



## The Role of Agriculture in Gross Added Value

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### ABSTRACT

The paper presents a study on the sectoral structure of gross added value in various countries including European countries. The purpose of this study is to identify the role of agriculture as an economic activity in the formation of gross added value of countries, to identify and determine areas of the economy development on the basis of comparison and experience of different countries. Structural differences based on the index analysis. A comparative analysis of the structure of gross value added for the presented set of countries is performed for the first time. Most European countries have a low level of differences in the sectoral structure of gross added value compared to the Russian Federation. Different growth rates of the main macroeconomic indicator are possible at a very low level of differences in the sectoral structure. This indicates the presence of more extensive, systemic factors, relationships, trends in macroeconomics. Methods and results can be used in socio-economic research, developing strategies for the effective development of sectors of the national economy of countries based on the optimal structure. This research makes a significant contribution to enriching the practice of applying the methodology for studying structural differences by international calculations.

### INTRODUCTION

Agriculture has been always the strongest balance factor in the harmonization of economic development of any country. The country's economy is a complex economic system. Analysis of processes in countries is primarily associated with the study of its structure, which is not frozen, is rapidly changing under the influence of reforming the system of economic management, the evolution of ownership, the formation of new economic relations, social reorientation of the economy, global processes (Zarova, 2006).

Agriculture is a significant sector of any country's economy worldwide (Niculae and Costache, 2016; Feher et al., 2017; Balezentis and Novickyte, 2018; de Lauwere et al., 2018). The food security of the country depends on the level of its state and development, the quality of food determines the population health, the life quality of the population, the realization of human potential (Simtion, 2017). As a type of economic activity, agriculture, along with forestry, hunting, fishing, fish farming forms a certain part of the gross added value of the country (Zsarnóczai and Zéman, 2019). The calculation of the macroeconomic indicator of gross added value is the basis of the production method of calculation of gross domestic product (Zarova, 2006). Gross domestic product measures the value of final goods and services produced. This indicator is used to determine the rate of economic growth and productivity of social labor, sectoral and institutional structure of the economy, to measure the proportions between consumption and accumulation (David et al., 2018).

It is important to produce, not just redistribute the product. In this regard, it is necessary to study the formation of the gross product by production method (Federal state statistics service). The problems of the economy sectoral structure, the role of agriculture in the development of the economy and the life of the population is paid close attention in the scientific literature. Scientists note that the theory of sectoral economic development enhances with new forms of the work organization as well as new sectors of economy being created (Szramka et al., 2016).

Agriculture contributes significantly to gross domestic product. Even with a possible reduction in its share in the social product, being sometimes observed in developed countries, it remains the basis of the national economy (Certan and Certan, 2017). Modernization of agriculture, development and application of technologies (Gabitov et al., 2019) led to the transfer of income to other sectors and stimulated overall economic development, but also led to structural changes and a relative decline in agriculture in favor of the food industry (Simtion, 2017). However, it is worth noting that the basis of the food industry is always agricultural production. In connection with the acute environmental problems and challenges facing humanity around the world, it is noted that agriculture is increasingly facing such serious problems as climate change, lack of natural resources and changing needs of society (Mili and Martínez-Vega, 2019; Skaf et al., 2019).

Speaking about sustainability and structural indicators, it should be noted that studies are conducted on the sustainability of human settlements (in Slovenia) to the economic downturn of individual years due to their socio-economic structure (Lapuh, 2018). It also addresses the issues of rural areas, their relationship with the socio-economic structure and the macroeconomic situation. Thus, the structure indicators are used in various studies; make the analysis more visible, comparable. Agriculture acquires a special role and importance in countries with severe natural and climatic conditions (Leonardo et al., 2018; Gómez Perazzoli, 2019; Morkūnas et al., 2018).

Studies on the role of small-scale agricultural production in the lives of poor people are being carried out on the example of African countries (Wuyep and Rampedi, 2018). Such studies are also interesting for countries with growing urban population and the simultaneous creation of urban agglomerations, the wide spread of individual housing construction around large cities. The development of agriculture and processing industry in these conditions is of particular importance. Regional differences in income between urban and rural areas are an issue of great interest for the academic environment, as well as for the development and implementation of economic policy (Fecke et al., 2017; Jimenez and Alvarado, 2018). Analysis and study of the role and contribution of agriculture to the national economy naturally leads to the construction of forecasts (Feher et al., 2017). Forecasts are based not only on extrapolation, but also on indicators of other countries as criteria for strategic growth. Such approaches are followed by the authors of the presented publication. Available research studies primarily address the quantitative aspects of gross value added (Simtion, 2017; David et al., 2018; Zsarnóczai and Zéman, 2019). But more important and relevant is the study of the qualitative content of the social product, the effective development of the dominant sectors of the economy. Not enough attention is paid to these issues. A comparative analysis of the structure of gross value added for the presented set of countries is performed for

the first time. The purpose of this study is to identify the role of agriculture as an economic activity in the formation of gross added value of countries, to identify and determine areas of the economy development on the basis of comparison and experience of different countries. Based on the goal, the following tasks were identified:

- to determine the role of certain economic activities in the formation of added value and social product;
- to perform a comparative analysis of the structure of the national economy of countries;
- to identify the main ways of effective agricultural development in the analyzed countries.

## 1. METHODS AND MATERIALS

The mobility of economic structures implies the need for their evaluation. We calculated structural differences based on the Ryabtsev index:

$$I_R = \sqrt{\frac{\sum_{i=1}^n (d_2 - d_1)^2}{\sum_{i=1}^n (d_2 + d_1)^2}} \quad (1)$$

where  $d_2$  and  $d_1$  are specific weights of the gradation values of the two structures;  
 $i=1,2,3,\dots,n$  - number of gradations (Zarova, 2006).

For the evaluation of the structural differences measure on the criterion of Ryabtsev the scale is worked out (table 1).

**Table 1.** Rating scale measures the materiality of the structures of differences on the criterion of  $I_R$

<i>The interval values <math>I_R</math></i>	<i>Characteristics of the structural differences</i>
0.000 - 0.030	Identity of structures
0.031 - 0.070	Very low level of structural differences
0.071 - 0.150	Low level of structure differences
0.151 - 0.300	Significant level of structure differences
0.301 - 0.500	Significant level of structure differences
0.501 - 0.700	Rather significant level of structure differences
0.701 - 0.900	Opposite type of structures
0.901 and above	Complete opposite of structures

Source: Zarova, 2006

On the basis of the descriptive statistics of the countries, structural indicators are used, thus avoiding differences in national currencies, partly the price factor, the size of the economy and the size of the country. In practice, the analysis is based on the use of relative and average values. Relative values make it possible to compare a variety of objects. In this paper we will study the structure and contribution of agriculture as a productive sector in the formation of gross added value in Russia and Europe as the most identical in natural conditions, climate and location. The source of information is the data of international statistics on national accounting for 2016 - 2017 (Federal state statistics service). The assumption of equality of years is accepted, since macroeconomic indicators are formed longer, change is not so fast, statistical information is delayed for two years compared to the rest of the data provided by statistical services.

## 2. RESULTS

The value analysis of structural differences in European countries compared to Russia is presented in table 2.

**Table 2.** Indices of differences in the sectoral structure of gross added value of European countries compared to Russia

<i>N<sub>o</sub></i>	<i>Country</i>	<i>Value of the I<sub>R</sub></i>	<i>Characteristics of the structural differences</i>
1	Austria	0.085	Low level of structural differences
2	Belarus	0.095	Low level of structural differences
3	Belgium	0.172	Significant level of structural differences
4	Bulgaria	0.057	Very low level of structural differences
5	Hungary	0.055	Very low level of structural differences
6	Germany	0.098	Low level of structural differences
7	Greece	0.190	Significant level of structural differences
8	Denmark	0.142	Low level of structural differences
9	Ireland	0.143	Low level of structural differences
10	Spain	0.125	Low level of structural differences
11	Italy	0.125	Low level of structural differences
12	Latvia	0.139	Low level of structural differences
13	Lithuania	0.138	Low level of structural differences
14	Netherlands	0.173	Significant level of structural differences
15	Norway	0.127	Low level of structural differences
16	Poland	0.078	Low level of structural differences
17	Portugal	0.128	Low level of structural differences
18	Republic of Moldova	0.174	Significant level of structural differences
19	Romania	0.040	Very low level of structural differences
20	Slovakia	0.044	Very low level of structural differences
21	Slovenia	0.044	Very low level of structural differences
22	United Kingdom (UK)	0.206	Significant level of structural differences
23	Ukraine	0.135	Low level of structural differences
24	Finland	0.122	Low level of structural differences
25	France	0.201	Significant level of structural differences
26	Czech Republic	0.069	Very low level of structural differences
27	Switzerland	0.135	Low level of structural differences
28	Sweden	0.124	Low level of structural differences
29	Estonia	0.087	Low level of structural differences

Source: calculated by the authors based on the data from the Federal State Statistics service

Table 2 shows that most European countries have a low level of differences in the sectoral structure of gross added value compared to the Russian Federation. This is due to the proximity of the territory, respectively, similar climatic conditions, and the effects of weather events. Some of the most developed countries (Belgium, the Netherlands, Great Britain and France) have a significant level of structural differences. It is fair to note that these countries (especially Belgium, the Netherlands) are world leaders in the production and export of agricultural products, leaders in the introduction of technologies in agricultural production (Gabitov et al., 2018), the development of organic farming (Gabitov et al., 2019), the organization of processing and markets for food and food products, the development of trade relations with agricultural products. Thus, Russia should use and adopt the experience of different countries. At the same time, the share of agriculture in gross added value among the analyzed countries in Russia is one of the highest (4.4%), while in Belgium – 0.7%, in the Netherlands – 1.8%. And the importance and level of the industry develop-

ment differ significantly in favor of the above-mentioned foreign countries. Table 3 summarizes the analysis and characteristics of the different types of countries identified by structural differences compared to Russia.

**Table 3.** Summary assessment of the materiality level of the differences between the sectoral structures of Russia and Europe

<i>Characteristics of the measure (level) of structural differences</i>	<i>Very low</i>	<i>Low</i>	<i>Significant</i>	<i>Total and average</i>	<i>Data for Russia</i>
Number of countries	6	17	6	29	1
Average share of economic activities in gross added value, %:					
Agriculture, forestry, hunting, fishing, fish farming	3.6	3.0	3.7	3.4	4.4
Industry	27.3	22.9	15.0	21.7	26.9
Construction	5.3	5.4	5.4	5.4	6.4
Trade, transport and storage, hotels and catering, information and communication	25.3	25.8	25.9	25.6	24.7
Financial and insurance activities, real estate transactions, activities of professional, scientific, technical, administrative and related services	20.7	22.1	27.1	23.3	21.4
Public administration, defense, social security, education, health and social services	14.8	17.6	19.9	17.4	14.1
Other activities	2.9	3.2	3.1	3.1	2.0
Average gross domestic product growth rate	104.1	103.2	102.4	103.2	101.5

Source: calculated by the authors based on the data from the Federal State Statistics service

As a result of the analysis of the data obtained, it can be concluded that the Russian Federation has one of the highest values of the share of agriculture in gross added value in comparison with European countries. At the same time, six countries – Romania, Slovakia, Slovenia, Hungary, Bulgaria, and the Czech Republic are the closest to Russia in their gross added value structure. However, in these countries, the average growth rate of gross domestic product is 104.1%, in Russia – 101.5%. Therefore, different growth rates of the main macroeconomic indicator are possible at a very low level of differences in the sectoral structure. This indicates the presence of more extensive, systemic factors, relationships, trends in macroeconomics. Overall, the average growth rate of gross domestic product in Europe is higher.

Thus, the share of domestic expenditures on research and development in Russia in 2016 amounted to only 1.10% of gross domestic product. While in the most developed countries of Europe, this figure was: in Sweden – 3.25%, in Austria – 3.09%, in Denmark – 2.87%. In our view, there is a direct correlation between the costs of research, science, development and the growth of gross domestic product. In these three countries, the growth of public product in 2017 ranged from 2.1% to 2.9% against 1.5% in Russia. Table 4 shows examples of countries by share of researchers in science sectors.

**Table 4.** Distribution of the number of researchers by sectors of science in 2016, % (Federal state statistics service)

<i>Countries</i>	<i>Public sector</i>	<i>Business sector</i>	<i>Higher education sector</i>
Russia	34.0	46.3	19.4
Austria	3.9	64.0	31.4
Denmark	3.3	58.9	37.4
Sweden	4.8	67.0	28.0

Source: Federal State Statistics service

Comparison with some countries (table 4) shows that Russia is at a stage of its development, which requires significant state participation in the formation of the new economy, its structural restructuring.

### 3. DISCUSSION

The level of development of agriculture in Russia, as in all countries, depends on natural resources and materials, which are emphasized by the existing human potential (Certan and Certan, 2017). Analyzing the indicators of specific weight of other types of economic activities in gross added value (David et al., 2018; Federal state statistics service) it can be noted that the most significant contribution to the formation of gross value added on average across the countries of Europe is provided by trade (including food products and food), transport and storage, hotels and catering, in second place – financial and insurance activities, transactions with real estate, professional, scientific, technical, administrative activities in the third place is industry (Smutka et al., 2019). These indicators are differentiated according to the selected groups of countries, but remain the leading positions.

The Russian Federation, in turn, has the lowest share of trade, public administration, defense, social security, education, health and social services in gross added value compared to other countries (Zarova, 2006). The closest branch structure of gross added value according to the results of calculations was formed in Russia and Romania. In this regard, studies of the development of agriculture in Romania are particularly informative in comparison with a number of European countries (Niculae and Costache, 2016; Feher et al., 2017). The structural problems associated with Romanian agriculture can only be solved in the long term. It is revealed that with the current growth rates Romania will not be able to reach the average level of the European Union or other studied countries (France, Germany and Hungary) until 2038. Elimination of differences is possible only on the basis of new production structures based on the following factors: land consolidation, expansion of irrigated surfaces, increase in the share of livestock, development of agricultural research, and expansion of financing opportunities (Feher et al., 2017). The revealed similarity of Russia with Romania allows us to apply and use some of these findings for the development of agriculture in the Russian Federation.

The results of the study showed that the most significant contribution to the formation of gross added value in the average European countries provide trade (including food and provisions). Thus, the fruit trade in the same Romania makes a significant contribution to the development of the national economy and the formation of gross added value produced by agriculture. It is noted that the increase in fruit production has a positive impact on gross domestic product and helps to reduce imports (Fেকে et al., 2016; Niculae and Costache, 2016; Leonardo et al., 2018). It is advisable to increase fruit production by increasing productivity through the use of more efficient technologies, the creation of associations of producers, the construction of storage facilities (Niculae and Costache, 2016)

Speaking about the role of transport, the logistics chain, the researchers find that specialization, export and transport infrastructure have the greatest impact on the sustainability of rural areas and the standard of living of the rural population, while economic development and social structure partially affect it (Lapuh, 2018). The development of the food transportation and storage system for the vast territories of Russia is of particular importance. Structural changes and technological developments also lead to an increasing contribution of industry to the production of social products. Due to the simple processing of agricultural products, the food industry has become an industry that produces more and more developed food products, which significantly increases the added value compared to agriculture (Simtion, 2017).

The results identified the need for scientific development of the country. A large share of research should be transferred to the higher education sector, as is the case in the most developed countries of Europe and unites the younger generation, experienced teachers, scientists, business, science and practice. A special role should be given to agricultural education and research in the field of agrarian economy in view of the specifics of our country, our social production. Science proposes a set of biophysical and socio-economic indicators for the integration of environmental accounting with the socio-economic aspect of food security and sustainable agriculture (Skaf et al., 2019). Thus, a system of indicators is being worked out and developed. All those involved in the agro-food sector should intensify their efforts to acquire new generation products, develop and apply appropriate technologies for their production, which will eliminate or at least limit risk and uncertainty (Certan and Certan, 2017; Leonardo et al., 2018). Development and implementation of innovations in our country are strategically important, are in the priority of state policy.

In some works it is observed that with a decrease in gross added value in agriculture, factor income increases due to subsidies for production (Wuyep and Rampedi, 2018; Zsarnóczai and Zéman, 2019). This experience should be used for the effective use of state subsidies to agricultural enterprises in Russia. The analysis of the relationship between economic growth (measured by economic, social and financial variables) and Ecuador's agricultural production structure in 2014 showed that gross agricultural added value have a positive impact on the diversification of agriculture, while the level of education, the unemployment rate and the amount of credit have had a negative (Pacheco et al., 2018). Studies of regional differences in Ecuador show that regions with high incomes specialize in production and services, and the population has a high average level of education. This reality suggests that human capital and industry specialization determine income levels and subsequent regional inequality (Silvana and Rafael, 2018). According to the results of this study, it is also concluded that the accumulation of human capital, the preservation of the nation health, largely dependent on the state and development of agriculture, is extremely important for economic growth.

Some studies claim that the contribution of agriculture to national food security should come from large farms in need of political support (Leonardo et al., 2018; Sultanova et al., 2018). As in Russian, large agricultural enterprises play a significant decisive role in the food provision.

## CONCLUSIONS AND RECOMMENDATIONS

Most European countries have a low level of differences in the sectoral structure of gross added value compared to the Russian Federation. This is due to the proximity of the territory, respectively, similar climatic conditions, and the effects of weather events. Six countries – Romania, Slovakia, Slovenia, Hungary, Bulgaria, and the Czech Republic are the closest to Russia in their gross added value structure. However, in these countries, the average growth rate of gross domestic product is 104.1%, in Russia – 101.5%. Therefore, different growth rates of the main macroeconomic indicator are possible at a very low level of differences in the sectoral structure. This indicates the presence of more extensive, systemic factors, relationships, trends in macroeconomics. The most significant contribution to the formation of gross value added on average across the

countries of Europe is provided by trade (including food products and food), transport and storage, hotels and catering, in second place – financial and insurance activities, transactions with real estate, professional, scientific, technical, administrative activities in the third place is industry. The Russian Federation, in turn, has the lowest share of trade, public administration, defense, social security, education, health and social services in gross added value compared to other countries. Comparison with some countries shows that Russia is at a stage of its development, which requires significant state participation in the formation of the new economy, its structural restructuring.

Based on the research, the study of the experience of European countries offers recommendations for improving the sectoral structure of the economy in Russia in terms of the contribution of agriculture. The Russian Federation is recommended to use the experience of advanced countries in agricultural development, differing in the structure of gross added value. At the same time, there is a situation when a high share of agriculture in the gross added value does not mean a high level of development of the industry itself. Further studies suggest adequate and appropriate use of the experience of both more and less developed countries in comparison with Russia.

To develop the system of national and international statistical accounting of macroeconomic indicators, the system of national accounts from the standpoint of substantiation of the contribution of the industry, the equivalence of producing and providing services industries, economic activities. A special role should be given to agricultural education and research in the field of agrarian economy due to the specifics of the country, social production. In this regard, the passage of internships of scientists, students of agricultural universities in educational institutions of other countries remains relevant. To develop the system of transportation and storage of food products.

In general, foreign countries will also benefit from the experience of agriculture in the Russian Federation with its severe natural and climatic conditions.

Methods and results can be used in socio-economic research, developing strategies for the effective development of sectors of the national economy of countries based on the optimal structure. This research makes a significant contribution to enriching the practice of applying the methodology for studying structural differences by international calculations.

## REFERENCES

- Balezentis, B., Novickyte L. (2018), "Are Lithuanian Family Farms Profitable and Financially Sustainable? Evidence Using DuPont Model, Sustainable Growth Paradigm and Index Decomposition Analysis", *Transformations in Business & Economics*, Vol. 17, No. 1 (43), pp. 237-254.
- Certan, S., and Certan, I. (2017), "Human potential in agriculture of the Republic of Moldova", *Scientific papers-series management economic engineering in agriculture and rural development*, Vol. 17, No. 2, pp. 21-28.
- de Lauwere, C., Malak-Rawlikowska, A., Stalgiene, A., Klopčič, M., Kuipers, A. (2018), "Entrepreneurship and Competencies of Dairy Farmers in Lithuania, Poland and Slovenia", *Transformations in Business & Economics*, Vol. 17, No. 3 (45), pp. 237-257.
- Fecke, W., Feil, J.H., Musshoff, O. (2016), "Determinants of loan demand in agriculture: empirical evidence from Germany", *Agricultural finance review*, Vol. 76, No. 4, pp. 462-476.
- Federal state statistics service of the Russian Federation, Access from [www.gks.ru](http://www.gks.ru)
- Feher, A., Gosa, V., Raicov, M. (2017), "Convergence of Romanian and Europe Union agriculture - evolution and prospective assessment", *Land use policy*, Vol. 67, pp. 670-678.
- Gabitov, I., et al. (2019), "Risk Reduction of Thermal Damages of Units in Machinery Heat Preparation for Load Acceptance", *Journal of Engineering and Applied Sciences*, Vol. 14, pp. 709-716.
- Gabitov, I.I., et al. (2018a), "Modelling the Process of Heap Separation in the Grain Harvester Cleaning System", *Journal of Engineering and Applied Sciences*, Vol. 13, pp. 6517-6526.

- Gómez Perazzoli, A. (2019), "Uruguay: país productor de alimentos para un sistema alimentario disfuncional", *Agrociencia Uruguay*, Vol. 23, No. 1, pp.92-100.
- Jimenez, S., and Alvarado, R. (2018), "Sectorial Specialization, human capital and regional income in Ecuador", *Revista de estudios regionales*, No. 111, pp. 99-128.
- Lapuh, L. (2018), "Socio-economic characteristics of resilient localities - experiences from Slovenia", *Regional studies regional science* Vol. 5, No. 1, pp. 149-156.
- Leonardo, W., van de Ven, G.W., Kanellopoulos, A., Giller, K.E. (2018), "Can farming provide a way out of poverty for smallholder farmers in central Mozambique?", *Agricultural systems*, Vol. 165, pp. 240-251.
- Lukmanov, D. et al. (2018), "Private Land Ownership Development and Investments in the Agrarian Sector of Emerging Economies", *Journal of Engineering and Applied Sciences*, Vol. 13, pp. 8760-8767.
- Mili, S., and Martinez-Vega, J. (2019), "Accounting for Regional Heterogeneity of Agricultural Sustainability in Spain", *Sustainability*, Vol. 11, No. 2, pp. 299-318.
- Morkūnas, M., Volkov, A., Pazienza, P. (2018), "How resistant is the agricultural sector? economic resilience exploited", *Economics and Sociology*, Vol. 11, No. 3, pp. 321-332. doi:10.14254/2071-789X.2018/11-3/19
- Niculae, I., Costaiache, G.M. (2016), "Study on the influence of import and export of fruit in Romania on economic indicators" *Scientific papers-series management economic engineering in agriculture and rural development*, Vol. 16, No. 1, pp. 343-353.
- Pacheco, J., Ochoa-Moreno, W.S., Ordoñez, J., Izquierdo-Montoya, L. (2018), "Agricultural Diversification and Economic Growth in Ecuador", *Sustainability*, Vol. 10, No. 7, pp. 2257-2273.
- Simtion, D. (2017), "The position of agriculture, agro-food system and national economy", *Scientific papers-series management economic engineering in agriculture and rural development*, Vol. 17, pp. 413-417.
- Skaf, L., Buonocore, E., Dumontet, S. (2019), "Food security and sustainable agriculture in Lebanon: An environmental accounting framework", *Journal of cleaner production*, Vol. 209, pp. 1025-1032.
- Smutka, L., Maitah, M., Svatos, M. (2019), „Policy impacts on the EU-russian trade performance: The case of agri-food trade”, *Journal of International Studies*, Vol. 12, No. 2, pp. 82-98. doi:10.14254/2071-8330.2019/12-2/5
- Sultanova, R. et al. (2018), "Evaluation of Ecological Potential of Forests", *Journal of Engineering and Applied Sciences*, Vol. 13, pp. 6590-6596.
- Szramka, H., Starosta-Grala, M., and Adamowicz, K. (2016), "Forestry in sectoral economic development in Poland", *Sylvan* Vol. 160, No. 5, pp. 416-423.
- Wuyep, S., Rampedi, I. (2018), "Urban Fish Farming in Jos, Nigeria: Contributions towards Employment Opportunities, Income Generation, and Poverty Alleviation for Improved Livelihoods", *Agriculture* Vol. 8 No 7, pp. 110-125.
- Zarova, E.V. (2006), *Regional statistics: textbook*, Finance and statistics, Moscow (in Russian).
- Zsarnóczai, J.S., Zéman, Z. (2019), "Output value and productivity of agricultural industry in Central-East Europe", *Agricultural Economics*, Vol. 65, No. 4, pp. 185-193.