DEPARTMENT OF ECONOMIC POLICY
Faculty of Economics and Management | Slovak University of Agriculture in Nitra
Trieda A. Hlinku 2 | 94976 Nitra | Slovakia

OUTLOOK FOR AGRI-FOOD SECTORS IN SLOVAKIA

- Ján Pokrivčák
- Ema Lazorčáková
- Jozef Gálik
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Outlook for Agri-Food Sectors in Slovakia

Ján Pokrivčák[1]
Ema Lazorčáková[1]
Jozef Gálik[2]
Natália Paseková[1]

ABSTRACT

Future development of agricultural markets is a substantial issue for policy makers as it determines food supply and food security. The study presents projections for main agri-food markets in Slovakia for the period 2019-2030 based on the Agmemod model. During the period 2019-2030, Slovakia should be self-sufficient in wheat and corn, domestic production exceeds domestic consumption. The country should be an exporter of both commodities. However, the production of barley is expected to decrease and hence, barley imports are expected to grow. Oilseed market will be characterised by high production and low domestic use of rapeseed and sunseed due to a lack of processing capacities. The outlook for beef market shows stable production and consumption comparable to current levels. Pork and poultry are competitive products for Slovak consumers, consumption of poultry is expected to increase and pork consumption is expected to decrease in the next decade. Slovakia is and should remain an importer of meat. The same is anticipated for milk and milk products - domestic production of milk, cheese and butter will not cover domestic consumption, so Slovakia will import them. Butter is an exception, by the end of the projected period, in 2030, there should be no negative balance in foreign trade anymore.

Key words: outlook, cereals, oilseeds, meat markets, milk and dairy products

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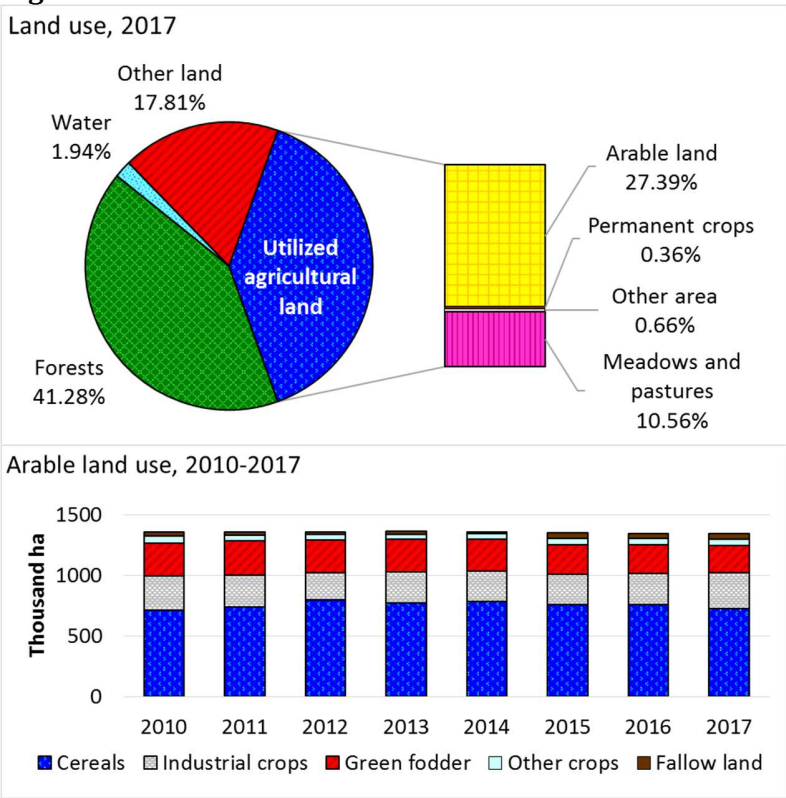
[1] Slovak University of Agriculture in Nitra, Faculty of Economics and Management
[2] National Agricultural and Food Centre, Research Institute of Agriculture and Food Economics

GENERAL OVERVIEW OF SLOVAK AGRICULTURE

Slovak agriculture has experienced several changes in recent years. The sector had to face transition from agricultural to industrial and service-oriented economy and to adopt a new policy and regulatory framework associated with the accession to the EU in 2004 (the Common Agricultural Policy). In 2017, agriculture, forestry and fishing employed 72.3 thousand people (3% of total employment), whereas 20 years ago it was 100 thousand more (175.8 thousand, 8% of total employment). Utilized agricultural area was 1910.7 thousand hectares, what means that roughly 39% of total area were used for agriculture in 2017. Since 2000, utilized agricultural area decreased by 15% and arable land by 5%. Agricultural activities were concentrated in southern and western part of Slovakia. This region has more suitable natural and geographic conditions, more fertile soils and higher average temperatures than mountainous central and northern part of the country.

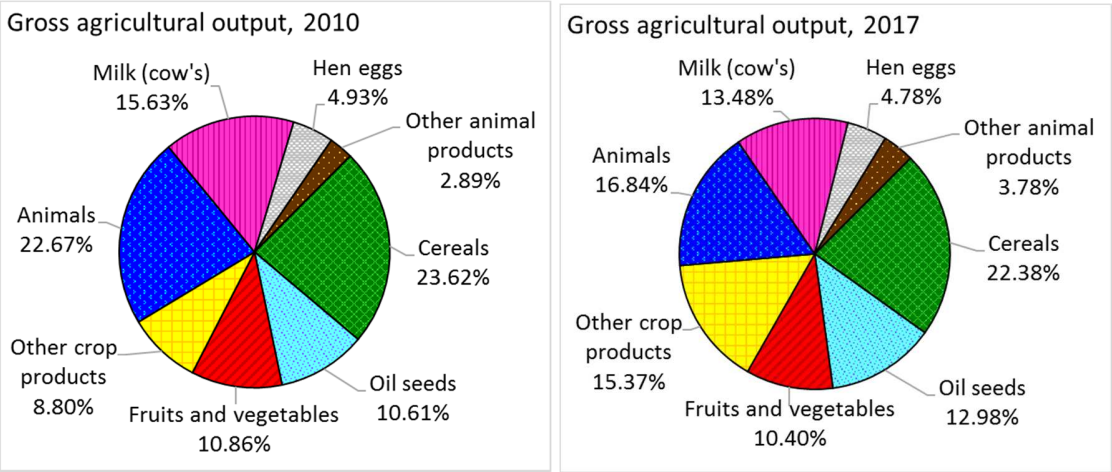
Figure 1: Land use in Slovakia in 2017 and arable land use in 2010-2017



Source: SO SR (2019)

In 2017, gross agricultural output was 2117.1 million EUR. Crop production accounted for 61% and animal production for 39%. Traditionally, animal production used to dominate, crop production creates more than one half of gross agricultural output only in the last 10 years (since 2007). Among crop products, cereals had the highest share. Animal breeding and milk production were the most relevant components of animal output. Compared to 2010, gross agricultural output increased by 10% (in 2010 constant prices).

Figure 2: Structure of agricultural output by products in Slovakia in 2010 and 2017
(gross agricultural output 2010: 1824.5 million EUR; 2017: 2117.1 million EUR)



*Fruits and vegetables: fresh fruit and fresh vegetable including potatoes and grapes
Source: SO SR (2019)

OUTLOOK FOR AGRI-FOOD MARKETS

Several models have been developed for the projection and outlook of agricultural markets. The Agmemod model is one of them. The Agmemod model is described in Salamon et al. (2008), Chantreuil et al. (2012) or JRC (2017). It is an econometric, dynamic, partial-equilibrium, multi-country, multi-market model. National commodity markets are modelled based on a partial equilibrium approach and a system of equations taking into account determinants of market development, specific policy measures and price linkages between markets in the EU. The model also interlinks agri-food markets in EU Member States and allows to aggregate national results and to get an overview for the whole EU.

CEREALS

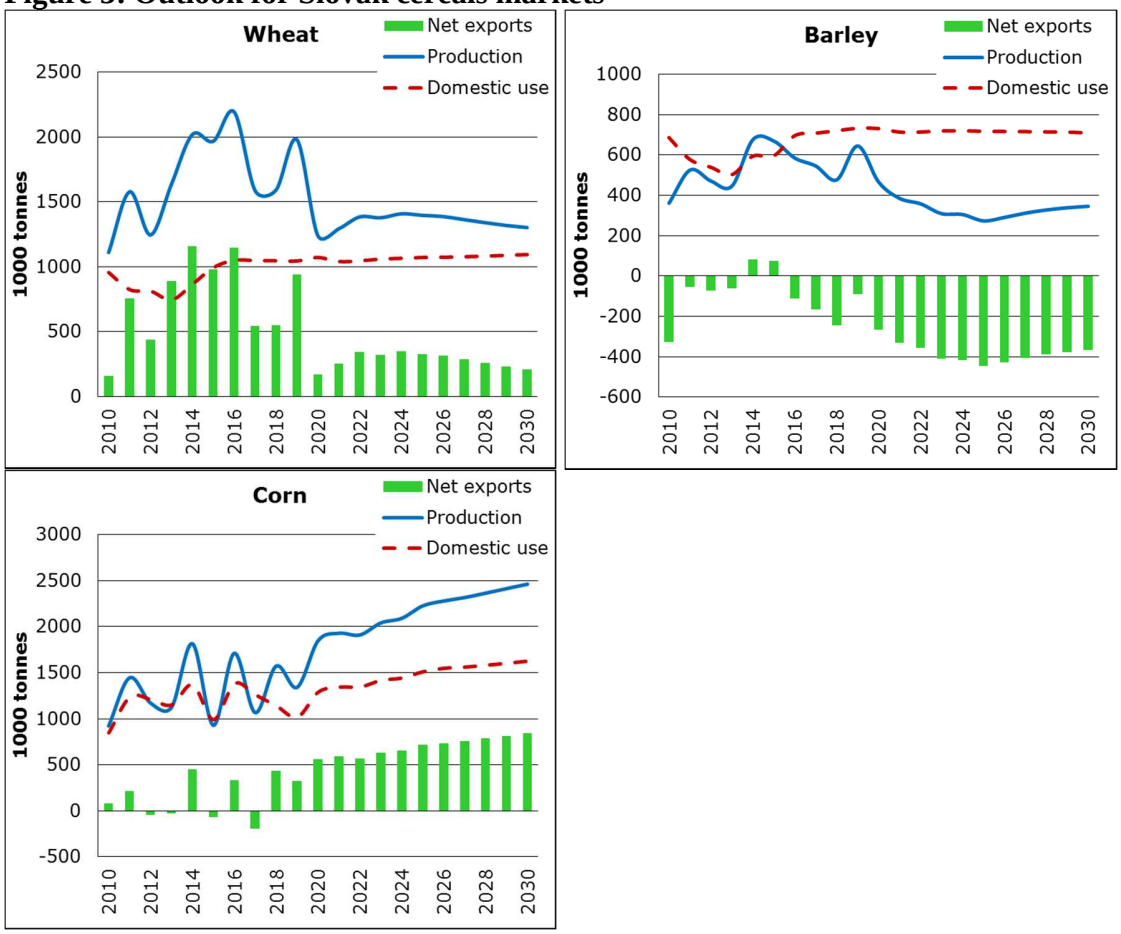
Cereals are the most important crop cultivated in Slovakia. In 2010-2017, their share in arable land was 56% and their contribution to the value of gross agricultural output was 28% on average. Historically, from 1970 to 2017, the highest production of cereals was recorded in 2016: 4.85 million tonnes. In 2017, production of cereals reached 3.5 million tonnes, what was – despite of drought, spring frosts, and local hails – 36% more than in 2010.

In the analysed period 2010-2017, wheat, barley, and corn represented 94-95% of the land under cereals (harvested area of the three commodities was 621-728 thousand hectares). Average hectare yields were 4.7 t/ha for wheat, 4.1 t/ha for barley, and 6.4 t/ha for corn with high variation between years caused by changing weather conditions, hence with variation in production. Almost one half of total production was wheat production. Wheat production exceeded domestic demand in every year, so Slovakia was self-sufficient (coefficient 1.8). The situation with barley and corn was different. With the exception of 2014 and 2015, Slovakia was an importer of barley. Corn exhibited mixed results in foreign trade. Wheat was mainly used for food, whereas corn was mostly used as feed. All commodities were also used for industrial purposes. Barley was processed in the beer industry, and corn was used for biofuels production.

In 2019-2030, the area under wheat, barley and corn should decrease from 690 to 630 thousand hectares. This development is expected because of stagnating human consumption and animal production. The decrease in harvested area of wheat and barley should be compensated by an increase in hectare yields. As a result, total production of wheat will remain approximately at the

same level as in 2012. Production of barley is expected to decrease, and barley for domestic use will have to be imported. The area of corn is projected to increase and together with an increase in hectare yields it should lead to a higher domestic production. Apart from agricultural use, corn will be further used for energy purposes to meet growing energy demand. However, production will rise at a higher rate than domestic use. During the projected period, Slovakia should be self-sufficient in wheat and corn, by 2030, self-sufficiency coefficients should be 1.2 and 1.5, respectively.

Figure 3: Outlook for Slovak cereals markets



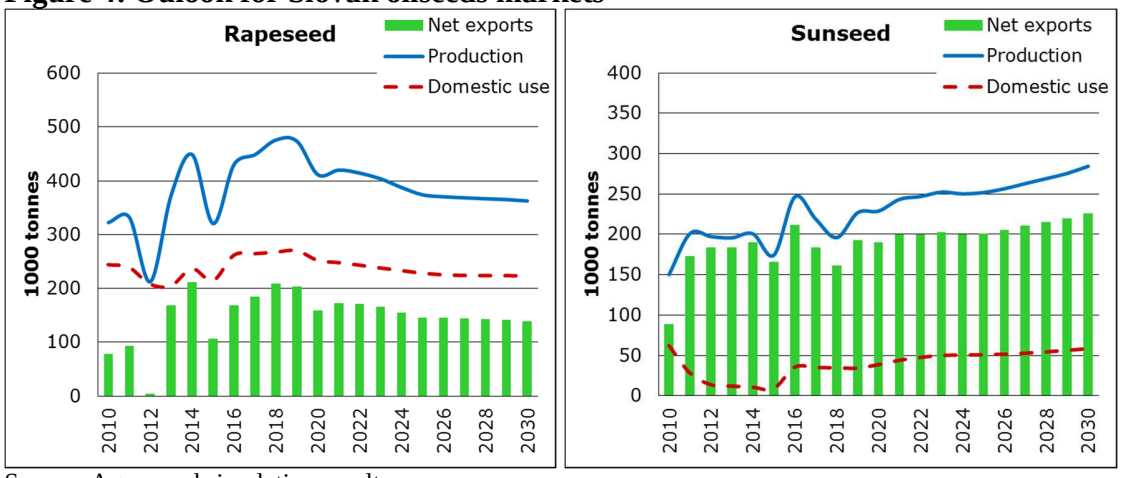
Source: Agmemod simulation results

OILSEEDS

Oilseeds are the second most important crop for Slovak agriculture and the main representative of industrial crops. In 2010-2017, the average share of oilseeds in arable land was 19%, and the share in gross agricultural output was 11%. Harvested area of oilseeds was 257.4 thousand hectares, thereof 133.8 thousand hectares of rapeseed and 83.6 thousand hectares of sunseed. Despite of reduction of processing capacities in Slovakia and the need to realise oil extraction process abroad, an increasing trend in the production of both commodities was observed. This was because of growing demand for oil for food as well as for energy purposes (biofuels).

For the next time period, a slight decrease in the production of rapeseed is expected, its area will decrease and yields per hectare will stay constant. Decreasing production of rapeseed will be compensated by sunseed. By 2030, a 30% increase in sunseed production and a 32% increase in harvested area are predicted. Both crops should have a positive balance in foreign trade.

Figure 4: Oulook for Slovak oilseeds markets



Source: Agmemod simulation results

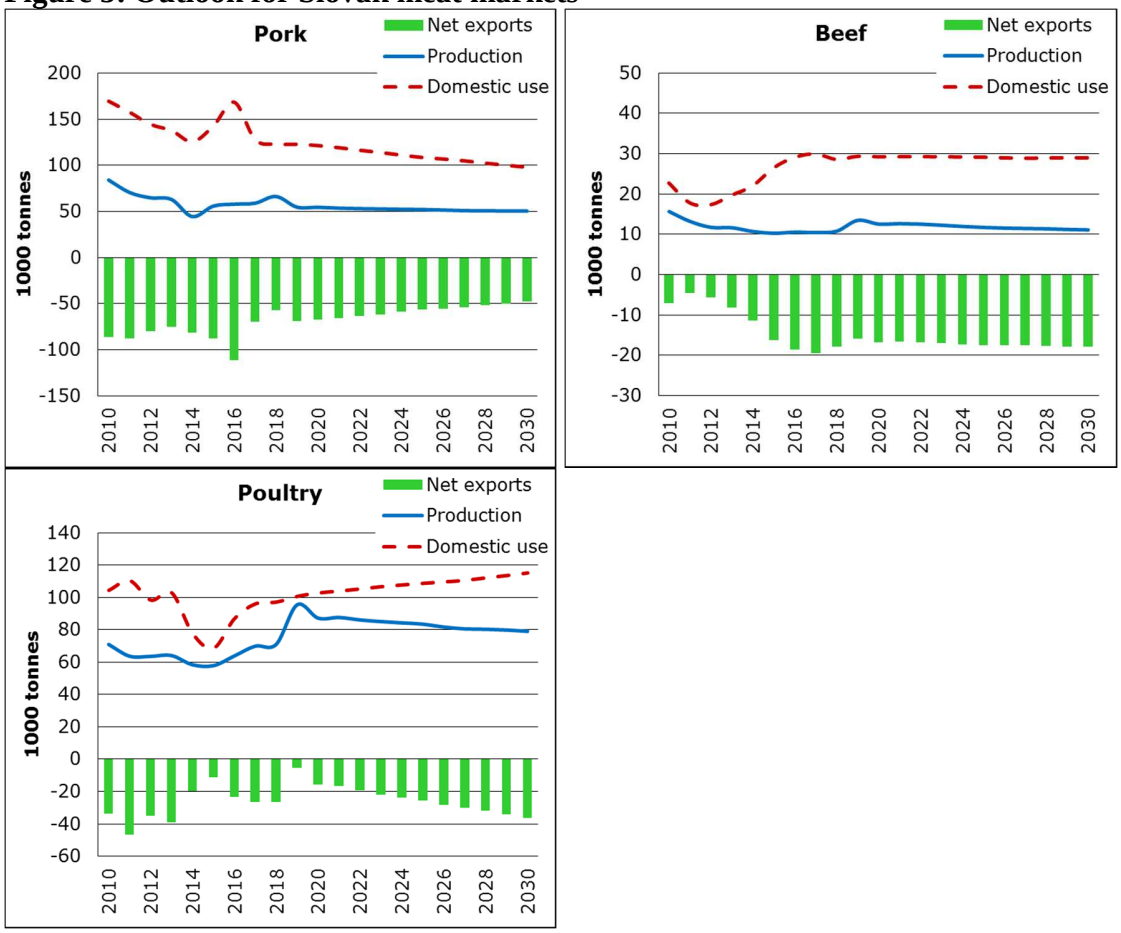
ANIMAL PRODUCTS AND MEAT MARKETS

In Slovakia, animal numbers – especially cattle and pig numbers – are falling for at least 20 years. The decrease is substantial, because it changed the original relationship between crop and animal production in the composition of gross agricultural output. Formerly, animal production created more than one half of gross agricultural output, but in 2007, crop production began to prevail. In 2017, animal production accounted for 39% of gross agricultural output. The importance of animal breeding is not only in agricultural value creation, it also influences the use of land. The share of permanent meadows and pastures in utilized agricultural land was 27% in 2017 (but for example in 2000, it was 35%).

In 2010-2017, the population of farm animals consisted of 626.4 thousand pigs, 460 thousand heads of cattle (thereof 140 thousand dairy cows), and 12.9 million chickens and hens (thereof 5.9 million hens). Average production of pig meat was 62.5 thousand tonnes and consumption 147 thousand tonnes. Beef/veal meat production reached 11.8 thousand tonnes and consumption 23.1 thousand tonnes. Production of poultry meat was 64 thousand tonnes and consumption 93.2 thousand tonnes per year. Slovakia was a net importer of meat. In addition to low numbers of animals, the reason for meat import was that existing capacities of slaughter houses were not fully used. Live animals were exported (positive balance in trade with live animals), slaughtered in neighbouring countries like Poland or Hungary, and meat was imported back to Slovakia (negative balance in trade with meat).

For 2019-2030, a stabilisation of beef and pork production is expected. The number of cattle should fluctuate around 452 thousand. Domestic beef/veal meet production should be 12 thousand tonnes on average and total beef/veal meet consumption 29 thousand tonnes (net import of 17 thousand tonnes annually). Pork production is predicted to remain at 52 thousand tonnes in 2019-2030, pig numbers at 677 thousand individuals. Total pork consumption is expected to decrease by 20% during the outlook period. On the other hand, a rise in chicken consumption is anticipated, pork and poultry are substitutes for Slovak consumers. Total poultry consumption should increase to 79 thousand tonnes by 2030, domestic production will cover 69% of domestic demand, 31% of poultry meat will be imported. Projected trends indicate, that the composition of meat diet will be changed in favour of poultry. In 2017, the share of pork in total meat consumption was 57%, the share of poultry 32%, the share of beef 8%, and the share of other meat 3%.

Figure 5: Outlook for Slovak meat markets



Source: Agmemod simulation results

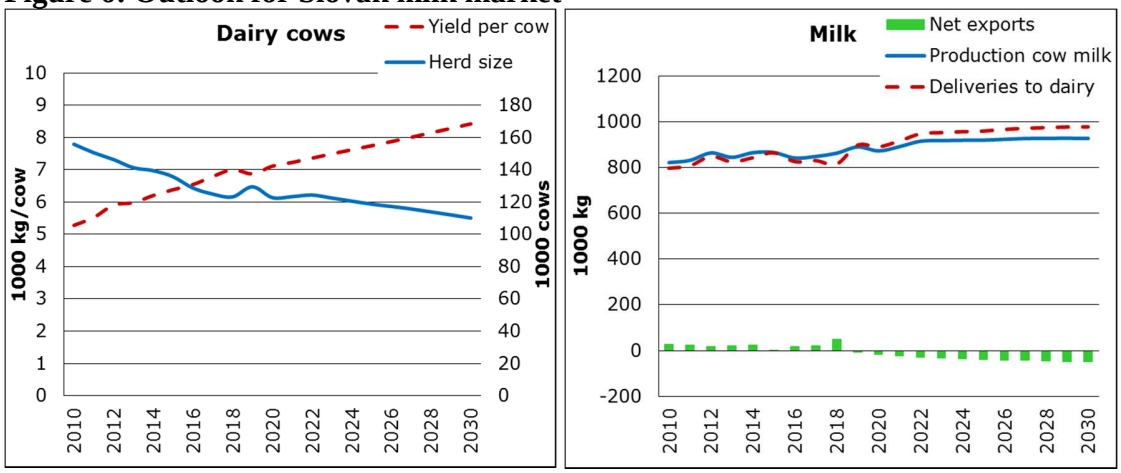
MILK AND MILK PRODUCTS

Milk production is a traditional activity of Slovak agriculture and the second pillar of animal husbandry (beside meat production). In 2017, the value of cow's milk produced was 285.4 mil. EUR, representing 13% of gross agricultural output and 34% of gross animal production. From 2010 to 2017, the population of dairy cows decreased significantly – by 20%. The decrease in herd size was compensated by an increase in average milk yields (by 29%). These trends resulted in a slight increase in total milk production (by 3%) and deliveries to dairies (by 4%). Deregulation of the EU's milk market had a negative impact on the milk sector in Slovakia. Average farm-gate price of raw cow's milk was 31 EUR/100 kg in 2010-2014 and 27.2 EUR/100 kg in 2015-2017.

For the next time period, the decline in dairy cow numbers is expected to continue. By 2030, herd size will drop to 110 thousand cows. However, milk production will grow to 930 thousand tonnes (a 4% growth between 2019 and 2030). Increasing milk production will be the outcome of improving yields per cow. Even so, domestic milk production will not be able to meet the needs of the processing industry. It is estimated that in 2030, diaries will demand 18% more milk than in 2017, circa 5% of cow's milk will be delivered from import. Slovakia will not be self-sufficient in milk anymore.

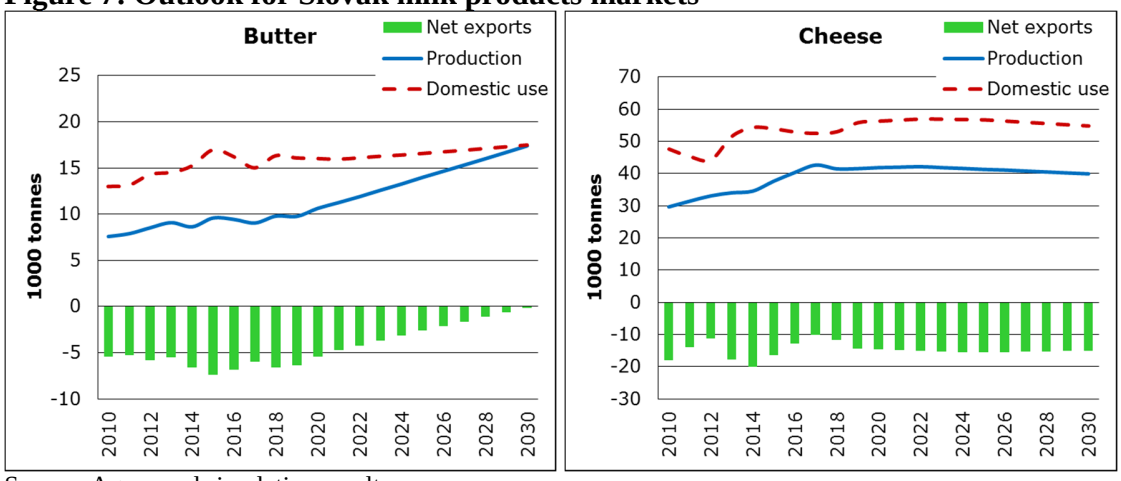
Milk production determines also the production of milk products. Almost one half of whole milk delivered to diaries was used for butter and cheese production in 2010-2017 (22% and 23%, respectively). But domestic production of neither butter nor cheese was able to satisfy growing domestic consumption, and despite of an increasing trend in production, Slovakia was a net importer of both. The other half of whole milk delivered to diaries was used for drinking milk (16% of delivered milk) and all other milk products like cream (18%), fresh dairy products (9%), whole milk powder (3%), etc. Projections for 2019-2030 reflect anticipated future development of milk production. By 2030, an increase in butter production is predicted (by 78%), and Slovakia will approach full self-sufficiency. Cheese production and consumption are expected to remain constant. Domestic production should cover approximately 75% of total cheese consumption in Slovakia, one fourth of consumed cheese will have foreign origin.

Figure 6: Outlook for Slovak milk market



Source: Agmemod simulation results

Figure 7: Outlook for Slovak milk products markets



Source: Agmemod simulation results

OUTLOOK SUMMARY

Expected development of agricultural markets is important for policy-makers when proposing or modifying relevant measures and policies. Based on the estimation results for Slovakia, area under cereals should slightly decrease in 2019-2030 because of stagnating human consumption and animal production. The decrease in area will be partially compensated by an increase in hectare yields leading to stable total production. For the projected time period, production of oilseeds is expected to increase due to increasing production of sunseed. After a decrease in animal numbers in the past, a stabilisation of beef and pork production is anticipated in 2019-2030. Chicken meat should have a more important place in the composition of meat consumption, however port meat will still create approximately 50% of meat consumption in Slovakia. Thanks to a stabilisation in animal numbers and increasing yields per cow, a 4% growth in milk production is expected between 2019 and 2030. On the other hand, demand for milk by diaries is expected to grow by 18%. Hence, Slovakia will be and importer of milk. If the trend of relatively high current butter prices remains, it will motivate diaries to increase butter production in the future. Domestic cheese production should cover three quarters of cheese consumption in Slovakia.

REFERENCES

- Chantreuil, F. – Hanrahan, K.F. – van Leeuwen, M. (eds.). 2012. The Future of EU Agricultural Markets by AGMEMOD. Springer, 2012. 128 p. ISBN 978-94-007-2290-3.
- JRC (Joint Research Centre of the European Commission). 2017. Unveiling Diversity in Agricultural Markets Projections: from EU to Member States. A medium-term outlook with the AGMEMOD model. JRC Technical Report. Publications Office of the European Union, 2017. 92 p. ISBN 978-92-79-77335-8.
- Salamon, P. – Chantreuil, F. – Donnellan, T. – Erjavec, E. – Hanrahan, K. - van Leeuwen, M. – Bouma, F. – Dol, W. – Salputra, G. 2008. How to deal with the challenges of linking a large number of individual national models: the case of the AGMEMOD Partnership. In *Agrarwirtschaft* 57 (8), 2008.
- Statistical Office of the Slovak Republic (SO SR). 2019. Database Datacubes. Available online https://slovak.statistics.sk/.