

# **WTO Agricultural Negotiations – A Comparison of the Most Recent Proposals for Market Access**

Martina BROCKMEIER\*, Rainer KLEPPER\* und Janine PELIKAN\*

\* Federal Agricultural Research Centre (FAL), Institute of Market Analysis and Agricultural Trade Policy, Bundesallee 50, 38116 Braunschweig, [martina.brockmeier@fal.de](mailto:martina.brockmeier@fal.de)

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## **Abstract**

The WTO negotiations of the Doha round are a key issue in the public debate. This paper analyses the effects of different market access options on the basis of a general equilibrium model. An extended version of the Global Trade Analysis Project (GTAP) model is used to firstly project a base run including the Agenda 2000, the EU enlargement, the Everything But Arms agreement and the Mid Term Review. The policy simulation additionally includes the WTO negotiations. Here, it is differentiated between four different proposals which have been submitted by the EU, the US, the G-20 and the G-10 in advance of the ministerial conference in Hong Kong in October 2005. All tariff cuts are calculated in the tariff data base (6 HS digit level) taking applied and bound rates into account. Based on the experiments, it can be shown that the highly protected sectors experience severe negative change of their trade balances in all four proposals, but particularly under the application of the US proposal. The comparison also shows that the highly protected beef and milk sectors of the EU are particularly affected.

## 1 Introduction

A great deal of attention is currently being paid to the discussion of the reform of global agricultural trade. In 2000 the WTO initiated a new round of trade negotiations on agriculture and services. According to the Doha mandate adopted on November 14th, 2001, the WTO members committed themselves to substantially improve market access, to reduce, with a view to phasing out, all forms of export subsidies and to substantially reduce trade distorting domestic support (WTO, 2001).

Several proposals have been delivered by negotiation partners and chairpersons of the agricultural committee on how this Doha mandate can best be achieved. Among them are the revised HARBINSON proposal (WTO, 2003a), the US-EU joint text (WTO, 2003b), the CASTILLO (WTO, 2003c) and DERBEZ text (WTO, 2003d), as well as the GROSSER proposal (WTO, 2004a). None of these submitted proposals has lived up to the expectations of a compromise to which all WTO member countries were able to agree. Only a revised version of the GROSSER text (WTO, 2004b), the so called OSHIMA text, was adopted in July 2004 as part of the Doha Work Program (WTO 2004c). However, the adopted Doha Work Program is very vague. It contains almost exclusively qualitative information about tariff cuts and the abolishment of export subsidies, but does not make any concrete statements regarding the time horizon or magnitude of tariff reductions. The latest attempt to bridge the gap between the diverging interests of the WTO members comprises new proposals by the EU, the US, the G-20<sup>1</sup>, the G-10<sup>2</sup> and the ACP countries<sup>3</sup> which were delivered in October 2005. But perspectives of the WTO member countries were still too different, so that it was evident already in advance of the last Ministerial Conference in Hong Kong in December 2005, that the newest proposals would meet the same fate as their predecessors.

One of the most difficult points to agree upon in the WTO agricultural negotiations is certainly the expansion of market access. Here, the suggestions made already range from a repetition of the Uruguay Round formula to an ambitious cut of 90% for tariffs above 60% in the initial situation. Given these widespread proposals, it is not surprising that WTO member countries have only made marginal progress in the pillar of market access. Until now, the WTO members could only agree to a standardized conversion of specific tariffs in Ad Valorem Tariff Equiva-

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1 At the time of this proposal the G-20 includes Argentina, Bolivia, Brazil, Chile, China, Cuba, Ecuador, Egypt, India, Mexico, Nigeria, Pakistan, Paraguay, Philippines, South Africa, Thailand, Venezuela and Zimbabwe.

2 G-10 includes Bulgaria, Iceland, Israel, Japan, Republic of Korea, Liechtenstein, Mauritius, Norway, Switzerland and Chinese Taipei.

lents (AVEs). Additionally, the use of a tiered harmonization formula with four bands was accepted by all WTO member countries (WTO, 2004c). In contrast, most other questions dealing with market access are still unclear. The level of tariff reductions and type of tiered harmonized formulas, the broadness of tariff bands as well as the tariff band flexibility are probably the most prominent issues. But the handling of sensitive products and tariff quotas also impair the already hardened trade positions of WTO member countries.

Against this background it is interesting to analyze whether the outcomes of the most recent proposals for market access are so different that they justify the blockade of the WTO negotiations. For this reason Chapter 2 first briefly illuminates the market access aspects of the latest proposals submitted by the EU, the USA, the G-20 and the G-10. In Chapter 3, the Global Trade Analysis Project (GTAP) framework is introduced together with the theoretical extensions. Thereafter, model design and experiments are discussed in the fourth chapter, while results and conclusions are presented in Chapters 5 and 6.

## **2 Overview of the most recent proposals for market access**

Numerous proposals concerning the market access were made by different negotiation groups in advance of the WTO ministerial conference in Hong Kong in December 2005. The proposals of the EU, the US, the G-20 and G-20 deliver quantitative information on the tariff cuts taking the four bands and the use of a tiered harmonization formula into account (compare Table 1).

Table 1 reveals that the expectations on the impact of tariff reductions on opening markets in the WTO member countries are very widespread. They range from tariff cuts as high as 90% for tariff rates above 60% in the US proposal, to the far lower tariff cuts of 45% for tariff rates above 70% in the G-10 proposal. It can also be seen that the EU proposal asks for more moderate tariff cuts, while the G-20 proposal is closer in scale to the US proposal. The cap of tariffs in the US proposal asks for an ambitious reduction of all tariffs below 75% in developed countries. In contrast, the EU and G-20 would already be satisfied, if final tariff rates of developed countries do not exceed 100%. The G-10 does not even want to apply a cap at all. Additionally, Table 1 reveals that the proposals do not always offer complete information for tariff cuts in developing countries (US and G-10 proposal).

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3 The African, Caribbean and Pacific (ACP) countries also submitted a proposal. It does not include quantitative suggestions for tariff cuts and is thus not considered here.

**Table 1:** Proposals of the EU, the US, the G-20 and G-10 for market access

EU proposal		US proposal			G-20 proposal		G-10 proposal	
Tariff rate (%)	Tariff cut (%)	Tariff rate (%)	Tariff cut (%)		Tariff rate (%)	Tariff cut (%)	Tariff rate (%)	Tariff cut (%)
			initial	final				
<b>Developed countries</b>								
> 90	60	> 60	85	90	>75	75	> 70	45
> 60 ≤ 90	50	> 40 ≤ 60	75	85	>50 ≤ 75	65	> 50 ≤ 70	37
> 30 ≤ 60	45	> 20 ≤ 40	65	75	>20 ≤ 50	55	> 20 ≤ 50	31
0 ≤ 30	35	0 ≤ 20	55	65	0 ≤ 20	45	0 ≤ 20	27
Cap: 100%		Cap: 75%			Cap: 100%		-	
<b>Developing countries</b>								
> 130	40	> 60	n.a.	n.a.	>130	40	> 100	n.a.
> 80 ≤ 130	35	> 40 ≤ 60	n.a.	n.a.	>80 ≤ 130	35	> 70 ≤ 100	n.a.
> 30 ≤ 80	30	> 20 ≤ 40	n.a.	n.a.	>30 ≤ 80	30	> 30 ≤ 70	n.a.
0 ≤ 30	25	0 ≤ 20	n.a.	n.a.	0 ≤ 30	25	0 ≤ 30	n.a.
Cap: 150%		n.a.			Cap: 150%		-	

**Source:** USTR, G-10, G-20, 2005 und FAPRI (2005).

Although the use of a tiered formula with four bands has already been decided, Table 1 shows the leeway that exists to implement this formula. The imposition of a tiered formula with linear cuts between the bands, however, implies the problem of discontinuity which results in a change of the ordering of tariffs. From the political-economy perspective, such discontinuities would create political resistance from agents in sectors which are just above the transition points (ANDERSON and MARTIN, 2005a, p.16). Also, developing countries such as the Dominican Republic with fixed bound tariffs at one specific level can be strongly affected by the problem of discontinuities. A possibility for avoiding this problem is the implementation of a progressive tiered formula as proposed by Canada in May 2005.<sup>4</sup> Instead of applying a single cut to the entire tariff line, different cuts are applied to different portions of the same tariff. Because of smaller cuts in the lower portions of the tariff, this formula cuts high tariffs by less than a linear tiered formula in absolute terms. But this possible tariff cutting option is not discussed in the recent proposals on how to open market access. The G-10 proposal, however, avoids the problem of discontinuity by adjusting a limited range of tariffs surrounding the thresholds (compare also Chapter 4).

4 Compare <http://www.tradeobservatory.org/library.cfm?refid=72991>.

### 3 GTAP framework

#### 3.1 Extension of the GTAP model

The analyses in this paper are based on the comparative static multi-regional general equilibrium Global Trade Analysis Project (GTAP) model. This model provides an elaborate representation of the economy, including the linkages between farming, agribusiness, industry, and service sectors of the economy. The use of the non-homothetic constant difference of elasticity (CDE) functional form to handle private household preferences, the explicit treatment of international trade and transport margins, and a global banking sector which links global savings and consumption are innovative in GTAP. Trade is represented by bilateral trade matrices based on the Armington assumption. Further features of the standard model are perfect competition in all markets as well as a profit and utility maximizing behavior of producers and consumers. All policy interventions are represented by price wedges. The framework of the standard GTAP model is well documented in the GTAP book (HERTEL, 1997) and available on the Internet<sup>5</sup>.

Agricultural policy instruments are represented via price wedges in the standard GTAP model. Therefore, the standard GTAP model is extended with an explicit modeling of the instruments related to the Mid Term Review (MTR) of the EU. Following the approach of FRANSEN, GERSFELD and JENSEN (2002), we introduce an additional land subsidy rate into the model that is equalized across all sectors entitled to direct payments.<sup>6</sup> With the implementation of the MTR, the existing domestic support measures are converted into a region-specific fully decoupled land area payment, while budgetary outlays for total domestic support are held constant. We deliberately did not model the EU sugar policy, as this would require resources that go far beyond the scope of this paper (compare BROCKMEIER, SOMMER and THOMSEN, 2005).

The EU budget is introduced in the GTAP model using a Social Accounting Matrix (SAM). This SAM not only covers the expenditures and revenues of already existing agents (e.g., producers, government, private household, etc.), but also of the European Agricultural Guidance and Guarantee Fund (EAGGF). This EU budget receives 75% of the import duties for agricultural and non-agricultural products from producers, private household, the government and the capital account. Additional revenues result from an endogenously calculated GDP related tax which flows from the regional household to the EU budget. Here, all EU member countries face an equal GDP tax rate. Revenues of the EU budget are used to cover agricultural output and export subsidies as well as direct payments. In contrast to these product specific instruments,

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5 Compare [www.gtap.agecon.purdue.edu/products/gtap\\_book/default.asp](http://www.gtap.agecon.purdue.edu/products/gtap_book/default.asp)

6 We are grateful to Hans JENSEN for his support in implementing the decoupling.

expenditures for structural policies are not covered within the EU budget module. Due to their characteristics and specific aims, structural funds can not be allocated to certain commodities. This strongly hampers their implementation into a product specific model like GTAP.

Obviously, revenues of the EU budget from one member country are not identical with the expenditures of the EU budget for the same member country. A comparison of revenues and expenditures of each member state therefore shows the net transfer that takes place within the EU financial system. Analogous to capital transfer, the net transfer within the EU is part of the current account balance which makes up the difference between exports and imports of goods and services. However, the sum of net transfers of all member countries equals zero, since the EU budget is balanced via the endogenous GDP tax rate.

In the standard GTAP model, EAGGF revenues and expenditures are organized through the regional household. All components of the EU budget are therefore introduced with the help of dummy variables allowing an easy shift from regional household to EU budget and vice versa. Consequently, a preliminary simulation is employed to move the GTAP data base from the initial situation without EU budget to a new equilibrium where the EU budget is in charge of the EAGGF (BROCKMEIER, 2003, pp. 100 - 112).

Besides changes in the political environment of an economy, macroeconomic developments like technical progress are of great importance for the growth of an economy. In order to take these changes into account, corresponding trends are incorporated into the analyses at hand. For this purpose we include exogenous projections based on data from WALMSLEY et al. (2000) for regional GDP and factor endowment into the extended GTAP model. In the simulations, technical progress is generated endogenously by the model, enabling the projected growth pattern.

### **3.2 Extension of the GTAP data base**

The most recent GTAP database (Version 6.04) includes applied tariffs which are based on the Market Access Map (MAcMap). The source files of MAcMap come from the TRAINS, the WTO and the AMAD database. The applied rates of the newest GTAP database therefore take preferences, AVEs and tariff rate quotas (TRQs) into account. Information on preferences in MAcMap is taken from the TRAINS database and is augmented with data from national sources. AVEs are calculated on the basis of the median unit value of world wide exporters using an average flow of the years 2000 to 2003. Finally, TRQs are taken into account utilizing the filled rate from the AMAD database. If the filled rate is less than 90%, the in-quota tariff is used. The out-of-quota rate is employed if the filled rate is higher than 100%. If the filled rate is

higher than 90%, but lower than 100%, a simple average of the in-quota and out-of-quota rate is applied (BOUËT et al., 2004).

WTO negotiations take place at a much higher disaggregated level of tariff lines. To be as close as possible to this negotiation process we implement all tariff cuts at the 6 HS tariff line level (compare 4.2). For this purpose we supplement the GTAP data base with a tariff module that includes bound and applied rates at the 6 HS tariff line level. Applied and bound rate at the 6 HS tariff line level is taken from the MAcMap data base.

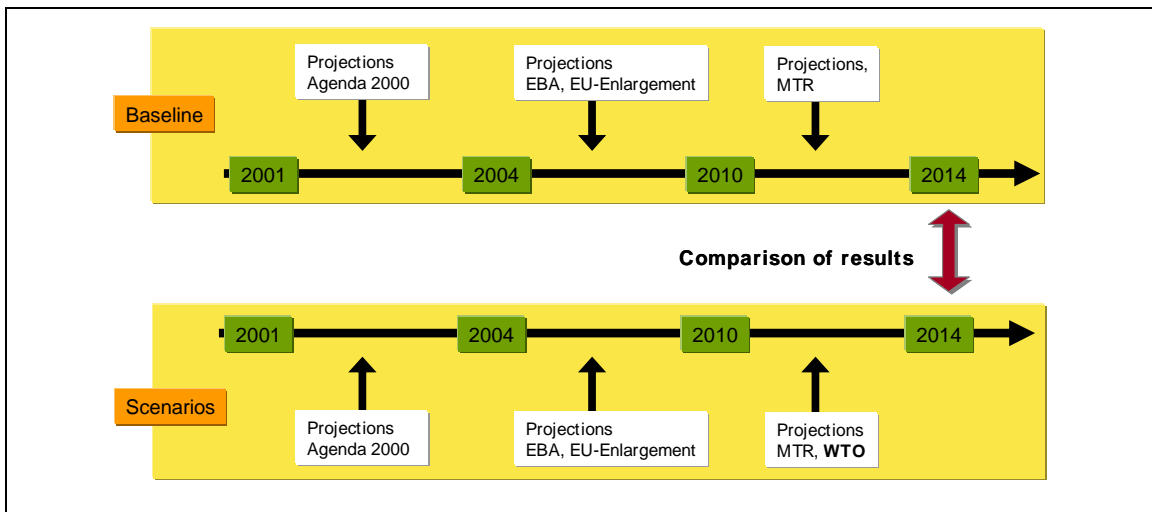
#### 4 Empirical analysis

The simulations are based on the GTAP data base Version 6.04 with 2001 as base year. The data base consists of bilateral trade, transport, and protection matrices that link 57 sector in 87 countries or regions. In order to keep the calculation effort in a reasonable scope, the data base is aggregated into 23 regions and 19 sectors (compare Tables A1 and A2, appendix). The regional sets are put together with regard to geographical nearness, developmental status or membership in a certain regional agreement. With regard to the sectoral aggregation, it was important to distinguish between primary and processed agricultural production sectors.

##### 4.1 Simulations

Before the actual simulations are carried out, it is necessary to conduct some pre-simulations to implement the extended model structure and to update the protection rates (see Figure 1 and Table A3).

**Figure 1:** Base Run and Simulations



This includes Common Agricultural Policy (CAP) instruments and the common budget of the EU. Based on the results of the pre-simulation, a base run is conducted which represents a projection of the exogenous variables population, GDP and factor endowment up to the year 2014. Additionally, the AGENDA 2000, the EU enlargement and the EBA agreement as well as the MTR are implemented in 2004, 2010 and 2014, respectively (for details see Table A3). The base run only considers political intervention in the EU-15 and in the candidate countries. Developments in other regions, like the Farm Bill of the USA or China's WTO access, are not yet taken into account. Parallel to the base run, a scenario is implemented as well. It takes account of the same projections and policy shocks (Agenda 2000, EU enlargement, EBA agreement and MTR), but in the time period from 2010 to 2014, it additionally implements the negotiations of the WTO round. Here, tariff cuts to open market access proposed by the EU, the US, the G-20 and the G-10 are employed according to Table 2. The US and the G-10 proposals do not provide information about the magnitude of tariff cuts and the cap for developing countries. Analogous to a study of FAPRI (2005) these cuts are assumed to be two third of the cuts for developed countries. The effects of the WTO round are obtained by comparing the results of the base run and the scenario in 2014. Table 2 summarizes the simulations.

**Table 2:** Tariff cuts of the EU, the US, the G-20 and the G-10 proposals used in the simulations

EU proposal		US proposal			G-20 proposal		G-10 proposal	
Tariff rate (%)	Tariff cut (%)	Tariff rate (%)	Tariff cut (%)		Tariff rate (%)	Tariff cut (%)	Tariff rate (%)	Tariff cut (%)
			initial	final				
<b>Developed countries</b>								
> 90	60	> 60	85	90	>75	75	> 70	45
> 60 ≤ 90	50	> 40 ≤ 60	75	85	>50 ≤ 75	65	> 50 ≤ 70	37
> 30 ≤ 60	45	> 20 ≤ 40	65	75	>20 ≤ 50	55	> 20 ≤ 50	31
0 ≤ 30	35	0 ≤ 20	55	65	0 ≤ 20	45	0 ≤ 20	27
Cap: 100%		Cap: 75%			Cap: 100%		-	
<b>Developing countries<sup>a</sup></b>								
> 130	40	> 60	56.7	60	>130	40	> 100	30
> 80 ≤ 130	35	> 40 ≤ 60	50	56.7	>80 ≤ 130	35	> 70 ≤ 100	24.7
> 30 ≤ 80	30	> 20 ≤ 40	43.3	50	>30 ≤ 80	30	> 30 ≤ 70	20.7
0 ≤ 30	25	0 ≤ 20	36.7	43.3	0 ≤ 30	25	0 ≤ 30	18
Cap: 150%		Cap: 112.5%			Cap: 150%		-	

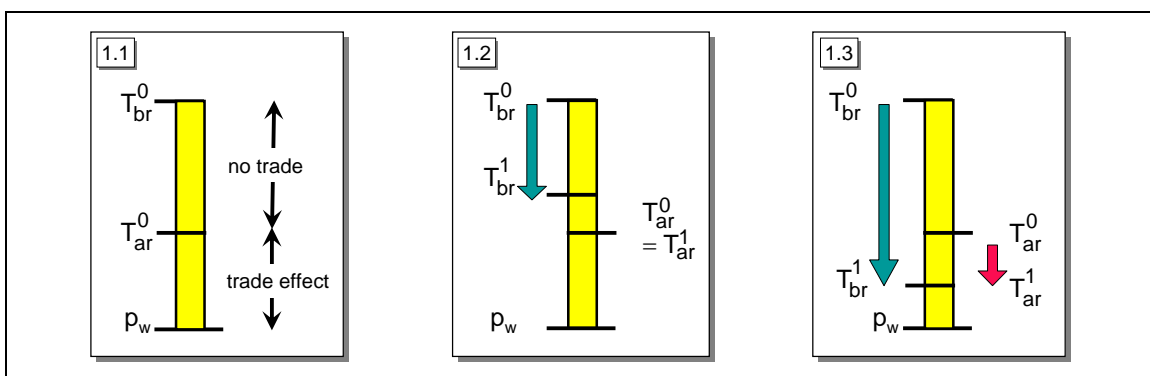
a) The US and the G-10 proposals give no information about the magnitude of tariff cuts and the cap for developing countries. Analogous to a study of FAPRI (2005) these cuts are assumed to be two thirds of the cuts for developed countries.

**Source:** USTR, G-10, G-20, 2005 und FAPRI (2005).

## 4.2 Calculations of tariff cuts

WTO negotiations are based on bound rates, while the economic effect of a tariff cut clearly depends on the applied rate. Therefore, our calculations of tariff cuts take both kinds of tariff rates into account. The difference between bound and applied duties is called water in the tariffs.<sup>7</sup> A reduction of the bound rate does not result in a trade effect, if the reduced bound rate is above the applied rate (Figure 2, Parts 1.1 and 1.2), e.g., the water in the tariff still exists after the tariff cut, so that imports are unchanged. However, there will be a trade effect if tariff cuts exceed the water in the tariffs (Figure 2, Part 1.3).<sup>8</sup>

**Figure 2:** Bound Rates, Applied Rates and Water in the Tariffs<sup>1)</sup>



T = Tariffs, br = Bound rates, ar = Applied rates,  $p_w$  = World market price

Accordingly, tariff cuts for the proposals of the EU, the US, the G-20 and the G-10 are calculated at the 6 HS tariff line level based on the following equations:

$$T_{br}^1 = T_{br}^0 \cdot \left(1 - \frac{y_{br}}{100}\right) \quad (1)$$

where: T                      Tariff rate  
y                              Tariff cut in %  
subscript br/ar          Bound / applied rate  
superscript 0/1          Initial / final situation

7 There is disagreement over the definition of the term "water in the tariffs" in the literature. For example, MARTIN and WANG (2004) define water in the tariffs as any gap between the applied rate and the actual rate of protection, where the actual rate is lower. Additionally, the term "water in the tariffs" is not equivalent to the term "binding overhang" which defines the difference between the bound and the MFN rate (FRANCOIS and MARTIN, 2003).

8 Due to unavailable information we do not take the effective protection into account. However, it should be stressed that an implemented tariff cut will not result in a trade effect if it leaves the applied rate above the effective protection. The effective protection is defined as the amount by which the prevailing internal price exceeds the world market price before tariffs (PODBURY and ROBERTS, 2003, p. 5).

If  $T_{br}^1$  is higher than or equal to  $T_{ar}^0$ , no tariff cuts will be implemented. If  $T_{br}^1$  is smaller than  $T_{ar}^0$ , the tariff cut to achieve  $T_{br}^1 = T_{ar}^1$  will be implemented according to equation (2):

$$T_{br}^1 = T_{ar}^1 = T_{ar}^0 \cdot \left( 1 + \left( \frac{T_{br}^1 - T_{ar}^0}{T_{ar}^0} \right) \right) \quad (2)$$

Water in the tariffs will lead to country-specific reduction commitments. Due to the ceiling binding option, developing countries were allowed to implement the tariff binding without reference to former protection levels. As a result, the bound tariffs in developing countries are much higher than in developed countries (ANDERSON and MARTIN, 2005a, pp. 14). Therefore, developing countries might experience an implicit preferential treatment that might be added to the already granted special and differential treatment.

The new applied rate ( $T_{ar}^1$ ) is aggregated to the GTAP level using import trade weights. This is done with the help of source generic world import values from the COMTRADE database of the year 2001 excluding intra-EU trade. Import weighting is the most commonly used aggregation scheme, also utilized to aggregate the applied rates included in the GTAP database version 6.04. Advantageously, trade weights take the relative importance of trade flows into account. Furthermore, the welfare implications are better addressed with this method. In contrast, the import weighted aggregation scheme leads to an endogenous bias, as the weight for every individual tariff decreases with an increase of the tariff. Accordingly, prohibitive tariffs impeding market access, and thereby reducing the trade volumes to zero, are not taken into account by import weighting. Trade barriers are therefore underestimated with this method.<sup>9</sup>

Finally, we calculate the shocks at the GTAP level which are necessary to reduce the initial applied rate of the GTAP data base ( $T_{ar}^0$ ) to the new applied rates calculated with the help of the tariff module ( $T_{ar}^1$ ) for all considered WTO proposals on market access (compare Table 2).

## 5 Results

This section discusses the results of four experiments analyzing the implementation of the tariff cuts proposed by the EU, the US, the G-20 and the G-10 in advance of the ministerial conference in Hong Kong in 2005. The results are presented in millions of US \$ for the year 2001 of

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9 In contrast to this study, WALKENHORST and DIHEL (2003) used simple averages for the tariff aggregation to avoid biases from the interdependence of tariff levels and trade flows. The simple non weighted average, however, does not take the relative importance of particular tariffs into account.

the GTAP data base and are obtained using the Version 9 of the software GEMPACK (HARRISON und PEARSON, 1996). As a macroeconomic closure we adopt a fixed trade balance.

In the following, we will mainly focus on the EU trade balance. The appendixes provide detailed results for the output of production (A5) on a disaggregated country level. Changes in the output of production are mainly induced by the changes in the trade regime. The output results therefore show a pattern that is similar to the changes in the trade balance and will only be discussed rudimentarily.

### **5.1 Impacts on the EU trade balance**

Table 3 reports the changes in the regional trade balance<sup>10</sup> by commodity resulting from the implementation of the EU, the US, the G-10 and the G-20 proposal. Examination of the entries in Table 3 shows that the changes in the EU-27 are negative in almost every important sector in all four simulations. These negative changes are particularly pronounced in the highly protected beef and milk sector, where imports raise relative to exports under the EU proposal by more than -8.05 billion US \$ and -8.23 billion US \$, respectively. Table 3 also reveals that the change in the EU trade balance for milk does not significantly vary between the simulations. In contrast, the EU trade balance for beef differs by around 7.48 billion US \$, when the US proposal (-14.46 billion US \$) is implemented instead of the G-10 proposal (-6.98 billion US \$).

Where do these different results come from? In the following, a decomposition is employed to assist in understanding these results. Here, the total changes are decomposed into parts, the so-called subtotals, which are attributable to changes in individual exogenous variables, e.g., policy instruments. The decomposition of the total effect into subtotals thereby allows identification of changes that govern the results. The decomposition is based on the changes of policy instruments, e.g., import tariffs or exports subsidies that are applied on bilateral trade flows. Thus, the policy instrument, as well as the source and the destination of the trade flow subject to the policy instrument, can be identified (HARRISON et al., 1999).

Such a decomposition of the EU trade balances for selected products is presented in Table 4. It shows, that in the case of beef, the results are clearly driven by two main effects. First, this comprises a deterioration of the EU trade balance between -0.96 billion US \$ (G-10 proposal) and -8.41 billion US \$ (US proposal) induced by the cuts of EU tariffs for agricultural products which are imported from third countries (TC).

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10 The change in trade balance represents the change in the value of fob exports minus the value of cif imports.

**Table 3:** Changes in the trade balance due to the implementation of the EU, the US, the G-20 and the G-10 proposal for market access (Mio US \$)

	EU27	USA	Japan	Oceania	WTO IC	Brazil	India	ACP	LDC	WTO DC	ROW
	EU proposal										
cereals	-388	3284	37	3	290	743	-59	-51	83	-4307	-58
oilseeds	181	1363	137	-133	-785	2461	21	-86	24	-3368	-150
paddy rice	-4624	-92	-4588	46	-81	-195	357	-41	-1126	9288	-128
vegetables and fruits	-214	-939	-102	-102	229	-129	-172	-130	-117	1466	-117
cattle	176	-632	27	-323	205	-12	1	-36	-18	730	-37
other animal	-130	-1098	26	-200	33	-55	28	-41	-46	1674	-137
beef	-8053	1857	-1189	648	117	3756	-1172	197	72	1554	2246
other meat	-2168	1352	-3351	-142	-907	-2078	10	-61	183	7182	-70
milk	-8232	992	-406	2162	630	24	364	416	588	2838	1037
sugar	-1708	-185	-383	353	-8	106	-14	887	-955	1947	43
other food	-7127	-4448	-6146	181	-592	-1393	-1191	-123	-608	21116	-888
other primary	3397	1619	595	-43	473	-221	-890	307	-1474	-5321	-826
manufactures	6542	-15515	15765	-2243	-2251	-1390	3176	-1283	4707	-23519	1944
services	22305	12449	-421	-203	2674	-1612	-540	59	-1304	-11307	-2750
	US proposal										
cereals	-39	3505	-28	39	724	848	-133	-296	138	-5596	140
oilseeds	289	1786	155	-155	-752	1894	52	-159	105	-3429	-131
paddy rice	-5797	115	-4003	77	-99	-259	617	-74	-1346	9530	-130
vegetables and fruits	-401	-960	-213	-103	572	-276	-994	-120	-96	1828	-55
cattle	332	-901	49	-437	362	-50	3	-51	-14	880	-38
other animal	-81	-957	95	-196	110	-142	75	-46	-48	1342	-117
beef	-14466	2987	-2882	1291	781	12455	-4830	297	86	1639	2255
other meat	2985	3783	-6901	-303	-679	-3435	-187	-211	266	4235	-82
milk	-7863	1833	-1646	4571	-1922	-70	324	183	643	2189	1793
sugar	-4499	-934	-1439	1044	3	429	-5	3341	-2337	3977	102
other food	-7234	-4139	-7044	411	-490	-1416	-1746	-402	-445	21160	-737
other primary	3876	1148	1290	-590	613	-1433	-143	-30	-1140	-4924	-859
manufactures	8461	-19493	21773	-4665	-2277	-5948	6817	-2290	5314	-22441	637
services	24417	12220	794	-976	3071	-2590	27	-108	-1132	-10353	-2665

1) For the composition of regions and sectors see Table A1 and A2 in the appendix. 2) WTO IC: other developing WTO member countries, ACP: African, Caribbean and Pacific countries; LDC: Least Developed countries; WTO DC: other developing WTO member countries; ROW: Rest of the world  
**Source:** Own calculations.

**Table 3:** Changes in the trade balance due to the implementation of the EU, the US, the G-20 and the G-10 proposal for market access (Mio US \$)

	EU27	USA	Japan	Oceania	WTO IC	Brazil	India	ACP	LDC	WTO DC	ROW
	<b>G-10 proposal</b>										
cereals	-308	2369	53	163	640	-23	0	64	130	-3224	16
oilseeds	90	78	113	-129	-829	2948	11	-78	-49	-2300	-167
paddy rice	-883	-478	-7444	-63	-20	-173	-60	-46	-1043	9198	-132
vegetables and fruits	-260	-363	-6	-68	-1	-91	-26	-108	-107	968	-129
cattle	145	-386	8	-268	62	-6	0	-30	-16	597	-35
other animal	-107	-861	5	-173	-59	-33	18	-37	-43	1467	-127
beef	-6976	1825	-844	523	84	1797	302	125	69	1313	2249
other meat	-3385	1446	-2530	-88	-399	-1604	302	-32	166	6225	-65
milk	-8330	884	-17	1878	887	44	388	428	574	2767	975
sugar	-1302	-5	-114	190	-15	85	38	423	-548	1360	29
other food	-6614	-4652	-3860	-319	-601	-1264	-857	-11	-572	18541	-639
other primary	2796	2435	195	73	296	69	-1096	365	-1605	-5106	-843
manufactures	4319	-14607	15024	-1692	-2424	-340	2040	-1122	4433	-21462	1809
services	20763	12319	-581	-26	2418	-1407	-763	70	-1378	-10377	-2838
	<b>G-20 proposal</b>										
cereals	-321	3233	54	11	429	602	-57	-124	95	-4320	-42
oilseeds	219	1463	152	-138	-773	2258	29	-107	40	-3330	-145
paddy rice	-4651	-94	-4580	45	-79	-223	376	-57	-1206	9419	-130
vegetables and fruits	-402	-1056	-138	-148	230	-175	-117	-142	-104	1770	-113
cattle	238	-700	31	-324	256	-23	2	-45	-15	707	-37
other animal	-118	-1085	41	-207	57	-86	41	-45	-43	1632	-136
beef	-10301	2129	-1578	687	183	7153	-2841	282	78	1910	2245
other meat	-968	2848	-5583	-177	-827	-2560	-89	-110	213	7127	-55
milk	-8264	1072	-820	2735	-106	8	376	399	606	3126	1198
sugar	-2607	-407	-556	469	-7	205	-18	1725	-1549	2662	66
other food	-7317	-4222	-6737	332	-633	-1499	-1114	-177	-533	21445	-894
other primary	3595	1546	873	-155	535	-656	-688	171	-1344	-5370	-825
manufactures	8003	-16928	18800	-2753	-2039	-3030	4351	-1731	5006	-25455	1716
services	22854	12208	41	-371	2792	-1968	-338	-19	-1238	-11328	-2740

1) For the composition of regions and sectors see Table A1 and A2 in the appendix. 2) WTO IC: other developing WTO member countries, ACP: African, Caribbean and Pacific countries; LDC: Least Developed countries; WTO DC: other developing WTO member countries; ROW: Rest of the world  
**Source:** Own calculations.

Second, the EU beef imports increase relative to its beef exports by -4.54 billion US \$ (G-10 proposal) and -4.77 billion US \$ (G-20 proposal) due to the abolishment of exports subsidies. While the latter remains more or less unchanged between the simulations, it can obviously be seen from Table 4 that the EU beef sector reacts very sensitively to EU agricultural tariff cuts. Additionally, Table 4 reveals the minor importance of the opening of third countries' beef market to the exports of highly protected EU beef.

In contrast, the results for the EU processed milk trade balance are almost completely dominated by the abolishment of EU export subsidies (compare Table 4). This effect varies only slightly between the simulation and comprises a relative increase of EU milk imports by around -10.16 billion US \$ (G-10 proposal) to -11.73 billion US \$ (US proposal). Milk exports are also subsidized by third countries. Here, the abolishment of export subsidies results in an expected positive effect for the EU trade balance of milk. However, the effect is, with 0.31 billion US \$, negligibly small compared to the effect of the disestablishment of EU export subsidies. Also, all other effects, particularly the cut of EU agricultural import tariffs are insignificant. Even the high agricultural tariff cuts of the US proposal evoke only smaller changes of the EU trade balance for milk. Here, a better access to third countries' milk markets of 6.98 billion US \$ is almost offset by the effect of EU agricultural tariff cuts (-2.16 billion US \$) and of diverting EU milk exports, which results from better market access between third countries (-1.62 billion US \$).

Table 4 also decomposes the change in the EU trade balance for other meat (porc and poultry) which reveals a high variation between simulations. The implementation of the G-10 proposal results in a deterioration of the EU trade balance of -3.39 billion US \$ in total, while the EU achieves a relative increase of EU other meat exports of 2.99 billion US \$ with the implementation of the US proposal. The decomposition of these results shows that this variation is due to the sensitivity of the EU other meat sector towards higher agricultural tariff cuts in third countries. The higher agricultural tariff cuts of the US proposal open up the market in third countries which have to accommodate additional EU exports of 14.64 billion US \$. However, only EU exports of -7.97 billion US \$ are displaced by the high agricultural tariff cuts of the US proposal and its resulting increased trade opportunities between third countries. An additional relative decrease of EU imports of other meat arises from the abolishment of EU export subsidies (-3.93 billion US \$), but does not compensate this positive effect. On the contrary, the application of the G-10 proposal only implies an increase of exports to third countries of 2.65 billion US \$, while it is just offset by the increase of trade between third countries (-2.86 billion US \$). The additional negative effect of the elimination of EU export subsidies for other meat arises to -

3.40 billion US \$ and leads to an overall deterioration of the EU trade balance for other meat. All other effects are negligible for the EU trade balance of other meat.

**Table 4:** Decomposition of the change in the EU trade balances for selected products due to the EU, the US, the G-20 and the G-10 proposal<sup>1), 2)</sup>

Commodity	Proposal	Tariffs of agricultural product from			Tariffs of non-agricultural products	Export subsidies from		Sum
		TC to EU	EU to TC	TC to TC		EU to TC	TC to all	
Cereals	EU	134	586	-346	53	-802	-13	-388
	US	101	1137	-506	53	-806	-17	-39
	G-10	87	456	-66	53	-824	-13	-308
	G-20	171	589	-319	52	-800	-14	-321
Sugar	EU	-655	-33	-35	85	-1068	-1	-1708
	US	-3433	-12	-23	73	-1103	-2	-4499
	G-10	-257	-25	-33	88	-1073	-1	-1302
	G-20	-1547	-25	-31	79	-1082	-2	-2606
Milk	EU	-657	3220	-817	153	-10476	345	-8232
	US	-2158	6979	-1619	164	-11729	502	-7862
	G-10	-366	2409	-672	149	-10162	312	-8330
	G-20	-1096	4014	-926	154	-10797	387	-8264
Beef	EU	-2094	-112	3	-1288	-4585	13	-8062
	US	-8408	-173	4	-1125	-4772	12	-14464
	G-10	-957	-83	-78	-1334	-4544	13	-6982
	G-20	-4391	-135	33	-1219	-4620	13	-10318
Other meat	EU	-38	4802	-3671	231	-3505	14	-2166
	US	3	14636	-7974	235	-3929	14	2986
	G-10	-16	2648	-2861	233	-3404	15	-3385
	G-20	-58	7709	-5237	228	-3622	14	-966

1) For the composition of sectors see Table A2 in the appendix. 2) TC = Third countries

**Source:** Own calculations

The EU sugar sector also develops a negative change in the trade balance which lies between -1.30 billion US \$ (G-10 proposal) and -4.50 billion US \$ (US proposal). Analogous to the beef sector, the EU sugar sector reacts very sensitively, if higher agricultural tariff cuts are applied under the US proposal. Here, EU relative sugar imports only decrease by a moderate amount of -0.26 billion US \$ under the application of the market access options included in the G-10 proposal, while the proposed US tariff cuts lead to a negative change of the EU sugar trade balance of -3.43 billion US \$. A clearly negative effect also results from the abolishment of EU export subsidy which is, however, more or less constant between the four simulations and amounts to -1.07 billion US \$ (EU proposal) or -1.10 billion US \$ (US proposal). All proposals result in a better access to third countries' sugar markets, but the relative increase of EU sugar exports is only marginal and does not compensate for the other negative effects.

Finally, Table 4 also reveals the negative change in the EU trade balance for cereals rising to -0.04 billion US \$ and -0.39 billion US \$ in the US and the EU proposal, respectively. The decomposition of these results discloses that there are two reasons for this negative development. First, the EU trade balance for cereals decreases due to the opening of markets for agricultural trade between third countries and its resulting diverting effect for EU cereal exports. This effect involves a negative development of the EU trade balance for cereals of -0.07 billion US \$ under the G-10 proposal, which even increases under the implementation of the US proposal to -0.51 billion US \$. Second, the EU trade balance for cereals is also hurt by the abolishment of EU export subsidies. Here, the trade balance deteriorates by around -0.8 billion US \$ in all four simulations. These negative developments are partly offset by positive developments that results from better EU export opportunities to third countries' market of 1.14 billion US \$ under the application of the US proposal. However, this positive effect slightly decreases to 0.46 billion US \$, when the agricultural tariff cuts of the G-10 proposal are employed. Table 4 also represents another positive influence on the EU trade balance for cereals which results from the cut of EU agricultural tariffs and lies between 0.09 billion US \$ (G-10 proposal) and 0.17 billion US \$ (G-20 proposal).

The latter is in particular a somehow puzzling result that certainly deserves a closer look. Why do the cuts of EU agricultural tariffs have a positive effect on the EU trade balance for cereals? Table 5 presents an extended decomposition of this effect for the US and the G-10 proposal to answer this question.

**Table 5:** Decomposed effects of EU agricultural import tariff cuts on the trade balance of cereals (million US \$)

	Impact of the trade balance of cereals	
	US proposal	G-10 proposal
<b>Cut of EU tariffs of</b>		
cereals	-303	-10
oilseeds	1	1
paddy rice	12	4
vegetables & fruits	58	18
cattle	0	0
other animal	5	4
beef	149	25
other meat	38	6
milk	33	6
sugar	30	4
other food	78	29
<b>Sum</b>	101	87

**Source:** Own calculations.

Here, the total effect of the cuts of all agricultural tariffs is further broken down into each agricultural commodity. From a first glance it can clearly be seen that the cut of EU import tariffs for cereals undoubtedly has the expected negative effect on the EU trade balance for cereals, if the US proposal (-0.30 billion US \$) and the G-10 proposal (-0.01 billion US \$) is applied. However, the cut for all other agricultural products, particularly for beef (0.15 billion US \$ and 0.03 billion US \$, respectively) has a positive effect on the EU trade balance for cereals. The reason for this is a reduction of, for example, high EU beef import tariffs that constitute an implicit tax for the EU cereal sector. In sum, these positive effects outweigh the negative effect of the cut of the relatively low EU tariff for cereals. A very similar effect can be observed when third countries cut their tariffs for EU imports of sugar and beef (see table A5 in the appendix).

## **5.2 Impacts on third countries' trade balances**

Who is taking advantage of the expanded EU agricultural market access? To elaborate this question we divide the countries and regions of Table 3 to developed, developing and least developed countries<sup>11</sup> as well as to the rest of the world which includes the none WTO member countries. Table 6 accordingly represents the change in the trade balance for these regions of all considered commodities. In the following we concentrate the discussion on the highest and lowest results in each of the four simulations.

An examination of Table 6 shows that the already indicated negative changes of the EU trade balance for beef (-6.98 billion US \$, G-10 proposal) is mainly accommodated by the developing countries (3.16 billion US \$), while the developed countries and the rest of the world share almost all of the remaining surplus of 1.59 and 2.25 billion US \$ respectively. However, only developed and developing countries are able to increase their beef exports to the EU, if the much higher agricultural tariff cuts of the US proposal are applied. It is interesting to note that the trade balance of developed countries increases disproportionately here. In contrast, the trade balance changes of the LDCs and the rest of the world stay relatively constant between the simulations.

The high negative changes of the EU milk trade balance in all simulations of around 8 billion US \$ are also distributed between all other groups of countries. Nevertheless, the developing and developed countries can obviously be identified as the main milk surplus producer, who are able to increase their relative milk exports by 3.6 billion US \$ in each case with the help of the tariff cuts proposed by the G-10. Developed and developing countries show, however, a slightly

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11 Developed, developing and LDCs are grouped according to the WTO classification.

less to increase of their trade balances, if the higher agricultural tariff cuts of the US proposal are implemented (about 2.7 billion US \$). In contrast, the rest of the world is able to almost double their increase of relative exports. Again, the LDCs are only minor players in the milk world market.

Table 6 also reveals that the EU (-3.34 billion US \$, G-10 proposal) and other developed countries (-1.57 billion US \$) high trade balance change for other meat are almost completely offset by developed countries who experience a significant positive development of their trade balance (4.89 billion US \$). However, it is interesting to note, that the higher tariff cuts of the US proposal almost completely benefit the EU (2.99 billion US \$), while the other developed countries have to accept a further deterioration of their trade balance for other meat (-4.1 billion US \$).

**Table 6:** Change in the trade balances due to the implementation of the EU, the US, the G-10 and the G-20 proposal for aggregated regions (Million US \$)<sup>1), 2)</sup>

	EU27	IC	DC	LDC	ROW	EU27	IC	DC	LDC	ROW
	EU proposal					US proposal				
cereals	-388	3615	-3674	83	-58	-39	4239	-5176	138	140
oilseeds	181	582	-972	24	-150	289	1033	-1642	105	-131
paddy rice	-4624	-4715	9409	-1126	-128	-5797	-3910	9815	-1346	-130
vegetables & fruits	-214	-914	1035	-117	-117	-401	-705	438	-96	-55
cattle	176	-722	683	-18	-37	332	-928	782	-14	-38
other animal	-130	-1240	1606	-46	-137	-81	-949	1228	-48	-117
beef	-8053	1433	4335	72	2246	-14466	2178	9560	86	2255
other meat	-2168	-3047	5053	183	-70	2985	-4101	401	266	-82
milk	-8232	3377	3643	588	1037	-7863	2836	2627	643	1793
sugar	-1708	-223	2926	-955	43	-4499	-1326	7742	-2337	102
other food	-7127	-11005	18409	-608	-888	-7234	-11262	17596	-445	-737
other primary	3397	2643	-6125	-1474	-826	3876	2461	-6530	-1140	-859
manufactures	6542	-4244	-23016	4707	1944	8461	-4662	-23862	5314	637
services	22305	14499	-13400	-1304	-2750	24417	15109	-13025	-1132	-2665
	G-10 proposal					G-20 proposal				
cereals	-308	3225	-3184	130	16	-321	3727	-3900	95	-42
oilseeds	90	-767	581	-49	-167	219	705	-1151	40	-145
paddy rice	-883	-8006	8919	-1043	-132	-4651	-4708	9514	-1206	-130
vegetables & fruits	-260	-438	743	-107	-129	-402	-1112	1336	-104	-113
cattle	145	-584	561	-16	-35	238	-737	640	-15	-37
other animal	-107	-1088	1415	-43	-127	-118	-1194	1542	-43	-136
beef	-6976	1588	3161	69	2249	-10301	1420	6504	78	2245
other meat	-3385	-1572	4891	166	-65	-968	-3738	4368	213	-55
milk	-8330	3632	3626	574	975	-8264	2881	3909	606	1198
sugar	-1302	57	1907	-548	29	-2607	-500	4575	-1549	66
other food	-6614	-9432	16409	-572	-639	-7317	-11260	18655	-533	-894
other primary	2796	2998	-5768	-1605	-843	3595	2798	-6543	-1344	-825
manufactures	4319	-3699	-20884	4433	1809	8003	-2921	-25865	5006	1716
services	20763	14130	-12476	-1378	-2838	22854	14669	-13653	-1238	-2740

1) For the composition of regions and sectors see Table A1 and A2 in the appendix. 2) IC: developed countries; DC: developing countries; LDC: Least developed countries; ROW: Rest of the world.

**Source:** Own calculations.

The sugar sector's reaction to the implementation of the Doha round is somewhat different. Here, the relative increase of EU sugar imports (-1.30 billion US \$, G-10 proposal) is accompa-

nied by a trade balance change in the LDCs' (-0.55 billion US \$) which is clearly coming from the preference erosion. The negative changes of the EU and the LDCs trade balance more than double under the application of the US proposal, while the slightly positive change of the sugar trade balance of the developed countries transforms into a relative increase of imports under the US proposal. The main increase of relative exports in the sugar world market is given, however, for developing countries and to a far lesser extent, also for the rest of the world. Thus, the trade balance change of developing countries (1.9 billion US \$) under the G-10 proposal is more than doubled when tariff cuts are more ambitiously applied with the implementation of the US proposal (7.7 billion US \$). The rest of the world is only a casual bystander in the world sugar market.

Finally, Table 6 also reveals the already indicated relative increase of cereal imports into the EU. Here, the application of the EU proposal leads to a trade balance change for the EU and the developed countries of -0.39 billion US \$ and -3.67 billion US \$, respectively. These changes are almost completely accommodated by developed countries (3.62 billion US \$). Due to better access to developing countries market, the EU trade balance change is slightly less reduces when the higher agricultural tariff cuts proposed by the US are applied.

## **6 Conclusions**

The WTO negotiations of the Doha round are a key issue in the public debate. This paper analyzes the effects of different market access options on the basis of a general equilibrium model. An extended version of the GTAP model is used to firstly project a base run including the Agenda 2000, the EU enlargement, the EBA agreement and the MTR. The policy simulation run additionally includes the WTO negotiations. Here, it is distinguished between four different simulations examining the different approaches to open agricultural markets proposed by the EU, the US, the G-20 and the G-10 in advance of the ministerial conference in Hong Kong in October, 2005. All tariff cuts are calculated in the tariff data base (6 HS digit tariff level) taking applied and bound rates into account and added up to the GTAP model level using import weights. In our examination, we concentrate on the effect of the WTO negotiation for EU trade flows. Here, the results of the simulations reveal the following points:

- ◆ Results from different options for market access in the WTO negotiations of the Doha round show parallel developments. Thus, for example, the increase or decrease of the trade balance is more or less pronounced, while a change of direction is merely an exception for the other meat sector.

- ◆ Implementation of all proposals results in negative changes of the EU trade balances for most agricultural products, but particularly for the highly protected EU beef and milk sectors. However, the trade balances of sugar, cereals, vegetable and fruits, other food products and partly also for other meat products deteriorates as well and thus, show a relative increase of imports. These developments are only reversed for other meat products, if higher agricultural tariffs, e.g., as proposed by the US, are implemented.
- ◆ With the help of a decomposition of the trade effects for selected products it can be shown that the negative developments of the EU trade balance for beef and sugar are dominated by the cuts in EU agricultural tariffs and the abolishment of EU export subsidies. For the EU milk trade balance, however, the biggest negative trade effect only stems from the abolishment of the EU export subsidies, while EU and third countries tariff cuts are not so important. The EU cereals and other meat sector particularly react to tariff cuts between third countries which displace EU exports to third countries. Nevertheless, the elimination of export subsidies is of significant importance for the EU cereals and other meat sector as well.
- ◆ Who is taking advantage of an improved EU market access? From the points of view of the non-participating LDCs and non-WTO member countries, it does not make much of a difference whether tariff cuts are higher (US proposal) or not (G-10 proposal). They only realize minor trade balances change. Additionally, the LDCs also suffer from preference erosion in the sugar sector which increases with higher tariff cuts. In contrast, developing countries are able to disproportionately increase their relative beef and sugar exports to the EU. This development is even enforced when tariff cuts are higher. Other developed countries are able to increase their relative cereal exports, but only get slightly better access to the other EU agricultural market.
- ◆ From the EU point of view it really matters which of the four proposals are implemented in the beef, other meat and sugar sectors, as these sectors react particularly sensitively towards EU and third countries' tariff cuts. For the EU milk sector, however, is hardly makes a difference, as the better market access to third countries of the EU is almost completely offset by the effect of EU tariff cuts and of tariff cuts between third countries.

## 7 References

- ANDERSON, K. and MARTIN, W., 2005. Scenarios for Global Trade Reform. In: Hertel, W. and Winters, A. (Ed.), Putting Development Back into the Doha Agenda: Poverty Impacts of a WTO Agreement, World Bank, Chapter 2, Washington.
- BOUËT, A., DECREUX, L. FONTANGNE, L., JEAN, S. and LABORDE, D., 2004. A Consistent Ad-Valorem Equivalent Measure of Applied Protection Across the World. The MAcMap-HS6 database. CEPII Working Paper, No. 2004-22.
- BROCKMEIER, M., 2003. Ökonomische Auswirkungen der EU-Osterweiterung auf den Agrar- und Ernährungssektor - Simulationen auf der Basis eines Allgemeinen Gleichgewichtsmodells, Habilitation, Wissenschaftsverlag Kiel, Agrarökonomische Studien, No. 22, Kiel.
- BROCKMEIER, M., SOMMER U. and THOMSEN, K., 2005. Sugar policies: an invincible bastion for modelers? In: Arfini F. (Ed.) Modelling agricultural policies: state of the art and new challenges: proceedings of the 89<sup>th</sup> European Seminar of the European Association of Agricultural Economists (EAAE), Parma, Italy, February 3-5. 2005.
- FAPRI, 2005. U.S. Proposal for WTO Agricultural Negotiations: Its Impact on U.S. and World Agriculture. CARD Working Paper 05-WP 417.
- FRANSEN, F., GERSFELD, B. and JENSEN, H., 2002. Decoupling Support in Agriculture: Impacts of redesigning European Agricultural Support. Paper presented at the 5th Annual Conference on Global Economic Analysis, Taipei, [www.gtap.agecon.purdue.edu/resources](http://www.gtap.agecon.purdue.edu/resources).
- FRANCOIS, J.F. and MARTIN, W., 2003. Formulas for Success? Formula Approaches to Market Access Negotiations. *World Economy* 26, No. 1, pp. 1-28.
- G 10, 2005. G 10 Proposal on Market Access. 10 October.
- G 20, 2005. G 20 Proposal on Market Access. 12 October.
- HARRISON, W.J., HORRIDGE, J.M. and PEARSON, K.R., 1999. Decomposing Simulation Results with Respects to Exogenous Shocks. Working Paper Number IP-73, CoPS/IMPACT, Australia.
- HERTEL, T., 1997. (Ed.), *Global Trade Analysis: Modeling and Applications*. University Press, Cambridge.
- MARTIN, W. and WANG, Z., 2004. Improving Market Access in Agriculture, Mimeo, World Bank, Washington.
- PODBURY, T. and ROBERTS, I., 2003. Opening Agricultural Markets through Tariff Cuts in the WTO, ABARE Report 03.2, RIRDC publication 03/011, Canberra.
- USTR (The Office of the United States Trade Representative), 2005. U.S. Proposal for WTO Agriculture Negotiations. 10 October.
- WTO, 2001. Ministerial Declaration, (WT/Min(01)/DEC/1), [www.wto.org](http://www.wto.org).
- WTO, 2003a. Negotiations on Agriculture. First Draft of Modalities for the further Commitments. Revision (TN/AG/W/1/Rev1), [www.wto.org](http://www.wto.org).
- WTO, 2003b. EU-US Joint Text. Agriculture (JOB(03)/157), [www.wto.org](http://www.wto.org).
- WTO, 2003c. Draft Cancún Ministerial Text, August 24 [www.wto.org/english/thewto\\_e/minist\\_e/min03\\_e/draft\\_decl\\_e.htm](http://www.wto.org/english/thewto_e/minist_e/min03_e/draft_decl_e.htm).
- WTO, 2003d. Preparations for the Fifth Session of the Ministerial Conference . Draft Cancún Ministerial Text. Second Revision. (JOB(03)/150/Rev.2), [www.wto.org](http://www.wto.org).

- WTO, 2004a. Doha Work Programme. Draft General Council Decision of (...) July 2004 (JOB(04)/96), [www.wto.org/english/tratop\\_e/dda\\_e/ddadraft\\_16jul04\\_e.pdf](http://www.wto.org/english/tratop_e/dda_e/ddadraft_16jul04_e.pdf).
- WTO, 2004b. Doha Work Programme. Draft General Council Decision of (...) July 2004. Revision (JOB(04)/96/Rev.1), [www.wto.org/english/tratop\\_e/dda\\_e/ddadraft\\_30jul04\\_e.pdf](http://www.wto.org/english/tratop_e/dda_e/ddadraft_30jul04_e.pdf).
- WTO, 2004c. Doha Work Programme. Decision adopted by the General Council on 1 August 2004. (WT/L/579), [www.ige.ch/E/jurinfo/documents/j10407e.pdf](http://www.ige.ch/E/jurinfo/documents/j10407e.pdf).

## 8 Appendix

**Table A1:** Aggregation of countries and regions

Countries and Regions	Abbreviation
<b>1. European Union 15</b> Austria, Belgium, Denmark, Finland, France, Germany, Ireland, United Kingdom, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden	<b>EU15</b>
<b>2. Central and Eastern European Countries</b> Bulgaria, Czech Republic, Hungary, Malta, Poland, Romania, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Cyprus	<b>CEEC</b>
<b>3. United States</b>	<b>usa</b>
<b>4. Japan</b>	<b>jpn</b>
<b>5. Oceania</b> Australia, New Zealand	<b>OCEA</b>
<b>6. Other WTO – members (industrialized countries)</b> Canada, Switzerland, Rest of EFTA, Albania, Croatia	<b>WTO IC</b>
<b>7. Brazil</b>	<b>bra</b>
<b>8. India</b>	<b>ind</b>
<b>9. Rest of African - Caribbean - Pacific - Countries</b> Rest of Oceania, Rest of FTAA, Rest of Caribbean, Botswana, South Africa,	<b>ACP</b>
<b>10. Least Developed - Countries</b> Bangladesh, Rest of Southeast Asia, Rest of South Asia, Malawi, Mozambique, Tanzania, Other Southern Africa, Madagascar, Uganda, Rest of Sub-Saharan Africa, Zambia	<b>LDC</b>
<b>11. Other WTO – members (developed countries)</b> China, Hong Kong, Korea, Rest of East Asia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Sri Lanka, Mexico, Colombia, Peru, Venezuela, Rest of Andean Pact, Argentina, Chile, Uruguay, Rest of South America, Central America, Turkey, Rest of Middle East, Morocco, Tunisia, Rest of North Africa, Rest of S. African CU, Zimbabwe	<b>WTO DC</b>
<b>12. Rest Of The World</b> Taiwan, Vietnam, Rest of North America, Rest of Europe, Russian Federation, Rest of FSU	<b>ROW</b>

**Table A2:** Aggregation of sectors

Sectors	Abbreviation
<b>1. Wheat, Cereal grain nec</b>	<b>CERE</b>
<b>2. Oil seeds</b>	<b>osd</b>
<b>3. Sugar cane, sugar beet</b>	<b>c_b</b>
<b>4. Paddy Rice</b>	<b>pdr</b>
<b>5. Vegetables, fruit, nuts</b>	<b>v_f</b>
<b>6. Cattle, sheep, goats, horses</b>	<b>ctl</b>
<b>7. Animal products nec</b>	<b>oap</b>
<b>8. Raw milk</b>	<b>rmk</b>
<b>9. Meat: cattle, sheep, goats, horse</b>	<b>cmt</b>
<b>10. Meat Products nec</b>	<b>omt</b>
<b>11. Dairy products</b>	<b>mil</b>
<b>12. Sugar</b>	<b>sgr</b>
<b>13. Food products nec, Vegetables oils and fats, processed rice</b>	<b>OFOOD</b>
<b>14. Other Primary Sectors</b> Plant-based fibers, crops nec, wool, silk-worm, cocoons, Forestry, Fishing Coal, Oil, Gas, Minerals nec, wood products, petroleum, coal products	<b>OPRI</b>
<b>15. Industry</b> Beverages and tobacco products, Textiles, Wearing apparel, Leather products, Wood products, Paper products, publishing, Chemical, rubber, plastic prods, Mineral products nec, Ferrous metals, Metals nec, Metal products, Motor vehicles and parts, Transport equipment, Electronic equipment, Machinery a. equipment, Manufactures nec	<b>MNFCS</b>
<b>16. Services</b> Electricity, Gas manufacture, distribution, Water, Construction, Trade, Transport nec, Sea transport, Air transport, Communication, Financial services nec, Insurance, Business services nec, Recreation and other services, PubAdmin/Defence/Health /Educat, Dwellings	<b>SVCES</b>

**Table A3:** Pre-Simulations, Agenda 2000 and EU enlargement

**Pre-Simulations:**

**CAP instruments**

- complementarity approach for milk and sugar (assumption: quantity in the data base represents production quotas)
- land subsidy equalized across sectors to implement a homogeneous area payment

**Common EU budget**

- 75 % of tariff revenues as well as a share of GDP is accrued to the EU budget; determination of a uniform endogenous GDP rate
- expenses of the EAGGF paid for by the Common EU Budget
- net transfers between EU member states

**Agenda 2000:**

**Cereals**

- reduction of intervention prices by –15 %
- unification of direct payments for cereals, oilseeds and protein plants
- reduction of set-aside rate from 15 % to 10 %

**Beef**

- reduction of intervention prices by –18 %
- no change in direct payments (assumption: increase in direct payments is compensated by a lower output)

**Milk**

- reduction of intervention prices by –15 %
- retention of quota regulation
- increase of quota by 2.4 %

**EU enlargement (EU 27):**

**Creation of customs union**

- EU 15 and MOEL abolish all bilateral trade barriers
- MOEL establish trade protection of the EU 15
- production quotas for milk and sugar are fixed at the current production level of the MOEL
- no set-aside in the new member countries
- direct payments in the EU-15 remain unchanged
- 100 % of the current land and animal premiums in the EU 15 are transferred to the new member states (standard procedure)
- fixation of plafonds for direct payments with endogenous adjustment of the premium rate for land and animals in the EU 15

**Common EU budget**

- complete integration of MOEL in the Common Budget of the EU: 90 % of tariff revenues as well as a share of GDP to the EU budget
- payments in the framework of the EAGGF in the MOEL via the Common Budget
- implementation of net transfers between the EU 15 and the MOEL

**Table A4:** Changes in the output due to the implementation of the EU, the US, the G-20 and the G-10 proposal for market access (in %)

	EU27	USA	Japan	Oceania	WTO IC	Brazil	India	ACP	LDC	WTO DC	ROW	
	EU proposal											
cereals	-13	19	-116	-2	5	45	-1	1	2	-26	2	
oilseeds	0	12	14	-51	-63	54	-2	-16	0	-73	-11	
sugar beet & cane	-43	-4	-54	13	6	0	1	48	-7	19	2	
paddy rice	-104	-18	-260	20	-84	-44	-2	-20	-19	-138	-6	
vegetables and fruits	-4	-11	-3	-4	12	-18	-2	-6	1	8	-1	
cattle	-38	0	-45	-2	13	42	-4	6	2	15	10	
other animal	-7	-6	-35	-18	-33	-26	1	-2	5	16	4	
raw milk	-19	2	-8	52	12	2	3	18	12	20	4	
beef	-83	6	-53	24	3	84	-10	8	9	15	132	
other meat	-9	4	-126	-11	-61	-68	55	-7	18	36	12	
milk	-31	3	-8	61	21	1	17	44	199	40	49	
sugar	-63	-4	-54	42	5	3	1	87	-20	25	5	
other food	-10	-5	-12	4	-6	-11	-17	-3	-6	31	-4	
other primary	2	1	0	-1	1	-3	-4	1	-2	0	-2	
manufactures	1	-1	3	-7	-2	-3	3	-3	6	-2	0	
services	1	0	0	0	1	0	0	0	0	1	0	
	US proposal											
cereals	-9	20	-225	-4	10	53	-1	-9	4	-37	4	
oilseeds	6	16	25	-65	-62	29	-3	-21	5	-70	-9	
sugar beet & cane	-83	-13	-109	37	-16	3	1	176	-19	27	4	
paddy rice	-138	-2	-262	28	-107	-54	0	6	-21	-121	-6	
vegetables and fruits	-5	-12	-4	-6	26	-36	-8	-6	1	9	-1	
cattle	-64	3	-90	0	18	149	-18	11	2	16	10	
other animal	0	-1	-69	-22	-32	-27	0	-4	6	14	5	
raw milk	-20	4	-27	105	-44	-2	3	11	13	18	5	
beef	-121	11	-108	44	-3	261	-67	11	10	16	133	
other meat	5	13	-229	-23	-67	-113	-89	-26	23	25	12	
milk	-30	6	-34	123	-66	-3	16	26	213	35	76	
sugar	-121	-14	-110	123	5	18	1	314	-53	42	9	
other food	-10	-5	-13	9	-4	-11	-23	-8	-5	31	-3	
other primary	3	0	1	-5	1	-14	0	0	-2	0	-2	
manufactures	1	-2	5	-13	-2	-12	7	-5	7	-2	-1	
services	1	0	0	0	1	0	0	0	0	1	0	

1) For the composition of regions and sectors see Table A1 and A2 in the appendix. 2) WTO IC: other developing WTO member countries, ACP: African, Caribbean and Pacific countries; LDC: Least Developed countries; WTO DC: other developing WTO member country

**Table A4:** Changes in the output due to the implementation of the EU, the US, the G-20 and the G-10 proposal for market access (in %)

	EU27	USA	Japan	Oceania	WTO IC	Brazil	India	ACP	LDC	WTO DC	ROW
	<b>G-10 proposal</b>										
cereals	-12	15	10	6	15	-11	0	8	4	-3	3
oilseeds	-3	-3	6	-49	-67	70	-1	-15	-3	-60	-12
sugar beet & cane	-32	-1	-32	2	3	1	1	19	-3	15	2
paddy rice	-21	-51	-245	-40	-23	-39	-7	-44	-18	-139	-6
vegetables and fruits	-4	-6	-1	-3	0	-13	0	-5	1	7	-1
cattle	-31	3	-36	-2	8	16	-1	4	3	13	10
other animal	-9	-3	-28	-15	-12	-23	2	-2	5	14	5
raw milk	-19	2	-2	46	19	2	2	19	12	18	4
beef	-73	6	-41	19	8	40	7	5	9	13	132
other meat	-12	5	-97	-7	-16	-51	263	-3	17	31	12
milk	-31	3	1	53	32	2	17	45	195	38	47
sugar	-48	-1	-32	23	4	3	2	43	-10	20	4
other food	-9	-5	-9	-6	-5	-10	-13	-2	-5	27	-3
other primary	2	1	-1	0	0	-1	-5	1	-3	0	-2
manufactures	1	-1	3	-5	-2	-1	2	-2	6	-1	0
services	1	0	0	0	0	0	1	0	0	0	0
	<b>G-20 proposal</b>										
cereals	-12	19	-139	-2	7	37	-1	-1	3	-25	2
oilseeds	2	13	17	-54	-63	45	-2	-16	1	-71	-10
sugar beet & cane	-60	-7	-65	19	5	0	1	92	-12	22	2
paddy rice	-106	-18	-260	19	-80	-49	-1	-17	-20	-137	-7
vegetables and fruits	-5	-12	-4	-5	11	-24	-2	-6	1	8	-1
cattle	-49	2	-64	-2	16	87	-10	9	2	16	10
other animal	-6	-3	-50	-19	-34	-25	0	-3	5	16	4
raw milk	-20	2	-15	66	-6	1	2	18	12	21	4
beef	-99	8	-75	25	3	157	-36	11	10	17	132
other meat	-6	10	-196	-13	-64	-84	-16	-13	20	35	12
milk	-31	4	-18	77	-7	0	17	42	203	42	55
sugar	-86	-7	-66	56	4	8	1	167	-34	31	6
other food	-10	-5	-13	7	-6	-12	-16	-4	-5	31	-4
other primary	2	1	0	-2	1	-7	-3	0	-2	0	-2
manufactures	1	-1	4	-8	-2	-6	4	-4	7	-2	0
services	1	0	0	0	1	0	0	0	0	1	0

1) For the composition of regions and sectors see Table A1 and A2 in the appendix. 2) WTO IC: other developing WTO member countries, ACP: African, Caribbean and Pacific countries; LDC: Least Developed countries; WTO DC: other developing WTO member country

**Table A5:** Decomposed effects of third countries' tariff cuts for EU agricultural imports on the trade balance of sugar and beef (million US \$)

	Impact of the trade balance of <i>sugar</i>		Impact of the trade balance of <i>beef</i>	
	US proposal	G-10 proposal	US proposal	G-10 proposal
<b>Cut of third countries tariffs for EU imports of</b>				
cereals	-8.2	-2.0	-111.0	-39.0
oilseeds	-0.4	0.0	-7.0	-2.0
paddy rice	0.0	0.0	0.0	0.0
vegetables & fruits	-9.2	-2.0	-95.0	-19.0
cattle	-0.4	0.0	-11.0	-5.0
other animal	-1.9	-0.7	-8.0	-3.0
beef	-2.0	0.0	560.0	100.0
other meat	-53.7	-10.0	-316.0	-54.0
milk	-37.3	-11.0	-118.0	-40.0
sugar	145.0	14.0	-1.0	0.0
other food	-44.2	-13.0	-66.0	-21.0
<b>Sum</b>	-12.3	-24.7	-173.0	-83.0

1) For the composition of sectors see Table A2 in the appendix.

**Source:** Own calculations.