

# VALUE-ADDED, NET INCOME AND EMPLOYMENT IN FARMS IN SLOVAKIA

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## Abstract

*The paper analyses the changes in productivity of farms in Slovakia over the period 2009-2015. Due to the structure of farms and dominance of large agricultural holdings in Slovakia, the production is based on commodities with low value added. Large farms often substitute labor with capital. Employment in Slovak agriculture has decreased significantly since 2004. We use the FADN methodology for Farm Income, employment and value added to compare the situation in EU member states with Slovakia. Out of V4 countries is the decrease in employment the highest in Slovakia, followed by Czech Republic, Poland and the smallest decrease in employment was recorded in Hungary. Labor input is one of the three main production factors followed by Land and Capital. Decrease in labor force input by the same level of production results in higher productivity. The value added is important as it creates value for society, has positive effect on job creation and business performance. The majority of utilized agricultural area UAA in Slovakia (75%) is cultivated by large farms – agricultural holdings – with 1200 ha per farm on average. Therefore, although subsidies in form of direct payments per hectare are lower than in old EU member states, the payment per farm is one of the biggest in EU. This negatively affects the motivation of farms in Slovakia to create value added and farms focus on production of commodities well suited for large farming. While the structure of farms in Slovakia differs from the EU-28, also the measures implemented through CAP result different in Slovakia. Farmers are not motivated to produce while the intensity of support is increasing.*

**Keyword:** Farm Income, Employment, Productivity of Farms

**JEL classification:** Q12, Q14

# 1 Introduction

World agriculture development objectives should take into account the irreplaceable function of agriculture in economic and social fields, pre-production facilities, environmental security of the population, development and protection of the landscape, ecological functions, stability of rural development and others.

Public support for agriculture should be based on objective valuation of social benefits of agriculture for society (public goods). In the opinion of several experts, to evaluate the cross-sector position of agriculture only by share of GDP, by share on employment and by share on foreign trade is not representative.

In EU agriculture the added value is considered as an indicator of its production performance. Net income from business activities in agriculture reflects the synergy effect of the reproduction process of production activities in agriculture. (Serenčėš, P. – Čierna, Z. – Piterková, A., 2016).

According to Serenčėš, P. – Tóth, M. (2012), in a functioning market environment, there is no potential for agricultural development created by entrepreneurs who produce everything and for any price, but they respect the theory of realizable agricultural production on the market, environmental and ecological production requirements and balanced internal consumption.

There has always been significant political tradition towards small farm protection and support in Europe (Mayfield, L. H., 1996). Many arguments have been used to support this attitude covering aspects like social importance and environmental benefits. His study concludes, that small farms seems to be more connected to local rural economy than large farms and therefore small farms do more support rural areas mainly in indirect employment. Therefore, small farms deserve more attention and support focused on rural development.

Role of agriculture in economic development and rural policy support for small farmers in comparison with large agriculture are in centre of long and controversial discussion. Small agriculture has similar potential to stimulate agricultural production growth as large farming. Short supply chains cover mainly informal sectors and generate more jobs than holding agriculture. Focus of agricultural and land policy on small food producers and a complex integrated rural development policy is therefore needed not only due to social equality, but also due to economic development support (Mellor, J. W. – Malik, S. J., 2017).

Serenčėš, P. – Čierna, Z. – Piterková, A. (2016) analysed by ratio analysis situation and development of agricultural production in Slovakia. In the observed period 2009-2013 using FADN data they focused on farm net income and farm area. In comparison to other EU countries the average farm size is significantly higher. In 2013 the average area of land per farm in the Czech Republic is 232,93 ha, in

Germany 86,63 ha, in France 85,87 ha, in Hungary 45,02 ha, in Netherlands 34,61 ha, in Austria 32,39 ha, in Poland 19,11 ha and in Slovak Republic 594,82 ha.

## 2 Data and methodology

Slovakia's accession to the European Union meant for Slovak Agriculture duty to evaluate the performance by common methodology of the EU.

The Farm Accountancy Data Network (FADN) is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy launched in 1965. It consists of an annual survey carried out by the Member States of the European Union. Derived from national surveys, the FADN is the only source of microeconomic data that is harmonised, i.e. the bookkeeping principles are the same in all countries. The survey does not cover all the agricultural holdings in the Union but only those which due to their size could be considered commercial. ([http://ec.europa.eu/agriculture/rica/database/database\\_en.cfm](http://ec.europa.eu/agriculture/rica/database/database_en.cfm) (2016-02-26)).

Article evaluates the development of the selected indicators they evaluate the Slovak agriculture performance for the last 7 years (2009–2015) according to the methodology of the FADN. Then on the last available data, in 2015, the position of Slovak agriculture is compared with the average for the EU-28 and the selected EU Member States such as Czech Republic, Germany, France, Hungary, Netherlands, Austria and Poland.

Table 1 shows the number of farms in a representative sample for the Slovak Republic in the examined period 2009–2015, the average number of farms for the period and average acreage per farm for examined period. There were evaluated results in average for 3 990 farms in examined period in Slovak Republic. The average size of farms in Slovakia in examined 7-year period is 524,81 hectares.

**Table 1 Farm represented and Total Utilised Agricultural Area (ha) (Slovakia, years 2009-2015)**

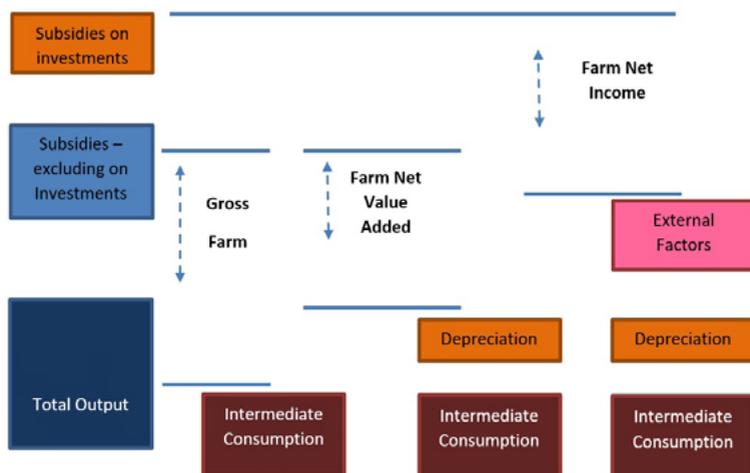
	<b>Farms represented</b>	<b>Total Utilised Agricultural Area (ha)</b>
<b>2009</b>	4 160	525,72
<b>2010</b>	4 290	508,77
<b>2011</b>	3 900	552,91
<b>2012</b>	4 580	474,75
<b>2013</b>	3 710	550,87
<b>2014</b>	3 640	532,04
<b>2015</b>	3 650	528,59

	Farms represented	Total Utilised Agricultural Area (ha)
Average	3 990	524,81

Source: FADN database, own calculations.

The article compares the state and development of the following indicators: total output, current subsidies and subsidies on investments, gross farm income, farm net value added, farm net income and development of employment in agriculture. Assessment of labor (AWU) in Slovakia and selected EU countries for the years 2005-2016 is based on Eurostat data. We compare the labor input with the production in individual EU countries.

Chart 1 **Creation of Gross Farm Income, Farm Net Value Added and Farm Net income**



Source: Authors.

Chart 1 shows creation of the gross farm income, of the farm net value added and farm net income.

### 3 Results and Discussion

Slovakia has the third highest UAA per farm in EU and agriculture is dominated by large farms with 71,6% share on total land (UAA). Large farm use hired labour. During the communist era farms in Slovakia were large cooperatives and state owned farms with large acreage, without existence of private companies. 29 years

after the change of the economy from centrally planned to market economy the structure of farms is still different compared to agriculture in old EU member states. The majority of UAA is cultivated by large farms – agricultural holdings – with 1 200 ha per farm on average. Therefore, although subsidies in form of direct payments per hectare are lower than in old EU member states, the payment per farm is one of the biggest in EU. (Table 2).

**Table 2 Structure of farms according to the size of land (UAA) (Slovakia in 2016)**

Size of land (ha)	0-5	5-10	10-50	50-100	100-250	250-500	Over 500	Total
Number of farms	8 037	3 367	4 262	925	868	528	997	18 984
Market share (%)	42,3	17,7	22,5	4,9	4,6	2,8	5,3	
Land share (%)	1,1	1,3	4,9	3,5	7,4	10,2	71,6	(ha) 1 871 948

Source: Agricultural Paying Agency, own calculations.

Before analysing the situation and development of the total output, intermediate consumption and farm net value added, used indicators were calculated per hectare for the years 2009-2015 in Slovakia and in each of the selected EU countries in 2015 (Table 3).

**Table 3 Total Output, Intermediate Consumption and Farm Net Value Added per hectare (Selected EU countries in 2015)**

	Total Output	Intermediate Consumption	Farm Net Value Added
<b>Czech Republic</b>	1 486,06	1 150,00	548,04
<b>Germany</b>	2 694,84	1 831,20	912,08
<b>France</b>	2 309,06	1 463,06	783,41
<b>Hungary</b>	1 506,56	1 078,23	598,00
<b>Netherlands</b>	13 248,75	8 289,36	3 879,49
<b>Austria</b>	2 661,07	979,63	536,94
<b>Poland</b>	1 527,52	979,63	536,94
<b>Slovakia</b>	1 120,29	853,90	362,29

Source: FADN database, own calculations.

The low level of total production and net added value in Slovakia compared with selected EU countries mainly consists in the fact that the majority of agricultural holdings perform primary agricultural production without production of products of higher added value, i.e. without processing and finalizing production.

Entrepreneurial activity in agriculture has its own specificities and particularities that manifest in the verticality of production and consumption as disparities: science and technical progress, competition and profit, which are the engine of development in the market economy, they have other objective conditions in the food production verticality, as they are in other manufacturing sectors.

Agriculture has produced essentially the same products in the history of mankind. There is a lack of a new discovery as a revolutionary means of development and profit generation in agriculture. Science and technical progress in agriculture have increased land productivity, animal productivity, labor productivity has increased with a reduction in staff and profits. If there is a different course of technical development, different dynamics of the profit creation in agriculture, the competition must have also different course.

The real consumption of food is determined by the purchasing power of the population, which can push food consumption below the physiological limit, but not above this limit.

The purchasing power of the population as well as the consumption of food are not dynamically growing indicators, that is, even the mass of profits formed in the food production vertically is virtually constant: competition and profit struggle are promoted between the different components of the food verticals.

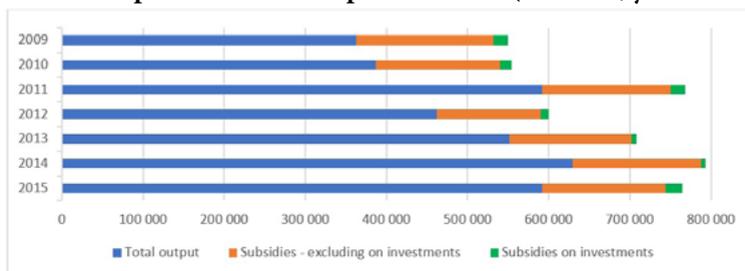
As a result of the competition, due to the objectively higher costs in the Slovak agriculture and the increase of the negative balance of foreign trade in food and agricultural products, the still decreasing formation of the mass of profit in agriculture.

In these disparities, untapped employment potential in Slovakia is hidden. In further analytical work we will focus on the assessment of individual indicators at the farm (agricultural enterprise) in Slovakia and in selected EU countries.

### **3.1 Development of the total production and subsidies**

Total agricultural output represents the sum of the values of crop and animal production, services for agricultural primary production and inseparable non-agricultural secondary activities.

Chart 2 **Total Output and Subsidies per Farm in € (Slovakia, years 2009-2015)**



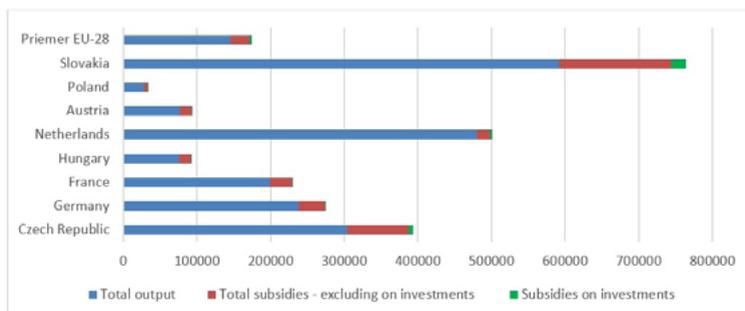
Source: FADN database, authors.

Total production in the Slovak agriculture has increased in 2015 compared to 2009 by 62%. Subsidies-excluding on investments for the period fell from 2009 to 2012 and then again increased. In 2015 compared to 2009, the decrease was 9,00%.

Subsidies on investments in agriculture recorded during the reporting period 2009-2015 increase and in 2015 subsidies on investments reached the highest level on farm 19 942 eur (index 2015/2009 is 1,13).

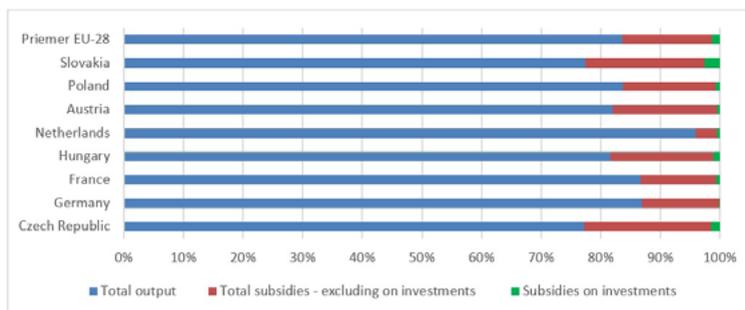
There are not only changes in trends of growth resp. of decrease in total agricultural production, in subsidies-excluding on investments, in subsidies on investments during the years 2009-2015 in the Slovak agriculture, but also in the structure and weight of the individual components of the performance of agriculture.

Chart 3 **Total Output and Subsidies per Farm in € (Selected EU countries in 2015)**



Source: FADN database, authors.

**Chart 4 Total Output and Subsidies per Farm in % (Selected EU countries in 2015)**



Source: FADN database, authors.

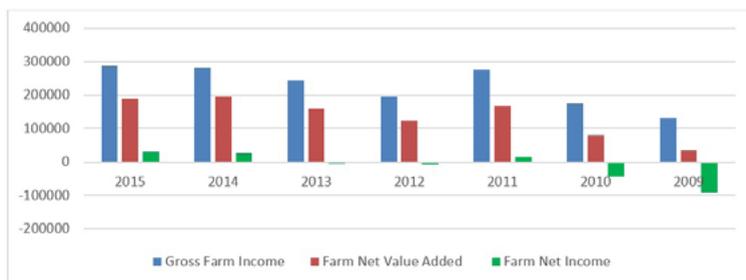
The share of the subsidies-excluding on investments and subsidies on investments in Slovak agriculture on total agricultural production recorded since 2009 an annual decrease (in 2013 a slight increase). While the article is not focused on analysing the relationship between subsidies and growth resp. decrease of the total agricultural production, because it requires a comprehensive approach, despite of it we can add the significant decrease in relation to mentioned components by 45% to significant growth of the total agricultural production and to stagnation of the subsidies over the analysed period 2009-2015 in Slovak agriculture.

The lowest share in the Netherlands (3,77%) and the highest in the Czech Republic (27,62%) and in the Slovak Republic (25,64%) is the result of the comparison of the share of current subsidies on total agricultural production in selected EU countries for year 2015. Germany has a share of 14,62%, France 14,64%, Hungary 21,20%, Austria 21,40%, Poland 18,40% and EU-28 average 18,04%.

### **3.2 Development of the Gross Farm Income, Farm Net Value Added and Net Farm Income**

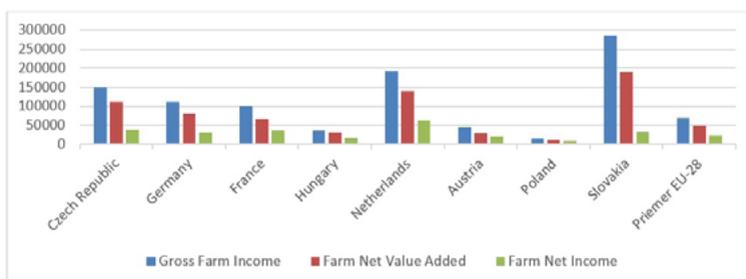
According to Varošćák, J. – Grznár, P. (2010) net income from agribusiness is a synergistic effect of the reproduction process of agriculture, i.e. of agricultural production activities, of employment in agriculture, of agricultural policy of the state and EU, of the agricultural land revenues and of the financial capital.

Chart 5 **Gross Farm Income, Farm Net Value Added and Farm Net Income in € (Slovakia, years 2009-2015)**



Source: FADN database, authors.

Chart 6 **Gross Farm Income, Farm Net Value Added and Farm Net Income in € (Selected EU countries in 2015)**



Source: FADN database, authors.

The value added is a part of the production value created by the producers activities. A special feature of the value added of agriculture is that the resulting value is reduced by taxes on products and increased by subsidies on products, listed Varoščák, J. - Grznár, P. (2010).

According to Serenčėš, P. – Tóth, M. (2012) the key problem of low efficiency of Slovak agriculture is a low level of value added which is compensated by public resources in the form of subsidies. Low level of value added results in the high share of depreciation on gross value added as well as the high proportion of labor costs on net value added. Therefore the profit for the owner of agricultural production is very low.

### 3.3 Development of employment in agriculture

Since 2005 in Slovak agriculture employment did decrease the most out of all EU countries. One of the main reason for this is the farm size in combination with EU Common Agricultural Policy. Farms receive subsidies which are mainly linked to UAA of the farm. Higher UAA means higher subsidies in total. There is no motivation to increase the production because of decoupling applied in CAP. Large farms in Slovakia tend to decrease the cost by decreasing Labour input. In comparison to countries with small farms the decrease in employment is much higher in Slovakia. Small farms cannot rely on subsidies only but they need also real agricultural production. Large farm on other hand with (1 200 hectares is the average size of large farms in Slovakia) receive only in form of subsidies a significant amount of money (in Slovakia 282€/ha on average) and tend to replace labour by technology much more than small farms.

Table 4 **Agricultural working units in selected MS in comparison with 2005**  
(in %, 2005 = 100%)

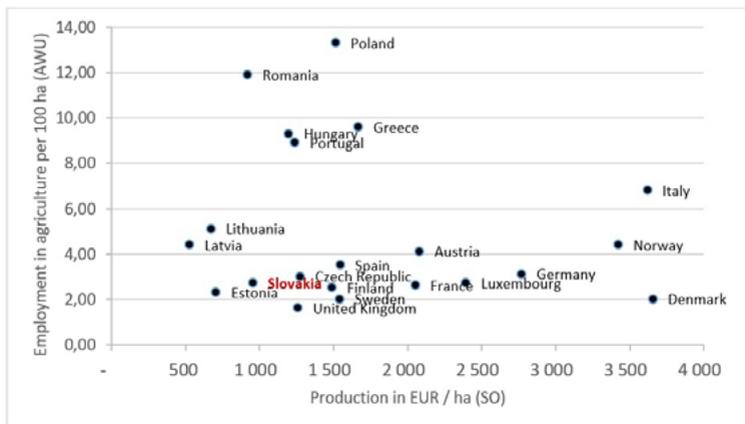
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>EU-28</b>	93	91	88	81	79	78	78	76	75	74
<b>Czech Republic</b>	91	87	82	78	76	76	76	75	75	75
<b>Germany</b>	95	93	91	90	89	88	86	87	85	85
<b>Hungary</b>	88	82	85	85	84	83	85	89	85	84
<b>Austria</b>	93	91	90	87	86	86	85	83	82	81
<b>Poland</b>	100	100	97	84	84	84	85	85	85	85
<b>Slovakia</b>	92	91	87	57	58	58	55	55	49	48

Source: Eurostat, own calculations.

In countries with small farms there are much more CAP beneficiaries mostly in rural areas than in countries with large farms. Rural development and rural economy suffers more in Slovakia than in countries with small farms.

Current labour input per 100 ha in Slovakia is comparable to Germany, France, Luxembourg, Denmark, but Standard Output is the lowest even compared to V4 countries. This is mainly due to the size of the farm measured by UAA and ownership structure, which is based on private companies with a limited number of owners.

Chart 7 Employment and production in EU MS (year 2013)



Source: Eurostat, own calculations.

Large farms in Slovakia behave rationally and try to benefit from the current CAP. In the production, they focus more on crops than on animal production which is much more labour intensive. In crop production, the large farms focus on products with low value added and crops, where intensive large farm technology can be used. Therefore, Slovakia crop production is focused on basic commodities and products with low value added. Large farms benefit from economy of scale. Standard Output per ha (excluding direct payments) in Slovakia is comparable with Romania, Bulgaria, Ireland and is lower than in other V4 countries.

## 4 Conclusion

The global economic and environmental crisis raises the demand for changes in the agriculture and food industry, not only in Europe. In general, factors that would support the vision of a world without hunger, malnutrition and poverty can be summarized as follows: to invest in agriculture, to encourage educated people, to support science and research, to promote the development of small and medium enterprises, to implement sustainable food systems that respect the environment and human health, to limit the generation of food waste, to promote healthy nutrition and social protection. (Serenčėš, P. – Čierna, Z. – Piterková, A., 2016).

From the analysis of some selected indicators and their comparison of the Slovak agriculture and selected EU countries can assess the status and development (on the farm or per hectare of land) as follows:

- The average area of agricultural land on the farm in Slovakia is the highest within the EU countries.
- The intensity of the inputs and outputs (the total agricultural output, intermediate consumption per hectare of the land) is in Slovakia the lowest within the EU countries.
- Slovak agriculture in the indicator Farm Net Income is in negative value, as the only EU Member State in years 2009-2013. In years 2014 and 2015, Slovakia achieved in the indicator Farm Net Income positive values.

Main reason for the low employment and low value added in Slovak agriculture is the high average size of the farm which is the result of the communist era. Large farms use hired labour which is different to small family farms. Farms in Slovakia focus on crop production and replace labour with technology.

We conclude that support in form of subsidies should be focused on small farms which would result into higher employment. Rural economy would benefit in form of higher or constant employment, local food consumption and development of other sectors in rural areas. Large farms should benefit from the economy of scale and should be competitive also with lower support in form of public funds. Capping direct payments should be introduced in Slovakia.

In order to solve the problems of agriculture we propose the following:

- To pre-define the relationship between the public sector, local government, private and business sector.
- Eliminating the gap between scientific knowledge and political decisions a reality, in practice to implement the right to choose, create alternatives outside of super and hypermarkets and multinational companies (regional companies).
- Develop a system for evaluating cross-sector of agriculture.
- Develop a methodology for the valuation of non-production benefits (income) of agricultural land use.
- Public support for agriculture and the justification should be based on an objective assessment of social benefits to society of agriculture (public goods). (Serenčák, P. – Čierna, Z. – Piterková, A., 2016).

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