http://dx.doi.org/10.15414/isd2016.s5.08

# The development of value added and net income of farms in Slovakia

**Peter Serenčéš[1], Zuzana Čierna[2], Andrea Piterková[3]**
Slovak University of Agriculture in Nitra[1, 2, 3]
Faculty of Economics and Management, Department of Finance
Tr. A. Hlinku 2
Nitra, Slovak Republic
e-mail[1, 2, 3]: peter.serences@uniag.sk, zuzana.cierna@uniag.sk, andrea.piterkova@uniag.sk

***Abstract***
*The article is focused on the assessment of the current state and development of efficiency of the agricultural enterprises in Slovakia for the time horizon 2009-2013 according to the FADN methodology. Partial objective of the paper is to compare the level of the Slovak agriculture in the year 2013 with the selected EÚ-28 member states. Performance and efficiency of the Slovak agriculture and its comparison with individual EU states is mainly evaluated by the total production, by the gross farm income, farm net value added and by farm net income. Assessment of the state and development of the performance and efficiency of Slovak agriculture and its comparison with selected EU member states leads to the solution of farm value added and farm net income creation through the harmonizing the science knowledge, political decisions and reality.*

***Key words:*** *Gross Farm Income, Farm Net Value Added, Net Farm Income, Effectiveness, Intensity*

***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, 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.

Results of production in agriculture can be seen in natural and value terms. Value terms have essential meaning in evaluating of economic results and financial indicators. 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.

Varoščák, J. – Grznár, P. (2010) argue that even in the recent past categories - such as the intensity of agricultural production, yields per hectare and the livestock's' performance were the main criteria for assessment and evaluation of agricultural producers and the social role of agriculture. At present, for the evaluation and improvement of the Slovak agriculture performance are important criterions of efficiency of the economy - a condition where the economy does not waste resources, but resources are efficient and fully used, competitiveness and the creation of public goods - as a socially recognized agricultural outputs.

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

http://dx.doi.org/10.15414/isd2016.s5.08

The source for the increase in value added by Serenčéš, P. – Tóth, M. (2012) should be green growth (comprehensive land management), as the core of rural development strategy. It includes the modernization and innovation, new methods of research and development and lifelong education of the rural population.

In the current era of globalization, especially after the accession to the EU, the position of agriculture is changing especially in the trend of EU CAP reforms. On the other hand according to Rovný, P. – Dobák, D. – Čierna, Z. (2015) there exists the basic problem in Slovakia. It is the fact that there are very few farms which their products process into the final products respectively semi-finished products. These final products or semi-finished products have a higher added value and farmers are benefiting from its own production. In this case for evaluation of production would be needed lower area of agricultural land to ensure basic expenses.

## 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 **F**arm **A**ccountancy **D**ata **N**etwork (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 (2016-02-26)).

Article evaluates the development of the selected indicators they evaluate the Slovak agriculture performance for the last 5 years (2009-2013) according to the methodology of the FADN. Then on the last available data, in 2013, 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: Farm represented and Total Utilised Agricultural Area (ha) (Slovakia 2009 – 2013)**

| | Farms represented | Total Utilised Agricultural Area (ha) |
|---|---|---|
| **2009** | 4 160 | 525,72 |
| **2010** | 4 290 | 508,77 |
| **2011** | 3 900 | 552,91 |
| **2012** | 4 160 | 521,50 |
| **2013** | 3 390 | 594,82 |
| **Average** | **3 980** | **540,74** |

Source: FADN database, calculation of authors

Table 1 shows the number of farms in a representative sample for the Slovak Republic in the examined period 2009-2013, the average number of farms for the period and average acreage per farm for examined period. There were evaluated results in average for 3 980 farms in

http://dx.doi.org/10.15414/isd2016.s5.08

examined period in Slovak Republic. The average size of farms in Slovakia in examined 5-year period is 540,74 hectares.

**Table 2: Farm represented and Total Utilised Agricultural Area (ha) (Selected EU countries in 2013)**

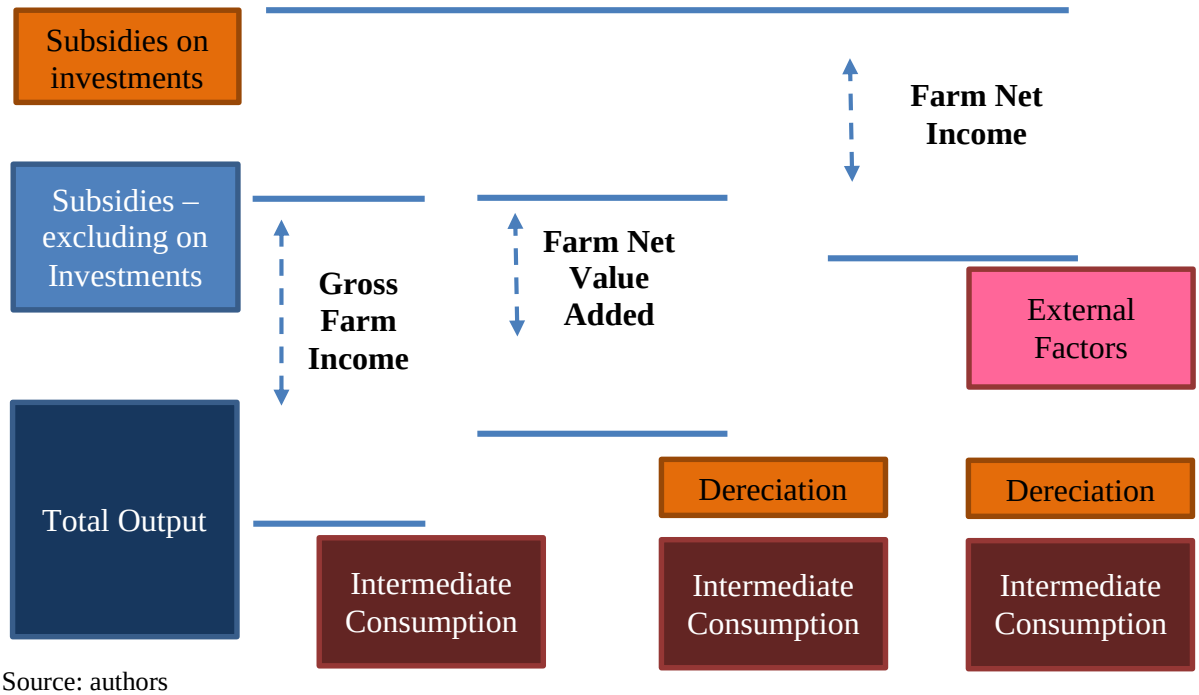
| | Farms represented | Total Utilised Agricultural Area (ha) |
|---|---|---|
| **Czech Republic** | 14 840 | 232,93 |
| **Germany** | 193 940 | 86,63 |
| **France** | 304 690 | 85,87 |
| **Hungary** | 107 260 | 45,02 |
| **Netherlands** | 52 200 | 34,61 |
| **Austria** | 92 990 | 32,39 |
| **Poland** | 720 630 | 19,11 |
| **Slovakia** | 3 390 | 594,82 |

Source: FADN database, calculation of authors

In the same way table 2 shows the number of farms in the sample for each selected EU-28 country and the average acreage of farm in each selected country.

The article compares the state and development of the following indicators: total output, current subsidies and subsidies on investments, intermediate consumption, depreciation, external factors (labour costs, rent and Interest costs), gross farm income, farm net value added and farm net income. Indicators are expressed per farm in EUR or in percentage terms.

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




Source: authors

http://dx.doi.org/10.15414/isd2016.s5.08

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

## 3. Results and Discussion

The characteristic sign of the selected sample of the EU countries is area of the farm. 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.

**Table 3: Total Output, Intermediate Consumption and Farm Net Value Added per hectare (Slovakia 2009 – 2013)**

| | Total Output | Intermediate Consumption | Farm Net Value Added |
|---|---|---|---|
| **2009** | 689,42 | 745,48 | 67,58 |
| **2010** | 760,74 | 706,43 | 156,67 |
| **2011** | 1 071,03 | 846,53 | 304,73 |
| **2012** | 998,59 | 833,94 | 269,25 |
| **2013** | 1 024,98 | 835,58 | 296,02 |

Source: FADN database, calculation of authors

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 2009-2013 in Slovakia and in each of the selected EU countries in 2013 (Table 3 and 4).

**Table 4: Total Output, Intermediate Consumption and Farm Net Value Added per hectare (Selected EU countries in 2013)**

| | Total Output | Intermediate Consumption | Farm Net Value Added |
|---|---|---|---|
| **Czech Republic** | 1 479,88 | 1 115,28 | 595,04 |
| **Germany** | 3 078,69 | 2 026,64 | 1 105,48 |
| **France** | 2 281,20 | 1 487,47 | 729,77 |
| **Hungary** | 1 455,06 | 1 011,28 | 640,78 |
| **Netherlands** | 14 164,92 | 8 780,96 | 4 272,32 |
| **Austria** | 2 323,40 | 1 412,53 | 926,58 |
| **Poland** | 1 642,60 | 1 062,32 | 625,38 |
| **Slovakia** | 1 024,98 | 835,58 | 296,02 |

Source: FADN database, calculation of authors

Total production of Slovak farms per hectare for period of years from 2009 to 2013 showed a year on year growth and over the years increased by 68%. Comparing the level of the total production per hectare with the selected EU countries Slovakia showed the lowest value of 1 024,98 EUR.

http://dx.doi.org/10.15414/isd2016.s5.08

Intermediate consumption per hectare of farms in Slovakia also shows increasing trend in period 2009-20013 but lower as the increase of the total production (increase of 12%.). Comparison of intermediate consumption per hectare of farms in Slovakia in 2013 with selected EU countries also shows the lowest value of 835,58 EUR.

Net value added of the Slovak agricultural farms per hectare for the years 2009-2013 has recorded growth among years and over the years under review increased 4,3 times. In assessing the level of net added value achieved in farms in Slovakia in 2013 with selected EU countries we can again confirm the lowest level of 296,02 EUR.

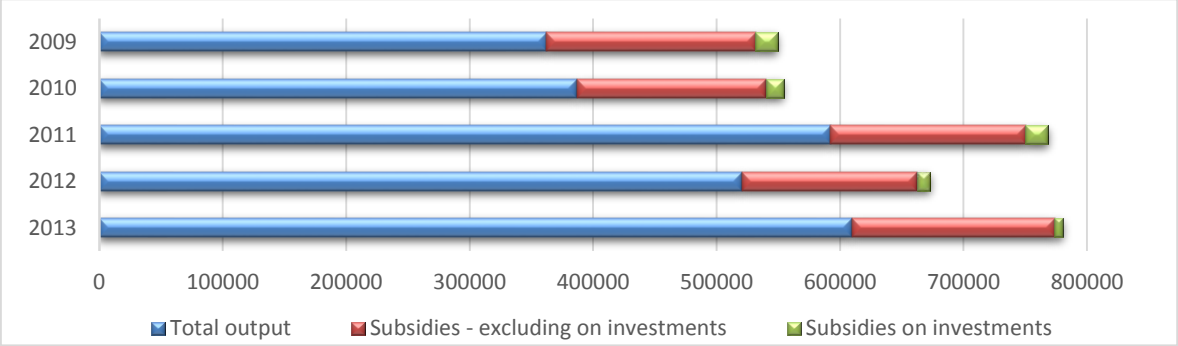
The big problem is that nowadays in the agricultural sector in Slovakia is a high proportion of enterprises that deal with only primary agribusiness (crop production and animal husbandry) without producing products of higher added value, i.e. finalization (milk, cheese, meat, specialty products, local products, unique products). Here is hidden very high employment potential in rural areas.

In further analytical work we will focus on the assessment of individual indicators at the farm (farm) in Slovakia and in selected EU countries.

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

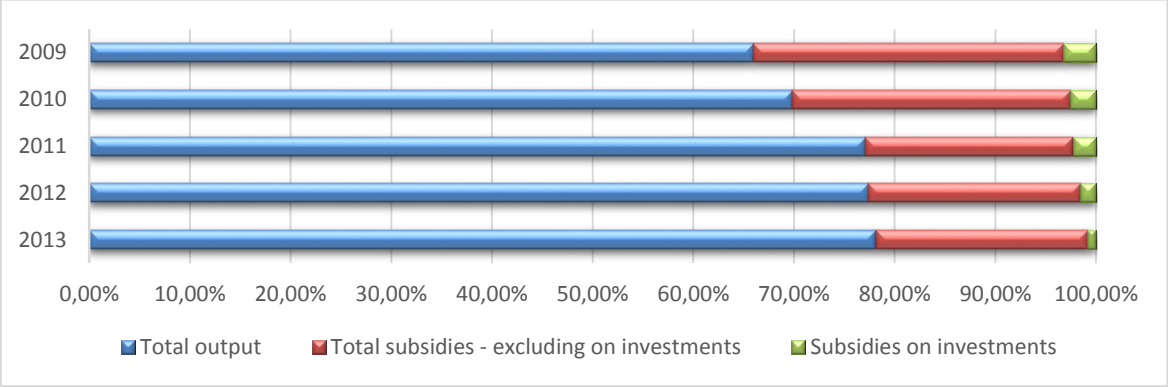
Total agricultural output represents the sum of the values of crop and animal production, services for agricultural primary production and inseparable non-agricultural secondary activities.

**Chart 2: Total Output and Subsidies per Farm in € (Slovakia 2009-2013)**




Source: FADN database, calculation of authors

**Chart 3: Total Output and Subsidies per Farm in % (Slovakia 2009-2013)**




Source: FADN database, calculation of authors

http://dx.doi.org/10.15414/isd2016.s5.08

Total production in the Slovak agriculture has increased in 2013 compared to 2009 by 68%. Subsidies - excluding on investment for the period fell from 2009 to 2012 and in the last year again increased. In 2013 compared to 2009, there was only a slight decrease in the amount of 3,04%.

Subsidies on investments in agriculture recorded during the reporting period 2009-2013 decrease and in 2013 subsidies in investments reached the lowest level on a farm 6 724 EUR (2013/2009 index is 0,38).

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 2009-2013 in the Slovak agriculture, but also the structure and weight of the individual components of the performance of agriculture.

**Table 5: Total Subsidies-excluding on investments / Total Output in % (Slovakia 2009 – 2013)**

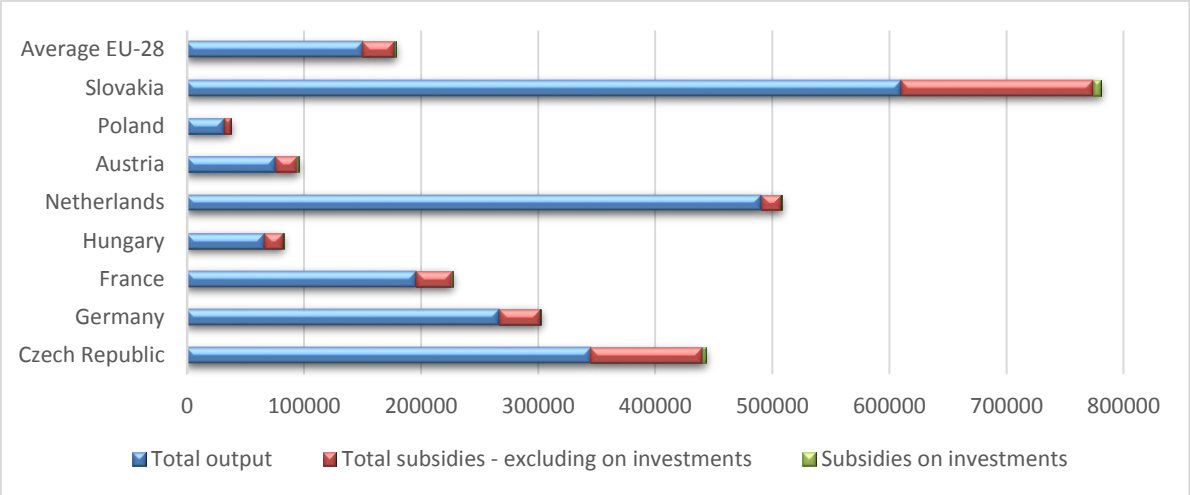
| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Slovakia** | 46,68 | 39,56 | 26,73 | 27,21 | 26,91 |

Source: FADN database, calculation of 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 42% to significant growth of the total agricultural production and to stagnation of the subsidies over the analysed period 2009-2013 in Slovak agriculture (Table 5).

**Chart 4: Total Output and Subsidies per Farm in € (Selected EU countries in 2013)**

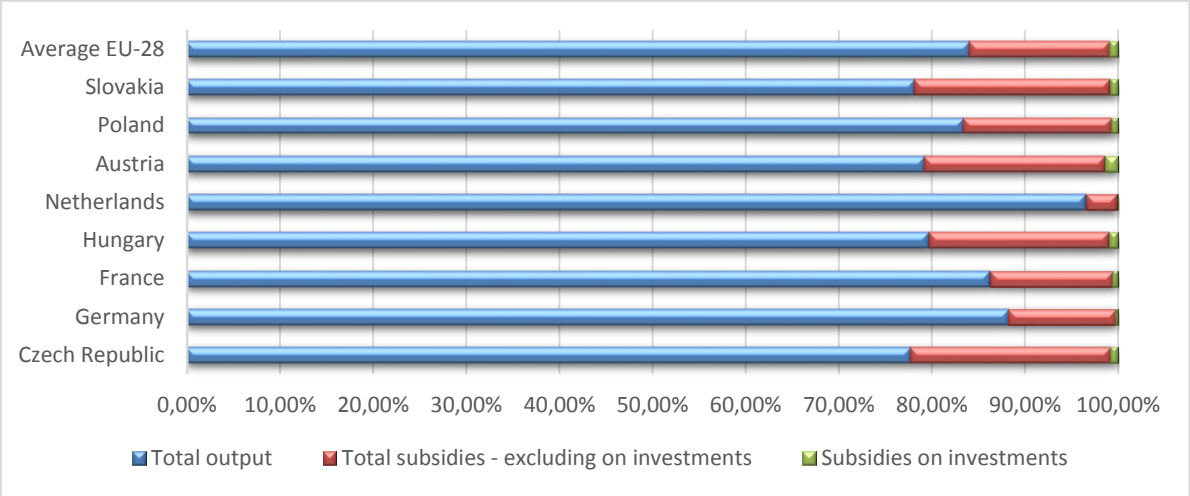



Source: FADN database, calculation of authors

From the comparison of the proportion of total agricultural production and subsidies in selected EU countries we conclude that the Slovak agriculture (farm) has the lowest percentage (78,02%), while countries such as the Netherlands (96,67%), Germany (88,45%) and France (86,76%) have a substantially smaller share in that relationship.

http://dx.doi.org/10.15414/isd2016.s5.08

**Chart 5: Total Output and Subsidies per Farm in % (Selected EU countries in 2013)**

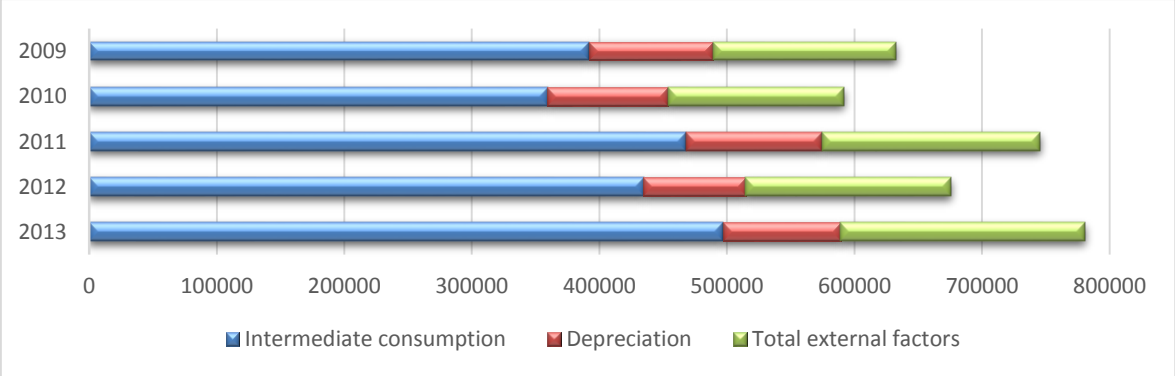



Source: FADN database, calculation of authors

### *3.2 Intermediate consumption, depreciation and external factors*

Varoščák, J. – Grznár, P. (2010) state that intermediate consumption represents the value of purchased materials, services and energy, including consumption of goods and services that are delivered within a company by affiliated units, shortages and damages to inventories and other costs included in intermediate consumption. When net income of agriculture is created its intermediate consumption is considered as a crucial component. An essential aspect of the development of intermediate consumption of agriculture is also the steady rise in prices of its components. These considerations leads to the fact that in agricultural practice may be intermediate consumption considered as a production-economics priority as in relation to the structural meaning as in value meaning

**Chart 6: Intermediate Consumption, Depreciation and External Factors (Wages, Rent and Interest paid) per Farm in € (Slovakia 2009 – 2013)**

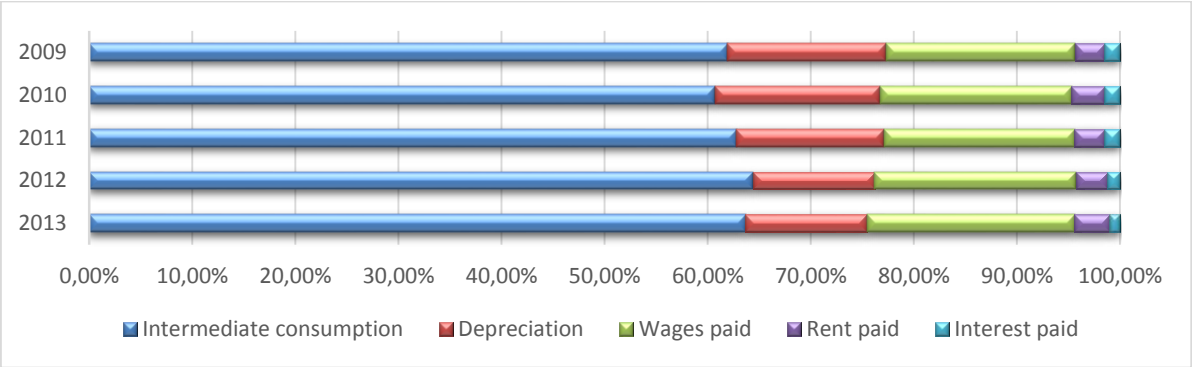



Source: FADN database, calculation of authors

Consumption of fixed capital, defined as the value of depreciation and value of disposed fixed assets is consumption of worn tangible and intangible assets recognized within the current time period - a calendar year, as stated by Varoščák, J. - Grznár, P. (2010).

http://dx.doi.org/10.15414/isd2016.s5.08

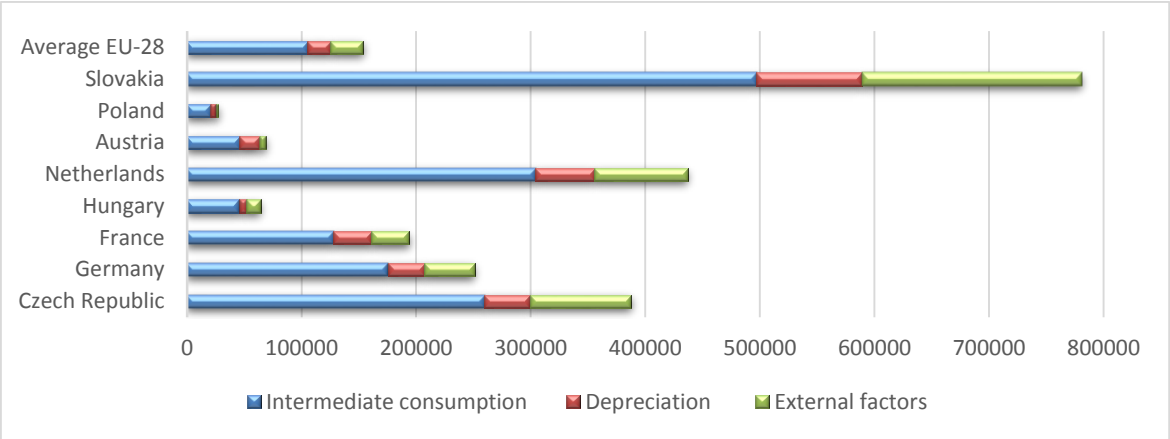
**Chart 7: Intermediate Consumption, Depreciation and External Factors (Wages, Rent and Interest paid) per Farm in % (Slovakia 2009 – 2013)**




Source: FADN database, calculation of authors

The external factors for the purposes of this text we consider wages, rent and interest. According to Varoščák, J. - Grznár, P. (2010) wages can be characterized as the total remuneration in cash or in kind paid by an employer to an employee for work performed by the employee during the period. It is also true that the wages of employees are defined as the gross prices and salaries and employers' social contributions.

**Chart 8: Intermediate Consumption, Depreciation and External Factors (Wages, Rent and Interest paid) per Farm in € (Selected EU countries in 2013)**

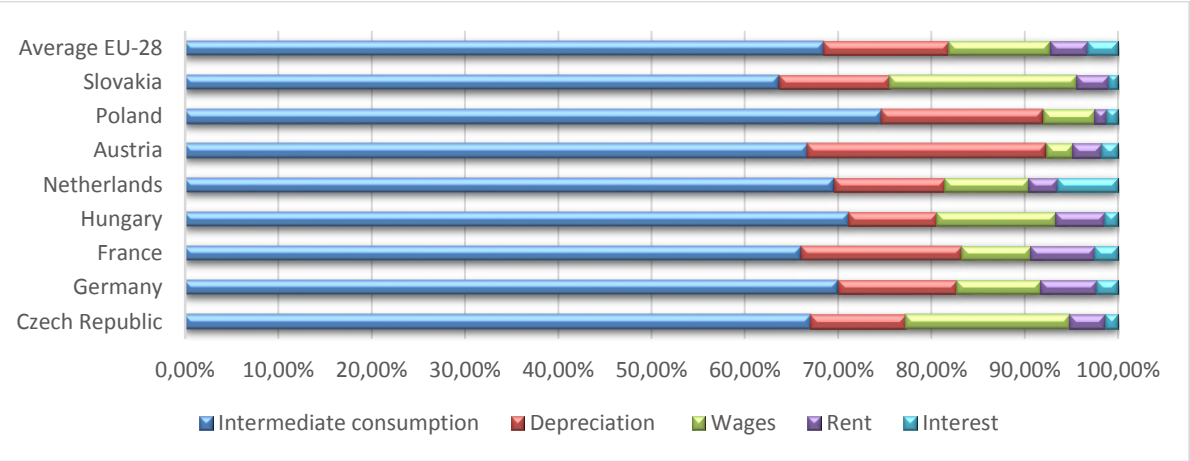



Source: FADN database, calculation of authors

Rent is characterized by Varoščák, J. - Grznár, P. (2010) as the amounts paid to the owner of non-material goods for their provision to another producer. The above-mentioned authors define interest charges as charges payable on a capital loan and are given from the nominal value of the financial asset.

http://dx.doi.org/10.15414/isd2016.s5.08

**Chart 9: Intermediate Consumption, Depreciation and External Factors (Wages, Rent and Interest paid) per Farm in % (Selected EU countries in 2013)**

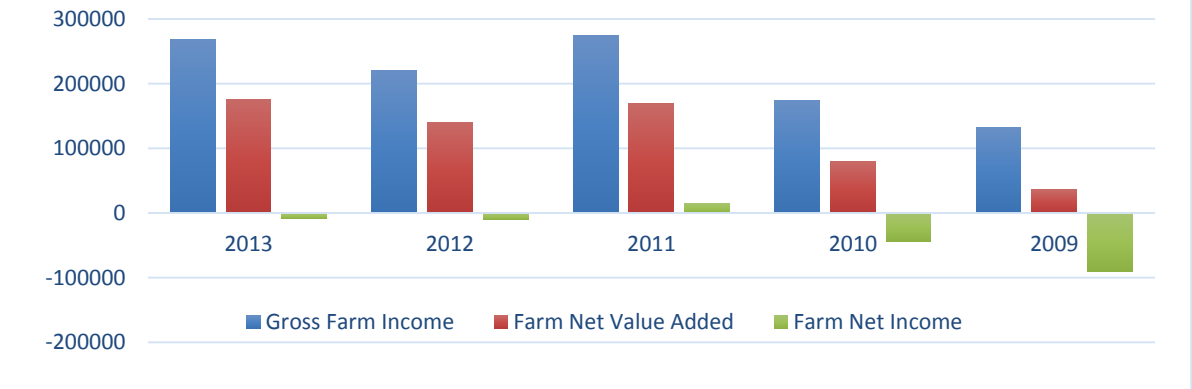



Source: FADN database, calculation of authors

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

According to Varoščák, 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 proceeds of land and if financial capital.

**Chart 10: Gross Farm Income, Farm Net Value Added and Farm Net Income in € (Slovakia 2009 – 2013)**

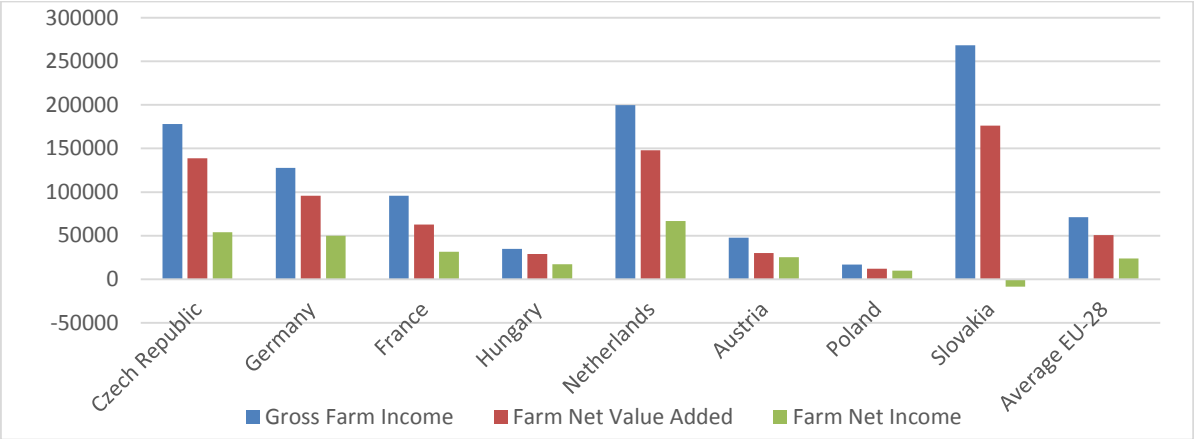



Source: FADN database, calculation of authors

The added value is part of the value created by the production activities of producers. A special feature of the added value 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).

http://dx.doi.org/10.15414/isd2016.s5.08

**Chart 11: Gross Farm Income, Farm Net Value Added and Farm Net Income in € (Selected countries in 2013)**




Source: FADN database, calculation of authors

## 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.

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.
- 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.
- Slovak agriculture in the indicator Farm net income is in negative value, as the only EU Member State.

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).

***Acknowledgement***

This paper was created within the VEGA project 1/0790/14 „Transmission mechanism of CAP instruments and their impact on the financial situation of farms“ and VEGA project 1/0912/14 “The Common Agricultural Policy 2014-2020 and the impact on the financial situation of farms in Slovak Republic”.

***References***

[1] European commission: Development in the income situation of the EU agricultural sector. Brussel, December, 2010 http://ec.europa.eu/agriculture/rica/pdf/hc0301_income.pdf (26.2.2016)

[2] http://ec.europa.eu/agriculture/rica/database/database_en.cfm (26.2.2016)

[3] Rovný, P. – Dobák, D. – Čierna, Z.: The calculation of the minimum area of agricultural land required to self-sufficiency of average Slovak farm family. In Global agribusiness and the rural economy. Prague: Czech University of Life Sciences, 2015, ISBN 978-80-213-2580-7

[4] Serenčéš, P. - Tóth, M. Zhodnotenie tvorby a rozdelenia pridanej hodnoty v poľnohospodárstve Slovenska: Evaluation of creation and distribution of added value in Slovak agriculture. In Global commodity markets: new challenges and the role of policy: International Scientific Days 2012 : proceedings = Globálne komoditné trhy: nové výzvy a úloha verejných politík : Medzinárodné vedecké dni 2012 : zborník recenzovaných príspevkov z medzinárodnej vedeckej konferencie, 16-18 máj, Nitra. Nitra. 2012. p. 473--482.

[5] Varoščák, J. – Grznár, P.: Výkon slovenského poľnohospodárstva v rokoch 2004 až 2008 a jeho porovnanie s poľnohospodárstvom EÚ 27 a vybraných členských krajín. 2010, 1. vyd, Výskumný ústav ekonomiky poľnohospodárstva a potravinárstva / Štúdia, č. 168/2010, Bratislava, 75 stran, ISBN: 9788080585501

* Online full-text paper availability: doi:http://dx.doi.org/10.15414/isd2016.s5.08