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## ARE WE READY FOR THE NEW CHALLENGES? THE CASE OF THE HUNGARIAN AGRICULTURE

### ABSTRACT

Agriculture still plays an important role in Hungary. During the former regime, the sector was forced to change to a socialist type of agriculture. After the transition, it resulted in a dual production system: a small number of large, professional farms are on the one side and a large number of small individual producers are on the other side.

The continuously changing world requires flexibility from the agricultural sector as well. Most notably producers need to face economic and environmental challenges. Taking into account the great dependency on the agricultural supports of the Common Agricultural Policy, agricultural producers need to be aware of any information regarding its changes. It is mostly a profitability issue for industrial farms, but a survival one for small producers.

**Key words:** agricultural production, farm structure, CAP.

**JEL Classification:** L11, Q15, Q18.

### 1. INTRODUCTION

The Hungarian agriculture went through serious changes in the last couple of decades. During the social era, Hungarian farmers were forced to join the Soviet type cooperatives (kolkhoz) and all the private land were taken away and became public property. The collectivization process was successful in Hungary, however, it left some room to the individual production in the frame of smallholder's farming called "háztáji". Farmers worked in the cooperative and on their small plot in parallel, so they were able to produce some raw materials for their own consumption, for their animals or to change/sell it. It contributed to a bit higher welfare of the farming community, therefore that system was tolerated.

After the change of regime, this production framework has been collapsed, as well as some of the former Eastern markets, especially the Soviet one. Land

compensation resulted in a fragmented land structure which can be a serious obstacle to agricultural production. Scattered land ownership did not provide the opportunity of modern farming in terms of technology or land size (Burger, 2001).

Moreover, it has caused the problem of the undivided common land, which has not been fully solved in the last almost 30 years. As a matter of larger production units, most of the survived cooperatives were owned either by the former leaders or the manager's extended family. This could be the major reason why comparative productivity studies could not find any differences between these units and other corporate farms not only in the Central European countries but also in the former Soviet countries (Gardner, Lerman, 2006).

In 2004, Hungary joined the European Union with 9 other, mostly Central and Eastern European countries. Land ownership was an important part of the negotiations as it plays a crucial role in every agricultural activity. Due to many reasons including the relatively low land prices and lack of capital, new member states were allowed to protect their land from foreign investors, either farmers or agricultural companies. This derogation provided the opportunity to keep away non-Hungarians or non-residents from the acquisition of agricultural land. Higher profits and these transitional measures provided better and long term opportunity for the Hungarian farmers to buy land (Biro, 2008).

The ten-year (7+3 years) moratorium expired on May 1, 2014. Due to the expiration of the 10-year derogation, Hungary adopted a new land law in 2013. According to its regulations, agricultural holdings are still not allowed to buy agricultural land leaving the tenure system untouched. It finetuned the already existing system of pre-emption rights and favoured local, individual, professional agricultural farmers.

The Common Agricultural Policy influenced Hungarian agriculture since the accession in 2004. The latest reform, called "Ciolos reform" after the Agriculture Commissioner in office, introduced in 2013 some new elements which have not been in use previously. One of its major elements was greening, linking 30% of the payments more to some environmental issues (crop diversification, maintaining permanent grassland and 5% ecological focus area).

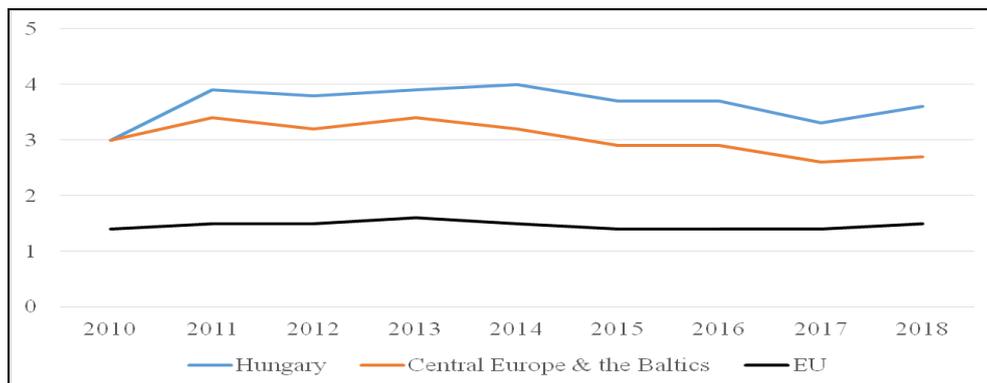
However, it was heavily criticized by its competing nation with cross-compliance (Matthews, 2013) or the lack of tools to objectively measure its environmental impacts (Alons, 2017). Besides greening, capping was the other important part of the reform. It contains mandatory degressivity meaning 5% reduction from direct support over 150000 euro/farm.

Moreover, it allows member states to apply a higher reduction. Hungary opted for the strictest option and increased it to 100% over 176000 euro/farm (capping). Eight other countries introduced this scheme, all the others applied only the mandatory 5% reduction (Matthews, 2018). This measure resulted in insignificant impact as only 109 million euros were taken away from the farms at EU level in 2015 and 2/3 of it was collected from Hungary (DG IP, 2016).

The support system, especially the amount and types of support, heavily effects the agricultural sector which starts from the change of sectoral output (crops versus livestock) to the profitability of the sector. Due to the relatively high reference yield (4.73 t/ha), Hungarian farmers received the highest amount of area payment (298 EUR/ha) among the Visegrad 4 countries (Mizik, 2017). In addition, almost 60% of the utilized agricultural area is arable land in Hungary (HNSO, 2019). These two factors caused a remarkable bias towards crop production at the expense of the livestock sector.

## 2. THE ROLE OF AGRICULTURE IN THE HUNGARIAN ECONOMY

The importance of agriculture can be measured in various ways. One of the most commonly used ones is agricultural value added as a share of Gross Domestic Product (GDP). Figure 1 gives an overview of the Hungarian values over the last 9 years together with the averages of the Central European and Baltic countries and the EU.



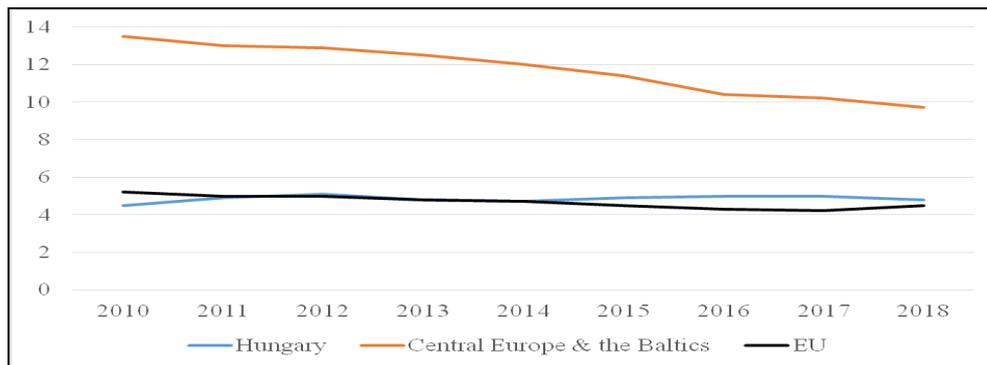
Source: Authors' composition based on the World Bank's WDI (2020) database.

Figure 1. Agricultural value added as a share of GDP (%), 2010–2018.

It is obvious from the figure above that agriculture is a more important sector in the new member states than in the old ones in terms of the contribution to the GDP. Countries joined the EU in 2004 or later are called new member states, often the EU-13 form is used for the same purpose. Old member states are referred to as EU-15. Moreover, it showed a slightly increasing trend at the beginning of the analyzed period, especially in Hungary. It can be seen on the widening gap between Hungary and the Central European and Baltic countries. By 2018, it was lower than 3% in the latter case but remained above it in Hungary. As a matter of

the European Union, it showed a very stable picture fluctuating around 1.5% and ended up at 1.5% in 2018.

Agricultural employment is also often used for measuring the importance of the agricultural sector. Figure 2 illustrates it for the same countries or country groups. Central Europe and the Baltics can be characterized by very high agricultural employment, despite the continuous decreasing trend during the analysed period.

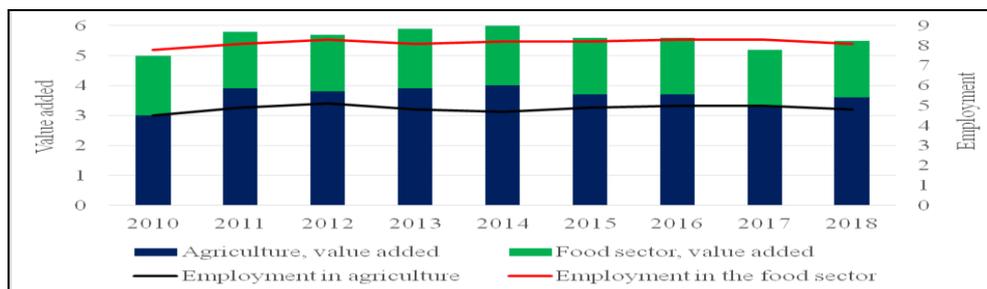


Source: Authors' composition based on the World Bank's WDI (2020) database.

Figure 2. Agricultural employment (%), 2010–2018.

The Hungarian and the EU averages were moving around 5% all the time, 4.5% the EU and 4.8% in Hungary in 2018. However, there is still observable a consecutive labour outflow from the agriculture, but mostly in the new members state and only at a small extent in the old member states.

As can be seen from the previous figures, agriculture itself plays an important role in Hungary, however taking into consideration the food sector as well, it becomes even larger. The so-called agribusiness sector contributes to the GDP by more than 5% (5.5% in 2018) and provides a job to more than 8% of the total workforce (Figure 3).



Source: Authors' composition based on the World Bank's WDI (2020) database.

Figure 3. Value added and employment in the Hungarian agribusiness sector (%), 2010–2018.

The distribution of employment among agriculture and food sector is in line with their value added, agriculture employs roughly 5% of total employees, while the share of the food sector is about 3%.

Besides these indicators, the importance of agriculture can be measured by its trade performance. It can be calculated by extracting import value from export value. In the case of a positive value (export is larger than import), the sector has a trade surplus. Hungary has traditionally large surplus, figure 4 shows its evolution in the 2010–2018 period.



Source: Authors' composition based on the WITS (2020) database.

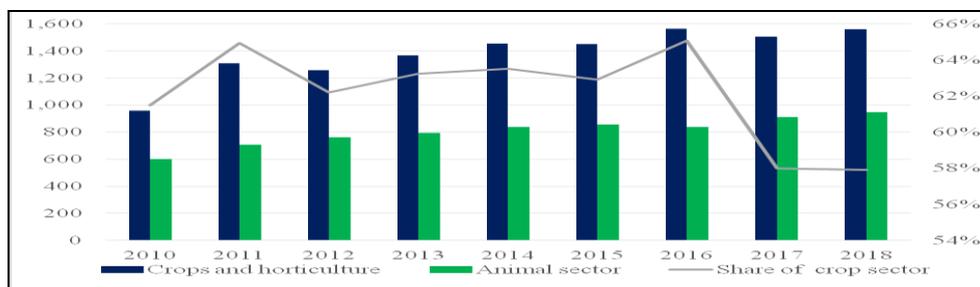
Figure 4. Hungarian agricultural trade (billion USD), 2010–2018.

Export, as well as import, increased significantly at the beginning of the period but started to fall in 2014. In 2016 both went up again, but the growth of the import was higher than that of the exports which resulted in the lowest trade surplus during the analyzed 8 years (2.4 billion USD). Import reached a record high value (6.9 billion USD) in 2018, however, it was offset by the more significant export growth and resulted in higher trade surplus (3.4 billion USD).

### 3. MAJOR CHARACTERISTICS OF THE HUNGARIAN AGRICULTURE

As it was already mentioned above, the Common Agricultural Policy has a significant impact even on the structure of the agricultural production. Relatively higher subsidies per production unit in hectare or animal (not mentioning the lower labour intensity or higher level of mechanization, in the crop sector favoured crop production at the expense of the animal husbandry. Figure 5 shows the distribution of agricultural production among these two sectors between 2010 and 2018.

As it can be seen from the figure above, agricultural production significantly increased during the analyzed period. The relatively dry weather caused some losses in the arable sector in 2012, while 2016 was an outstanding year which cannot be repeated in 2017 or 2018. The line measured on the secondary axis shows the sectoral distribution.



Source: Authors' composition based on the HNSO (2020) data.

Figure 5. Distribution of agricultural production (billion HUF), 2010–2018.

It was balanced between the sectors around 2000–2002 and just right after the EU accession crop production boomed and its share in the total agricultural production stabilized above 60% and went below that value only in the last two analyzed years. However, the increasing production value of the animal sector is a good indicator of the more efficient, as well as balanced agricultural production.

Sectoral changes can be measured by the datasets of three-year farm structure surveys (FSS) and agricultural census (2010). In Hungary one clear trend can be identified: the number of private holdings (mostly small, subsistence or semi-subsistence farms) is continuously decreasing. However, it is not the case for agricultural enterprises. Table 1 summarizes FSS and census data.

The number of private holdings has been more than halved in the analyzed period, went down from 959 thousand to 422 thousand. Meantime, number of agricultural enterprises started to increase around the accession, then decreased in the middle of this period and started to increase again in 2010, 2013 and 2016, especially in the latter year. It was definitely caused by the Ciolos reform and its degressivity and capping measures.

Table 1

Change of number and size of agricultural units

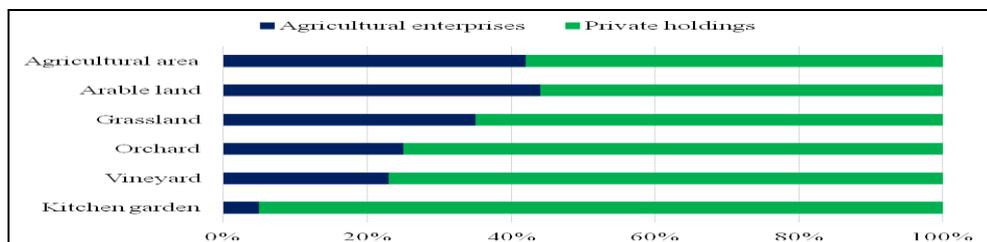
	2000	2003	2005	2007	2010	2013	2016
No. of private holdings	958 534	765 608	706 877	618 651	561 030	479 166	421 870
No. of agricultural enterprises	6 954	7 813	7 927	7 405	7 970	8 090	9 388
Land use, privates (ha)	2 614 327	2 357 689	2 355 326	2 262 824	2 418 537	2 467 616	2 724 350
Land use, enterprises (ha)	3 833 829	3 472 092	3 800 909	3 740 724	2 191 548	2 121 676	1 945 917
Average land size, privates (ha)	2.73	3.08	3.33	3.66	4.31	5.15	6.46
Average land size, enterprises (ha)	551.31	444.40	479.49	505.16	274.97	262.26	207.28
National average land size (ha)	6.68	7.54	8.61	9.59	8.10	9.42	10.83

Source: Authors' composition based on the HNSO (2020) data.

Due to the historical development of the Hungarian agriculture, a significant share of the total production is produced by relatively large farms. Although enterprises use less and less land (less than 2 million hectares in 2016 compared to the initial 3.8 million) but can be characterized by much higher average land size. Despite the growing land size of the private holdings, they used only 6.5 hectares in 2016, while the average of enterprises was more than 30 times higher. This difference was even greater previously, especially in 2010 (200 times higher). What was the impact of degressivity and capping? Both limited the amount of basic payment. From a financial point of view, large enterprises gave a rational answer as they started to dismember themselves into smaller production units in order to maximize the basic payment (Mizik, 2019).

Despite the relatively high average land size of the enterprises and the continuous increase of the farm size of the private holdings, the national average has just surpassed 10 hectares in 2016. Besides the average farm sizes, there are many other differences between enterprises and private holdings in the crop, as well as in the livestock sector. Figure 6 shows the breakdown of crop production by the type of farms.

It was already mentioned and can be seen in table 1, private holdings use roughly 60% of the total utilized agricultural area. Their share is a bit lower in case of arable land but higher for grassland, orchard, vineyard and especially kitchen garden. According to land law, private companies are not allowed to buy agricultural land, they can only rent it.



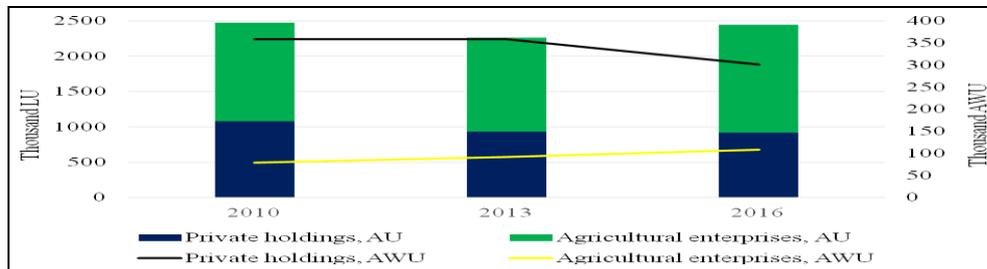
Source: Authors' composition based on the HNSO (2020) data.

Figure 6. Crop production by the type of farms, 2016.

Based on the figure above, they rent mostly arable land, followed by grassland, orchard, vineyard and almost no kitchen garden area. Arable area is often used to produce fodder for animal breeding. Figure 7 gives an overview of the total animal production measured in livestock unit (LU or LSU<sup>1</sup>) and workforce measured in annual workforce unit (AWU<sup>2</sup>) by the type of farms.

<sup>1</sup> Livestock unit is a reference unit of various species in order to aggregate them for comparisons (Eurostat – Livestock unit, 2020).

<sup>2</sup> The annual work unit is minimum 1800 working hours equivalent to 225 working days (8 h/day) and was developed to measure the uneven workload of the agricultural production (Eurostat – Annual work unit, 2020).

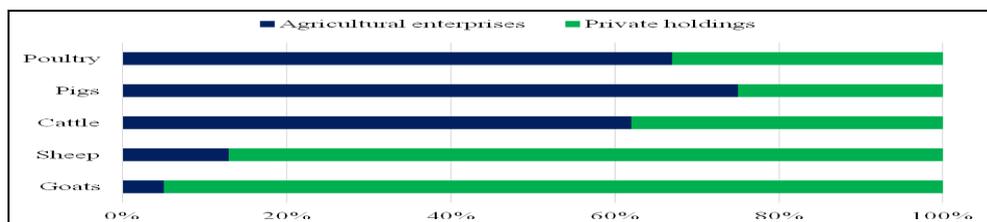


Source: Authors' composition based on the HNSO (2020) data.

Figure 7. Total animal production and workforce by the type of farms.

Animal production is dominated by agricultural enterprises. Their share in the total livestock unit was 57% in 2010 and it increased to 62% by 2016. On the other hand, most of the workers are employed by private holdings, however their share shows a continuous decreasing trend over the years. During the analyzed period, the opposite trend can be identified for the enterprises, workforce measured in AWU increased by more than one third (+37%) from 2010 to 2016. As a result of these opposite trends, the share of enterprise employees went up to 26% from the initial 18%. It tells a lot about farm size and efficiency, generally enterprises are larger in terms of LU in the livestock sector, therefore they use relatively fewer employees compared to the smaller private holdings.

Analyzing animal production by major species on farm type level, we can get further insight into these issues. Figure 8 contains the five major livestock animals by their relevance measured in livestock unit.

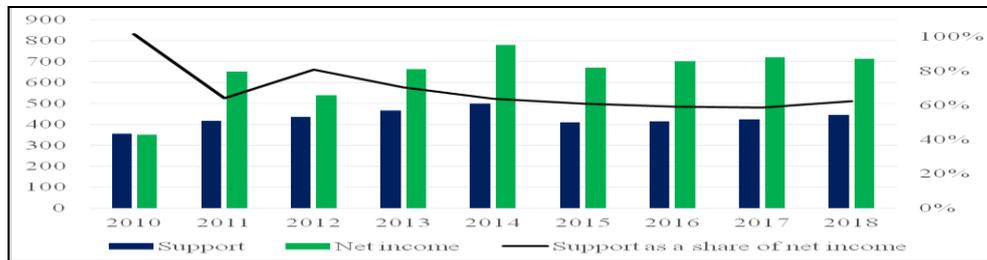


Source: Authors' composition based on the HNSO (2020) data.

Figure 8. Animal production by the type of farms, 2016.

The three major animal species (poultry, pig and cattle) are dominated by agricultural enterprises, their share is 62%, 75% and 67% respectively. Although private holdings have 87% and 95% in the sheep and goat sector, those are less significant animal subsectors.

As it was already mentioned earlier, agricultural policies, especially agricultural subsidies play a crucial role in agricultural production. It is specifically true for Hungary and it is demonstrated on Figure 9.



Source: Authors' composition based on the HNSO (2020) data.

Figure 9. Agricultural income and support<sup>3</sup> (billion HUF), 2010–2018.

Agricultural net income fluctuated over the analyzed years following a generally increasing trend. In favourable years, when weather conditions were good (weather plays an important role in production due to the 2/3 share of crop sector in the Hungarian agriculture), sectoral net income was higher and reached or even surpassed 700 billion HUF. On the other hand, agricultural support increased from 2010 to 2014, then dropped back by approximately 20% in 2014. Its main reason was the redistribution effect caused by the Ciolos reform (degressivity and capping). The secondary Y-axis shows the relationship of net income with agricultural support. It demonstrates the high dependency on (mostly) EU supports as the lowest share of support was 59% during the last 8 years with a peak in 2010 where it has surpassed even 100%.

#### 4. SUMMARY AND CONCLUSIONS

After the transition and land compensation, a relatively fragmented land structure has been formed limiting agricultural development on the small producers' level. The loss of the Eastern markets forced the farming community to seek for new markets. It was accelerated by the EU accession when Hungary became a part of the common market and customs union providing free trade with the other member states.

The land is a key issue in agricultural production and the new member states were allowed to protect their markets for a limited time period after the accession. Hungary applied the maximum length of protection with 7+3 years. It provided the opportunity of catching up with Western European land prices. This derogation has been expired in 2014. The new land law was designed to regulate the land market by keeping away non-resident and non-professional farmers from land acquisition.

Besides, agricultural policies, most notably the Common Agricultural Policy, formed the agricultural production as well as the farming structure. The latest,

<sup>3</sup> Support does not contain investment support.

so-called Ciolos reform introduced greening and basic payment along with obligatory degressivity and the opportunity of limiting support level (capping). Hungary was the most affected by the rigorous capping regulation due to its dual production system.

Evaluating the function of agriculture in the Hungarian economy, agriculture still plays a significant role based on its value added to the GDP and employment. It is even higher considering the agriculture and the food sector (agribusiness) together (more than 5% and 8% respectively). Another important indicator of the sector is international trade performance. Agriculture reached an enormous surplus in every year analyzed, its value varied between 2.9 and 4.7 billion USD:

However, production is heavily biased towards crops, it generates 2/3 of the total agricultural production. On the long run, it can cause huge problems as most of the crop sectors output is ideally the livestock sectors input. It results in much higher value-added and provides the opportunity of longer distance export compared to bulk products. Despite the decreasing area cultivated by enterprises, large farms still make a significant contribution to the sectoral output due mostly to their more efficient production based on high average land sizes (over 200 ha). A slow, but continuous land concentration can be identified, however, the national average is just above 10 ha which limits the performance of the small production units.

As a matter of crop and livestock sectors, it is clearly seen that individuals (private holdings) are crops oriented, while (large) enterprises have more balanced output and a significant share in the major livestock sectors (poultry, pig and cattle). It was demonstrated by the sectoral breakdown and large differences in livestock units and annual work unit. The latter one also revealed that enterprises use workforce more efficiently due to higher average livestock units compared to the private holdings.

One the greatest threat of the Hungarian agriculture comes from the high support dependency. There is only one thing that can be learnt from the next CAP reform: lower budget. It is fact, only its degree is questionable. According to the European Commission's proposal, it would be 4% at current prices meaning even higher cut at real prices (EC, 2018). Dealing with it is mostly a profitability issue for industrial farms, but a survival one for small producers. However, national governments will have greater influence on the budget allocation too, based on the greater subsidiarity of the member states (Blagoeva, Ignat, 2019).

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