Research Institute of Agricultural Economics
Committee on Agricultural Economics, Hungarian Academy of Sciences

STUDIES IN AGRICULTURAL ECONOMICS
No. 110.

Budapest
2009

Studies in Agricultural Economics No. 110.

The Studies in Agricultural Economics is a scientific journal published by the Hungarian Academy of Sciences and the Research Institute of Agricultural Economics, Budapest. Papers of agricultural economics interpreted in a broad sense covering all fields of the subject including econometric, policy, marketing, financial, social, rural development and environmental aspects as well are published, subsequent to peer review and approval by the Editorial Board.

Manuscripts should be sent via e-mail to the Editor-in-chief (aki@aki.gov.hu). Instructions for the authors can be found on the website of the Research Institute of Agricultural Economics: http://www.aki.gov.hu

HU ISSN 1418 2106

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BOOK REVIEW

Studies in Agricultural Economics No. 110. p. 5-22. (2009)

Global responsibility of food, energy and environmental security

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Abstract

This paper focuses on global responsibility of food, energy and environmental security. World population growth will lead to increasing demand for food and feed with increasing meat consumption. With globalization and urbanization production is moving to the most competitive countries and regions, and food trade is becoming more liberalized but also more concentrated. Growing energy demand and climate change will also influence food production. Additional challenges are increasing market volatility resulting from yield and climate change. We need greater responsibility in cutting greenhouse gas (GHG) emissions, in showing greater respect for the environment. More responsibility is needed regarding food and energy security, and environmental sustainability. The reform process of the Common Agricultural Policy (CAP) must be adapted to changing realities.

Keywords

food security, energy security, environmental sustainability, public goods

Introduction

The sustained economic growth worldwide during the last two decades has shown benefits of globalization. Although it must be admitted, not for all, and much more could have been achieved if notably on the Doha Development Agenda on trade more progress would have been made. However, with the current lower growth environment worldwide, unemployment rising and asset values deflating, etc, the popular discontent will rise and may trigger nationalism, excessive self-interest and protectionism. We need more responsibility in world trade in order to avoid that globalization allows a few to enrich beyond belief excluding many others. Trade responsibility also means accepting special and differential treatment of developing countries in temporary trade protection so as to allow them to catch up with the more competitive industrialized and emerging countries. All these countries should be allowed to protect themselves from a food import surge.

We face a future of food scarcity, with high, albeit very volatile prices both for inputs and outputs. Food scarcity is aggravated by managed trade and lack of finance and eventually also by environmental degradation. The market has lost its magic. Recent events have proven that markets can fail. Deregulation has backfired. Open trade and related financing depend on it. A new financial architecture is urgent. We also need greater responsibility in budgetary and financial affairs. Necessary stimulus packages must cater more to taxpayer than to shareholder interests, and avoid budgetary indiscipline passing the burden of adjustment on to future generations.

More responsibility is needed regarding food trade, and more responsibility in supporting a coordinated regulatory framework as well, as virtuous public and private behaviour fighting environmental degradation. We need greater responsibility in cutting GHG emissions, in showing greater respect for the environment and in strengthening and widening the Kyoto process. Countries in the southern hemisphere will have to introduce land reforms allowing the poor to accede to the land, and adopt more appropriate food pricing policies. If there is going to be enough food at affordable prices for everybody we may also have to change our food habits. The reform process of the CAP must be continuously adapted to changing realities.

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Can we stop excessive borrowing from future generations in ecological and financial terms? The current crisis has proven that governments can act decisively and even effectively if extraordinary circumstances so dictate: we are not short of medicine (i.e solutions, capacity, funds), but we need political will to apply it, which we usually only have when the crisis has manifested itself. Evidently, the costs of earlier inaction are much higher at that stage. So how can we prepare ourselves? One of the key issues is convergence of the many different policy roads leading to a better world. Only true political leadership and trusted, effective institutions, recognizing the return on reconciliation will change this.

Globalization at crossroad: responsibility of food and energy security, and environment preservation in times of financial and economic crisis

The global economic crisis may well become the longest in three generations. Investment and even trade protectionism may be temporarily on the increase If trust in finance and economy does not return, rapidly economic reform, socio-economic growth and political stability will suffer. While some confidence in the financial system will return in due course, a new financial architecture will be required to strengthen the global economy and increase economic and financial fairness. In this connection, it is of the essence that the demands of global food, bienergy and environmental security are taken into account, and that ways are found to finance the services that farmers provide to society.

World population growth is the biggest trend-making factor: 70-80 million more people a year, close to 8 billion by 2025 (FAO, 2008). Consequently, there is rapidly growing demand for crop products including feed with increasing meat consumption. With globalisation and urbanization production is moving to the most competitive regions, food trade is becoming more liberalized but also more concentrated. Growing energy demand and climate change will also influence food production with agriculture contributing to emissions, but also suffering or benefiting from climate change. Additional challenges are increasing market volatility resulting from yield and stock fluctuations, and consumer sensitivity to food quality, safety and price. There is uncertainty regarding timing and application of innovations as regards biotechnology, nanotechnology, precision farming, carbon sequestration, and information technology. Finally there is the challenge of who will pay for agricultural public services provided by land managers that the market does not pay for, such as rural landscape maintenance, environmental protection biodiversity and animal welfare These challenges are aggravated by global irresponsibility, regarding food and energy security, water and environmental sustainability.

Food security

By 2050 global food output must increase by about 70-100% due to higher food demand changing diets and urbanization (Table 1). Urbanization will double domestic and industrial water use (not to mention climate change and bioenergy production). Without water productivity gains, crop water consumption doubles by 2050. Water ‘bubble’ is unsustainable and fragile because 6.7 billion people has to share the same quantity as the 300 million global inhabitants of Roman times. Globally food crops evaporate 7,100 km^3, 7,100,000,000,000,000 liters per year. About 80% of water for food comes directly from rain but an increasing part is met by irrigation (IWMI, 2007).

Table 1

Water use

Use	Liters of water
Drinking water	2-5 liters per person per day
Household use	20-500 liters per person per day
Wheat	500-4,000 liters per kilo
Meat	5,000-15,000 liters per kilo
Biofuel	1,000-3,500 liters per liter
Cotton t-shirt	2,000-3,000 liters
Agriculture	3,000 liters per person per day 1 liter per calorie

Source: IWMI (2007) and Charlotte de Fraiture and David Molden: Balancing global water supply and demand. Presentation. Challenges for Agricultural Research, OECD, 6-8 April 2009 Prague, Czeh Republic

A quarter of the world's population lives in closed or closing basins which are over-allocated with less environmental flows and more pollution. New development means taking water from current users downstream and new entitlements require re-negotiation of rights, reallocation of water. It means taht no water is left for more development (Yellow River, Colorado, Amu/Syr Darya, Egypt's Nile, Lerma-Chapala, Jordan, Indus, Krishna ect.). Another issue is how to reduce diversions? In India 55-60% of farmers are dependent on groundwater irrigation. We need new governance in order to tame the anarchy (IWMI, 2007).

What are the challenges? We have to increase both the physical water productivity (more crop per drop) and economic water productivity (more value per drop) with investing in rainfed agriculture and irrigation. Water productivity improvement is feasible but farmers optimize land productivity rather than returns to water particularly where water is subsidized. We do not know what are adequate incentives but farmers in the EU are fighting for a higher irrigation water subsidy without impact analysis of water productivity improvement. Promoting food trade from water rich highly productive areas to water scarce areas contributes to global water productivity improvement.

There is good potential for new land cultivation in Latin America, Africa and Eastern Europe (Ukraine and Russia). However, new land is insufficient, and either inappropriate because of poor or polluted soils, or difficult to use for food production (due to doubtful property rights and/or poor finance and/or due to government mismanagement and lack of transportation infrastructure). Moreover, cultivated land is diminishing fast due to expanding deserts and urbanization. Global population growth (70-80 million people every year) claims nearly 3 million hectares for housing, roads, highways and parking lots each year. The main reasons why world food supply is tightening are population growth and accelerated[2] urbanization, changes in life-stiles, falling water tables and diversion of irrigated water towards the cities (The Earth Institute, 2005).

To meet world demand the necessary production growth will to a large extent have to be met by a rise in the productivity of the land already being farmed today. However, this will be difficult to accomplish as global agricultural productivity growth has been in decline since the Green Revolution of the 1960s and 1970s. Global crop yield increases have plummeted from 4% per annum in the 1960s to 1980s to 2% in the 1990s and, barely 1% in 2000 to 2010 forecasts (FAO, 2008). Yield increases have generally exceeded areal increases. Despite substantial expected

[2] An estimated 40,000 ha of land are needed for basic living space for every 1 million people added.

yield increases in India, the USA, Russia and Ukraine by then Europe's role as supplier of food to the world is diminishing. The net crop-trade position of the EU-27 can be expected to deteriorate. The EU capacity to help fight world starvation will be reduced at a time in which food production will decline predominantly in those countries which already have record increasing food import needs. Nevertheless Europe will become a more secure production location in comparison to other world regions, while higher food prices will boost deforestation there.

The discussion of the food crisis has faded into the background because it has been overshadowed by the global macroeconomic crisis and the financial crisis. The sharp rise in prices of basic foodstuffs created extreme difficulty for a large part of the world. Food crisis affected more people more severely than the macro crisis has done so far because those who were most affected by the sharply rising food prices are those who spend a larger share of their income on food (FAO 2008). The global food crisis had an extraordinary human impact, a larger adverse human impact then the global financial crisis so far. One indication of its severity is the remarkable amount of civil unrest and political instability that happened last year in dozens of countries (Ethiopia, Egypt, Mexico, Thailand etc.) as people were unable to afford basic nutrition (FAO, 2008).

There were also some extraordinary political responses. Much of the world's system of trade in foodstuffs broke down temporarily as food exporting countries moved to limit, or in some cases completely ban, exports in an attempt to provide some protection to their domestic consumers. The severe economic slump striking the whole world is quite clearly the worst downturn since the great depression. All of this has taken the attention away from the food crisis. The macro crisis has led to many people to write off the food and more broadly the commodity price crisis of 2008 as not fundamental. There is widespread belief that all that really happened was a speculative bubble and too many people were trading commodities driving commodity prices to unsustainable levels, and that all the concerns about ultimate supplies of food were misplaced (Krugman, 2009).

With the end of crisis, resource constraints plus bad polices are creating a major problem for the supply of food in the world. Despite the sharp fall in food prices since their peak in early 2008, prices of basic foodstuffs in real term are still higher than the beginning of this decade. Aside from food prices being still on an upward trend, price volatility is a clear problem. People do not eat only in the long term, they eat every day. Should high prices from 2008 re-occur, it would be a very serious problem as people are very vulnerable to such high prices. For example, when a country imposes an export ban the global economy is affected even if the domestic consumers are protected.

Today we have a severe slump for everything and in the case of raw materials this means a decline in relative prices. With the end of recession we are back in a world that has growing population, growing purchasing power and growing consumption of foods that are very intensive in the use of cereals; for example meat uses a lot more basic agricultural production than the consumption of grain. Water is a concern and so too is the use of potential arable land. When arable land is diverted to non-agricultural uses it usually raises world GDP, but it also has the effect of reducing the incomes of those already at the bottom of the earning scale. We had a very serious outbreak of human suffering and political instability resulting from a really quite brief spike in the price of food. It was not an extended period and it was overtaken by events by the broad collapse of economic activity due to the financial crisis. Had it gone on any longer, it might have been much worse and all indications are that the food crisis of 2008 was a dress rehearsal for future crises. There are no such mechanisms in place yet to deal with these issues (Krugman, 2009).

Energy security

Energy prices have seen a secular decline (in constant dollars) over the last 200 years. The latest energy price hikes have not even brought us back to the price levels of some 30 years ago. The tragic reality is that political zeal has led governments to keep energy prices as low as possible, thus frustrating most attempts to increase energy productivity. Energy price elasticity is very much a long-term rather than a short-term affair, yet infrastructure investments that are crucial to the creation of an energy efficient society take a lot of time. Creating a long-term trajectory of energy prices that slowly, steadily and predictably rise in parallel with our energy productivity would give a clear signal to investors and infrastructure planners that energy efficiency and productivity are going to become ever more necessary and profitable.

Biofuel policy is a major aggravating factor even it not really discussed at present because of the decline in oil prices, which reduced the demand and at the same time food prices have gone down. It is pushed to the background because of the current economic crisis, but it will be a problem that will come back as the macro crisis will end and crude oil prices will increase. There is much debate about the potential contribution of agriculture to renewable energies. The problem is that with existing technology, renewable energies may be renewable, but they are mostly not green. Wheather second generation biofuels could get clear of most of the pitfalls of the first generation is open to doubt, although they allow saving the food component of plants.

Bioenergy covers approximately 10 percent of total world energy supply. Traditional unprocessed biomass accounts for most of this, but commercial bioenergy is assuming greater importance. Liquid biofuels for transport are generating the most attention and have seen a rapid expansion in production. However, quantitatively their role is only marginal: they cover 1 percent of total transport fuel consumption and 0.2-0.3 percent of total energy consumption worldwide. Large-scale production of biofuels implies large land requirements for feedstock production. Liquid biofuels can therefore be expected to displace fossil fuels for transport to only a very limited extent. Even though liquid biofuels supply only a small share of global energy needs, they still have the potential to have a significant effect on global agriculture and agricultural markets because of the volume of feedstocks and the relative land areas needed for their production.

Liquid biofuels such as bioethanol and biodiesel compete directly with petroleum-based petrol and diesel. Because energy markets are large compared with agricultural markets, energy prices will tend to drive the prices of biofuels and their agricultural feedstocks. Biofuel feedstocks also compete with other agricultural crops for productive resources; therefore energy prices will tend to affect prices of all agricultural commodities that rely on the same resource base. For the same reason, producing biofuels from non-food crops will not necessarily eliminate competition between food and fuel. For given technologies, the competitiveness of biofuels will depend on the relative prices of agricultural feedstocks and fossil fuels. The relationship will differ among crops, countries, locations and technologies used in biofuel production.

Modern bioenergy generates an increasing competition for natural resources, notably land and water, especially in the short run, although yield increases may mitigate such competition in the longer run. Competition for land becomes an issue especially when some of the crops (e.g. maize, oil palm and soybean) that are currently cultivated for food and feed are redirected towards the production of biofuels, or when food-oriented agricultural land is converted to biofuel production. Biofuel policies have significant implications for international markets, trade and prices for biofuels and agricultural commodities. Current trends in biofuel production, consumption and trade, as well

as the global outlook, are strongly influenced by existing policies, especially those implemented in the EU and United States of America, which promote biofuel production and consumption while protecting domestic producers especially in case of ethanol production.

Trade policies *vis-à-vis* biofuels discriminate against developing-country producers of biofuel feedstocks and impede the emergence of biofuel processing and exporting sectors in developing countries. Many current biofuel policies distort biofuel and agricultural markets and influence the location and development of the global industry, such that production may not occur in the most economically or environmentally suitable locations. International policy disciplines for biofuels are needed to prevent a repeat of the kind of global policy failure that exists in the agriculture sector.

Currently, around 80 percent of the global production of liquid biofuels is in the form of ethanol. In 2008 global ethanol production reached 65 billion litres, global biodiesel production amounted to 13 million tons. The two largest ethanol producers, the United States of America and Brazil, account for 85 percent of total production, with the remainder accounted for mostly by the EU (mainly France and Germany) China and Canada (Figure 1).

In the USA fuel ethanol production reached 33 billion litres in 2008. Brazil shipped 2.8 billion litres (740 million gallons) of ethanol either directly to the US or through CBI countries. It is quite clear, at least on paper, that a similar quantity will be available for shipment to the American market in 2009. Whether or not Brazilian alcohol can be mobilised for the US trade will crucially depend on the price. Direct exports of anhydrous ethanol are out of the question now that the re-export loophole in the customs regulation has been closed in the latest Farm Bill. Also one should not forget that there is little incentive for Brazilian millers to produce more than minimum volumes of ethanol as long as sugar is trading at the current premium to the green fuel. The year 2009 will be a defining one for the US ethanol sector. A combination of high corn prices and rock-bottom gasoline values is threatening an industry. Higher grain costs put margins under pressure, and then the meltdown in the financial markets prompted gasoline prices to tumble. The industry is getting nervous and the consensus which had carried it through all previous crises is wearing thin. But with the new administration now in place in Washington, the American renewable fuels sector is taking new hope.

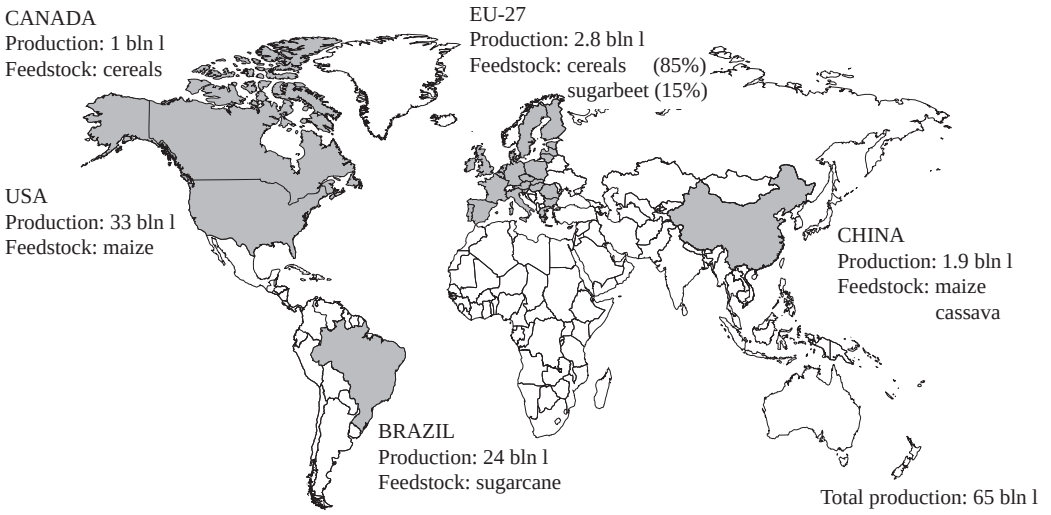

Figure 1: Global fuel ethanol production (2008)

Source: F. O. Licht (2009) and own calculations

Brazil produced 24 billion litres of ethanol in 2008 and almost two thirds of Brazil's ethanol exports went to the United States, some via states in the Caribbean and Central America (CBI countries). These countries can re-export up to 2.35 billion litres of dehydrated alcohol to the US in 2009 free of the high duty imposed on any ethanol imported directly from Brazil. Before oil values collapsed last year, alcohol imported directly from Brazil was competitive with gasoline, even after the high duty had been paid. In addition, some oil firms took advantage of a loophole, which allowed ethanol to be imported tax free on a "draw-back" scheme, if an identical amount of some other fuel was exported, a trade which was halted at the end of September 2008. Although developments in the United States and the EU mean the long term for alcohol looks guaranteed, the sector in Brazil will face extremely difficult times until that happens.

In the EU total bioethanol production in 2008 was 2.8 billion litres. Bioethanol imports increased by 400 million litres to almost 1.9 billion, of which 1.4-1.5 billion litres came from Brazil and around 50% of the total was used in the fuel sector (F. O. Licht, 2009). EU's continued commitment to 10% mandate for 2020 is welcomed. The package will require the EU to derive 20% of its energy from renewables by 2020, including 10% of its transportation energy, mostly from biofuels. Starting in 2014 biofuels will have to achieve greenhouse gas (GHG) savings of 35% relative to fossil fuels. This number is to rise to 50% by 2017. Biofuel plants beginning operating in 2017 and beyond would have to achieve savings of 60%. Biofuels consumption in Eastern Europe is expected to increase on the back of increasing biofuel mandates. A significant share of this demand will be met by domestic production. To a growing extent, markets in the new Member States (EU-12) will however have to compete with EU-15 and non-Community imports. Competitiveness of ethanol production depends on the relative prices of feedstock and fossil fuel.

In Asia, biofuels in general and ethanol in particular have been introduced as one method of alleviating the chronic energy shortage which is dogging many of the region's economies. With crude oil prices currently below $50 a barrel, the need to develop domestic sources of energy has lost some of its urgency. Even though the lower commodity values seen in recent months have reduced the cost of production for ethanol, this fall has not been sufficiently large to compensate for the sharp decline in crude oil prices.

Thailand has been promoting biofuels with a comprehensive package of policy measures since 2003. The country's distilleries are presently working at less than capacity due to limited overseas opportunities and disappointing domestic gasohol demand. The current excess of supplies will prevent short-term expansion of alcohol capacities. Traditionally, China has used grains for the manufacture of fuel ethanol. Currently, four of the five plants in the country use cereals with only one using tapioca starch. The use of this substrate in various forms to produce fuel alcohol is a relatively recent development and it still has to prove its economic viability. Lower crude oil values are likely further to delay the build-up of alcohol capacity in China. While the government's policy to limit the use of cereals for ethanol production effectively put a lid on new investments, it will now be the low price of oil which will act as a disincentive. Therefore, achieving the consumption target of 2 million tons of fuel alcohol for 2010 looks more than a little doubtful.

India's output of sugar and molasses will be considerably lower in 2008/09 than a year before. The downturn has already boosted values of the sugar co-product and, as a result, those of alcohol as well. In order to offset higher domestic molasses prices, ethanol/chemical companies have resorted to importing denatured hydrous alcohol from Brazil. Moreover, arrivals of finished chemical products will also rise as a result of the tight supplies of the sugar co-product. The sharp fall in crude oil values is for the time being unlikely to change the government's lukewarm stance on biofuels.

Philippines government remains committed to biofuels. The local alternative-fuels sector would grow further despite the decline in world oil prices. The introduction of E-5 blends in 2009 will require 220-230 million litres of alcohol in a year. By 2011, an E-10 blend will become mandatory, raising consumption to 480-490 million litres per year.

Biodiesel production is principally concentrated in the EU (with around 55 percent of the total), with a significantly smaller contribution coming from the United States of America. In Brazil, biodiesel production is a more recent phenomenon and production volume remains limited. Other significant biodiesel producers include Argentina and to a lesser extent India, Indonesia and Malaysia. Brazil, the EU and the United States of America are expected to remain the largest producers of liquid biofuels, but production is also projected to expand in a number of developing countries (Figure 2).

In 2008 biodiesel production reached over 6 million tons in the EU. The greatest potential for feedstock suppliers in- and outside the EU-27 is offered by the vegoils market since there is a significant import demand from the Community. The average spread between average biodiesel ex-works prices and total net production costs narrowed but remained negative. Vegoil prices in the first months of 2009 were declining slightly more than biodiesel prices. However, the main problem is low fuel prices. Furthermore, competition between imports and EU material may not be halted with the end of soy methyl ester (SME) B-99.9. Palm Methyl Ester (PME) is traded at a significant discount against EU specifications and there were already reports of direct SME shipments from Argentina. Competitiveness of biodiesel production depends on the relative prices of feedstock and fossil fuel.

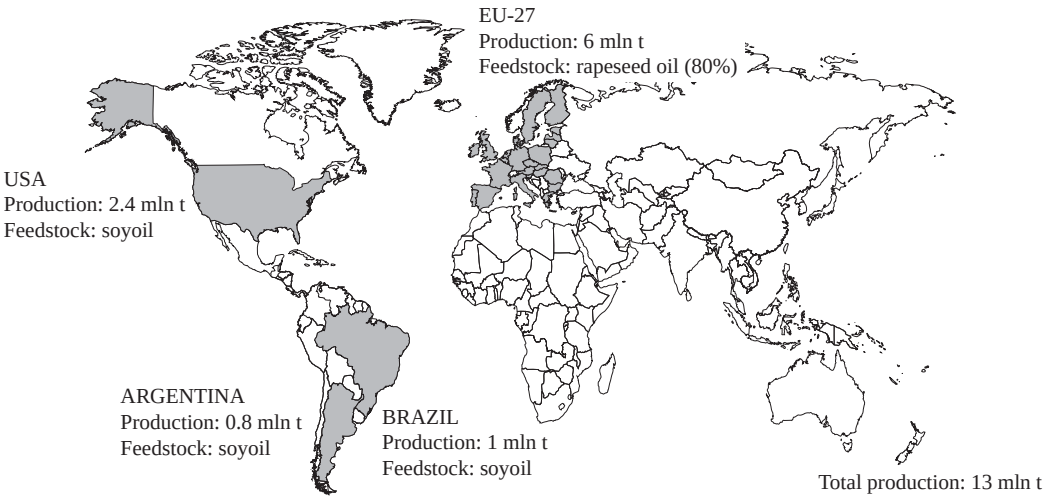

Figure 2: Global biodiesel production (2008)

Source: F. O. Licht (2009) and own calculations

The EU's sustainability requirements could fundamentally change the Community's import demand for biodiesel. According to the EU's Joint Research Committee's figures published in 2008, the soyoil based biodiesel reduces GHG emissions by only 31% while biodiesel made from palm oil without methane capture at the oil mill is even worse at only 19%. Biodiesel exporters from South America and Southeast Asia as well as the Community's biodiesel producers using these feedstocks

may face severe problems from 2010. There may be a significant growth in the use of waste cooking oil and animal fat in the EU as in both cases GHG reductions stand at 83%. There is a logistical cost to using these feedstocks (collection of the oils, refining, etc.) and the feedstock supply itself is limited. There are also discussions on the sustainability of biodiesel produced from soyoil in the United States where the Environmental Protection Agency is currently assessing the national ecological aspects of biofuels.

All the biofuels produced from wastes, residues, non-food cellulosic material, and lignocellulosic material shall be considered to be twice that made by other biofuels. This means that only half the volume of this type of biofuel is needed to achieve the 10% target. However, it does not automatically mean that this biofuel will have a double economic value nor is it certain whether this double counting will offset the higher production costs of most of those advanced biofuels. It is equally unclear if higher CO_2 savings will be realized, after all less volume could result in less net emission reductions.

Judged by the quantitative targets at European and national level and the EU's present biodiesel manufacturing capacity of about 15 million tonnes, it is clear that there is no need for more biodiesel plants. On the contrary, European biodiesel manufacturers need to make the effort to develop export markets and new sales markets (e.g., biofuel oil). At the same time, they should as far as possible make better use of their advantages in terms of cost and the CO_2 balance in a situation where cut-throat international competition is substantially greater. From this perspective, it does not make sense for further subsidies to be provided from either Community or national budgets for the construction of more biodiesel capacity.

The end of the SME B-99.9 business also means significantly lower biodiesel output in the United States compered to 2.4 million tons in 2008. However, there is also the biodiesel mandate under the Energy Independence and Security Act, which may help make up for the loss of the biodiesel business. With no mandate in place for 2009 it is expected that the 2009 and 2010 mandates will be combined into a 2-year period, which will create 3.8 million tons of consumption. The US federal tax credit is due to expire on December 31 2009 but can be extended. The present prospects for import business are seen as limited. At current freight rates (April 2009) plus the 4.6% import tariff, Argentine SME is not competitive.

Brazil's B-3 mandate introduced in 2008 raised output to 1 million ton and may lead to strong growth in 2009. Brazil's biodiesel production capacity has risen to more than 2.7 million tonnes annually from 1.4 million. The B-3 mandate requires 1.1 million tonnes of biodiesel annually. Almost all of the domestic output is destined for domestic use, due to the relatively high cost of production. Due to industry overcapacity, the manufacturers are asking for a B-4 mandate which could be introduced in the course of this calendar year according to recent official announcements. It should be noted that 2009 blending demand is expected to be significantly below earlier forecasts as diesel consumption is set to decline by 10% due to lower economic activity. Argentina's manufacturers see Europe as their main outlet and the arrival there of several shipments is expected for 2009. There is still much overcapacity in the sector locally as local plants can produce more than 1.5 million tons. Production in 2008 was around 0.8 million tons.

Southeast Asian producers are seen benefiting from the end of SME B-99.9 as there will be a significant biodiesel import demand from the EU. However, that benefit could be short-lived as there are doubts over the sustainability of biodiesel production from palm and soyoil, particularly in the EU. A stop to biodiesel exports to the EU would be a severe setback for Indonesia and Malaysia.

After several years of strong growth rates, world biodiesel production is forecast to remain virtually flat in 2009. The outlook strongly depends on the present low fuel prices. On one hand, low energy prices reduce feedstock manufacturing costs. On the other, they decrease sales values for biofuels and thus production margins. Actual biodiesel consumption figures will strongly rely on the blending demand outlook for conventional fuels as there is currently no real B-100 market. However, the latest IEA data see a decline in conventional fuel consumption. Not only will the expected two-year contraction in oil demand be the first since the early 1980s, but 2009's decline will also be the largest since 1982 (IEA, 2009).

At present, feedstock for biofuel occupies just 1% of global cropland. Rising population, changing diets and demand for biofuels are estimated to increase demand for cropland by 17% to 44% by 2020. The balance of evidence indicates there will be sufficient appropriate land available to meet this demand to 2020, but this must be confirmed before global supplies of biofuel increase significantly. Current policies are not entirely effective in assuring that additional production moves exclusively to suitable areas – and attempts to do so will face challenges in terms of implementation and enforcement. Governments should amend but not abandon biofuel policy in an effort to recognize these issues and ensure their policies deliver net GHG benefits.

In 2009 an increase in grains use for fuel ethanol is expected, mainly due to a higher output in the United States and Europe. This could be the equivalent of more than 6% of 2008/09 grain consumption (5.6% the previous season). Net grains use for fuel ethanol is actually one third lower (4%), as ethanol yields dried distiller grains (DDGS) as by-product. The bulk of the worldwide use of grains in alcohol production comprises corn in the United States and China. However, an increase in the offtake of wheat for fuel ethanol can also be observed in Canada and the EU. Due to the limited growth prospects for biodiesel, only a small rise in vegoils use for biodiesel manufacture can be foreseen. The share of biodiesel in total vegoils use may even fall to 8.9% from 9.0% as non-fuel vegoils consumption has increased at a faster pace (F. O. Licht, 2009). The EU is set to remain the largest biodiesel producer and thus the main consumer of vegoils for fuels, but growth rates are also declining on lower fuel prices.

It should be possible to establish a genuinely sustainable biofuels industry, provided that robust, comprehensive and mandatory sustainability standards are developed and implemented. The risks of indirect effects can be significantly reduced by ensuring that the production of feedstock for second-generation biofuels takes place mainly on idle and marginal land – and by encouraging technologies that take best and appropriate advantage of wastes and residues. This certification system must cover all biomass (regardless of the end use) and all relevant bioenergy – and it must take a global approach as biomass and bioenergy sources become internationally traded commodities. Systems that focus simply on national or EU-wide implementation, for example, will not help solve major sustainability issues. Additionally, the system must take a holistic approach or risk forfeiting all relevance. For example, if the relatively small quantities of palm oil used for biodiesel are produced in a sustainable manner, but the large volumes consumed in the food sector are not, all the effort expended would be invalid. Higher targets for biofuels in the marketplace should be implemented carefully to ensure these fuels are demonstrably sustainable. Any criterion related to competition or demanding more than just a reporting obligation could potentially lead to an infringement of WTO rules.

Environment preservation

Biodiversity losses have accelerated, most notably in the tropics. The depletion of fisheries and fish stocks has continued, and in some cases has accelerated. China's growing appetite for mineral and energy resources in Africa and elsewhere is cause for concern, and India, Brazil, South Africa, Angola and others are all aiming to fuel their high growth rates with accelerating resource extraction.

In terms of climate change and the overall ecological situation, the picture is not better but a good deal grimmer. By adopting the right policy mix, we can decouple wealth creation from energy and material consumption just as we decoupled wealth creation from the total number of hours of human labour. That was the great achievement of the industrial revolution, and labour productivity has risen at least twentyfold in the course of mankind's last 150 years of industrialisation. Resource productivity should become the core of our next industrial revolution. Technologically speaking, this should not be more difficult than the rise in labour productivity.

We now start to recognize that the (over)exploitation of our entire ecosystem and the depletion of natural resources (the reserve/production ratio of oil reserves is rapidly declining) must carry a price which must be paid today to compensate future generations for the loss (or costs of substitution) they will be faced with tomorrow. Moreover, world population growth by 50% during the next 50 years, causing new scarcities (eg. water) and pollution (eg. CO_2 emission rights), is reinforcing this issue. Already now corporations in energy-intensive sectors need to start taking future CO_2 prices into account in their investment decisions and public disclosure policies, because the scarcity of emission rights has been recognized, an active market has been created in the EU and CO_2 emission rights now have a price; more regional cap & trade markets for CO_2 have been (in the US) or are in the process of being created.

The environment is now back at centre-stage, after a quarter century of denial among the political and business elite in the US. The weight of evidence from the Intergovernmental Panel on Climate Change, and the devastating levels of pollution in the industrial centres of the high growth countries, like China, have at last shifted opinion behind tough new controls. The EU has taken the political lead in addressing global warming, setting up the European Trading System (ETS) for carbon dioxide emissions. President Obama has given clear commitments to mitigating global warming, and China too has become very serious about tackling pollution, climate change and energy efficiency. Renewable energy sources now constitute a dynamic growth sector, and the Convention on Biological Diversity (CBD) is enjoying increasing visibility in the signatory states which means nearly all countries around the world except the US.

Joseph Stiglitz and Nicholas Stern have made a joint appeal to use the financial crisis as an opportunity to lay the foundations for a new wave of growth based on the technologies for a low carbon economy (Financial Times, 2009). The investments would drive growth over the next two or three decades, ensuring it becomes sustainable. They added that "providing a strong, stable carbon price is the single policy action that is likely to have the biggest effect in improving economic efficiency and tackeling the climate crisis." Lord Stern calculated that governments should spend at least 20% of their stimulus on green measures to achieve the emission targets (Stern, 2006).

Mankind is directly influenced by the loss of biodiversity. Through the extinction of species we loose possibly crucial opportunities and solutions to problems of our society. Biodiversity provides us directly with essentials like clean water and air, fertile soil, protects us from floods and

avalanches. These aspects can all be economically valuated. It is a difficult and complex task, but through this valuation it becomes clear how important they are for human well being and economic development (Table 2).

Table 2

Scenario of the future: 2050

Actual	2000	2010	2050	Difference	Difference	Difference
Area	million km^2	million km^2	million km^2	2000 to 2010	2010 to 2050	2000 to 2050
Natural areas	65.5	62.8	58.0	-4%	-8%	-11%
Bare natural	3.3	3.1	3.0	-6%	-4%	-9%
Forest managed	4.2	4.4	7.0	5%	62%	70%
Extensive agriculture	5.0	4.5	3.0	-9%	-33%	-39%
Intensive agriculture	11.0	12.9	15.8	17%	23%	44%
Woody biofuels	0.1	0.1	0.5	35%	437%	626%
Cultivated grazing	19.1	20.3	20.8	6%	2%	9%
Artificial surfaces	0.2	0.2	0.2	0%	0%	0%
World Total	108.4	108.4	108.4	0%	0%	0%

Source: Cost of Policy Inaction, Braat et al., (2008)

Many people are unaware of the speed at which we are using up our natural resources, and that we are producing waste far faster than it can be recycled. It is important to clarify the items of public goods and services with arguments whether or not market failures are linked to the provision of services. Market failure is crucially important justification for taking measures to protect our landscapes. Corrections in market failures could also be achieved through investments and the provision of payments to reward land managers who provide public goods and services (European Commission, 2008).

It is important to demonstrate the economic value of ecosystem goods and services. We not only need to know costs, but also to be assured that the benefits are greater. There is increasing consensus about the importance of incorporating these "ecosystem services" into resource management decisions, but quantifying the levels and values of these services has proven difficult.

Our searches have revealed a disappointingly small set of attempts to measure and value these services. The first chronologically is the quantification of global ecosystem services by Constanza et al (1997). Estimates were extracted from the literature of values based on willingness to pay for a hectare's worth of each of the services. These were all expressed in 1994 US$ per hectare, there was some attempt to adjust these values across regions by purchasing power. The results were that central estimate of the total value of annual global flows of ecosystem services in the mid 1990s was $33 trillion (i.e. 10^{12}) the range was thought to be US$ 16-54 trillion. To put their figure into some kind of context, their central estimate was 1.8 times bigger than global Gross Domestic Product (GDP) at that time. We should take the figures only as the roughest of approximations – indeed the authors warn of the huge uncertainties involved in making calculations of this kind.

The "Stern Review" parallels the TEEB (see later) study into the economics of climate change (Stern, 2006). Climate change could have very serious impacts on growth and development. The costs of stabilising the climate are significant but manageable; delay would be dangerous and much more costly. The review estimates that if we don't act, the overall costs and risks of climate change

will be equivalent to losing at least 5% of global GDP each year, now and forever. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year. Key to understanding the conclusions is that as forests decline, nature stops providing services which it used to provide essentially for free. So the human economy either has to provide them instead, perhaps through building reservoirs, building facilities to sequester carbon dioxide, or farming foods that were once naturally available.

World Wildlife Fund's Living Planet Report" demonstrates that mankind is living way beyond the capacity of the environment to supply us with services and to absorb our waste (WWF 2008). They express this using the concepts of ecological footprints and biocapacity, each expressed per hectare per person[3]. Humanity's footprint first exceeded global biocapacity in 1980 and the overshoot has been increasing ever since. In 2005 they calculated the global footprint on average across the world was 2.7 global hectares (gha) per person[4] compared to a biocapacity they calculated as 2.1 gha/person, a difference of 30%. That is each person on earth, on average is consuming 30% more resources and waste absorption capacity than the world can provide. We are therefore destroying the earth's capacity and compromising future generations.

The study on "The Economics of Ecosystems and Biodiversity" (TEEB) is fundamentally about the struggle to find the value of nature. There are about 100,000 terrestrial protected areas on Earth, covering 11% of the land mass of our planet. These protected areas provide ecosystem services and biodiversity benefits to people valued at $4.4 trillion to $5.2 trillion (that is a million millions) per annum. If you want a comparison, that's more than the revenues of the global automobile sector, steel sector and IT services sector combined! Calculations show that the global economy is losing more money from the disappearance of forests than through the current banking crisis as forest decline could be costing about 7% of global GDP. It puts the annual cost of forest loss at between $2 trillion and $5 trillion. The figure comes from adding the value of the various services that forests perform, such as providing clean water and absorbing carbon dioxide. But the cost falls disproportionately on the poor, because a greater part of their livelihood depends directly on the forest, especially in tropical regions. The greatest cost to western nations would initially come through losing a natural absorber of the most important greenhouse gas (European Commission, 2008).

The study shows that diversity is crucial for survival and the importance of biodiversity for economic development. It might be possible to substitute some of the ecosystem services by human-made technologies, but the study results clearly show that it is often cheaper to invest in the conservation of biodiversity than to invest into new technologies to substitute the services nature provides for us. Therefore it is essential for the safeguarding of our natural resources to jointly create a coordination of economic interests. We need to give the ecosystem services of biodiversity a market value to create incentives for developing countries to conserve their biodiversity.

Market-based instruments are helpful to give the peoples of the world a chance to secure the natural resources and secure their livelihood simultaneously. In this context the inclusion of the private sector into the process of conservation and sustainable use of biodiversity has high priority. The goals of conservation and sustainability will only be achieved if the main drivers of ecosystem and biodiversity loss are actually addressed through appropriate intervention and response based on credible valuations. Businesses have to accept biodiversity as the indispensable resource, which it is and have to treat this resource with respect and care.

[3] The Ecological Footprint "measures the amount of biologically productive land and water area required to produce the resources an individual, population or activity consumes and to absorb the waste it generates, given prevailing technology and resource management." (WWF, 2008)

[4] A global hectare is a hectare with a global average ability to produce resources and absorb wastes.

The Global Canopy Programme's report concludes: "If we lose forests, we lose the fight against climate change". International demand has driven intensive agriculture, logging and ranching leading to deforestation. Standing forest was not included in the original Kyoto protocols and stands outside the carbon markets. The inclusion of standing forests in internationally regulated carbon markets could provide cash incentives to halt this disastrous process. Marketing these ecosystem services could provide the added value forests need and help dampen the effects of industrial emissions. Those countries wise enough to have kept their forests could find themselves the owners of a new billion-dollar industry (Parker et al., 2008).

Currently, there are two paradigms for generating ecosystem service assessments that are meant to influence policy decisions. Under the first paradigm, researchers use broad-scale assessments of multiple services to extrapolate a few estimates of values, based on habitat types, to entire regions or the entire planet (Constanza et al., 1997). This "benefits transfer" approach incorrectly assumes that every hectare of a given habitat type is of equal value – regardless of its quality, rarity, spatial configuration, size, proximity to population centres, or the prevailing social practices and values. Furthermore, this approach does not allow for analyses of service provision and changes in value under new conditions. In contrast, under the second paradigm for generating policy-relevant ecosystem service assessments, researchers carefully model the production of a single service in a small area with an "ecological production function" – how provision of that service depends on local ecological variables (Kaiser and Roumasset, 2002). These methods lack both the scope (number of services) and scale (geographic and temporal) to be relevant for most policy questions (Nelson et al., 2009).

Spatially explicit values of services across landscapes that might inform land-use and management decisions are still lacking. Quantifying ecosystem services in a spatially explicit manner, and analyzing tradeoffs between them, can help to make natural resource decisions more effective, efficient, and defensible (Nelson et al., 2009). Both the costs and the benefits of biodiversity-enhancing land-use measures are subject to spatial variation, and the criterion of cost-effectiveness calls for spatially heterogeneous compensation payments (Drechsler and Waetzold, 2005). Cost-effectiveness may also be achieved by paying compensation for results rather than measures. We have to ensure that all the possibilities to create markets to provide environmental services are fully exploited to minimise the public costs (and the extent of government bureaucracy etc).

Creating markets for environmental services could encourage the adoption of farming practices that provide cleaner air and water, and other conservation benefits. Products expected to generate the greatest net returns are the ones generally selected for production. Since environmental services generally do not have markets, they have little or no value when the farmer makes land-use or production decisions. As a result, environmental services are under-provided by farmers. The biggest reason that markets for environmental services do not develop naturally is that the services themselves have characteristics that defy ownership. Once they are produced, people can "consume" them without paying a price. Most consumers are unwilling to pay for a good that they can obtain for free, so markets cannot develop. Can anything be done other than relying on government programmes to provide publicly funded investments in environmental services?

Creating markets for environmental services is not an entirely novel idea. Governments play a central role in setting them up as has been done for markets in water quality trading, carbon trading and wetland damage mitigation. These markets would not exist without government programmes that require regulated business firms (such as industrial plants and land developers) to meet strict environmental standards. In essence, legally binding caps on emissions (water and carbon) or mandatory replacement of lost biodiversity (wetland damage mitigation) create the demand needed to

support a market for environmental services. So-called cap and trade programs create a tradable good related to an environmental service (Ribaudo et al., 2008).

Mandatory reduction pledges can be experienced in all developed nations apart from the United States. The same is true for project-level reductions in developing countries. Mandatory cap-and-trade programs have been introduced in the Northeastern U.S. and EU. The U.S. and Australian government will also institute a mandatory cap and trade programme to create financial incentives to limit energy use or reduce emissions.

In the case of water quality, it is necessary to establish caps on total pollutant discharges from regulated firms in some watersheds, and issue discharge allowances to each firm specifying how much pollution the firm can legally discharge. In markets for greenhouse gases, carbon credits are exchanged. Contracts also include renewable energy credits and voluntary carbon credits.

No-net-loss requirements for new housing and commercial development require that damaged/lost wetland services be replaced, creating demand for mitigation credits, which are produced by creating new wetlands. In all of these cases, the managing or regulatory entity defines the tradable good and enforces the transactions.

Simply creating demand for an environmental service does not guarantee that a market for services from agricultural sources will actually develop. A number of impediments affect agricultural producers' ability to participate in markets for environmental services. Purchasers may be unwilling to enter into a contract with a farmer who cannot guarantee delivery of the agreed-upon quantity of pollution abatement, wetlands services, or other environmental service. Some markets prevent uncertain services from being sold. For example the Chicago Climate Exchange does not certify credits from soil types for which scientific evidence is lacking on the soil's ability to sequester carbon. Transaction costs can also undermine the development of markets for environmental services (Ribaudo et al. 2008).

If markets are to become important tools for generating resources for conservation on farms, government or other organizations may have to help emerging markets overcome uncertainty and transaction costs. Government can reduce uncertainty by setting standards for environmental services. Government can play a major role in reducing uncertainty by providing research on the level of environmental services from different conservation practices. For example, the government can develop an online Nitrogen Trading Tool to help farmers determine how many potential nitrogen credits they can generate on their farms for sale in a water quality trading programme.

While markets have many desirable properties, they are limited in what they can accomplish, even with government assistance. Public good characteristics that defy ownership discourage markets for environmental services from developing – and prevent the full value of environmental services from being reflected in prices The prices of credits in water, carbon, and wetland markets also may not reflect their full social value, only their value to the regulated community. A national cap-and-trade programme could establish a national market for carbon credits. Others, such as water quality trading or wetland damage/loss mitigation, may be limited to a few specific geographic areas.

A significant role will be given for EU policy and budget in the appropriate land and environmental management. The EU needs regulation defining its policy on markets for environmental services. This policy would cooperate with MS and local governments to establish a role for agriculture in environmental markets. We have to find ways to make EU policies and programmes support producers wanting to participate in such markets. Conducting research and developing tools for

quantifying environmental impacts of farming practices is of great importance as well. Requirements are needed to establish technical guidelines for measuring environmental services from conservation and other land management activities, with priority given to participation in carbon markets. Guidelines are also to be established for a registry to record and maintain information on measured environmental service benefits, and a process for verifying that a farmer has implemented the conservation or land management activities reported in the registry.

"Ecosystems" markets will change the present, economics-only value-paradigm, with winners and losers. As an example, countries and companies with significant carbon-sink potential will benefit. On the other hand, applying the "polluter-must-pay" principle, CO_2 emitters must a pay a price for continuing to be able to do so. The concept of limiting (capping), auctioning and trading emission/access/user rights must be further developed beyond CO_2, in scope (eg. water) and scale (worldwide). On the basis of valuing our ecosystems and regulating the access thereto a market will be created for payment for ecosystem-access entitlements and for ecosystem services. We really need to upgrade our performance metrics. The same is true with respect to Human/Social Capital: also here the metrics, the value of education, culture, social cohesion, etc. should be established and more prominently included in investment/development decisions.

Conclusions

In 2008, the issue of sharply rising food prices was at the top of the agenda. International trade in commodities futures has expanded enormously and food prices went up very sharply, commodity prices went up very sharply and then fell a great deal. The discussion of food crisis has faded in to the background because it has been overshadowed by the global macroeconomic and the financial crisis. With an economic slump, the real price of commodities always falls and vice versa. The current fall in prices is the consequences of a global recession. With the end of crisis resource constraints plus bad polices are creating a major problem for the supply of food in the world. Despite the sharp fall in food prices since their peak in early 2008, prices of basic foodstuffs are still higher than the beginning of this decade. Aside from the level of food prices still on an upward trend, the volatility is a clear problem as people are very vulnerable to such high prices.

Biofuel policy is a major aggravating factor even it not really discussed at present because of the decline in oil prices, which reduced the demand and at the same time food prices have gone down. It is pushed to the background because of the current economic recession, but it will be a problem that will come back as the global recession will end.

The environmental resource scarcity issue is also a real challenge. With the end of recession we are back in a world that has growing population, growing purchasing power, and growing consumption of foods that are very intensive in the use of cereals, for example meat uses a lot more basic agricultural production than the consumption of grain. Water is a concern and so too is the use of potential arable land. To the extent climate changes, most agricultural patterns may become disrupted.

We face three global crises. They concern the food, energy, environment (and finance). At present the sharpest of them is the current financial collapse but the most frightening is the looming food crisis. Biofuel policy will be a problem that will come back as the global recession will end. Climate change is alarming because of its different and greater scale of risk. They are interconnected. For instance, without a greater and more stable food economy meeting the Kyoto goals against climate change is impossible.

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Studies in Agricultural Economics No. 110. p. 23-42. (2009)

A vision of the future of the Common Agricultural Policy

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Abstract

The reforms proposed by the authors intend to ensure the economic, social and environmental sustainability of rural regions and place agricultural policy on a fundamentally different basis. The scope of community and state intervention will change. Payments linked to production will be cancelled and the provision of public goods will be rewarded instead. At the same time, measures aimed at enhancing the viability of the rural economy and society will become more significant. The depth of the changes calls for a new name expressing better the new approach, so instead of CAP the use of a more justified name is suggested: Common Agricultural and Rural Policy (CARP). This paper outlines the vision and the major proposals we suggest to meet the above mentioned goals.

Keywords

CAP, reform, public goods, Common Agricultural and Rural Policy, vision.

Preface

In the summer of 2007, a few experts gathered to talk about the future of the Common Agricultural Policy (CAP). Although there was an agreement that Hungary is a net beneficiary of the current system, in the long term (after 2013) the CAP undoubtedly has to be changed. The evolution is imperative for numerous reasons. The question is whether the Hungarian approach should be conservative, defensive – no change is necessary – (in which case the country would suffer the changes), or offensive. In the latter case Hungary should have its own proposal about the future of the CAP, which has to be a viable vision, tempting or at least acceptable for most of the Member States (MS). We prefer the second option. Through endless discussions an agreement was reached on the fundamental objectives of the proposed new common agricultural and rural policy. These are: sustainability, market-orientation, provision of public goods, improving competitiveness, focusing on rural areas, and simplicity and transparency[3].

Introduction

The CAP and especially the CAP-related expenditure in the common budget has been debated for a long time. The origins of the problems go back to the objectives of the CAP set out in the Amsterdam Treaty (modernization, income security, market stabilization and food security). Although these agricultural policy objectives have remained important, there has been a significant change in emphasis.

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[3] This article is based on the authors' study published as A Közös Agrárpolitika jövője. (The future of the CAP) In: Tabajdi Cs. (eds.) Közös út? A Közös Agrárpolitika jövője 2014-től: radikális reform vagy felzárkózás? I. Magyar Agrárakadémia. EU Ground Kft. Budapest, 2008. pp. 38-70. This article represents the situation as of November 2007, although there has been made some attempts to update the study.

Agricultural production has had significant objectives beyond direct food production (multifunctionality) from the very beginning in the EU member states: food safety, animal welfare, biodiversity, preserving the landscape, environment protection etc. As agriculture and forestry cultivate more than 80% of the European land surface, these multifunctional elements serve and will increasingly serve essential, cross-border externalities. All of these (that is, the fundamental factors of the European agricultural model) can be jointly classified as European public goods.

Tensions over the CAP budget can be explained by the fact that the current expenditure levels and mechanisms do not reflect the above mentioned shift in priorities. Not even the CAP reform introduced in 1992 and the further reforms in 2000 and 2003, and the modifications as part of the Health Check have brought the expected results. Although traditional market support (intervention, export support) has decreased, the new direct payments (which are mainly area based) have increased the CAP expenditure and the system has become more complicated than ever, and the significance of the second pillar has remained limited.

However we have to accentuate at least two facts:

- on the one hand, through the reduction of price support, the CAP reform increased the system's efficiency and decreased the consumers' burden;
- on the other hand, CAP expenditure has increased at a slower rate than the common budget, so its budgetary share is decreasing. (It will be slightly above 40% by 2013, while the percentage of the first pillar expenditure will be 32%.)

In spite of changes to the CAP, i.e. the reform processes up to now, the present system of the CAP is essentially criticized along the following lines:

- Decoupling (i.e. level of payments becomes independent of production (decisions)), a central element of the reform, is only limited;
- Direct payments are based on historical amounts which represent neither the needs of individual farmers nor the value of public goods produced;
- (Partially) decoupled payments may have significantly less distorting effect on the product markets. However a large portion of direct payments can get capitalized into land prices or land rental fees, i.e. it can distort the input markets and, at the same time, it can have an unfavourable effect on the transfer ratio of agricultural subsidies (i.e. ratio of one unit of subsidy received by the agricultural producer as opposed to the favourable position of the land owners);
- In a paradoxical way the reformed system has become a lot more complicated and bureaucratic than the original model. It may result in significant redistribution as well;
- The elements of quantitative regulations may still cause disorder, the mandatory set-aside is still in force and the elimination of the milk quota may be placed on the agenda only after 2013.
- In spite of the declarations the role of rural development has remained limited.

Furthermore it is worth mentioning that the system of CAP has been enlarged by ten new member states since 2004 (and two more since 2007). As far as support is concerned, significant disparities have evolved which have handicapped the new member states: while the large amount of payments under the first pillar are fully financed from the common budget in the case of the wealthier member states, the share of the poorer new member states is much smaller. Further difficulties can be expected because of the several new challenges the CAP (and in general the EU) faces (globalization, climate change and energy safety). At present, the main challenges for European agriculture and the EU's Common Agricultural Policy are the following:

- Due to the gradual but continuous liberalisation of the international agricultural markets imports from third countries continue to grow, market competition intensifies, and competitive pressure increases;
- Despite of the debate over the CAP, European society continues to demand the multifunctional services provided by rural areas. Provision of these rural services represents an implicit taxation for European producers, as well as a competitive disadvantage. Production of public goods, therefore, presumes budgetary financing: either from the common or from national budgets.
- Turning to climate and energy, agriculture could adapt various mitigation measures (substitution of fossil energy through biofuel production, increased carbon storage etc.), but agriculture will also have to adapt (growing seasons will change, agriculture will have to cope with different pests and diseases, there will be a shift in the geography of crops, possible water shortages etc.);
- The budget review may further limit the CAP's financial possibilities. Under the consultation process of the budget review, most of the contributions were very critical as regards the CAP and its common financing. Most of the contributions stress that European agriculture should be competitive internationally and should be able to answer the challenges of climate change, food safety and quality requirements. Most of the contributions urge significant reduction of agricultural expenditure and radical reforms especially as regards the first pillar. Several contributors would like to see the first pillar expenditure moving to the second pillar. There is no consensus on the future of direct payments (continue or abolish).

We can argue that in spite of the substantial changes, the present system of the CAP is still unsustainable. There is a widespread consensus that further reforms are necessary in order to accommodate the agricultural policy to the current priorities. Opinions however, differ on the extent of the reforms. Based on the literature the following options can be outlined.

a) Consolidation, further corrections. Having approved the reform decisions, their implementation is a great challenge. Implementation of the decisions approved as a result of the Health Check (despite of their imminent contradictions) suggests a more efficient agricultural system. However, this reform (even it has several forward looking measures) cannot result in a sustainable CAP. Further changes are inevitable.
b) Coherent (radical) reform. A radical deepening of the reform process could focus on sustainability from environmental, economic and social perspectives too. A Common Agricultural and Rural Policy, which respects both environmental values and competitiveness creates a chance for the evolution of a sustainable system. A radical reform could ensure the continuation of the common financing. However, if agricultural support financed from the common budget decreases, digressive support or national co-financing should be considered for Pillar 1.
c) Re-nationalisation. The system of fully or partially renationalised direct payments forms an other alternative: national governments would have nearly full autonomy as regards the allocation of direct payments; however, they should respect EU competition policy and certain CAP regulations.
d) Total liberalisation is also possible in theory. The common policy no longer functions and the same happens to the national policies. The implementation of this option would have drastic consequences in regions where agriculture is less competitive. Most of the farmed landscape would lose its maintainers.

Abolishing or radically lowering the common financing of the CAP would only result in a reduction in the common budget. Most likely, the re-nationalisation would simultaneously become possible, i.e. agricultural expenditure would increase within the national budgets. Should the financing of the agricultural policy be renationalised, individual member states could support their agriculture to very different degrees. This would jeopardise the smooth operation of the internal market and social-economic cohesion.

The prevalence of sustainability is critical, both from an economic, environmental and social perspective. We think that the European agricultural model can be renewed and its multifunctional content can be maintained (and even enhanced) through a radical reform. In the next sections we outline a possible vision for a CAP which is sustainable in the long term from economic, environmental and social points of view as well and is able to give efficient answers on the above mentioned challenges.

Vision for a new Common Agricultural and Rural Policy

What should the new Common Agricultural and Rural Policy look like?

The agricultural policy conducted in the past cannot be maintained any more. As caretaker of the European landscapes, it produces European public goods, and may even produce more of them following further reforms. The consistent pursuit of the reform process can contribute to creating a sustainable **Common Agricultural and Rural Policy** (CARP), serving both environmental values and competitiveness.

Real change **is needed: radical reform of the CAP in order to focus on the provision of public goods.** The key features of the CARP's desired development are sustainability, market-orientation, public goods, competitiveness and the development of rural areas.

Sustainable

The prime requirement of future European agriculture is **environmental sustainability**. The future CARP is aimed on the one hand at avoiding environmental damage, and on the other hand at encouraging farmers to assume a positive role in sustaining the rural landscape and environment. The CARP's fundamental objective is to promote agriculture's multifunctional role: the production of healthy and safe food, contribution to the sustainable development of rural areas and the conservation and improvement of the status and biodiversity of areas used for farming.

The reformed CARP has to be not only environmentally**, but also economically and socially sustainable**. Good soil fertility, low agrochemical residue levels, animal welfare, the ecosystem itself, and simultaneously economic and social sustainability are all key requirements. Economically non-viable farms are not capable of sustainable farming. It is crucial to improve their competitiveness. Acceptable agricultural wages are required and the unavoidable structural transformation has to be made tolerable for rural societies. From the perspective of social sustainability, the transparency of the system, its financeability and the smallest possible burden on consumers and taxpayers are vital.

Market-oriented

A key factor of the reform is consistent and full decoupling. **Considering structural aspects, full decoupling separates direct support from production.** This system – unlike the construction based on the decision of 2003 – does not allow for partial re-coupling. At the same time, **quantity limitations**, and thus set-aside requirements, will also be entirely **abolished**. The fundamental rules of the system will be the same for the entire EU.

Deepening market reforms is also of crucial importance:

- institutional prices may decrease to the level of world market prices;
- intervention will cease;
- external protection will decrease, but community preference will be maintained;
- extensive agricultural development programmes will be carried out in the new MS (supported by the CAP, in addition to national resources), aimed at improving market transparency and agricultural bargaining power.

Among these conditions, **the role of market coordination becomes crucial**.

Falling prices, falling subsidies, more liberalised trade and changing consumer needs all represent risks. To maintain stability and competitiveness, **crisis and risk management** systems must be developed.

The future CAP system has to become more market-oriented by ensuring the prevalence of its multifunctional values. Implementing effective decoupling will enable transfers remunerating additional rural services offered by agricultural producers which do not distort the market (or only to a very slight extent).

Focus on public goods

Agriculture has salient social and environmental effects on the land use, the environment, animal welfare, public health and rural life. These effects include both negative and positive externalities. Future agricultural and rural policy not only has to strive to decrease negative agricultural externalities, but also to ensure the predominance of positive ones. As a result, the new policy should focus on activities (including forestry) that actually produce public goods, and therefore social benefits offset costs.[4]

Within the CARP's framework, **the system of direct support undergoing transformation will reward public goods produced by agriculture**, which form the core of the European agricultural model: keeping the earth's land surface cultivated; producing safe food; complying with environmental, animal welfare and other standards which underpin relevant values for European citizens; conserving historical and cultural heritage; sustaining rural communities, etc.

In the future, direct support **will become increasingly separated from previous base values.** Firstly, direct support will partly be granted as flat-rate subsidies. Secondly, the proportion of targeted support (adjusted to the special conditions of given regions) will increase. We should stress here the importance of public goods produced by forestry and aquaculture as well. The strict and increasingly sophisticated condition for the granting of direct support is the fulfilment of environmental, food safety, animal welfare, etc. requirements, far stricter than those of competitors on the global market (improved cross-compliance).

[4] Buckwell (2007) calls this policy – focusing on public goods – the European Food and Environmental Security Policy. He deems the question of "whether the CAP should be further reformed, or whether a new policy, better suited to the coming half a century should be created" merits consideration.

One might ask to what extent cross-compliance can contribute to achieving environmental and other objectives. Cross-compliance can be achieved with uniform standards applicable on the entire territory of the Community. These standards, however, do not take into account diverging agricultural and environmental conditions. In the future, the cross-compliance system can be made more targeted (see Bennett et al., 2006). One might also ask how effective an instrument cross-compliance can be in case direct support is decreased. Tightening conditions for obtaining subsidies is acceptable up to the point where the majority of CAP subsidies are allocated through the first pillar. If direct payment gradually decreases over time while the cost of compliance stagnates or increases, producers will sooner or later leave the system. As highlighted by the OECD (2007), the drastic cutting of direct payment cannot be reconciled with increasingly ambitious environmental conditions (OECD, 2007).

This issue will become less important if the proportion of targeted support increases. As the OECD (2007a) report suggests, in case of policies aimed at correcting market failures (e.g. landscape, biodiversity), targeted support (especially if the amount of money saved through targeted measures are substantial) seems to be the most effective solution. Targeted policy is aimed at precise results, well defined by the policy's objectives, while minimising transfers to unwanted beneficiaries and negative spill-over effects. Targeted policies are better suited to the specific geographic, climate, social and environmental conditions of a given member state or region, and thereby contribute more effectively to the production of public goods.

The so-called "non-marketable" services, such as habitat preservation, a clean environment and the protection of biodiversity need better recognition and should be addressed by new and specifically targeted policies. Direct payment for environmental and other "non production services" which society expects farmers to provide can only be justified where they are not automatically delivered by normal profitable good husbandry. The single farm payment is certainly not the means of achieving this objective efficiently. Its linked *cross compliance* obligation has not achieved and is not likely to achieve environmental objectives by default.

By complementing each other, flat-rate and targeted support can jointly foster the provision of rural public goods needed by European society. According to the original compensation logic of direct payments, they offset the income loss stemming from the abolition of coupled support. Demand for compensation currently and in the future will increasingly be linked to the fact that community producers are subject to a growing number of stricter regulations compared to competitors. Direct payments should be increasingly considered as compensation for additional costs arising from the provision of multifunctional goods and services, compliance with animal welfare standards etc, not paid for by the market.

If payments are based on positive externalities or for structural changes and transfers flow from richer regions towards poorer ones without sectoral limitations, support will be more effective and transparent. Such support is socially more acceptable, in accordance with the WTO's requirements and has a positive effect on community cohesion.

Improving competitiveness

Since the announcement of the Lisbon Strategy, improving competitiveness has been one of the major objectives of the EU. The CAP can contribute to this objective by facilitating economic adaptation (training, infrastructure-related investments, advising), and the support of research and development.

The reforms of the CAP and the international trade commitments equally lead towards the development of a **more competitive agriculture.** Along with the progress made by the reforms, market distortion has diminished substantially. Market competition has increased. Market-oriented farming has come to the forefront, which requires improved competitiveness. At the same time, adaptation is a complicated process. Production procedures take a relatively long time to get modified and also their transformation requires significant investment.

Via the enhancement of competitiveness and by facilitating modernisation, the CARP may contribute to providing an efficient response to challenges: to the better fulfilment of market needs via a more flexible adaptation, a more efficient utilisation of resources, quality improvement and by providing new products and services. At the same time, efficient responses must be found to the challenges presented by the protection of human health, food safety, environmental conservation, climate change, energy security and efficiency, innovation and the succession of generations. The enhancement of the competitiveness of forestry and aquaculture may receive more attention.

A key factor in improving competitiveness is the structural adjustment of the European agriculture. The precondition for this is the more flexible functioning of the resource markets (most of all, of the land market) and the special development of human capital (Blandford-Hill, 2006). At the same time, the adjustment processes also have a crisis preventing (proactive) effect. The adaptation potential of a fundamentally restructured European agriculture will be much greater.

On the other hand, the integrated crisis and risk management system built into the rural policy makes possible the handling of new challenges and unforeseeable, unexpected developments

The CAP has a comprehensive system of subsidies. These transfers are legitimate if the beneficiaries really need them or the transfer is in compensation for different services. The scheme of transfers which extensively support market players that are already competitive without receiving subsidies has been severely criticised. The non-allocation of grants to competitive market players would artificially keep the less competitive players alive and would restrict development opportunities available for more competitive players. Furthermore, setting brand new bases for these payments (e.g. direct payments) may bring about position shifts for market players that are difficult to forecast. By way of the decoupled payments, less competitive farms can, in principle, continue their operations for a longer period of time than without receiving them, as the payment will often cover their variable costs. However, due to increased competition, it is rather uncertain that these farms are able to operate in the long term.

With regard to improved competitiveness, it is of key importance that, in addition to economic growth, the multi-functional character of the sector also prevails and rural employment is either maintained or expanded. The continued support of innovation by the Community is important also with respect to economic and social sustainability, especially in such new areas as e.g. bioenergy. The concept of competitiveness in rural areas should be understood to include newer and newer economic activities producing non-product outputs.

Focusing on rural areas

There is a basic need to determine what direction the CAP should take in order to have a more positive impact on the development of rural Europe. The understandably increased attention paid to the "second pillar" sometimes leads to the questioning of the agricultural policy: certain approaches press for regionalization of the economic policy and assimilation of the agricultural policy into regional economic policy.

In reality, however, **crossing the dividing line between the first and second pillars of the CAP is already possible today.** An important component of the second pillar is e.g. the agri-environment programme. Via the cross-compliance and other similar schemes, direct payments that form part of the first pillar today can increasingly serve the assertion of these aspects. The more „measures" are moved into the first pillar the more sources will remain for the more targeted subsidies of the second pillar.

In fact, there is a paradigm shift going on in the rural development policy of the EU. The point is the following: an agricultural policy aimed at food self-sufficiency and agricultural income parity seems to be replaced by a territorial rural policy that ensures sustainable development of rural areas. The shifting towards the new focal points is gradual but continuous. The concept of the „new rural economy" describes the above development.

The basic components of the new rural development paradigm are:

- regional, integrated (multi-sectoral) policy that ensures sustainable development of rural areas;
- focus on the improvement of competitiveness: the transformation of local peculiarities (environmental or cultural conditions, traditional products etc.) into a competitive advantage;
- promoting the production of rural public goods;
- agriculture plays a preferential role in the rural economy: it is the major consumer of local inputs and business services; the main provider of rural public goods; however, it is unable to fulfil the function of rural development on its own
- the main features of the „new rural economy": improved accessibility and approachability via communication and supportive infrastructure (networks of enterpreneurs etc.); the improvement of the competitiveness of rural businesses by way of improving business management skills, product innovation and innovative marketing; the maintenance of an attractive rural environment and a high quality of life via the provision of public goods; tourism could become a determinant sector; the promotion of innovation (market niches, new products, innovative marketing); the possibility of a knowledge-based bio-economy; the development of human resources.

The rural policy – via an integrated development strategy taking into consideration the role of agriculture – promotes the enhancement of the economic and social viability of rural areas. Via the diversification of economic activities and the integration of the various sectors, viability and sustainability can be attained in a much more efficient manner than at the time when the focus was merely placed on agricultural policies.

With respect to making rural areas more viable and attractive, the basic goal is to develop the rural economy, improve the quality of life, retain rural population, strengthen the multi-functionality of activities and secure subsistence level.

The measures of the territorial policy aimed at supporting rural regions can be integrated within the framework of the new rural policy, via the strengthening of local responsibilities and decision-making possibilities (LEADER-approach). At the same time, the new rural policy could regulate, via the community guidelines, the basic factors which promote the maintenance and development of more viable and attractive rural areas.

Simple and transparent

The problems arising from the complicated scheme of the CAP are concentrated in three main areas: they result in a high level of losses and transaction costs (both policy-related and non policy-related transaction costs); create opportunities for misuse (unentitled payments); constitute an entry restriction over the course of debates on the shaping of the policy (significantly restricting the number of participants efficiently contributing to the debate).

At the same time, one of the major problems is the inappropriate acceptance by society. In general, the criticisms of European society do not relate to the basic principles of the CAP but to its excessive complexity, the lack of transparency and the excessive administration of its regulation and implementation.

As regards the acceptance of the new CARP, it is of key importance that the regulation is simple, transparent and well-justified. The simplified regulation of the new policy requires the involvement of the regulatory and enforcement authorities. The simplification approach must cover the entire life cycle of the policy (planning, legislation enforcement, review). Better regulation will not only lead to lower costs but will also help prevent situations where market failures prevail. (Thus, the acceptance of the agricultural policy will increase.) The efficiency of the enforcement of community level regulation will be enhanced if there are no new rules or technical restrictions at national level and if best practices are shared. The replacement of market organisations by a single market organisation, full decoupling and the application of the European and international standards in force will result in significant simplification of the system. There is a need for fewer regulations that can be interpreted more easily and are in force in all the MS in the same form.

Major Proposals

Common Agricultural and Rural Policy

The reforms of the CAP we propose will ensure the economic, social and environmental sustainability of rural regions on a fundamentally different basis. The scope for community and state intervention will also change. Payments depending on production – on a historical basis – will be cancelled; instead of that the provision of public goods will be rewarded. At the same time, measures aimed at enhancing the viability of rural economy and society will become more significant. The depth of the changes calls for finding a new name and, instead of the Common Agricultural Policy, we should use the more appropriate name: **Common Agricultural and Rural Policy (CARP)** that expresses better the new approach.

The Structure of the new Common Agricultural and Rural Policy

The changes in the structure of the agricultural policy**, the redistribution of tasks** and the **modified allocation of resources** are the most tangible indicators of the changes to the policy.

At present, the CAP has two basic pillars. The first pillar is the source of direct payments and market interventions. The second pillar is called rural development, which is divided into four axes (groups of measures). The first axis targets the improvement of the competitiveness of agricultural and food producers. The second axis finances support for agri-environmental operations, whereas axes 3 and 4 are aimed at rural development itself. In the new **CARP** this system will go through a fundamental change.

The proposed new CARP is also based on two pillars. As regards the first pillar, direct payments are replaced by **flat rate payments based on public goods and complementary subsidies on a regional basis.** Within the framework of Pillar 1/a, producers receive uniform („flat rate") area-based payments within the entire EU. The amount of payments under Pillar 1/b would vary regionally, facilitating targeted provision of public goods. Thus, Pillar I fundamentally serves the compensation of producers on the basis of public goods.

Pillar II aims at enhancing **sustainable development of the rural economy and society**. Pillar II supports the improvement of competitiveness and structural transformation as well as economic and social development of rural communities. Within this, Pillar II/a supports structural transformation, as part of which, support in poorer countries are paid with a higher EU contribution, whereas in more affluent countries they are paid with a higher national contribution. These payments, in the long term, could be possibly redistributed into Pillar II/b. In addition, the new Integrated Crisis Management forms part of Pillar II/a too. The aim of Pillar II/b is to strengthen the viability of the rural economy and society, expected to gain growing importance in the future as the improvement of the quality of rural life, the preservation of the special peculiarities of a region, the support of local communities, the increased power of rural regions to retain the population will receive a role that is more significant than previously.

A major difference between the two pillars, in addition to the objective of providing support, is the nature of financing. Pillar I entirely relies on Community sources, whereas Pillar II is co-financed, which means that it is financed in part from Community and, in part, from national resources.

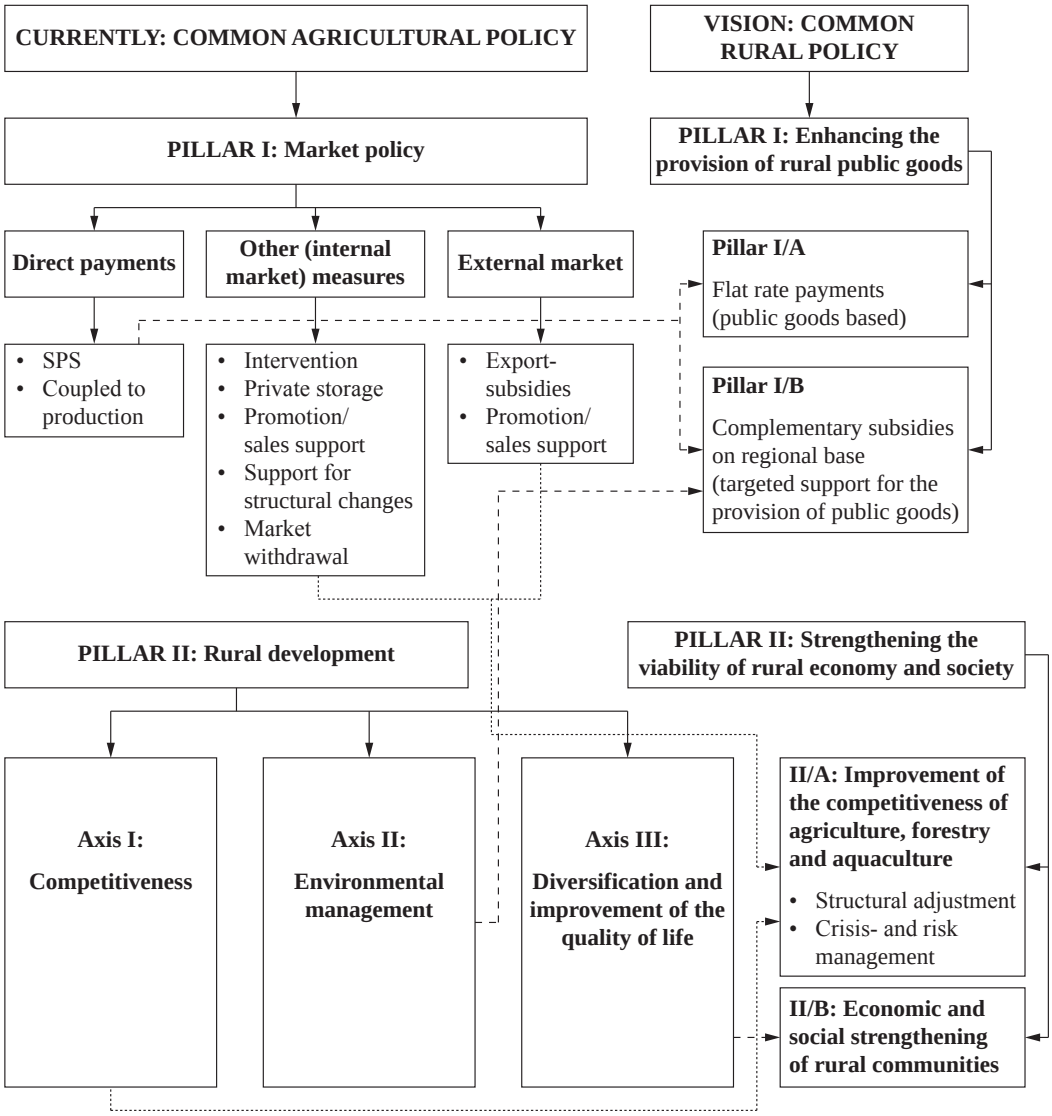

Figure 1: The structural transformation of the Common Agricultural and Rural Policy
Source: own work

The transition

There are basically two solutions for the transition between the old and the new policies. One option is the application of a „shock therapy", that is, the **introduction of the new system in a single step**. This would constitute the launch of the policy on 1 January 2014; that is, the tasks would be transformed instantly and the new structure and financing system would come into force with immediate effect. In the period between 2011 and 2013, a possibility may open up to prepare for the new policy. A switchover in this manner can be implemented quickly, it creates a predictable situation within a short period of time, is less complicated and easy to comprehend. However, the time for adapting to the major changes of the new system may be too short.

The other option for a transition is a **gradual phasing-in**. Experience shows that the CAP is characterised by cautious reforms that have been implemented slowly. Therefore, this option is closer to the former practice but it is more difficult. A gradual transition would mean that, as of 2014, we would switch over to the new system from the SPS over a transitional period (three or possibly seven years, that is, over a full budgetary period), involving several steps, complex re-allocation (possibly mandatory modulation), involving annual corrections of specific percentages. The main and perhaps the only advantage of this type of transition is that it leaves more time for adaptation. Its possible drawback is the possibly higher administrative costs or the application of complex transitional rules.

Pillar I (payments based on public goods)

Under the new policy (with new theoretical basis) a **public goods-based financing** would replace the former area based subsidies, which would create the new **Pillar I**.

The proposed new Pillar **I, with respect to its objective, would remunerate public goods provided by the "maintainers" of rural areas (agriculture, forestry etc.)**, thus facilitating the continued provision of public goods needed by society. As this type of support would not be coupled in any way to production and would not require production at all, it represents a perfect *decoupling*, which would be received positively also at the international trade negotiations. At the same time, as this type of support would not differentiate between sectors, production methods, plants − or, in the case of Pillar I/a – countries, the programme would be neutral as regards competition. Thus, with respect to production decisions, the free will of producers could prevail. Production decisions would depend on market and climatic conditions, as well as on the accessibility and prices of resources. At the same time this approach could make agricultural production **more efficient for society**.

Pillar I is divided into two parts. The first (Pillar I/a) would include the **basic support that would compensate for the public goods, the provision of which could hardly be enhanced by targeted measures.** The public good-based flat rate support per hectare would be identical across the entire EU. In our view, the actual production of the public goods needed would be facilitated by a *cross-compliance* regulation that would be more comprehensive than today. Producers would only be entitled to this basic support upon compliance with these requirements.

The second part of Pillar I (I/b) would support **the provision of additional public goods** (with national and/or regional characteristics). Provision of these public goods is not mandatory; it could be undertaken on a voluntary basis and would increase social utility to an extent that would be higher than demanded by Pillar I/a. To facilitate this, certain MS and regions could apply special regulations if, in the given geographical region, social and environmental conditions require so. These requirements must be in excess of the *cross-compliance* regulations set forth with respect to all the producers (see later in more detail).

Determining the rate of support is not a simple task because, as it derives from the basic definition of public goods, these "products" (non-product outputs) do not have a market value or price. At the same time, there is a need for value determination as an intervention aiming at internalisation of externalities can only be efficient if the value of negative or positive effects is offset precisely. (Otherwise, market players will not react appropriately and will continue to produce too little or too much externality). Value determination is a difficult or even an impossible task in the majority of cases. Often the value is determined by assessing the costs of eliminating and rectifying the damage caused by negative effects. This method can be used relatively well e.g. in the case of environmental pollution. In case of positive externalities, however, it is more problematic to determine the price of

positive effects. The value of the public goods produced is determined by the utility it provides to the consumers, that is, society. However, this can be assessed only if, in one way or another, we know the preference system of the consumers.

In recent years, since the principle of a multi-functional agriculture has come into the forefront of interest, a number of research institutions (FAO, OECD, MEA-Scope, EU research projects within the framework of the EU FP6 programme) have dealt with determining the value of the positive externalities or public goods produced by agriculture. Although the conceptual steps of the method were elaborated, the basic issue (the precise evaluation of public goods and positive externalities) has remained an open issue.

A possible basis for evaluation could be the opinion of society. Although this could be assessed in practice by way of a questionnaire, this method raises a number of issues:

- Social judgement can vary based on the knowledge and economic situation of those asked, although, in principle, the value of public goods should be general.
- Assessing social judgement can only be based on asking the current population, although public goods will also influence the life of future generations.
- The precise gauging of public opinion would not only be questionable but also costly and complicated.

Consequently, we offer a simplified approach to resolve the issue.

Suppose, as a starting point, that at present the European agriculture produces public goods in an appropriate manner and at an appropriate level. Consequently a support level, of an extent similar to that of today, will be sufficient to ensure the continued maintenance of this level of provision. At the same time, the current amount of support covers other objectives (e.g. they ensure a proper income status to producers) too. Thus, in our opinion, the new basic payment should be of a rate lower than that applied until now.

In our view, the **basic payment should be uniform at the EU level.** This is important, first of all, with respect to the simple applicability and transparency of the system. This part of the support enhances the provision of general public goods that can be expected from any European producer. The value of these public goods does not differ from each other, irrespective of which part of the EU it was produced in. Most of the public goods have cross-border effects (e.g. lower rate of soil, water or air pollution), or can reach consumers via the food trade (production of healthy food) or although it is of local nature, from time to time, it provides value to other populations (e.g. landscape) too. As the new support system focuses on the provision of public goods instead of the production of agricultural products, the rate of support may not depend on the structure of production or a former or current income status.

At the same time, with respect to supplementary undertakings, it is **important to consider regional differences**, because the significance and role of several public goods varies according to region; they are embedded in different natural environment and landscape features, and the local population could have varying needs as well.

Payments under the second part of Pillar I (I/b) would remunerate the targeted production of public goods, and would be tailored to the unique social and environmental conditions of the individual member states and regions.

A policy that becomes targeted in this manner is aimed at specific results precisely determined by the objectives of the policy and minimises transfers to unintended beneficiaries as well as negative spill-over effects.

On a community level, only the amounts earmarked for MS ("national envelope") and the framework conditions of support would be determined. During the calculation of the "national envelopes" aspects that are of special importance with respect to the potential provision of public goods should be considered. Such possible variables could be the following:

- The percentage of agricultural areas;
- The percentage of forests;
- The percentage of mountainous areas or those that are disadvantaged due to some other ecological aspects (LFA);
- 'NATURA' areas;
- Ratio of eco-farming areas;
- Number and area of nature reserves;
- Contribution of agriculture to GDP;
- Population density;
- GDP per person.

Our last axiom, in relation to the previous point, is that it is the MS themselves that are the most aware of their conditions, and the needs and expectations of society. The compilation of the national programmes enhancing the targeted provision of public goods would be the responsibility of the MS. They would determine the measures, set the rates of support and control the implementation. Of course, the Commission must approve the programmes as only those that meet the framework conditions set by the Commission would be eligible for support included in Pillar I/b; e.g. the following activities could be included:

- Production methods falling under the previous agri-environmental programmes (extensive cultivation, integrated plant protection, eco production),
- Environmentally-friendly maintenance of forests and sylviculture,
- Production of raw materials for the bio-energy industry,
- Maintaining of the habitats of protected species,
- Gene preservation activities (maintenance and production of indigenous species and breeds) etc.,
- Maintenance and nursing of peculiar landscape components,
- Freshwater fishing activities,
- Game management serving the balance of the environment.

A further problem may be caused by the fact that different geographical areas and special needs can make the coordination of the strictly determined objectives difficult. In such a case, a project-like approach can help. It is necessary to mention at this point that major transaction costs may attach to targeted policies. However, these costs are compensated by the benefits that arise from such targeted policies: transfers of lower amounts, more efficient policies and reduced distortions.

To summarize, the essence of Pillar I is the following: The financial source of Pillar I/a **would be allocated to the MS according to the percentage of areas under agricultural cultivation**. All the (eligible) producers of the EU would receive the same rate of area payments in compensation for the public goods (positive externality) they provide. MS would enforce the fulfilment of this latter condition within the framework of an expanded *cross compliance* scheme.

Pillar I/b would be allocated on the basis of factors mentioned above. The MS would elaborate within their own scope of responsibility the programmes enhancing the additional provision of public goods in the given MS. The number of programmes to be elaborated will be decided at national level, just as the conditions of such programmes or the amounts of support. There may be no production requirement, the support may not influence production decisions and must actually serve the goal set (additional production of public goods). Compliance with the conditions would be ensured by the approval and supervision by the Commission of the national programmes of MS.

Pillar II/a: Improvement of the competitiveness of agriculture, forestry and aquaculture

As a result of the proposed reforms the market-oriented nature of agricultural production will increase, which will result in a change of the production structure, the methods of land use and employment. The cross compliance requirements (related to environmental conservation, food safety, animal health and animal welfare) introduced as eligibility criteria will certainly improve the social acceptance of the system, but farmers are still negatively affected when compared to the producers of countries where less strict requirements are in force.

Measures aimed at structural change help the prevalence of comparative advantages in the individual MS which, in addition to sustainability, also contribute to the strengthening of economic and social cohesion.

Thus, the new Pillar II/a must specially contribute to eliminating the structural deficiencies existing in MS that have joined the EU recently as well as to their catching up. As regards subsidies to be offered within the framework of Pillar II/a, the difference between more affluent and poor countries (to be determined by their divergence from the average Community GDP per capita) **would determine the rate of co-financing**. Apparently, Community contribution in economically less developed countries would reach a much higher level, whereas, in the most developed MS, national resources would play a more important role.

Along with strong market competition, climate change also presents a major challenge for producers. The most affected areas are agriculture and tourism. Unpredictable weather conditions, the increasing frequency of droughts and floods and strong fluctuation of temperature may lead to a reduced agricultural output. [Stern Review, 2006]. We must prepare for a change in the structure of production, and species, and for the transformation of the water management system. In addition, agriculture must also contribute to the reduction of greenhouse gases by applying more efficient technologies and manure handling methods on the one hand and by increasing the production and utilisation capacities of renewable energy sources on the other.

The subsidies available from Pillar II/a not only include innovative and modernising technical-technological investments, although these developments are of key importance due to increased market orientation. This pillar could support (in line with the needs of the individual MS) among others the following measures: investments related to the infrastructure and the production of renewable energy, generational succession, investments that help to meet the cross-compliance requirements, to support cooperation between the players of the production chain, and to support dissemination of information and knowledge.

In addition to structural adjustments and investment subsidies, an important component of the new Pillar II/a is the scheme of integrated crisis and risk management.

Integrated crisis and risk management

Market measures will practically cease to exist in the proposed new policy, because direct intervention into market processes is not an objective of the new common policy. At the same time, as it is known, risks in agriculture are higher than in other branches of the economy, thus the prevention of a crisis and the handling of crises and risks remain important issues.

The major factors that affect the economic standing of agricultural businesses beyond the normal business risks are the following (Commission of the European Communities, 2005):

- Price reduction because of trade agreements and market liberalisation;
- Low prices offered to producers due to the unbalanced relation of producers and purchasers;
- Food safety measures, diseases affecting animal or plant health;
- Climate change (extreme weather conditions).

Diversification of production and activities is one of the most obvious way of risk reduction. As regards the risk-sharing methods that serve the distribution of risks, sales contracts, production contracts, hedging transactions implemented in futures markets, participation in mutual (insurance) funds and insurance are the ones most commonly used.

Risks higher than average risks (which are in general systematic) necessitate state/Community intervention. In this respect, there are two possible ways of Community intervention. The use of market-oriented risk management tools is still very limited. Training could ensure the expansion of risk-related knowledge, development of risk management strategies and special know-how (futures and option transactions). On the other hand, subsidies are needed to counterbalance the fact that, due to the extremely high systematic risk that is typical in the agricultural sector, insurance companies only undertake insurance against an excessively high premium. Subsidies may be granted directly to producers to cover part of the costs arising from insurance and other risk reducing instruments or to the insurance companies through the introduction of state guarantee and/or reinsurance schemes. The solution selected must, however, meet the criteria set forth in the WTO green box.

Whereas risks can equally involve negative and positive outcomes, a crisis will always involve significant negative consequences. A crisis is an unforeseeable situation that threatens the viability of an agricultural enterprise either at a local level or in the entire production branch (Commission of the European Communities, 2005).

Economic crises must be handled at Community level. Although the scope of supply management and price regulation has significantly narrowed as a result of the reforms, the system of safety net operated in a number of common market organisations provides protection in the case of crises also today. However, along with the full elimination of market measures, this bridging solution will also cease to exist. On the other hand, due to the level of risks that are much higher than the average level of business risks, producers may not be left without any protection.

Back in 1974, the Community introduced a general measure on crisis management in the common market organisation of beef: If a significant price surge or drop is registered on the Community market which is expected to disturb or threatens to disturb the market, the necessary measures may be introduced. (Commission of the European Communities, 2005.) This general measure could be expanded, further developed and tailored to the criteria set forth in the WTO green box.

According to our intentions, the **single integrated crisis management system** would meet the requirements set forth by the WTO, would not impose an excessive burden on taxpayers and would not deteriorate the general competitiveness of the agriculture. Taking into consideration these objectives, the package of measures we propose would be based on the following components:

- Full elimination of production quotas and intervention.
- Maintaining private storage only in order to avert serious market disturbances.
- Setting up a common, central fund to reduce damage caused by natural disasters and to finance measures introduced to manage market disturbances (This fund would equal approximately 5 percent of Pillar II)

The objective of crisis management is not an income-insurance for producers; it would only protect market players in case of major crises that cannot be prevented. Consequently, the programme must correspond with the following aspects:

- The extent and method of support or the sectors to be covered would not be determined in advance in any manner.
- Measures would be specifically defined only on the basis of a natural disaster that occurs, or a serious market disturbance, on an ad-hoc basis, and the provisional eligibility would be withdrawn immediately upon the end of the crisis.
- The Community would take decisions on the necessity, method and extent of intervention and the release from the fund of any amount on the basis of proposals made by the member states.
- MS must back up the existence of a natural disaster or market disturbance with facts and statistical figures.

Under such conditions risk management would really serve the solution of crisis situations that occur unexpectedly, irrespective of the actions of producers, and would not offer income security to producers because it would not function in a pre-announced form. Neutrality of competition within the EU is ensured by way of central management and decision-making. Backing up with facts would not only verify the intervention but would also help to meet the requirements set forth in the WTO green box.

If, in a given year, the entire amount of the fund is not used, it could be carried over to the next year but, as of the second year, it could be released for use for other (even other than agricultural) purposes.

The financing of the new risk and crisis management tools does not require additional Community expenditure. The new measures are aimed at enhancing the competitiveness of the agricultural and forestry sector via the strengthening of the economic sustainability of agricultural operations, and thus can perfectly be fit into Pillar II/A. In this context, the MS could decide whether or not to introduce the risk and crisis management measures into their programmes aimed at the enhancement of the viability of the rural economy and society.

In their development plans, MS could freely determine which crisis and risk management methods approved by the Commission they intend to support. This flexibility would ensure that the tools applied can adjust to the highest possible degree of potential risks and the preparedness of those involved (beneficiaries, institution system etc.).

Pillar II/b, or the economic and social strengthening of rural communities

The current measures of axes 3 and 4 would be integrated into Pillar II/b, the purpose of which is the economic and social strengthening of rural communities and the **target group of which is the entire rural population**. The new pillar will include all measures that play an essential role in rural development and can be implemented tailored to local needs. In this new, wider context, agriculture does not play an exclusive role; although it continues to be an essential component of the rural economy.

The enlarging EU becomes more and more colourful and diversified with various circumstances, conditions and issues with many aspects. Thus, a development policy with centralized management will not achieve the intended results at all times. In order to ensure that regions with varying conditions efficiently identify the niches required for their development, **initiatives coming from lower levels must receive more emphasis in Pillar II/b.** To facilitate the most efficient allocation of subsidies, the involvement of local and regional players and that of the key players in rural development outside the agricultural sector needs to be enhanced as much as possible (Dax et al., 2003). Local factors, local identity, venue-specific marketing activities, efficient local government and strong local businesses all form indispensable components of the process of a venue-specific rural development. Experience shows (Bryden, 2003) that rural areas with more developed local government and larger independence tend to be more successful. The LEADER programme and a number of other national rural programmes (e.g. the PRODER in Spain, the POMO+ in Finland, the Regionen Aktiv in Gemany or the Calabria in Italy) serve similar goals (CNASEA, 2003). The local institutional structure and government is particularly weak in the new MSs (Bryden, 2003); thus, in these countries, the strengthening of local capacities must receive special attention.

As opposed to the previous policy, subsidies not only target a narrow class of the rural population (producers and businesses involved in agriculture); instead, they are based on territory, which means that the region will receive more importance. The **purpose of Pillar II/b is alleviating the subsistence problems of people living in rural areas and the improvement of the quality of their lives, maintaining the power of the countryside of preserving the population and supporting the local communities**. To facilitate the implementation of the above goals, one of the **most important tasks is** the expansion of rural work opportunities. Local communities must be supported to ensure that – utilising their peculiarities, local capacities and ideas – they can identify alternative solutions for creating jobs and ensuring sustainability in this manner. Economic diversification must be activated at local level, which will result in creating jobs in the long term via the use of local resources, targeted, venue-specific marketing activities and an attaching entrepreneurial readiness. Agriculture, despite its declining economic weight, may undoubtedly continue to play a determinant role in rural economy; at the same time, the multi-functionality of activities, locality as an approach must receive more emphasis.

The current subsidies serving agricultural and rural development are not sufficient to resolve the problems of the countryside. To facilitate a complex, venue-specific rural development, the sectoral approach must be replaced with a territory-based policy, that is, the various sectoral policies must be integrated at regional and local level. Accordingly, the measures of the Structural Policy that can be implemented at local level and play a role in reducing the social and economic problems of rural areas must be integrated. The integration of these measures is expected to provide an **efficient and targeted solution to rural issues.** The creation of jobs, the enhancement of the quality of rural life, the preservation of local peculiarities, the support provided to local communities and the increased power of the countryside to retain the population will receive a more significant role than previously.

The measures of rural development can be divided into three main areas:

- **Society**: the long term survival of local communities via the encouragement of cooperation, increasing the power of rural areas to retain their population;
- **Economy**: increasing the opportunities for those living in rural areas to find jobs, multifunctional activities and an improved security of subsistence via emphasizing the diversification of rural economies, support to small and medium sized enterprises and local initiatives;
- **Environment**: the preservation of the natural values of the rural environment, safeguarding biodiversity, the value of the landscape and the natural heritage.

Thus, Pillar II/b will comprise a new set of tools for strengthening rural communities, with a new support scheme and regulations. The new r**ural development regulation** – which is a territorial policy – will identify at community level the major issues of rural economy and society that need to be supported, such as: employment, income, quality of life, health, education, infrastructure. Community guidelines and limit values will be determined. Then, a target value or an intended impact attached to a concrete objective or measure will be defined at national or regional level. The programme will facilitate compliance with the guidelines and the achievement of the target values set forth in the regulation. The **programme** will specify the measures proposed to be used and the objectives to be achieved in order to have the intended effect. The scope of issues determined at Community level, the nationally or regionally determined target value and the achievement along with the subsidies elaborated in detail in the programme are connected at this point. As a result, rural development would not only involve subsidies but would constitute a much more organised approach that is coordinated along the guidelines, is based on clear goals, is focused on local initiatives and is differentiated on a territorial basis (niche policy).

Acknowledgements

We are grateful for the valuable comments and corrections of Andrew Fieldsend.

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Strategic models, ownership and organisational changes in the Hungarian food industry[1]

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Abstract

Based on statistical analyses of the financial data, the study showed that organisational instability characterised the period under examination. On average, change of ownership or of management, or even mergers or de-mergers occurred every 3.7 years. The "stable" periods are too short for implementing corporate activities based on an elaborated strategy, granting success both in the medium and long term. We have established the strategic models by which the enterprises could be ranked following the change of ownership or management. From among the four types, the asset depleting and the surviving strategies are definitely disadvantageous,but they accounted for more than 56% of the cases. The frequency of occurrence of the negative strategic models increased remarkably in the second half of the period between 1992 and 2006, while the occurrence of the positive strategies – optimising and push forward – dropped to half. It was established that any available reserves of the Hungarian food industrial structure were exhausted in the actual social and economic environment. Withdrawal of foreign capital from the country will continue. A further decrease of the registered capital, depletion of the assets and deterioration of the competitiveness are unavoidable. In the short term, supporting retention of the foreign capital, while in the medium and long term, encouraging expansion of the small and medium size enterprises may grant the opportunity for improvement.

Keywords

food industry, structure, ownership, capital, strategic model

Introduction

The food industry played an important role in Hungary's economy during the past 100-150 years. In the Carpathian basin, excellently adapted for agricultural production, the ambition was conceived to place the products of agriculture on the markets with the highest possible degree of processing and with the highest added value. During the 20th century, new food industrial sectors were established that allowed the rapid development of an industry scale food processing sector. As a result, a food industry able to manufacture products – even if far from being of world class quality – in quantities exceeding the domestic consumption demand and living up to the challenges of the epoch developed prior to the change of regime in 1989-1990. And all this was founded on a well-developed agriculture.

Due to the processes that occurred in agriculture following the system change, a lack of conformity developed between the quality requirements of the Individual food industry sectors and the opportunities offered by a dispersed agricultural production base (Kerek, 2002). In addition, the co-operation relationships granting mutual advantages for the determinative participants of the product paths broke up.

Following the EU accession, the output of the food industry and the returns from sales showed decreasing trends, even at current prices. Its economic – and consequently eco-political – importance suffered remarkable decline. The share of the food industry's output in comparison to

[1] The study underlying this article was prepared in the Research Institute of Agricultural Economics, edited by the author (Kapronczai ed., 2009). Bojtár–Lukácsik, Mónika; Felkai, Beáta Olga; Györe, Dániel; Kürti, Andrea; Székely–Raál, Éva; Tóth, Piroska and Vágó, Szabolcs have co-operated in the research.

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the total of the national economy fell from 12.5% of 1992 to less than half, i.e. 6%. While this sector provided nearly 9% of the aggregate employment within the national economy, it offered work to only 4.5% in 2006.

Also the income production capacity of the food industry continued to decrease. While in 1997, operating profits on HUF 100 returns from sales amounted to HUF 4.8, this rate was HUF 3.8 in 2003 and barely HUF 2.9 in 2006.[3] The industry's poor income position is all the same not primarily due to the low profitability of its actual production activity, but to the losses from financial operations. This is a consequence of the low capital supply and of the high credit demand resulting therefrom, due to the lack of capital investments. The entire food industry was characterised by growing indebtedness and by continuous decrease of the state subsidies, which started in 2002.

The negative tendencies were strengthened by the withdrawal of foreign capital from the sector. The foreign capital had a share of 32% within the total registered capital in 1992, exceeding 50% in 1995 and already 60% in 1997. No further remarkable growth occurred thereafter, the highest level was observed in 2000 (63%). Thereupon, the foreign share decreased dramatically, hardly exceeding 47% in 2006. The withdrawal of foreign capital from the country implied serious consequences also due to the fact that the domestic investors and entrepreneurs were unable to supplement the multinational capital withdrawing from the food industry. This had the consequence that quality changes of foreign capital almost coincided with the fluctuations of the sector's registered capital; that means, the amount of the food industry's registered capital fell at the same rate as the amount of foreign capital decreased.

During the research which served as basis for this article, our primary aim was to show some of the reasons for the decay through application of exact investigational methods. As the first step, we strived to establish what corporate strategies were followed by the different food industrial enterprises following certain "shock events"[4] (privatisation, ownership change, change of management, merger or de-merger). Whether the foreign owned companies typically strived for acquiring markets only and exclusively the domestic capitalists acted In the real interests of the Hungarian economy? Whether the different ownership and management changes can be determined or categorised that typically were connected with certain enterprise development strategies? And in the affirmative case, whether spreading of the schemes more advantageous for the food economy can be encouraged through application of eco-policy tools?

Database and methods

Under the food industry, in this article, the production of food, drinks and tobacco is understood. The overwhelming majority of the data used for the calculations derive from the database maintained by the Hungarian Tax Authority (APEH). These were complemented by data collected from statistics, from the annual reports available at the Trade Court, and from interviews and publications available in the trade literature. The APEH database consists of the tax returns of the companies keeping their books through single and double entry accounting. The use of this database has therefore the consequence that our research is mainly focused on the larger enterprises having

[3] At the end of the period surveyed, about HUF 250 amounted to EUR 1.

[4] For the purpose of the research, only privatisation, change of ownership, change of management, merger and de-merger are considered as "shock events". In the original meaning of the word, several other shock events had an impact on the food industrial enterprises during the period surveyed – e.g. the Rouble crisis, exchange rate changes, decrease of demand in consequence of the restrictive measures etc. – however these were not concerned as forming part of the "shock effects".

a determinative role in the single speciality sectors, and also the findings apply principally thereto. This fact does not imply any difficulty in understanding the present processes, explained by the high degree of concentration – high CR indices (!) – of the industry.

The database was available in the form allowing its use for the purposes of our research for the period between 1992 and 2006. This time span has **a priori** determined the period to be covered by the research, which luckily coincided with the requirements set by the research objectives. Consequently, the analysis covers the time span from the period directly following the change of regime until 2006. The choice of 1992 as base year was also justified by the fact that both most important Privatisation Acts of Hungary (Act LIII of 1992 and Act LIV of 1992) were enacted in this year, and that the majority – 83% – of the privatisations in the food industry occurred in 1992 or in the subsequent years (Alvincz, Tanka and Udovecz 1994).

Nine speciality sectors of the food industry – meat processing and manufacturing of meat products, poultry meat processing, fruit and vegetable processing, manufacturing of dairy products, manufacturing of milling products and fodder-production, dried pasta production, brewing industry production, soft drink production and manufacturing of tobacco products – were involved into the research. Within the speciality sectors, when electing the companies to be involved, we strived to opt for the enterprises having determinative importance at the beginning and at the end of the period under study. In order to grant proper coverage in respect of the single speciality sectors' income, we planned to select up to ten of the largest companies at both dates (i.e. altogether 20) in each sector.

The examination of the development strategies of the determining companies is based on the analysis of dependent and independent variables. The independent variables are the above-defined "shock events" which can generate changes in a company's life.

The dependent variables include the corporate features changing in consequence of the "shock events", thus for example the assets, the investments, the sales, the export returns, the staff number and the personal expenditures, the liabilities and their composition, the profit/loss categories and the financial indices. The main objective consisted in presenting the trends of the dependent variables' changes as a function of the events which occurred in the company's life and designated by us. Such a relationship has been determined for each enterprise separately, however the findings of the study are published here only in the aggregate, applicable to all companies included.

The relationship between the dependent and independent variables has been examined in a manner comparing the mean of the year of occurrence of the "shock event" (as subject year) and of the previous year to the average of the two years following the subject year. The study has been expanded to the entire scope of the assessed enterprises in a manner that all data related to the given independent variable – concerning the year of the event – were summed, and in this manner an event-index[5] was formed. (That means, not the indices of the single enterprises were averaged!) The value thus derived was compared to the sector-index of the population assessed relating to the same year, calculated using the above method.[6] From the comparison of the event-indices and the sector-indices we could establish by what percentage the increase or decrease of the given dependent variable was quicker at the companies where a determined independent variable occurred than in the entire scope of the enterprises involved in the study. This was called the "effect-index". From the

[5] Thus the event-index presents how the variable concerned has developed in the average of the two years following the subject year in respect of the group of enterprises suffering the shock event against the mean of the year of the shock effect – the subject year – and the preceding year.

[6] The sector-index therefore demonstrates the changes of the variable concerned in respect of the total population in the average of the two years following the subject year in comparison to the mean of the year concerned – as subject year – and the year preceding that year.

annual results, a weighted average was calculated for the entire period under study[7], including them in a result matrix. The analyses and tables were prepared on the basis thereof.

The important events ("shock events") occurring in the life of the enterprises served also as starting point for the **strategic modelling assessment**. Similar to the method used for assessing the development strategies of the determinative enterprises, starting out from the year concerned, the next two years were compared to the average of the previous and the subject year and indices generated from the extent of changes expressed as a percentage. Ranking in the model groups was made on the basis of the index values. As in several cases the data required for each year under study were not available, we have assessed the year for which data could be connected, thus endeavouring to include the highest sample allowing to draw conclusions. During categorization, the events were ranked under the relevant strategic type if it complied with the requirements related to the model concerned. As the series of data to be used was often incomplete, one missing value was allowed.

Development strategies of the determining enterprises

The number of the food industrial enterprises included in the research has slightly changed during the 15 year period, but in the aggregate it declined due to mergers. While 73 companies were assessed in 1992, the starting year of the study, this number dropped to 61 for the closing year (2006).

259 "shock events" concerning the companies under study occurred in the period between 1992 and 2006. 47% of the "shock events" concerned change of ownership. In 48% of the ownership changes the enterprises remained under domestic ownership, while in 41% foreign majority and in 11% foreign minority ownership was formed. It appears therefrom that foreign investors accepted minority ownership only on rare occasions; they rather strived for acquiring an ownership rate necessary for making strategic decisions. The number of "shock-events" concerning ownership was higher than the average in the years 1992-1997 and 2003-2004 (9 to 21 events/year); while it was remarkably lower (3 to 7 events/year) in the remaining years. This indicates that both the privatisation period and the period of the EU accession have remarkably rearranged the ownership relations of the food industry's enterprises of determining importance.

In 38% of the "shock-events" a change of management occurred. From this, in 65% of cases Hungarians and in 35% of cases foreigners became company managers. The number of management changes presented a continuous increase during the years; while 3 to 7 events occurred in each year between 1992 and 1999, their annual number amounted to 4-12 between 2000 and 2006. During the privatisation period, and above all if domestic ownership acquisition occurred, the former management and its orbit were motivated in the changes, therefore the same team of professionals continued to manage the company even after the change of ownership. In several cases, also foreign investors acquiring ownership in food industrial companies maintained – for a while – the domestic management. Simultaneously however, the liberalisation of trade following the EU accession and the sharpening competition reinforced the endeavours to designate more competent management. Fourteen per cent of the companies reacted through mergers to the challenges, while de-merger occurred only in one case.

It comes clear from the above that the frequency of "shock-events" during the period following the change of regime exceeded the level justified by natural development. Instability in ownership and, to a lesser extent, in management characterised this period. At the food industrial

[7] The aim was to give greater weight to a year in which the given "shock event" occurred more than once!

companies under assessment, ownership or management change, or maybe merger or de-merger occurred in every 3.7 years, on average. These "stable" periods are too short for allowing even the outlining of a successful operation in the medium or long term along a well elaborated strategy. Short term thinking and the lack of perspective are direct consequences of such instability.

During the period assessed, there were in the aggregate 33 occasions when ownership change **resulting in majority foreign ownership** occurred among the companies involved in the study, while on 18 occasions the company acquired became the property of another foreign investor (second or second generation foreign proprietors).

Table 1 represents the effects of the change of majority ownership. In the aggregate, it allows the conclusion that the companies realised increasing returns with lower staff number but growing payroll in consequence of foreign ownership. They started intensive investment activities, while their financial position (long term liabilities, asset coverage ratio, indebtedness and liquidity index) as well as their efficiency (asset turnover rate, per capita returns, leverage) improved, and their dividend and tax payments decreased. After further sale of the reorganised company with more optimal operation and better asset position, the second generation foreign proprietors started already longer term developments of strategic character.

Table 1

Majority foreign ownership was formed or re-formed in consequence of change of ownership

Dependent variables	Sector-index	Majority foreign ownership maintained		Majority foreign ownership formed	
		Event-index	Effect-index	Event-index	Effect-index
Average staff number	0.97	1.02	1.04	0.84	0.86
Total assets	1.03	1.36	1.32	1.12	1.08
Investments	1.03	1.84	1.78	2.09	2.03
Long term liabilities	1.24	1.76	1.43	0.76	0.61
Added value	1.27	1.18	0.93	1.18	0.93
Net return on sales	1.08	1.02	0.94	1.14	1.05
Export returns	1.07	1.61	1.51	1.12	1.05
Personal expenditures	1.04	1.14	1.09	1.07	1.02
Income/expenditure index	1.00	1.04	1.04	1.00	1.01
Tax payment obligation	0.91	1.38	1.51	0.71	0.78
Dividends or shares paid	1.04	1.40	1.34	0.61	0.58
Rate of invested assets (from total assets)	1.08	1.11	1.03	1.00	0.93
Asset coverage (equity coverage) index	0.95	1.25	1.30	1.16	1.21
Supplier liability coverage	2.12	5.79	2.74	1.14	0.54
Indebtedness rate (long and short term)	1.24	1.56	1.26	0.82	0.66
Asset turnover rate	1.00	0.87	0.87	1.06	1.05
Per capita return	1.11	1.07	0.96	1.40	1.26
Leverage	1.41	1.37	0.98	2.00	1.42
Liquidity index	0.85	1.23	1.44	1.10	1.29

Source: own calculations

In about 11% of the changes of ownership during the period assessed among the companies selected lead to formation of **minority foreign ownership.** As regards the number of events, this means that on 11 occasions minority foreign ownership was formed and only on two occasions the enterprise acquired became the property of a second generation minority foreign investor.

The food industrial companies coming under minority foreign ownership have realised returns on sales increasing slightly over the sector's average rate with decreasing staff numbers and economic payroll managements. The intensive investments of the first generation proprietors implied the increase of the long term liabilities. The rate of indebtedness increased remarkably, while the asset coverage decreased. The tax and dividend payments declined. Despite this, the asset turnover rate and the per capita return slightly increased (Table 2).

Table 2

Minority foreign ownership was formed or re-formed as a consequence of change of ownership

Dependent variables	Sector-index	Majority foreign ownership maintained		Majority foreign ownership formed	
		Event-index	Effect-index	Event-index	Effect-index
Average staff number	0.97	0.92	0.95	0.94	0.96
Total assets	1.03	1.04	1.01	1.02	0.99
Investments	1.03	0.51	0.50	2.02	1.95
Long term liabilities	1.24	1.48	1.20	3.39	2.74
Added value	1.27	1.52	1.20	0.92	0.73
Net return on sales	1.08	1.10	1.02	1.05	0.97
Export returns	1.07	1.12	1.05	1.17	1.10
Personal expenditure	1.04	0.96	0.92	0.96	0.92
Income/expenditure index	1.00	1.03	1.03	1.00	1.00
Tax payment obligation	0.91	n.a.	n.a.	0.67	0.73
Dividends or shares paid	1.04	n.a.	n.a.	0.61	0.59
Rate of invested assets (from total assets)	1.08	0.96	0.89	0.93	0.87
Asset coverage (equity coverage) index	0.95	0.85	0.89	0.75	0.78
Supplier liability coverage	2.12	0.75	0.35	0.42	0.20
Indebtedness rate (long and short term)	1.24	1.44	1.16	4.40	3.54
Asset turnover rate	1.00	1.05	1.04	1.01	1.01
Per capita return	1.11	1.20	1.08	1.15	1.04
Leverage	1.41	1.33	0.95	1.62	1.15
Liquidity index	0.85	1.05	1.23	1.06	1.25

Source: own calculations

Between 1992 and 2006 changes of ownership occurred in 47 companies from among those involved in the assessment when a **domestic owned company became owned by another domestic proprietor.** In the first half of the assessment period, until 1998, this mainly meant privatisation of the state property by private investors. Thereafter, for some years, only a small number of changes of ownership occurred, then again the number of events increased. In the second half of the assessment period 21 changes of ownership occurred, only slightly less than during the privatisa-

tion period (26). A remarkable proportion of the companies acquired during privatisation changed proprietors only after a few years. There were in all events among the companies assessed, when domestic investors have bought the company from foreign proprietors. The majority of such cases occurred in the period after 2000, above all between 2002 and 2004.

The research has demonstrated that companies coming under new domestic ownership had performed not only weaker than the companies coming under foreign ownership but also than the entire industry (Table 3). From the social aspect the greatest advantage consists in the higher rate of employment, though the payroll cannot be considered as satisfactory. Deterioration of the quality of the professionals had an adverse effect on the competitiveness and innovative capability of the enterprises undergoing a similar event, manifesting itself in the drop of the per capita personal expenditure. In comparison with the companies passing to foreign ownership, these enterprises under performed considerably, suffering a remarkable loss of market. It cannot be disregarded that the biggest drop compared to the sector's average in tax payment occurred at these companies. After the change of ownership, they started intensive investments, financed from few long term and much more short term obligations. Though their liquidity position improved, the efficiency problems escalated: the added value dropped drastically, the income/expenditure rate decreased; the per capita returns fell. In the aggregate, it can be established that the competitiveness of the companies coming under domestic ownership worsened.

Table 3

Domestic ownership was formed or re-formed as a consequence of change of ownership

Dependent variables	Sector-index	Majority foreign ownership maintained		Majority foreign ownership formed	
		Event-index	Effect-index	Event-index	Effect-index
Average staff number	0.97	1.04	1.07	1.03	1.05
Total assets	1.03	1.03	1.00	1.11	1.08
Investments	1.03	1.71	1.66	5.52	5.35
Long term liabilities	1.24	1.07	0.87	2.75	2.23
Added value	1.27	1.00	0.79	1.01	0.80
Net return on sales	1.08	1.01	0.93	1.01	0.93
Export returns	1.07	1.26	1.18	0.86	0.80
Personal expenditure	1.04	1.06	1.02	1.01	0.97
Income/expenditure index	1.00	0.98	0.99	0.97	0.98
Tax payment obligation	0.91	0.67	0.74	0.45	0.49
Dividends or shares paid	1.04	0.93	0.89	n.a.	n.a.
Rate of invested assets (from total assets)	1.08	1.07	1.00	1.67	1.55
Asset coverage (equity coverage) index	0.95	1.02	1.07	2.38	2.49
Supplier liability coverage	2.12	1.60	0.76	1.54	0.73
Indebtedness rate (long and short term)	1.24	1.46	1.17	5.69	4.58
Asset turnover rate	1.00	1.00	1.00	1.00	1.00
Per capita return	1.11	1.01	0.91	0.93	0.84
Leverage	1.41	1.28	0.91	1.13	0.80
Liquidity index	0.85	1.16	1.36	0.95	1.11

Source: own calculations

In the life of the companies included in the sample, 98 changes of management occurred; of these, in 34 cases foreign participation can be demonstrated. In 16 cases the new management was dominated by foreigners, in 18 cases it remained under foreign ruling, meaning that a foreign management was replaced by another foreign management. It is typical that after 2001, if change of management occurred, the dominance was not changed; domestic remained domestic and foreign dominance remained foreign.

Table 4

Management dominance after change of management

Dependent variables	Sector-index	Foreign		Foreign		Remained domestic		Became domestic	
		Event-index	Effect-index	Event-index	Effect-index	Event-index	Effect-index	Event-index	Effect-index
Average staff number	0.97	1.00	1.03	0.94	0.96	1.11	1.14	1.04	1.07
Total assets	1.03	1.04	1.01	1.16	1.12	1.02	0.99	1.06	1.03
Investments	1.03	1.20	1.17	3.55	3.44	1.75	1.69	5.18	5.02
Long term liabilities	1.24	0.93	0.75	1.29	1.05	1.38	1.11	5.27	4.26
Added value	1.27	1.97	1.56	1.43	1.13	1.21	0.95	1.11	0.88
Net return on sales	1.08	1.35	1.25	1.10	1.01	1.06	0.98	1.17	1.08
Export returns	1.07	1.17	1.09	1.87	1.75	1.13	1.05	1.39	1.30
Personal expenditure	1.04	1.16	1.11	1.07	1.02	1.12	1.07	1.14	1.10
Income/expenditure index	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.10	1.10
Tax payment obligation	0.91	1.72	1.88	0.94	1.03	0.83	0.91	2.01	2.20
Dividends or shares paid	1.04	0.95	0.91	1.30	1.24	1.50	1.44	n.a.	n.a
Rate of invested assets (from total assets)	1.08	0.99	0.92	n.a.	n.a.	1.05	0.97	0.78	0.72
Asset coverage (equity coverage) index	0.95	0.75	0.78	1.15	1.20	0.99	1.03	1.62	1.70
Supplier liability coverage	2.12	5.82	2.75	0.97	0.46	0.66	0.31	0.47	0.22
Indebtedness rate (long and short term)	1.24	0.99	0.79	0.87	0.70	1.22	0.98	5.51	4.44
Asset turnover rate	1.00	1.19	1.19	1.02	1.02	0.99	0.98	1.10	1.10
Per capita return	1.11	1.28	1.16	1.33	1.20	0.99	0.89	1.15	1.04
Leverage	1.41	1.49	1.06	1.88	1.34	1.20	0.85	1.44	1.03
Liquidity index	0.85	1.10	1.29	1.18	1.38	1.00	1.17	1.17	1.38

Source: own calculations

Changes in the managements with domestic dominance were more frequent: 64 similar events occurred during the period examined, concerning annually 8-10% of the companies assessed. In the selected companies, between 1992 and 2006, in 14 cases a domestic manager replaced a foreign executive, while in 50 cases the company remained under Hungarian management. Companies under Hungarian ownership and those under minority foreign ownership employed almost exclusively domestic management.

From among the enterprises involved in the study, there were 37 **mergers** and a single demerger during the period assessed. As a single event cannot be analysed in itself, only the effects brought about by the mergers are examined. The majority – almost 57% – of the mergers occurred between 1995 and 2000, practically in the years directly following the privatisation of the food industry. There was a second wave of mergers between 2002 and 2005, when more than one third of the companies assessed considered that they could operate more successfully in the future if they merged.

However, upon analysing the data of Table 5, it is clear that the mergers did not have unequivocally positive effects. Though, following the mergers, the number of employees and the personal expenditure increased, the per capita incomes did not grow remarkably. Mergers were also characterised by the increase of development inclination, but, due to the increase of their obligations, the companies' financial position did not improve.

Table 5

Merger

Dependent variables	Sector-index	Merger	
		Event-index	Effect-index
Average staff number	0.97	1.16	1.19
Total assets	1.03	1.34	1.30
Investments	1.03	2.11	2.04
Long term liabilities	1.24	1.45	1.18
Added value	1.27	1.45	1.14
Net return on sales	1.08	1.33	1.22
Export returns	1.07	1.56	1.46
Personal expenditure	1.04	1.28	1.22
Income/expenditure index	1.00	0.99	1.00
Tax payment obligation	0.91	1.81	1.98
Dividends or shares paid	1.04	0.82	0.79
Rate of invested assets (from total assets)	1.08	0.99	0.92
Asset coverage (equity coverage) index	0.95	0.85	0.89
Supplier liability coverage	2.12	1.06	0.50
Indebtedness rate (long and short term)	1.24	1.10	0.89
Asset turnover rate	1.00	0.91	0.90
Per capita return	1.11	1.14	1.03
Leverage	1.41	1.42	1.01
Liquidity index	0.85	1.09	1.28

Source: own calculations

Strategic models[8]

The strategy definition is not easy as it has many different interpretations. Also the trade literature cites different definitions in this connection:

- According to the classical "5P" definition of Henry Mintzberg, the strategy consists of Plan, Ploy, Pattern, Position and Perspective (Mintzberg, 1987);
- Michael Porter – one of the determinative characters of strategy formulation – represents the opinion that organisations have to acquire a position to which consumers attach value and which cannot be occupied by the competitors, being unable to copy it (Porter, 1996).

According to the theory of competitive strategies by Al Ries and Jack Trout, the strategy of a given company depends on several factors, but principally on its market position (Ries and Trout, 2007). Consequently the following strategic behaviours may be identified:

- market leader – the strategy in this case is market expansion or maintenance of the position,
- market challenger – characterised by a strategy attacking the competitor,
- market follower – imitates the product, maintains the positions,
- flanker – specialising in determinative market segments.

Porter's basic strategy starts out from the statement that it is impossible to create something that is cheap and unique at the same time (Porter, 1996). Consequently, the following strategies are differentiated:

- Cost leadership – it is applied by companies that have efficient size, are not bureaucratic and may avail of synergic effects. The company seeks cost reduction possibilities in order to increase its market share. Advantages: it preserves the buyer's bargaining position (it is beneficial for the buyer, because it may purchase the product at the lowest possible price), grants protection against new entrants because nobody can sell at lower prices. Consequences: increase of the market share; because all segments are to be satisfied, this strategy requires a high amount of capital reserve.
- Differentiation strategy – the aim consists in the differentiation of the product through emphasising its special features.
- Focus strategy – the company focuses on a single product or to a geographical area. It has a better relationship with buyers, but its target market is smaller. Advantages: it is a cost, economic and asset efficient strategy.

It can be therefore well sensed that the market drives the enterprises into competition and their strategy is simply a tool for attaining the objective(s) defined by them. The corporate strategies have undergone dynamic changes during recent years, resulting in beneficial effects on the competitiveness. While "competitive strategies" were prevailing between 1980 and 1990 in the companies' life, in the years after 1990, the enterprises tried to conquer more through strategies based on value chains and basic capabilities (Mészáros, 2002). In general, it may be established that cost awareness and cutting of the overhead expenses appeared as important criteria, and a considerable shift from production focus to market-orientation can also be observed.

[8] During the recent years, there were several trials to reveal the strategies of the Hungarian food industrial companies, however their methodology was not adaptable to the database used by us. From among them, Lehota et al (2004) assessed the strategy models of the wine-growing companies, Módos et al. (2004) studied the meat and packing industry, while Lakner and Hajdúné (1999) the corporate strategies applied prior to the EU accession.

It is clear from the above that no analyses that would present strategies adaptable to the food industrial companies on the basis of the database used by us were ready available. Therefore we have created ourselves "strategic models" that may be applied to the "shock events" assessed and allow defining how the single companies under study reacted to the changes. These "strategic models" include[9]:

- depleting,
- surviving,
- optimising and
- dynamic strategies.

According to the basic concept, the companies classified as following **depleting** strategies are in a difficult financial position, have no funds for implementing the investments required for the supplementation of their equipment, while there revenues continuously decrease. In order to avoid bankruptcy, the funds required for the operation are obtained from loans or from selling assets. Decreasing staff number and gradual loss of assets characterise them.

Enterprises were ranked here in connection with altogether 21 "shock events", from among the total number of 102 appraisable "shock events", complying with the established criteria (Table 1). Within the period under study, the number of enterprises identified as following depleting strategies was divided equally; ten of them falling in the period prior and 11 of them in that after 1998.

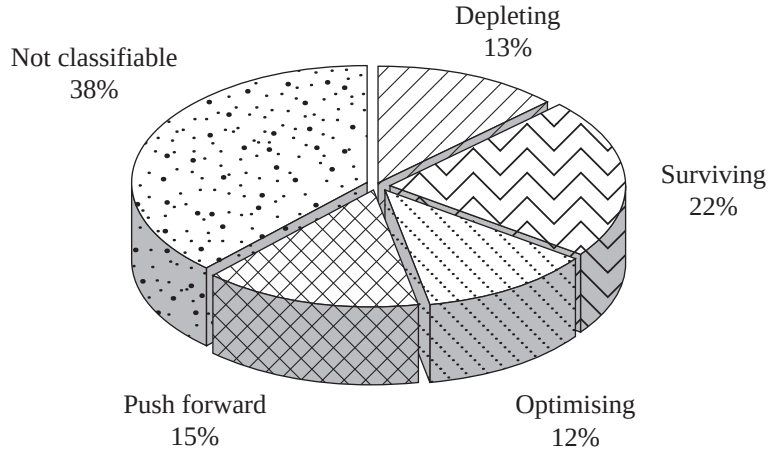

Figure 1: Division of strategic models

Source: own calculations

In our computations, the depleting type companies decreased the number of employees by 27%, while the per capita personal expenditure increased by merely 3.5% (Table 6). This latter index increased at all strategy types, though at different rates. As we have used inflation-corrected data for our calculations, this may be due – beyond growth of the real wages – to the fact that the number

[9] Beyond these four types, the logic would also require a fifth model including companies specialising in certain fields, manufacturing highly positioned products of higher quality standards, and which would increase primarily the income and the efficiency in consequence of their reaction to the "shock event". Companies of this category would lay great emphasis on product development and marketing. However, the data available to us did not make it possible to unequivocally circumscribe these characteristics, therefore, finally we decided to abandon studying of this category.

of the less skilled staff decreased, partially in consequence of mechanization and in part due to a better organisation of the work processes. Also the growth of charges and taxes imposed on wages increased the personal expenditure. The rate of exports within sales increased also at the depleting-type companies, but this trend is more or less true for the entire scope of the enterprises assessed. In the case of these companies, the increase of the export ratio remained below the average.

Table 6

Number of the single strategic types and their event-indices

Strategic model	Number of employees	Per capita personal exp.	Export/ domestic sales	Return from sales/ output	Turnover rate	Per capita revenues	Indebtedness	Investments	Return from sales	Capital assets	Number (from total of 207)
Depleting	0.73	1.04	1.43	0.96	0.98	0.97	1.78	0.30	0.69	0.76	21
Surviving	0.93	1.03	1.10	1.02	1.00	1.04	2.57	0.68	0.97	0.97	36
Optimising	0.88	1.12	1.75	1.05	1.14	1.35	2.27	3.68	1.17	1.04	20
Dynamic	1.44	1.11	4.34	0.97	1.15	1.15	1.75	6.98	1.58	1.48	25
Not classifiable	0.98	1.11	21.27	0.98	1.03	1.27	4.80	2.56	1.16	1.14	63

Source: own calculations

The rate of return from sales and the output decreased, showing that these companies manufactured low quality, unbranded products or could realise only a narrow price margin, due to the sharp price competition. Also the turnover rate decreased, indicating efficiency problems. The per capita revenues dropped by 3.5% on average, meaning that returns from sales decreased to an extent even exceeding that of the strongly decreasing number of employed. The rate of indebtedness decreased more moderately than in the case of the other companies, probably due to the fact that these companies were less creditable. Their investments dropped by 70% following the „shock event", one quarter of their capital assets were lost due to obsoletion or sale.

Companies belonging to the **surviving type** operate with low profitability, being able to pay the salaries, but having no sufficient funds for investment and development. Their product innovation is at the minimum level. The surviving type companies compete first of all on price, they hardly acquire any new markets and their return from sales is stagnating or decreasing. During our study, the surviving type companies proved to be prevalent; in total, 36 of them were identified. This category was markedly more frequent after 1998, when 22 enterprises could be ranked here, while earlier this type was observed only in 14 cases.

Enterprises ranked here decreased the number of their employees by 7% in the two years following the "shock event", while the per capita wage costs increased only slightly, by 3%. The moderately dropping revenues (by 3%) – from sales directed invariably to the already existing markets – were sufficient to increase the per capita return minimally, by 4%. Neither the return/output ratio, nor the rate of turnover changed, meaning that the companies lived through the period of assessment without any meritorious progress. Their investments fell to two thirds on average, while their capital assets decreased only slightly, by 3%. The indebtedness increased considerably, but the funds thus raised were spent on the maintenance of their solvency, instead of investments or equipment purchases.

After a "shock event", the **optimising type** companies reorganise their operation, implementing remarkable cut-backs in the staff, termination of some activities and closing down of factories. Without serious investments, in this manner a more optimal operation may be attained, with improving profitability and efficiency. The revenues increase moderately and sales are mainly targeted to new markets (export). As a result, the financial standing of the enterprise improves considerably. The new proprietor employs not so much new capital as up-to-date management knowledge and know how in managing the company. The after "shock event" behaviour of 20 enterprises belonged to the optimising category. This attitude was more applied by the companies in the first half of the period concerned; 13 similar enterprises were identified prior to 1998 and only seven thereafter. Companies following the optimising model decreased their staff number by 12% on average, retaining however the employees with higher qualifications and consequently with higher salaries, because the per capita personal expenditures increased by 12%.

Their investments grew on average by 3.7 fold and that brought the expected results: the revenues increased by 17% and the capital assets expanded by 4% (we can see that these companies did not focus on equipment purchases!). Entering new markets was typical, as the rate of exports within returns from sales increased by 75%. All this had led to a remarkable 35% increase of the per capita revenues. From among all strategic models, the revenue/output ratio increased most in this category, by nearly 5%, indicating a quality progress and a higher price margin. Also the 14% growth of the turnover rate can be accounted for as success. On the financing side, doubling of the indebtedness index is observed, but – as shown above – the resources were used beneficially.

Accordingly, the optimising type companies lay the emphasis on reorganisation and on rendering more efficient their operation, while intensive investment activities constitute only a secondary objective. (The increase to nearly quadruple of the investments should not deceive as investments are already retained by the management during the period preceding the "shock events", and any further growth has to be evaluated in comparison thereto.) By reason of the above-said, the optimising behaviour may be successful only on the short term, it does not grant long term development. It could be rather considered as crisis management or as an endeavour to increase quickly the company's value, with the probable aim of a sale at a later time.

At the **dynamic type** enterprises – perhaps following a short reorganisation – considerable investment activities are started; the staff number, the capital assets are increased and, in consequence thereof, also the returns from (both export and domestic) sales grow. Due to the intensive utilisation of resources, the credit stock – the indebtedness – is increasing. The efficiency indices improve only slowly, compared to the production volume. In all, 25 companies adopting dynamic behaviour have been identified; the majority of them (13) in the first half of the period under study, while only nine in the second half.

In the case of the enterprises adopting dynamic behaviour, a remarkable expansion of employment is detected; their staff number increased by 44% on average during the two years following the "shock event". The maintained and newly employed personnel was also paid well; the per capita personal expenditure increased by 11%, presumably making also a quality improvement. In consequence of the investments increasing to sevenfold on average, the capital assets grew one and a half times and the revenues increased by 58%. This implies that development was founded not principally on more skilful management but on quantitative increase of the production. The rate of the export within the total revenues jumped to more than quadruple; that is, these companies outgrew the placement possibilities of the country, seeking foreign market opportunities for their goods produced in large volumes at competitive prices. Instead of seeking outlets for the excess quantities generated in peak production periods, they strived to find stable foreign markets.

The revenue/output rate decreased slightly, implying that low cost mass production was developed; moving towards quality products of higher prices was less typical. Their efficiency also improved remarkably; both the turnover rate and the per capita revenues increased by 15%. Their indebtedness grew, but to a lesser extent than in the companies adopting other strategic models; in the majority of the cases, financing was granted by the new proprietor's capital.

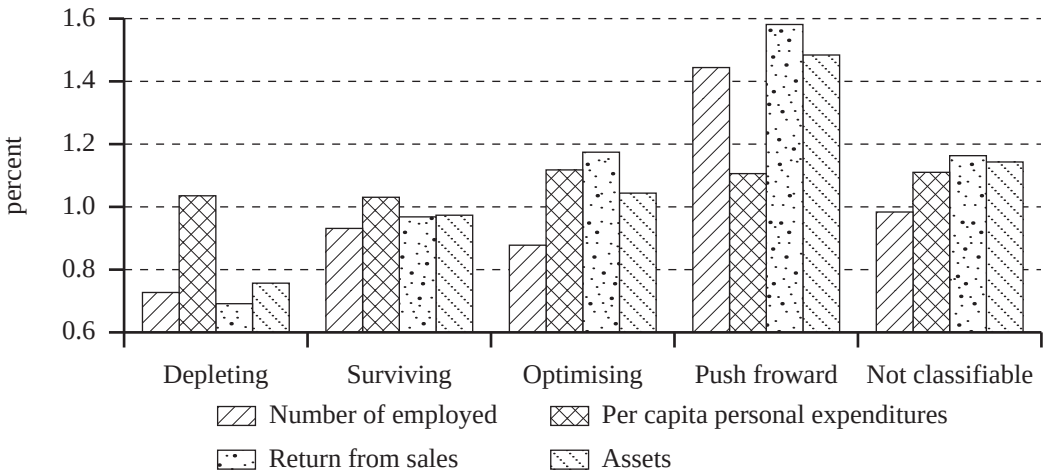

Figure 2: Mean values of some typical event-indices of the strategic models assessed
Source: own calculations

Conclusions

The food industrial enterprises involved in the study presented several negative traits in the period between 1992 and 2006. From among the four types of strategic behaviour, the depleting and – the most frequently occurring – surviving strategies are unequivocally disadvantageous. In addition, apart from the advantages, there are several negative trends also in the optimising strategy. The short term thinking and the cut-backs, giving preference to reorganisation instead of development are not favourable not only for the entire society, for the other sectors linked with the processing industry, but – in the long run – also for the company concerned. The dynamic category alone may be considered as unequivocally positive; these companies were driving forces for development, providing the foundations of growth. Beyond them, also specialised companies focusing on niche markets have opportunities to be exploited.

Dividing the period between 1992 and 2006 into two stages, it can be established that while the frequency of occurrence of the unequivocally negative types – depleting and surviving – increased remarkably in the second half of the period assessed, simultaneously the rate of the companies applying optimising and dynamic strategies fell nearly to half. This is a consequence of several factors; of them, the disadvantageous market changes and the adverse effects of the socio-political environment to capital attraction can be accentuated. The changes revealed also indicate that the general position of the food industry turned to a direction presenting tragically deteriorating trends as from the years around 2000. The companies belonging to the Individual strategic models were divided uniformly among the different speciality sectors; no relevant relationship was revealed among strategy types and special sectors.

The research allowed also drawing other conclusions regarding the future of the sector. It was for example established that, to the same extent as the participation of the foreign capital in the Hungarian food industry's development was determinative, the sector was exposed to the decisions of the multinational companies. The domestic experiences confirm that foreign capital may play a positive role in the food economy under normal and balanced economic and market conditions. However, as soon as the economy "tilts" and crisis symptoms emerge, the mother companies endeavour to survive the difficult periods to the detriment of their subsidiaries in foreign countries, without caring about the negative effects exercised by the capital withdrawal and profit repatriation to the economy and society of the countries previously admitting such subsidiaries. Therefore, the issue of the impacts of foreign capital in the food industry is at the same time an issue of the national security.

Our research has confirmed that foreign proprietors enjoyed considerable tax allowances during the period assessed, implying competitive advantages for them. At the same time, however, withdrawal of the profits in the form of dividends in companies with majority foreign ownership, though exceeding the rate of dividends paid by the domestic owned companies, could not be considered as excessive, at least until the closing year of the research, when the foreign capital present in the food industry was already "escaping" from the country. Dividends withdrawn by foreigners amounted to 8.1% of their invested capital in 1992, 8.3% in 1997 and "only" 14.7% in 2003, acceptable as fair capital return in consideration of the domestic inflation rates. But in 2006, funds withdrawn by way of dividends amounted already to HUF 38 billion, that is to 27.1% of the total foreign capital invested. The rate of dividends at the domestic owned companies fluctuated between 2% and 10%. It is however necessary to add that data were only available on the amount of dividends from among the possible forms of capital withdrawal, though there are several other methods of repatriation that cannot be easily detected from the tax returns.

We have established that, during the one and a half decades of our assessment, great collapses, bankruptcies of processing enterprises causing billions of forints of loss to producers supplying them, occurred in the companies or groups of companies purchased or privatised by Hungarian capitalist circles. Probably, the reasons thereof consisted in the lack of professional management and strategic thinking at the domestic companies, and in their endeavours to exploit the possibilities of quick profiteering. Data revealed during our research have also demonstrated that there were almost no large collapses in the case of green field investments; the later negative developments and their effects were much less frequent and moderate than in the case of enterprises established through the purchase of already existing capacities. The reasons thereof probably consisted in the fact that there was no negative determination in the case of green field investments, implemented on the basis of well-considered business plans.

The partial results of our research confirm that the reserves available in the food industry's structure are already used up in the actual social and economic environment. Under the existing conditions, the sector is not able to stop its backsliding. Though in a decreasing rate, the withdrawal of foreign capital from the country will continue. The decrease of the registered capital, depletion of the assets and deterioration of the competitiveness seem to be unavoidable.

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Consumption patterns in the market of pork and pork products

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Abstract

Pork is a source of nutrients essential for the human body but still it is regarded by consumers as a non-healthy product. The main objective of the study was to analyse consumption patterns concerning pork products and to define alternative target markets in bigger Hungarian towns. In the course of the research, 494 people, representative of the base population, were questioned. According to the results obtained, the consumers' opinion and the already formed image are less favourable regarding pork than poultry in almost all respects. Respondents regarded pork as an out-of-date, slightly boring and aging product. The applied cluster analysis identified five different consumer segments. Among them, rational young consumers represent the primary target group, which can be reached by efficient communication. The most important task of a collective marketing strategy is to alter the unfavourable image of pork.

Keywords

pork, consumption patterns, segmentation, re-positioning

Introduction

Pork plays an important role in the nutrition of the EU population. It provides exactly 50 per cent of the total meat consumption of the EU (Popp and Potori, 2009), while this share is somewhat lower in Hungary (42.3%). Despite the difference in the percentages, the level of the Hungarian pork consumption is similar to the average level of pork consumption in the EU, 28 kg per year per capita. From the aspect of the Hungarian meat industry, it can also be considered as a favourable trend that pork consumption increased by 8% from 2004 to 2006 (HCSO, 2008).

Pork ensures essential nutrients for the human body; its nutrient content is significantly higher than its energy content. Pork is especially rich in certain vitamins, minerals and protein. According to Szakály, Fülöp and Nábrádi (2008), 100 g of pork leg contains 17-80 per cent of vitamins B and 40 per cent of protein in terms of the recommended daily intake and in the case of minerals it contains 14% of magnesium, 18% of zinc and 21% of phosphorus of the RDI. On the basis of the above mentioned, as well as based on Hungarian (Holló, 2004; Honikel and Arneth, 1997) and international references (Bech-Larsen, Grunert, and Poulsen, 2001; Cheeke, 1993; Moran, 1986) it can be stated that pork is a health promoting, so-called functional food with positive nutritional benefits.

Pork is often criticized because of its high fat and cholesterol content (Várhegyi, J.-né and Várhegyi, J. 2007). Despite these attacks **pork does not have a higher fat content than the meat of other animal breeds,** within the same breed the differences among the different meat parts are much bigger than among the breeds. According to Honikel and Arneth (1997), pork and beef have about 58 mg cholesterol content, while chicken and turkey have 100 mg per 100 g. It means that

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pork does not have a higher cholesterol content than other meats, including different types of fish. Investigations also showed that food derived cholesterol has a low impact on blood cholesterol level (Brisson, 1986; Cheeke, 1993).

Despite these obvious facts, **pork is mostly regarded as an "unhealthy" food by consumers**, while poultry is described as a food with positive, health protective properties. Therefore, the consumption of poultry exceeds that of pork in terms of both its amount and proportion (HCSO, 2008).

In cooperation with the Faculty of Agricultural Economics and Rural Development of the University of Debrecen and the Market and Fact Market Research and Consulting Institute, the University of Kaposvár started a survey in order to analyse consumer preferences and attitudes concerning meat products and the image of various meats. **The objectives of the survey set by the participating organisations were to collect information about the consumers' opinion on various meat products, with special regard to pork, and to define consumer segments in bigger Hungarian towns.**

The results obtained in the survey are useful for the meat industry: they can build the information regarding the consumption patterns and image of red meats (mainly pork) into their product development, and can launch more efficient marketing communication. On the basis of the consumers' judgements, the professional organisations of the meat industry can develop such collective marketing strategies (Juhász, 2002; Éder, 2007) that ensure the desired market position in the future (Nábrádi, 2007). The definition of consumer segments and clusters may significantly contribute to the knowledge on the motives of consumer behaviour concerning meat products, which will result in a more efficient future strategy building (Polereczki, Huszka and Szakály, 2008; Polereczki and Szakály, 2008).

Materials and methods

The most important principle of the survey was to select test settlements instead of the whole country. Among the settlements there were many county towns and Budapest. The size of the sample was also subordinated to this objective: **altogether 494 people were selected and they were representative of the population of the settlements by age and gender**. In practice it meant that in each selected settlement 100 people were questioned in a proportion that coincided with the composition of the settlement's population aged 18 or over. The composition of the sample was determined according to the census of the Hungarian Central Statistical Office (HCSO) in 2001. The settlements involved in the survey were: Budapest, Kaposvár, Szeged, Szombathely and Debrecen.

The first question of the questionnaire was a so-called filtering question that was used to filter out those respondents who leave meat out of their diet. According to the results all the respondents consume meat products. The questionnaire covered the following areas: **meat preferences, consumption frequency, image profile of pork and poultry products and level of agreement with claims regarding the image of pork and questions about lifestyle in order to define consumer segments.**

Face-to-face interviews were used to collect data at the respondents' places (Malhotra, 2008). The fieldwork was carried out by trained interviewers. During the interview the respondents were asked their personal details with the help of which some 15% of the interviews were controlled by telephone.

In the course of the data processing and evaluation, besides the descriptive statistical methods, significance and factor analyses were used to characterise the differences between the segments (Grafen and Hails, 2002). The Tables show the frequency distributions of the samples, and where necessary, the means and statistical data are also outlined. Only those background variable groups are analysed among which significant differences were found.

Results and discussion

Preferences for various meat types

In the first step, various meats were listed and the respondents were asked to make an order of preference for them (Table 1).

Table 1

Consumer preferences on various meat types

Meat types	Statistics		
	Head (n)	Mean	St. deviation
Poultry	492	1.61	0.809
Pork	493	2.09	0.879
Beef	473	2.61	0.844
Fish	130	3.16	0.888
Rabbit	9	3.22	0.833
Lamb	17	3.41	0.939
Venison	71	3.44	0.937

Source: own data

In Table 1 the calculated means of the rank numbers assigned to the types of meat are shown, where number 1 indicates the most preferred meat type and 2, 3, 4, etc. the less preferred ones. Thus, the closer the mean value to number 1 is, the more favourable it is regarded. Based on the results an extremely high preference for poultry is revealed, which is followed by pork and then by beef. The means of the last four types of meat are much closer to each other which, besides their higher standard deviation values indicate the consumers' different judgement on them.

In the case of poultry, a significant difference was found between female and male consumers. Men's preference for poultry was 0.2 lower than the mean, while that of women was 0.2 higher. The preference for pork shows a significant connection according to age groups and education. Pork is mostly preferred by consumers between 50 and 59 years of age (1.98), while it is the least preferred by the younger (18-29 years old) consumers (2.34). The higher the education level of the consumers is, the less they prefer pork. Beef is more preferred by men (2.47) than women (2.75).

Consumption and preferences of product groups made of pork

The next group of questions covered **consumption patterns and preferences concerning exclusively pork products**. The consumption frequency of nine different product groups made of pork was analysed in the first question. In order to make the consumption frequency data of different product categories comparable, the frequency categories were assigned with values from 1 to 6, indicating the increasing intensity of consumption (less than monthly: 1; 1-2 times a month: 2;

1-2 times a week: 3; … several times a day: 6); the means of these values indicate the rank order of the product groups. In this case only the opinions of those that consume the product groups were considered, and those of the non-consumers were not. The higher the value of the mean is, the more favourable the mean values presented in Table 2 are.

Table 2

Consumption frequency of various pork product groups according to the respondents

Denomination of product group	Statistics		
	Head (n)	Mean	St. deviation
Bologna	439	3.29	1.348
Other cold meat cuts	468	3.26	1.205
Sausages, salamis	488	3.09	1.128
Hams	479	2.92	1.172
Vienna sausage	464	2.70	1.041
Liver paste or spread	449	2.60	1.054
Bacons	446	2.39	1.190
Smoked-cooked meats	466	2.34	1.096
Deep-frost products	378	2.17	1.153

Source: own data

Various types of Bologna and other cold meats are the first in the order of preference with an average consumption frequency of 2-4 times a week. They are followed by sausages and salamis and then hams with an average consumption frequency of 1-2 times a week. The consumption frequencies of Vienna sausages and liver pastes are very similar; the last places in the order are shared by different bacons, smoked-cooked meats and deep-frozen products.

In the following step, **the preferences for the studied product groups were measured** on a 5 step scale, where value 1 indicated the category “do not really like to consume” and value 5 indicated the category “likes to consume very much” (Table 3).

Table 3

Preference of the respondents for various pork product groups

Denomination of product group	Statistics		
	Head (n)	Mean	St. deviation
Hams	490	4.05	1.019
Sausages, salamis	492	3.79	1.084
Smoked-cooked meats	492	3.47	1.210
Vienna sausage	492	3.34	1.148
Liver pastes and spreads	492	3.31	1.270
Other cold meat cuts	490	3.16	1.060
Bacons	491	3.16	1.353
Bologna	491	3.00	1.307
Deep-frost products	489	2.42	1.261

Source: own data

The preference results show a different order of the product categories from consumption frequency. The first two places in the order are taken by hams, and sausages and salamis; they are followed by smoked-cooked meats, Vienna sausage and liver products. Other cold meats and bacons are given the same preference values; while Bologna and deep-frost products are listed last.

The comparison of the two Tables indicates that **the preference of most of the product groups differs from their consumption frequency**. There is a remarkable difference in the case of hams and salamis. The difference found can be explained by the higher price of these products. However, in the case of Bologna and other meat cuts, the position of the consumption frequency is much better than that of their preference probably due to their lower price.

Image profile of fresh pork and poultry

A seven-step semantic differential scale was used in the **analysis of the image profile of fresh pork and poultry** applying 15 opposite attribute pairs. The middle value of the scale (4) is regarded as the neutral value (zero) in Figure 1, while the higher or lower values represent the orientation to one or the other end points of the scale.

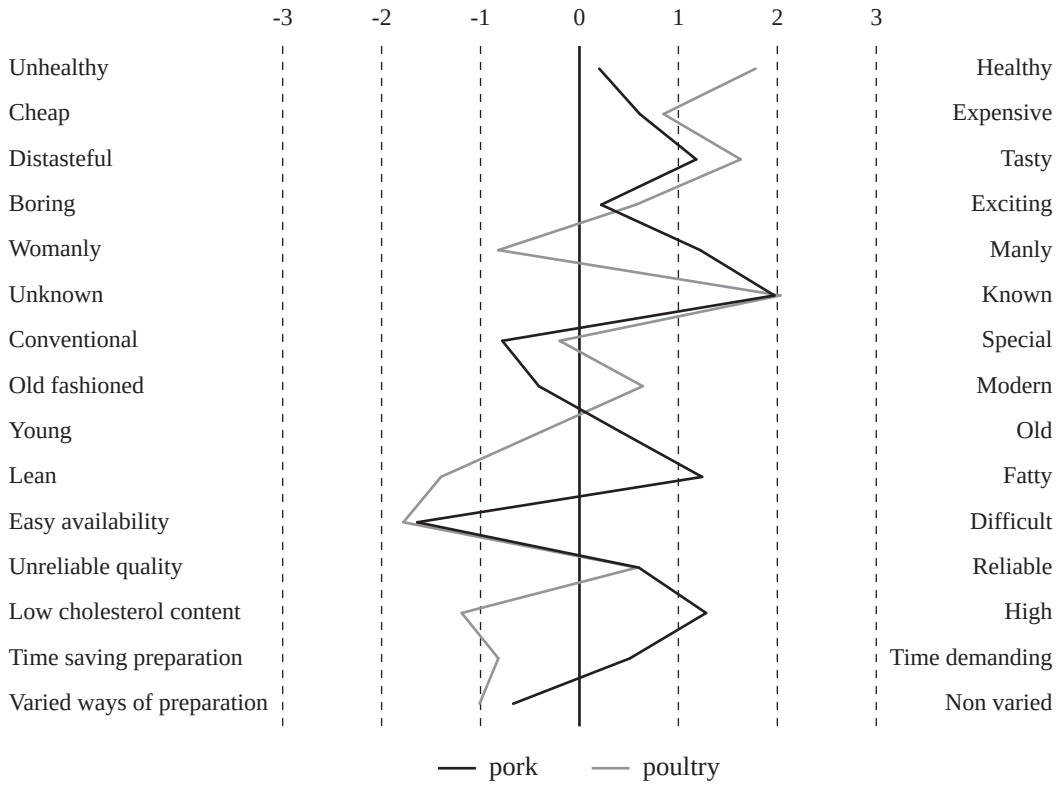

Figure 1: Image profile of fresh pork and poultry

Source: own data

The consumers' image on fresh pork can be summarized as follows: the level of its notoriety is sufficient, and neither its availability, nor the ways of preparation are objected by the consumers. It has a basically good taste; it can be described as a conventional product with an obvious manly image. Its high cholesterol level is regarded as a remarkable negative feature, which is linked to the

quality "fatty" by the consumers. Therefore, the product is not regarded as healthy, in this respect it is lagging far behind poultry. This image is even supported by the respondents' beliefs that pork is a rather out-of-date, boring and "aging" product. They think that it demands more time to prepare than poultry. From the food safety aspect, pork is at least as safe as poultry. The consumers break with the trends concerning prices: according to them pork is available at lower prices than its competitor.

Fresh poultry has a more favourable image that fits the modern nutritional trends much better. It is an easily available, basically safe, healthy and well-known product according to the consumers, and poultry has an image of a low cholesterol and lean type of meat. It is unfavourable for the pig sector that according to the consumers poultry has a better taste than pork (it indicates changes compared to previous surveys), which can fit modern human nutrition better. It presents an obviously younger, rather womanly image for the consumers; while traditional or conventional attributes are less linked to it. Its preparation is more varied and time saving, which is another important advantage when the target group is considered. The only drawback of the product compared to its competitor is its price as, according to the consumers, poultry is more expensive than pork.

Factors influencing the consumers' judgement on fresh pork

In the following block of questions the degree of the consumers' agreement with various statements on fresh pork was measured. The degree of agreement was indicated on a five-step scale, where value 1 meant the category "do not agree at all" and value 5 the category "completely agree with the statement". The statements covered five different areas: **healthiness, price-quality relation, taste-freshness, brand personality and food safety**.

Table 4 represents the means and main statistics of the replies on the healthiness of the product.

Table 4

Degree of agreement with statements on the healthiness of pork

Statement	Statistics		
	Head (n)	Mean	St. deviation
I consider pork a healthy product.	488	3.14	1.177
Healthy nutrition requires the consumption of pork.	486	3.01	1.287
Fats of animal origin are healthier than vegetable oil.	467	2.44	1.316
Slimming dieters are also advised to consume pork.	478	2.47	1.296

Source: own data

The respondents agree that pork is healthy only to a moderate degree; only some of them think it is part of healthy nutrition. This fact supports the earlier information on the consumers' opinion. If the other two statements are considered as well, then an image of such a product can be drawn up that is significantly uncompetitive with poultry. Respondents agree less with the statement that animal fat is healthier than vegetable oil. Pork is regarded as a basically fatty product by them, which weakens its position further. This is the reason why people who are on a slimming diet also reject the consumption of pork.

Men (3.34) consider pork much healthier than women (2.96); they have similar views about the role of pork in healthy dieting (men: 3.16; women 2.88). A similar tendency can be seen concerning whether it can be part of slimming diets or not (men: 2.63; women: 2.33). Mid-aged people (30-39 years: 2.93; 40-49 years: 2.98) think that pork is less healthy than the other age groups (18-29 years: 3.09; 50-59 years: 3.19; above 60 years: 3.22).

The following group of questions covered the price-quality relationship (Table 5).

Table 5

Degree of agreement with statement on the price-quality relationship of pork

Statement	Statistics		
	Head (n)	Mean	St. deviation
The price of pork is affordable.	485	3.36	0.979
I get value for money in case of Hungarian pork.	485	3.51	0.978
The purchased fresh pork is always of high quality.	488	3.18	0.966
I prefer pork of Hungarian origin to foreign pork.	488	4.22	1.128

Source: own data

According to the respondents, the price of pork is payable to a moderate degree; they think the same of its quality. The consumers' judgement on Hungarian pork is more favourable, they think that if they purchase a Hungarian product, they get value for money. It is obvious that the degree of agreement is high in case of the preferences for Hungarian products. However, the question may arise: what does preference mean? Does it mean that the consumer prefers the Hungarian product when prices are the same or that he is willing to pay more for it as well? If so, how much more is he/she willing to pay?

More men (3.28) think that the pork they buy is of high quality than do women (3.09). An outstanding proportion of the oldest age group thinks that (3.49) pork is always of high quality (18-29 years: 3.07; 30-39 years: 3.05; 40-49 years: 3.07; 50-59 years: 3.14). The older the people are, the higher the proportion which prefers Hungarian products to foreign ones (18-29 years: 3.93; 30-39 years: 4.22; 40-49 years: 4.24; 50-59 years: 4.45) and the only exception is the eldest age group (4.36).

The next group of statements investigates the taste and freshness of pork (Table 6).

Table 6

Degree of agreement with statements on the taste and freshness of pork

Statement	Statistics		
	Head (n)	Mean	St. deviation
Pork fits the Hungarian cuisine better than poultry.	458	3.15	1.260
The purchased pork is always fresh.	485	3.20	1.019
Pork is tastier than poultry.	473	2.87	1.372
When shopping for pork, the most important aspect is taste.	484	3.17	1.248

Source: own data

The statements on taste and freshness are agreed on to a moderate degree by the respondents. The opinions about the connection between pork and Hungarian cuisine were different. Although the degree of agreement is higher than the average, the high standard deviation reflects rather different opinions. The comparison of the tastiness of pork and poultry is even more debated. The standard deviation is high with much lower level of agreement. The highest level of agreement can be seen in case of freshness, with the lowest standard deviation of this group. The role of taste, as the most important factor influencing shopping decisions, is also a debated issue.

Men (3.35) consider pork to be a product fitting the Hungarian cuisine much better than do women (2.96). This is the group where a higher proportion of the consumers think that pork is tasty as well (3.14; 2.62; respectively). Thus, the opinion of the sexes is also different about the role of taste in shopping decisions (men: 3.35; women: 3.00). The higher the education level is, the lower the level of the consumers' agreement is. A similar, although less obvious trend can be seen in the comparison of the taste of pork and poultry. The survey reveals that respondents with lower level of education (maximum 8 elementary school years: 3.19; skilled workers: 3.25) find pork much tastier than those with higher qualifications (secondary school qualifications: 2.82; higher education qualifications: 2.51).

The analysis of the brand personality (Table 7) strengthens the picture obtained during the image profile examination.

Table 7

Degree of agreement with the statements on "brand personality" of pork

Statement	Statistics		
	Head (n)	Mean	St. deviation
When I think of pork, a young man comes to my mind.	473	1.72	1.085
When I think of pork, a town/city man comes to my mind.	477	1.71	0.997
When I think of pork, a fatty man comes to my mind.	478	3.07	1.383
When I think of pork, a fit man comes to my mind.	475	1.86	1.072
When I think of pork, an educated man comes to my mind.	466	1.87	1.042
When I think of pork, a man comes to my mind rather than a woman.	476	3.37	1.460

Source: own data

It is typical that pork calls an older, fatty man with lower education level into the people's mind who lives in a rural area and avoids sports. It is obvious that this image is not what a modern foodstuff fitting the current nutritional trends should represent. The question arises: what is the reason for the development of such a brand personality, and how can it be modified? In order to answer these questions, it is necessary to analyse those value components of pork that are important and valuable according to the consumers.

The image of a fatty man is more typical of women (3.23) than men (2.89). A higher proportion of the older respondents (50-59 years: 2.03; above 60 years: 2.05) associates pork with a fit man than younger consumers (18-29 years: 1.76; 30-39 years: 1.61; 40-49 years: 1.81). People with the lowest income associate pork less with a fatty man (2.58). A higher number of those with average (3.73) or higher income (3.58) associate it with a man than those with lowest incomes (2.84).

The last component of the question block targeted food safety statements (Table 8).

Respondents agreed on the importance of the traceability of pork. Although they think that the current available quality is appropriate, they are moderately afraid that food scandals will show up in case of pork as well. Typically, the respondents disagreed with the statement that the quality of pre-packed pork is more reliable than of pork sold at the counter.

Table 8

Degree of agreement with statements concerning food safety issues of pork consumption

Statement	Statistics		
	Head (n)	Mean	St. deviation
The quality of Hungarian pork is reliable.	479	3.63	0.960
I am afraid that food scandals may show up in case of pork as well.	462	3.26	1.275
It is important that the origin of pork is traceable.	479	4.34	0.957
I think that the quality of pre-packed pork is more reliable than of pork sold at the counter.	465	2.19	1.271

Source: own data

Male consumers trust (3.73) the reliability of Hungarian pork better than do women (3.53). The eldest group believes more (3.84), while the younger ones less (3.46) in the reliability of Hungarian products. Over 40 years of age, the older the people are, the more they are afraid of a food scandal, while those between 30-39 years of age are the least afraid of one (2.70).

Segmentation of consumers on the basis of lifestyle variables

Lifestyle analysis is a suitable method to reveal and describe those segments easily that can be the primary target group of the meat industry regarding the topics of the research. The authors' hypothesis was that **lifestyle has a significant impact on various attitudes concerning meat products**. To prove this hypothesis, factor and cluster analyses were used.

Seven well differentiated factors were defined with the factor analysis of 21 lifestyle variables (after varimax rotation). The indicator Kaiser-Meier-Olkin (KMO) is higher than 0.5 (0.750), thus the set of variables is suitable for factor analysis (Komáromi, 1997). The significance of the Bartlett test was 0.000, indicating the independence of the variable pairs. Segmentation gives an answer to the question, that which are those main factors that basically influence the consumers' way of thinking. The results are summarised in Table 9.

Factor number one can be regarded as an 'innovator type'. Important components of this way of thinking are searching for variety and trying the new products immediately. Consumers belonging here like shopping in famous, trendy places. Besides the functional properties of products bought by these people, reputation and high prestige of the products also have an effect on these consumers. They prefer high quality service, convenience is important for them, which can be seen in their eating habits as well (they frequently go to restaurants). **The second factor** is the 'ecologically conscious traditionalist'. In their case, environment protection and family traditions are paid attention to. This manifests in their preference for eco/bio products; if a product meets these expectations, they will be much likely to buy it. They are definitely proud of being Hungarian and accept advertisements emphasising the Hungarian character of products of domestic origin. **Factor three** reflects the way of thinking of the 'introverted traditionalist'. This type of people avoids social entertainment. They prefer to stay at home. They thoroughly plan their shopping, for them price is the most important directing principle. During shopping they try to avoid impulsive decisions, they plan their shopping and choose the cheaper good from the same product category. **Factor four** includes the 'opinion-leaders'. These people shape their friends' opinion; they are often asked for advice and are leaders of the group. This social role is of great importance for them, they are highly concerned about what others think of them. **Factor five** is the "pessimist". They have negative views on their future and are usually frustrated. **Factor six** is the 'uninvolved'. It is important for them to keep

the conventional nutritional habits, they usually smoke and their behaviour is characterised by risk-taking factors. These people cannot be influenced by a 'healthy food' message; the main value for them is enjoyment. They are not willing to make any compromise in this issue; they prefer delicious products to healthy ones. **Factor seven** is the 'disappointed'. They refuse all types of advertisements and do not believe in them.

Table 9

Rotated factor-matrix of lifestyle variables

Lifestyle variable	Factors						
	1	2	3	4	5	6	7
I do my shopping in trendy places.	0.765						
I am generally among the first to try new products.	0.742						
Mostly I choose well-known products.	0.666						
Convenience is of great importance to me.	0.602						
I often eat in restaurants.	0.595						
I prefer my life varied.	0.451						
We should look after our environment better.		0.747					
I believe in family traditions and values.		0.653					
I am proud to be born in Hungary.		0.573					
I plan my shopping thoroughly.			0.795				
Generally I pay great attention to price.			0.672				
I prefer eating at home to going out.			0.561				
I like cooking.							
My friends often ask me for my advice.				0.777			
I am a leader of my friends.				0.585			
I am very optimistic about the future.					-0.694		
I am often concerned about the future.					0.683		
I regard important what others think of me.				0.410	0.570		
I smoke.						0.802	
I pay attention to my nutrition.						-0.425	
I do not believe in advertisements.							0.861

Source: own data

The above defined factors may contribute to the definition of the direction of marketing strategy. For this, however, we also need to know the profile of the most important lifestyle segments (Grafen and Hails, 2002**)**. Therefore, cluster analysis was carried out in the next step by using the defined factors (K-Means Cluster). According to the results of the analysis, five clusters can be identified. They cover 81.4% of the sample. The description of the clusters is as follows.

Aging, introverted consumers (Cluster 1)

Within the whole sample, they represent 17.8%; this is the second biggest cluster. They are typically elderly people with secondary or lower education. They have the lowest income among the five clusters which, of course, influences their lifestyle and food shopping habits as well.

On the basis of their answers given to the lifestyle questions, they pay attention to the environment and are definitely conscious about being Hungarian. Due to their age, they prefer staying at home to going out. Family and family values, as well as relationships, are important for them. They are well organised in shopping; they buy only those products that are on their shopping lists. Price is the most important for them when they choose among alternative products. They like cooking which, together with the previous description of this group, suggests that they prefer buying the ingredients of their food to buying processed meals. They prepare their meals themselves.

For the consumers of this segment the price of pork is rather high which is explained by the disadvantageous income position of the group. This, however, is true not only for pork; these consumers are price and promotion-sensitive in all food categories. They regard pork as a tasty and traditional product, which can be prepared in various ways. The excellent enjoyment value, though, does not always compare to healthiness; according to their opinion pork is an unhealthy product due to its high cholesterol level. On the basis of the characteristics of this group, they are not an attractive target group for the meat industry, although these people can be consumers of low-price products.

Young people with conventional values (Cluster 2)

It is the biggest cluster, with 21.3% within the sample. On the basis of the background variables it is typically a group of young people with at least secondary education. Their financial situation is about the average, although there are people with higher income in the group as well.

Similarly to the first cluster, they are concerned about environment and are proud of being Hungarian. For them family values are very important and they believe in well-working family relations. They like convenience, which manifests in preferring highly processed, ready-to-cook or semi-ready products in the course of their shopping. They pay attention to variability, which indicates a lower level of brand loyalty. They prefer famous brands, the image and the social status of the product are the most important for them.

According to this cluster pork has unhealthy properties opposed to the other segments, which influences their shopping decisions as well. Agreeing with the previous group, they think that pork has high cholesterol content and find it a basically fatty product. As the members of this cluster rarely cook for themselves (opposed to the previous group), they have no idea about how long pork takes to be prepared and about the different ways of preparation. They can be targeted by the meat industry only if it provides a wide selection of health promoting pork products for them.

Uninvolved, controversial consumers (Cluster 3)

These consumers form the smallest cluster with 9.3% within the whole sample. By their age, they represent both the youngest and the oldest groups of people. They have secondary or lower education; the share of those with elementary education is relatively high. Their financial situation is about average.

On the basis of their answers given to lifestyle questions, this group represents average people in all terms, giving no definite answers to any statements. Their way of looking is neutral, they have no opinions and they are often phlegmatic. They are not proud of being Hungarian. Although variety and price are paid attention to by them, these reflect discrepancy. Striving for variety assumes risk-taking behaviour, in the background of which there are usually a stable personality, existence and wider knowledge than average. As none of these characteristic features are typical of this group, it can be assumed that looking for variety remains only a plan for them.

The judgement of the group on pork consumption is controversial and basically neutral. These are indicated by the mean values and the standard deviation calculated in the image profile analysis of pork, just like their unfounded opinion compared to the other clusters' opinion, which assumes lack of information. This is the group of people which can judge the healthiness, tradition or modernity of pork the least. Due to the inconsistency and low knowledge of these people, it is very difficult to develop a strategy to convince them.

Uninvolved consumers (Cluster 4)

This cluster represents 16.0% of the whole sample, taking the last but one place. It is a typical middle-aged group which has secondary school or lower education. Their financial situation is slightly worse than the average.

Their lifestyle refers to environment consciousness, they are proud of being Hungarian. They smoke regularly; their nutrition is instinctive (risk-taking). Health consciousness as a motivating factor is not typical of these people at all. Family traditions are important for them although, compared to the other clusters, only moderately.

This cluster considers the price of pork the highest; at the same time they think they are familiar with the characteristics of pork. They associate a relatively young image with pork and think it is less unhealthy than the other clusters do. The characteristic features of this segment are similar to the previous one, but with more favourable general opinion on pork. They are a potential target market of the classic, fat-rich (and lower-price) products of the meat industry.

Rational young (Cluster 5)

This cluster represents 17.0% of the whole sample, with the third largest number of people. Predominantly, it comprises young people with at least secondary school education. Their financial situation is around or above the average. This is the group where the proportion of incomes above the average is the highest.

They are more environmental conscious. They like variety, but convenience is also important for them. Typically they buy well-known products, their decision is rational, that is they control their spending and they expect high quality, professional service, and products of high prestige for their money.

Their preferences concerning pork are the most favourable among all of the clusters. They define it as a relatively healthy and reliable product; they prefer its traditional character, as well. Pork is characterised with relatively modern attributes; and its price is acceptable for these people. From among the above introduced clusters, this is obviously the primary target group for the meat industry; effective positioning and communication may certainly lead to success in targeting them.

Conclusions

On the basis of the results obtained it can be stated clearly that **the previous leading meat types are still the most preferred and most frequently bought products (poultry, pork, beef).** At the same time, though, an obvious shift in consumption can be seen towards white meats, primarily poultry.

It is a general opinion that red meats (especially pork) do not belong to the modern diet, primarily due to their high cholesterol and fat content. It seems that poultry gradually gains ground in meat consumption, which basically cannot be compensated by the pig sector. All this has happened

despite the poultry sector globally suffering from avian influenza, but this could not undermine the increasing trust of the Hungarian consumers. Thus, the question arises: **what factors make the consumers have a more favourable judgement on poultry than red meats?**

During past years, poultry sector has **carried out a very efficient collective marketing activity.** The message of the communication focused on the safety (traceability) and excellent quality of Hungarian poultry, as well as on the slogan 'Hungarian poultry, Hungarian jobs'. Besides this, the devotees of healthy nutrition started an attack against red meats saying they have to be left out of our diet.

The consumers' view and image of pork are worse than those of poultry in almost all aspects. Therefore, future marketing research needs to reveal the factors that result in such an unfavourable image of pork that cannot have an impact on the consumption of pork and on the preferences of the consumers. A substantive re-positioning of pork products may not be necessary or only slightly, but rather **a psychological re-positioning of the pork products becomes due.**

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Technical efficiency in dairy farming: A comparison of France and Hungary in 2001-2006

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Abstract

The paper investigates the difference in technical efficiency and potential technology gap between French and Hungarian dairy farms during 2001-2006, using Data Envelopment Analysis under each country's respective frontier and under a common frontier (metafrontier). Results indicate that French farms have a more optimal scale of production than Hungarian farms, but Hungarian farms make better use of the technology. They also have a more productive technology than French farms. The latter finding is obtained under the assumption of a hypothetical common frontier. Although French and Hungarian farmers do not have access to the same technologies and the metafrontier is still hypothetical, our paper adds to the thin literature that compares two countries in terms of performance.

Keywords

technical efficiency, technology gap, dairy farms, France, Hungary

Introduction

The paper investigates the difference in technical efficiency between French and Hungarian dairy farms in the period 2001-2006, and compares their technology potential. Comparing two countries in terms of efficiency and technology has not been widely studied. In the European Union (EU), one can mention the study by Brümmer et al. (2002) about dairy farms in Germany, the Netherlands and Poland over the period 1991-1994. The authors use a parametric approach, namely the stochastic frontier analysis and found that Polish farms had the lowest average technical efficiency. In this paper the non-parametric approach Data Envelopment Analysis (DEA) is employed. Specifically, the method used here to compare Hungarian and French farms is the one proposed by Charnes et al. (1981) to compare two types of education programmes. The method has for example been used by Oude Lansink et al. (2002) to compare organic and conventional farms' technology in Finland. The method consists in calculating two technical efficiency scores. Technical efficiency, that is to say the ability of a farm to use the best existing technology in terms of quantities, is calculated firstly under each country's own efficient frontier, in order to assess the room for improvement within each country. Then, the measure is calculated under a common frontier (metafrontier), that is to say using the merged sample of both countries, in order to understand which country is lagging behind in terms of technology under the assumption of a common hypothetical frontier.

France and Hungary differ largely in terms of natural and economic conditions, and in terms of policy support. Dairy farming in France is mostly located in the Western lowlands (Brittany, Normandy; 45% of the country's dairy area) and in mountainous areas (Alps, Jura, Central France; 28% of the country's dairy area). During the period studied (2001-2006), French farmers benefited from intervention prices for specific dairy products in the frame of the Common Agricultural Policy (CAP) and were subject to production quotas. Intervention prices have however been reduced and compensating dairy premiums introduced. And since 2006, French farms receive Single Farm Pay-

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ments (SFP), payments per hectare whose amount is specific to farms and depends on the level of support (on the quotas, in the case of dairy farms) previously received. In Hungary dairy farms are predominantly located in the Northern Great Plain and Southern Great Plain (43% of the country's dairy area) as well as in the Transdanubian area (Central Transdanubia, Western Transdanubia and Southern Transdanubia; 42% of the country's dairy area). During the analysed period, national support for milk production was mainly in the form of price support as an effort to stop the fall in milk production. Between 1990 and 2000 the production decreased from 2,763 to 2,081 million litres and from 2003 onwards, the country became a net importer of dairy products (Udovecz et al., 2008). The milk processing industry was privatised in the 1990s and the process was considered a success. The industry is now operated by international brands (Friesland, Danone, Bongrain, etc). Since EU accession in 2004, Hungarian dairy farms are subject to community regulation: the production is limited by milk quotas, and all farms receive payments in the frame of the CAP, namely Single Area Payments (SAP). By contrast to SFP in the EU-15, in Hungary all farms receive the same amount of SAP per hectare. In addition, dairy farms received coupled complementary payments from the national budget (top-up) as milk premium in the first three years of EU accession: 8.06, 17.65 and 32.27 EUR per thousands litres in 2004, 2005 and 2006 respectively. Since 2007, this milk premium of 31.99 EUR per ton has been shifted to decoupled payments, the amount being computed based on historical milk quotas (Aliczki et al., 2009).

The paper is structured as follows. The next section explains the methodology used, while the third section presents the data. The fourth and fifth sections provide the results and some conclusions, respectively.

Methodology

The non-parametric method DEA is preferred in this paper over the stochastic frontier method. The latter necessitates assumptions about the production function and the error term distribution, and therefore may induce potential misspecifications. By contrast, DEA uses linear programming to construct the efficient frontier with the best performing observations of the sample used, so that the frontier envelops all observations (see Charnes et al., 1978). The distance from a farm to the frontier provides a measure of its efficiency, and the further the farm, the less efficient it is. DEA also enables to assess under which returns to scale each farm operates and to calculate its scale efficiency. Calculating efficiency under the assumption of constant returns to scale (CRS) gives the so-called total technical efficiency score, while assuming variable returns to scale (VRS) allows calculating one component of this total efficiency score, namely the pure technical efficiency. This component captures whether farmers make optimal use of the technology disregarding the farm size, while the residual between total technical efficiency and pure technical efficiency shows whether the farm operates under optimal farm size. This residual is called the *scale efficiency* and can be interpreted as the potential scale economies available to the farm (i.e. the potential move on the production frontier to reach the point of optimal production scale). Efficiency (total, pure and scale) scores that are obtained range between 0 and 1; the score 1 indicates a fully efficient farm (i.e. on the frontier) and a larger score indicates higher efficiency.

An *output-orientated* model is used, with two outputs – the quantity of milk produced in litres and the value of the other farm output in euros –, and five inputs – the agricultural utilised area in hectares, the labour used in Annual Working Units (AWU) equivalents (1 AWU corresponding to 2,200 hours of work per year), the value of total assets in euros, the value of intermediate consumption in euros, and the number of livestock units (calculated with the EU definition). All values were

deflated by relevant price indices. The use of an output-orientated model against an input-orientated model implies that we assume that it is easier for farmers to modify their output volumes than their input quantities. However, as noted by Coelli et al. (2005), both models produce similar results, and therefore the choice of orientation is not important.

Yearly efficiencies are calculated, that is to say a frontier is constructed for each year. In order to compare the performance between France and Hungary, firstly separate frontiers for each country are used. This can show how farms in each country perform with respect to their own country's technology. Then both countries are merged in a common sample supposing a hypothetical common technology and a common frontier (metafrontier) is constructed. This allows investigating which country has the more productive technology, by calculating a technology ratio for each farm. This measure is calculated as the ratio between the efficiency score calculated under the common frontier and the efficiency score calculated under the respective country's frontier (Charnes et al., 1981). Average technology ratios for French farms and Hungarian farms are then compared, the higher average indicating the country with the more productive technology while the lower indicating a technology gap.

The calculations were performed using the software DEAP developed by Coelli (1996). The linear programming model for the output-orientation is as follows (Coelli et al., 2005).

$$\max_{\theta,\lambda} \theta \tag{1}$$

$$\text{s.t.} \quad -y_i + Y\lambda \geq 0 \tag{2}$$

$$x_i - X\lambda \geq 0 \tag{3}$$

$$\lambda \geq 0 \tag{4}$$

$$N\lambda \geq 0 \tag{5}$$

where Y and X are respectively the sample's outputs and inputs; y_i and x_i are respectively the i-th farm output and input; N is a vector of 1; λ is a matrix of parameters. $1/\theta$ gives the technical efficiency score. Constraint (5) ensures the assumption of VRS; the assumption of CRS holds when this constraint is removed.

Data

Farm Accountancy Data Network (FADN) data are used for both countries. Farms with the European type of farming dairy (TF41) were extracted each year between 2001 and 2006, providing unbalanced samples. Table 1 gives the number of observations in each year in each country.

Table 1

Samples' size: number of observations per year and per country

	France	Hungary
2001	1,257	100
2002	1,219	104
2003	1,116	98
2004	1,038	78
2005	956	94
2006	963	100

Source: French and Hungarian FADN data.

Table 2 presents the average outputs and inputs for both countries over the period studied. Hungarian farms are much larger than French farms; for example, they operate on average 258 ha of land against 77 ha for French farms. The size discrepancy is visible for both outputs and inputs: Hungarian farms produce much more outputs and use much more inputs. However, the difference is not so sharp with regard to the capital. This may come from the fact that, during the transition, Hungarian dairy farmers may have faced financing constraints and may not have been able to replace a potentially obsolete technology or to increase their owned equipment. Fertő et al. (2009) for example showed that Hungarian farmers' investment decisions were constrained between 2000 and 2004 due to a lack of financing. Table 2 also provides country's averages of animal yield (milk output per livestock unit) and of animal density (livestock unit per agricultural utilised land). Values are fairly similar in both countries.

Table 2

Description of the samples: average values per country for the whole period 2001-2006

	France	Hungary
Milk output (thousand litres)	264.9	976.8
Other output (thousand euros)	35.8	174.9
Agricultural utilised land (ha)	77.2	257.8
Labour (AWU)	1.8	13.4
Capital (thousand euros)	219.4	341.9
Intermediate consumption (thousand euros)	68.7	214.2
Livestock units	88.9	254.3
Milk output (litres) per livestock unit	2,747	2,935
Livestock units per agricultural utilised land (units per ha)	1.3	1.4
Total number of observations	6,549	574

Source: Authors' calculations based on French and Hungarian FADN data.

Results

Technical efficiency calculated under each country's respective frontier

Table 3 presents the descriptive statistics for technical efficiency calculated with regard to the countries' respective frontier. For the whole period 2001-2006, the average total technical efficiency (i.e. under CRS) is slightly lower for France (0.723) than for Hungary (0.791). This indicates that French farms can increase their output production by 27.7% and Hungarian farms by 20.9%, without having to increase their input use. The difference between both countries' total technical efficiency mainly stems from a difference in pure technical efficiency (i.e. under VRS) (0.762 vs. 0.842) rather than from a difference in scale efficiency (0.950 vs. 0.940). This suggests that within the French sample there are more farms far from the efficient frontier than in the Hungarian sample. One quarter of Hungarian farms are scale efficient (i.e. operating under CRS) while the share is only 8% of the French sample. In both countries, farms that are not scale efficient are almost equally split between too small farms (i.e. operating under IRS) and too large farms (i.e. operating under DRS).

Table 3

Yearly technical and scale efficiency as averages for the whole period 2001-2006; calculation under the countries' respective frontiers

	France	Hungary
Total number of observations	6,549	574
Average total technical efficiency (under CRS)	0.723	0.791
Average pure technical efficiency (under VRS)	0.762	0.842
Average scale efficiency	0.950	0.940
Share of farms with score of 1:		
for technical efficiency under CRS (%)	8	25
for technical efficiency under VRS (%)	8	39
for scale efficiency (%)	8	27
Share of farms operating under:		
CRS (%)	8	28
IRS (%)	43	34
DRS (%)	49	38

Source: Authors' calculations.

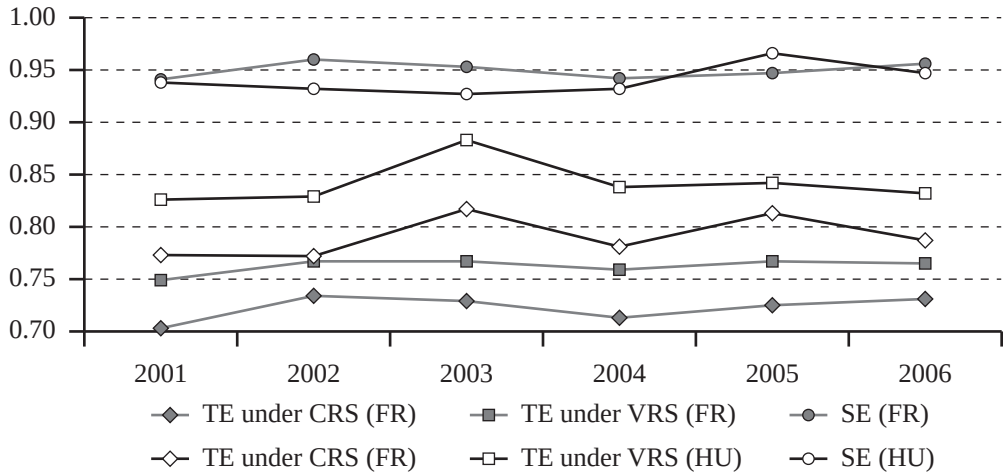

Figure 1: Evolution of yearly technical (TE) and scale (SE) efficiency over the period 2001-2006 for France (FR) and Hungary (HU); calculation under the countries' respective frontiers

Source: Authors' calculations.

Figure 1 shows the evolution of efficiency averages for both samples over the period studied. The figure reveals that the average efficiency scores of French farms have fluctuated less than the average scores of the Hungarian sample. Scale efficiency has improved for the Hungarian farms after 2004, while pure technical efficiency (i.e. under VRS) has decreased. This suggests that accession to the EU has enabled farms to reach a more optimal scale of production, but has implied a worsening of farming practices. The evolution of the Hungarian farms' milk output indicates that

it has decreased over the period studied, as well as input use, suggesting a decrease in the scale of production. This downsizing may be due to the CAP support provided to Hungarian farmers, support that is higher than what they received before accession: thus, farmers may need to produce less, as a reduction of profit is now compensated by higher support. However, farmers have not been able to adapt properly yet to the new production conditions brought by EU accession, as pure technical efficiency has decreased.

Comparison of the countries' technologies

Comparing the technology in both countries is done by merging both samples and calculating efficiency with this merged sample, i.e. under a common frontier. As the interest is in the comparison of countries, the results using a common frontier are not presented for the whole merged sample, but for each country only. Table 4 shows the descriptive statistics of the technical efficiency of France and Hungary, when a common frontier is used. The results for the whole merged sample are given in Appendix.

Table 4 reveals that Hungarian farms display much higher average total and pure technical efficiency than French farms over the period studied; the average total technical efficiency (i.e. under CRS) is 0.759 for Hungarian farms, and 0.670 for French farms. This suggests that more Hungarian farms are on or closer to the efficient common frontier than French farms. French farms however seem to perform slightly better in terms of scale efficiency (0.969 vs. 0.929). Thus, it suggests that, if it is assumed that French and Hungarian farms have access to the same technology, Hungarian farmers would have better farming practices and use better the technology, while French farms would have a more efficient operational size.

Table 4

Yearly technical and scale efficiency as averages for the whole period 2001-2006; calculation under the common frontier; results for each country

	France	Hungary
Total number of observations	6,549	577
Average total technical efficiency (under CRS)	0.670	0.759
Average technical efficiency (under VRS)	0.691	0.821
Average scale efficiency	0.969	0.929
Share of farms with score of 1:		
for technical efficiency under CRS (%)	3	20
for technical efficiency under VRS (%)	4	36
for scale efficiency (%)	8	21
Share of farms under operating:		
CRS (%)	9	22
IRS (%)	52	37
DRS (%)	39	41
Average technology ratios		
under CRS	0.928	0.961
under VRS	0.907	0.975

Source: Authors' calculations.

Table 4 also presents the technology ratios, calculated under CRS and VRS. The average technology ratio over the whole period is greater for Hungarian farms (0.961 and 0.975 under CRS and VRS respectively) than for French farms (0.928 and 0.907). This suggests that, under the assumption of a hypothetical common frontier, Hungarian farms would have on average a more productive technology than French farms. This is confirmed by the shares of farms on the efficient common frontier, which are larger for Hungary than for France. Hungarian farms thus lead the merged sample in terms of technology over 2001-2006 while French farms face a technology gap. As shown by Figure 2 picturing the evolution of the productivity factors over the period, the discrepancy between both countries is consistent, except in 2003 and 2004 where the average technology ratio under CRS of the Hungarian sample is very close to the French sample's one.

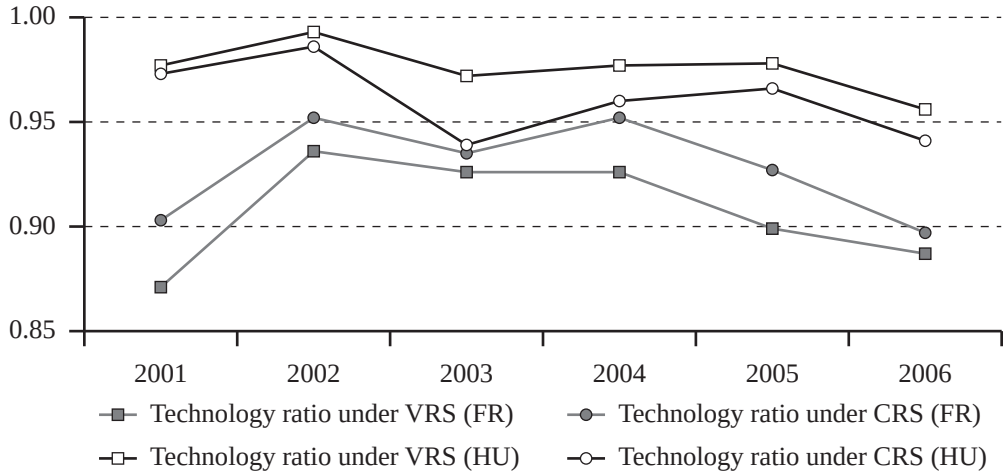

Figure 2: Evolution of technology ratios over the period 2001-2006 for France (FR) and Hungary (HU)

Source: Authors' calculations.

Conclusions

The paper has investigated the performance of French and Hungarian dairy farms, with respect to their own technology frontier, and has compared their technology. The analysis was performed during the period 2001-2006, partly during Hungary's preparation for EU accession (2001-2003) and during the first three years of accession (2004-2006).

Regarding the performance related to their own country's frontier, Hungarian dairy farms showed similar scale efficiency than French farms, but were found to use better their technology than French farms. The results obtained with a common frontier indicated that Hungarian farms would be consistently leading the hypothetical common technology. It could have been expected, instead, that Hungarian farms would lag far behind French farms, as they may not have had access to modern technology during the transition period, either because this technology was not available or because farms were financially constrained. This paper suggests that, by contrast, Hungarian farms have had access to technological improvement as much as French farms did. The high support received by Hungarian dairy farms pre-accession may be one reason. The Producer Support

Estimate (PSE) calculated by the OECD for milk production in Hungary[3] was 42%, 57% and 53% in 2001, 2002 and 2003 respectively, while the figures were 42%, 49% and 51% in the EU. Public subsidies may have helped farms' structural change before the EU enlargement by relaxing financial constraints. However, further research is needed regarding the effect of policy. As noted by Just and Pope (2001), it is often difficult to disentangle productivity differences that are solely due to technology, from effects of policy. Moreover, our yearly analysis does not account for dynamics such as technological change.

Results obtained under the hypothetical common frontier showed that French farms had a more optimal scale of production than Hungarian farms. Despite this, they were still experiencing a technology gap. The reduction in output produced and input use by Hungarian farms over the period studied may be the reason why they remained technology leader. French farms may thus find it difficult to compete with Hungarian farms in the future.

Appendix

Table 5

Yearly technical and scale efficiency as averages for the whole period 2001-2006; calculation under the common frontier; results for the whole merged sample (France + Hungary)

	Merged sample
Total number of observations	7,123
Average total technical efficiency (under CRS)	0.678
Average pure technical efficiency (under VRS)	0.702
Average scale efficiency	0.966

Source: Authors' calculations.

Acknowledgements

This research benefited from financial support from the French Ministry of Foreign Affairs (ECO-NET program).

[3] The PSE calculations for Hungary provided to OECD are performed by AKI.

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The interpretation of working capital and its elements, working capital management

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Abstract

Those literary sources, which are about the interpretation of the working capital in a context with the financing strategies of the companies, about the related financial indices, and the counting methodological questions of all these, could not be called poor, nor unified. The deficiency of defining the concepts that give the theoretical basis and their vocational tenability, the controversial interpretation and the unclearness of the related methodological questions creates several problems. The problematic concepts are working capital, net working capital, working (operational) capital, the circulation of current assets and working capital management etc. The root of the problems could be found on the other hand in the unclearness of the theoretical contexts, in the deficiency and vocational tenability of the defining of the related concepts and categories. We define the concepts of working capital, net working capital, working (operating) capital based on the results of our several years of research work. We prove the theoretical basis of the concepts and we open up the causal connections, the interactions of the different elements, and we prove that the sectorial peculiarities cannot be separated from attention to defining the elements and the interpretation of the contexts.

Keywords

working capital, net working capital, working (operating) capital, product production system, current assets tied up permanently

Introduction

Our research results, achieved since the beginning of the 1990s, were the motivational factors that led our research work to the development of methods and procedures which can further the financial foundation and check of the companies' function and the testing of the proposed analysis techniques and methods which can be found in the literature. We confronted it in the course of the examination of the literature that the examination methods of the companies' financing system, the interpretation of the related concepts and indices cannot be called uniform, and their practical application brings up more problems because of the deficiency of their theoretical basis. The publications on the topic are at a general level in most cases. The interpretations of the concepts are incomplete or controversial and the concept of working capital and its elements are not clarified. It has not been studied whether the sectorial peculiarities (as for example the known peculiarities of agriculture) modify the theoretical contexts or not, or totally overwrite them or not.

We outlined the problematic contexts and concepts in our earlier publications (Pupos and Demeter, 2004; Pupos, 2005; Pupos et al., 2008). We did not consider the published results mature ones; we rather marked them for raising the question. Newer and newer problems came to light in the course of the deeper exploration of the causal connections. We judged that for the clarification of the contexts considered problematic, the scientific responding to the following questions give the answer:

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1. What constitutes/may constitute the grounds for defining working capital and its elements?

2. If we accept the definitions given in the literature, namely, that working capital is equal to net working capital, how is it possible to interpret the concepts of the current assets coming forward seasonally, the current investment and working capital management?

3. Why did the authors dealing with the issue interpret the concepts based on the contexts of the balance sheet only, and what kind of context is there between the interpreted concepts and the different financing strategies?

4. Do the sectorial peculiarities – here the agricultural production – modify the theoretical contexts?

The production process as a product production system

It is known that the differentiation of production according to needs manifests itself in the production processes manufacturing the different products and services. The outputs, which may be a product or a service, are generally the end products of the production process. Henceforth, the concept of production we equally understand as product and service production.

We judge it in such a way that the approach manner being based on the system theory is the one that is suitable for the clarification of the unanswered questions mostly, because "…the fundamental idea of a system theory is that the phenomena or things should be studied in their complex context" (Csáki, 1982). It is known that a system consists of particular elements and it is able to operate only if its elements interact with each other. The production process can be also interpreted as a system. Let us define the production process as the factors and elements of a product production system. The factors of the production process can be the following if we take the definition of the production as a starting point and we compose in the most general way:

1. The technical factors
2. The physical factors
3. The chemical factors
4. The biological factors
5. The human factors

The inputs of the production process form the elements of the system of the production process. These inputs as the elements of the system transform and build in the product and service during the production process. The requirement of the transformation on the other hand is to get the elements into an interaction with each other. It is clearly reasonable that it can be only ensured by one of the elements of the system, the human factor. Figure 1 exemplifies the statements above. In spite of the deficiencies of the delineation, the contexts and the conditions of the function of the system are traceable in the figure.

So the figure includes the listed factors above and the common set of the single factors and its interactions by making use of the depictions known in the set theory. We get to the output only if the person, who is one of the indispensable factors of the system, ensures the interaction. The quality of the output (product/service) resides in this interaction. This interaction though is not anything other than the technology of the product/service production. The technology – in a system-based notion – is not anything other than the execution manner and procedure of the production process of the

necessary factors (elements) which is ensured by the linking of the algorithms defined in advance. Let us take the production process of bread as an example. The elements of the production process will be the following:

1. The Technical factors: machines, equipment
2. The Physical factors: temperature of the baking
3. The Chemical factors: additives
4. The Biological factors: the application of yeast
5. The Human factors: the baker as a skilled worker

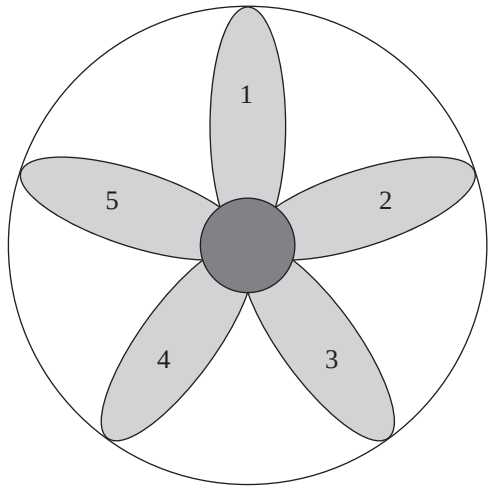


Figure 1: The production process as a product producing system
Source: own work

The quality of the product, will there be any waste product, how large will be the loss, how much will be the output etc. depends on the quality and the technology of the input factors of the system. It is reasonable that enforcement of the management functions at the level of the execution is also needed in the interest of the tranquillity of the process. The same functions come forward as in the company level, but understandably with another content.

The production process as the economic aspects of the product production system

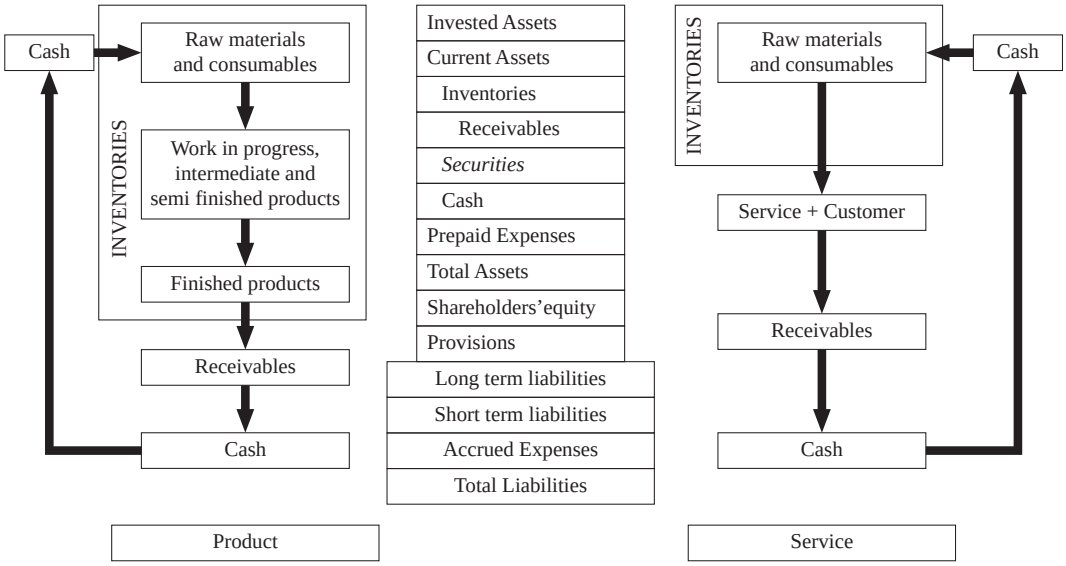
In the following we examine the general peculiarities of the companies manufacturing material goods (products) and service. Let us take a products producing company and a hotel that deals with accommodation and catering – in harmony with its basic function – as a basis. It is reasonable that both companies need inputs. There is no difference between the inputs regarding the role played in the production between the two companies, but their actual form of appearance is already output dependent. Namely it means that both companies need money, invested or fixed assets, current assets and human resources. That these inputs mean a lathe, sphere iron, workforce with academic specialization qualifications, refrigerator, pork chop, or a human resource with master cook qualification, it already output dependent. It is also not necessary to prove that the scene of the transformation of the inputs is the production process in the case of both companies. However the procession of the production process is an output dependent too. The aim of the two companies can be the same,

like the realization of profit, despite a different mission. The conditions of the realization and the bars of profit are also the same for both companies. We receive the contexts of Figure 2 if we make the economic content of the production process the object of an examination.

As is traceable on the figure, the circulation of the current assets is going on among the inputs in the course of the production process, so the production of the outputs comes true through the circulation of the current assets. In the course of the circulation the current assets lose their original appearance partly or completely, their value turns into the value of the output. The invested devices take part in the process of the production naturally to ensure the conditions of the production, but they do not lose their original appearance. However, the human resource brings the inputs into an interaction with each other. The concrete product and service are suitable for the satisfaction of the human needs. The customer visualizes and conveys it on the figure. Based on the figure it is traceable that the process of the supply chain of the need satisfaction is the same until the product or service production in that sense, that the production of the product and service is possible equally with the use of inputs, so the service is also the result of a given production process. However essential peculiarities can be discovered in the need satisfaction process. The transport of the product to the consumer comes true through the supply chain. The supply chain is the vertical linking of the activities between the companies in the interest of satisfaction of the needs. One of the important peculiarities of the need satisfaction process fulfilled by the product and service is that the product gets to the consumer through different sales channels, like wholesale and retail trades. The need on the other hand cannot be taken because of its peculiarities, so the consumer goes to the place of production. This is one of the peculiarities that it is necessary to take into consideration in the course of the practical realization of the different leadership functions. In the case of the service the production of the output and its consumption partly or fully cover each other in time, so the service cannot be reserved.

In the following let us track the circulation taking the production of the nut as a starting point. Based on the figure it is verifiable that the money is the first form of appearance of the current assets, which is the same in reality. The money makes it possible to buy inputs, in this case to buy the necessary current assets for production, like sphere iron, energy etc. so we convert money into current assets. The production process did not begin yet, but we have prepared ourselves for its launch. We call this section an ever-ready section. The production begins with the slicing of the sphere iron. The end product of this is the chopped sphere iron, which is a semi-finished product. The nut will be the result of the production process, as the finished product. The production section lasts from the launch of the production to the appearance of the finished product. The realization follows it.

Receivables stock also arises until the financial realization of the income from sales. This section is the return section, which result will be money again. The real flows going on inside the company generate financial processes which come true simultaneously or with some time lag with the real flows. So we need the knowledge of financial processes of the circulation and its attached elements, because these financial processes appear in cash flows. Figure 3 exemplifies the contexts of the real and financial processes. Based on the figure, the stockpiling period begins with the purchasing of materials and lasts until the realization of the finished product. The supplier debt finances the purchasing as commercial credit until the equalisation of the debt. The sums of stockpiling and realization of the equalisation of the supplier debts, the production and the finished product get the source demand of the circulation. As a return, the financial realization of the claims moderates this sum. All of these constitute the financial cycle of the circulation of the current assets collectively. The continuous production comes true in the manner that the sketched processes are reproduced, so they are repeated, if the money is at present as a connecting link. The sketched contexts constitute the conceptual basis which is needed to take into consideration for short-term investment and financing decisions of the current assets.



AIE: Prepayments, **HLK:** Long term liabilities, **RLK:** Short term liabilities, **PIE:** Accruals

Figure 2: The cycle model of current assets, and product and service production in the production process

Source: own work

The interpretation of working capital and working capital management

Earlier we have written about the circulation of current assets. We saw that the production process is not other than the continuous recurrence of the circulation of current assets. We interpreted the function cycle and its financial effects. However, only the interpretation of the circulation and the knowledge about its elements is not enough. We need the clarification and interpretation of the role of the elements of the circulation in the interest of the exploration of the causal connections and in the interest of the insurance of the continuity of production. Providing the harmony of the real and nominal processes is an important requirement to the company's long-term financial stability according to the principle of the temporal. The temporal principle expresses the requirement of the harmony between the blocking period of the inputs in production and the expiry date of the resources. Namely it means that the assets functioning as capital should be financed by own capital or by beyond-a-year (long-term) liabilities. It is known that investment decisions have an effect on the establishment and construction of the company's assets. If these decisions also seem good from the financial viewpoint, we find ourselves confronted by a newer decision problem, namely, that from where and in what form we shall ensure the resource demand and how to finance it. So it is needed to bring our financing decision. The company's desired property structure and financial and capital structure takes shape and changes as the result of our mentioned decisions. The vocational tenability of the investment and financing decisions cannot avoid the definition of working capital and its elements, their interpretation and the examination of their interaction. The interpretation of related concepts cannot be entered uniform ones; we alluded to this already in the literature. Working capital is considered as identical with either the full substance of the current assets or with net working capital. According to the Economical Alphabet (1973:158): "The working capital is the elements of production capital that are used up in the production period and their value is conveyed

to the new product". This wording considers working capital as being identical with current assets. We find identical definitions in the following sources: Economic concise lexicon (1987:173); Hungarian encyclopaedia (2003:628). According to Hámori (2000:46): "working capital is the other part of a company's property beside the fixed capital." The working capital has three main components.

The first component is the capital stock, including the finished goods, the semi-finished goods and raw materials; the second is the account receivables and short term debtors. The third is the cash and the short-term investments. The size of working capital is the main indicator of the company's liquidity especially in terms of the financial proportions. The author regards the full substance of the current assets as working capital. That is how working capital can be regarded as the indicator of the liquidity, for the reader this cannot be judged based on the source only.

Essential difference can be discovered in the work of those authors who consider working capital identical with net working capital. In connection with the topic Brealey and Myers (1993:464-473) reckon as basis literature in which the authors interpret working capital as the summation of the tied up current assets and the current liabilities, as the components of working capital.

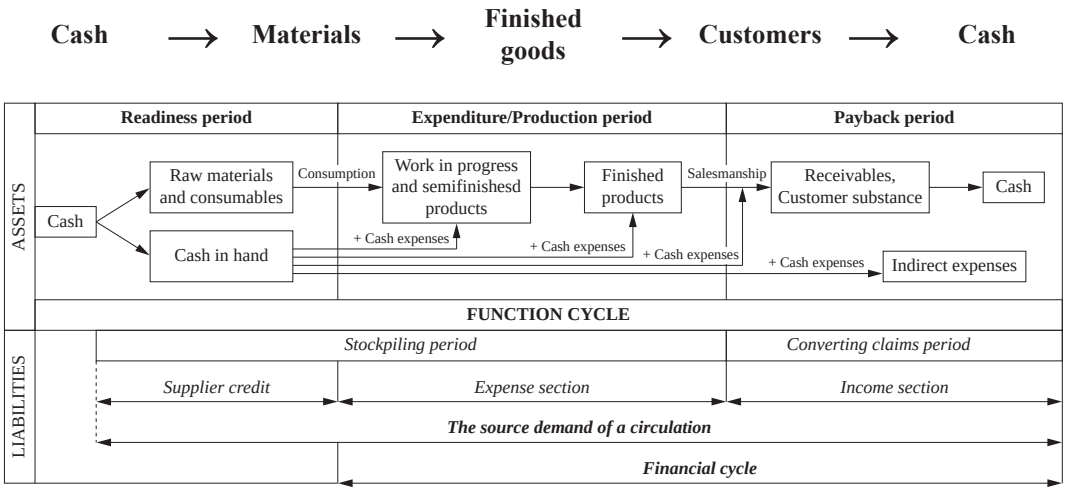


Figure 3: The general model of the cycle of current assets and liabilities needs

Source: own work

The working cycle of working capital is indicated for the series of continuous metamorphoses. Would it be true based on the above context that the working capital is equal to the amount that is necessary for the realisation of a circulation? Related to the peculiarities of the function cycle the authors compose the following: Only one constant element is in this process – namely working capital. The components of working capital change continuously. This is one of the reasons wherefore net working capital is considered a good comprehensive indicator of the current assets and the current liabilities. The definition of working capital would be unambiguous if the net attribute would not be there in brackets and, referring to the current liabilities, if we speak about the function cycle of the working capital only. In our opinion the capital demand of the function cycle and the source demand of the cycle, and its structure, should be examined separately. Later we justify the tenability of this statement.

The authors compose according to the undermentioned statements in the following: "The strength of working capital – as an index-number – is hidden in the fact that the different current assets and the temporary or seasonal changes of current liabilities do not have an effect on it. If this is in this manner, then working capital points to the fact of capital binding with a constant sum between the frameworks of typical production process conditions."

Matching in accordance with the opinion of cited authors, Illésné (1994) judges that the current assets are called working capital, referring to the Anglo-Saxon countries' practice, then composes according to the undermentioned statement: "The net working capital plays a honoured role, which is the difference of current assets and current liabilities." So the net working capital is the surplus of the current assets that is necessary to be financed with long-term liabilities (with own capital and long-term liabilities). It is not possible to agree with this wording. In our opinion it is not the surplus of the current assets, but it is concerned with its proportion. The author – in his previously cited work – writes in detail about the importance of the validation of the time principle in connection with choosing financing strategies. He stated that invested or fixed assets, long-term tied up current assets and temporarily necessary current assets are needed for the undisturbed function of the developing company. These latter "… change around the trend with certain regularity because of the cyclical nature of the economy and the seasonality of the production or realization. Its other part cannot be predicted in advance, it fluctuates day by day, month by month." Would it be true based on the above mentioned statement that the working capital is the same with the long-term tied up current assets? Markham Collins and Collins (1963); Dambolena and Shulman (1988) and Cohen (1997) concretize and interpret the net working capital on the basis of the balance sheet data.

$$\mathbf{NWC = (CA + PE - P) – (STL + AE)}$$

where: **NWC**: Net working capital **CA:** Current assets, **PE**: Prepaid expenses, **P**: Provisions, **STL**: Short term liabilities, **AE**: Accrued expenses

The translator calls this category net functioning capital, in our opinion incorrectly. Béhm (1994) – referring to the foreign literature – defines working capital as the part of the current assets financed with own capital, indicates his definition with the difference of current assets and short term liabilities. Working capital is identical with net working capital according to the author's interpretation, too. Tétényi and Gyulai (2001) states in connection with the negotiation of the role of current assets played in production: "The amount of current assets requested steadily is called long-term current assets strangulation… Which is constant compared to a particular production programme, and which is the sum of own capital without expiration, and/or the long-term liabilities which finance the current assets kept in store. This capital is called net working capital". Would be the thing only about current assets appearing in the ever-ready section of the circulation in connection with the working capital according to this interpretation? Tétényi (1997) calls the liabilities current or business financing sources, ordered to the proper financing of the current assets. If this basic context comes true, then the undermentioned context arises according to the author:

Current assets altogether = Short term liabilities altogether (current financing sources)

The author composes according to the following based on the context above: "Net working capital (it is also called functioning capital) is the difference of the sum of current assets and the sum of current financing sources, which properly finance the current assets." He calls attention to the fact that this statement is true beside the adherence of the financing rules only. Net working capital answers how many per cent of the current assets are financed by own capital and/or by long-term (middle-term) liabilities according to his statement.

We consider it important to emphasize the author's opinion which indicates the necessary amount of net working capital: "On the question of what amount of net working capital would be accepted, to give an unambiguous answer is not possible. It is a requirement to be the smallest possible, but not hinder the increase of the business profit". We judge it is not possible to accept the general validity of the author's opinion. It suggests that net working capital is a beyond-a-year source proportion with which current assets (or a part of them) are financed. (In the other publication the author uses the concept of current assets financed with net working capital).

Coombs and Jenkins (2002:158) also interpret working capital as the difference between current assets and short-term liabilities. They compose this way in connection with the negotiation of the issue: "It is important to mention that it is necessary to interpret and define the effect of the elements of working capital on each other clearly in the company's financing policies".

According to Bélyácz (2007) "the corporate working capital means the investment being directed into the current assets. …, the cash itself belongs to it, the marketable stock, the outstanding debt and the supply. The net working capital is the difference between the current assets and the current liabilities". The opinion of the cited author does not differ from the opinion of other cited authors regarding the content, although he uses different concepts. He regards the full substance of the current assets as working capital, and the definition of net working capital does not differ from the interpretations which can be found in the sources.

The summary of the specialist literature

In both the international and the domestic literature it is verifiable that:

- the interpretation of the related concepts is not uniform, but moves in general terms,
- the single interpretations do not draw a distinction between the concepts of expenses of capital and current production,
- the cited authors did not examine the causal connections of the assurance of continuous production,
- the circulation is considered sufficient theoretical basis,
- only the knowledge of the elements of the circulation and its interpretation do not make possible the defining of the single elements and the exploration of the causal connections,
- the calculation of the net working capital based on balance sheet data leads to a conclusion only on the principle of the time, because of this it may not be identical with working capital.

However it may not follow from all these that the concept of working capital and net working capital, current assets coming forward seasonally, current invesments and the aspect system of capital and the source structure could be neglected in connection with the forming of the related investment and financing decisions. So it is essential to clarify the definitions of the above concepts and their interpretation for the exploration of the causal connections.

The interpretation of the causal connections, the exploration of the related concepts

The contexts interpreted based on Figures 1 and 2 interpret the economic projection of the production process in general. Based on the contexts verifiable, that the continuous production is not other than the circulation of the current assets. For the exploration of the causal connections we need

to examine the elements appearing in the circulation of the current assets from the viewpoint of what kind of role they manage in the interest of the assurance of continuous production. Let us make the circulation of the current assets the object of an examination again (Figure 4) and let us focus on the role of the single elements played in continuous production.

In the interest of the right illumination of the contexts, let us take in this case also a nut manufacturing company producing only one product, the production is steady, the realization happens every ten days, the salary deadline is 20 days, the stock purchase happens according to the intensity of the production and the safety stock supply is equal to the production of five days. The finished-product supply level let be identical with five days of production.

If we map the effects of these assumptions on the function cycle interpreted at the corporate level, then all of the elements of the function cycle appear. It is reasonable that the essential condition of the continuous production, that the single sections' encounter (rip dots) let supplies form, and that the assets stock will be the constant element of the function cycle depending on the firm's commercial credit policies (the length of the salary deadline). The elements of the circulation appear in a different form because of the peculiarities of the production process and the management's related decisions, for example the work in progress does not appear in all function cycle of production processes (for example in case of the production of service),and it is also not needed to reckon with the assets stock in case of cash realization.

From the figure it is clear that there are elements between the items of the current assets appearing in the balance sheet which do not appear in the circulation of current assets, for example credit securities, prepayments for inventories, receivables against founders, other receivables, etc. So these elements are only accountancy categories, and are not elements of the circulation, but to be present in the property balance sheet is naturally justified. This fact also shows that the full substance of the current assets may not be identical with the working capital. We may deduct the inference that the condition of the continuous production is that the current assets appearing in the circulation – money, stocks, receivables – the peculiarities of the production process, defined by the related economic decisions, have to co-exist with each other and should be tied up with a constant character. It depends on the peculiarities of the production process or the related decisions (for example the standard of salary deadlines, stockpiling and salary manners) largely how large is the value sum of the money tied up permanently in them.

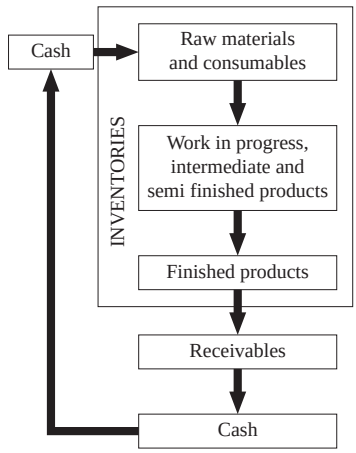


Figure 4: The theoretical model of the interpretation of the working capital

Source: own work

$$\mathbf{FTF} = \frac{NFT}{FT}$$

where: **FTF** = working capital coverage indicator, **NFT =** Net working capital, **FT=** Working capital

The expenses of continuous production are in the form of current assets, money or supplies considering their first appearance. They turn into an expense when we make use of them in the course of production, they lose their original appearance and their value turns into the value of the new product. So the expenses transform into property, but only the direct expenses. The indirect expenses appear as invested current assets they are left quasi hidden, because they cannot be put on inventories. We call these current assets current assets coming forward seasonally and they can be taken into account only as production expenses. The current assets coming forward seasonally so the ones that present themselves in addition to working capital. The current investment concretizes the average substance value. The current investment is that substance value of the current assets coming forward seasonally, which arises from the launch of the continuous production until the return (until the realization of income from sales) above working capital. This means that the invested current assets of continuous production must be advanced until the financial realization of the income from sales, and their substance value continuously grows up to the finished-product being ready. They are repaid through the realized income from sales, we get money at this time, which we invest in the newer production process, and we account it as a production expense. Their financing may happen as short term liabilities in the case of deficiency of income from sales. A part of the income from sales may appear as receivables. The resource demand of the circle and the financial cycle develops as the resultant of an aggregation effect of the sketched possible forms. The decisions shape and define the economic burdens of the circle and the resource demand, brought relatedly to the circulation of current assets and the elements.

As we saw, net working capital is concretized based on the property balance sheet in the literature, and this is considered as identical with working capital. Based on the interpreted context the net working capital is that substance value of the current assets to which the company orders long-term or resources without expiration. It is reasonable that the manner of the calculation determines the concept of net working capital unambiguously, since this may not be other than based on the accounting principles of the balance sheet. Cited authors do not analyse that case if the value of the net working capital is negative. This is not a theoretical opportunity; these cases appear often in practice. Cases like this call attention to the fact that net working capital may not be identical with working capital, because net working capital allows us to make conclusions on the temporal principle only and because of this it cannot be accepted as an index reflecting the financial position. Because negative net working capital indicates the company's aggressive financing strategy, in a degree that it orders short term liabilities to the invested assets too.

Net working capital merely so does not show the company's real financial position. It is expedient to count the working capital coverage indicator (FTF) that is based on the undermentioned context and which can be concretized and be interpreted:

Based on the context it is reasonable that if FTF = 1, the financing strategy is moderate, if FTF > 1, the financing strategy is conservative, and if FTF < 1, then the company's financing strategy is aggressive. The above mentioned related financial contexts are not possible to leave apart from attention to the calculation of the indices, for example at liquidity and efficiency rates, etc. (This issue is the subject of our present research work.) The data in Table 1 support our statement too, concerning the negative value of net working capital. The data in the table were calculated based on the data of the balance sheet of an agricultural producer company and a medical hotel (company

providing a service). The aggregate amount of the balance sheet of the agricultural company in single years successively are approximately 66 million HUF and 240 million HUF, in the case of the medical hotel is equally 5 billion HUF in the two years. The peculiarities of the agricultural production and accomodation giving (as production processes) are well traceable on more areas based on the data of the property balance sheet.

These peculiarities come forward in the structure of the property mostly, based on the data of the table. It is visible that the agricultural company dealt with plant cultivation only in the year T_1, in the year T_2 it bought a milk producing dairy-farm. The current assets are in predominance in the structure of the property because of the peculiarities of the production. Opposite to this is the case of the medical hotel where the proportion of the current assets did not even reach the 10%.

It is an important question related to the issue, that what kind of structure shows the substance value of the current assets inside the two companies. We summarized the structure of the current assets and the net working capital calculated based on the data of the balance sheet in Table 2. The inventories are in predominance inside the current assets at a production type company. In the hotel's case the high proportion of the liquid assets is visible. This high proportion indicates the importance of the role of the inventories and receivables forming the elements of the working capital, the current assets coming forward seasonally, namely on the role of the current investment. If we take the data of the property balance sheet as a starting point only, and we concretize net working capital, we obtain the character values of Table 2. It is visible that it occurs in the case of both companies that net working capital will be negative.

Table 1

The establishment of the balance sheet structure of the examined companies

Appellation	Agricultural company		Medical resort	
	T_1	T_2	T_1	T_2
	Years (%)			
TOTAL ASSETS	**100.0**	**100.0**	**100.0**	**100.0**
Invested Assets	20.5	25.2	91.6	93.8
Current Assets	79.3	70.9	8.6	6.0
Prepaid Expenses	0.2	3.9	-	0.2
TOTAL LIABILITIES	**100.0**	**100.0**	**100.0**	**100.0**
Shareholders' equity	15.2	27.3	11.6	11.5
Provisions	-	-	-	-
Long-term liabilities	-	14.6	73.9	77.1
Short-term liabilities	82.8	52.0	6.2	7.2
Accrued expensis	2.6	6.1	8.3	4.2

Source: own work

We consider it important to emphasize to correct the values of the property balance sheet according to the law of accountancy where necessary. The substance value of the accrued expenses plays an important role behind the above mentioned negative values, which are connected with the financial settlement of the supports not to be refunded. This correction was only in the case of medical hotel necessary to do and it resulted in net working capital becoming positive in the case of the medical hotel in the year T_1, but in the year T_2 it appeares with a negative value likewise. We judge

that these data should justify our opinion that net working capital may not be identical with working capital, so working capital allows only onto the emergence mode of principle of the time to make a conclusion. Based on the data concerning the structure of the current assets in Table 2 verifiable, the stocks do not figure in all years in the property balance sheet of the companies.

This fact also verifies our statement that the stocks are not the elements of working capital, since this refers to managing the free liquid assets (the realization of capital gain) depending on the decision of the management. The substance of the safe money supply depends fundamentally on the management's decision and on the actual conditions of the farming.

Table 2

The structure of the substance of current assets of examined companies and the establishment of net working capital

Appellation	Agricultural company		Medical resort	
	T_1	T_2	T_1	T_2
	Years (%)			
Inventories	**59.2**	**58.2**	**4.2**	**4.1**
Raw materials and consumables	35.8	11.6	65.3	54.3
Animals for breeding and fattening and other livestock	-	40.0	-	-
Work in progress and semi finished products	63.2	33.9	-	-
Finished products	1.0	14.5	-	-
Commodities	-	-	34.7	45.7
Receivables	**10.6**	**26.4**	**11.8**	**16.6**
Securities	**-**	**-**	**12.1**	**-**
Cash	**30.2**	**15.4**	**71.9**	**79.3**
CURRENT ASSETS	**100.0**	**100.0**	**100.0**	**100.0**
Net working capital (THUF)				
Based on balance's data	**-3,907**	40,172	**-305,937**	**-253,400**
Made corrections based on balance's data	**-3,907**	40,172	127,016	**-46,785**

Source: Own work

Those elements of the current assets are definable which are necessary on the basis of the circulation and their role played in the production, after we reviewed the role of the elements appearing in the circulation of the current assets in the insurance of the continuous production and the contexts between the elements.

- The concept of the current assets is a wider category than working capital.
- Working capital is the steadily appearing or existing stock value of the several kinds of current assets functioning as capital, in the process of the circulation of the current assets, in a given period, in the interest of the assurance of the continuous production, defined by the production processes and the peculiarities of the organization of production. Its elements are the Inventories to ensure the continuous production process, Receivables and Safety money supply of the Cash.
- The current assets coming forward seasonally present themselves in addition to working capital.

- The current investment on the other hand is the stock value of the current assets coming forward seasonally, which arises from the beginning of the continuous production until its return (until the realization of income from sales).

- The usage of the concept of capital is technically correct only if the economic event or the related decision with the accumulation functions of the money can be brought into a context directly or indirectly.

We consider it important to highlight that in the definition of working capital the expression working indicates that this proportion of the current assets functions as a capital only, so it is kept invested constantly and it is independent of seasonality of production. It follows from the definition unambiguously that the production can be financed only with own capital or long-term liabilities since its freeing would risk the continuity of production. The freeing of the capital tied up in them is possible in that way only, if for example we reduce the safety supply level or we give shorter salary deadline, etc. However we have to reckon even with customers loss in the latter case, because the shorter salary deadline cannot be undertaken.

The elements of the working capital will be the following taking the nut production example as a starting point:

- **Stocks:**
  - **Materials** (safety supply quantity level of the round bar being equal to the production of five days)
  - **Semi-finished goods** (quantity of sliced round bar being equal to the production of five days)
  - **Finished goods** (quantity of a nut being equal to the production of five days)
- **Receivables:**
  The average monthly closing according to the paying deadline and the time of and the realization. Receivables stock, (his substance value will be identical with the net revenues of one month because of the accepted conditions).
- **Cash:** (The safety money supply, for example a monthly wage and common charges)

It is reasonable on the basis of the sketched statements that the operative management may not miss the content contexts.

We saw that the production process is not other than the continuous recurrence of the circulation of the current assets and the single elements appear in the circulation function as capital. It follows from this that the operative decisions are not less important than the decisions brought at the corporate level. The reason of this is to be looked for in the effects of the decisions brought at the operative level being spread to the corporate level, and in the interactions of the product production systems coming forward at a corporate level. So working capital management is not other than the economy of the production process. As a discipline it takes the economic projection of the production process as a starting point. The managing with the elements of the circulation and with the working capital and the related financing decisions stand in the centre of the investigation, for example the stockpiling, commercial and credit policies of the company and managing the finances.

The peculiarities of working capital and agricultural production

In the case of the agricultural company a question can be formulated. Can the concept of working capital be interpreted without reservation? The concept of the current assets tied up permanently is known in vocational circles. An important question is, can it be considered identical with the concept of working capital? If we take the role of working capital and the current assets substance kept interested permanently played in production as a starting point, then the answer is yes. Furthermore the "meeting point" of the two concepts can be discovered only from the viewpoint of the time from the financing and the resource demand. Because of the known peculiarities of the agricultural production (the seasonality of the production, the timely separation of the production and the work process, the special asset groups of the production, such as the animals, etc.) that substance of current assets is necessary to be regarded kept interested permanently which is necessary to assure the tranquillity of the continuous production. The important peculiarities of the working capital are that the groups of the current assets are kept interested on a yearly level and in a constant sum. This criterion can be interpreted and is true only in the case of the agricultural company on a corporate level, and in the relation of years. Concretizing the value of these resources has to happen inevitably referring to a given time. The concretizing on the corporate level not, but brings up more methodological problems at the sectorial level. We judge, based on our research results until now, that the methods known in the literature (Sövényházi, Z.-né and Tóth, 1979; Kiss, 1975; Potori, 2004; Tétényi and Gyulai, 2001; Béhm, 1995; Takács, 1995) require a correction because of the wrong definition of working capital or the lack of it. The peculiarities of the agricultural production question in many cases the application of useful concepts worked out onto continuous industrial production, indices and analysis techniques, which the agroeconomics have taken over mechanically in many cases leaving the sectorial peculiarities out of consideration.

The defining of the working capital elements of the milk producing dairy-farm

In the case of cultivation the field inventory constitutes the binding of working capital of the section as to property transformed direct production expense. We present a dairy-farm company based on the sketched theoretical contexts above. The elements of the company's working capital are traceable based on Figure 5. We summarized the content contexts in Annex 1. The quantified values of the model calculation can be found in Annex 2 based on the economic factual data.

Taking the activity of the enterprise as a starting point, it is reasonable that necessary level of the stock of current assets, which has to stand for taking action in the interest of continuous production equal with the state of 31 December. Based on these concepts, it is indicated in the table that the inventories are in predominance. That group of materials represents the bought inventories inside the inventories, the level of which may not go under the safety supply level.

The field inventory is also necessary for the production of the need of the next yearly fodder for the livestock, for example the silage. The own produced year-end supply of fodder has to cover the claim of livestock until the reproduction. This stock level decreases gradually during the year and turns into the value of the milk or the animals according to the intensity of the use.

Inside the inventory group of animals, two groups are necessary to separate on the basis of their role in the production. The young breeding animals that supply the stock of breeding animals can be placed in the first group. If we want to keep the numbers of cows from an own progeny then it is necessary to ensure a given number of cows according to the breeding and progeny indicators. It is clearly reasonable that the maintenance of production is in danger if we reduce these cow numbers, because we cannot ensure the necessary supply from an own progeny in this way. The young

animals waiting for the realization are in the second group which are not ready yet. They have not reached the sales weight yet. They would be saleable if there would be a demand for them and the continuous production would not be threatened.

(It is a different thing that in term of the establishment of the incomes with what kind of weight worthy to market.) Since the realization of the milk is continuous, and the customer transfers the offset of the milk inside a predetermined time span only for the company, the company has some receivables stock each day of the year depending on the paying conditions.

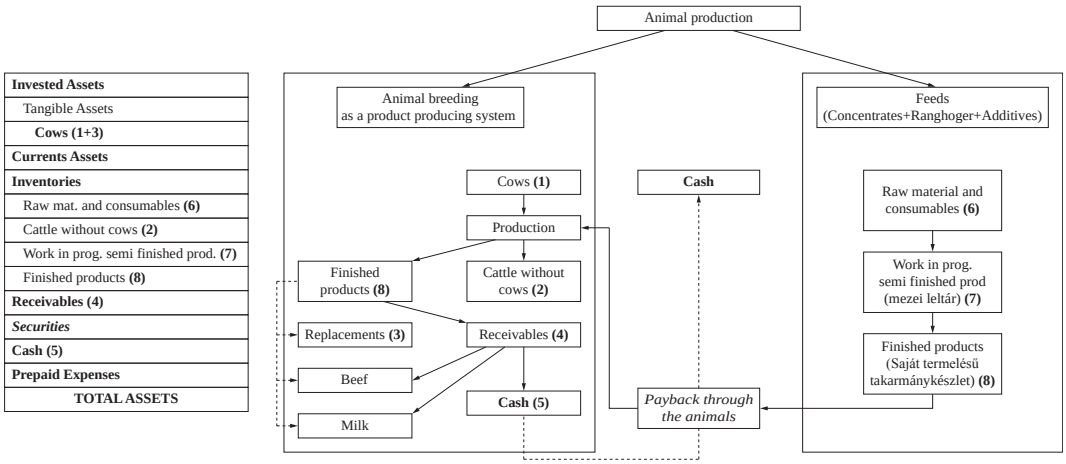


Figure 5: The elements of the working capital claim of the dairy-farm

Source: own work

The interpretation of the safety money supply may not constitute a problem. If we want to maintain the enterprise, it is necessary to maintain the stock value of current assets (as working capital) being qualified as kept interested permanently on 31 December in relation of the years in the interest of the insurance of the continuous production. In terms of the insurance of the financial stability, long-term liabilities without expiration should be assigned to this. We consider it important to mention that the correction (decrease) of the stock value of the current assets with the values functioning as capital is necessary for concretizing the related liquidity indices, since these may not constitute the coverage of the short term liabilities because of their role played in the production.

Inferences, additional questions to be responded to

In the knowledge of the role of the working capital and its peculiarities, it is reasonable that leaving them out of consideration means a considerable risk. The clarification of the theoretical contexts and the exploration of the interactions mean important practical consequences. The revealed theoretical contexts are justifiable with practical factual figures. It was also shown that the peculiarities of the different production processes do not overwrite the contexts. It is an important vocational question that with what kind of method should these elements be concretized, furthermore, that in the course of planning what kind of level lets us aim for accuracy, and what planning procedure and method should we apply because of the sectorial peculiarities. The mechanical application of the known indices and planning methods and leaving the peculiarities of the production processes out of consideration is a road which cannot be followed technically because of the sectorial peculiarities.

The importance of the respect of the mentioned contexts is more significant in the case of a starting company which has considerable risk since the aggregate degree of the related specific values is irreducible in connection with the peculiarities.

Because of it, a crucial requirement of the reduction of the risks is the creation of the condition system of the logical farming with inventories. So it cannot be allowed that the stock value of working capital appearing in the necessary stocks, receivables (trade debtors) and safety liquid assets recharge from the taxed incomes generating in the course of the continuous function mainly in the case of a starting enterprise. We judge in that manner that the theoretical contexts have been cleared up unambiguously. These add a suitable theoretical basis to answer several related question which are not cleared up until the present time. We regard the review of the methods and indices applied to examination of the companies' financial position, the development of the applicable planning methods and their testing as an important research task regarding the future. We intend to handle the analysis of the related questions of the agro-companies in detail.

Annex 1

The elements and content of working capital in the case of a milk producing dairy-farm company

Currents Assets	Working capital	Denomination
Inventories	**Inventories**	
Raw materials and consumables	Safety feeds supply	Bought milking feeds
	Other substances	Medicines supply
Work in progress and semi finished products	Field inventory	Sowing substance of cereal grains, gross and forage crops, roots and tubers and soil works
Cattle without cows	Replacements	Replacements
Finished products	Own feeds	Cereal grains, gross and forage crops, roots and tubers from 1 January to yielding (grass hay, alfalfa hay, cereal grains, etc.)
Receivables	**Receivables** The net income of milk	The average value of claim stock
Cash	**Cash** Safety many supply	According to the management's decision etc. monthly wage

Source: own work

Annex 2

The establishment of working capital claim of 100 of dairy producing cow and their progeny

Denomination		Inventories of the animals production			Feeds thaen working capital (THUF)				Total working capital (THUF)
		Total (THUF)	Working capital		Work in progress, semi finished products	Own feeds	Bought feeds	Totals	
			THUF	Total =100%					
Cows*		30,300	30,300	100.0	1,683	8,776	259	10,718	30,300 10,718
INVESTED ASSETS		30,300	30,300	100.0	-	-	-	-	
Animals	Female calves	1,380	890	89.0	37	161	4	202	1,092
	Male calves	1,348	-	-	37	161	4	202	202
	Replacements	7,636	7,636	100.0	433	2,251	70	2,754	10,390
	Beef	7,337	-	-	400	2,204	79	2,683	2,683
	Total	17,701	8,526	48.0	907	4,777	157	5,841	14,367
Work in progress and semi finished products		-	-	-	2,590	-			-
Finished products		-	-	-	-	13,553			-
*Raw materials and consumables***		10	10	100.0	-	-	**416	416	10
Inventories		17,711	8,536	48.2	2,590	13,553			25,095
Receivables		3,300	3,300	100.0	-	-			3,300
Cash		1,000	1,000	100.0	-	-			1,000
CURRENT ASSETS		22,011	12,836	58.0	2,590	13,553	416	16,559	29,395
INVESTED ASSETS AND CURRENT ASSETS /Total/		52,311	43,136	82.0	2,590	13,553	416	16,559	59,695

*The accountancy law list the breeding animals as invested or fixed assets
** The bought fodders altogether (breeding animals + animals)
Source: Own work

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Interests and goals in the agricultural higher education system of Hungary – a methodological approach

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Abstract

In recent decades the Hungarian intelligentsia, both political and governmental, emphasised the importance of higher education in socio-economic modernisation. At the same time, after nearly twenty years of system-transition we have to see that the ambitious goals of reforms in many cases have been turned into their opposite. This paper analyses the key actors and their strategies in the higher education system, highlighting the most important obstacles to development based on a multi-actor strategy model, based on institutional economy and principle-agent theory. The results show considerable divergence in force and interest-structure of different actors. As a consequence of relationship of forces it has been shown that, without steadfast governmental policy, long-term commitment for development and active participation of the business sector in innovation, there seems to be only a rather limited possibility for upgrading the agricultural higher education system.

Keywords

institutional economics, MACTOR, policy analysis, social bargaining, stakeholder analysis

1. Introduction

All over Europe, the higher education system is facing new challenges in an era of deep-rooted socio-economic changes, European integration and globalisation.

The concentration of material and intellectual resources seems to be a necessary precondition of modernisation. This is a rather deep-rooted problem of the Hungarian higher education system: Klebelsberg (1929, cited by Ladányi, 2000:25), at that time Minister of Education has emphasised that: "*as a consequence of developments in the past we have a lot of parallel institutes …, there are numerous dwarf colleges. In this way we lost a lot of energy, dissipate our efforts*." The need for better concentration of resources, quality improvement and the increasing of the role of higher education institutes in regional development have been the programme priorities of different governments but – contrary to the declared goals – the number of institutes did not diminished. For example, in 1989, there were 101 faculties in 43 institutions, in 2007 there were 41 institutions with 159 faculties (not including the religions institutes and faculties).

In an earlier paper (Hajdu, I.-né and Lakner, 2008) we offered a detailed description of the discrepancies between the declared goals and reality in higher education. The aim of this paper is to offer a more detailed analysis: identifying and evaluating the actors and their strategies shaping the current agricultural higher education system, highlighting the causes of the current – in many aspects chaotic – situation, and determining the possible ways of further work. Our analysis focuses on agricultural education, but the results can be generalised to the whole system of Hungarian higher education.

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2. Methodology

The basic paradigm of analysis were the institutional economics (Amin, 2004), as well as the principle-agent theory (Eisenhardt, 1989). According to the basic theory of the so-called "French school of strategy" the different social systems can be considered as an arena in which different groups of participants (the so-called actors) take part with the purpose of enforcement of their specific interests (Godet, 2003).

The method of systematic analysis of social bargaining can be modelled by the so-called MACTOR method, an acronym for Matrix of Alliances and Conflicts: Tactics, Objectives and Recommendations. This approach has been extensively used in different fields for analysis of actors and their goals, for example in case of historic fishing policies (Castroviejo, 1993); modelling of the Tunisian university structure (Jaziri and Cherif, 2003); urban planning (Dufrasnes et al. 2008) and furniture production sector in El Salvador (Mitma et al. 2006).

If one can relatively adequately simplify the actors and the most characteristic features of their systems of interests, then there is the possibility to analyse the chances of different actors realising their goals. The possibilities of actors influencing other actors are determined by their potential to pressure other actors directly or indirectly with the purpose of affecting their behaviour. The influence of an actor (A) on another actor (C), is the sum of the direct and indirect influences of actor A on actor C.

The quantification of mutual influences can be characterised by a rectangular matrix. Cells of matrix – by definition – reflect the intensity of influence of an actor in a row on an actor in a column (Bendahan et al., 2004). The intensity of direct influence of one actor on another was measured on a 0-4 scale, from no influence to absolute influence, determining the existence of the respective actor. The matrix of direct and indirect influences (MIDI [1]) can be quantified for each pair of actors as a sum of direct and indirect influences.

$$MIDI_{a,b} = MID_{a,b} + \sum_{c} (\min (MID_{a,c}, MID_{c,b})) \quad [1]$$

In this way of each and every actor can be determined the vector in influences (I_a) and dependences (D_a) by equations [2] and [3].

$$I_a = \sum_{b} (MIDI_{a,b}) - MIDI_{a,a} \quad [2]$$

$$D_a = \sum_{b} (MIDI_{b,a}) - MIDI_{a,a} \quad [3]$$

Based on these indicators a normalised value can be determined for each actor. [4].

$$r_a = \left(\frac{(I_a - MIDI_{a,a})}{\sum_{a} (I_a)} \right) \cdot \left(\frac{I_a}{(I_a + D_a)} \right) \quad [4]$$

Using the r_a vector one can define the matrix of influence-possibilities of each actor for different issues [5].

The importance of different goals from the point of view of each actor has been expressed by the Matrix of Actor-Object (MAO). In this matrix the importance and attitudes of different goals from the point of view of different actors were quantified on a -4…+4 scale, where the -4 denoted the high importance and total negation of the given goal and the +4 denotes the high importance and total support.

$$3MAO_{a,i} = 2MAO_{a,i} \cdot r_a \quad [5]$$

The 3MAO matrix is the basis of most of the analyses proposed by method of analysis. Indeed, a number of important values are directly drawn from the 3MAO matrix. This is the case of the mobilization coefficient [6], showing how much the different actors are involved in the situation, but also of the agreement [7] and disagreement [8] coefficients, which indicate how controversial are the different issues.

$$Mob_a = \sum_i 3MAO_{a,i} \quad [6]$$

$$Ag_i = \sum_a (3MAO_{a,i}(3MAO_{a,i} > 0)) \quad [7]$$

$$Disag_i = \sum_a (3MAO_{a,i}(3MAO_{a,i} < 0)) \quad [8]$$

Furthermore, the 3MAO matrix is used to obtain the convergence matrix (3CAA [9]) and divergence matrix (3DAA [10]). For each pair of actors, these matrixes show how much they agree (respectively disagree) on salient and controlled issues.

$$3CAA_{a,b} = \frac{1}{2} \cdot \sum_i ((|3MAO_{a,i}| + |3MAO_{b,i}|) \cdot (3MAO_{a,i} \cdot 3MAO_{b,i} > 0)) \quad [9]$$

$$3CAA_{a,b} = \frac{1}{2} \cdot \sum_i ((|3MAO_{a,i}| + |3MAO_{b,i}|) \cdot (3MAO_{a,i} \cdot 3MAO_{b,i} < 0)) \quad [10]$$

Finally, the ambivalence coefficient [11] can be calculated for each actor, giving an indication of their expected stability in their potential alliances.

$$3EQi = 1 - \left[\frac{\left(\sum_k \| 3CAAi,k| - |3DAAi,k \| \right)}{\left(\sum_k \| 3CAAi,k| + |3DAAi,k \| \right)} \right] \quad [11]$$

The basic data for analysis have been estimated by expert interviews. In the framework of our research we have conducted a series of deep-interviews in two cycles with nineteen specialists working in full-or part-time jobs in higher education sector. Nine of them worked in Budapest and the other ten in other cities. Six respondents hold the doctor of sciences title (this is a specific title for high-level scientific activity). Their institutions embraced practically whole range of Hungarian agricultural higher education.

The determination of coefficients in the two input-matrices followed the logic of the Delphi-method. The experts estimated the coefficients in two rounds. After the first round, they have been provided with an anonymous summary of the results. Participants were encouraged to revise their earlier answers in the light of the replies of other members of the group. During this process the range of the answers decreased considerably and the group converged towards a compromise. The pre-final version was send to participants by e-mail, and the last version was accepted without further amendments.

3. Results

3.1. Key actors and their strategic goals

Governments

The overwhelming majority of higher education institutes are in state ownership. The state budget allocation is the main source of financing of education and research. That is why the state is a decisive player in education. In the opinion of the survey participants the most important goals of consecutive governments in higher education were as follows:

- Increasing the efficiency of higher education. Higher education has been seen as the main tool for modernisation and upgrading of the competitiveness of Hungarian economy, but – as we will see – the practical realisation of well-sounding political declarations have run into difficulties.
- Promotion of concentration of higher education institutes. This can be explained by two arguments. On one hand, it was hoped for a reduction of costs of education by exploiting the economics of scale effect. On the other hand, the governments tried to promote the integration of higher education institutes because this was a necessary precondition of the obtaining the long-term monetary credit for the modernisation of the higher education system. Later on, the Hungarian government did not accept this credit.
- Increasing of the practice-orientation of university research. On the one hand, this was considered for increasing of competitiveness. On the other hand, the income generated by this activity was supported to ease the burden of financing of higher education by the state budget.
- Harmonisation of structure and qualification level of young graduates with the demands of labour market. Of course, in different government programmes this was the priority, but in practice it should be taken into consideration that the horizon of governmental planning was in most cases focussing on the parliamentary cycle and the tasks, bearing their fruits over a longer period, were of lesser important in the operative activity of government.
- Decreasing of the slack of workforce on labour market. As a consequence of the decreasing level of education in professional training schools (secondary technical schools) and the relatively high share of secondary schools of general education (gymnasiums), the labour market is full of young people having no qualifications. That is why an important goal of governments is to decrease this pressure and reduce the number of unemployed. Of course, in the long term these efforts could offer additional benefits for participants in education.
- Creation and maintenance of a relatively stable political atmosphere among the co-workers of institutes. Under the conditions of lack of financial resources the most important means of this was the introduction of a centralised wage tariff system and the provision of public employee status practically for every employee of institutes, from manual workers up to professors. This system offered a modest but predictable wage with a high degree of job security. On other words, before a selection of workers of higher education, a system was introduced, par excellent contradictory to the qualify improvement efforts and differentiation on based on the scientific and/or pedagogic performance.

Regional municipal organisations

The regional-level municipalities promoted the establishment of regional colleges or universities, because this seemed for them a favourable way for increasing the importance and the prestige of the region, involving new resources, increasing the number of qualified intelligentsia in the region and decreasing the number of young, unemployed persons. The establishment of new higher education institutes in a region, or the defence of the independence of an existing college or university was an aim which was able to forge an alliance even between parties having totally different political values. The overwhelming majority of Members of Parliament elected in the region did not dare to go against the public will at local level.

The universities and colleges

Under conditions of rapid social and economic changes the majority of universities have been not able to formulate any long term strategy, because the scientific elite of these institutions has no experience in this field. At the same time there was an increasing pressure on these institutions to increase their income by any means. The most important possibility for this was the so-called per capita payment for students from the state budget. It was a natural reaction from the institutes to offer a lot of new, well – sounding new qualifications (e.g. communication, media, environmental management, marketing), often without a sound study of the labour-market demand.

Students and their families

Until the 1990s, as a consequence of the relative closeness of the higher education sector, "the diploma" had an extremely high social prestige. Universities and colleges enjoyed a high reputation among the public. After the increasing of possibilities to get a college or a university degree, the majority of parents suggested to their children to obtain a higher qualification because "this will certify that you have an above-average qualification, you were able to fulfil the requirements of a college or university, and we will see the other things later on…". Under these conditions, to get a diploma became a new fashion among the younger generations, often without a real motivation to learn and not considering the demand from the labour market. At the same time, the problems created by the repaid expansion in the number of students are a general phenomenon all over the world and cannot be considered as a specific feature of former socialist states. This question has been extensively investigated in last the three decades in developed states, but even these states have not been able to formulate an adequate response (Scott, 1995).

A considerable number of students try to get a relatively general qualification. This means that there is an increasing popularity of degrees in communication, economics and liberal arts. The popularity of agricultural faculties has been decreased considerably by other factors, too. The most important of these are as follows: (1) rather unfavourable image of agriculture (e.g. crises in different sectors, shrinking production); (2) hardship of the agricultural producers' life (e.g. lack of free time in animal husbandry, high risk of production, e.g. financial, criminal, market, natural, threats); (3) decreasing interest in natural sciences in secondary education.

A much thinner layer of university students (following mainly the value-patterns of their families) tried to maximise his/her knowledge during the years in higher education. It is worth highlighting that in the opinion of every participant of our interviews the number of these students has drastically decreased during the last two decades. It is extremely important that in the opinion of participants of interviews there is a value-crisis in Hungary. The "traditional" values of the society (hard work, priority of family life) are losing their effect; the socialist era could not establish a long-lasting value system and the first two decades of "capitalism" have proved for the masses of society that the most important keys of success are the moral inhibitions. (Róna-Tass, 2002).

These days it is impossible to speak about "the students" in general. With considerable simplification it seems to be useful to divide the students into two groups: the so-called ambitious ones, who really want to achieve a sound and marketable knowledge and another group who would like to spend their time (and the money of their parents) as students in colleges or universities, waiting for some good possibility to get a job, temporary employment, and hoping to have a higher social status by having a BSc or MSc degree. A considerable part of them have part-time jobs demanding a relatively low qualification but offering the possibility of income generation. This income-generating activity-step by step gets an increasing importance in their value-system and time-allocation, and the college/university education holds only secondary importance in their mind.

The elite of the Hungarian science and education

The organisational structure of Hungarian science and higher education mirrors a rather hierarchical scheme (e.g. there are eight categories of teachers in higher education institutes, from college teaching assistant to university professor). The structure of Hungarian science, offering numerous monopolistic positions of elite, is a highly debated issue.

Some critics of this system, inherited mostly from the socialist-years, have achieved international publicity and attention (Schiermeier, 2006). During the troubled years of transition the elite of Hungarian science (professors, scientists having the Doctor of Sciences title (their number is approximately 2600, average age: 66 years; members of Hungarian Academy of Sciences, approximately 370 members, average age: 71 years) tried to form a circumstance where they could profit from their above-average social capital and scientific background. This was promoted by the fact that the establishment of new faculties were linked to the presence of professors. This offered a favourable possibility for this elite to get 2-4 (in some cases even more) positions at different universities and colleges in last decade. Of course, this elite tried to create for itself a quasi-monopolistic position, minimising the possibilities of competition. To achieve this, the keeping up of the above-mentioned soviet-type two-tier system of scientific qualification was an excellent tool.

At the same time one should note that among the younger generations of Hungarian scientists there has not been enough ambition to achieve higher scientific degrees and worldwide recognised results in research, because other activities (e.g. part-time entrepreneurial activity) offer much more obvious short-term advances than the scientific career.

The "average teachers"

This term embraces an extremely heterogeneous group of college and university teachers. With some simplification, they are the teachers who cannot be considered as the elite of scientific life, from PhD students to the elder associate professors. In most cases the most important aim of these people is to get a "rather quiet" academic status (As some respondents formulated: the majority of ambitious, dynamic, younger Hungarian scientists are soon in the business sphere or at foreign universities. It should be noted, that during the last twenty years the Hungarian agricultural faculties have not been able to attract the best students from secondary schools.). According to current Hungarian regulations the dismissal of an associate professor is an extremely difficult process. For more ambitious teachers the most important way to achieve success in academic life is the production of high quality scientific papers. In the evaluation of teacher's activity the efficiency of pedagogical work, teaching quality or practice–related activity have a rather low (if any) importance.

Actors of the labour market

With some simplification, the actors of labour market can be divided into two groups: the state- or municipally owned ("public institutions" in the broadest sense of the word) socio-economic institutions, and the competitive sector. In years of socialism, the role of the state embraced every part of the socio-economic life. Privatisation and the decreasing of the economic role of the state, re-structuring of the public sector (e.g. reform of public education, health-care system and armed forces) caused a considerable decrease in labour-demand in the public sector. Of course, under conditions of rapid, often contradictory changes, these institutions had neither energy nor ambitions for long-term human resource planning, and articulation of their demands for higher education sphere.

The business sector comprises a wide range of economic entities. The most important actors of the Hungarian economy are the filials of the multinational firms, giving approximately 39% of the GDP, and 87% of export value (HCSO, 2007). The most important parts are the multinational enterprises. The majority of these firms have their own training systems, which is why they do not want to participate in a pro-active way in the modernisation of higher education. In most cases, these realise their R+D activity in their home country, but there are 38 multinational firms which have research and development laboratories in Hungary. The R+D activity of the firms is below the international average even in innovation-intensive branches. For example the share of R+D costs in revenue in average in the European pharmaceutical industry is 14,2%, in Hungary it is 9.1 % (Vas, 2007).

Innovation in small and medium sized enterprises in most cases only a secondary importance. In the opinion of respondents, they are reluctant to deal with and invest in research-intensive activities, when the return of investments is much higher in other spheres of the economy e.g. in the service sector, trade, entertainment, and in general in searching for the loopholes in regulations. A good example of this statement is the food industry: the share of illegal food production and trade (without any tax payment) is in meat, poultry and wine industry about 30%, according to the official estimates. There seems to be no innovative product which is competitive with the short-term profitability of these activities, which is why their interest in considerable upgrading of higher education is rather low. The relatively low involvement of the business sector in higher education and research is highlighted by the fact that, although the per-capita R+D expenses are well below the EU average, the business sector finances only 38% of these expenses. The corresponding indicator for the EU-27 is 54% (Eurostat, 2001).

In summary, it can be stated that the possibilities of "demand-side" regulation of the higher education sector seems to be rather difficult because the level of interest in upgrading of this sector from the end-user side is weak.

3.2. Analysis of strategies by MACTOR method

Based on the considerations above, the set of key, relevant actors (Table 1), and the most important strategic goals of one or more of actors were determined (Table 2).

To concentrate the energy of participants on the key issues, only the most important problems have been taken into consideration in preparation of Tables 1 and 2. Even in this case it is obvious the relatively high number of actors and their strategic goals. This fact highlights the complexity of the problem.

Table 1

The relevant actors in Hungarian higher education system

Actor	Abbreviation
Government	GOV
Regional self –government (County-level)	REGIO
Scientific elite	PROFS
Higher education teaching staff	TEACHERS
Higher educational institutions (Universities and/or colleges)	INSTITUTES
Socio-economic entities of market of services of higher education	MARKET
Students with high level of professional aspiration	AMBSTUD
Students with low level of professional aspiration	LOWAMBST

Table 2

The relevant actors and key strategic goals in Hungarian higher education system

Strategic goal	Abbreviation
Keeping of the state budget allocated for higher education financing	BUDGET
Increasing of practice-oriented research and teaching activity of higher education institutes	PRACTICE
Introduction of measures aiming at incentives and forces for more efficient research and teaching	INCENT
Achieving a higher education qualification without considerable effort	EASIDIP
Decreasing the number of youth unemployment by increasing the number of higher education students	UNEMP
Stabilisation of workplaces in higher education	STATUSQ
Integration of entities, decreasing the number of higher education institutes	INTEGR
Establishment of regional higher education institutes	REGIONAL
Increasing of income of university budget	INCOME
Increasing the quality of teaching and research activity e.g. by increasing of demands for diplomas	HIGHQ

After these preliminary remarks the interpretation of the matrix of direct influences (Table 3) is straightforward.

Table 3

The matrix of direct influences of actors, measured on a 0-4 scale

	GOV	REGIO	PROFS	TEACHERS	HIGHEDU	MARKET	AMBSTUD	LOWAMBST
GOV	0	3	1	1	3	2	1	1
REGIO	2	0	1	1	1	1	0	0
PROFS	1	1	0	2	4	0	1	1
TEACHERS	1	0	1	0	2	0	1	1
HIGHEDU	1	1	2	4	0	0	1	1
MARKET	1	0	0	0	1	0	1	1
AMBSTUD	1	0	0	1	1	0	0	1
LOWAMBST	1	0	0	1	1	0	1	0

Some remarks:

- Formally, the Hungarian government respects the autonomy of higher education institutes, but by allocation of resources is able to influence considerably the position of institutes. This is an especially important factor, because the incomes of institutes in most cases are not sufficient for upgrading the infrastructure, which is why the government-level decisions are crucial.
- As a consequence of the election system, the regional interests can be rather efficiency articulated and carried out, often against the will of central political power. In socialist times, the geographical distribution of higher educational, research and development capacity was distributed in Hungary in a rather uneven way: the overwhelming majority of these capacities were in Budapest and some larger cities. It is an important question whether the distortions of this institutional system could be counter-balanced by scattering of resources of development for higher education. This question should and can be answered only by in-depth effect-studies, but until now such types of analysis were not conducted.
- The government and regions can influence the motivation and behaviour of students (e.g. by scholarships, but the efficiency of these systems are hard to estimate and goes beyond the scope of the current study); in practice, this type of influence is rather weak. The system of scholarships is a relatively weak incentive for better performance. The business sector is often reluctant to offer scholarships because in the opinion of managers there is a huge supply of young specialists and they have a favourable position to choose the most suitable students for their purposes. The larger, multinational firms often apply specific teaching programmes for young specialists. They often consider this as a more efficient way of human resource management than the support of higher education universities.
- The actors in the market have theoretically a considerable possibility to influence the higher education policy, but their participation in this process is rather formal. The SMEs have only rather limited resources to influence the activity of higher education institutes, their professional organisations are focussing on current economic problems. The professional organisations (e.g. Hungarian Society for Agronomic Sciences) are rather weak, and in some cases (e.g. Hungarian Scientific Society of Food Industry) are formal. The multinational enterprises focus on their own education system.
- The students' organisations are rather weak and inefficient. Theoretically, these organisations have a relatively wide scope of influence but in practice they utilise only very small parts of their competences.
- Members of teaching staff have different organisations and representation possibilities, but they do not focus on strategic questions, rather on day-to-day social problems of teachers. In the case of students' and teachers' organisations the diversity of interests of their members (e.g. ambitious and lesser ambitions students) can be considered as an important hindrance to consensus.

The interests-system of different actors are summarised in Table 4.

Table 4

The actors-interest relations, measured on a -4…+4 scale

	BUDGET	PRACTICE	INCENT	EASIDIP	UNEMP	STATUSQ	INTEGR	REGIONAL	INCOMEMAX	HIGHQ
GOV	4	4	3	-3	4	3	4	-2	4	2
REGIO	-2	1	0	-1	4	1	-4	4	0	1
PROFS	-2	1	-1	1	1	2	-4	4	3	-1
TEACHERS	-2	3	-2	1	1	4	-4	4	3	-1
HIGHEDU	-4	4	3	3	4	3	-3	4	4	2
MARKET	0	1	1	-1	-1	-1	0	0	0	1
AMBSTUD	0	1	1	-3	-1	-2	0	0	0	4
LOWAMBST	0	0	0	4	1	1	0	0	0	-2

Analysing the graph of influence and dependence of different actors (Figure 1), based on equation [1], it is clear that there are considerable differences in the possibility of bargaining power and ability to enforce interests between actors. The direct influence of market forces and students is extremely low. The scientific elite have a relatively favourable position: high influence, paired with relatively low dependence.

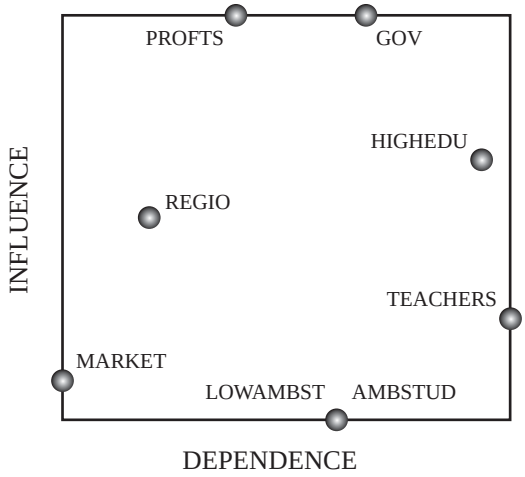

Figure 1: The influence-dependence relations of actors

Source: own calculation, base on Table 1

The government and the scientific elite have the highest level of influence (Figure 1). In the case of this elite the level of dependence is slightly lower than the government. This highlights the importance and the responsibility of this social group for higher education. At the same time, this fact highlights the importance of the Hungarian Academy of Sciences too.

The freedom of activity of higher education institutes is relatively low compared to the government. This is a consequence of balance of power, mainly in the case of distribution of resources. The heterogeneous group of higher education teachers is in a relatively dependent position. It can be considered as an important contradiction that the two, theoretically, key actors of the education process, the students and the market, have only rather limited possibilities of influence. This can be explained by the factors outlined above. Theoretically, the market-players could influence the activity of higher educational institutes in a more intense way but, as we see, they are engaged with running their daily business. The higher number of low-ambition students can counterbalance the (rather sporadic) efforts of ambitions ones.

The normalised value of influences (r_i), calculated on the basis of equation [4] highlights even more the rather contradictory situation (Figure 2).

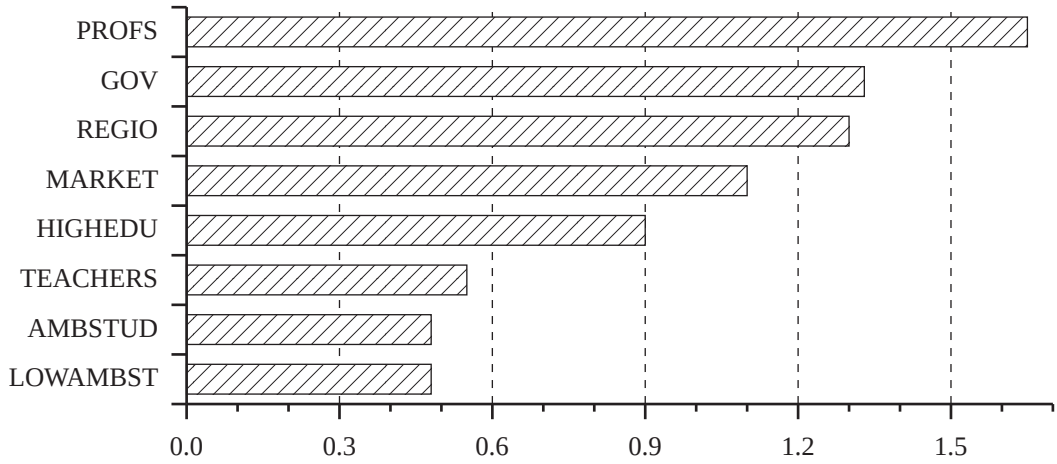

Figure 2: The normalised values of influence

Source: own calculations, based on Table 1

The problems of imbalance of power are obvious on this graph. That is why the forging of an alliance between the forces interested in changing of situation is a critical question. In this process the cooperation between forces who are really interested in development is a crucial question. The relatively low level of influence of ambitions students is an especially important problem. There is an increasing need for specific programmes aiming to offer better possibilities for talented students. This issue has gained in importance after the EU accession, because there is a real danger that the best students will be "lured" out of Hungary by high-quality and reputable Western-European universities. This tendency can be seen in the fact that in 2002 twenty research intensive European Universities founded the League of European Research Universities (LERU, www.leru.org). It is highly informative that there is no Central-or Eastern European Universities amongst these institutions. If the current processes continue, we have to forecast a division of labour between the "western" and "eastern" universities; the former will offer the education of the elite and the latter the input for secondary or tertiary cycles of higher education.

Analysing the relation of different actors to goals, weighted by the level of their influence offers a favourable possibility to see the most important focal points of discussion as well as the level of support of these efforts (Figure 3).

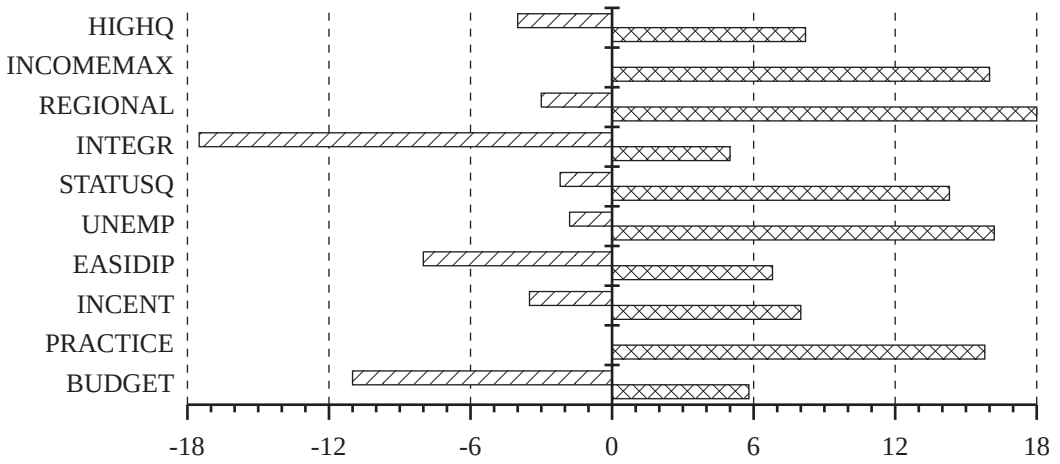

Figure 3: The acceptance and reluctance towards different goals.
Source: own calculations

Figure 3 offers at least five important lessons:

- The increasing of practice orientation of higher education is the only goal which can be considered as a generally accepted one. Acceptance of each other goal is highly controversial. At the same time, the acceptance of this strategic aim is not enough to change radically the activity of higher education institutes.
- There are considerable forces against the integration of institutes of higher education. Until the radical changes of the current relations of force there is only a limited possibility for real integration. The most probable scenario is the achievement of formal solutions, without real and efficient concentration of resources.
- The preservation of stability is a highly supported issue, being an important obstacle of any reform, aiming at increasing of efficiency of activity of institutes.
- The increasing of quality of higher education seems to be a question of secondary importance from the point of view of key policy-makers compared to another aims. At the same time, the upgrading of quality is a decisive question from the point of view of the future of Hungarian higher education (Mészáros and Szabó, 2009)
- The world-wide economic crisis will be a key factor from the point of view of the Hungarian higher education system. In the worst-case scenario, the energy of the political elite will be concentrated on crisis-management with limited attention to future consequences of short-term decisions. In the best-case scenario, the government will acknowledge the importance of the role of education in general and higher education in particular in socio-economic development, and further efforts, human and material resources will be allocated for development of agricultural higher education, because this system is a key factor of food safety and security, environmental management, rural development and (in an increasing way) of energy-security. In these turbulent and difficult times there lies a large responsibility on the shoulders of the Hungarian scientific and political elite with regard to which way of development to choose.

Analysing the ambivalence of actors, based on equation [11], it is clear that practically each important actor is rather ambivalent and it is a rather unfavourable fact that the lowest level of ambivalence can be observed in case of participants which are the most interested in preservation of current situation (Figure 4). That is why we cannot expect long-lasting stable alliances between the participants, because the level of acceptance of key goals is rather different between the different players.

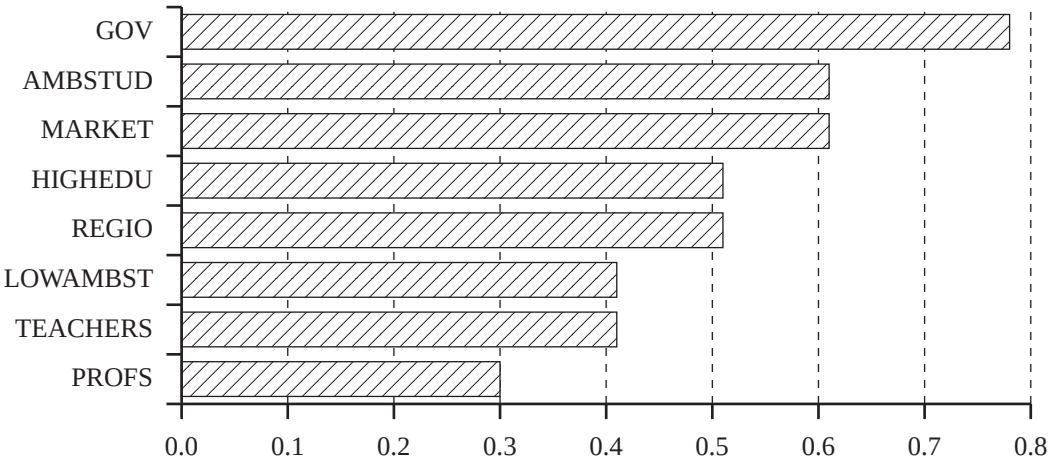

Figure 4: Level of ambivalence of actors

Source: own calculations

Summary

Based on the findings above, there is an intense temptation to develop an agenda for strategic development of Hungarian higher education system, but this goes well beyond the current article. We would like to emphasize only one thing, based on a proverb, attributed to Albert Einstein (http://en.wikiquote.org/wiki/Albert_Einstein#Einstein.27s_God_.281997.29): "We cannot solve problems by using the same kind of thinking we used when we created them". The modernisation of the higher education system is impossible without a much more intensive European integration of this system, based on the real demands of the market.

Acknowledgement

The research has been supported by K 62649 OTKA (National Scientific Research Foundation) grant.

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Brouwer, F., van Rheenen, T., Dhillion, S. S. and Elgersma, A. M. (eds.): Sustainable Land Management: Strategies to Cope with the Marginalisation of Agriculture[1]

Mészáros, Sándor[2]

A new book on sustainable agriculture was published by the Edward Elgar Publishing Company in 2008. The content of this multi-author work is based mainly from the EU research project with the acronym EUROLAN. Most of the 13 chapters are case studies focusing on some northern, southern, eastern and western EU Member States, plus Norway, whilst the United States and Japan are each covered by a chapter.

The subject matter of the book can be described in four **key terms,** namely: marginalisation of agriculture, sustainable land management, multifunctional agriculture, and social capital.

The term 'marginalisation' was first used at the end of the 1980s and, in European context, at the beginning of the 1990s. According to a definition in the book "marginalisation of land is a process of changing land management practices, driven by a combination of social, economic, political and environmental factors by which the use of land for the main land-dependent activities (agriculture, forestry, housing, tourism, local mining) ceases to be viable under an existing socio-economic structure" (p. 237). Marginalisation is therefore a socio-economic process decreasing the viability of agriculture. This process "might be invisible in many parts of Europe" (p. 6), though, at the same time, "marginalisation is an early warning for future abandonment of land" (p. 246). The book covers also to the factors of marginalisation; in some parts of Spain, for example, the population density is about 10 persons/sq.km, which is considered to be the minimum threshold for ensuring sustainability of county-level services.

A separate chapter deals with multifunctionality, and presents eight different meanings and interpretations thereof. Multifunctional agriculture is considered as a social concept that, beyond its primary function "also provides other functions such as the viability of rural areas, food security, cultural heritage and environmental benefits" (p. 2). In this respect, the most interesting thing for me – considering multifunctionality and sustainable development as separate categories – is the fact that the book links these two concepts. It is appropriate to cite one of the paragraphs of the last, recapitulatory chapter: "Multifunctionality could be a concept to understand sustainable development better. Multifunctionality strengthens our body of knowledge on sustainable development, making the linkages between the different components transparent. For example, farmers producing food and meanwhile also maintaining the landscape contribute to the economic, social and ecological dimensions of sustainable development." Of course, multifunctionality is also connected with the marginalisation of agriculture.

No separate chapter is devoted to the theoretical issues of sustainability, but chapter 2 discusses in detail its connection with the previous two concepts (pp. 48 and 52-53). In this respect, the last two chapters summing up land management practices are also worth mentioning; one of them also illustrates by means of a flow chart the dependence of the outcome of sustainability and marginalisation on land quality and correct land management (Figure 12.1, p. 229).

[1] Edward Elgar Publishing 2008. 252 p.

[2] emes@t-online.hu

Chapter 11, discussing social capital, also provides important theoretical and conceptual contributions; and includes three case studies. Putnam linked the term 'social capital' to civic organisations and voluntary associations and suggested the ratio of the number of such organisations to the population as its indicator. In his opinion, social capital may really serve rural development in "well-connected" societies. "It facilitates the utilisation of local resources both in terms of natural and human resources by the creation of social networks, trust and civicness" (p. 211). In the last section of the chapter, the authors illustrate the relationship between social capital and rural development with a lively metaphor: this relationship is the same as the connection between the software package with the hardware facilities; these latter being represented here by local employment, infrastructure and services.

The case studies firstly provide an overall picture of Europe. Chapter 9 includes also a recapitulatory study on the condition of the EU-15 countries, i.e. the more developed part of the EU, with the objective of forecasting the problems which can be expected between 2010 and 2020. The extent of risk of marginalisation is described by four indicators: the percentage of regions with a population density below 50 persons/sq.km, the percentage of farmers over 55 years of age, the percentage of farmers with incomes below half of the average for the national economy, and the rate of areas exposed to erosion in excess of 2 t/ha per year. The data detailed by regions are also displayed in four maps which clearly show the hot spots of the EU-15 countries. All four indices are between 20 and 30% as an average of the EU-15 countries. It has been established that there is no risk of marginalisation on two thirds of the territory of the EU-15 countries. However, a great risk exists in 5% of the territory, especially in Portugal, but also in Greece and in Italy, though to a smaller extent. The main hazard is constituted in these Mediterranean regions by the insufficient rainfall anticipated due to climate change, but, of course, there are also other risks of a social character. Also the important connection has been emphasised that the rates of land abandonment and depopulation is dependent on policy (support).

The case studies by countries have however demonstrated that marginalisation does not concern only the Mediterranean regions. Chapter 5 includes case studies in Norway and Finland; in these North European countries, the cold climate, the low population density and the large geographical distances constitute the specific causes of marginalisation; and the same factors also prevent pluriactivity. The authors suggest two economic strategies for farmers against marginalisation: increasing the farm size and growing of more productive, special plant varieties. Beyond this, the other option concerns the change to pluriactivity. As to the state (policy), subsidy represents the only tool for counteracting marginalisation; without support, the agriculture of these two countries is not competitive with the other economic sectors.

The situation is somewhat similar in the mountain regions, presented by Chapter 7 in a case study in the Alps region in Austria. Though there are differences in the demographic trends (the population is increasing in the Western Alps, while decreasing in the Eastern Alps), the marginalisation process is proceeding, albeit slowly (the livestock levels and the intensity of agricultural production are decreasing). Here, tourism and forestry may represent the main alternatives for farmers, but the agricultural (support) policy is not sufficient for arresting the unfavourable trends, but "integration programmes combining regional, environmental, socio-cultural and economic development will also have to play a major role in combating marginalisation and land abandonment"(p. 145).

Hungary is strongly represented in the volume in several respects. On the one hand, Alajos Fehér and Gábor Szabó are members of the team of 24 authors, the latter contributing to two chapters. On the other hand, the Czech Republic and Hungary represent in the book the ten countries which joined the EU in 2004, partly in chapter 6, discussing both countries, and partly in chapter 11,

devoted to social capital. As regards the situation in Hungary, there are of course similarities with the Czech Republic, for example the composition of land holdings by size is bipolar in both countries; however, at the same time, the proportion of mountain areas, especially that of high mountains, is greater in the Czech Republic. Though in Hungary, at present, only a few micro-regions and settlements are endangered by the risk of depopulation, the marginalisation process is nevertheless present, especially in some regions located in the north-eastern and south-western parts of the country, as illustrated by a map on p. 112. In Hungary there are several factors preventing the rationalisation of land management, some of them encumbering also the change to multifunctional agriculture. As the authors put it: "The poor development of human and social capital as well as of regional economies are crucial factors hampering agriculture from undertaking functions other than commodity production (for example environmental protection and nature conservation, tourism, landscape protection and so on)" (p. 111). Due to this reason: "The development of multifunctional agriculture in Hungary is still in its infancy" (p. 122). However, the authors make four proposals for improving the situation and suggest measures for the period between 2007 and 2013 (pp. 123 and 127 respectively).

The problem is contemplated with a different attitude in the United States of America than in the densely populated Europe. There, already three quarters of the population live in cities, occupying however barely 3% of the territory. And again, only a part of the rural population is engaged in agriculture; this is perhaps the reason why this chapter was entitled: "The clock is ticking for rural America". That is, one sign of marginalisation is the decrease of the agricultural area. This diminution amounted to 5% on average across the entire USA between 1990 and 2004, exceeding 10% only in three areas. Land abandonment does not constitute a serious concern, either, because areas suitable for recreation purposes (hunting, tourism, cottage and summer-house construction) are in great demand, thus land prices are high. Urbanisation and size increase of the farms are considered to constitute the two main factors of marginalisation. The latter is the principal reason leading to the decrease of the population employed in agriculture. Of course, several government programmes are in place in order to protect the agricultural and natural lands; these are discussed in a separate section of chapter 4. Regarding multifunctional agriculture, the author is of the opinion that it could be helpful in developing the relationships between agricultural and non-agricultural regions.

In Japan, farms are located on just 13% of the total area and even those – from European or American eyes – can be considered as micro-farms, with an average size of 1.8 ha. As in the US, marginalisation manifests itself also here in urbanisation and – in the provinces – in the increase of the proportion of the non-agricultural population. Land abandonment concerns by today about 10% of the cultivated area. Here, multifunctional agriculture has been involved in the agricultural legislation since 1999. New management concepts have been disseminated, one of them named Nature Management Farming, which is the more common (more current) category. This movement has started from the Netherlands and Great Britain in the 1980s and 1990s and refers to multifunctional farming laying great emphasis on nature protection. "Nature management farming can be defined as land management practices that support multifunctionality of land. Farming provides food and fibre, maintains agricultural landscapes, generates employment in rural areas, supports the bio-ecological system and biodiversity, and also controls the quality of water, air and soil, and animal welfare" (pp. 187-188). The other new term is High Nature Value Farming, where farmers not only cohabit with the wild plants and animals but accept also restrictions, as is usual in Europe in nature protection areas. By way of a concrete example, the book cites a wild-goose migration site, where ploughing is restricted in winter and pesticide use in the breeding season; however the price of the rice produced in such area covers the excess costs.

IN SUMMARY: A very interesting, accurate and useful new book has been published on the topic. **One of its principal merits** consists in the thorough clarification of the topic's basic concepts (marginalisation, sustainability, multifunctionality and social capital), covering all interrelations. **Its other advantage** lies in the image of Europe, gradually evolving in the reader's mind, revealing the condition and concerns of the continent's agriculture and rural areas and also the methods and tools for their remedies. **As its third virtue** it can be emphasised that it is far from being only a theoretical work of basic research character, but it applies a highly practical approach to the relevant problems, providing several ideas, methods and tools for the agricultural and rural policy makers. In addition to the authors' work, the efforts of the four editors – F. Brouwer and T. van Rheenen of the Netherlands and S. S. Dhillion and A. M. Elgersma of Norway – also merit special recognition. As a person participating both in eastern and western European collaborative research projects, I know by experience what a difficult task they had, from standardisation of the terminology to the preparation of scientific syntheses.

Of course, also questions emerge in the reader's mind when studying the book. In me, for example, the question emerged, to what extent phenomena and issues similar to marginalisation of agriculture or development of sustainable land management may be subject to European (EU) level eco-political management, and also to what extent such management is necessarily of national competence. The book convinced me that, due to the differences in the natural conditions, the population density and the degree of social development in each country, no uniform, supranational formula can be conceived in the foreseeable future. Readers may also ask to what extent the discussion of the topic may be considered as comprehensive and whether there are some issues that are dealt with to a lesser extent. I have felt two weaknesses: the one is the situation in eastern Europe (i.e. the recently accessed EU-10 countries) that, though not entirely neglected in the book, their greater representation could have been decidedly useful for a more complete European image. My other thought is that the theoretical questions of sustainability did not perhaps received sufficient attention in the book in accordance with their actual importance, with special regard to their connections with the likely climate changes. Although the book briefly addresses climate change, for example in the closing chapter (pp. 243-244) and also in the case studies here and there, all the same, a chapter discussing systematically the topic of sustainability would have been of benefit for the work.

Apart from the above-mentioned critical remarks, I can strongly recommend the book to agricultural economists, particularly researchers, professionals and PhD students dealing with the restricted issues of marginalisation, sustainable development, multifunctional agriculture or with the problems of the disadvantaged regions. However, the volume merits wider attention, including first of all teachers interested in environmental economics or in rural development, and, on the other side, agricultural experts interested in the life and problems of rural Europe. Last but not least, I also recommend this work to the attention of agricultural policy makers and decision makers having competence in respect of the issues discussed therein; they may then act upon the lessons and proposals of the book when formulating their measures, or if they would like simply to enhance their European outlook.

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   (Koester, 1988:12) indication of page
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    Books:

    Harris, S., Swinbank, A. and Wilkinson, G. (1983): **The Food and Farm policies of the European Community.** New York: Wiley.

Book chapters:

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11. **Acknowledgement.** Short appreciation of work of contributing persons in research, of reviewers or those who gave financial support for the research.

12. **Submission**. Manuscripts (PDF and DOC extensions/double spaced) should be sent via e-mail to the Editor-in-chief (aki@aki.gov.hu).

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