOs may be present in conventional food and feed, either by accident or as a result of adventitious or technically unavoidable contamination during cultivation, harvest, transport and/or processing.

Effects linked to a GMO's potential toxicity/allergenicity or its effects on non-target organisms are evaluated by national and community scientific bodies. Coexistence is not a question of health or environmental protection, as no GMO is allowed on the EU market unless it has been proved to be completely safe. The development of efficient and cost-effective strategies to ensure coexistence between GM and non-GM products for farmers and consumers is considered vital for the coming years, although the experience with the cultivation of GM crops remains limited in the EU. For many years, commercial cultivation was limited to two types of GM maize grown in Spain since 1998, under a non-binding code of good practice. In 2006, genetically modified maize was grown on a total of nearly 60,000 hectares in Spain and on very limited territory in France, Portugal, the Czech Republic, and Germany. The GM maize crop is used exclusively for animal feed in the EU.

CONTAINED USE OF GENETICALLY MODIFIED MICRO-ORGANISMS

Council Directive 90/219/EEC

In order to minimise the risk of genetically modified micro-organisms to human health and the environment, the user must adhere to certain principles of safety and health. In addition, the user must submit to the authorities a notification enabling them to ensure that the proposed installation can be used for this activity without danger. The notification will contain different information depending on the level of the risk involved. Member States may make provisions for consulting groups or the public on any aspect of the proposed use of genetically modified micro-organisms. Member States must also ensure that an emergency response plan is drawn up to ensure an effective response in the event of an accident and that the persons likely to be affected by an accident are informed about all matters relating to their safety.

In the event of an accident, the user must immediately inform the competent authority and communicate all the information necessary in order to assess its impact and to adopt the appropriate measures. In addition, the Member State must inform the Commission and any other Member State liable to be affected by the accident. The Commission must set up a register of the accidents, which have occurred, including an analysis of their causes, the experience gained and the measures taken to avoid similar accidents. To enable

the contained use of genetically modified micro-organisms, the Member States have to provide the Commission with information. Directive 90/219/EEC stipulates that every three years, Member States must send the Commission a summary report of their experience with this Directive. Commission report COM 263/2001 is based on the reports of Member States for the period of 1996–1999 and covers both installations and activities; classification and risk assessment; notification and approval systems. It considers accidents, enforcement, problems with interpreting the provisions of the Directive, public consultation and information, accident and emergency plans, protection of confidential information, waste disposal in respect of each Member State.

DIRECTIVE ON THE RELEASE OF GENETICALLY MODIFIED ORGANISMS

Directive 2001/18/EC of the European Parliament and of the Council

The aim of Directive 2001/18/EC is to make the procedure for granting consent to the deliberate release and placing on the market of GMOs more efficient and more transparent, to limit such consent to a period of ten years (renewable) and to introduce compulsory monitoring after GMOs have been placed on the market. It also provides for a common methodology to assess the risks associated with the release of GMOs. Where new information becomes available on the risks of such release, the mechanism allowing the release of the GMOs is to be modified, suspended or terminated. Public consultation and GMO labelling are made compulsory. The Commission must establish one or more registers recording information on genetic modifications in GMOs, which contain information accessible to the public, and information accessible only to the Member States, the Commission and the European Food Safety Authority. The information includes (i) detailed information on the person responsible for the deliberate release or marketing; (ii) general information concerning the GMO(s) including the commercial and scientific names, the Member State concerned, the decision to authorise the GMO); (iii) information on the DNA inserted into the GMO; (iv) information on detection and identification tools; (v) information on the lodging, storage and supply of samples. The system of information exchange is maintained and operated under the new Directive and the Commission is obliged to consult the competent scientific committees on any questions which may affect human health and/or the environment. The Commission may also consult ethical committees and establish registers for the purpose of recording information on genetic modifications in GMOs and on the location of GMOs. Rules on the operation of these registers are laid down in Decision 2004/204/EC.

Every three years, the Commission is to publish a summary of the measures taken in the Member States to implement the Directive, and a report on experience with GMOs placed on the market. The majority of GMOs that has been developed for deliberate release is transgenic crop plants, modified to tolerate certain herbicides or to resist certain insect pests. Despite the fairly limited experience gained since the Directive entered into force, the report stresses that the Directive and the relevant Regulations help to increase confidence in the legislative framework and to increase the predictability of the decision-making process.

REGULATION (EC NO) 1829/2003 ON GENETICALLY MODIFIED FOOD AND FEED

Regulation 1829/2003/EC of the European Parliament and of the Council

Regulation aims to harmonise national rules on genetically modified food and feed. It established a common EU marketing authorisation procedure and outlines labelling requirements. The authorisation procedure includes safety assessments for the protection of human and animal health and the environment. To be eligible for authorisation foods containing, consisting of or produced from genetically modified organisms must not (i) have adverse effects on human health, animal health or the environment; (ii) mislead the consumer; (iii) differ from the food which it is intended to replace to such an extent that its normal consumption would be nutritionally disadvantageous for the consumer. Applications for authorisation are to be made to the national competent authority of the Member State in which the applicant is based. The application is forwarded to the European Food Safety Authority (EFSA), which will inform the Commission, Member States and the public of the application. The EFSA provides an opinion on the application within six months – it is then considered by the European Commission. The Committee is to provide its opinion within three months. If the Committee agrees with the Commission's decision it will be adopted, if not the Commission must submit a proposal to the European Council for approval. Once a decision is adopted the Commission is responsible for informing the applicant of the decision. See http://www.efsa. europa.eu/en/science/gmo/gm_ff_applications.html for list of applications. Authorisations will include labelling proposals, any necessary restrictions on handling and use, and details for monitoring and detection.

Detailed guidance for applicants is provided in Regulation (EC) No 641/2004 on detailed rules for the implementation of Regulation (EC) No 1829/2003. A Community Reference Laboratory will test and validate the method of detection and identification proposed by the applicant. In regard to ethical issues the Commission may refer to the European Group on Ethics in Science and New Technologies for advice.

TRACEABILITY AND LABELLING OF GENETICALLY MODIFIED ORGANISMS

Regulation (EC) No 1830/2003 of the European Parliament and of the Council

Regulation 1830/2003 of the European Parliament and of the Council concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms stipulates that traceability will be required throughout the food chain. The objective of this measure is to inform consumers through the compulsory labelling of these types of products and create a "safety net" based on the traceability of these products at all stages of production and marking. This "safety net" will facilitate the monitoring and checking of nutritional claims made on labels, the targeted surveillance of the potential effects on human health or the environment and the withdrawal of products if an unforeseen risk to human health or the environment is identified. The 1830/2003 Regulation covers all foodstuffs produced from GMOs, without making any distinctions between those containing DNA or genetic modifications in the chromosomes and those containing proteins derived from GMOs. The old legislation on GMOs covered only foods with traces of the GMOs in the DNA. The Regulation stipulates that operators who place pre-packaged products consisting of or containing GMOs on the market must, at all stages of the production and distribution chain, ensure that the words "This product contains genetically modified organisms" or "This product is produced from GM (name of organism)" appear on a label affixed to the product. In the case of products, which are not packaged and/or the use of a label is impossible, the operator must ensure that this information is transmitted with the accompanying documents. In order to facilitate the traceability of GMOs and also to protect the environment, the Regulation requires operators to transmit an indication that the products consist of or contain GMOs and the unique identifier(s) assigned to the GMOs contained in the products. Through this system of unique GMO identifiers, it will be possible to know these product features and characteristics for the surveillance of traceability.

ESTABLISHING A SYSTEM FOR THE DEVELOPMENT AND ASSIGNMENT OF UNIQUE IDENTIFIERS FOR GENETICALLY MODIFIED ORGANISMS

Commission Regulation (EC) NO 65/2004

All GMOs must be assessed before they can be sown or placed on the market. Unique identifiers make it possible to identify easily a specific GMO on the labelling. The code is uniform and is made up of letters and numbers, enabling each product type to be identified precisely. The identifier is made up of 9 characters, including letters and numbers, combined in a uniform way. This format was approved within the framework of the Organisation for Economic Cooperation and Development (OECD). The identifier for each specific GMO is therefore listed in the OECD's BioTrack database. It contributes to the traceability of GMOs and to consumer information. Set up under the Cartagena Bio-safety Protocol, the Commission or the authority that approved the product's marketing must inform the Bio-safety Clearing-House of this unique identifier in writing.

TRANSBOUNDARY MOVEMENT OF GENETICALLY MODIFIED ORGANISMS

Regulation (EC) No 1946/2003 of the European Parliament and of the Council

The origins of the Bio-safety Protocol are to be found in the UN Convention on Biological Diversity, which was signed by over 150 governments at the Rio "Earth Summit" in 1992, and which came into force in December 1993. In the Convention on Biological Diversity (CBD), it was acknowledged that releases of GMOs (referred as 'living modified organisms' or LMOs) may have adverse effects on the conservation and sustainable use of biological diversity. All countries that signed up to the CBD were expected to (i) establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts, taking also into account the risks to human health and (ii) consider the need for and modalities of a protocol setting out appropriate procedures in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity.

Biological diversity is at the heart of the Bio-safety Protocol, which applies to the transboundary movement, transit, handling and use of all living modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking also risks to human health into account. In the preamble, the Protocol recognizes the crucial importance of centres of origin and centres of genetic diversity discovered by Vavilov. The Protocol reaffirms the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, and notes that the Parties are aware of the rapid expansion of modern biotechnology and the growing public concern over its potential adverse effects on biological diversity, taking also risks to human health into account.

Regulation (EC) No 1946/2003 aims to set up a common system for notifying and exchanging information on the transboundary movements of GMOs to third countries. The

ultimate goal is to ensure that GMOs movements that may have adverse effects on the sustainable use of biological diversity and on human health take due account of the environment and human health. This Regulation distinguishes between GMOs intended for deliberate release into the environment and GMOs intended for use as food or feed, or for processing. Exporters of GMOs intended for deliberate release into the environment must notify, in writing, the competent national authority of the country of import prior to the transboundary movement. The notification must contain the information specified in Annex I to the Regulation. This notification gives importers the option of only accepting the products for which they have given their prior informed consent. If the importer does not reply within 270 days from the date of receiving the notification, the exporter must send a reminder to the competent national authority of the country of import, with a deadline for response of 60 days from receipt. The exporter must send a copy of the notification and of the acknowledgement of receipt to the competent authority of his Member State and to the Commission. Under no circumstances may transboundary movements take place without the prior written consent from the importer. Exporters must keep the notification, the acknowledgement of receipt and the importer's decision for at least 5 years. They must also notify the transit of the GMOs to any country upon request.

The Commission or the State which took the decision must notify the Bio-safety Clearing House (BCH), set up by the Cartagena Protocol, of any decision regarding the use, including placement on markets, of GMOs intended for food or feed, or for processing, which may be subject to transboundary movements. The Bio-safety Clearing-House Focal Point contact person is Ferenc Sárosi, Department of International Treaties on Nature Conservation Ministry of Environment and Water H-1121 Budapest, Költő utca 21. Cartagena Protocol on Bio-safety, Secondary National Focal Point, Emergency Measures (Article 17) contact person is Hajnalka Homoki, Nature Conservation Officer Department of International Treaties on Nature Conservation Ministry of Environment and Water, H-1121 Budapest, Költő utca 21.

The notification must contain the information specified in Annex II to the Regulation. GMOs intended for food or feed, or for processing, may not be moved across boundaries if they have not been authorised within the Community and if the importer has not given his expressed consent (not withstanding the provisions in Regulation (EC) No 178/2002). Exporters must ensure that the exported GMOs are clearly identified; and must state that the product contains or consists of GMOs and produce the codes assigned to those GMOs. Exporters of GMOs intended for food or feed, or for processing, must sign a declaration on the effect that the GMOs will not be deliberately released into the environment. GMOs intended for use in a confined environment must be accompanied by safety rules for their storage, transport and use.

The Bio-safety Protocol includes several positive features, such as the explicit recognition of a precautionary approach enabling a country to ban imports of a particular GMO even if there is a lack of scientific certainty about its potential adverse effects. Advance Informed Agreement (AIA) procedure means that exporting countries must obtain explicit approvals by the importing country before the first shipment of a GMO intended to be disseminated in the environment. Sharing the information on GMOs through a Bio-safety Clearing House (BCH), facilitating the exchange of scientific, technical, environmental and legal information among Parties and assistance in the implementation of the Protocol are also important focal points. The Bio-safety Clearing House should also include information on existing laws, regulations and guidelines for the implementation of the of the Bio-safety Protocol, any bilateral, regional and multilateral agreements and arrangements, summaries of risk assessments or environmental reviews, final decisions and regular reports submitted by Parties. For the first time under international law, there is an explicit requirement that countries take precautionary measures to prevent GMOs from causing harm to biodiversity and human health.

Conclusion

The European Food Safety Authority is responsible for approving GMOs and placing them on the market. Approved GMOs have passed specific tests proving that they do not affect human or animal health. European legislation has harmonised traceability and labelling through Regulation (EC) No 1829/2003 and since 2003, all foodstuffs that are genetically modified organisms, which contain them or are derived from them, including foodstuff for animals, must be labelled GMO. In addition, EC Regulation No 1830/2003 broadens the concept of GMO foodstuff to include all types of foodstuff containing or produced from GMOs, including proteins derived from GMOs, and incorporates additives and flavourings for human consumption, as well as GMO animal feed. This allows consumers to make a choice, when buying these products.

Coexistent measures aim at protecting farmers of non-GM crops from the possible economic consequences of accidentally mixing crops with GMOs. The Commission recommendation states that coexistence measures should not go beyond what is necessary to ensure that accidental traces of GMOs in non-GM products stay below EU labelling thresholds in order to avoid any unnecessary burden for the operators concerned. Measures should be science-based and proportionate and must not generally forbid the growing of GM crops. The diverse nature of EU farming means that coexistent measures have to be adapted to local conditions and crop types, and make it imperative to ensure the maximum degree of flexibility for the Member States in developing their national approaches.

References

Directive 90/219 The contained use of GM micro-organisms.

Directive 90/220 The deliberate release into the environment of GMOs (repealed)

Directive 94/51 Adapting to technical progress for the first time 90/220 on the deliberate release of GMOs. into the environment

Regulation 258/97 Novel Foods and Novel Foods Ingredients.

Regulation 1813/97 The compulsory indication on the labelling of certain foodstuffs produced from GMOs in addition to the particulars required in food labelling laws (repealed in 1998).

Directive 97/35 Compulsory labelling of all new agricultural production or containing GMOs notified under Directive 90/220.

Directive 98/81 Amending Directive 90/219/EEC on the contained use of genetically modified micro-organisms OJ 1998 L330/13

Regulation 50/2000 The labelling of foodstuffs and food ingredients containing additives and flavourings that have been genetically modified or have been produced out of GMOs.

Directive 2001/18 The deliberate release of GMOs into the environment and repealing Directive 90/220.

Regulation 1829/03 New Regulation on GM Food and Feed.

Regulation 1830/03 New Regulation on GM Traceability and Labelling.

Regulation 1946/03 New Regulation on Transboundary Movement

Decision 93/572 The placement of a product containing GMOs on the market pursuant to Article 13 Directive 90/220.

Decision 93/584 Establishing the criteria for simplified procedures concerning the deliberate release of genetically modified plants into the environment pursuant to Article 6(5) Directive 90/220.

Decision 2001/204 Supplementing Directive 90/219 as regards the criteria for establishing the safety of human health and the environment, types of GMOs.

Decision 2002/812, pursuant to Directive 2001/18 summary information format relating to the placement of GMOs on the market or their elements in products.

Decision 2002/813 Establishing the summary notification information format for notifications concerning the deliberate release of GMOs into the environment for purposes other than for their original purposes on the market.

Information for Authors

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ABSTRACT

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