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Agriculture's strategic role

The economic, social and environmental dimensions of sustainable agriculture in Hungary

Abstract

The development of the Hungarian economy has always been heavily influenced by agriculture. The aim of this paper is to consider the most important problems of the period following the change of the regime in Hungary: dual ownership, the dominance of large-scale farms and the low employment rate in agriculture. The study examines the changes of Hungarian agriculture using the Three Pillar approach to sustainability.

1. Introduction

Before the change of the regime, the agricultural sector had a leading role in the Hungarian economy. In the 1950s the „green revolution” increased agriculture production, and the new techniques relied heavily on chemical use making agriculture reliant of petroleum products. In Hungarian agriculture, from the beginning of the 1960s, a technical, technological revolution began. Western production organisation systems were introduced and fit into the prevailing socialist ideological approaches in Hungary. Successful adaptation of the new technologies was urgent since the agricultural output were low as a result of forced collectivisation (disinterested members, lack of machinery and experienced managers). It became important to increase production with the aim of increasing the domestic food supply and to promote the export of agricultural and food industry products in order to earn convertible foreign currency.

Outputs increased rapidly in the 1960s and 1980s: by 1980 wheat yields increased from 1909.5 tonne/hectare to 4.7643 tonne/hectare, maize yealds increased from 2.0263 to 5.3242 tonne/hectare (FAO statistics). Agricultural production value nearly doubled between 1960/62 and 1983/85. Per capita cereal production in Hungary was the same as in the USA. Per capita meat production was only higher in the Netherlands. Agricultural products were exported not only to socialist countries but to convertible currency markets as well.

The aim of this paper is to consider the most important problems of the period following the change of the regime in Hungary, with special attention to dual ownership, the dominance of large-scale farms and the low employment rate in agriculture. In agriculture there is a Three Pillar approach to sustainability, all equally important to the integrity – if one pillar weakens, the entire model fails. The study aims at considering the development of Hungarian agriculture using the Three Pillar approach to sustainability in agriculture.

2. The criteria system of sustainable agriculture

There is an extensive literature about the concept of the **three-pillar integrated approach** of sustainable agriculture. The common point that the definitions highlight is the importance of the three dimensions of sustainability. In other words, **sustainable agriculture has environmental, social and economic dimensions** – and all three must be considered together.

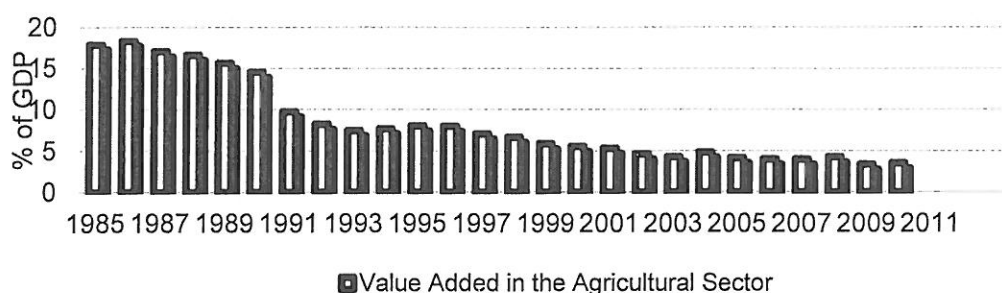
According to the Three Pillar approach, the economic dimension of agriculture should ensure the economic viability of farming: increased yields, an adequate net farm income to ensure an acceptable standard of living for the rural population, providing self sufficiency, contributing to public goods, etc. The social dimension of agriculture supports initiatives like reducing poverty and social equity, addresses rural community development and acknowledges socially just employment that provides adequate wages and working conditions. The environmental dimension has the objective of preserving natural resources, maintaining soil fertility, adapting to climate change, reducing chemical use, reducing waste, and maintaining biodiversity.

2.1. The economic dimension of sustainable agriculture in Hungary

It is a fact that despite the key factors that link agriculture to the macroeconomy are decreasing, agriculture has an important role in the economy. For instance, economic inactivity showed a dramatic increase, while the labour intensive agricultural activities declined after 1990. Earlier, agriculture played a prominent role in Hungary even when industry was much preferred in the socialist economic policy. After the transition, the change in production and in ownership coincided with narrowing domestic and foreign market opportunities, and besides „the blades of the scissors” in agriculture began to open, and there was a sharp drop in the profitability of production and a significant narrowing in the financial opportunities.

Hungary has an area of 9.3 Mio ha, of which around 80% is devoted to agriculture. The role of agriculture in the national economy is best characterised by the continuously shrinking share of agriculture in GDP (Figure 1.). In 1990 the share of agriculture in GDP was 12.5%, in 2004 it decreased to 5.9%, and in 2009 it was only 2.5% (World Bank, 213).

Figure 1. Value added in the agricultural sector in Hungary between 1985 and 2011



Source: World Bank, 2013

Land privatization in Hungary contributed to the decline of agriculture's contribution to national income. The economic and social changes of the 1990s have radically transformed the organizational and ownership structure of agriculture in Hungary. Cooperative land was purchased with compensation bonds (restitution) and private ownership of land was allowed. As a result of the compensation process, an extremely fragmented structure of land ownership emerged and a significant amount of land was allocated to non-farmers, thus the ownership and use of land became largely separated. The remaining agricultural cooperatives operated on land leased.

Agricultural land is characterized by **unreasonable fragmentation** and dispersion regarding both ownership and land use. The typical fragmentation of land ownership led to a dual farm structure. First, cooperatives and state farms were replaced by industrial farms that used 40% of the land, and there were about 30.000 family farms and about 180.000 small farms and about 700.000 households having 2.3 hectare of land. The new land owners either cultivated their own land or they rented pieces of land as private entrepreneurs. This structure was inefficient and uncompetitive. Large farms tried to adapt to the new circumstances but large scale operations ignored the specific needs of rural areas and are characterized by low labour intensity and had a negative effect on rural employment. Small-scale farms however, grow herbs and spices, Hungarian traditional products (Hungaricum), horticultural and medicinal plants and healthy products.

As a result of the privatisation and land selling for compensation bonds land ownership was unreasonably fragmented, and the privatisation of food industry took place rapidly. The amount of export products decreased dramatically due to the changes in ownership structure, the narrowing market opportunities and the decreasing amount of government subsidies (Varga, 2007). On the other hand, import increased due to foreign trade liberalisation, the European Union export subsidies, the selling of food processing plants to foreign companies and the appearance of food retail chains (Gulyás, 2009).

Twenty years after the transition agriculture's contribution to GDP is only 3-4%, while agribusiness' portion of GDP is 12-13%. The sector's foreign currency generating capacity makes agriculture a strategic sector (the export value is 60% higher than import value). This 1.6 ratio is important despite of the continuous decline in the past 20 years. An advantage of intensive production is that large farms are one of the largest sources of foreign currency for the country. Obtaining foreign currency has become a key factor in the government's economic policy.

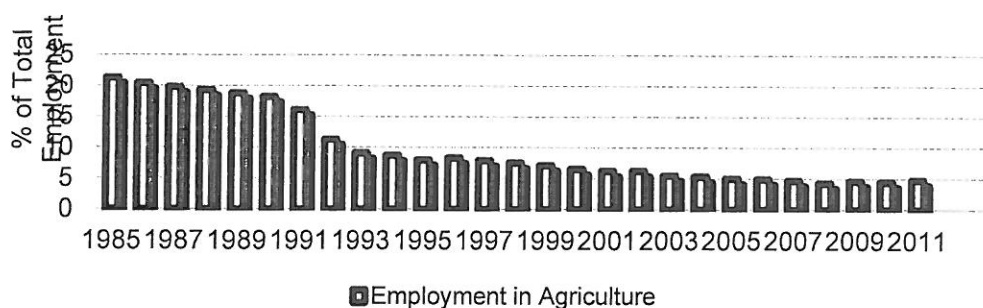
2.2. The social dimension of sustainable agriculture in Hungary: employment

In Hungary following the emergence of agricultural cooperatives, a gap between the traditional and the larger-scaled systems for the organization of production appeared. By the 1970s, the Taylorist principles of labour and production organisation, a system that was adopted by the communist leadership and the ideologists of the soviet regime as well, became the dominant practice in large scale farming in Hungary. With the aim of modernising agriculture, the socialist agricultural policy intended to increase productivity and to introduce modern technologies. However, in spite of the inevitable successes, crop yields, performance, economic efficiency and cost efficiency decreased.

Industrial scale production and increased discipline are inseparable. To ensure discipline, Taylorist techniques were applied, however, industrial scale agriculture offered full-time employment for far too many people that resulted in invisible unemployment. After the transition, unemployment became visible leading to severe economic and social tension in rural areas in Hungary. In the agricultural sector a considerably high number of people became constantly and inevitably inactive. Statistics clearly indicate that a significant growth in economic inactivity indicators and a steady decrease in the production of labour-intensive crops coincided. Private capital funded the production of less labour intensive crops, whereas vegetable and fruit production that provides more rural employment opportunities decreased dramatically.

After the transition, employment trends in the agricultural sector within total employment decreased significantly (see Figure 2.). Before the transition state farms and agricultural cooperatives offered employment to 90% of the people engaged in farming, and other activities like book keeping or maintenance.

Figure 2. Employment (% of total employment) in agriculture in Hungary between 1985 and 2011



source: World Bank, 2013

Invisible unemployment characterising the Socialist large scale agriculture became visible and during the first 10 years following the transition employment rate dropped by over 60%. Instead of migrating to more productive sectors, labour force moved to long-term inactivity since private capital funded the production of the less labour intensive crops while vegetable and fruit production that provides more rural employment opportunities decreased dramatically. The significant decrease in the labour intensive sectors has a negative impact on rural employment (fruit production declined by 50%, vegetable production by 80%) (Csendes, 2013). The continuous decline in the labour intensive sectors resulted in a significant drop in agricultural employment (Table 1).

Table 1. Active population and the number of people employed in agriculture (1989-2010)

Year	Number of employed people in whole economy (thousand)	Number of employed people (thousand people)	Number of unemployed people (thousand people)
1989	10000	1000	9000
1990	10000	1000	9000
1991	10000	1000	9000
1992	10000	1000	9000
1993	10000	1000	9000
1994	10000	1000	9000
1995	10000	1000	9000
1996	10000	1000	9000
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2005	10000	1000	9000
2006	10000	1000	9000
2007	10000	1000	9000
2008	10000	1000	9000
2009	10000	1000	9000
2010	10000	1000	9000

	people)		
1989	4760	837	23
1992	4028	460	660
2001	3868	240	345
2010	3788	172	445

Source: Csendes, 2013

Before the transition state farms and agricultural cooperatives offered employment to 90% of the people engaged in farming, and other activities like book keeping or maintenance, etc. Invisible unemployment characterising the Socialist large-scale agriculture became visible and during the first 10 years following the transition employment rate dropped by over 60%. Instead of migrating to more productive sectors, labour force moved to long-term inactivity since private capital funded the production of the less labour intensive crops while vegetable and fruit production that provides more rural employment opportunities decreased dramatically.

2.3. The environmental dimension of sustainable agriculture in Hungary

From the 1960s, industrial farming practices were harmful for the environment because of the excessive and incorrect use of chemicals. The key features of industrial-scale agriculture were described by Ángyán József (2001): According to the **principle of independence**, space (biological and social territory) focuses solely on the production and aims at concentration and centralization, at increasing size (farm, land, machinery). It transforms the environment to the needs of the specific tasks and activities, that is, space is transformed to the task and it does not seek the task that is suitable for the endowments of the space. In this respect, it artificially increases resource use.

In the development of agriculture "industrial production systems" which have been a pillar of the Hungarian agricultural model played a major role. Industrial-scale agriculture relies heavily on chemical inputs such as synthetic fertilizers and pesticides. Table 2 and 3 show the amount of chemical and energy use in agriculture before and after the change of the regime.

Table 2. Fertiliser consumption (tonnes total fertilisers) between 1965 and 2002

Year	Total fertiliser consumption (tonnes)
1965	357439
1970	837163
1975	1518272
1980	1399125
1985	1337972
1990	679944
1995	368145
2000	417024
2002	501321

Source: Faostat archive

Table 3. Energy used in agriculture and forestry as a % of total energy use

Year	1971	1975	1980	1985	1990	2000
Energy used, % of total energy	5.30	7.21	6.59	6.30	5.46	3.80

Source: Faostat archive

In the second half of the twentieth century, the development of Hungarian agriculture was characterized by the rapidly increasing amount of primarily imported direct (fuel) and indirect (fertilizer, pesticides, machinery, etc.) energy inputs. The share of materials of industrial origin was negligible in the early 1960s but by the mid-1980s it increased to almost 60 %. It was accompanied by a radical transformation of the farm structure, concentration and centralization, while farms size became larger thus diversity decreased. While in the 1960s the relatively cheap factors of production enhanced economic growth, an accumulation of international relations and market expansion, the global economic changes of the 1970s and 1980s made the problems clearly visible (Bekker 1995). Intensive, industrial-scale farming is energy- and material-intensive, therefore immediate consumption increased at a faster rate than gross production resulting in a decreasing ratio of net agricultural production (Klenczner 1982).

The green revolution technologies have led to increased productivity and the larger-scaled industrial agricultural systems became heavily dependent on external (imported) resources or inputs for materials. Industrial-style agriculture appeared: closed system, human controlled space, processes based on functional relationships, and the gradual replacement of the natural resources with artificial resources (Kaposi 2007).

Evidence indicates that there are long-term disadvantages of intensive monoculture and it requires an increase in the external costs. Moreover, these negative effects tend to become amplified over the long term. A number of "ecological diseases" have been associated with the intensification of production, including erosion, depletion of soil, the development and spread of herbicide-resistant weeds (e.g. *Phalaris canariensis*), sensitivity to pests, etc. In the 1970s in Hungary adopted the techniques of the cultivation of single crops that required increasing levels of chemical inputs.

Even in the 1990s Hungary was characterised by intensive monoculture production. European Union subsidies intensified the competitive differences between plant and animal production. Most of the subsidies were received by large industrial-style farms that damage the environment. Production costs are high since the loss of soil fertility reduces crop productivity and output. The cost of replacing soil nutrients through additional fertilisers is high, besides fertiliser prices are high. Monoculture production leads to a decline in biodiversity and is not sustainable.

Conclusions – possible solutions

One of the more significant findings to emerge from this study is that in Hungary agriculture plays a major role in providing stable rural employment and in ensuring food safety. The study highlighted the key issues and trends in Hungary twenty years after the change of the regime. The two most important issues were the disproportionate distribution of land ownership (the dominance of large-scale farms) and the decrease in agricultural employment.

The new Land Tenor Act passed in 2013 is meant to regulate the land market, to help small- and medium-size family farms stay independent, to reduce unemployment levels and to enhance production. Large-scale privately owned monoculture farms possesses 91.6% of arable lands in Hungary, therefore, the state only has indirect tools to change the ratio of small- and large-scale farms. Land in Hungary is owned by 660 landowner companies with an average of 4,000 hectare farm size, whereas the average size of the more than one million small farms is only 4.7 hectares.

Under the new Land Tenor Act traditional small-scale producers, self-employed farmers may hold a maximum of 50 hectares, individual entrepreneurs can hold 300 hectares, including the land already owned or leased, while foreign persons or companies are not allowed to own land. Companies and corporations are allowed to lease a maximum of 2,500 hectares. Preliminary authority approval of arable land transfers are implemented. Until the end of 2013, 121.000 hectares of state-owned land have been put to use and 3000 land lease contracts have been signed within the framework of the National Land Programme. Private persons, i.e. small scale producers, private entrepreneurs, family farmers and young farmers access to 75% of state land. The average area size is 17 hectares.

A breakout point for Hungarian agriculture could be the new Hungarian Fruit and Vegetable Sector Strategy of the Ministry of Rural Development which is awaiting adoption. The main objective is to reverse the negative trends of the recent decades, to increase fruit and vegetable production and to promote their sales. The main objective of the Strategy is for the country to produce 1 million tons more fruit and vegetables than the current level during the period 2014-2020 and to facilitate the preservation and creation of jobs in rural Hungary. The strategy aims at decreasing chemical use and encouraging environmental friendly, organic and integrated technologies. In fruit and vegetable production a priority is to apply integrated and environmentally friendly production technologies.

Agriculture is responsible for the viability of rural areas. Agriculture remains to be labor-intensive and provides the basis for rural employment. A long-term strategic objective of Hungarian agriculture – in line with the three dimensions of sustainability - is to contribute to economic growth, to sustainable management of natural resources and to the balanced territorial development of rural areas.

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