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Serbian Academy of Sciences and Arts
Board for Village



Serbian Association
of Agricultural Economists

AGRI-FOOD SECTOR IN SERBIA

STATE AND CHALLENGES

Edited by

Academician Dragan Škorić
Danilo Tomić
Vesna Popović

Belgrade, 2013

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DEVELOPMENT CHARACTERISTICS OF AGRICULTURAL SECTOR IN SERBIA

Milivoj Gajić, Stanislav Zekić

INTRODUCTION

The agricultural sector¹ has an important place in the economy of Serbia, because of its share in employment and the GDP share, as well as its contribution to foreign trade deficit reduction. Trend analyses in Serbian agrarian sector are given longer time horizons, in order to compare the pre-transition period with the period of transition. The relationship trends between agricultural and non-agricultural sectors are highly emphasized, as well as the relations in agribusiness between agricultural production and agro industry – food processing and tobacco industries. The development characteristics of Serbian agriculture are analyzed through production and export performances of the sector, in the period 2005-2011. The production performances are analyzed through the structure and dynamics of agricultural production and the level of its partial productivity – labour and land. The export performances are analyzed through the value of agricultural exports with regard to hired labour and land in agricultural production. All analyzes use the comparative approach with the EU countries and the countries of the Region – Albania, Bosnia and Herzegovina, Montenegro, Croatia and Macedonia.² There are four EU countries that are singled out – the two "old" and two "new" EU states, which are interesting to be compared with Serbia.³

1. LONG-TERM DEVELOPMENT TRENDS

In the long-term development context, Serbian economy has been, according to the level and pace of GDP growth, in the crisis from the

¹ In this paper, the agricultural sector includes agriculture and agro industry that consists of food production, beverage production, animal feed production and tobacco production and processing, according to the Classification of Economic Activities from 1977, or food and beverage production and tobacco processing according to CA 1996, and food production, beverage production and tobacco processing, according to CA 2010. For more details, see: [7].

² The countries of the Region are analyzed collectively and individually, but it should be noted that Serbia is not included in the outlook of the Region.

³ Austria and France are the representatives of the "old" EU member states, where Austria is by area and population similar to Serbia, while France is an important agricultural country of the EU. The "new" EU member states and the former socialist countries compared to Serbia are Hungary, the neighboring country, which has relatively similar agro-ecological characteristics, and Poland, which did not have collectivized agriculture but had, as Serbia in the former Yugoslavia, agricultural production mainly based on individual farms.

mid-eighties. Namely, in the final decade of the twentieth century, the economy and the agricultural sector of Serbia develop under conditions of more or less closed economy, which suddenly turns the stagnant economic characteristics of the development process from the eighties into the retrograde development dynamics (Fig.1). Thus, after almost two and a half decades of continual and relatively high pace of economic growth in the sixties and seventies, there is the emphasized retardation pace of economic development in the 1980s, i.e. the reduced rate of GDP growth in the period 1982-89 is 0.5% in total and -0.2% on a *per capita* basis. With the beginning of the active process of "breaking" of the former Yugoslavia and sanctions imposed shortly after to the newly formed Yugoslavia, i.e. Serbia, the stagnant development gets highly emphasized retrograde characteristics, the economy "functions" in the conditions of hyperinflation and economic system is adjusted to "forcibly selected" model of closed economy. The economic epilogue is a sudden and large-scale drop of gross domestic product, which is in 1993 reduced to 41% compared with 1989.

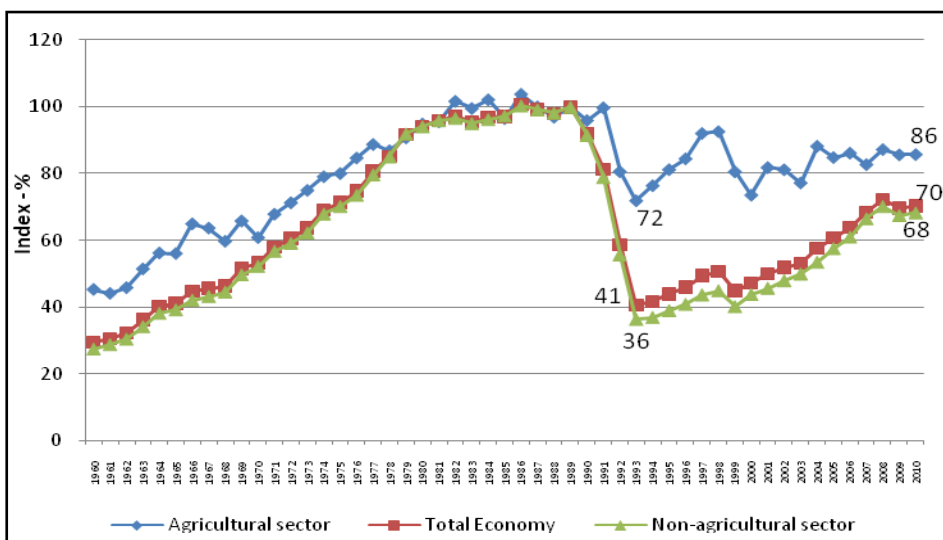


Figure 1: Dynamics of Gross Domestic Product in Serbia
(Note: Prices of 2002, and 1989 = 100)

Source: The authors' calculations on the basis of [7].

In only four years, the Serbian economic growth reverts thirty years. The economic activity of the non-agricultural sector is reduced to 36%, and the agricultural sector to 72%, compared with 1989. Within the agrarian sector, the agriculture has better growth performance than the agro

industry; their levels of gross domestic product are reduced to 80% and 56% respectively, compared with 1989.⁴ The process of economic recovery is, of course, much more gradual: five years after 1993, the gross domestic product grows at an average rate of 4.9% and in 1998 it reaches the level of 51%, compared with 1989. In 1999, the year of NATO "intervention" against Serbia and Yugoslavia, the scope of economic activity is again reduced to the level of 45%, compared with 1989. The transition period from 2000 to 2010, with a significant change of economic system and the initiation of the process of European integration, "brings" the GDP growth rate of 4.6%, with a growth rate of 5.3% in the non-agricultural and only 1.2% in the agricultural sector, with the volume of the gross domestic product of agriculture and agro industry scaled at a rate of 0.9% and 1.8% respectively.

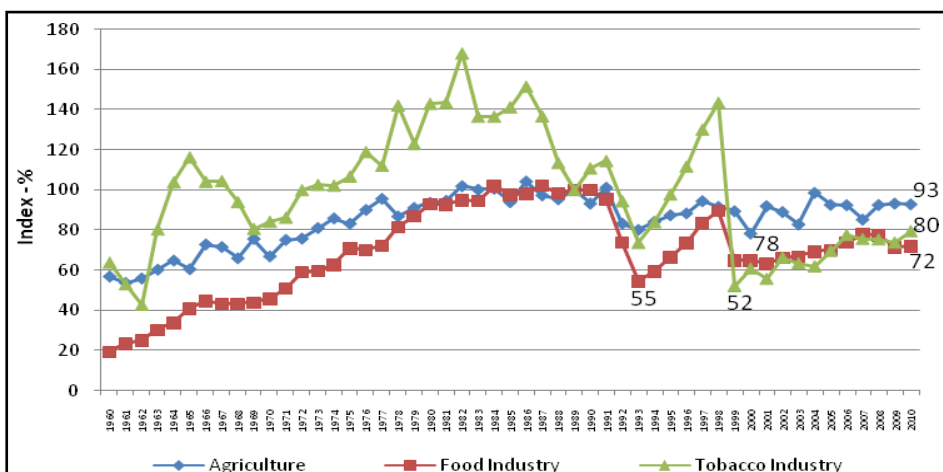


Figure 2: Dynamics of Gross Domestic Product in Serbian Agribusiness
 Note: Prices of 2002, and 1989 = 100.

Source: The authors' calculations on the basis of [7].

However, at the end of the last decade, more precisely from 2008 and the start of the global financial and economic crisis, the economic growth slows: in the period 2008-2010, the total gross domestic product decreases at a rate of 1.3%, with more emphasized reduction in the non-agricultural (1.4%) than in the agricultural sector (0.9%), therewith, there

⁴ During the initial transition years, this development trend is stimulated by so-called factors of transition recession, which in some transition countries, ensue in the decrease of more than 50% of agricultural production. The trade relations are crucial, i.e. relative agricultural prices, whose disparity explains approximately 46% of the total and 52% of the explained decline in the agricultural production. The rise in agricultural input prices reduces their engagement, which determines approximately 82% of the total and about 92% of the explained decline in agricultural production. For more details, see: [5].

is the slight increase of 0.2% in agriculture and the decline of 3.2% in agro industry. Such growth performances in Serbian economy, agricultural and non-agricultural sectors in 2010 reach 70%, 68% and 86% respectively, compared with the gross domestic product in 1989, with the current level higher in agriculture (93%) than in agro industry – 80% and 72% (Fig. 2).

2. DEVELOPMENT CHARACTERISTICS OF AGRICULTURE

In Serbia, the slowdown in agricultural production begins back in the eighties, to reach the negative development trend⁵ entering the transition period, at the end of the decade. In the following decade, i.e. during the nineties of the 20th century, there is the transition recession with the strong decline in agricultural production. This retardation of the development process of Serbian agriculture causes the increasing gap between the potential and the accomplished volume of agricultural production. Namely, during the nineties of the last century, the capacity utilization decreases in agricultural production, i.e. yields per unit area for crop production and per livestock unit for meat and dairy cattle production are reduced. The above-mentioned yields are significantly lower than in the developed countries of the EU, but also compared with the contemporary transition countries of Central and Eastern Europe. The trend of livestock reduction, both per livestock unit and per unit of land, together with the reduction in production per hectare of agricultural land is the inexplicable waste of primary potential of agricultural production, i.e. land in this period [3]. The agricultural production in Serbia does not achieve much better results in the period 2000-2005, and the accomplished level of production does not reach the production volume from the beginning of the transition period [2].

⁵ Until the 1990s, the slowdown is caused by the bimodal strategy development and from the dual character of the agricultural policy, which favors the development of social sectors of agriculture and neglects the private sector development, dominant even then. However, despite leaving the bimodal strategy development and creation of conditions for unique agricultural policy, Serbia enters the transition period with negative medium-term growth rates of agricultural production acquired in the second half of the 1980s.

2.1. Structure and Dynamics of Agricultural Production

In the analyzed period, the agricultural production in Serbia shows the upward trend with the relatively significant annual oscillations. These oscillations can be partly explained by the domination of crop production in total agricultural production in Serbia, where cereals have an important place mainly in dry land farming system.⁶ Such a production structure implies the significant impact of weather conditions on total volume of agricultural production. From the aspect of crop production and animal husbandry, Serbia is not different from the other countries in the Region, but it has a slightly larger share of cereals in total crop production. In relation to the EU countries, Serbia shows much more extensive production structure dominated by crop production with more than 2/3 of the total agricultural production (Fig. 3).

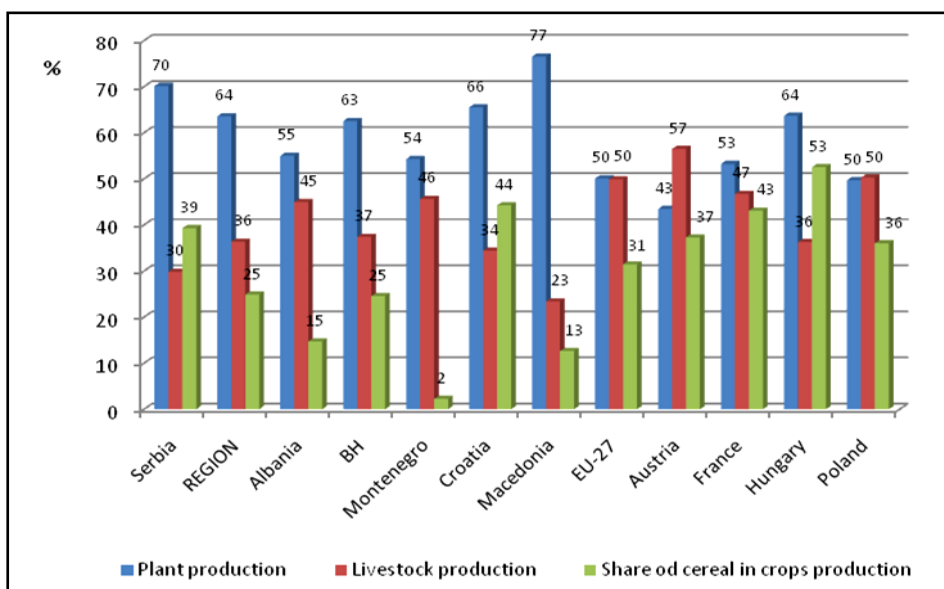


Figure 3: Structure of Agricultural Production

Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

The production growth in Serbia still lags behind the other countries of the Region, while the slower pace of agricultural production in the EU (Fig. 4) is in accordance with the achieved high level of agricultural development in most member states, but also with the changes in

⁶ In Serbian crop production, corn and wheat are the most common, occupying almost 60% of arable land [7], while the percentage of irrigated land is negligible [1].

the Common Agricultural Policy, which, after decades of production subsidies, emphasizes support of farmers' incomes without affecting the volume of production (*decoupling*).

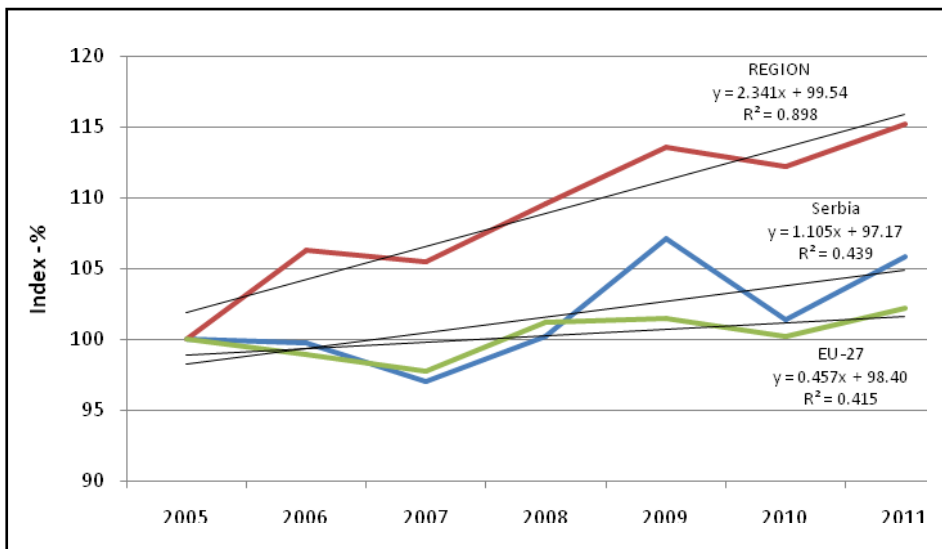


Figure 4: Trends in Agricultural Production

Note: 2005 = 100.

Source: The authors' calculations on the basis of [1].

2.2. Agricultural Production and Productivity

Before analyzing the productivity of primary agricultural resources, it is necessary to consider the resource structure of agriculture, i.e. the relationship between the primary production factors of agriculture, land and labour, which significantly determine levels of partial agricultural productivity. It should be noted here that Serbia has relatively small areas of available agricultural and arable land per active farmer.⁷ However, Serbia has a more favourable resource structure compared with the average of other countries in the Region, which is relatively low, due to very unfavourable land-labour ratio in Albania. The lag of Serbia compared with EU countries is particularly significant; since they have on average twice as much agricultural and arable land per active farmer

⁷ Term *Active farmer*, in the article, refers to *economically active population in agriculture* according to the FAOSTAT methodology [1].

(Fig. 5). The unfavourable resource structure of Serbian agriculture indicates the relative over-employment in Serbian agriculture, which is mostly the consequence of fragmented estate ownership [6], and the slow development of non-agricultural sector, which does not have the capacity to accept the surplus labour from agriculture. The unfavourable production structure is also characteristic for the countries with similar ownership structure in agriculture, i.e. the countries with significant share of smallholdings – Albania and Poland.

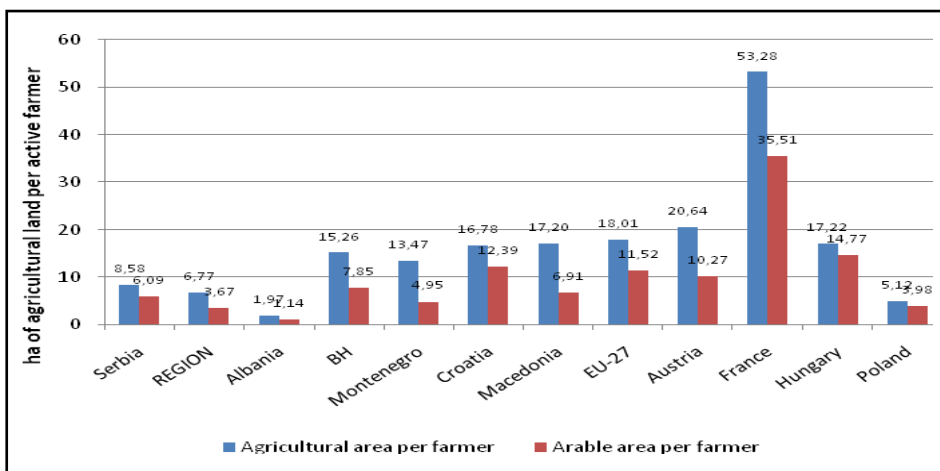


Figure 5: Structure of Resources in Agriculture

Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

The labour productivity in agriculture of Serbia lags behind most of the analyzed countries. Its ratio compared with the average of EU countries is 1:3.6, and the lag is even higher, compared with France and is 1:10.7. Compared with the countries of the Region, only Albania and Montenegro, and only Poland compared with the analyzed EU countries, have lower agricultural output per active farmer (Fig. 6). This is fully in accordance with the unfavourable resource structures in these countries, which obviously highly determine the level of partial productivity. Concerning other countries, Croatia achieves more than twice the labour productivity of Serbia, and Hungary almost triples it. The reasons for the low labour productivity are numerous, and in the case of Serbia, the most important are probably the dominant small estate ownership with semi-subsistence farming using extensive production methods and the phenomenon of hidden unemployment.

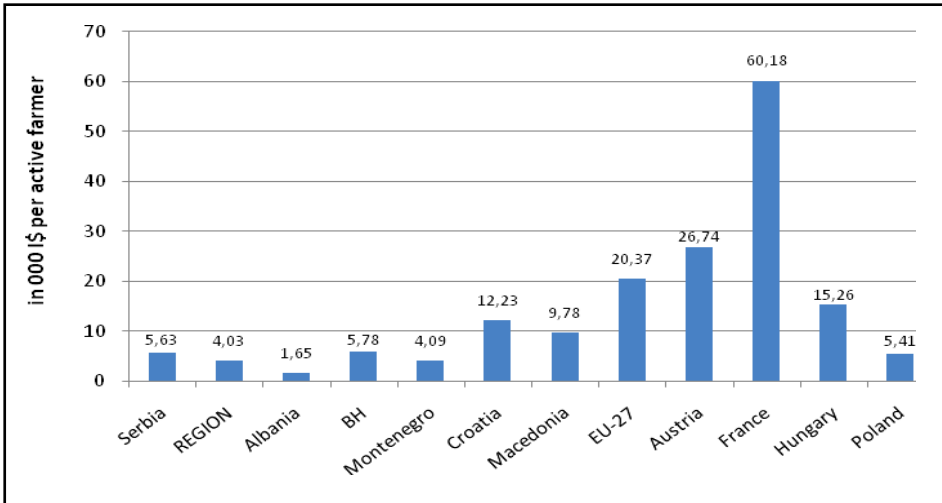


Figure 6: Labour Productivity in Agriculture
Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

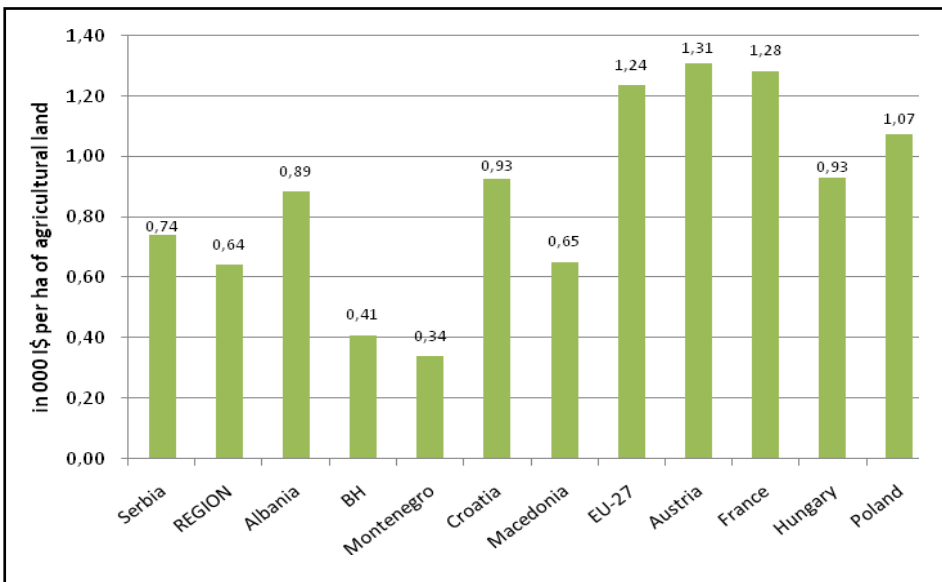


Figure 7: Land Productivity in Agriculture
Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

When it comes to the level of productivity of land, the situation is somewhat better for Serbian agriculture – lagging behind the EU average (the data for Austria and France are not significantly different) is not so

distinct, and the ratio is 1:1.68 (Fig. 7). The extensive structure of agricultural production in Serbia in terms of the lag in livestock production implies the inadequate utilization of the of crop production potential, or inadequate use of conversion options of less valuable plant products to livestock products with higher added value. In this context, the development of the livestock production would certainly serve to intensify agriculture in Serbia and to increase the total production per unit area.

2.3. Export Performances of the Agri-food Sector

From the middle of the first decade of this century, Serbia has positive foreign trade balance in agri-food products, increasing year after year. These tendencies are the result of improved trade position of Serbia, primarily in the Region, i.e. with CEFTA countries, but also with the Russian Federation and the EU. Namely, the bilateral agreements within CEFTA, trade liberalization with the EU, as well as the privileged position in the Russian market, have significantly contributed to continual Serbian increasing foreign trade surplus of these products.

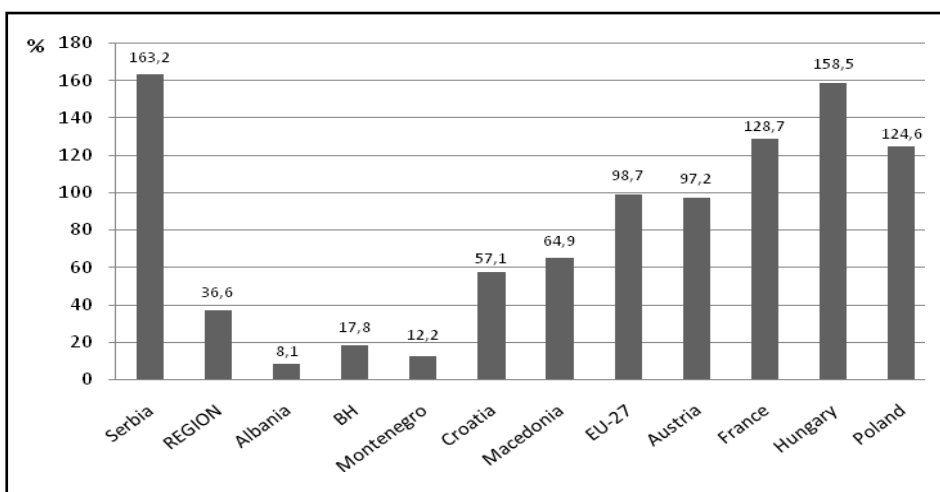


Figure 8: The Export/Import Coverage of the Agricultural and Food Products
 Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

The Figure 8 shows that compared with the analyzed countries, Serbia has the highest rate of import coverage with export of agricultural products. On the other hand, all the countries of the Region import far

more than export, especially Albania, Bosnia and Herzegovina and Montenegro, the last two being the major export markets for agricultural products from Serbia. In addition, the EU is, thanks to the Common Agricultural Policy (CAP), closer to the realization of the permanent surplus in foreign trade in agricultural and food products.

However, it is questionable if the export potential of Serbian agriculture is utilized enough, i.e. if export could be further increased. This can be best seen when agricultural export is related to the basic productive resources – labour and land, and compared with other countries. When the export of agricultural and food products per active farmer is analysed, it can be observed that Serbia does not achieve impressive results, even in the regional context. The situation is even worse in relation to EU countries, which per active farmer, on average, export almost 14 times more agricultural products, Hungary almost 7 times, while in comparison with high-income countries such as Austria and France, it is even more expressed, not in the favour of Serbia (Fig. 9).

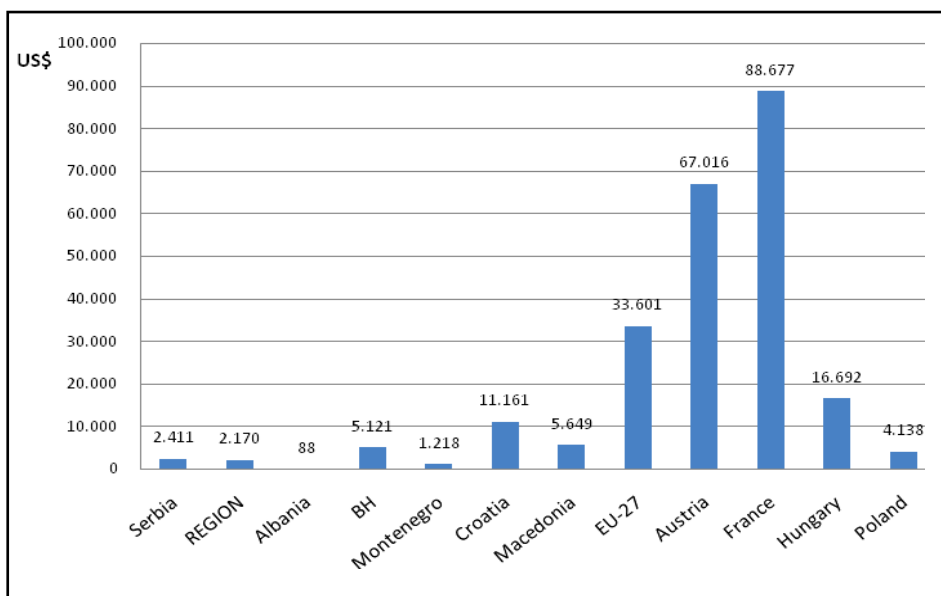


Figure 9: Export of Agricultural and Food Products per Active Farmer

Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

The situation is somewhat better in agricultural export in relation to the available agricultural land, though Serbian lag is evident here too, especially in relation to the EU. For example, the EU exports an average

of more than six times the agri-food per unit area, and Austria as much as 10 times (*Figure 10*). These tendencies are the aforementioned consequences of the relative extensiveness of Serbian agriculture oriented towards crop production and extensive production methods. Such a production structure dictates the structure of agricultural exports of Serbia, which is dominated by plant products of lower level of processing, or products with low added value.⁸ In this context, the small share of products of animal origin and final products⁹ is quite alarming.

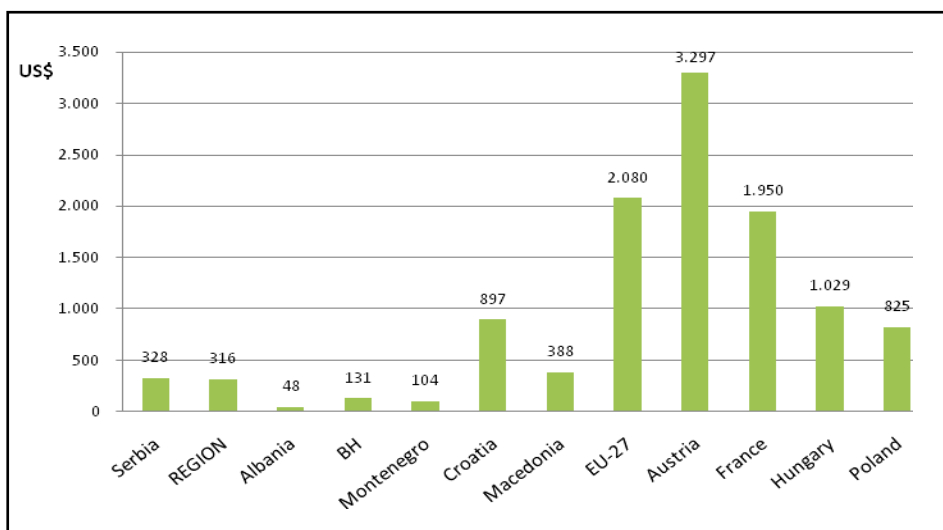


Figure 10: Export of Agricultural and Food Products per Hectare of Agricultural Land

Note: Average for the period 2005-2011.

Source: The authors' calculations on the basis of [1].

3. DEVELOPMENT CHARACTERISTICS OF AGRO-INDUSTRY

⁸ Thus, as an average for the analyzed period, Serbia has mostly exported fruits and vegetables, as well as cereals and cereal derivatives. These two product groups, together with sugar, represent more than 50% of the agricultural exports [1].

⁹ Considering higher levels of processing, there is a significant share of beverages and tobacco products with just over 10%, while livestock products from meat and meat derivatives represent 4.4%, dairy products and eggs 2.7%, and live animals only 2.2% [1].

After the stagnant development, process of the 1980s, during the last decade of the 20th century, Serbian agro industry, as well as the whole industry, has negative development features. The period 1989-2000 is characterized by the reduction of agroindustrial production that contributes to the industrial production decline rate of 7.9%. Additionally, the decline in production is mostly in animal feed production¹⁰ (10%), while food processing, being the dominant sector of agro industry, declines 5%. The production decline is much less severe in tobacco production and processing (1.4%) and beverage production (0.7%). In the former economic and political environment, in 1993, under the economic and political sanctions by the international community, in the implicitly "imposed" model of closed economy, the sharp decline and the lowest production output occur in food processing (51% compared with 1989) and beverage production (71%). The following positive development trend is very slow in food processing, so in the last year of the twentieth century and after the "humanitarian" intervention of NATO in 1999, it reaches only 55% of food processing volume achieved in 1989, while the beverage production, with significant fluctuations, reaches the pre-recession and pre-transition output level. Animal feed production has the trend of decline by 2000, when it reaches the lowest volume. In tobacco production and processing, the production volume declines by 1997, and after a three-year growth, it achieves the production volume of the year 1989 (Fig. 11).

The decline in the volume of production in the period 1989-2000 is accomplished with the reduction of employment in all areas of agro industry, with simultaneous and even more decrease in labour productivity in the food processing, beverage production and animal feed production, basically being the consequence of the closed economy model imposed by economic sanctions. Only tobacco production and processing shows the tendency of labour productivity growth.

¹⁰ Production performances of animal feed production are mainly determined by retarded development characteristics of livestock production and the relatively high level of import dependence on the components used in the production of balanced concentrate animal feed.

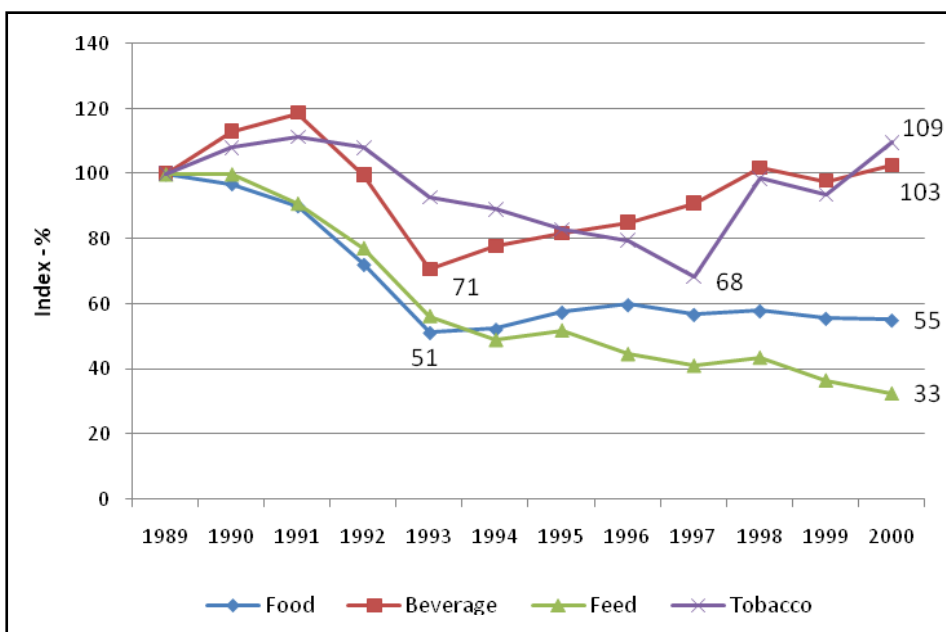


Figure 11: Agroindustrial Production in Serbia (1989-2000)

Note: 1989 = 100.

Source: The authors' calculations on the basis of [7].

Serbian production capacities of agro industry, built mostly in a very different economic environment including the size of the domestic market as probably its most important feature, in the first half of the 1980s are utilized approximately 80%, compared with the projected capacity¹¹. The stagnant level of utilization of production capacity of agro-industry and the entire industry of Serbia in the 1980s significantly and rapidly decreases at the end of that and at the beginning of the next decade, which is caused by the above-mentioned narrowing of domestic market, as well as by very limited opportunities for exports in the period after international sanctions of 1992, followed by abrupt and high liberalization of foreign trade without adequate measures to protect

¹¹ The official statistics has published the data on the utilization of the projected and technical capacities. This paper analyzes the utilization of the projected capacity including the year 2000, which by definition of projected and technical capacities, show higher degree of utilization compared with the technical capacity. However, since the utilization trends of both of them are almost the same, the concentration only to the projected capacity does not question the results of the analysis.

domestic production. The significant increase in the level of capacity utilization is achieved only in the tobacco production and processing¹², with the "moving" around or above 50% in the 2000s, which is still significantly below the pre-recession and pre-transition period. In the same period, in the other segments of the agricultural industry, the capacity utilization is approximately 40% in food processing, just under 40% in beverage production, and about 30% in animal feed production.¹³

Locating the analysis of development characteristics of agro industry in the transition period 2001-2012, when the economic system significantly changes and the process of European integration begins, leads to the conclusion that the development process is characterized by the positive development trend. The most increase is in the tobacco processing (2.2%), while the lowest growth rate in the agricultural industry is in the beverage production (0.7%). In the food processing¹⁴, as the dominant segment of the agroindustrial production, the average growth rate is 1.5%, and it has the greatest weight in determining the development of agroindustrial production performance. The detrimental fact is that the tendency of growth in the food processing and beverage production after 2008, and in the tobacco processing after 2010 is inverted to the tendency of decrease (Fig. 12). This is another supplementary indicator that the process of de-industrialization is not stopped, because the overall tendency of growth in whole processing industry after 2008 is "inverted" to the tendency of decrease, and on the average, the production in the processing industry has been declined at a rate of 0.1%.

¹² Tobacco production and processing is, together with oil and derivatives sector, the segment of the economy that is in the highest degree exposed to the black market, which has the significant impact on its production performance, and the "filling" of the budget and the settlement of general social needs.

¹³ Details on the problems of capacity utilization and the level of achievement and loss of potential output see: [3].

¹⁴ It should be noted that the data for this period are given by the Classification of Activities from 2010 [7], and that there exist significant differences compared with the earlier classifications, the most important being the fact that the animal feed production "is attached" to the previous food processing.

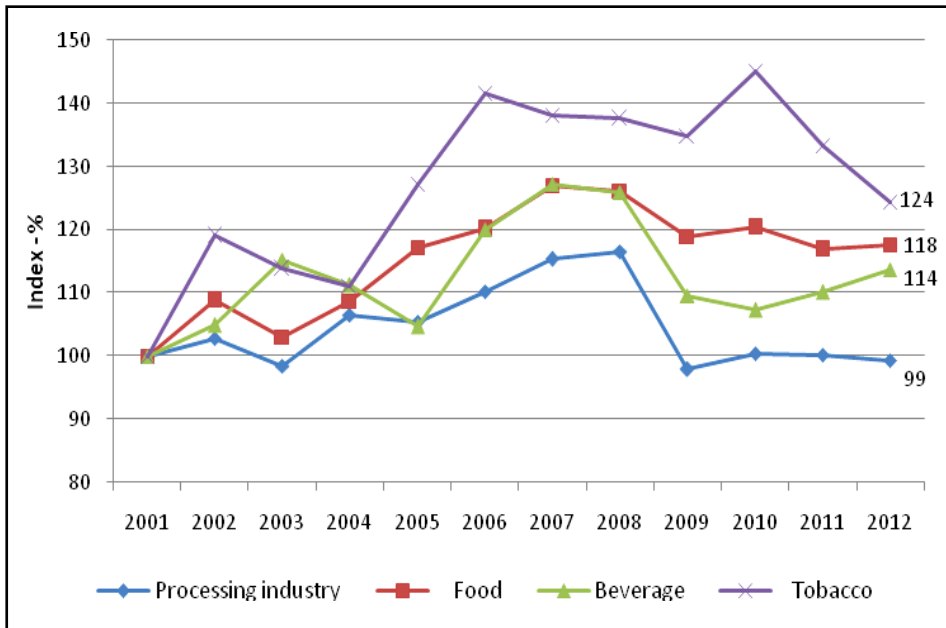


Figure 12: Agroindustrial Production in Serbia (2000-2012)

Note: 2001 = 100.

Source: The authors' calculations on the basis of [1].

In this period, the tendency of output growth is accomplished by reduced number of employees in all areas of agro industry, with simultaneous and strong increase in labour productivity, which is the positive development feature. However, in the context of the aforementioned data on the degree of production capacity utilization, the extremely emphasized reduction of employment in agro industry and the whole processing industry indicates the imperfection of the economic system in the regulation of the impact factor of the transition recession, property transformation and the like.

CONCLUSIONS

The production performances of Serbian agriculture are basically at the level of the regional average, but far behind the EU countries. The ownership in Serbian agriculture is characterized by a high proportion of

smallholdings with semi-subsistence production, and unfavourable ratio of primary agricultural resources, which is reflected in the low available land per active farmer. In addition, the production structure is dominated by a relatively extensive crop production, with inadequate representation of livestock as a generator of agricultural intensity. These characteristics dominantly determine the low partial productivity of agriculture in Serbia – especially the labour productivity. The total agricultural production of Serbia suffers from the low representation of animal products deriving from the extensive character of Serbian agriculture, which is certainly reflected in the structure of exports. Serbian agricultural export, dominated by products with lower levels of processing or raw materials, mainly from crop production, achieves inevitably weaker export performance through the observed low value of export, compared with the engaged labour and land. In this context, the improvement of livestock production and the development of processing industries would significantly contribute to better production performance of agricultural production and increased exports of agricultural and food products.

During the nineties, negative development characteristics are present in all sectors of agro industry, in which the decline in production is accompanied by the decrease in employment. Excluding the tobacco production and processing, in all other sectors – food, beverages and animal food processing – there is the decrease in productivity. In the period 2000-2012, the output growth in the processing industry increases together with the further reduction of number of employees in all sectors, leading to the increase in labour productivity. However, at the end of the first decade of this century, the agro-industrial production is re-reduced. The degree of capacity utilization in the food processing in Serbia is inadequately low and the slightly higher utilization of installed capacities exists only in the tobacco industry. The analysis of production performance and the degree of utilization of projected capacity clearly indicates that in the last twenty years, the agro industry of Serbia "has developed" at a pace that is well below the determined economic parameters, but also below the required level, indicated by the aggregate domestic demand and balance of payments. Such development trends will be fatal, not only for the agro industry, but also for the whole

economy of Serbia. The solution must be sought in a clear and precise definition of development objectives and economic and political instrument operationalization for their realization.

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REFERENCES

- [1] FAO, FAOstat. World Agriculture Statistics Data Base. (<http://faostat.fao.org>).
- [2] Gajić, M., Lovre, K., Zekić, S. 2007. Development Performance of Agricultural Sector and Economic Development in Southeast European Countries in Transition. In: D. Tomić, M. Ševarlić (eds.) *Development of Agriculture and Rural Areas in Central and Eastern Europe*. Novi Sad: EAAE-SAAE. pp. 587-595.
- [3] Gajić, M., Lovre, K., Zekić, S., Trkulja, Đ. 2003. Capacity Utilization of Agri-food Sector in Serbia. In: Z. Zakić, G. Rikalović, Ž. Stojanović (eds.). *Institutional Reforms and Transition of Agri-food Sector in Serbia - Part 2*. Belgrade: CID - Faculty of Economics. pp. 243-256. (In Serbian).
- [4] Gajić, M., Lovre, K., Zekić, S. 2001. Agriculture of Yugoslavia and European Union – Development Trends. Subotica: *Annals of the Faculty of Economics in Subotica*. 6: 211-220. (In Serbian).
- [5] Macours, K., Swinnen, J.F.M. 1999. Causes of Decline in Economic Transition: the Case of Central and Eastern European Agriculture. Paper presented at the IXth Congress of the European Association of Agricultural Economists, Warsaw.
- [6] Popović, R., Zekić, S. 2010. Evolution, State and Perspectives of Serbian Agriculture Within EU Integrations. *Advances in Agriculture & Botany – International Journal of Bioflux Society*. 2 (2): 98-110.

- [7] Statistical Office of the Republic of Serbia. Electronic Databases. (<http://webrzs.stat.gov.rs>).
- [8] Zekić, S., Tošin, M., Kresoja, M. 2010. Foreign Trade of Agricultural and Food Products of Serbia. In: M. Ševarlić, D. Tomić (eds.) Agribusiness of Serbia and European integration. Belgrade: Serbian Association of Agricultural Economics. pp. 95-102. (In Serbian).
- [9] Zekić, S., Gajić, M., Kresoja, M. 2012. Development Performances of Serbian Agricultural sector in Function the Overcoming of Economic and Financial Crisis. *Annals of the Faculty of Economics in Subotica*. 48 (27): 97-109. (In Serbian).
- [10] World Bank, 2011. Republic of Serbia, Country Economic Memorandum: The Road to Prosperity: Productivity and Exports, Vol. 2 of 2, Report No. 65845-YF, December 6, 2011. (<http://www-wds.worldbank.org>).