Impacts of CAP reform and exchange rate on Lithuanian agricultural and food markets

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The impacts of CAP Reform and differing exchange rate developments are evaluated with a dynamic, partial-equilibrium model of the main agricultural sub-sectors in Lithuania. The model was developed under the 5th framework funding, and this analysis was conducted under the 6th framework reseach project with analysts from 24 other EU countries. Agricultural policy assumptions to 2015 are jointly determined with the project team, and the Lithuanian macroeconomic outlook is based on national and Eurostat forecasts. The baseline outlook shows a growth in production of most products and a significant growth in exports for wheat, barley, rapeseed, and cheese. Gross agricultural income is projected to more than double over 10 years, and in the last five years, subsidies and payments comprise about 25 percent of this. The CAP Reform scenario (full decoupling) has a little effect on the baseline results, since the planned Lithuanian SFP programs are already mostly decoupled. However, exchange rate alternatives make a significant difference. If the Euro weakens to equal one US dollar, prices would be higher and gross agricultural incomes about five percent higher. At the other extreme, if the Euro strengthens to 1.4$ = 1 Euro for the whole period, domestic prices would be lower and gross agricultural incomes more than five percent lower than in the baseline.

Key words: agricultural income, agricultural products, CAP Reform, exchange rate

INTRODUCTION

This analysis of the 10-year outlook for Lithuanian agricultural markets and their response to changes in CAP policies and alternative exchange rates between the US dollar and the Euro was conducted by analysts in 24 other EU member or candidate countries (EU, 2007). All of the analysis was part of the 6th Framework project, AGMEMOD. The methods and assumptions are presented, followed by the results and discussion of the baseline and scenarios which have been uniformed for all EU-27 member states included in the project.

METHODS AND ASSUMPTIONS

The modelling approach is a dynamic, partial equilibrium commodity market model with policies explicitly imbedded in the appropriate equations and linkages (Meyers, Kazlauskiene, Krisciukaitiene, 2004). A summary of the specific Lithuanian assumptions on macroeconomic and policy variables that underlie the model's baseline projections up to 2015 are provided in Tables 1 and 2.

Table 1. **Assumptions on macroeconomic variables for Lithuania**

	Unit	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Population	million	3.50	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3
GDP	bill. 2000 euro	12.49	18.49	19.61	20.75	22.04	23.42	24.62	25.79	26.95	28.11	29.32	30.58
GDP per capita	2000 euro / cap	3568.7	5416.0	5746.2	6110.5	6523.0	6964.6	7358.8	7749.0	8141.3	8537.9	8953.8	9388.1
Inflation	2000 = 1.0	1.000	1.07	1.06	1.09	1.12	1.15	1.17	1.20	1.22	1.25	1.27	1.29

Source: National projections, except later years, use FAPRI rates of change for macro.

Table 2. **Assumptions on national policy variables for Lithuania**

	Unit	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cereal reference yield	tonne / ha	na	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Oilseed reference yield	tonne / ha	na	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Milk quota	1,000 tonne	na	1646.9	1646.9	1704.8	1704.8	1704.8	1704.8	1704.8	1704.8	1704.8	1704.8	1704.8
direct marketing allowance	1,000 tonne		367.2	367.2	367.2	367.2	367.2	367.2	367.2	367.2	367.2	367.2	367.2
Suckler cow quota	1,000 head	na	47.23	47.23	47.23	47.23	47.23	47.23	47.23	47.23	47.23	47.23	47.23

Source: Lithuanian Ministry of Agriculture.

Table 3. **SAPS, CNDP and SFP payments in Lithuania**

		2003	3004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Land payments	UNITS	Pre access	SAPS	SAPS	SAPS	SAPS	SAPS	SFP	SFP	SFP	SFP	SFP	SFP	SFP
Grains	Euro / ha	0	89	97	106	119	136	157	174	180	186	143	141	140
Rye for less favorable land	Euro / ha	43	145	154	163	176	193	214	230	236	243	199	141	140
Rapeseed – average	Euro / ha	23	89	97	106	119	136	157	174	180	186	143	141	140
Flax	Euro / ha	401	166	165	170	170	170	157	174	180	186	143	141	140
Buckwheat	Euro / ha	101	89	97	106	119	136	157	174	180	186	143	141	140
Legumes	Euro / ha	9	89	121	140	158	181	157	174	180	186	143	141	140
Potatoes	Euro / ha	0	32	41	50	57	71	157	174	180	186	143	141	140
Potatoes for starch	Euro / ha	52	82	97	106	116	134	157	174	180	186	143	141	140
Grassland and pasture	Euro / ha	0	32	41	50	57	71	157	174	180	186	143	141	140
Sugar beets and set aside	Euro / ha	0	32	41	50	57	71	157	174	180	186	143	141	140
Livestock and dairy														
Cattle grassland equivalent	Euro / head	0	45	57	70	80	100	220	243	252	261	200	198	196
Special premium – bulls	Euro / head	42	145	110	188	217	248	0	0	0	0	0	0	0
Slaughter premium – adults	Euro / head	42	26	41	56	65	75	0	0	0	0	0	0	0
Suckler cow premium	Euro / head	155	146	153	198	227	259	0	0	0	0	0	0	0
Pasture payment + Direct	Euro / 100 kg	0	113	121	155	178	205	47	52	54	56	43	42	42
Milk Direct payment	Euro / ton	13	10	14	21	35	35	0	0	0	0	0	0	0
Pasture payment + Direct	Euro / 100 kg	1.3	1.4	1.8	2.6	4.0	4.2	1.3	1.5	1.5	1.5	1.2	1.1	1.1
Sheep grassland equivalent	Euro / head	0.0	9.0	11.4	14.0	16.0	20.0	44.0	48.6	50.4	52.1	40.0	39.6	39.2
Sheep Direct payment	Euro / head	18.2	8.7	11.0	17.7	20.3	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pasture payment + Direct	Euro / 100 kg	62.3	38.9	49.2	74.6	85.6	99.6	45.1	49.8	51.6	53.4	40.9	40.5	40.1

Source: Lithuanian Ministry of Agriculture.

Due to the implementation of SAPS after accession and assumed implementation of the Luxembourg Agreement in 2009, most premiums have been decoupled in Lithuania from 2004, the year that Lithuania joined the EU. The payments not decoupled until 2009 were headage premiums for suckler cows, bulls, and ewes as well as milk payments per ton until 2008 (except for 2005). Lithuania chose to implement SAPS rather than standard CAP programs and also decided to use the top-up under CNDP, which is primarily focused on beef cattle, milk, ewes and sensitive crops. The top-up was about half the allowed maximum in the first year, after which it is increasing gradually so that total support reaches 100 percent of OMS levels by 2009. The CNDP was used to add payments to sensitive crops and livestock, which get extra payments until 2008 (Table 3). From 2009 onward, payments per hectare are equal and no livestock or milk payments are to be made. Beginning in 2013, modulation decreases the payments per hectare.

Thus, to take account of the differing levels of decoupling under different policy instruments, we make a set of assumptions as to the degree to which the payment is affecting the incentive price and is supply-inducing (Table 4).

Table 4. **Multipliers used in all scenarios for Lithuania**

	SAP Scheme	SFP scheme
Crop sector		
SAP portion	0.3	
CNDP portion	0.8	
Combined multiplier	0.6	
SFP payments		0.3
Animal sector		
SAP for grassland	0.3	
CNDP for animals	1.0	
SFP payments		0.3

Source: Author's assumptions.

Crops with basic payment only (vegetables, potato, pasture, sugar beet), we assume a high level of decoupling and apply the multiplier of 0.3 to payments.

Crops with top-up payments (grains, rapeseed, potato for starch, flax, buckwheat, and legumes), we assume an 0.8 coupling multiplier for the top-up portion and 0.3 for the basic payment or a weighted average of 0.6 for total area payments.

Milk and dairy cows – there is a milk quota as given in Table 2. Payments per ton of milk were continued under CNDP, and these are considered to be fully coupled with a multiplier of 1. Pasture payments received are considered a highly decoupled form of support for dairy with a multiplier of 0.3, and these are converted to headage and milk equivalent payments by using 1.4 hectares per cow and the yield per cow.

Livestock and sheep – for animal premiums paid under CNDP, we assume a coupling multiplier of 1.0, and for grassland equivalents (for cattle, sheep and milk) we assume a 0.3 multiplier. Sheep meat equivalents of pasture payments are calculated using 0.28 hectare per sheep and 2004 slaughter weight.

When SFP is introduced in 2009, payments will all go to land, and all agricultural land will receive the same payment level, so we assume that all payments influence production decisions with a 0.3 coupling multiplier. The only payments to cattle,

sheep and milk are indirect ones through grassland and pasture payments. Thus for all products, the decoupling multiplier of 0.3 is applied to all payments from 2009 onward.

Because of the large price adjustment that is already occurring since 2004 in cattle and dairy markets, we introduce price convergence assumptions for the number of years and the degree of convergence for each of these products only (Table 5). These are similar to those used in the 5th Framework project, but are adjusted based on what has been observed up to 2005. All other prices are linked to key prices with estimated linear equations.

Table 5. **Price convergence assumptions by commodity**

Commodity	Direction	Years	% of EU Price
Rye	Up	4	100
Beef	Up	5	85
Sheep	Up	4	90
Butter	Up	7	100
Cheese	Up	7	85
SMP	Up	7	100
WMP	Up	7	100

Source: Lithuanian AGMEMOD Model (2006).

RESULTS AND DISCUSSION

Results of the AGMEMOD analysis are driven primarily by changes in prices and technology (Table 6). Yields and animal productivity change more rapidly as a consequence of being part of the Single Market. Market integration also means that there is an increasing price convergence between Lithuania and other European markets, as represented by the linkages to key prices used in the model and in some cases also the convergence assumptions. The price changes from 2000 to 2015 reflect this realignment. Grain and SMP prices were similar before accession, but most other prices increased significantly after accession. Exceptions were pig meat and poultry, which had tariff protection in Lithuania prior to EU accession. Prices of these two commodities decline by 20 percent or more during the period 2000–2015. In the period after accession, from 2005 to 2015, Lithuanian prices move mostly with the key prices of the EU to which they are linked. The exceptions are rye, beef and veal, sheep meat, milk, cheese and butter, which increase by more or decline less when compared to EU prices, because there are still upward influences from the price convergence process.

Grains and oilseed sectors. Prices are relatively stable in grains and oilseed sectors, except rye which needs to align with EU prices as it becomes an imported commodity; but there are some area shifts. Grain and rapeseed area and production increase from 2000 and 2005 levels, though rye does not return to the 2000 to 2002 levels. Though grain demand also increases, net exports increase over the projection period. Rapeseed production increases rapidly, and most of this is for the expanding export market, since domestic crushing capacity is nearly non-existent.

Livestock and dairy sectors. Pork grows only slowly after a large 2000 to 2005 increase, but poultry production continues to increase more rapidly. The poultry production growth seems high, but much of it occurred by 2005. Pork imports are projected to rise substantially, while poultry imports remain small and

Table 6. **Baseline results concerning main agricultural commodities of Lithuania**

	Unit	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total grains													
Production	1,000 ton	2'409	2'435	2'606	2'699	2'797	2'789	2'865	2'936	3'010	3'049	3'118	3'184
Domestic use	1,000 ton	2'079	2'181	2'318	2'440	2'512	2'531	2'499	2'466	2'434	2'417	2'408	2'400
Soft wheat													
Production	1,000 ton	1'238	1'379	1'461	1'518	1'578	1'577	1'625	1'670	1'716	1'742	1'785	1'826
Domestic use	1,000 ton	938	992	1'058	992	1'112	1'146	1'157	1'132	1'120	1'114	1'112	1'111
Producer price	euro / ton	116	104	104	106	108	107	107	107	108	108	109	109
Barley													
Production	1,000 ton	860	948	988	1'020	1'054	1'049	1'075	1'099	1'124	1'137	1'160	1'183
Domestic use	1,000 ton	862	936	998	1'056	1'088	1'095	1'078	1'061	1'044	1'035	1'029	1'024
Producer price	euro / ton	106	95	96	98	100	100	100	101	102	102	103	104
Rye													
Production	1000 tons	311	108	157	161	165	163	165	167	170	170	173	175
Domestic use	1000 tons	279	253	262	272	278	279	276	273	270	268	267	265
Producer price	euro / ton	92	94	97	100	103	103	103	104	104	105	106	106
Total oilseeds													
Production	1,000 ton	81	201	192	213	233	249	267	286	307	328	350	372
Domestic use	1,000 ton	28	29	30	31	32	33	34	35	36	37	38	40
Rapeseed													
Production	1,000 ton	81	201	192	213	233	249	267	286	307	328	350	372
Domestic use	1,000 ton	28	29	30	31	32	33	34	35	36	37	38	40
Producer price	euro / ton	177	190	191	210	220	210	205	205	206	207	208	209
Beef and veal													
Production	1,000 ton	60	47	47	52	54	55	52	50	48	47	46	44
Domestic use	1,000 ton	42	37	29	27	27	29	30	30	31	31	32	32
Producer price	euro / 100 kg	116	175	221	244	254	248	245	245	246	248	251	254
Pig meat													
Production	1,000 ton	74	106	93	94	96	99	101	102	102	104	106	109
Domestic use	1,000 ton	84	128	127	131	132	134	135	139	143	145	147	149
Producer price	euro / 100 kg	177	144	130	131	144	150	157	150	142	149	156	162
Poultry meat													
Production	1,000 ton	25	57	53	55	58	60	62	65	67	69	72	74
Domestic use	1,000 ton	34	54	57	61	64	66	69	71	73	76	78	80
Producer price	euro / 100 kg	154	113	121	117	117	116	113	108	105	103	101	99
Fluid milk													
Production	1,000 ton	1'725	1'862	1'974	2'052	2'082	2'043	2'050	2'048	2'043	2'031	2'025	2'019
Domestic use	1,000 ton	1'200	1'134	1'134	1'143	1'155	1'170	1'183	1'195	1'207	1'218	1'230	1'242
Wholesale price	euro / 100 kg	14	18	19	20	20	20	20	20	20	21	21	21
Butter													
Production	1,000 ton	19	21	24	25	26	22	22	20	19	18	16	15
Domestic use	1,000 ton	9	10	10	10	10	10	10	10	10	10	10	10
Wholesale price	euro / 100 kg	168	243	251	258	264	265	264	264	265	266	268	268
SMP													
Production	1,000 ton	10	14	13	12	12	11	11	11	10	10	9	9
Domestic use	1,000 ton	2	1	1	2	2	2	2	2	2	2	2	2
Wholesale price	euro / 100 kg	181	194	185	181	183	182	181	181	182	182	183	183
WMP													
Production	1,000 ton	3	4	4	4	4	4	4	4	4	4	4	4
Domestic use	1,000 ton	1	1	1	1	1	1	1	1	1	1	1	1
Wholesale price	euro / 100 kg	188	204	167	190	211	201	194	197	202	206	211	215
Cheese													
Production	1,000 ton	42	56	64	70	73	73	76	77	78	80	81	83
Domestic use	1,000 ton	11	20	21	22	24	25	27	29	31	33	35	36
Wholesale price	euro / 100 kg	254	285	359	381	394	403	406	405	405	407	410	413

Source: Lithuanian AGMEMOD Model (2006).

decline over the projection period. Growing beef prices would seem to induce more production, but this is constrained by declining cattle numbers. Farmers follow their quotas and are reducing cow numbers as yields increase. Lithuania seems likely to remain a small net exporter of beef and veal products.

On the dairy side, butter production is projected to decline as CAP Reform reduces butter prices in the future. However, cheese production fares better and both products, as well as SMP and WMP, remain important export products. Cheese continues to be the leading export product. Though milk production increases after accession, it peaks in 2008 and declines very slightly after that. Checking against the dairy quota indicates that total factory purchases plus direct sales never exceed the milk quota. Since feed use, losses and home consumption are still significant, total production does exceed the quota, but the quota does not constrain these uses. These quantities are declining, but in 2005 were still more than 30 percent of total production.

Agricultural income. Although the AGMEMOD country models capture a restricted set of agricultural commodities and cover feeding stuff as the sole input variable, it is possible to approximate the path of gross agricultural sector income. This is based on the path of agricultural output value, subsidies (direct payments and SFP) made to producers of the included commodities and feeding costs, respectively (Tables 7 and 8).

The share of subsidies / SFP in the estimated agricultural output value is estimated to increase from 3.6% in 2000 to 25% in 2015. This is due to the introduction of EU payments in 2004 and the steady increase of these subsidies over time. From 2005 to 2015, the baseline shows a 32% increase of the agricultural output value, which comes from all sub-sectors, crops, livestock and milk. In crops, the value increase comes more from production than price, while in livestock and milk it is mostly due to growing prices. Hence, gross agricultural income is projected to increase by more than 50% in the projection period (excluding returns for other agricultural commodities, other inputs, depreciation, and taxes).

SCENARIO RESULTS AND DISCUSSION

CAP reform. The CAP reform of June 2003 introduced decoupled direct payments to EU farmers, while allowing for the differential implementation of these payments across EU MS. The 'Further CAP reform' scenario, described in Report 3, involves the effective homogenisation of the MS currently nationally differentiated CAP implementation plans through the imposition of full decoupling from 2009, while the rates of compulsory modulation that are associated with the current SFP are increased for NMS to 6% in 2013, 8% in 2014 and 10% in 2015.

When adopting SFP in 2009 Lithuania chose to decouple from production all direct payments previously made to farmers and to introduce a SFP based strictly on historical entitlements. Farmers receiving single farm payments (SFP) in excess of €5,000 were, like other farmers in new member states, subject to modulation at rates as specified above.

The "further CAP reform" scenario, involving the "full" decoupling of all CAP direct payments and increased rates of modulation would not, *a priori*, be expected to have a major impact on the supply and use of agricultural commodities in Lithuania. On the one hand, the commodities in the IPTS study were already fully decoupled under the baseline from 2009 onward. On the other hand, increases in the rate of compulsory modulation by decreasing the value of the SFP would be expected to have some (negative) impact on supply of agricultural commodities but only affect a small portion of recipients. In addition, the full decoupling of CAP payments in all EU MS would be expected to alter the supply and use balance in EU agricultural commodity markets since many MS have chosen to only partially decouple some direct payments. Such an altered supply and use balance at an EU level would be expected to reduce production of those agricultural commodities that are still supported by coupled direct payments and to consequently have at least some small positive impact on the EU market prices for agricultural commodities.

Table 7. **Agricultural output, subsidies, feed cost and gross income in Lithuania, million euro**

	Unit	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Agric. output value	million euro	752	910	962	1042	1109	1117	1131	1131	1134	1153	1178	1202
Subsidies / SFP	million euro	23	129	165	195	238	277	315	336	357	345	347	350
Feeding costs	million euro	127	140	153	168	177	179	176	173	171	170	171	171
Gross agric. invome	million euro	648	899	974	1,070	1,170	1,215	1,271	1,294	1,320	1,327	1,355	1,382
% subsidies / SFP of gross income		3.6%	14.3%	16.9%	18.2%	20.3%	22.8%	24.8%	25.9%	27.0%	26.0%	25.6%	25.3%

Source: authors' calculations.

Table 8. **Agricultural output, subsidies, feed cost and gross income in Lithuania, 2000 = 1**

	Unit	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Agric. output value	2000 = 1	1.00	1.21	1.28	1.39	1.47	1.49	1.50	1.50	1.51	1.53	1.57	1.60
Subsidies / SFP	2000 = 1	1.00	5.48	7.02	8.31	10.12	11.79	13.43	14.30	15.20	14.70	14.81	14.92
Feeding costs	2000 = 1	1.00	1.10	1.20	1.32	1.39	1.41	1.38	1.36	1.34	1.34	1.34	1.34
Gross agric. income	2000 = 1	1.00	1.39	1.50	1.65	1.80	1.87	1.96	2.00	2.04	2.05	2.09	2.13

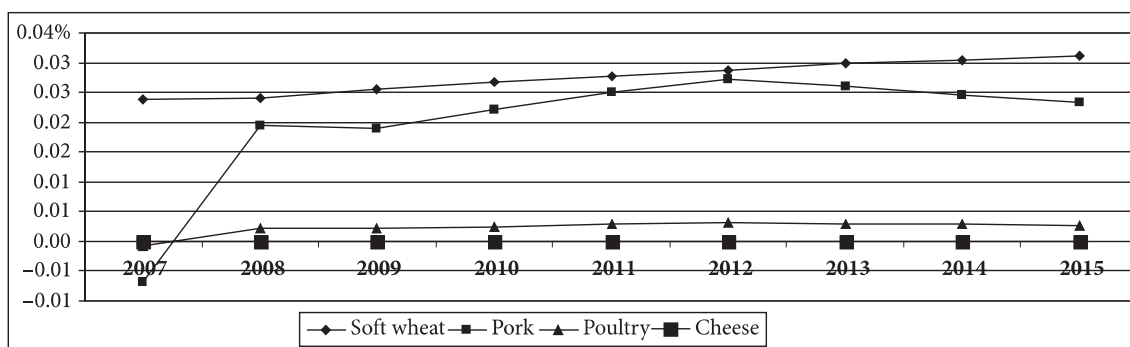Source: authors' calculations.

Fig. 1. Lithuanian prices: FCR scenario percent changes from baseline
Source: Lithuanian AGMEMOD Model (2006).

The further CAP reform scenario results presented below show that the impacts on Lithuanian agricultural commodity markets from the introduction of full decoupling in all MS and the increased rates of compulsory modulation are extremely small.

Main results. The impact of full decoupling in other EU MS on Lithuanian agricultural commodity markets is reflected in the path of prices. However, the implementation of full decoupling across all EU MS leads to very small increases in the supply-inducing prices that are used in the Lithuanian AGMEMOD sub-model. The percentage changes from the Baseline level projections for the prices of four key commodities in the AGMEMOD model (soft wheat, pork, poultry and milk) are presented in Fig. 1.

The Lithuanian AGMEMOD model's projections under the FCR scenario are compared with the Baseline projections in Table 9. The remainder of this section provides commentary on these results.

Grains and oilseed sectors. The impact of the FCR scenario on Lithuanian grain markets when compared to the Baseline projections are, as expected, quite modest. An important reason is that the AGMEMOD crop commodities in the IPTS study were already fully decoupled in the Baseline and, hence, the main effect of decoupling of direct payments was already projected in Section 5.14.1 above. Under the FCR scenario, the EU grain prices would show a slight increase due to the full decoupling of arable land direct payments in all MS. The result is that the impact on the Lithuanian grain prices is negligible when compared to Baseline levels.

A modest increase in prices would be expected, *ceteris paribus*, to contract the domestic use of cereals somewhat when compared with the Baseline, but price changes are so small that the only conclusion one can make is there is no change. What change there is, comes from the increased modulation that reduces direct payments and production slightly in the last three years.

Livestock and dairy sectors. The impact of the FCR scenario on Lithuanian livestock markets when compared to the Baseline projections is quite small. The reason is that there are no differences in the decoupling rates for animal product support in the Lithuanian model between the two scenarios. As in crops, the most general change is a slight decline in production for some products the last three years due to increased modulation. There is a slight increase in beef and veal production and a decline in consumption from a price increase that is slightly higher than for other commodities.

The increased rate of modulation of SFP is projected to lead to only a very small contraction in the total volume of milk and dairy products produced in Lithuania. Changes in the rate of modulation are not expected to change the relative prices of different dairy commodities; as a consequence, changes in supply and use balance in dairy commodity markets in Lithuania and the Lithuanian farm gate milk price, under the FCR scenario, are negligible.

Agricultural income. It was expected that somewhat higher agricultural commodity prices that prevail under the FCR scenario and the modest increases in the levels of production that occur in response to the projected price would lead to a slight increase of Lithuanian agricultural income. In the last three years, though, this even small increase disappears when modulation reduces direct payment. Compared to the Baseline, Lithuanian agricultural incomes increase slightly until 2013 under the FCR scenario, then decrease (Table 9), which is entirely due to the lower subsidy receipts of 5 to 7 percent (from the increased rate of modulation). This reduction more than offsets the small increase in agricultural output value in the last three years and leads to a net decline in gross income net of feed costs, which also increased slightly. The change in gross income went from near zero to minus 2 percent in the last year.

Exchange Rate Change (ERC). The exchange rate between the US dollar and the euro is an important factor in determining the influence of world prices of agricultural commodities on EU

Table 9. **Agricultural output and income in Lithuania: further CAP reform percentage change from baseline**

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Agric. output value	0.01%	0.09%	0.07%	0.08%	0.07%	0.07%	0.03%	0.01%	−0.02%
Subsidies / SFP	0.00%	0.05%	0.04%	0.05%	0.04%	0.04%	−3.00%	−4.97%	−6.90%
Feeding costs	0.02%	0.17%	0.15%	0.16%	0.16%	0.15%	0.15%	0.13%	0.10%
Gross agric. income	0.00%	0.07%	0.06%	0.06%	0.06%	0.05%	−0.77%	−1.28%	−1.78%

Source: Lithuania AGMEMOD Model (2006).

agricultural markets and the competitiveness of EU agricultural exports to world markets. Under the Baseline, the projected US dollar versus the euro exchange rate ranged from US$ 1.24 to 1.10 per euro from 2006 onwards. In evaluating the impact of changes in this key macroeconomic assumption, three alternative paths of the US dollar versus the euro were analysed. Two of these alternative exchange rate projections involve a depreciation of the US dollar versus the euro with the exchange rate moving to rates of 1.3 and 1.4 US dollars per euro in 2007 and continuing to 2015. The third alternative exchange rate projection examined is one under which the euro depreciates versus the dollar with the exchange rate in 2007 to a parity exchange rate of US$ 1 per euro.

Since all key prices are external to Lithuania, the influence of the alternative exchange rate paths examined in this scenario operates through the impact of the different exchange rates on the key commodity price projections generated by the AGMEMOD model.

CONCLUSIONS

This section provides a summary of the Exchange Rate Change (ERC) scenario projection results for Lithuania. Three exchange rate sub-scenarios are labelled as follows: ERC-1 (euro = 1 USD), ERC-2 (euro = 1.3 USD) and ERC-3 (euro = 1.4 USD). The results of the scenarios relative to the Baseline projections in terms of percentage changes are provided in Figs. 2 and 3.

The impact of the three ERC scenarios when compared with one another and with the Baseline projections indicate that the AGMEMOD model performs as one would have expected. Key prices under the ERC-1 scenario increase when the euro depreciates to parity with the US dollar from 2007. When compared with Baseline price projections for Lithuania, prices under both

the ERC-2 and ERC-3 scenarios decline as expected when the euro appreciates against the dollar. The size of the increases in the key prices that are endogenously determined within the AGMEMOD modelling system are, in general, smaller than the percentage changes in prices that are determined exogenously to the AGMEMOD model. For these exogenous prices the percentage change in the exchange rate from Baseline levels is fully reflected in the euro prices for these commodities (oilseeds and oil seed meals and oils).

The impact of the changed exchange rate on the commodity prices determined endogenously by the AGMEMOD modelling system is moderated by the endogenous response of EU supply and demand for agricultural commodities. The percentage change in four Lithuanian prices under each of the three ERC scenarios is shown in Fig. 2 graphs. The commodity prices chosen for review are soft wheat, pork, poultry and milk. These prices are endogenously determined in the AGMEMOD model and range from relatively smaller changes for wheat and poultry to relatively larger effects for pork and cheese prices.

When the projections for Lithuanian commodity markets under the ECR-1 Scenario are compared with those under the Baseline, market clearing prices are thus generally higher. These higher prices are associated with small increases in production of most agricultural commodities and somewhat reduced domestic use. Sheep meat is an exception, since price changes very little, so larger changes in input prices cause production to decrease and larger changes in other meats cause consumption to increase. The same effects obtain to a larger degree in ECR-2 and ECR-3.

The two exchange rate change scenarios, labelled ECR-2 and ECR-3, involve increases in the value of the euro versus the dollar when compared with the Baseline exchange rate assumptions. From 2007, under the ECR-2 the euro – US dollar exchange rate equals
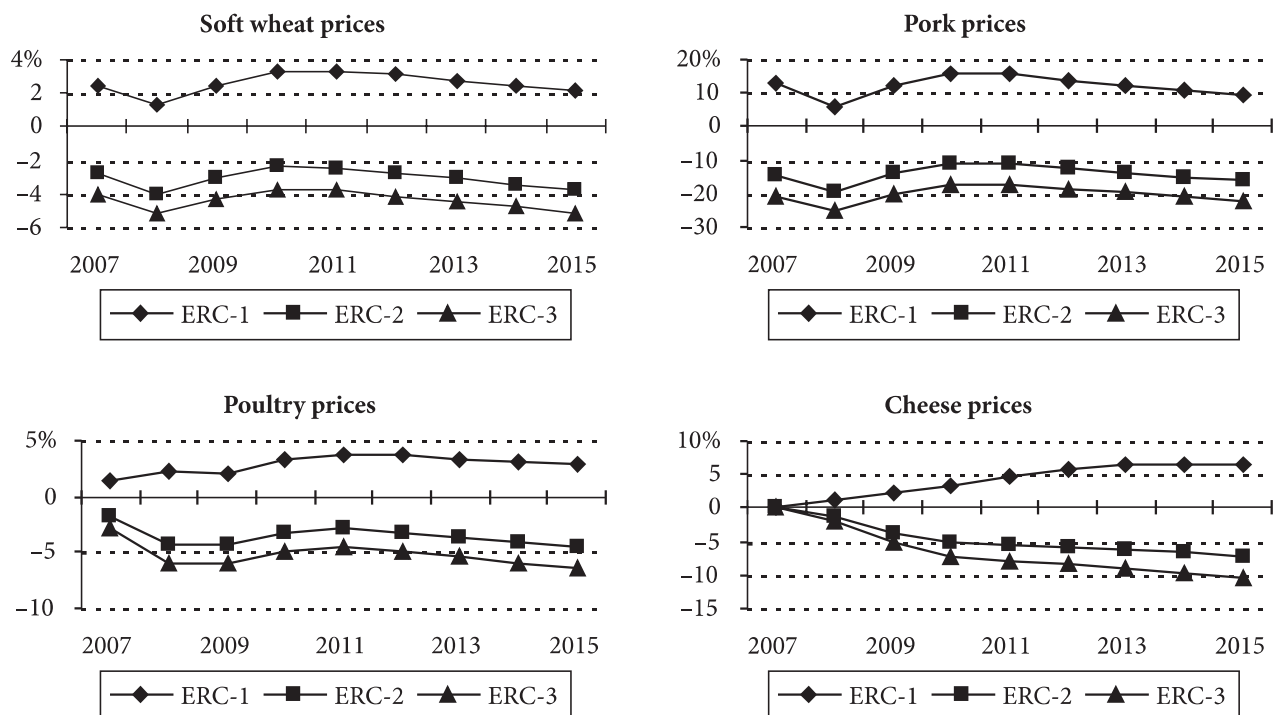

Fig. 2. Lithuanian commodity prices: change from baseline under ERC scenarios
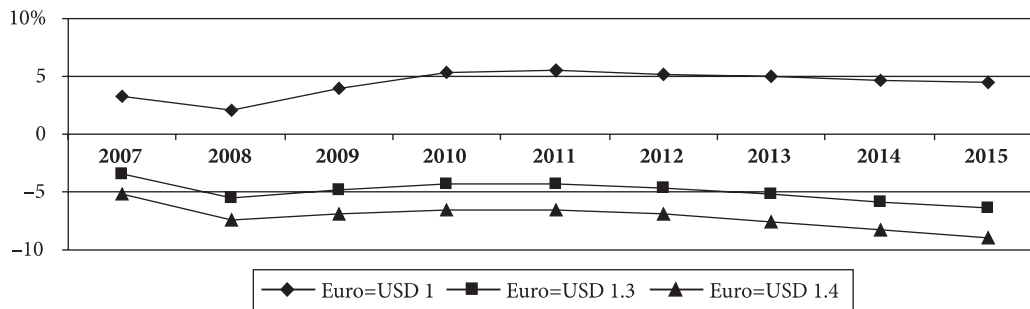Source: Lithuanian AGMEMOD Model (2006).

Fig. 3. Lithuania: gross agriculture income in exchange rate scenarios.
Percent changes from baseline
Source: Lithuanian AGMEMOD Model (2006).

1.3, while under ECR-3 the exchange rate is assumed to equal 1.4 from 2007 onward. As expected, the projections for Lithuania under both scenarios when compared with those under the Baseline show similar changes in prices, quantities supplied and demanded. But impacts are proportionately larger in ECR-3. As in the ECR-1 Scenario, the impact of the exchange rate changes is most fully expressed in the prices of commodities exogenous to the AGMEMOD model system, such as oilseeds, pig meat and WMP. For the majority of agricultural commodities in the AGMEMOD modelling system, prices are determined endogenously together with all of the elements of supply and use balances. Under each of the euro–US dollar exchange rate appreciation scenarios, market prices of all commodities in Lithuania are projected to be lower than under the Baseline, which causes production to be lower and consumption higher in most cases. Grain and rapeseed demand, however, declines due to reduced feed demand. The exceptions to this pattern are sheep meat and SMP whose price changes are much smaller, so cross price effects dominate the own-price effects.

Agricultural income. Total subsidy receipts are not really influenced by the exchange rate shocks. The main influence on the gross agricultural income arises from changes in the agricultural prices, output value and feed costs. Higher prices and production levels in the ERC-1 Scenario would lead to increased values of agricultural output and are partly offset by higher feed costs, while the opposite is the case in the ERC-2 and ERC-3 Scenarios (Fig. 3).

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BŽŪP REFORMOS IR VALIUTŲ KURSO ĮTAKA LIETUVOS ŽEMĖS ŪKIO IR MAISTO PRODUKTŲ RINKOMS

S a n t r a u k a

Straipsnyje pateikiamos žemės ūkio produktų rinkų prognozės ir jų pokyčiai iki 2015 metų bei parodoma, kokią įtaką jiems turi BŽŪP reforma ir valiutų kursai, BŽŪP reformos ir valiutų kursų įtaka Lietuvos žemės ūkio atskiriems produktams įvertinti naudojant dalinį pusiausvyros modelį. Jo pagrindą sudaro atskirų žemės ūkio produktų balansų ir politikos priemonių (kvotos, intervencinės kainos) 2000–2005 m. duomenys.

Modeliuojant gauta, kad perspektyvoje didės visų pagrindinių žemės ūkio produktų gamyba. Pažymėtina, kad žymiai didės kviečių, miežių, rapso ir sūrio eksportas. Prognozuojama, kad per dešimtį metų bendroji žemės ūkio produkcijos vertė padidės daugiau kaip du kartus ir per pastaruosius penkerius metus tiesioginės išmokos išaugs 25%. BŽŪP scenarijus (visiškas tiesioginių išmokų atsiejimas nuo gamybos) turės nedidelę įtaką galutiniam žemės ūkio sektoriaus rezultatui, nes Lietuvoje dauguma tiesioginių išmokų nesusietos su gaminama produkcija. Priešingai, valiutų kursų kaita turės žymesnę įtaką minėtam rezultatui. Jeigu euras susilpnėtų ir būtų lygus JAV doleriui, žemės ūkio produkcijos kainos išaugtų ir bendroji žemės ūkio produkcijos vertė padidėtų 5%. Kitu atveju, jei euras sustiprėtų (1 EUR = 1,4 $) per nagrinėjamą laikotarpį, vidaus kainos būtų mažesnės ir bendroji žemės ūkio produkcijos vertė 5% būtų mažesnė, palyginti su baziniu variantu.

Raktažodžiai: BŽŪP reforma, pajamos iš žemės ūkio veiklos, valiutų kursas, žemės ūkio produktai

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ВЛИЯНИЕ РЕФОРМЫ ВСХП И КУРСА ВАЛЮТ НА РЫНКИ СЕЛЬСКОХОЗЯЙСТВЕННЫХ И ПРОДОВОЛЬСТВЕННЫХ ПРОДУКТОВ ЛИТВЫ

Р е з ю м е

В статье представлены прогнозы рынка продуктов сельского хозяйства и их изменения до 2015 г., а также рассмотрено влияние на них реформы ВСХП и курса валют. Для определения влияния реформы ВСХП сельского хозяйства Литвы и курса валют используется модель частичного равновесия. Основу этой модели составляют данные балансов и политических средств (квота, интервенционная цена) продуктов сельского хозяйства 2000–2005 гг.

В процессе моделирования установлен рост производства всех основных сельскохозяйственных продуктов. Также ожидается значительное увеличение экспорта пшена, рапса и сыра. Прогнозируется, что в течение 10 лет общая стоимость сельскохозяйственной продукции возрастёт более чем в два раза, а за последние пять лет прямые платежи возрастут на 25%. Сценарий ВСХП (полное отделение прямых выплат от производства) на конечный результат сельскохозяйственного сектора окажет незначительное влияние, поскольку бо́льшая часть платежей не связана с производимой продукцией. Однако изменения курса валют могут сильнее влиять на рассматриваемый результат. Если курс евро ослабеет и станет равен одному доллару США, то цены на сельскохозяйственную продукцию возрастут и общая стоимость сельскохозяйственной продукции возрастет на 5%. И наоборот, в случае усиления курса евро (1 EUR = 1,4 \$) стоимость сельскохозяйственной продукции понизится и общая стоимость сельскохозяйственной продукции станет на 5% меньше по сравнению с базовым вариантом.

Ключевые слова: доход от земледелия, курс валют, реформа ВСХП, сельхозпродукты