Analysis of the Czech and Slovak Agricultural Markets under Alternative CAP Scenarios- AG-MEMOD Modelling Approach

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Abstract

The paper presents the results of research focusing on the modelling the impact of the EU enlargement on agriculture of the Czech Republic and Slovakia. The research has been conducted under the AG-MEMOD of the 5th Framework Programme. The Czech Republic and Slovakia joined the European Union (EU) in May 2004 and became part of the single European agricultural market. The impacts of three scenarios (non-accession and two accession scenarios with SAPS and SPS introduction) are investigated. The paper concentrates mostly on pig and potato sectors. The Common Agricultural Policy (CAP) is expected to adversely affect these two sectors. This is expected to be the case especially in Slovakia. The main reason is that these sectors faced higher domestic prices and higher support level before accession, while accession will lead to a limited support and price decline. Also continued restructuring is an additional factor that will affect these sectors after accession.

Key words: accession, modelling, CAP, pork, potatoes

Agriculture and agricultural policies in the Czech Republic and Slovakia

The Czech Republic and Slovakia joined the European Union (EU) in May 2004 and became part of the single European agricultural market. Introduction of the Common Agricultural Policy (CAP) brings about a substantial change in the level of support as well as changes in the set of agricultural policies applied in both countries. These changes significantly affect agricultural sectors in the Czech Republic and Slovakia. The goal of the paper is to present the results of

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ongoing research focusing on the modelling the impacts of the EU accession on the Slovak and Czech agriculture. A special attention is devoted to two key Slovak and Czech agricultural commodities: pork and potatoes. The research has been conducted within AG-MEMOD research consortium within the 5th Framework Programme under contract N° QLK5-CT-2000-00473.

The role of agriculture measured by its share on GDP or employment has been steadily declining in both countries. Currently the share of agriculture on GDP is 4.6% in Slovakia and only 4.2% in the Czech Republic. Similarly Slovak agriculture employs 4.7% of working population and the Czech agriculture 3.0% (MZeCR, 2004a; MPSR, 2004).

Agriculture in both countries is still dominated by large co-operatives and commercial companies. In the period before 1989 nearly all land was cultivated by either collective or state farms. During transition period (after 1989) structure of farms has changed because of transformation of collective farms and sale of state farms. The Czech Republic and Slovakia opted for a combination of restitution and compensation of former owners. The collective and state farms were transformed into cooperatives, limited liability and joint stock companies or broken up into family farms or partnerships (Csaki-Lerman, 1997).

In spite of the fact that almost all farms have been downsized and reorganized, both countries have dual farms structure. In the Czech Republic about 75% of agricultural land is cultivated by approx. 5% of farms (cooperatives and commercial companies). In Slovakia 10% farms (cooperatives with average acreage of 1600 ha) cultivate 48.9% of agricultural land. The Slovak individual farms cultivated only12.4% of agricultural land in 2003 (MPSR, 2004; MZeCR, 2004a). Individual farms in the Czech Republic tend to be larger than those in Slovakia or other Central and East European Countries as significant number of mid-sized farms cultivated 27% of the agricultural land (average acreage 43 hectares) appeared during transition (MzeCR, 2004a).

The early expectation that land and other farm asset privatisation would stimulate the creation of many commercial family farms, similar to those prevalent in Western countries, has not been realized in many Central and East European Countries (CEEC) (Sarris – Doucha - Mathijs, 1999). The most extreme case in this respect are Slovakia and the Czech Republic, where the share of family farms remained the lowest from all CEECs.

Csaki (1998) considers imperfections in land markets, technology geared to large-scale farms in post-socialist period, lack of start-up and working capital, and conflicts between groups in cooperatives as major constraints on development of family farms.

During transition, agriculture in both countries faced similar problems (falling terms of trade, subsidy cuts, privatisation disruptions, inadequate supply chains, inability to obtain credits, weather fluctuations…). All these problems led to decline of agricultural output in the first years of transition. This phase was followed by subsequent stabilization. In spite of this Slovakia and the Czech Republic reached only 70 and 80 % range of previous agricultural output levels. Facing negative development of terms of trade and subsidy cuts farms significantly reduced costs of production, lowered on-farm consumption, decreased the use of intermediate inputs and reduced animal stock. During transition cattle herd in the Czech Republic declined to 43.7% of its 1989 level, in Slovakia the number of milk cows fell by 27%; cattle herd by 35%; pigs by 32%; sheep by 15%.

There was a decline of labour force employed in agriculture, but both labour productivity and total factor productivity went up in Slovakia and the Czech Republic during transition. Labour productivity increased more than total factor productivity. Decline of labour input in Slovakia and the Czech Republic was the biggest of all CEECs as state in these countries provides more extensive social security, unemployment benefits and pensions, and also because of transformation of other sectors of the economy were surplus labour was moved.

Slovak and Czech agriculture exhibit lower intensity of production than the EU 15 countries. In a regional comparison of the major agricultural production parameters, Slovakia falls in the lower half of the group, behind Slovenia, the Czech Republic, and Hungary. The crop yields and the livestock production parameters in Slovakia were in 2002 between 40% and 70% of EU levels (41% of potatoes, 70% of wheat, and 73% of milk) (Bozik, 2003a; Csaki et al., 2002).

Since January 1993 when the Czech Republic and Slovakia were separated different agricultural policies in both countries are observed. The level of support of agriculture measured by OECD's producer support estimate (PSE) remained in both countries however similar (around 20%), which was significantly less than the level of support of agriculture within Common Agricultural Policy (CAP) of the EU. During transition support of agriculture in the Czech Republic and Slovakia was also lower than in the pre-transition period. Early years of transition brought about significant liberalization and reduction of support. This was later followed by introduction of ad hoc stabilization measures. In the second half of 1990s ad hoc policies were being replaced by a CAP-like protection system. Instruments similar to those used in the CAP were introduced but at a lower level of support (Pokrivcak- Ciaian, 2004). Table 1 shows the development of support level in both countries.

Table 1. Development of agricultural support level in the Czech Republic and Slovakia

PSE%	1989	1993	1997	2002	2003
Czech Republic	55	27	6	25	27
Slovak Republic	50	35	11	22	22
EU 12/15	36		32	35	37

Sources: OECD 1998. In: Agricultural Situation and Prospects in the Central and Eastern European Countries. Summary Report, 1998; MZeCR, 2004a; MPSR, 2004.

In both countries a wide range of support instruments was applied varying from market price support (border measures and/or domestic floor prices) and several types of direct payments to input subsidies, investment aids and tax exemption. Agricultural policies have not been very stable with frequent changes in instruments and in commodities and activities covered.

In 2000-2002 the share of payments based on area planted or animal numbers were important in Slovakia (39% of PSE), while in the Czech Republic the share was 17% of PSE and in the EU 27% of PSE (OECD, 2003).

Generally prices of agricultural products were lower in Slovakia and the Czech Republic than in the EU. In 1993 the range of prices in both countries for most crops was around 37-50% below EU prices. Livestock and livestock product prices also remained below EU price

level. This partly explains lower intensity of production in Slovakia and the Czech Republic than in the EU.

The Czech Republic and Slovakia joined the European Union in May 2004. Since then, both countries similarly as other new Member states of the EU adopted Single Area Payments Scheme (SAPS). SAPS will be replaced by Single Payment Scheme (SPS) in 2007.

Direct payments from the EU are being phased in over 10 years. The new Member states will receive 25 % of the full EU rate in 2004, 30 % in 2005 and 35% in 2006. The governments can top up the EU payments by adding up to 30 % a year in national funds. This would bring farmers' direct payments up to 55 % of EU levels in 2004, 60 % in 2005 and 65 % in 2006. Final decision on the level of top-up depends on budget resources and the political influence of agricultural interests.

Farmers will also receive support from the second pillar of the CAP, of which the most important will be support for disadvantaged areas. Land classified as disadvantaged could be as high as 1 700 000 ha, which is more than two-thirds of Slovakia's agricultural land and roughly one-third of its total area (Bozik, 2003a).

There were several approaches to modelling of the impacts of the EU accession on the agriculture, food processing industry and rural development that were used in the last decade. In addition to models developed in international institutions (Anderson -Tyers, 1993; Tangermann - Josling, 1994; Hertel et al., 1997; Banse, 2000; Banse et al., 2000; Hartell - Swinnen, 2000; Münch, 2000; European Commission, 2002), there were several other models developed and/or used in Slovakia and the Czech Republic. The most important are Bozik (2001), Bozik (2003b), Blaas – Božik (2002), and Foltyn et al. (2004a).

Model and scenarios

The model was developed as part of the AG-MEMOD project of the EU Fifth Framework Program. AG-MEMOD modelling approach, which is a sectoral, dynamic, partial equilibrium econometric model, was applied in both countries to analyse the impact of EU accession on agricultural markets. For the structure and a detailed description of the model see Hanrahan (2001), Westhoff (2000), Vancauteren – de Frahan (2002), and Chantreuil et al. (2002).

Slovak and Czech models cover cereals (wheat, barley, and maize), oilseeds (rapeseed, sunflower seed), sugar beet, sugar, potatoes, livestock (cattle, dairy cows, sucler cows, beef, pigs - sows, pigs for fattening, pork, poultry - broilers), and dairy (fluid milk, cheese, butter, skim milk powder, and whole milk powder) sectors. In addition to that, Slovak model encompasses soybean, sheep and mutton.

There was a common approach to estimation and calibration of the model parameters within the AG-MEMOD modelling approach. The equations in the models are estimated using annual data from the period 1990-2002. Most parameters were estimated using ordinary least squares methods. Some elasticities were adopted from the existing literature, when missing

data or frequent structural changes did not warrant their estimation on the national dataset. Projection period runs from 2003 up to 2010 year.

National models differ in several aspects. The most important differences are macroeconomic assumptions, the approaches employed for the policy modelling, the components of policies under SAPS, and the distribution of direct payments among agricultural activities. National models also reflect different assumption on the impact of direct payments on agricultural production (the degree of decoupling).

Three scenarios are simulated. The first scenario or baseline scenario (N-Ac) assumes no accession of Slovakia or the Czech Republic into the European Union. This scenario is for the sake of comparison. The second scenario (A-SAPS) assumes that Slovakia and the Czech Republic join EU in 2004 and that they will implement SAPS until the end of the projection period 2010. The third scenario (A-SPS) assumes accession, implementation SAPS until 2007 and SPS afterwards. The assumptions on policies in the last two scenarios were designed so as to reflect the most likely CAP implementation in Slovakia and the Czech Republic.

Scenario assumptions

1. N-Ac baseline scenario

In this scenario it is assumed that pre-accession policies remain implemented. The policies observed in the last year (2000 or 2001) are used for future projections.

2. A-SAPS scenario

This scenario assumes accession and introduction of SAPS in 2004. Additionally to direct payments financed from the EU budget, top-ups financed from the national budget are considered.

Slovak domestic prices are assumed to converge in one year to EU price level (to EU prices). Specifically they are assumed to increase in 2004 and following years by an adjustment factor that is equal to 90% of the difference between domestic price in 2004 and its respective EU price in 2004.

Decoupled direct payments are assumed to have a moderate impact on production in Slovakia. Cross compliance, risk effect, alleviation of credit constrains and policy risk, are the main reasons why decoupled payments may have some production effects (Westhoff, Binfield, 2003). The coefficient of coupling, which reflects to what extent direct payments affect production, is therefore assumed to be equal 0.15. The reasons of choosing a relatively low value of the coefficient, 0.15, instead of 0.3 for instance, are the following.

Large commercial farms dominate the agricultural sector. Their behaviour is expected to be somehow different as compared to family farms, especially in the short-run, and they are expected to channel some of the decoupled subsidies outside the agricultural sector. Commercial farms are more flexible what concerns hiring labour and the adjustment of production structure after a policy change or due to other factors. The main reason is lower specificity of their human capital. Also, commercial farms have a more diversified production structure with

some activities outside the agricultural sector. Thus some of the decoupled payments may be invested in these sectors.

Farmers are expected to invest part of the decoupled payments in the most profitable sectors. In the model production shares were used as the proxies for profitability. As a result, the area payments financed from the EU budget and top-ups financed from national budgets are distributed to crop and livestock sectors taking in consideration each sector production share. The sectoral envelopes are then calculated per unit of production or per hectare. The coefficient that measures their effect on production equals 0.15.

Part of the top-ups that will remain coupled to production (to sheep and suckle cows). As a result, it is assumed that they will have a larger impact on production. The coefficient reflecting their effect on production is assumed to equal 0.6.

3. A-SPS scenario - Accession and CAP reform

For 2004-2007 policy assumptions are the same as in the A-SAPS scenario. From 2007, SPS (Single payment scheme) is assumed to be implemented, with all payments decoupled. Thus the coefficient for coupling equals 0.15. There are assumed smaller hectare grassland payments than arable land payments. Grassland payments are assumed to be half of the arable land payments. Again production shares were used as the proxies for profitability and to distribute the payments to specific sectors and activities. However, because grassland is mostly used for livestock production, the total envelope for grassland is distributed to livestock sectors (bovine, sheep and goats) in the model according to their contribution to total livestock production. The total envelope for arable land is distributed to crop sectors and pig sector according to their contribution to total crop plus pig production.

Additionally, 10% set-aside is assumed in 2007-2010 period, and a decrease of the intervention prices by 5% from 2004 onwards.

The Czech model differs from the Slovak model in several aspects. The biggest difference is the way how direct payments are distributed among agricultural commodities. The Czech model uses livestock units. The degree of decoupling is the other difference. The Czech model uses no decoupling for SAPS and full decoupling for SPS.

Macroeconomic assumptions

Macroeconomic assumptions for the Slovak model:

- For inflation and for GDP growth rate, Eurostat forecasts are used: an average 5.2% inflation rate and a moderate GDP growth (3% on average) is projected.
- For population developments UN forecasts are used that predict a very small population growth rate.
- For exchange rate of Slovak currency against dollar SAV (Research Institute for World Economy) forecasts are used. Starting in 2004, the exchange rate of Slovak currency against Euro is projected by maintaining the purchasing power parity (ppp) of the 2003 actual rate plus a one percent growth in value for every one

percent difference between real rates of GDP growth of Slovakia and the EU15 (Balassa-Samuelson effect).

Macroeconomic assumptions for the Czech model, particularly for the exchange rate, GDP growth and inflation, macroeconomic predictions of the Czech National Bank and Statistical Office were used.

Data Sources

Data were used from different sources: national research institutes of agriculture and food economics (VUZE, VUEPP), Eurostat, OECD, FAO, FAPRI, national ministries of agriculture, national statistical offices, national banks, customs statistics, national academies of sciences.

Expected development of the Slovak and Czech agricultural sectors after accession

First, the projections for baseline scenario are presented in short. In this scenario real prices for almost all crops are projected to decline in Slovakia. This would lead to a decrease of profitability and thus reduction of the cultivated area for majority of crops. Expected increase of crop yields however will offsets this negative area development leading to an increase in crop production for most commodities. The real price decline has a positive effect on consumption. The per capita consumption for majority of crops increases. Projections for trade balance of crop commodities are mixed. Trade balance for cereals and sugar improves while for oilseeds and potatoes it worsens.

Similar changes are predicted for the Slovak animal sector. Real price decline leads to decline of animal numbers and of majority of animal products. Consumption of animal products is projected to increase as real prices decline. Negative production developments combined with increase in consumption of animal products are expected to cause a deterioration of trade balance. Compared to accession scenarios, scenario N-AC would lead to the lowest growth of domestic market prices (with the exception of potatoes) in the Czech Republic. This combined with relatively low pre-accession support level would generate the lowest level of profitability among all three scenarios. The total crop acreage is expected remain unchanged.

Accession scenarios

Accession would lead to an increase of domestic prices. Higher domestic prices and higher direct payments under SAPS scenario are expected to have a significant positive impact on the

profitability of the Czech cereal and oilseed sectors. Acreage (cereals more than 13%, oilseeds even about more than 25 %), production, export and trade balance of these commodities are expected to increase. Scenario A-SAPS assumes decoupling of a majority of direct payments in Slovakia. Due to expected small impact of the decoupled direct payments on agricultural activities, they will not significantly affect agricultural markets. Increase of direct payments is expected to have only a moderate impact on agricultural markets. More important factor that will affect agricultural markets after accession is the effect of price level increase.

Majority prices before accession were smaller than the prices in the EU. The largest difference was observed for animal products. The exemptions to this are pig and potato prices, which were higher before accession and thus will experience decrease after accession. The results of scenario A-SAPS indicate an average 24% price rise of crop commodities relative to the baseline scenario (Table 2).

What concerns prices of animal products, they will significantly increase after accession (except for pork price). On average they are expected to increase by around 67% relative to the baseline level. The largest gainers are beef and sheep meat prices. Their prices are expected to increase by more than 160%. Pork price will be reduced by around 24%.

Higher prices will give incentive to increase yields, which will have a positive production effects. On the other hand larger prices will have a negative effect on consumers. They will reduce consumption after accession compared to baseline scenario. This opposite developments in production and consumption will produce a general improvement of agricultural trade balance after accession.

Because most of the direct payments are already decoupled under SAPS (scenario A-SAPS), switching from this scheme to the implementation of the reformed CAP, as assumed in the scenario A-SPS after 2007, will not have a significant impact on agricultural markets in Slovakia. However some small sectoral asymmetric impacts may occur. Area payments for grassland are assumed to be half of those for arable land. Since it is assumed that grassland payments will be invested to animal sector only (except pig sector) and arable land payments to crop and pig sectors, this will lead to a reduction of the total direct payments in the animal sector. As a result, a small redistribution of direct payments from animal sector to crop and pig sector will occur as compared to A-SAPS scenario having a slight positive impact the latter two sectors.

In the Czech Republic top-ups are slightly more coupled than in Slovakia. As a result, a shift to SPS (scenario A-SPS) in the Czech Republic will have a bigger impact on agricultural markets. It is expected that cereal and oilseed area and production will decline, while sugar beet and potatoes will expand.

Table 2. Expected Slovak domestic price changes caused by EU accession

Commodity	% change (A-SAPS versus baseline)	Commodity	% change (A-SAPS versus baseline)
Wheat	27	Beef	173
Barley	5	Pork	-24
Maize	9	Chicken	54
Rapeseed	53	Mutton	258
Sunflower	60	Milk	26
Soybeans	8	Butter	46
Potatoes	-20	SMP	1
Sugar	49	WMP	19
		Cheese	52
Crop products average	24	Animal products average	67

Potatoes and pork

Potatoes and pork are traditional production and consumption commodities in both Slovakia and the Czech Republic. However, production and consumption changed significantly over the transition period. This changes and adjustments in the both sectors are expected to continue after accessions especially in Slovakia.

Potato food consumption has continuously declined during transition in both countries. In the last decade potato per capita consumption encountered 6.6 kg yearly decline in Slovakia and 2 kg in the Czech Republic (VUEPP, 2004a, MZeCR, 2004b).

Before the EU accession production of both commodities in the Czech Republic and Slovakia was subsidized and there was relatively high border protection. This high support hindered full restructuring of the sectors. Slovak potato production is non-competitive for several reasons. Main causes are high costs, low intensity of production, outdated technologies and low product quality. Potato yield in Slovakia reached only 45% (15.3 t/ha) of the EU level in 2003. In the Czech Republic the intensity of potato production was closer to the EU level.

Harvested area as well as production of potatoes in the Czech Republic and Slovakia have gradually declined during the transition period, while the average yield increased by 32%. In 2003 potato area reached 52% of its 1991 level in Slovakia. In the Czech Republic it declined to one third of its 1991 level. Despite of decline in the total potato area, cultivation of starch potatoes increased in the Czech Republic (this is linked to the potato starch quota after accession).

Majority of Slovak domestic production (70%) comes from small producers that have unstable production (VUEPP, 2004a). A relatively high share of production in both countries comes from household plots. In the Czech Republic it is up to 20% (MZeCR, 2004b).

Almost 75% of the Slovak domestic production is used for household consumption. Only approximately 10% is processed. Slovak potato sector is characterised by low level of vertical integration (contracting), insufficiently developed distribution chain and insufficient potato processing capacities (VUEPP, 2004a). In 2003 16 crop producer-merchandiser companies operated in the Slovak market, of which five were specialised in potatoes processing.

The Czech potato market is more developed. Up to 40% of potato production has been sold directly to consumers. Approximately 39% of the Czech domestic production is domestically processed. The most attractive is potato starch production (MZeCR, 2004b).

After accession restructuring of potato sector is expected to continue in Slovakia. Due to low competitiveness and due to expected lower prices, further contraction of the sector is projected. Compared with the other crops, potato sector is expected to be among the most significantly affected (A-SAPS scenario). The potato price is expected to decline after accession by around 20%. This will lead to a reduction of potato acreage by around 49% in 2005 and by around 54% in 2010 as compared to 2001. Production is projected to contract by 38% and by 50% in 2005 and 2010 respectively. Price decline will however stimulate potato consumption.

In A-SPS scenario it was assumed introduction of set-aside requirement, therefore certain negative impact on potato acreage through cross-effects can be expected (Figure 1).

More stabilised development of potato sector can be expected in the Czech Republic (Figure 2). In accession A-SAPS scenario potato production is expected to slightly decline as a consequence of the absence of support. Production however will increase in the A-SPS scenario. Similar to Slovak projections, domestic consumption, mainly for technical purpose, will expand as a consequence of expected price fall. Both countries are projected to become net importers of potatoes.
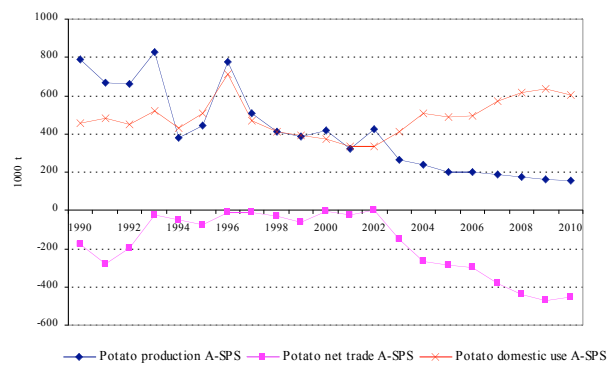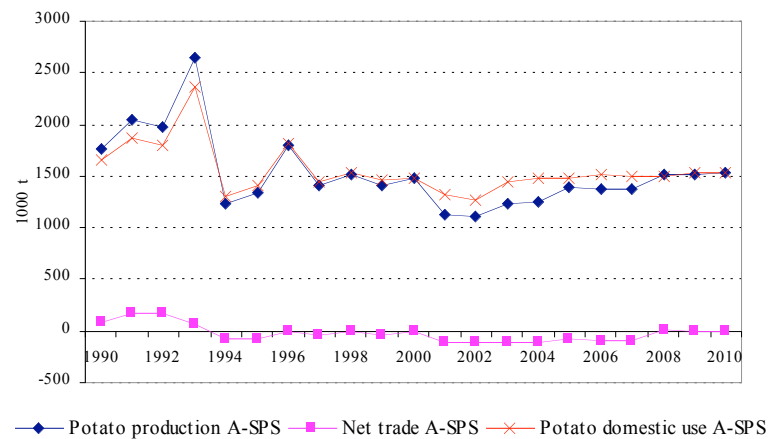

Figure 1. Development of production, domestic use and net trade of potatoes in Slovakia (A-SPS), (2003-2010 projections)

Pork sector was one of the largest in Slovakia. Its share on the total agricultural production was 19% in the 1998/1999 season. Similarly, pork production accounted for 16% of the total agricultural production in the Czech Republic (EC EU, 2002).

Consumption of meat dramatically declined during transition in Slovakia, by 30%. In 1989 per capita pork consumption was 45 kg in Slovakia, while in 2003 it was only 32 kg. Per capita pork consumption in the Czech Republic declined from 50 kg per capita to 41 kg in 2000 and since then remained relatively stable (MZeCR, 2004c).

From 2003 there was observed a modest growth of consumption of pork in Slovakia, while beef consumption has declined. The pork consumption in Slovakia was stimulated by lower consumer prices and by income growth. There is significant growth of poultry consumption in both countries (VUEPP, 2004b; MZeCR, 2004c).

During transition total pig herd fell in Slovakia by more then 32% compared to the 1989 level. Situation on the international markets significantly affects the Slovak and the Czech pork markets. Growth of pig herd and pork production in 2002 that was caused by BSE crisis was followed by a fall in pork demand and price decrease in next years, leading to a deterioration of the pork sector. In 2004 pig herd in Slovakia subsequently declined by approximately 11%. Since 1995 Slovakia is a net importer of pork and the Czech Republic is its main supplier.

Figure. 2. Development of production, domestic use and net trade of potatoes in the Czech Republic (A-SPS), (2003-2010 projections)

Overall decline of pig herd in Slovakia was accompanied with a decrease of productivity, caused by low access to capital and frequent occurrence of diseases (VUEPP, 2004b). Slovak pork sector is characterised by poor price competitiveness, outdated technologies and lack of capital. In many cases production was affected by limited privatisation of pig farms.

The most significant producers of pigs in the Czech Republic are specialised large commercial companies. They cover almost 65% of the total pig production. Their average farm size

is 806 ha and they cultivate around 45% of the total agricultural land. The second largest share have agricultural co-operatives with 24% share on the pigs sector (MZeCR, 2004a). Their average size is 1,475 ha and they cultivate 29% of agricultural land.

Similar structure with high concentration of pork production prevails in Slovakia. 61% pig production is concentrated at large farms of over 1 000 ha. The most important producers were cooperatives (70%), limited liability companies (22%) and share holding companies (7%). Small producers (with an average area of less then 0.5 ha) have 14% share in the sector. (SU SR, 2003).

In the pre-accession period pork sector was the most supported in both countries. In 2000-2002 almost 32% of total production support in the Czech Republic was devoted to pork, compare to only 8% in 1991-1993 (MZeCR, 2004a). Pork export subsidies were used in both countries before the accession as well. High support during the transition prevented full restructuring of the pork sector.

Vertical integration is underdeveloped in majority of the Slovak food chains. Agricultural producers are organized in the Agricultural Chamber defending predominantly interests of large producers (cooperatives) and have not sufficient power to bargain selling conditions, especially prices with buyers (Csaki et. al., 2002).

Situation on the Czech pork market is more favourable. The Czech government policies have supported the establishment of the selling organisations on selected markets including potatoes and pigs in 1999. Nine selling cooperatives, with 40% share on domestic market production, operated in 2003 in the Czech Republic (MZeCR, 2004c).

In accession A-SAPS scenario due to price convergence, pork price is projected to decline by around 24% in Slovakia. This expected real prices decline and low level of competitiveness will reduce the attractiveness of the pig sector. Pig stocks are expected to continuously decline reaching in 2010 only 70% of the baseline level. Relatively large decrease of pig numbers will result in decrease of meat production by 7% and 12% in 2005 and 2010 respectively. Regarding pork consumption, it is expected to recover by around 24% relative to baseline. However trade deficit of pork is expected to increase due to large reduction of domestic pork surpluses.
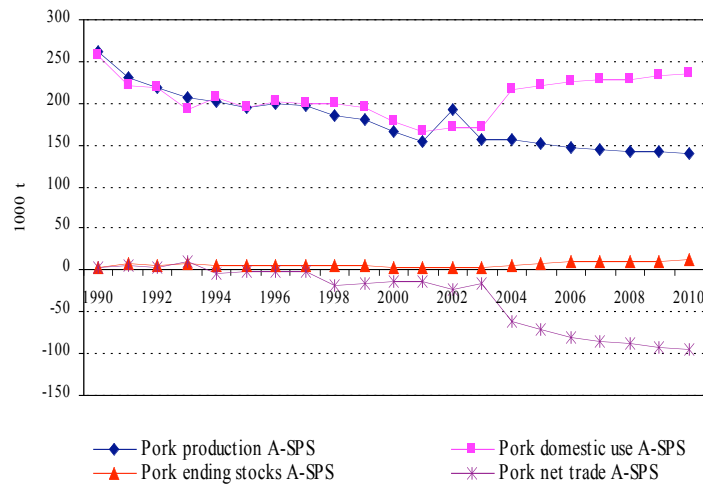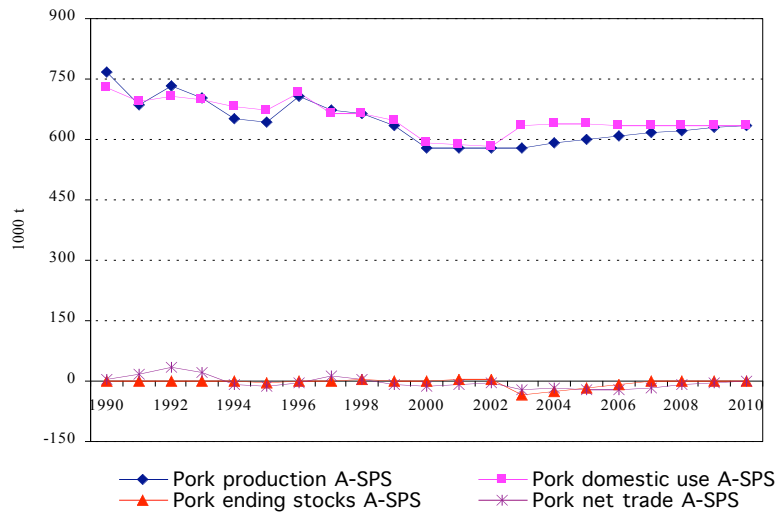
Figure 3. Development of production, domestic use, net trade and ending stock of pork in Slovakia (A-SPS, N-Ac), (2003-2010 projections)

Under A-SPS scenario modest recovery of the Slovak pork sector could be expected (Fig 3). Pig stocks are expected to gain due to expected increase of direct payments invested in this sector. Compared to A-SAPS scenario, pig herd will increase by around 1% in 2010 having a positive impact on pork meat production.

Pork production in the Czech Republic is expected to slightly recover after accession (Fig. 4). In spite of the absence of support in the pork market, the main driver of production growth will be stable domestic demand. Slight production increase will reflect also favourable pork prices and increase of competitiveness, which will have positive impact on the pork export.

Figure 4. Development of production, domestic use, net trade and ending stock of pork in the Czech Republic (A-SPS, N-Ac), (2003-2010 projections)

Conclusions

1. National models contain several weaknesses, therefore the results obtained should be taken with caution and models need to be further improved. The inconsistent databases, short time series might have led to less accurate reflection of reality, inaccurate estimation of elasticities, misinterpretation of the past trends and inaccurate projected impacts of considered scenarios. The improvement of institutional environment after the accession may induce a better functioning of agricultural markets, especially land and credit markets. This improvement may have productivity enhancing effect, which could not be reflected in the functional relationships that were estimated based on the time series data. Model adjustments would be required as soon as the more data after the accession are available.

2. In spite of this weaknesses, however the models are appropriate in providing general projections as well as the impact of desired policy scenarios on the direction of change of agricultural markets.

3. Prospects for development of the Slovak and the Czech agricultural markets after accession differ by commodities mostly depending on policies and price adjust-

ments. The most affected commodities are expected to be those for which accession will produce significant changes in prices and in support level.

4. The development of potato and pork sectors in Slovak and in the Czech Republic are further affected by: change in consumption structure; incomplete restructuring of agricultural farms and food processing companies; lack of capital; low quality of products and underdeveloped vertical integration.

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