Slovakia's self-sufficiency in selected food products

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Abstract

Food production is a basic branch of the processing industry not only in the Slovak Republic, but also in the entire European Union. Food production has a priority role in ensuring the nutrition of the population. The agrarian sector is, on the one hand, an important integral part of the national economy and, on the other hand, maintains its own specific position. Food self-sufficiency in the Slovak Republic has been declining for a long time, the decline accelerated after the country joined the EU. The food industry is closely related to agriculture and performs important functions such as ensuring the receipt, storage and processing of agricultural products, the production of food products and the supply of food to the population. The goal of this contribution was the evaluation of production and food self-sufficiency in selected food products of animal origin. The following commodities were analysed: pork, beef and veal, poultry, table egg production and raw cow’s milk production. All analysed indicators were characterized in the period from 2019 to 2021. In production self-sufficiency, Slovakia achieves relatively good results in the production of beef, where the average value for the period 2019 to 2021 is 86.45%, in the production of table eggs in the shell 86.10% and in cow’s milk 78.91%. The critical situation is in the production of pork, where it is covered only 46.44% of consumption on average. Compared to other small open economies, the Slovak Republic has a low level of food self-sufficiency, which continues to decrease relatively quickly. During the monitored period, the average food self-sufficiency at the level of 60-70% was recorded in the production of poultry meat, and higher self-sufficiency is achieved in the production of table eggs. In the production of pork, beef and milk, food self-sufficiency oscillates around 30%, which is mainly caused by problems in the processing industry and not satisfactory subsidy policy.

Keywords: food industry, food self-sufficiency, production self-sufficiency

JEL Classification: Q10, Q18, L66

1. Introduction

The food industry is the largest processing industry in the EU. According to FoodDrinkEurope, the European Association of the Food and Beverage Industry, food businesses in EU countries provide employment for 4.82 million inhabitants, generate a turnover of 1,205 billion euros and 266 billion euros of added value, making this sector the largest manufacturing sector in the EU. The largest food sector within the EU is the meat processing industry with a 20% share of turnover, followed by the production of beverages (15%) and the bakery sector (14%) [2].

Food consumption is closely related to the food self-sufficiency. In Europe there are countries with great agriculture capacity and conditions for food export, as well as countries dependent on food...
import [1]. In a study on regional self-sufficiency in the European Union, the ratio of domestic production to consumption was examined in three aspects: animal products, agricultural products, and primary agricultural biomass; a systematic concept was presented for self-sufficiency ratios [4].

Current studies are exploring alternative options for sustainable regional food systems that are based on the regionalization of diets, thereby shortening food supply chains, and increasing the resilience of the food system [11]. Resilient food systems require an integrated approach between the optimal localization of production and changes in food consumption. Through the designed food self-sufficiency index, it would be possible to evaluate self-sufficiency at the selected level, e.g., in the region, country, or worldwide [5].

Contemporary Slovak consumers care about the sustainability of food products, but their positive approach is not always demonstrated in real purchasing behaviour as stated [3]. Interesting fact associated with products of animal origin is that a part of the young population does not consume these products. Their eating habits can be classified as vegetarians and vegans as reported by Skylare [8] in Sweden it is approximately 20% of the younger population.

In Slovakia the food industry is closely related to agriculture and performs significant functions such as provide for takeover of products, storage and processing of agricultural products, the production of food products and the supply of food to the population. The food industry is significant part of the national economy and belongs to important sectors of economic activity. In the food industry, there must be a functional food chain that connects three sectors: agriculture, food processing industry and food retail. The functioning of the vertical of the entire chain can be negatively affected by the instability and structural problems of any link of mentioned chain.

The food industry represents a very important sector in the industrial portfolio and economy of Slovakia, which is directly related to primary agricultural production. The food industry has a strong presence in all regions of Slovakia and produces a wide range of food products, from meat processing to bakery, dairy and other products, to the production of various types of beverages.

The production and consumption of food is currently of great importance to society. Dairy and meat industry are the dominant branches in terms of market share (sales) (Figure 1).

**Figure 1: Market share of selected food products of the food industry (%)**

![Diagram showing market share of selected food products of the food industry]  

Source: Annual report 2020, VÚEPP [12]
In the Slovak meat market, there have been changes during the last decade: a reduction in the number of pigs among Slovak breeders and an increase in the import of pork and meat products to Slovakia. [6]. The question of Slovakia's food self-sufficiency and the associated goals for farmers and food producers are gaining importance, especially in connection with the current threats and crises of various kinds in Europe and the whole world. The availability of food in the EU is not yet at risk, as the Union can be largely self-sufficient in the case of many agricultural products. However, Slovak agricultural sector is a net importer of some products, for example feed protein [9].

2. Data and Methods
The rate of production self-sufficiency expresses the percentage coverage of the consumption of individual commodities of agricultural production by own production without including imports and exports. Food self-sufficiency is the ability of a country to cover the needs of the domestic market with its own production potential, i.e., domestic food. Simply, producers will export the surplus, import what the domestic market doesn't have, and they will also make money. The evolution of consumer behaviour has changed, is evolving and has a major impact on food exports and imports.

The article evaluates production and food self-sufficiency in selected food products of animal origin. All analysed indicators were characterized in the period from 2019 to 2021. To better explain the issue, the results are shown in graphs. In the contribution, there were used method of observation, analysis, and the method of synthesis. Evaluated data about commodities were obtained from the Situational and outlook reports of commodities presented by National Agricultural and Food Centre (NPPC) and Research Institute of Agriculture and Food Economics (VÚEPP) [7].

3. Results and Discussion

3.1 Production self-sufficiency in selected livestock production commodities in Slovakia
In this contribution these commodities of animal origin are analysed: pork, beef and veal, poultry, table eggs and raw cow’s milk production.

First analysed commodity is pork meat.

In Slovakia the contemporary situation in pig farming is alarming. Livestock numbers are declining, and farms are being wiped out by the African swine fever. This fact was also reflected in the gross production of pork. The gross domestic production of pork in the observed period of 2019 to 2021 had a fluctuating trend. In 2019, production was 83,716 t carcass weight, in 2020 it decreased by 3.38% (80,883 t), in 2021 it increased by 3.95% compared to 2020 and by 0.43% compared to 2019 (84,076 t) (Figure 2).

The development of domestic consumption of pork in the monitored period had an increasing trend. In 2019, we recorded 167,819 t of carcass weight, in 2020 an increase of 8,712 t (by 5.19%), in 2021 an increase of 13,547 t (by 7.67%) compared to 2020 and by 22,259 t (by 13.26%) compared to 2019. In the monitored period, the rate of self-sufficiency in pork production was 49.88% in 2019, 45.82% in 2020, and 49.29% in 2021, which means that Slovakia is significantly behind in the pork production.
Next analysed commodity is beef and veal meat. The gross domestic production of beef and veal in the period 2019 to 2021 acquired a growing tendency. In 2021, it reached 24,169 t carcass weight, which is an increase compared to 2020 by 9.8% (by 2,158 t) and by 6.4% (by 1,453 t) in 2019 (Figure 3).
The domestic consumption of this meat in 2021 increased by 11.74% compared to 2020 and by 14.19% compared to 2019. The production self-sufficiency rate of Slovakia in the production of beef and veal reached 88.32% in 2019, 83.74% in 2020, and 2021 82.29%. These numbers indicate that we are lagging in gross beef and veal production and not covering domestic consumption.

Third analysed commodity is poultry meat.

In 2021, 94,373 t of poultry meat was produced in Slovakia, which represents an increase of 1,704 t (by 1.84%) compared to 2020 and 2,607 t (by 2.84%) compared to 2019 (Figure 4). The development of domestic consumption of poultry meat in the period from 2019 to 2021 had a downward trend. In 2021, it was recorded a decrease in consumption from 127,443 t of carcass weight by 13,086 t (by 10.27%) compared to 2020 and by 14,478 t (11.36%) compared to 2019.

In 2019, consumption was 1,392 t (0.99%) lower than in 2020. Slovakia's production self-sufficiency in poultry meat production is at the level of 64.66% in 2019, 65.94% in 2020 and 74.05% in 2021. The data show that, despite the decrease in consumption, domestic producers are unable to produce enough poultry meat.

Next analysed data are about the production and consumption of table eggs.

The gross domestic production of table eggs in the shell in the observed period of 2019 to 2021 had a decreasing trend (Figure 5). In 2019, 1,048,519 thousand pieces of eggs were produced in the Slovak Republic, which was by 226,261 thousand (by 27.52%) more than in 2021. If we start from the domestic consumption of table eggs in 2019 in the amount of 1,218,774 thousand pieces, Slovakia's self-sufficiency in egg production is at the level of 86.03%. In 2020, self-sufficiency in egg production reached 71.52%, and in 2021 it was 83.27%. Slovakia is not self-sufficient even in the production of table eggs.
The last analysed commodity is cow’s milk. The production of raw cow’s milk in 2019 reached a value of 844,535 t, and its consumption was 1,024,284 t, which is slightly below the level of consumption (82.45%) (Figure 6). In 2020, milk production increased by 20,240 t compared to 2019, and consumption also increased by 82,981 t. Currently, the production of raw cow’s milk is at the level of 76.18% self-sufficiency in Slovakia.
3.2 Food self-sufficiency in selected food products of animal production in Slovakia

The recommended annual food consumption of one adult in Slovakia is approximately as follows: up to 60 kilograms of meat of various kinds, 220 litres of milk and milk products, and 11 kilograms of eggs. Slovakia does not have the necessary level of food self-sufficiency. Even with relatively good production self-sufficiency, domestic consumption is not covered by food products. The biggest problems are in the processing industry, in which there are insufficient financial resources for reproduction, investing in modern technologies and supporting sales associations. In addition, the market shows high competition from imported products.

The situation is especially critical in the production of pork, where the results of production self-sufficiency (average over the last 3 years is 46.64%) and food self-sufficiency (average 30.23%) in individual verticals are known, and therefore measures must be taken to support the preservation of domestic animal production and processing industry.

In the production of beef, Slovakia achieves good production self-sufficiency (the average over the last 3 years is 86.45%), but this is not reflected in food self-sufficiency (average 28.57%), which results in problems in the processing industry, which is financially undervalued. The production of cow’s milk copies the self-sufficiency in the production of beef. Over the last three years, production self-sufficiency is in the range from 82.45% (year 2019) to 76.18% (year 2021) and food self-sufficiency in the range from 40.32% (year 2020) to 37.04% (year 2021).

Self-sufficiency at the level of 60-70% is recorded for the commodity poultry meat; the average production self-sufficiency for the monitored period is 68.22% and 62.62% for food self-sufficiency. At the level of 85% and higher is the production of table eggs.

4. Conclusion

Until the 20th century, Slovakia had a predominantly rural character. It was common to see farm animals in every village backyard and small agricultural production was a part of families’ lives. At the end of the 20th and the beginning of the 21st century, this situation changed radically.

Compared to other small open economies, the Slovak Republic has a low level of food self-sufficiency, which continues to decrease relatively quickly. Reversing Slovakia’s downward trend in food self-sufficiency should be a priority. Better protection is needed for domestic farmers who produce quality food, but they are not financially subsidized enough like similar ones in other EU countries. The Concept of Development of Slovak Agriculture for 2013 – 2020 [10] aimed to increase production of agricultural commodities to 80% of consumption.

Currently, it is already possible to evaluate the implemented measures to slow down the spread of the Covid-19 epidemic, which significantly limited free trade. An increase in the prices of pork and other foodstuffs can be currently seeing. This is also about food products, where the production of the Slovak Republic does not cover own consumption. Meat, fruit, eggs, and vegetables can be identified as potentially deficient foods. The reason is that even the current main importers to Slovakia do not show high surplus production in these foods. With low surpluses, it can happen at any time that they will not be willing to export as much food as Slovakia would need, and especially in times of crisis, there could be supply shocks, and thus short-term high price volatility of these foods.

In the current conditions, ensuring enough food for the population is a big challenge for agriculture and food producers:

- Due to the increasing world population of the Earth, the demands on agricultural production are increasing in terms of securing food resources.
• To improve food affordability in 2022, EU member states may implement reduced rates of value added tax and economic operators to limit sharp increases in retail prices.
• One of the issues that needs to be addressed from a global perspective and criteria for people’s access to food is the reduction of food waste.
• According to the FAO, up to a third of the food produced worldwide is wasted or spoiled, amounting to approximately 1.3 billion tons of food annually.
• By 2030, the European Commission proposes to reduce food waste by 50%.
• The development of agriculture will have to respect current environmental challenges with an emphasis on soil, water, and diversity.

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