Development of the Serbian sugar industry in the European context

Martin Vaněk[1], Věra Bečvářová[2], Nina Pavlovič[3]

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Abstract: The paper deals with the development of the sugar industry in the Republic of Serbia in the context of changes in the business environment, which are largely related to the application for accession to the European Union submitted on 19 December 2009. Serbia was granted candidate status on 1 March 2012. This is the period when the European Union (EU) Member States had to apply measures within the sugar beet-sugar commodity vertical resulting from the Common Market Organisation (CMO), which aimed to increase the competitiveness of the European sugar industry, in particular through a quota regime and minimum purchase prices. The analysis consists in the evaluation of the basic production indicators of the different phases of this commodity vertical in Serbia. The indicators found are then compared with the trends of the EU Member States. On the basis of this comparison, Serbia's approach to the individual reforms applied under the EU Common Agricultural Policy, which as a country in the pre-accession period it has to integrate into its national legislation, is also assessed.

Keywords: sugar beet, Common agricultural policy, Common organization of sugar market, sugar reform
JEL Classification: Q10, Q18

1 Introduction

Sugar beet can objectively be considered a crop with a wide variety of uses. In the temperate zone, sugar beet is grown primarily for sugar production because of its high sucrose content. However, the potential of sugar beet to produce alcohol for fuel (bioethanol) production is increasing (Pulkrábek, 2007) and the waste products from sugar production are used as feed in livestock production (Pulkrábek and Šroller, 1993). The aforementioned wide use of sugar beet is conditioned by the high agro-ecological requirements for its cultivation and a certain experience of the grower, because sugar beet also has high requirements for individual agro-technological procedures (Pulkrábek, 2007).

The sugar beet and sugar market is monitored within the EU through the Common Market Organisation (CMO) for sugar (European Commission). Under the CMO, market measures have been in place since 1968 to directly intervene in the sugar and sugar beet market. Through these interventions, the CMO responded to changes in the business environment for this commodity in order to ensure an adequate income for European growers (European Commission, 2004). Due to the enlargement of the EU to include new Member States, it was necessary to reform the business environment for this commodity. A key re-form came into force in 2006 with the aim of strengthening the competitive players within the sector (verticals) at the expense of those who were not competitive within the markets for this commodity. The non-competitive operators (sugar factories) were able to benefit from compensation payments that provided them with financial compensation for closing down their activities. The main elements of this reform were the reduction of quotas for sugar production and the reduction of minimum prices for sugar beet and sugar (Krouský, 2008). Increasing the competitiveness of the sector was crucial and targeted. Then, in 2017, all measures that Member States had to follow within the sector were already abolished, which further strengthened the competitive environment (Ministerstvo zemědělství, 2017).

The cultivation of sugar beet with subsequent sugar production has a long tradition in Serbia, dating back to 1913, when the first sugar factory called Bačka (Sunoko) was established in the Vojvodina region. The Vojvodina region is one of the most important agricultural areas in Serbia, as it has fertile black soil, which is ideal for sugar beet cultivation. The Vojvodina region is also crucial for Serbian agriculture because it accounts for 35 % of Serbia's agricultural area. From the sugar beet cultivation point of view, this region is key and accounts for 96% of the sugar beet production (Novkovic, Mutavdžić., Vukelić., 2013).

[1] Mendel University in Brno, Faculty of Business and Economics, Department of Business Economics, Zemědělská 1, 613 00 Brno, Czech Republic, xvanek6@mendelu.cz
[2] Mendel University in Brno, Faculty of Regional Development and International Studies, Department of Regional and Business Economics, Zemědělská 1, 613 00 Brno, Czech Republic, vera.becvarova@mendelu.cz
[3] Mendel University in Brno, Faculty of AgriSciences, Zemědělská 1, 613 00 Brno, Czech Republic

Serbia applied for EU membership in 2009. On the basis of the submission, the EU Council changed Serbia's status to candidate country in 2012. The granting of candidate status meant that the sugar beet and sugar sector had to apply the measures resulting from the CMO (European Commission). The candidate status allowed Serbia to benefit from funding for strengthening the competitiveness and transformation of its agriculture, including the sugar beet and sugar sector, through the EU's pre-accession assistance for rural development (IPARD) (European Commission).

2 Methods

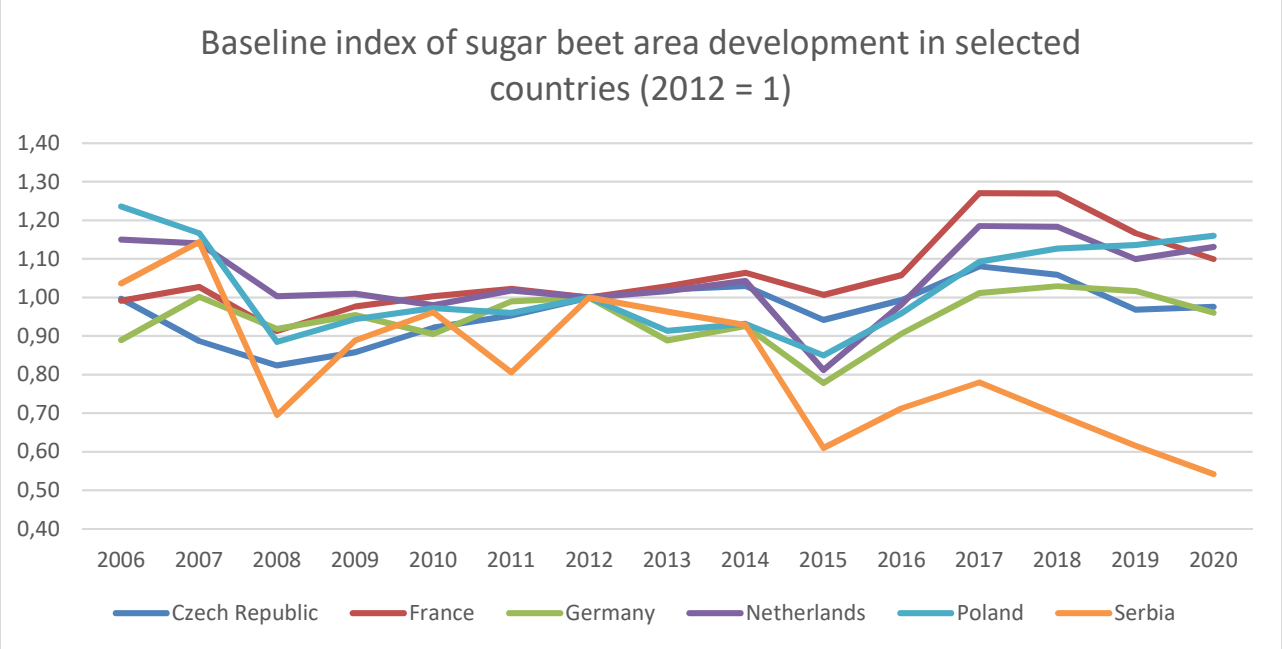
The paper deals with the evaluation of the response of the Republic of Serbia to the implementation of the European legislation, specifically the legislation resulting from the EU Common Agricultural Policy, which it has to integrate into the national legislation within the framework of the candidate country status. In the case of the sugar beet and sugar commodity, it concerns the reaction to individual measures resulting from the CMO reforms, which the Member States had to apply in the past and Serbia had to apply additionally in this sector. The analysis carried out compares key indicators characteristic of the beet and sugar sector. The comparison is assessed on the basis of a base index or comparison of values for the period 2006-2020. The base year for comparison is 2012, which is a key year due to the granting of candidate status. For a better assessment, the selected indicators are compared with selected EU Member States. This comparison allows a better assessment of the response of the original Member States and Serbia.

3 Research results

3.1 Sown areas

Planted area is one of the basic indicators among agricultural crops. The area under cultivation tells us how much of the area of a country is occupied by the crop under consideration. The basal area index in Figure 1 allows a better evaluation of the parameter under study without the bias caused by the different size of the different states.

Figure 1: Baseline index of sugar beet area development in selected countries (2012 = 1)



Source: data from Faostat, own processing

Based on the comparison made in Figure 1, we can observe a different development between the original EU Member States and Serbia. The EU Member States have a similar development in the period under review with minor variations. In the general context, the base index of these countries followed a downward trend after the introduction of the reform in 2006, but thanks to the possibility to buy sugar quotas since 2009, the base index shows a steady state even around the base year 2012. A common feature of these countries is the decline caused by the uncertainty with the planned end of sugar quotas by 2015, which finally occurred only in 2017. These countries took advantage of the time available to prepare and deliberately increased their sown area as the end of sugar quotas approached in order to secure a higher share of the European market. Typically, there is again a slight decline after 2018, caused by the fall in sugar prices due to overproduction in previous years.

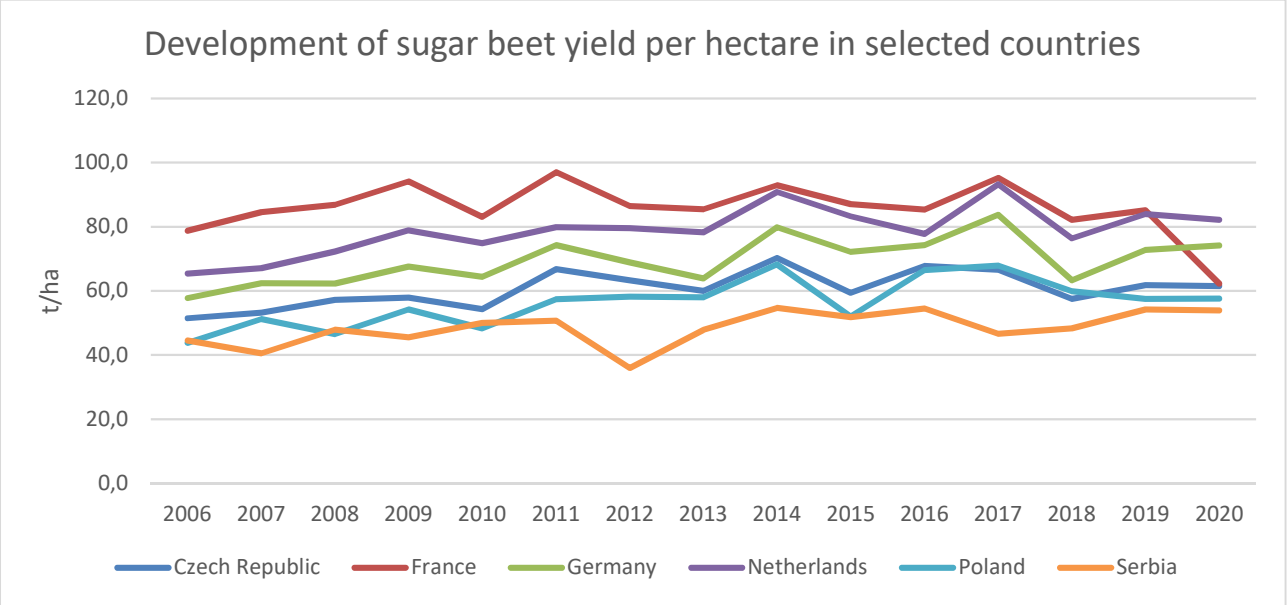
In the case of Serbia, we can observe high volatility in the base index in the period before the base year 2012, where such significant volatility in the case of agricultural commodities can be attributed to the weather. After 2012, the base index follows a similar trend as for the other Member States. With 2015 came a fall in the base index, as in the case of

the other countries, but in the case of Serbia it was much more pronounced and amounted to 0.32 basis points year-on-year. This decline was partly offset by the increase by 2017, but its dynamics did not correspond to the growth dynamics of the other countries. After 2017, the basis index has already had a persistent decline, which may be partly due to the less competitive position of local growers in the face of the significant price drop that occurred in the sugar beet market. The other major factor was the discovery in 2019 of a disease called bull rot, against which there was no known protection.

3.2 Hectare yields

The production of sugar beet pulp is one of the important parameters targeted by the CMO in its reforms. Total production is the result of the size of the sugar beet harvested area and, in particular, the hectare yield of sugar beet. The hectare yield values in Figure 2 allow us to better assess the technological and agrotechnical maturity of the growers in a given state. As mentioned in the introduction of the paper, sugar beet is a highly demanding crop both in terms of agro-ecological conditions and grower knowledge.

Figure 2: Development of sugar beet yield per hectare in selected countries



Source: data from Faostat, own processing

Based on the values shown in Figure 2, France has consistently achieved the highest yields per hectare in the long term, with yields consistently around 90 t/ha of sugar beet pulses. This level has also been achieved in the Netherlands in recent years, thanks to the high intensity of agricultural production. Germany has long achieved yields of around 70-80 t/ha, while the Czech Republic and Poland have yields of around 60-70 t/ha. If we look at trends rather than specific values, the trend in the countries studied is similar, with year-on-year fluctuations caused by climatic factors or the impact of pests and diseases. The aforementioned diseases, specifically beet yellows virus, have caused a decrease in hectare yields in France since 2019.

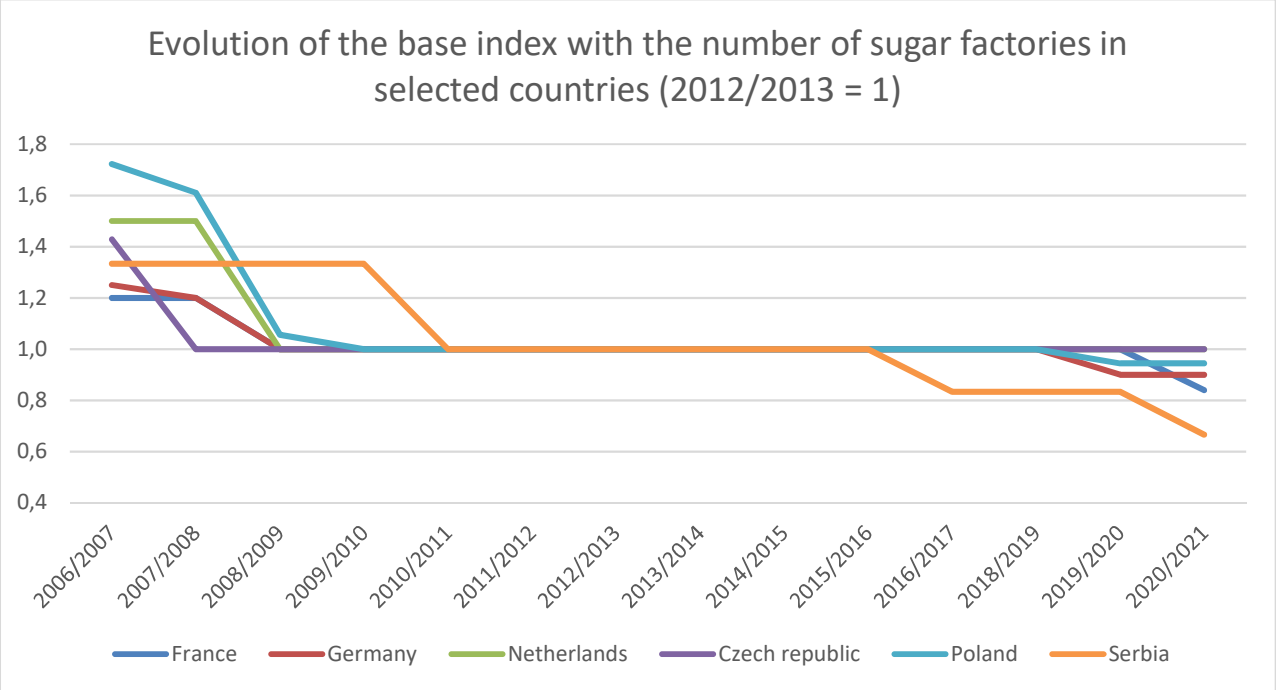
Serbia, which has lower yields per hectare than other countries, has seen a growing trend in yields per hectare since 2006. In 2006, the hectare yield in Serbia was around 40 t/ha. After a fluctuation in 2012, this trend has been reversed and hectare yields are currently around 50-60 t/ha. Overall, it can therefore be concluded that Serbian sugar beet growers are increasing their competitiveness through modern agricultural practices and technologies, but this trend is largely influenced by the decline in the production area that has occurred since 2014, which is confirmed by the trend in sugar beet seeded area shown in Figure 1.

In the future, the ability to cope with climate change can be expected to be key to high yields in all the countries studied, as sugar beet is not suited to long dry spells. Last but not least, the impact of diseases, pests and early intervention against them will also play a role.

3.3 Processing assumptions - number of sugar factories

The presence of a downstream processing industry in a given country is very important for the successful development of sugar beet production. As sugar beet is a bulk commodity, there is a problem of the number of sugar factories, the issue of transport for processing and the high cost of transport over long distances between countries. The evolution of the basic index with the number of sugar factories in each country can be seen in Figure 3.

Figure 3: Evolution of the base index with the number of sugar factories in selected countries (2012/2013 = 1)



Source:own processing

Based on the data shown in Figure 3, it is clear that the development in terms of the number of sugar factories in Serbia is different compared to other countries. In the context of the post-2006 CMO reforms, the most significant reform came into force, which sought to reduce the amount of sugar produced in the EU. This fact is confirmed in Figure 3, where for all countries the base index has a decreasing character, which is related to the possibility to benefit from financial compensation for the cessation of sugar production in a given sugar factory. These compensation payments were paid until the marketing year 2009/2010. Since that year, there has been no further change for the countries concerned. The further decline in the base index is in the case of Germany and Poland in parallel after the marketing year 2018/2019, when the CMO reform was expected to end. A much more pronounced decline occurred after the 2019/2020 marketing year in France, where there was a 0.2 point drop in the base index, which is to some extent related to the dramatic fall in the world sugar price during this period.

In the case of Serbia, the evolution of the base index is different. A significant decrease occurred in the marketing year 2009/2010, which was related to the ongoing transformation of processing capacities. The next significant drop of 0.2 basis points came after the marketing year 2015/2016 and the last drop of 0.1 basis points came after the marketing year 2019/2020. It can be noted that overall there has been an increase in concentration in the sugar market, with 4 sugar refineries operating in Serbia as of this year, 3 of which are owned by a single owner. The sugar beet processing market in Serbia shows an oligopolistic character similar to that of other European countries.

3.4 Sugar production

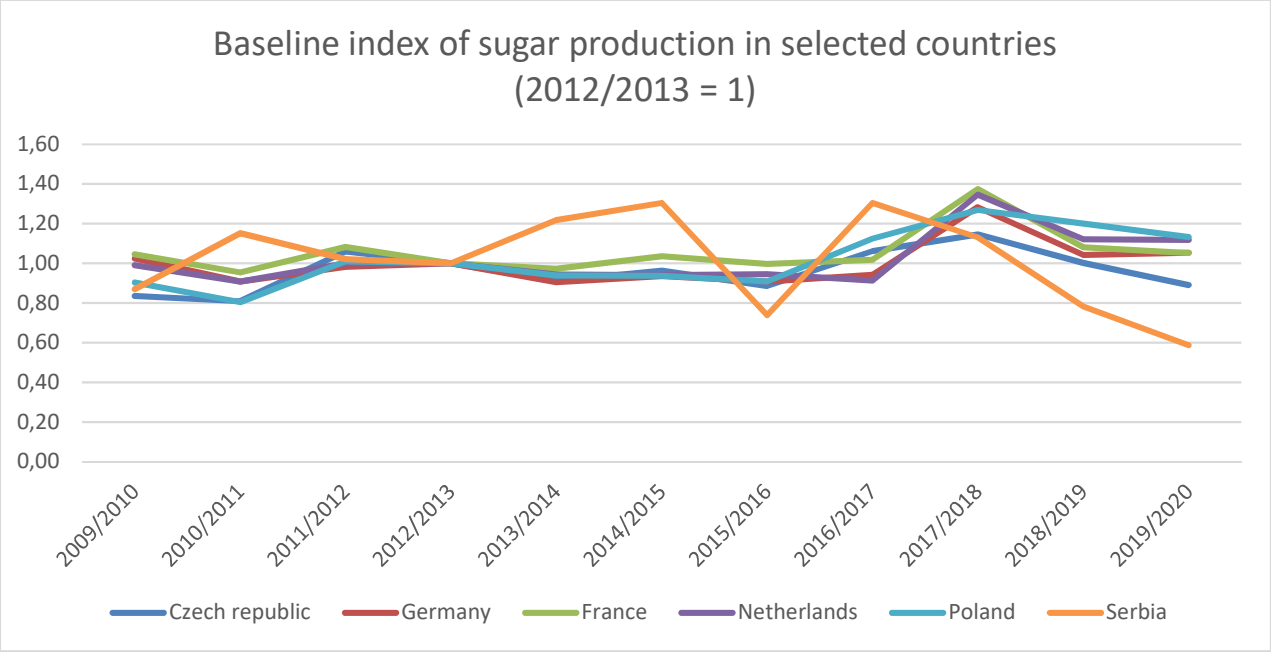
In Figure 4 we can see a comparison of the evolution of the base index in sugar production of the countries under consideration. Sugar production in each country reflects the above-mentioned basic indicators, which practically determine the dimension of sugar production.

For the EU Member States, a virtually parallel trend in the evolution of the base index can be observed. This parallel trend confirms the reality of how Member States have been affected by the CMO reforms which have constrained their

sugar production. The significant increase in the base index came only with the end of sugar quotas, which was reflected in the 2017/2018 marketing year. However, this increase was followed by a decline, which was largely linked to the fall in the sugar price.

The base index in the case of the Republic of Serbia shows more volatility and does not correspond to the evolution of the EU Member States' base index, given that the Serbian processing industry did not have to comply with the measures resulting from the CMO reforms. The decrease in the base index has been occurring since the marketing year 2016/2017, which is related to the reduction in the number of sugar factories and the decrease in the area under cultivation and as a result means less raw material input for sugar production. This downward trend has accelerated in subsequent years. It has been reinforced by the decline in the number of sugar factories and the reduction in the area sown, while the increase in yield per hectare has not been able to compensate for this decline.

Figure 4: Baseline index of sugar production in selected countries (2012/2013 = 1)



Source:own processing

On the other hand, there have been some positive developments in manufacturing. Comparing the evolution of the base indices in Figure 3 and Figure 4 over the period under review, it can be seen that this part of the commodity vertical reflects the impact of the increase in the technological level and processing capacity in functional sugar factories, as the processing industry was able to produce more sugar with fewer factories. This improvement may be due to some extent to the extension of the length of the beet campaign, but the sugar factories try not to extend the length of the beet campaign, as the quality of the beet decreases over time and hence the yield of the resulting sugar production is lower.

4 Conclusions

Sugar beet is a traditional crop of European and Serbian agriculture, thanks to the suitable agro-ecological conditions, and in both cases the downstream processing industry plays a role, which is absolutely necessary for the maintenance and efficient use of the production of this crop. Serbia, which applied for EU membership in 2009 and was subsequently granted candidate status in 2012, has to integrate European legislation into its national legislation as part of the pre-accession period. These changes also concern agricultural policy, which must be in line with the strategy and objectives of the EU's Common Agricultural Policy. IPARD funds are earmarked to support the transformation and increase the competitiveness of Serbian agriculture and downstream industry.

In the case of sugar beet and sugar production, Serbian agriculture, unlike Member States, did not have to fully apply the reforms and measures resulting from the CMO regulation, which affected European sugar beet and sugar producers since 2006, when these measures were abolished in 2017.

Based on the comparison of several basic indicators in the sugar beet and sugar sector, a different trend from the EU Member States is evident in all the monitored indicators. The observed differences are related to the fact that the integration process is long-term and in the case of sugar beet cultivation and sugar production, the measures resulting from the CMO reforms have not been applied in Serbia.

A decreasing trend was found for most of the monitored indicators, in contrast to the other countries. This downward trend could pose a problem for maintaining the position of this sector in the Republic of Serbia after its accession to the EU, when its country-agricultural policy will be based on the CAP and the pressure on the efficiency and competitiveness of this sector will further increase.

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