

## Labour productivity in the Hungarian agriculture

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### Summary

This paper presents the situation of the agricultural labour employment and evaluates the agricultural labour productivity in Hungary. Since Hungary's EU accession, the share of agricultural employment in the total employed population has been stabilized at around 5% in the country. Due to low wages, low profit and low prestige, agricultural jobs are not attractive. The gross and net labour productivity gap between Hungary and the EU have been significant since the EU accession. The agricultural labour productivity of the Hungarian regions also shows a different picture. The labour productivity influences the cost, profitability and competitiveness of products. The advantage of the cheap labour force in Hungary's agriculture significantly decreased due to low labour productivity. There are several opportunities to increase the agricultural labour productivity such as the increase of labour force qualification, moving toward producing higher value added agri-food products, rejuvenation of population in agriculture and the improvement of the conditions of financing agriculture.

**Keywords:** agriculture, employment, gross value added, labour productivity, regions

### Introduction

Working people in the agriculture of European Union is different from a state to another regarding age structure, training level, productivity, income and living standard (Popescu, 2013). Compared to other branches, the agricultural sector has some special characteristics. Therefore it is difficult to know precisely how many people it employs.

About 70% of the agricultural labour workforce in the European Union is concentrated in only six countries: Poland, Romania, Italy, Spain, France and Germany. The family farms dominates in most EU Member States agriculture. Many farmers work in agriculture as a part-time activity and have other more or less important sources of income. Finally, the agriculture is characterized by seasonal labour peaks, where a great numbers of workers may be hired for relatively

short periods. About 11 million farms operated in the European Union in 2016. Since 2005, one quarter of agricultural jobs disappeared. Roughly, 22 million persons were regularly engaged in agricultural activities, many of whom were working part-time. Converted into full-time equivalents, this is between 8.7 and 9.2 million. In the European Union the share of agriculture in employment is 4.1%. One third of the agricultural labour force are women (European Commission, 2013).

### Employment in agriculture of Hungary

After change of regime the labour force in the Hungarian agriculture has dramatically decreased. The people working in agriculture declined by 38% between 1990 and 2016. The diminishing role of agriculture in the economy entailed the declining share in total employment. In 2010, the number of people working in agriculture was only 173 thousand.

However, the trend reversed owing to the economic crises which impacted on other economic sectors and as well as the simplification of the bureaucratic seasonal work permit process (Potori et al., 2014). Since 2011 the number of employed people increased in the agricultural sector and reached the 217 thousand in Hungary (in 2016). Hungary is on the 9<sup>th</sup> place in the European Union as regards the share of the population employed in agriculture in the working age population. The employment rate is generally higher for men than for women in the European Union. One of the lowest employment rate among women was found in Hungary in 2016 (51.3%). The great majority of the Hungarian women work in the service sector. The agriculture for men is more important in terms of providing employment. Nowadays, three times as many men are working in agriculture as women in Hungary (Table 1).

Table 1. *Employment in agriculture of Hungary (in thousand)*

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Employed persons	190,2	181,5	168,1	174,9	172,8	184,6	192,7	184,6	189,6	203,2	217,0
- Male	142,3	140,1	127,3	129,6	131,2	137,8	143,4	137,7	140,5	153,8	161,5
- Female	47,9	41,4	40,8	45,3	41,3	46,8	49,3	46,9	49,1	49,4	55,5
Unemployed persons*	9,9	10,8	12,1	10,4	14,1	13,7	13,6	12,8	10,2	10,1	8,7

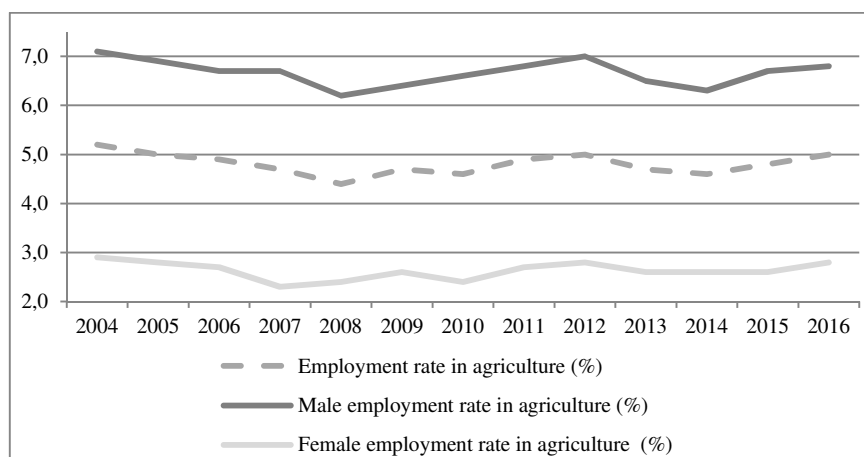
Source: Hungarian Statistical Office (2017), Note: \*who worked previously in agriculture.

The number of unemployed people in the agriculture increased until 2010 and then it started to decrease. In 2016 the number of job seekers were 8.7 thousand who worked in the agriculture previously. This population is low educated and highly connected with the rural areas and the agriculture. Most of them are middle-aged or older workers and

it is very difficult for them to find new jobs. Since EU accession the share of employment in agriculture in Hungary has been stabilized at around 5%.

The employment rate of men in agriculture moved above the average, but the employment rate of women moved below the average. Remarkable, that only 27 percent of the employed in agriculture are women in Hungary (Figure 1).

Figure 1. Share of employment in agriculture of Hungary (%)



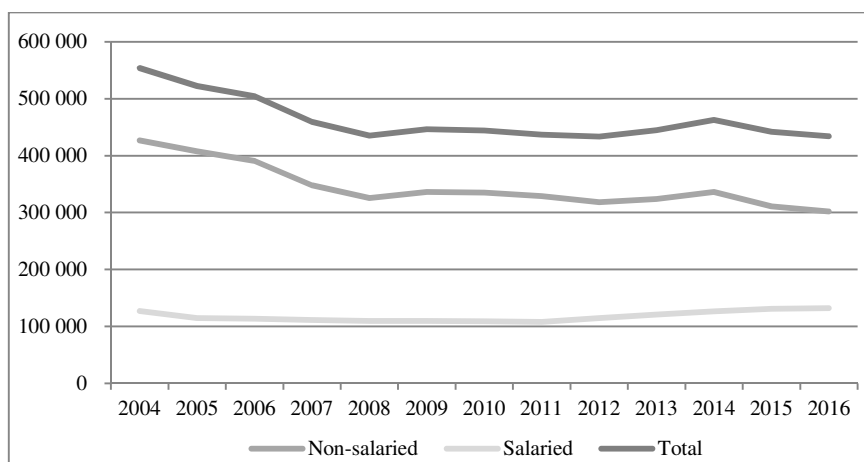
Source: constructed on Hungarian Statistical Office database 2017

In Hungary, the agricultural production is mostly based on family farms. Most of the Hungary's farms are relatively small, family-run holdings. Often, the family members provide labour. Agriculture is also characterised by seasonal labour peaks, with high numbers of workers hired for relatively short periods of time. There are a large number of people providing labour within agriculture, many of these will have their main employment elsewhere sometimes including the farm owner. (Hamza et al., 2017) The agricultural labour input is measured in AWU (annual work unit), which can be defined as full-time equivalent employment (corresponding to the number of full-time equivalent jobs) and represent the total number of days worked in a given year by the salaried and unsalaried.

The labour input was equivalent to the agricultural activities of 434 thousand workers in 2016. The total agricultural labour input of Hungary declined over the period 2004–2016 by 21.5 %. The non-salaried labour input went down by 29% compared to the base. Meanwhile, the salaried labour input increased by 4% between 2004 and 2016. The ratio of non-salaried labour input to salaried labour input fell by 32% (from the

previous ratio 3.35 to 2.29) during the examined period. It can be concluded that farmers substitute a part of the declining non-salaried labour by salaried input (Figure 2).

Figure 2. Evolution of agricultural labour input in Hungary (in AWU)



Source: constructed on Hungarian Statistical Office database 2017

Due to low wages, low profit and low prestige the agricultural job is not attractive. Aging agricultural labour force is a trend in the EU as well as in Hungary. The age structure of agricultural workers is worse than the average of other sectors. The average age of agricultural employees reached 48 years in 2016. The share of farmers in the younger age category (25–34 years old) is only 15%, but the share of farmers in the older age category (over 55 years old) is 59% in Hungary. The average age of agricultural farmers was 57 years in 2016.

### Material and methods

The data of analysis came from the database of Hungarian Statistical Office and European Commission Eurostat database. Productivity is a quantitative measure of the relationship between input and output. Labour productivity indicates how efficiently labour is used in production. Productivity can be commonly defined as a ratio of a volume measure of output to a measure of input use. Labour productivity is equal to the ratio between a volume measure of output (output of agricultural industry or gross value added) and a measure of input use (annual work unit) (Freeman, 2008). In the article we evaluate the labour productivity of agriculture by comparing the output of agricultural industry and the gross value added to the annual working unit.

## Results and discussion

The value of agricultural industry output in Hungary totalled 8.31 billion euro in 2016. Hungary represented 2.06% of the value of EU-28 agricultural production. In the same year, the gross added value (at basic price) of agriculture in Hungary was 3.45 billion euro. Hungary accounted for 2.08% of value of gross added value of agriculture in the total EU. However, the 434.3 thousand annual work units of agriculture in Hungary represented the 4.66% of the AWU of agriculture of EU-28 in 2016. At first glance, it seems that the labour force in Hungary is less efficient than the labour force in the EU-28.

The gross labour productivity gap is significant between Hungary and the EU. In 2016, the output of agricultural industry/AWU ratio was 19 132 euro in Hungary and 43 365 euro was in the EU. The gross labour productivity was 2.26 times higher in the European Union than in Hungary. In the case of net labour productivity the situation is similar. The gross value added/AWU ratio was 7944 euro in Hungary and 17 823 euro in the EU. In 2016 the net labour productivity was 2.24 times higher in the European Union than in Hungary (*Table 2*).

Table 2. *Labour productivity in agriculture of Hungary in 2016*

	Output of Agricultural Industry (million euro)	Gross Value Added (at basic price) (million euro)	AWU (thousand )	Output of Agricultural Industry/AWU (euro)	Gross Value Added (at basic price) (million euro)/AWU (thousand )
Hungary	8309	3450	434.3	19132	7944
EU-28 countries	403949	166023	9315	43365	17823
Hungary of EU-28 countries (%)	2.06	2.08	4.66	44.12	44.57

Source: own calculation on European Commission eurostat database (2017). Note: the output of agricultural industry consists of the output of agricultural products, agricultural services and of the goods and services produced in inseparable non-agricultural secondary activities (European Commission, 2017).

The input productivity influences the cost, profitability and competitiveness of products. The advantage of the cheap labour force in agriculture significantly decreased due to low labour productivity in Hungary. This is one of the reasons why only a few Hungarian agri-food products have been competitive on the domestic and foreign market. The level of labour productivity influences the entrepreneurial incomes as

well. The production factors of the agriculture are recompensated from gross value added. The lower the gross value added the lower the farmers' income as a residual. Among the V4 countries Hungary had the biggest amount of money given to the employers in order to support the creation of job opportunities (Vincúrová, 2017). Despite the great amount of money to support the job creation the labour productivity level is the lowest in the region and it has been stagnating since the end of the 2008 crisis.

### **Regional labour productivity in agriculture of Hungary**

In Hungary, the contribution of agriculture to the gross domestic product was 3.8% in the year 2016. The share of crop production is 67% of the agricultural goods output and the value of crop output was 4.9 billion euro. The share of animal production was 33% of the total agricultural goods output with 2.5 billion euro. Unfortunately, the ratio of crop output to animal output has been increasing for decades, but it was near to 50% in the 1990s. Crop production has recovered, but animal production has continued to decrease.

The characteristics of Hungarian regions are very different from several aspects. The share of agriculture in the regional GDP is significantly above the national average (3.8%) in Southern Great Plain (10.42%) and in Southern Transdanubia (9.08%). The agricultural character of these regions is stronger than other regions' in Hungary. The importance of agriculture in the Central Hungarian region is negligible; its contribution to the gross domestic product is only 0.59%. The regional employment data of agriculture show a very similar picture. The employment rate in agriculture is high in Southern Great Plain (11.32%) and in Southern Transdanubia (8.39%), but very low in Central Hungarian region (0.76%) (Table 3).

The agricultural labour productivity between the Hungarian regions is very different. The agricultural output/AWU ratio was 26 775 euro in Central Hungarian region in 2016. The gross labour productivity of this region's agriculture was 40% higher than the average labour productivity of the Hungary's agriculture. The labour force is more effective in Central Hungarian region due to favourable economic environment and excessive employment in agriculture of the rural regions. The labour productivity of agriculture expressed in agricultural output/AWU is high in Central Transdanubia (20 504 euro), Northern Great Plain (20 916 euro) and in Southern Transdanubia (19 904 euro). However, the labour productivity of agriculture is below the average level of Hungary in Northern Hungary (15 658 euro) and in Southern Great Plain (16 899

euro). The net agricultural labour productivity values of the Hungarian regions show similar proportion among the regions (Table 4).

Table 3. *Share of agriculture in GDP and share of population employed in agriculture in total employed population and by regions in 2016*

Variable	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
Share of agriculture in GDP	0.59	4.23	3.79	9.08	4.11	8.23	10.42	3.8
Share of employed in agriculture in total employed population	0.76	4.86	5.32	8.39	4.61	7.09	11.32	4.99

Source: own calculation on European Commission eurostat and Hungarian Central Statistical Office database (2017)

Table 4. *Labour productivity in agriculture of Hungary's regions in 2016*

	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Hungary
Output of Agricultural Industry (million euro)	573.3	971.9	930.6	1238	673.3	1819.7	2102.2	8309
Gross added value (million euro)	264.5	379	297.8	365.6	364.1	775.4	1003.6	3450
AWU (thousand)	21.4	47.4	48.6	62.2	43	87	124.4	434
Agricultural output/AWU	26775	20504	19148	19904	15658	20916	16899	19132
Gross added value/AWU	12360	7996	6128	5878	8467	8913	8068	7944

Source: own calculation based on European Commission Eurostat and Hungarian Central Statistical Office database (2017)

The question is how to increase the labour productivity in Hungary's agriculture. Nowadays, the modern economies are basically driven by knowledge and innovation. The agriculture also becomes a knowledge intensive sector. The qualified human capital is a very important factor of high agricultural productivity. In order to narrow the agricultural productivity gap between Hungary and the EU we have to focus on

education and increasing of qualification level. The higher the level of qualification and practical experience the more effective the application of innovative solutions, technologies (Baptista, 2012). Basic task is to improve the education level in the rural areas with special emphasis on college and university education with agricultural profile. The role of human capital is outstanding in producing high value added food products.

Producing high value added products could contribute to enhance of competitiveness of our agri-food products on domestic and foreign markets (Popescu, 2009). This is very important because the positive balance of foreign trade of Hungary's agriculture and food industry has an important role in the stabilisation of external trade balance of the Hungarian economy. In addition to, the European Union provides a lot of measures to help producers build on the high quality reputation of European products to sustain competitiveness and profitability.

Aging agricultural labour force is a trend in Hungary. Due to low wages, low profit the agricultural job is not attractive for the young. However, if we want to diminish the labour productivity lag the rejuvenation of population in agriculture is needed. Support of the EU for young farmers in agriculture promotes generational change in the labour force. This measure is binding on the Member States to which they can spend up to 2% of their annual financial framework. Hungary has allocated only 0.8 percent of its annual financial envelope to this support address due to the relatively low number of applicants in 2016.

Farmers' technical endowment is a indispensable to increase the productivity. The agricultural producers are financed from various sources beyond their own capital. Despite the various sources the farmers are facing financing problems. The Hungarian farmers can hardly get credit due to high risk and low profitability (Fogarasi et al., 2014). So that, the agriculture of Hungary is under-financed. Besides the EU sources, the government also should help the farmers to get credit. Of course, increasing of the agricultural labour productivity in Hungary is not the only task. New jobs must be created as well.

### Conclusions

One of the main objective of the Common Agricultural Policy of the European Union is to increase the agricultural productivity. The labour productivity influences the cost, profitability and competitiveness of products. On average, the labour productivity of agriculture is 2.25 times is higher in the EU compared to Hungary. The agricultural labour productivity between the Hungarian regions is very different. Despite the cheap labour force the comparative advantage of Hungary's agriculture



does not prevail due to low labour productivity. There are several opportunities to increase the agricultural labour productivity such as increase of labour force qualification, move toward producing higher value added agri-food products, rejuvenation of population in agriculture and improve the conditions of financing of agriculture.

However, the task is not only to improve the labour productivity of agriculture, but to create new jobs as well, regardless productivity. The production function of agriculture is to supply foods with reasonable prices, high quality and safety. The rural function of agriculture is to maintain the agricultural activities in rural areas where there are only few other possibilities of employment. These agricultural activities can contribute to the economic and social viability of rural areas and thus to balanced territorial development.

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