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# THE SITUATION OF AGRICULTURAL SECTOR IN HUNGARY – TRENDS AND TERRITORIAL ASPECTS<sup>1</sup>

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**Abstract:** Based on its geographical features, Hungary is basically an agricultural country. The proportion of the production area within the total area of the country is approximately 80% and the proportion of arable land is 60%. This makes our country one of the first in the European Union. In the EU, only Denmark and the United Kingdom have a higher proportion of agricultural land. Hungary accounts for only 3% of the total agricultural area of the EU-27 Member States, however, it plays a significant role in the production of certain products. (Harangi-Rákos, 2013)

In addition, the climate is favorable for agricultural production, which also strengthens the country's agricultural character. Throughout history, we have rightly been given the honorable name "pantry" (Marosi, 2009), which was true both within the Monarchy and Europe. In the socialist system the agricultural country became a so-called "industrial-agrarian" country due to the violent industrializations. Beyond industrial development, the service sector plays an important role in the national economy due to its technology-intensive nature. In addition, agricultural production is still significant in Hungary (Lakner et al. 2020). The agricultural sector is significantly involved in the production of the gross domestic product (Fróna-Kőmives 2019) and in the positive development of the export-import balance. During the 2008 world crisis, it was thanks to this sector, among other factors, that the recession that affected our country did not deepen. The domestic consumption is largely covered by domestically produced commodities (Csatáriné, 2019)

## OBJECTIVE, DATABASE, METHODOLOGY

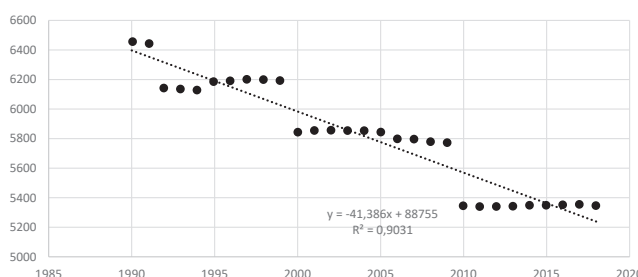
Based on some key aspects, the authors attempt, without wishing to be exhaustive, to summarize the changes that have taken place in the sector in the decades following the change of regime, based on key macroeconomic data, taking into account some regional differences as well. The authors mainly performed their analyzes by using the latest database of the KSH (Hungarian Central Statistical Office), and by relying on some simple, descriptive and inferential statistical methods.

## RESULTS

### Changes in agricultural land and in the production of major agricultural products in recent decades

The proportion of agricultural land is high compared to the total area of the country, but has been steadily declining in the years following the change of regime. According to the available data, it decreased from 6473.1 thousand hectares in 1990 to 5343.8 thousand hectares by 2018. This represents a decrease of nearly 1,130 thousand hectares (17.5%), (the annual average decrease was nearly 0.7%, ie slightly more than 41 thousand ha) (Figure 1).

Figure 1. Changes in the size of agricultural land in Hungary, thousand ha



Source: Edited by the authors based on the KSH STADAT database

Despite the decrease in the agricultural area, we can still say that Hungary has remained self-sufficient in the production of agricultural products. The level of mechanization has increased significantly, and this has resulted in a much more efficient production, agrotechnics developed, and the quality of propagating materials influencing the production of commodities has improved. All this can be said despite the fact that since the 1990s, the amount of crop and livestock products produced in some cases has been steadily declining.

In the last almost 30 years the wheat production has

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fallen from 6 million 200 tones to 5.26 million tones (15%), while maize production has increased by 78% and sugar beet production has fallen sharply to one-fifth since the change of regime. The latter data show an obvious correlation with the large-scale privatization of the Hungarian sugar industry (Bertalan, 2016; Molnár, 2016). Among the other crops, the change in the production of oilseeds stands out, with an increase of almost three and a half times. For the other crops (vegetables, grapes, fruits), production fell to almost two-thirds, with the exception of potato production, where the decline was similar to that of sugar beet (73% reduction).

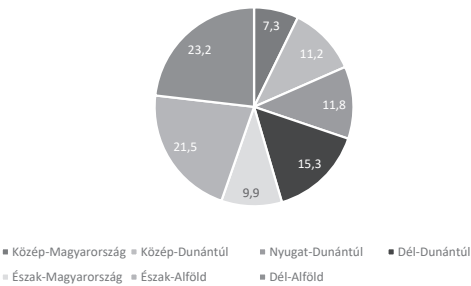
We can also see a decline in the livestock sectors. On one hand, the number of animals decreased for all major animal species: the number of cattle fell to 56%, the number of pigs to 35%, the number of sheep to 60% and the number of poultry to 80% compared to the 1990 base year.

At the same time, of course, the production of the livestock sectors (commodity stock) also decreased. In the case of cattle this decrease is 25%, in the case of slaughter pigs 55%, in the case of cow’s milk 32%, in the case of egg production 45%, and in the case of wool production 50%.

The index of agricultural production (crop and livestock production combined) fell by 2.3% over 28 years, but the two sectors moved in opposite directions. While we see an increase of almost 25% in crop production, the value of livestock production decreased by 40% at current prices. (KSH, Stadat 2020.)

Based on the territorial distribution of cultivation sectors, there are big differences between the regions. Based on the national distribution of arable land, not surprisingly almost half of the total arable land of the country (44.7%) is concentrated in the two Great Plain regions (Northern Great Plain and Southern Great Plain). (Figure 2).

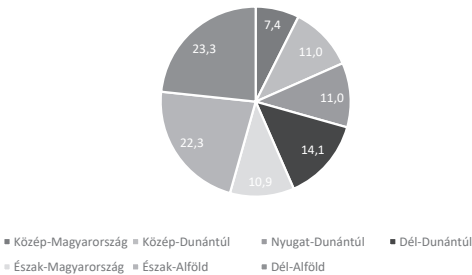
Figure 2. Regional distribution of arable land in Hungary, June 1, 2019,



Source: Calculated and edited by the authors based on the KSH STADAT database

In terms of agricultural area, we can actually observe very similar proportions as we saw in the distribution of arable land. In this respect, the Northern Great Plain and the Southern Great Plain regions represent almost half of the areas in question (45.6%) (Figure 3).

Figure 3. Regional distribution of arable land in Hungary, June 1, 2019,



Source: Calculated and edited by the authors based on the KSH STADAT database

Characteristics of the number of full time employees and total number of employees (full time employed and seasonal workers) in the agricultural sector

In the agricultural sector (by which we mean agriculture, forestry, fishing, and hunting together), the number and proportion of full time employees have changed since the change of regime. During the last ten years (2009 to 2019), the number of people living from the income received from this sector decreased by approximately 9,000 (Table 1).

The number and proportion of those employed full time in the agricultural sector in Hungary in the last decade Table 1.

| year | number of full time employees in the agricultural sector, thousand people | number of full time employees in the agricultural sector, % |
|------|---|---|
| 2009 | 82.8  | 3.11  |
| 2010 | 76.7  | 2.84  |
| 2011 | 74.7  | 2.78  |
| 2012 | 77.8  | 2.91  |
| 2013 | 75.3  | 2.79  |
| 2014 | 78.2  | 2.77  |
| 2015 | 78.9  | 2.73  |
| 2016 | 77.7  | 2.61  |
| 2017 | 78.1  | 2.58  |
| 2018 | 74.7  | 2.40  |
| 2019 | 73.3  | 2.30  |

Source: Edited by the authors based on the KSH STADAT database

In case of proportions, we can see similar trends. While in the early 1990s more than 20% of workers made a living from the agricultural sector, at present this proportion does not reach 3%. The decline in the number of employees was not entirely even (see the years starting from 2012), but we are still seeing a steady decline in its trend.

The total number of people employed in the sector is higher than this, as it also takes into account those who work here temporarily (eg working on a contract basis and seasonal). Thus, we can say that the situation in the sector is slightly better than if only full time employed are taken into account (Table 2).

*The total number and proportion of people working in the agricultural sector in Hungary in the last decade Table 2.*

| year | number of people working in the agricultural sector, thousand people | number of people working in the agricultural sector, % |
|------|--|--|
| 2009 | 174.9  | 4.7  |
| 2010 | 172.8  | 4.6  |
| 2011 | 184.6  | 4.9  |
| 2012 | 192.7  | 5.0  |
| 2013 | 184.6  | 4.7  |
| 2014 | 189.6  | 4.6  |
| 2015 | 203.2  | 4.8  |
| 2016 | 217.0  | 5.0  |
| 2017 | 220.0  | 5.0  |
| 2018 | 214.9  | 4.8  |
| 2019 | 210.7  | 4.7  |

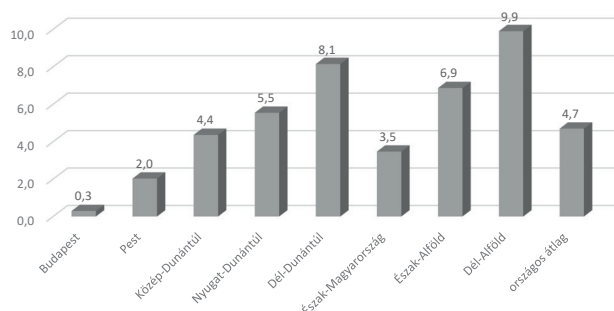
*Source: Calculated and edited by the authors based on the KSH STADAT database*

There are significant differences between different regions in terms of the number and proportion of agricultural workers. Based on these indicators (among others) conclusions can be drawn on the agricultural character of a region. In this respect the South Transdanubia and the Southern Great Plain regions stand out.

In the following, we show what ratios can be observed in this respect at the beginning (2009) and at the end (2019) of the study period.

At the beginning of the study period (2009), the national average for those working in agriculture was 4.7%. The regional data (Budapest was taken here separately from Pest County) differed significantly from this average. In addition to the above-mentioned regions (Southern Great Plain and Southern Transdanubia) (9.9 and 8.1%, respectively), the proportion of agricultural employees was significant in the Northern Great Plain region (6.9%). Budapest, Pest County and the Northern Hungary region are significantly below average (Figure 4).

**Figure 4. Changes in the share of agricultural workers in the Hungarian regions in 2009, %**

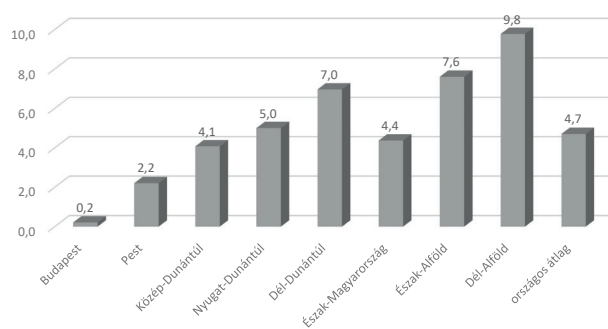


*Source: Calculated and edited by the authors based on the KSH STADAT database*

At the end of the study period (in 2019), the proportion of agricultural workers at the national level is the same as 10 years earlier. The proportions of the regions have been rearranged at some degree.

Thus, the share of Budapest and the Southern Great Plain region decreased slightly (by 0.1 percentage points), while the share of workers in Southern Transdanubia decreased significantly (by 1.2 percentage points). In contrast, we can observe a relatively significant increase in the regions of Northern Hungary and the Northern Great Plain (0.9 and 0.7 percentage points). In addition, there was a slight increase in Pest County, while a slight decrease was observed in Central Transdanubia and Western Transdanubia (Figure 5).

**Figure 5. Changes in the share of agricultural workers in the Hungarian regions in 2019, %**



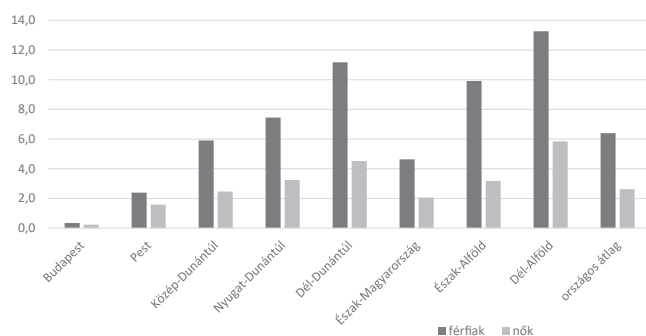
*Source: Calculated and edited by the authors based on the KSH STADAT database*

It is interesting to examine the gender differences for those working in agriculture. At the beginning of the study period, a much higher proportion of men worked in agriculture than women (see Figure 6). The difference is more than double in favor of the former (6.2% and 2.6%, respectively). This is obviously related to the fact that working in agriculture in general tends to require more physical power than in other sectors.

The above-average regions are the same as for the total number of workers, so the Southern Great Plain, the Northern Great Plain and the South Transdanubia regions stand out, and the Western Transdanubia data is just above the average. Thus, the average of women is lower than that of men, and in fact in all regions, the agricultural employment of women is lower than the national average of men (Figure 6).

Values of the women above its own average occur in the same regions as in the case of men (Southern Great Plain, Northern Great Plain, Southern Transdanubia and Western Transdanubia).

**Figure 6. Changes in the proportion of women and men in Hungary in different regions in 2009, %**



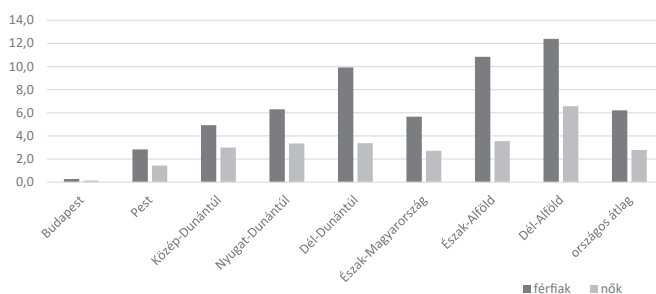
*Source: Calculated and edited by the authors based on the KSH STADAT database*

By the end of the period, national averages had changed very slightly, men's had decreased slightly, women's had increased slightly, but no significant change had taken place. There was some change in each region (Figure 7).

For men, there was an increase in the regions of Northern Hungary Northern Great Plain, and in Pest County, while in the other regions we observed a decrease, the largest in Southern Transdanubia.

Women also had the largest decrease in the South Transdanubia region, but we can see an increase everywhere outside the central region (Budapest and Pest County). The highest rate was registered by the Southern Great Plain (0.7% percentage points).

**Figure 7. Changes in the proportion of women and men in Hungary in different regions in 2019, %**



*Source: Calculated and edited by the authors based on the KSH STADAT database*

### Development of wages for full time employees in the agricultural sector

It is widely believed that those working in agriculture have a gross wage below the national average, although there might be significant differences between wages and income. The following table (Table 3) shows the development of gross wages in the agricultural sector over the last 10 years and the deviations from the national average. It should be noted that the data in the table come from enterprises with more than 5 employees, so they are slightly skewed upwards.

Wages observed in the sector remain significantly below the national average, although this gap has narrowed

**Changes of wages in the agricultural sector in Hungary in the last decade Table 3.**

| year | gross average wages in agriculture, Ft | national average, Ft | deviation from the national average, % |
|------|--|----------------------|--|
| 2009 | 137 101                                | 199 837              | -31.4                                  |
| 2010 | 143 861                                | 202 525              | -29.0                                  |
| 2011 | 153 301                                | 213 094              | -28.1                                  |
| 2012 | 164 136                                | 223 060              | -26.4                                  |
| 2013 | 171 679                                | 230 714              | -25.6                                  |
| 2014 | 180 251                                | 237 695              | -24.2                                  |
| 2015 | 189 136                                | 247 924              | -23.7                                  |
| 2016 | 204 385                                | 263 171              | -22.3                                  |
| 2017 | 230 638                                | 297 017              | -22.3                                  |
| 2018 | 255 664                                | 329 943              | -22.5                                  |
| 2019 | 293 207                                | 367 833              | -20.3                                  |

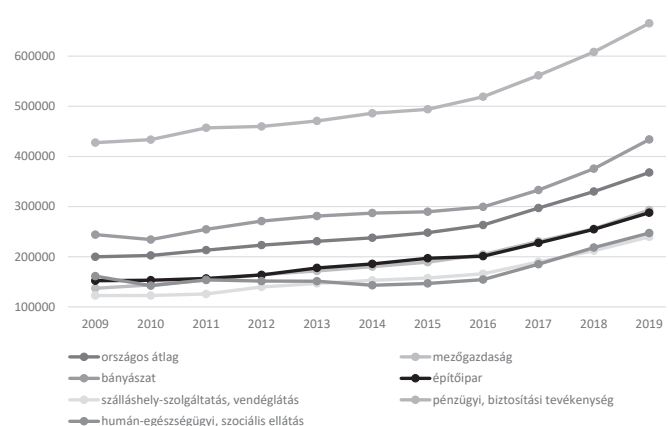
*Source: Calculated and edited by the authors based on the KSH STADAT database*

significantly since the beginning of the period, the gap of more than 30% by 2019 narrowing to just over 20%.

Taking into account all sectors, the 2019 data show that agriculture does not have the lowest gross wages. The lowest earnings were in the "human health and social care" sector, where the average wage did not reach HUF 250,000.

Within this, the "social care" sub-sector was the last with its average of HUF 175,000. Furthermore, the wages of those working in "construction" as well as in "accommodation and hospitality" activities also lagged behind in comparison with those working in the agricultural sector (Figure 8).

**Figure 8. Development of gross average wages in some domestic sectors, HUF**



*Source: Calculated and edited by the authors based on the KSH STADAT database*

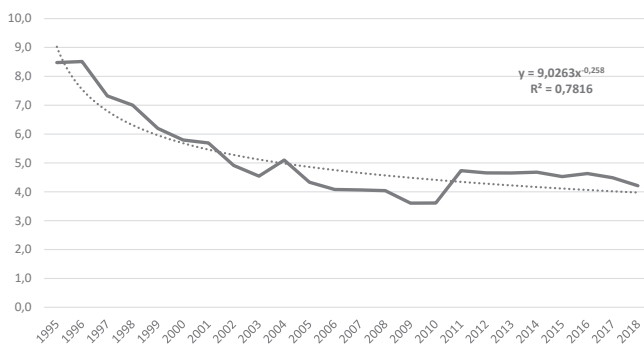
In each year of the period under review in terms of wages, the list-leading sector is "financial and insurance activity". The wages available here were almost double the national average in 2019 (exactly 1.8 times higher), and 2.3 times higher than the agricultural earnings. In addition to "agriculture", the data of the other primary branch of the national economy, "mining and quarrying" also show values exceeding the national average.



### Some characteristics and significance of the production in the agricultural sector

Although the importance of the agricultural sector in Hungary is great, its role in the production of gross value added (GVA) has been declining since the change of regime. While in 1995 its share in the GVA was 8.5%, by 2018 this rate was less than half (4.2%), dropping by 0.25% in average per year (Figure 9).

Figure 9. Share of agricultural sector in GDP, %



Source: Calculated and edited by the authors based on the KSH STADAT database

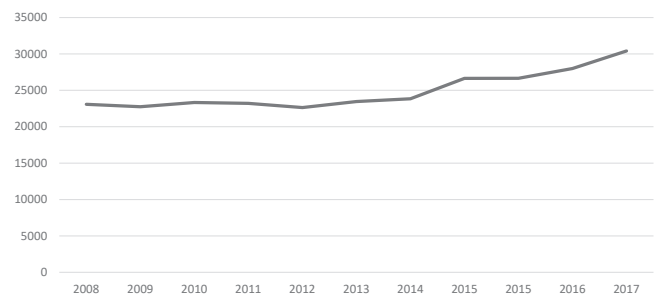
At the end of the period (2018), it ranks only 11th in the distribution between sectors and also lags significantly behind the performance of the leading sectors. The manufacturing industry is on the first place, with a share of 22.1%, ahead of the trade and repair of motor vehicles and motorcycles activities (11.0%). Sectors in the same weight as the agricultural sector were construction, transport and storage, information and communication, administrative

and support service activities, education, human health and social work activities.

### Number of enterprises operating in the domestic agricultural sector, in the different regions

The number of enterprises operating in the domestic agricultural sector has been growing steadily since 2008, reaching a total increase of 30% in 10 years. From 23 thousand (23 081) at the beginning of the period, their number increased to more than 30 thousand (30 408). In this regard, especially since 2014, there has been a noticeable increase, which can be seen in Figure 10.

Figure 10. Number of enterprises operating in the agricultural sector in Hungary



Source: Calculated and edited by the authors based on the KSH STADAT database

However, there are also big differences between the NUTS level 2 regions in Hungary in this respect. At the beginning of the period, in the eight regions (excepting Budapest and Pest county), the Southern and Northern Great Plain regions stood out with the highest share (19.8

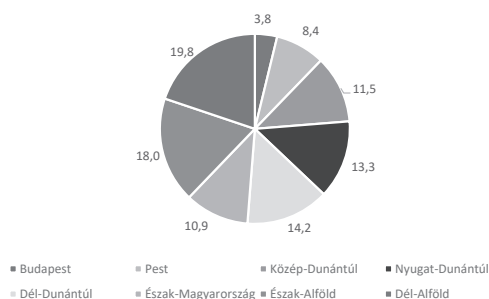
Share of different branches of the national economy in GDP, 2018 Table 4.

| Code | Economic activities  | distribution, % |
|------|--|-----------------|
| A    | Agriculture, forestry and fishing                                    | 4.2             |
| B    | Mining and quarrying   | 0.3             |
| C    | Manufacturing  | 22.1            |
| D    | Electricity, gas, steam and air conditioning supply                  | 1.5             |
| E    | Water supply; sewerage, waste management and remediation activities  | 0.9             |
| F    | Construction   | 5.3             |
| G    | Wholesale and retail trade; repair of motor vehicles and motorcycles | 11.0            |
| H    | Transportation and storage   | 6.1             |
| I    | Accommodation and food service activities                            | 1.9             |
| J    | Information and communication  | 5.0             |
| K    | Financial and insurance activities                                   | 3.5             |
| L    | Real estate activities   | 7.9             |
| M    | Professional, scientific and technical activities                    | 6.2             |
| N    | Administrative and support service activities                        | 4.0             |
| O    | Public administration and defence; compulsory social security        | 8.0             |
| P    | Education  | 4.5             |
| Q    | Human health and social work activities                              | 4.6             |
| R    | Arts, entertainment and recreation                                   | 1.5             |
| S    | Other service activities   | 1.4             |
| T    | Activities of households   | 0.0             |
|      | <b>Total gross value added</b>                                       | <b>100.0</b>    |

Source: Edited by the authors based on the KSH STADAT database

and 18.0 per cent, respectively) (see Figure 11). These regions are followed by South Transdanubia (14.2%) and West Transdanubia (13.3%). Naturally, Budapest (3.8%) and Pest County (8.4%) had the smallest share of enterprises engaged in agricultural activities.

**Figure 11. Distribution of enterprises operating in the agricultural sector in Hungary in 2008, %**



*Source: Calculated and edited by the authors based on the KSH STADAT database*

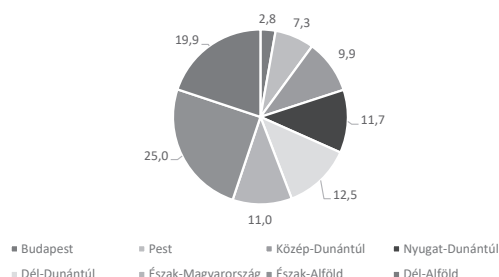
By the end of the study period, significant changes had occurred in some regions (Figure 12). The role of the already small share regions has further diminished. The share of agricultural enterprises registered in Budapest decreased from 3.5 percent to 2.8 percent (this means 848 enterprises in particular), as did the share in Pest County (from 8.4 per cent to 7.3 per cent). Even a larger decline was registered in the Central Transdanubia, Western Transdanubia and South Transdanubia regions (1.6; 1.7; 1.7 percentage points, respectively). In the regions of Northern Hungary and the Southern Great Plain, this ratio remained practically unchanged, but in the Northern Great Plain region the share of agricultural enterprises increased significantly (an increase of 7.0 percentage points). With this, the Northern Great Plain region took over the leading role in this respect. Of the total number of domestic agricultural enterprises, we found the largest proportion here, around 25 percent, which meant 6,050 such enterprises in 2017.

## SUMMARY OF RESULTS, CONCLUSIONS

The authors examined the situation of the Hungarian agricultural sector and the trends of the recent years. It was pointed out that the size of utilized agricultural area has decreased in recent decades and that the production of major agricultural products, including the crop and livestock sectors, has also declined somewhat, but this has not jeopardized the domestic consumption.

At the national level, the number and proportion of employees in the agricultural sector has been steadily declining in the recent decades. The sector is under double pressure: on the one hand, the aging workforce needs to be replaced, and on the other hand, seasonal jobs remain, where it is possible to solve the handwork-intensive tasks with casual labor (Ukrainian, Serbian, Romanian).

**Figure 12. Distribution of enterprises operating in the agricultural sector in Hungary in 2017, %**



*Source: Calculated and edited by the authors based on the KSH STADAT database*

There are significant regional differences behind the national average, with the Southern Great Plain being the most agricultural region in terms of employment. There are also significant differences between the sexes. The number of men employed in the sector is significantly higher than the number of women, and regional differences for both sexes are similar to national trends.

The wages of full-time employees in the agricultural sector lagged significantly behind the highest-wage domestic sectors and did not reach the national average, but improved somewhat during the study period. At the beginning of the period considered, this was still 30% behind, falling to 20%.

The sector's share of GDP was just over 4% in 2018 and this rate has been steadily declining in previous years. The number of enterprises operating in the agricultural sector, on the other hand, increased by 30%, but behind this trend we can observe significant regional differences.

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