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**MULTILATERAL MARKET-ACCESS REFORMS
OF THE DOHA ROUND**

**A PRELIMINARY ASSESSMENT OF IMPLICATIONS
FOR EU AGRICULTURAL TRADE**

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AND

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Abstract

The July package of the Doha Round of trade negotiations stipulates that a tiered-formula approach should be used to significantly reduce market access barriers across countries, implying that the EU would have to make larger cuts to its high external tariffs, in comparison with many other WTO members such as the US. This paper provides a preliminary assessment of the likely impact of the tiered-formula reform approach on EU agricultural sectors. Numerical simulations of a multilateral market-access reform scenario show that such cuts would lead to across-the-board decreases in intra-EU trade flows, as compared with a baseline projection. While intra-EU trade flows would decrease, the EU's trade with the rest of the world would increase. Yet such increases would not be symmetric – imports into the EU would increase more than exports, resulting in larger external trade deficits or smaller external trade surpluses in many EU agricultural products. Further, the resulting adjustments in member states' production and net trade positions are not equal: the new member states would generally lose part of their export shares in the EU market to external competitors, as highlighted in the cases of bovine meat and dairy products.

Finally, simulation results show that although EU welfare as a whole improves, the distribution of such gains across EU member states is uneven. EU-15 countries generally gain from improved efficiency as a result of the reform. The new member states, however, will only experience marginal efficiency improvements but will likely suffer terms-of-trade losses, thereby losing some of the related benefits of joining the EU (as projected in the baseline case).

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1. Introduction

After the setback in Cancun, agricultural trade negotiations within the World Trade Organisation (WTO) have moved back on track with the agreement to the July package. While the negotiations are being conducted in three different areas (market access, export competition and domestic support), reducing market access barriers is once again at the heart of intense negotiations. This is because virtually all the WTO members maintain at least some market access barriers. And for many of the less-developed countries, such barriers are the only instruments used for protecting their agricultural markets and for generating tariff revenue. Therefore, analysing the impact of further market access reforms is a pressing issue and the purpose of this preliminary study.

The current negotiations exert further pressure on the European Union to reduce its high import barriers in a number of areas. The July package stipulates that a tiered-formula approach shall be used to reduce these barriers. Such an approach would result in larger cuts to higher tariffs and would require members with higher barriers to shoulder greater reform commitments. This is indeed a significant deviation from the Uruguay Round approach, which applied homogeneous, average cuts across member countries.

If the tiered-formula approach indeed becomes operational at the conclusion of the Doha Round, the EU as a whole would need to open its market more than many other WTO members. This would likely lead to non-trivial changes in the production and trade patterns of heavily protected agricultural products and would possibly elicit a shift of gravity from intra-EU trade to extra-EU trade. Furthermore, there would be an important redistribution of intra-EU trade among the 25 EU member countries as their natural comparative advantages in different products would be reconfigured. Finally, some of the benefits of joining the EU for the new EU member states may be eroded as a result of the opening up of the EU market to non-member countries.

This preliminary study attempts to analyse the potential impact of likely market-access reforms on the EU and its individual member countries after the completion of EU enlargement. Particular attention is paid to the production and trade positions of each member country in key agricultural and food products. The full, economy-wide effects of these reforms are also illustrated by examining the welfare effects of such reforms.

The paper is organised as follows. In section 2 we briefly introduce the method and database used for the quantitative analysis. Section 3 is devoted to the baseline and the market-access reform scenarios. Results of the scenarios are presented in section 4. Section 5 provides a summary and some concluding remarks.

2. Methodology and database

We use a global general equilibrium model to simulate the impact of possible multilateral market-access reforms resulting from the Doha Round. This model is a variant of the GTAP model (Hertel, 1997). Numerous policy features of the common agricultural policy (CAP) have been refined in the modified model to make it more suitable for agricultural trade policy analysis in the EU context.¹ The GTAP version 5 database (Dimaranan & McDougall, 2002) is used to carry out the policy simulations. Specifically, we use an aggregated version of the database. In the aggregation, most of the agricultural and food products in the original GTAP database are retained while non-agricultural goods are grouped into manufacturing and services. In light of the focus on the EU, the database is further aggregated along the regional dimension but all the 25 member states of the EU are included in the aggregation as separate countries.

The GTAP model is a standard, multi-regional, static, computable general equilibrium (CGE) model. Like any other applied economic model, this model is of course based on specific assumptions both in terms of the theoretical structure as well as the specific parameters and the data used. In this model, regional production is produced according to a constant return-to-scale technology in a perfectly competitive environment, and the private demand system is represented by a non-homothetic demand system (a constant difference elasticity function).² The foreign trade structure is characterised by the Armington assumption, implying imperfect substitutability between domestic and foreign goods.

3. Scenarios

3.1 Baseline scenario

Like previous the rounds of global trade reforms, any multilateral liberalisation following the conclusion of the Doha Round will likely take a few years to be implemented. A meaningful evaluation of the anticipated policy changes can be obtained by comparing the liberalisation scenario with a non-liberalisation scenario. Such a non-liberalisation scenario contains projections of the macro economy and incorporates the effects of important policy changes other than the exogenous shocks to be analysed. To be consistent with the focus of the paper, we construct a non-liberalisation baseline scenario that features a number of important policy initiatives by the EU, including the Agenda 2000 reform and the mid-term review (MTR) reform of the CAP, the Everything But Arms initiative and EU enlargement. In addition, the Uruguay Round agreement on agriculture is assumed to have been completed in this baseline. Finally, we apply shocks to GDP, population and total factor productivities to project the world economy to the baseline year of 2013 – a year when the market access reforms are also assumed to have been completed.

The basic elements of the baseline scenario have been used in a number of studies conducted by the Food and Resource Economics Institute. The most relevant example of these studies is by Jensen & Frandsen (2003a), which examines the impact of EU enlargement and the MTR-

¹ For a more detailed discussion of the many changes to the standard GTAP model, readers are encouraged to see a series of working papers published by the Food and Resource Economics Institute on reform of the CAP and trade liberalisation under the WTO. These papers can be downloaded from www.foi.dk or can be obtained from the authors.

² Hence, the present analysis does not include features such as imperfect competition or increasing return to scale, which may, however, be important in certain sectors.

reform of the CAP against a non-enlargement and non-CAP reform baseline scenario. The current study takes one of the enlargement scenarios found in Jensen & Frandsen (2003a) as the starting point or baseline scenario. Therefore, the beneficial effects of EU enlargement to the 10 new member countries have already been reflected in the baseline case.³

3.2 Multilateral market-access reform scenarios

The July package stipulates a multiple-tiered formula for reducing market access barriers. Developing and developed member countries will use different formulas with the former facing less-stringent commitments. The least developed members will be exempt from any reduction commitments. Yet there are no numerical values assigned to either the tiers or the cuts applied to each tier in the July package. Therefore, we are forced to base our analysis on an earlier proposal, namely the Harbinson proposal, which preceded the July package. In the Harbinson proposal, there are three tiers for developed member countries:

- for tariffs higher than 90%, the average cuts shall be 60%;
- for tariffs falling between 15% and 90%, the average cuts shall be 50%; and
- for tariffs below 15%, the average cuts shall be 40%.

For developing members, there are four tiers with smaller cuts, specifically,

- for tariffs over 120%, the average cuts shall be 40% only;
- for tariffs between 60% and 120%, the average cuts shall be 35%;
- for tariffs between 20% and 60%, the average cuts shall be 30%; and
- and for tariffs lower than 20%, the average cuts shall only be 25%.

In addition to the Harbinson tiered-approach, we also consider an alternative approach according to the Swiss formula, with a coefficient of 25.⁴ This alternative formula is interesting in that it would lead to greater harmonisation of market access barriers across products and member countries. In fact, the tiered formula can be seen as a compromise between the Swiss formula approach and the Uruguay Round ‘linear-cuts’ approach. Simulation results from the Swiss formula will be used as a reference for benchmarking the magnitude of the effects of the tiered formula.

To illustrate the different cuts in import tariffs implied by the tiered approach and the Swiss formula, we present the baseline import tariff rates and those lower rates resulting from the assumed market access reforms in Table 1 for the EU and the US. By definition, using the Swiss formula will lower high tariffs more than low tariffs and will have a greater impact on harmonising the levels of protection across products. The Harbinson tiered-formula is a compromise between the Swiss formula approach and the average-cut approach applied in the Uruguay Round. As such, the resulting cuts for high tariffs are generally lower in this case, in comparison to the Swiss formula approach.

³ Details of this baseline scenario can be found in Jensen & Frandsen (2003a and 2003b).

⁴ The Swiss formula is specified as follows: $Z = AX/(A+X)$ where X = the initial tariff rate, A = the coefficient and the maximum final tariff rate, and Z = the resulting lower tariff rate. So a Swiss formula with a coefficient of 25 will lower all tariffs to be a level that is lower than 25% after the reductions.

Table 1. Import tariff equivalences, the EU and US, baseline and post-liberalisation levels (%)

	EU-25			US		
	Baseline	Harbinson	Swiss	Baseline	Harbinson	Swiss
Paddy rice	32.5	16.2	14.1	4.9	2.9	4.1
Wheat	48.8	24.4	16.5	2.6	1.5	2.3
Other grains	17.5	8.7	10.3	0.6	0.4	0.6
Vegetables fruits and nuts	14.5	8.7	9.2	4.7	2.8	3.9
Oilseeds	0.0	0.0	0.0	17.7	8.8	10.4
Sugar cane and beet	251.4	100.6	22.7	0.7	0.4	0.6
Plant-based fibres	0.0	0.0	0.0	9.7	5.8	7.0
Other crops	3.1	1.9	2.7	21.5	10.8	11.6
Bovine animals	36.6	18.3	14.9	1.1	0.6	1.0
Other animals	6.7	4.0	5.3	0.6	0.4	0.6
Raw milk	0.0	0.0	0.0	0.0	0.0	0.0
Wool	0.0	0.0	0.0	0.9	0.6	0.9
Natural resource	0.3	0.3	0.3	0.4	0.4	0.4
Bovine meat products	71.9	36	18.6	5.3	3.2	4.4
Other meat products	30.9	15.5	13.8	3.6	2.2	3.2
Vegetable oils and fats	11.4	6.8	7.8	4.3	2.6	3.6
Dairy products	76.4	38.2	18.8	42.5	21.2	15.7
Processed rice	87.4	43.7	19.4	5.3	3.2	4.4
Sugar	76.4	38.2	18.8	53.4	26.7	17
Other processed foods	28.8	14.4	13.4	11.4	6.9	7.8
Beverage/tobacco	8.3	5.0	6.3	3.0	1.8	2.7

Sources: GTAP 5 database and authors' calculations.

The EU maintains high tariffs on a number of products, including bovine meats (71.9%), dairy products (76.4%), rice (87.6%) and sugar (76.4%). The Swiss formula approach will bring these down to between 18% and 19%, whereas the Harbinson tiered-formula will cut these to between 36% and 44%. For products with lower tariff rates (e.g. grains, vegetables and other crops), the Harbinson formula is more effective than the Swiss formula. In contrast, market access barriers in the US are generally lower than those in the EU. Therefore, the two approaches lead to similar reductions to tariff rates for many products. The only notable exceptions are dairy and sugar. For dairy, the 42.5% baseline rate will be cut to 21.2% (15.7%) by the Harbinson scenario (Swiss formula). For sugar (with a baseline rate of 53.4%), the difference is more pronounced (26.7% versus 17%).

4. Results

Results from simulating the two market-access liberalisation scenarios are reported in Tables 2-5. Since the Harbinson tiered-approach scenario is more realistic in light of the agreement to the July package, we focus our attention on the results from the Harbinson scenario when discussing the simulated impacts of market access reforms. We may touch upon the results from the Swiss formula in the tables, however, for reference purposes and when necessary.

4.1 Intra-EU trade

Multilateral market-access reforms will lead to across-the-board decreases in intra-EU trade, as can be seen from Table 2. These decreases happen for two reasons. First, one should recall

that the market-access reform scenario is simulated against a baseline where EU enlargement has been achieved. Lowering the EU's common external tariff rates will no doubt lead to more imports from outside the EU. Second, other WTO members are also assumed to have lowered their own market access barriers, a move that will induce more exports from the EU and divert some of the intra-EU trade to its external trading partners.

Not surprisingly, intra-EU trade will drop the most for those products with the highest external tariffs (and hence the greatest reductions), including bovine meats, dairy products and wheat. Total intra-EU trade will be reduced from the baseline level by around \$2.6 billion for bovine meats, \$3.2 billion for dairy products and over \$0.9 billion for wheat. Although the baseline tariff rates for rice and sugar are also very high, the absolute reductions of intra-EU trade flows are much smaller, owing to the fact that the baseline trade flows for the two products are quite small.

Compared with the Harbinson approach, the Swiss formula would generally result in larger cuts to the EU's common external tariffs and hence larger reductions in intra-EU trade.

4.2 Extra-EU trade

To illustrate the changes to the EU's external trade, we present the results on the EU's trade with the US (the middle panel in Table 2) and with the rest of the world (all non-US trading partners, the right panel in Table 3). Here, we focus on the results obtained from the Harbinson approach. As the Swiss formula generally implies larger cuts to market access barriers, the resulting changes in trade volumes are generally larger than those obtained from the Harbinson approach.

Owing to the different baseline market-access barriers between the EU and the US (as presented in Table 1), multilateral market-access reforms will mostly boost imports from the US into the EU, especially for bovine meats, wheat, fruit, vegetables and dairy products. On the other hand, exports from the EU to the US will largely remain at the baseline level, except for other crops and dairy products where baseline tariff rates are relatively high in the US and where there are notable increases in exports from the EU. The US also maintains high tariff rates for sugar in the baseline. Nevertheless, the EU is not in a position to penetrate the US sugar market and there will only be marginal increases in sugar exports from the EU.⁵

Moving beyond the bilateral trade patterns between the EU and US, changes in trade between the EU and the rest of the world reveal that multilateral market-access reforms will lead to more external trade and less internal trade for the EU. Results from the Harbinson approach show that imports of bovine meat and dairy products will each increase by over \$3 billion, more than the projected decreases in intra-EU imports. Moreover, exports of many products from the EU to the rest of world will also increase. On balance, the EU would either experience enlarged trade deficits or reduced trade surpluses in many agricultural and food products, most notably in bovine meats and dairy products.

⁵ This is because competitive producers such as Brazil will gain more in the world sugar market under a liberalisation scenario. In the current paper the EU sugar regime is not modelled in its entirety; instead we focus on the market access barriers only. For the complete modelling of the EU sugar regime, see Frandsen et al. (2003).

Table 2. Baseline and post-liberalisation trade flows of the EU, selected products (\$US millions, 1997 value)

	Intra-EU-25			External trade with the US						External trade with the rest of the world (excl. US)					
	Baseline value	Chg. from baseline		Baseline value		Changes from baseline				Baseline value		Changes from baseline			
		Harbinson	Swiss			Harbinson		Swiss				Harbinson		Swiss	
		Internal	Trade	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Wheat	3,277	-944	-1,424	191	1	179	0	130	0	319	1,914	605	302	1,294	1,048
Other grains	2,288	-341	-376	738	57	130	2	142	-19	338	720	180	160	288	-57
Veg., fruit, nuts	20,293	-1,595	-2,000	657	907	287	51	407	-140	2,964	7,916	1,370	2,930	2,249	8,333
Oilseeds	1,957	14	-56	2,949	7	-177	2	-186	-1	1,804	368	121	33	588	230
Plant-based fibres	425	-25	-83	175	1	-11	0	-27	0	1,809	745	-14	-42	-44	-132
Other crops	9,310	-433	-592	793	1,014	144	244	103	54	8,089	4,309	264	216	801	-2
Bovine animals	2,064	-162	-294	106	190	-3	4	-7	3	205	550	-13	-11	-25	-20
Other animals	3,474	3	223	221	105	2	1	16	0	2,420	1,753	-31	-4	12	21
Bovine meats	7,656	-2,595	-4,309	528	17	1,094	2	2,037	-1	1,365	897	3,303	225	7,270	491
Other meats	14,134	-567	-621	152	386	226	17	264	-55	231	8,098	452	1,689	793	8,544
Veg. oils and fats	7,985	-684	-691	558	475	123	-8	58	-120	2,639	5,071	878	726	1,223	2,115
Dairy products	15,244	-3,182	-7,407	73	359	344	381	734	537	573	6,024	3,360	2,460	10,955	7,966
Processed rice	614	-221	-469	18	32	69	3	100	-7	498	463	41	34	309	1,463
Sugar	1,874	-155	-138	3	16	17	15	58	23	2,499	2,419	69	126	425	22
Other process.	40,530	-6,728	-7,956	1,521	2,165	1,758	363	1,817	13	7,647	20,004	8,297	5,824	12,289	23,719
Total	157,126	-18,833	-27,115	12,297	10,471	5,237	1,399	6,196	195	36,153	78,495	19,690	24,718	39,622	87,055

Sources: Authors' calculations from simulations.

Table 3. Baseline and post-liberalisation outputs and trade flows for bovine meats at the EU member state level (\$US millions, 1997 value)

	EU-25 production and intra-EU trade								EU external trade					
	% Change		Baseline		Change in baseline value				Baseline		Change in baseline value			
	Domestic production		value		Harbinson		Swiss		value		Harbinson		Swiss	
	Harbinson	Swiss	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Belgium/Luxembourg	-21.7	-36.0	240	304	-170	-121	-214	-197	212	32	245	23	402	65
Denmark	-17.1	-36.0	238	234	-78	-90	-153	-141	19	83	76	9	167	-9
Germany	-12.8	-26.3	1,128	519	-527	-205	-829	-325	278	114	785	24	1,593	4
Greece	-4.3	-10.9	316	8	-87	-4	-173	-6	28	7	123	1	307	0
Spain	-6.2	-13.1	241	326	-113	-118	-170	-202	86	39	233	3	506	-8
France	-9.6	-20.0	1,324	667	-543	-258	-909	-414	258	130	851	47	1,878	126
Ireland	-11.6	-16.2	50	405	-17	-200	-30	-300	6	102	21	46	55	107
Italy	-3.3	-9.0	2,150	162	-258	-74	-664	-116	53	32	290	0	897	-13
Netherlands	-27.2	-44.4	286	1,154	-179	-448	-239	-730	166	156	260	43	438	97
Austria	-3.2	-8.4	169	46	-15	-16	-21	-30	6	4	27	1	98	1
Portugal	-4.8	-12.9	196	7	-57	-3	-113	-5	18	6	79	1	205	1
Finland	-2.3	-6.0	45	8	-11	-2	-23	-4	3	5	16	0	43	-2
Sweden	-2.6	-0.9	223	31	-14	-12	-27	-22	4	7	23	10	89	56
United Kingdom	-21.3	-39.3	722	226	-459	-108	-614	-167	738	18	1,306	13	2,483	82
Cyprus/Malta	-22.4	-31.6	12	119	-1	-57	-2	-91	0	8	1	9	4	27
Czech Republic	-1.4	-2.5	18	15	-1	-7	-3	-11	0	0	2	0	5	0
Estonia	-20.5	-31.0	3	36	0	-18	0	-26	0	2	0	1	0	0
Hungary	-11.5	-23.6	81	996	-9	-194	-19	-375	0	18	3	6	9	10
Latvia	-25.0	-35.5	17	19	0	-11	-1	-15	0	1	0	0	1	-1
Lithuania	-27.6	-45.9	12	207	-1	-93	-2	-141	0	37	0	-5	0	-18
Poland	-12.7	-24.9	159	1,324	-54	-308	-97	-554	16	105	57	-6	125	-37
Slovakia	-2.9	-5.2	6	22	0	-8	0	-13	0	0	0	0	1	0
Slovenia	-25.4	-44.1	21	820	-2	-238	-4	-422	0	9	1	1	4	-1
Total	-	-	7,656	7,656	-2,595	-2,595	-4,309	-4,309	1,891	915	4,399	227	9,310	487

Sources: Authors' calculations from simulations.

4.3 Bovine meat and dairy products: Detailed impact on individual EU member states

4.3.1 Bovine meat

Total internal EU imports of bovine meat is projected to be around \$7.7 billion in the baseline scenario, as compared with the less than \$2 billion of imports from outside of the EU (Table 3). External exports from the EU are quite insignificant, which are projected to be less than \$1 billion in the baseline. Therefore, without multilateral market-access reforms, intra-EU trade in bovine meat would dominate its external trade and the EU would be a small net importer of bovine meat in the world market. As a result of EU enlargement, assumed in the baseline, some of the new EU member countries are projected to become major exporters in the internal market. For instance, Poland's bovine meat exports to the EU are projected to be \$1.3 billion in the baseline, followed by almost \$1 billion from Hungary and around \$0.8 billion from Slovenia. On the other hand, none of these new member states will become major importers of bovine meat from within the EU.

Multilateral market-access reforms will lower the common external tariffs of the EU and will change the patterns of intra-EU and extra-EU trade, altering the net trade position of the EU in the world market for bovine meat.

First, there will be a significant decline of total intra-EU trade – dropping from around \$7.7 billion to around \$5 billion. At the same time, imports from outside the EU will increase significantly, rising from less than \$2 billion to about \$6.3 billion. This drastic surge in imports will be accompanied by a modest increase in the EU's external exports of less than \$1 billion. On balance, the EU will become a far greater net-importer, as compared with the baseline projection. The size of intra-EU imports will become smaller than that of its external imports, signalling that the EU will be more dependent on the external market of bovine meat.

Second, the new member states' position of being large internal exporters will be eroded in the presence of multilateral market-access reforms. As can be seen in Table 3, these countries' internal exports will decline universally. The changes in internal exports range from over \$300 million for Poland and \$238 million for Slovenia to \$194 million for Hungary. These declines are hardly surprising, given that non-EU exporters will be facing lower import barriers to the EU market. What is more interesting is that these new member states will not be able to expand their exports to the external market, despite the generally more favourable market access conditions in those countries (owing to the multilateral market-access reform). This is because the now lower market-access barriers in non-EU countries are still not as favourable as the tariff-free access offered by the EU-15 countries. As such, the internal market of the EU still attracts most of the exports from the new member states. In addition, as compared with other exporters to the world market (such as Australia and New Zealand), the new EU member states do not possess enough comparative advantages to seize large market shares in the external market.

Third, increased external imports to the EU will be almost all purchased by the EU-15. These imports will 'crowd out' some of the projected imports from the new member states in the baseline scenario. For example, the UK will reduce imports from the internal market (declining from \$722 million in the baseline to \$263 million) and increase imports from the external market (an increase of \$1.3 billion). Therefore, the net trade positions of many new member states will be weakened.

Finally, as a result of the previously discussed changes in trade patterns – most notably the switch from internal EU imports to extra-EU imports and the decline of the new member states' exports – the output patterns of the individual member states will also change. Bovine-meat outputs in many new member states will drop by over 20%, which is consistent with their losses in the internal market. Some of the EU-15 member states will also suffer big drops in bovine meat production, including the UK, the Netherlands, Belgium-Luxembourg, Denmark and Germany. Overall, the bovine meat sector in the EU will contract as a result of the assumed multilateral market-access reforms.

4.3.2 Dairy products

The case of dairy products in the EU is quite different from that of bovine meat, as the EU is a major producer and exporter of dairy products. Although internal trade in the EU (projected to be over \$15 billion in the baseline scenario) dominates its total exports of dairy products, its exports to the external market are also quite significant (\$6.4 billion in the baseline). The border protection maintained by the EU in the baseline scenario ensures that few imports can penetrate the EU market. In fact, this is projected to be only \$645 million in the baseline, a paltry sum as compared with total internal EU trade. Unlike bovine meat, the new member states are both importers and exports of dairy products produced within the EU. In total, these countries have a combined position of being a small net-importer.

The assumed market access reforms will reduce the import tariff maintained by the EU from 76.4% to 38.2% according to the Harbinson tiered-formula. This will certainly lead to more external imports into the EU, leading to a replacement of some of the intra-EU imports with external imports. On the other hand, being a big producer in the world dairy market, the EU will also gain from other countries' market-access reforms by exporting more to the external market. As such, there will a switch of exports from the internal EU market to the external market for the dairy products produced in the EU. Table 4 illustrates this point. Specifically, the EU as a whole will trade less within itself, as seen by a drop of nearly \$3.2 billion in intra-EU imports of dairy products. Its exports to the rest of the world will increase by \$2.8 billion and its external imports will expand by \$3.7 billion, resulting in a decrease of less than \$1 billion in its net exports.

The modest decline of the EU's net exports implies that the overall EU production level will only be affected marginally. Indeed this is the case according to the results on total dairy outputs in the EU. The production level of dairy products is by and large dictated by the milk quota assigned to individual member countries. For member states whose baseline quotas are binding, there are little changes in their dairy outputs. But for those members whose milk quotas are not fulfilled in the baseline scenario, a decline in the internal EU market price of milk as a result of the lowering of import tariffs will drive some of the producers out of business and thus will further lower the quota-fill ratios in these countries. This is the case for countries such as Germany, Spain, Austria, Finland and Sweden.

Changes in net trade positions – in internal trade and external trade – vary at the member state level. There are generally small changes for the new member states. Many of these countries are small importers/exporters and their exports to the EU market will decline slightly. At the same time, they will not be able to gain market shares in the world market.

Table 4. Baseline and post-liberalisation outputs and trade flows for dairy products at the EU member-state level (\$US millions)

	EU-25 production and intra-EU trade								EU external trade					
	% Change in domestic production		Baseline value		Change in baseline value				Baseline value		Change in baseline value			
	Harbinson	Swiss	Imports	Exports	Harbinson		Swiss		Imports	Exports	Harbinson		Swiss	
					Imports	Exports	Imports	Exports			Imports	Exports	Imports	Exports
Belgium/Lux.	1.8	-12.1	1,429	1,363	-385	-122	-907	-472	45	340	262	131	687	192
Denmark	0.3	0.6	201	827	-44	-335	-108	-587	16	713	97	470	297	942
Germany	-8.1	-23.5	2,634	3,695	-564	-884	-1,315	-2,007	127	961	763	-35	2,388	-429
Greece	-1.5	-6.9	351	107	-18	-28	-54	-61	3	44	22	19	89	14
Spain	-3.5	-11.7	657	363	-64	-97	-197	-214	13	118	94	12	373	-28
France	0.2	-0.3	1,927	2,065	-428	-479	-1,007	-1,103	105	1,108	610	919	1,895	2,363
Ireland	0.2	-0.2	137	1,067	-36	-190	-78	-440	6	447	30	155	80	319
Italy	0.1	16.7	2,130	471	-513	-129	-1,077	-340	98	255	612	513	2,266	3,912
Netherlands	0.7	1.1	1,809	2,213	-308	-425	-803	-948	41	1,395	260	486	830	1,045
Austria	-5.2	-16.7	221	236	-44	-59	-99	-141	11	30	62	34	204	72
Portugal	-0.4	-0.7	220	57	-28	-10	-79	-27	5	13	30	15	116	71
Finland	-5.3	-14.2	97	92	-26	-23	-58	-53	5	170	32	-43	103	-99
Sweden	-2.7	-7.2	127	221	-28	-54	-57	-138	6	71	39	13	143	-20
United Kingdom	-5.3	-16.5	1,232	925	-457	-214	-821	-526	149	597	671	117	1,753	52
Cyprus/Malta	0.4	-0.8	92	38	-5	-8	-12	-20	0	2	1	4	6	13
Czech Republic	-0.2	-0.9	115	250	-10	-22	-31	-50	0	18	2	4	7	-1
Estonia	-0.8	-2.6	93	99	-9	-6	-28	-18	0	3	4	-1	14	-2
Hungary	-0.1	-0.4	205	212	-21	-35	-68	-90	2	20	16	31	64	89
Latvia	-4.7	-13.7	69	75	-5	-10	-16	-27	0	2	2	-1	7	-2
Lithuania	-0.4	-1.6	76	163	-11	-11	-35	-26	1	7	7	4	25	6
Poland	0.4	0.1	1,152	563	-155	-35	-491	-96	11	46	83	4	318	11
Slovakia	-0.2	-0.8	125	17	-5	-3	-14	-7	0	1	1	0	6	0
Slovenia	-0.1	-0.7	145	124	-19	-3	-51	-15	1	22	3	-10	18	-17
Total	-	-	15,244	15,244	-3,182	-3,182	-7,407	-7,407	645	6,383	3,703	2,841	11,689	8,503

Sources: Authors' calculations from simulations.

In fact, the adjustment of the EU's net trade positions will be largely reflected in the changes in the positions of the EU-15 member states. The switch from intra-EU imports to extra-EU imports is quite evident in the cases of Germany, France, Italy and the UK. The respective decreases (increases) in their imports from within the EU (from outside of the EU) in millions of US dollars are: \$564 (\$163) million, \$428 (\$610) million, \$513 (\$612) million and \$457 (\$671) million. Moreover, the lower market access barriers of other countries will stimulate more exports from some EU-15 countries, notably France, Italy, the Netherlands and Denmark.

4.4 Welfare effects

The above analysis discusses the changing trade and production patterns of agricultural and food products for the EU, with the emphasis on bovine meat and dairy products. Yet, such a focus ignores the impact of consumers and therefore provides an incomplete picture of the overall impact of market access reforms on the individual EU member states. For this reason, we now turn to an evaluation of the welfare implications of such reforms by computing the equivalent variation of moving from the baseline to the post-reform equilibrium. Detailed results are provided in Table 5.

Following such market-access reforms, the world as a whole will gain in excess of \$42 billion, as compared with the no-reform baseline scenario. Within the EU, we observe a clear pattern that the EU-15 countries gain significantly in terms of money metric values while the new member states lose marginally. To understand these diverging results, we offer a simple decomposition of the total welfare effect into its two main components, the efficiency effect and the terms-of-trade effect.

The EU-15 member states generally gain from improved efficiency. More broadly, the larger the size of the member country, the greater the gain is. For instance, Germany, France, Italy and the UK will all have efficiency gains in excess of \$1 billion. Many of these countries, on the other hand, lose slightly on terms-of-trade. The main reason for the latter is that their losses from lowering their own market access barriers are greater than their gains from higher world market prices for their exports. Nevertheless, these terms-of-trade losses are quite small in comparison to the efficiency gains. As such, all the EU-15 countries will gain from the market access reforms.

For the new member states, the efficiency gains are typically small as these countries will not be able to adjust their production patterns to the changes in the world market, owing to the fact that their trade is predominantly with other EU countries. Further, all these countries will suffer small terms-of-trade losses, because as the common external tariffs of the EU are lowered, they suffer from higher world market prices for their imports. Meanwhile, they will not be able to take advantage of the higher world market prices because they will not be able to expand their extra-EU exports. Moreover, reducing the common external tariffs of the EU will lead to lower domestic prices in the internal market, which consequently hurts those net exporters in the internal market, including many new member states.

Table 5. Changes in economic welfare, selected countries (\$US millions, 1997 value)

	Harbinson tiered-approach					Swiss formula				
	% Change in utility	Total change	Efficiency	TOT	Other	% Change in utility	Total change	Efficiency	TOT	Other
Belgium/Lux.	0.12	343	458	-131	16	0.20	560	761	-184	-17
Denmark	0.23	413	201	155	57	0.50	925	344	495	86
Germany	0.06	1,330	1,478	-18	-131	0.10	2,093	2,740	-39	-608
Greece	0.10	132	174	-29	-13	0.17	233	354	-83	-39
Spain	0.10	621	721	-70	-30	0.22	1,415	1,386	147	-119
France	0.10	1,604	1,382	186	35	0.21	3,292	2,459	922	-89
Ireland	0.02	21	62	-96	55	0.03	43	95	-141	89
Italy	0.11	1,467	1,151	319	-3	0.37	4,801	2,683	1,760	358
Netherlands	0.11	497	566	-109	39	0.32	1,394	1,292	120	-18
Austria	0.12	282	207	70	5	1.12	2,546	1,509	978	59
Portugal	0.14	169	174	-6	1	0.46	551	283	57	211
Finland	0.06	85	111	-7	-19	0.05	79	199	-43	-76
Sweden	0.13	344	220	147	-23	1.21	3,296	1,749	1,634	-88
United Kingdom	0.13	1,995	1,805	287	-96	0.25	3,726	3,014	995	-282
Cyprus/Malta	0.05	7	3	-6	10	0.84	122	-32	57	97
Czech Rep.	-0.02	-12	11	-23	-1	-0.03	-20	21	-48	6
Estonia	0.13	7	10	-3	1	0.28	16	19	-6	2
Hungary	-0.11	-73	18	-97	5	-0.12	-77	17	-167	73
Latvia	0.11	7	15	-6	-2	-0.01	-1	23	-19	-4
Lithuania	-0.22	-25	21	-34	-12	-0.45	-50	42	-67	-24
Poland	-0.04	-72	181	-210	-43	-0.14	-257	330	-470	-117
Slovakia	-0.02	-5	8	-11	-2	-0.03	-8	16	-21	-3
Slovenia	-0.12	-28	21	-42	-7	-0.30	-69	39	-93	-14
World	–	42,375	42,380	-5	0	–	94,733	94,819	-82	-3

Note: Economic welfare is measured as the money metric value of the equivalent variation.

Sources: Authors' calculations from simulations.

Having discussed the negative terms-of-trade effects for the new member states, it is worth noting that these terms-of-trade losses are no indication of how these countries will fare in 2013, as compared with the pre-enlargement situation. Rather, they reflect the changes against our baseline projection, in which these countries are assumed to gain from joining the EU. Therefore, these losses are just slight erosions of the benefits derived from EU accession.

5. Summary and concluding remarks

As expected, the tiered-formula approach as stipulated in the July package would subject the EU to larger cuts to its high external tariffs. Such cuts would lead to across-the-board decreases in intra-EU trade flows compared with a non-liberalisation baseline scenario. While intra-EU trade flows would decrease, the EU's trade with the rest of the world would increase. Such increases would not be symmetric, however – imports into the EU would increase more than exports from the EU, resulting in larger external trade deficits or smaller external trade surpluses for many of the agricultural and food products for the EU.

The redirection from intra-EU trade to extra-EU trade and the changes in net trade positions at the member state level are exemplified in the cases of bovine meat and dairy products. The baseline projections show that the EU's bovine meat trade would be primarily conducted within the EU and that the EU would be a small net importer in the world market. Multilateral market-access reforms will induce a significant decline in the intra-EU trade of bovine meats, a large increase in imports from outside the EU and a modest increase in exports from the EU to the rest of the world. Underlying this shift in trade patterns is an erosion in the role of the new member states as large exporters to the internal EU market and their inability to redirect their exports to the world market. Their intra-EU exports will be crowded out by external imports. Finally, these changes would lead to significant contractions of bovine meat production in the EU.

Unlike the case of trade in bovine meat, according to the baseline projection, the EU has not only large internal trade flows of dairy products but also significant exports of these products to the world market. Multilateral market-access reforms will allow for more imports into the EU and lead to less intra-EU trade. The EU's exports to the rest of the world will also increase, however, resulting in only a minor drop of its net exports. Total outputs of dairy products in the EU will change very little, as a result of the fact that raw milk quotas in many member states are binding in the baseline scenario. Nevertheless, changes in the net trade position and output levels vary across member states. Again, the new member states will not be able to expand their external exports.

A balanced evaluation of the effects of multilateral market-access reforms is provided through the calculated changes in economic welfare. While welfare for most of the countries involved will improve, the distribution of such gains across EU member states is uneven. The EU-15 member states generally gain from improved efficiency. The new member states, however, will only experience a marginal efficiency improvement but will likely suffer terms-of-trade losses, thereby losing some of the benefits of having joined the EU (these benefits are reflected in the baseline projections).

Before concluding the paper, we would like to point out several caveats regarding the numerical results. First, the results reported in the paper are changes based on the baseline projections. Therefore, they should not be considered as predictions of the trade and production patterns of EU agriculture in 2013. Rather, they only reflect the effects of the assumed market access reforms. Second, our analysis is based on a rather aggregated database

and the cuts are applied to the average protection levels of these aggregated products. In reality, tariff cuts are conducted at tariff-line levels. Therefore, the effects of reducing these tariffs may be different even if we have applied the correct average tariff cuts. Third, the GTAP database underlying the simulations is the version 5 database, which has a rather old base year of 1997. This can certainly be improved with the final release of the version 6 database in the very near future. Finally, we want to reiterate that the multilateral trade-liberalisation scenario considered in the paper only concerns market access reforms. The inclusion of reforms of export competition measures and domestic supports will no doubt change the quantitative results obtained here.

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ENARPRI is a network of European agricultural and rural policy research institutes formed for the purpose of assessing the impact of regional, bilateral and multilateral trade agreements concluded by the European Union or currently under negotiation, including agreements under the WTO, EU accession, Everything But Arms (EBA), EuroMed and Mercosur. It also addresses the wider issues of the multifunctional model of European agriculture and sustainable development of rural areas. Participants in the project include leading national institutes and research teams from 13 countries (11 EU member states and 2 accession countries).

AIMS

- Creation of an institutional structure linking key research institutes with major benefits for improved exchange of information and policy analysis both in the short and long run,
- Development of improved tools for impact assessment,
- More effective impact assessment of trade agreements on a variety of important social, economic, and environmental indicators and an assessment of multifunctionality, and
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