Aus dem Institut für Marktanalyse und Agrarhandelspolitik

Petra Salamon
Ernst-Oliver von Ledebur
Marianne Kurzweil

The European beef trade case - the Agenda 2000 and the MERCOSUR-EU Trade agreement

Manuskript, zu finden in www.fal.de

Published in: Landbauforschung Völkenrode 53(2003)2/3, pp. 191-205

Braunschweig
Bundesforschungsanstalt für Landwirtschaft (FAL)
2003

The European Beef Trade Case - the Agenda 2000 and the MERCOSUR-EU Trade Agreement

Petra Salamon, Ernst-Oliver von Ledebur and Marianne Kurzweil[1]

Abstract

Regarding the Agenda 2000 of the EU and possible outcomes of a trade liberalisation with the MERCOSUR in the beef sector different scenarios were analysed: The first one focuses on the effects of the implementation of the Agenda 2000 on trade flows. The second and third scenario focus on different bilateral liberalisation paths. The scenario analysis is conducted with an extended version of the general equilibrium model GTAP (Global Trade Analysis Project).

The results indicate that the implementation of the Agenda 2000 mainly leads to an EU internal adjustment while its positive welfare effects on the rest of the world are quite disperse. Regarding the simulation results achieved by the Trade Agreement scenarios corroborate the well known sensitivity of agricultural trade. The most prominent effects of the Trade Agreement with the EU are likely to arise in the meat sector, specially beef.

Key words: agricultural trade, bilateral trade agreements, EU-MERCOSUR, GTAP

Zusammenfassung

Im Fokus: Der europäische Rindfleischhandel - Agenda 2000 und das MERCOSUR-EU Handelsabkommen

Hinsichtlich der Umsetzung der Agenda 2000 der EU und einer möglichen Handelsliberalisierung mit dem Ländern des MERCOSUR (Mercado Comun del Sur) auf dem Rindfleischmarkt werden verschiedene Szenarien untersucht. Das erste Szenario bezieht sich auf die Umsetzung der Agenda 2000, wobei sich die Analyse auf deren Auswirkungen auf die bilateralen Handelsströme fokussiert. Das zweite sowie das dritte Szenario konzentrieren sich auf unterschiedliche Ausprägungen der bilateralen Handelsliberalisierung. Die Szenarioanalyse wurde mit Hilfe einer erweiterten Version des Allgemeingleichgewichtsmodells GTAP (Global Trade Analysis Project) durchgeführt.

Die Ergebnisse weisen darauf hin, dass die Umsetzung der Agenda 2000 im wesentlichen zu EU-internen Anpassungen führt, während daraus folgende Wohlfahrtsänderungen in der übrigen Welt eher gering ausfallen werden. Die Simulationsergebnisse zu den verschiedenen Handelsabkommenszenarien unterstreichen ihrerseits die wohlbekannte besondere Position des Agrarhandels. Die herausragendsten Auswirkungen eines präferenziellen Handelsabkommens mit der EU würden im Fleischbereich auftreten, insbesondere im Bereich Rindfleisch.

Schlüsselworte: Agrarhandel, bilaterale Handelsabkommen, EU-MERCOSUR, GTAP

1 Introduction

Beef[2] is the second largest sector of EU agriculture, accounting for around 10 % of the value of agricultural production (after dairy with a share of 18% in 1998). Currently, the European Union accounts for about 14 % of world beef production. Nevertheless, the Community beef sector has declined since 1996. This fall was due to a cyclical downsizing in production, impact of urgency measures taken in response to the BSE (bovine spongiform encephalopathy) crisis and the FMD (foot and mouth disease) outbreak. In the meantime however, beef production has resumed.

The European Union has trade relations with nearly all regions in the world. Concerning the beef sector, prominent trading partners are found in South America with Brazil, Argentina, Paraguay and Uruguay forming a Free Trade Area called Mercado Comun del Sur (MERCOSUR). The growing trade interactions between the EU and MERCOSUR are far from balanced. On the one hand, the MERCOSUR has an overall trade deficit with the EU and on the other hand, the EU runs a deficit with the MERCOSUR countries in the agricultural sector. The main reason for the unbalanced trade relations is the commodity composition of the trade flows. The EU mainly exports capital goods and manufactured products to the MERCOSUR, while importing primarily agricultural goods from the MERCOSUR. In 2001, the EU and the MERCOSUR launched their fifth negotiation round about the future of their Free Trade Agreement (FTA). The relation between the EU and the four South American countries was already started prior to the creation of the MERCOSUR, with bilateral arrangements between the EU and each single country consisting of political dialogues and technical assistance. In the meantime, importance of trade issues rose. In 1994, this development resulted in preparation for an Interregional Association Agreement. Due to the structure of trade flows, trade liberalisation concerning agricultural goods is particularly important for the Southern Cone since these sectors account for the region's major export items. But one cannot deny that the agricultural sector has always presented the stumbling block in the negotiations about trade liberalisation and even in the course of the forthcoming EU-MERCOSUR FTA talks. The same has to be expected due to differing agricultural policy strategies applied in the participating countries.

[1] Institute of Market Analysis and Agricultural Trade Policy of the Federal Agricultural Research Centre (FAL), Braunschweig, Germany. Contact: oliver.ledebur@fal.de

[2] Always including veal.

Table 1:
Bovine meat (beef and veal) production in millions of metric tons(%), (1970-2000)

Region/Year	1970	1980	1990	2000
World	38.4 (100)	45.6 (100)	53.4 (100)	56.5 (100)
EU (15)	7.2 (18.7)	8.5 (18.7)	8.9 (16.7)	7.4 (13.1)
MERCOSUR countries	5.0 (13.0)	6.1 (13.5)	7.6 (14.3)	9.9 (17.5)
Argentina	2.6 (6.8)	2.8 (6.2)	3.0 (5.6)	2.7 (4.7)
Brazil	1.8 (4.8)	2.9 (6.3)	4.1 (7.7)	6.5 (11.6)
Paraguay	0.1 (0.3)	0.1 (0.2)	0.2 (0.4)	0.2 (0.4)
Uruguay	0.4 (1.0)	0.3 (0.7)	0.3 (0.6)	0.5 (0.8)

Source: FAOStat (2002)

But EU markets are regulated by so-called agricultural market organisations governing production, trade, intervention purchases, price formation and sometimes even consumption. At intervals, these market organisations have been subject to reforms, the last one called Agenda 2000. As part of the Agenda 2000 package, beef market organisation was reformed. On the one hand, lower intervention prices serving as the basis of price support were fixed to bring market prices down and to narrow the gap between domestic and world prices. On the other hand, farmers were compensated by an increase in direct payments. Although the reform programme of the Agenda 2000 concentrated upon EU internal regulations leaving the foreign trade regime completely untouched and under the WTO Agreement, the internal reform affect trading partners and also the trade with the MERCOSUR through market adjustments. EU beef trade with MERCOSUR is likely no exception.

The main objective of the present paper is to examine the economic impacts of the Agenda 2000 and of a gradual trade liberalisation between the EU and the MERCOSUR countries including or excluding the agricultural sectors. The focus will be on beef, which is likely to show the relatively biggest impacts within the agricultural sector. To give insight on the European Common Agricultural Policy, the current beef market organisation and the most relevant elements the Agenda 2000 will be described. The quantitative impact of Agenda 2000 and trade liberalisation will be studied by means of the general equilibrium model GTAP (Global Trade Analysis Project). GTAP provides for an opportunity to study global trade relationships on the one hand and the economic interactions between agricultural and non-agricultural sectors on the other. The focus will be on the potential of the bilateral agricultural trade with respect to effects on welfare of each single region, on trade patterns, such as changes in exports, imports and also in trade balances, on gross domestic product (GDP) and changes in the countries' production structures.

2 Some aspects of the beef sector in the EU and the MERCOSUR

The structure of the beef sector in the EU and the MERCOSUR is briefly outlined by production and trade figures. Since the subsequent analysis focuses on the effect of policy changes on the trade between the two blocs separate attention must be drawn to the structure of the bilateral trade.

Bovine meat production increased by about 60 % from 1970 to 2000 (Table 1). Regarding the MERCOSUR its ratio in world beef production rose during the same period from 13 to more than 17 %. Output was primarily expanded during the 90's of the last century. Within the MERCOSUR countries the most prominent growth in production occurred in Brazil. The country's ratio in world beef production more than doubled from 5 % in 1970 to 11 % in 2000, while the other MERCOSUR countries either maintained or like Argentina temporarily even reduced their shares in world production during the period.

Trade figures concerning exports and imports of bovine meat reveal that in the 1970 to 1990 period the EU[3] constantly expanded exports faster than imports, allowing the region to change its net importer status to a bovine meet net exporter (Table 2). In 2000 exports declined as a result of several domestic and trade policy changes.

The figures for the MERCOSUR member states show on the one hand increasing imports, specially in 1990 when the economic liberalisation process in the region showed strong impulses. On the other hand exports declined during the 80's due to severe domestic economic set backs. The net trade status in 2000 indicates a recuperation to the status existing in 1970. Even though MERCOSUR as a whole was expanding its beef exports constantly since the depression in 1980, the export performance of the two largest members differed significantly. While the position of Argentina as beef exporter remained debilitated Brazil expanded its surplus significantly between 1990 and 2000.

[3] The 15 actual member states are included for comparison reasons.

Table 2:
Bovine meat trade in metric tons, (1970-2000)

Region/Year	1970	1980	1990	2000
	Imports Mt			
World	2 965 249	4 273 924	5 950 120	7 345 417
EU (15)	1 429 618	1 682 408	2 012 012	2 066 356
MERCOSUR countries	597	72 116	238 178	76 101
Argentina	0	6 748	0	16 377
Brazil	597	65 355	237 900	58 429
Paraguay	0	13	3	1 148
Uruguay	0	0	275	147
	Exports Mt			
World	3 033 455	4 576 388	6 078 772	8 016 290
EU (15)	654 729	1 838 931	2 459 141	2 295 541
MERCOSUR countries	1 004 161	738 538	1 044 540	1 260 132
Argentina	696 978	444 216	496 968	369 253
Brazil	140 478	178 175	235 650	551 523
Paraguay	27 072	959	103 475	51 672
Uruguay	139 633	115 188	208 447	287 684
	Net trade Mt			
EU (15)	-774 889	156 523	447 129	229 185
MERCOSUR countries	1 003 564	666 422	806 362	1 184 031
Argentina	696 978	437 468	496 968	352 876
Brazil	139 881	112 820	-2 250	493 094
Paraguay	27 072	946	103 472	50 524
Uruguay	139 633	115 188	208 172	287 537

Source: FAOStat (2002)

The structure of the trade between the two blocks is better depicted by the bilateral trade. Due to constraints in data availability only the trade flows between the EU and Argentina and Brazil are considered. The data from 1990 to 2000 indicate that the trade concentrated on bovine cooled, frozen meat and meat preparations. As expected only minimal trade amounts of live animals can be found in the statistics. EU beef imports from the two biggest MERCOSUR countries were relatively small, when compared to the intra-EU beef trade measured in imports. In 2000 the imports of the two MERCOSUR countries accounted for about 11 % compared to intra-EU trade. Regarding only extra-EU imports however, the share of the MERCOSUR beef was about 70 % in the same year.

Beef imports from Argentina and Brazil increased from 185 thousand tonnes in 1995 to 215 thousand tonnes in the year 2000. During this decade the structure of beef exports from these MERCOSUR countries changed with the Brazilian exceeding the Argentinean exports. This development was determined by a recovery in Brazil, but also by a very unfavourable Argentinean exchange rate policy. EU beef exports to the MERCOSUR countries ranged on a very low level during the whole period from 1990 to 2000 (Table 3) The year 1991, with nearly 100 thousand tonnes, when liberal reforms were introduced in Brazil and imports allowed to stabilise market prices was an exception.

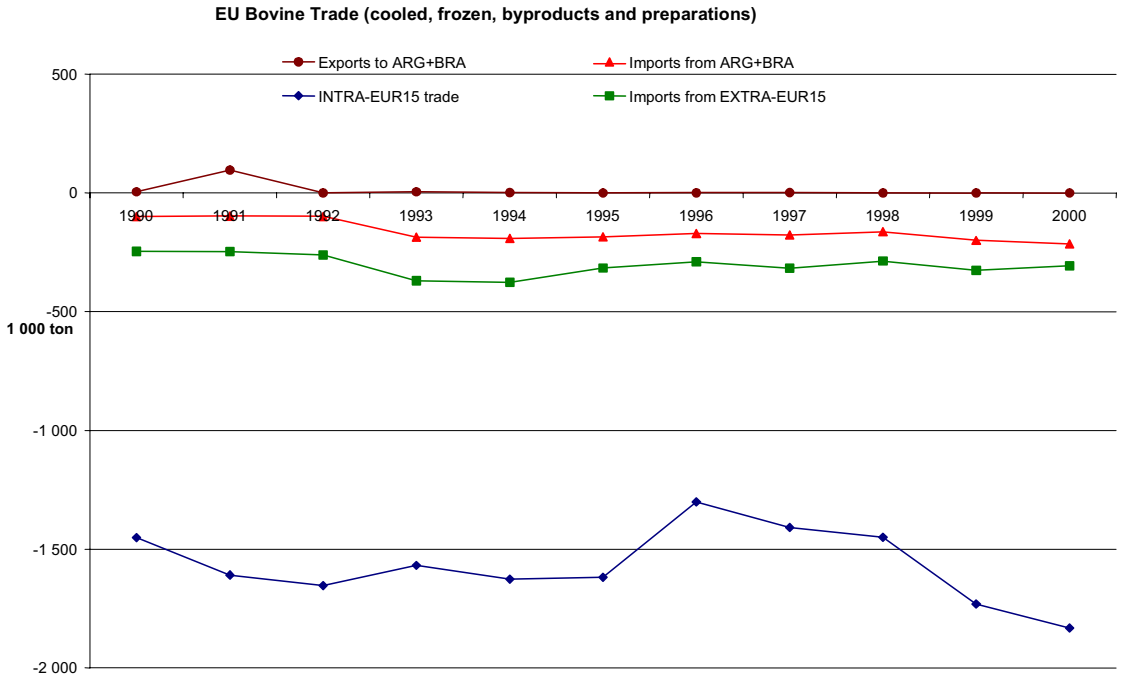
3 CAP and CAP reform: The beef and veal sector

The beef market organisation of the EU provides for measures applying to production, consumption, trade and budget. It covers a wide range of products such as live animals, fresh, chilled and frozen meat, meat otherwise prepared or preserved and preparations containing bovine meat or offal other than uncooked.

3.1 Domestic Market Regime

The basic regulation comprises a system of price support supposed to keep the market prices close to an agreed common price level. The main mechanisms are domestic market measures such as support buying (the so-called intervention buying), private storage aid and direct payments (premiums in the EU jargon) and trade measures affecting imports from outside the EU or EU exports to third countries (CAP Monitor 2002). The new regulation governed by the Agenda 2000 introduces a 20 % reduction

Table 3:
Bilateral beef trade between the EU(15) and Argentina and Brazil, in 1000 tons (1990-2000)



Source: EUROSTAT (several years)

in the level of market support in three equal steps over three years. Concurrently direct payments are partly offsetting the reduction of market support in order to compensate for the income loss incurred. All parts of the reform concerning price reductions and direct payments to producers were applicable as from the 1 January 2000 (COM-EU 2002a).

Basically the intervention price has been set by the European Commission always to remain in force for a 12 month period starting in July. It was used in conjunction with the EU deadweight cattle price to trigger the intervention buying-in. The intervention price was set at 3 475 € per ton for the first six months of 2000 and reduced thereafter to 3 242 € per ton for the year 2000/2001 and to 3 013 € per ton for 2001/2002 (COM-EU 2002a). Intervention purchases are subject to a total annual limit of 350 000 t[4]. Detailed prescriptions exist for the operation of intervention buying. Two forms of intervention can be operated, depending on the relation between market prices and the intervention price:

- Normal intervention is triggered when during two consecutive weeks EU market prices for a particular category (e.g. steers or young bulls) are below 84 % of the intervention price, and at the same time, within an individual Member State, prices for the same category are below 80 % of the intervention price[5].
- Safety-net intervention takes place when EU market prices for a particular category (steers or young bulls) decline below 78 % of the intervention price, and at the same time within an individual Member State they are below 60 % of the intervention price (CAP Monitor 2002).

On July 1 2002, the intervention price has been replaced by a basic price (for storage), fixed at 2 224 € per tonne. From than on, a payment for private storage can be granted when the average Community market price is less than 103 % of the basic price. From July 1, 2002 on, producers may also benefit from a safety net intervention system. When the average market price for bulls or steers in a Member State (or region thereof) is less than 1 560 € per tonne for two consecutive weeks, buying-in tenders will be organised in this Member State (COM-EU 2002a).
Taking account of the variety of different livestock holdings, various types of direct farmers' support measures (see Table 4) are destined to:

4 Although, quantities purchased under safety-net conditions do not count against that maximum.

5 Under the normal procedure, tenders below the so-called R3 equivalent of the average market price for the Member state concerned are submitted. Under R3 price plus 10 € they will enter the second stage in which the EU can set a maximum buying-in price. Under safety-net intervention, all tenders below R3 market price for the Member State plus 6 € are automatically accepted.

Table 4:
Special measures on the beef market - premium payments in €, 2000 to 2002

			2000	2001	2002
Slaughter premium	Adult cattle	Animals slaughtered	27	53	80
	Calves	Animals slaughtered	17	33	50
Suckler cow premium	Cows and partly heifers, special breeds	Yearly basis	163	182	200
Special beef premium	Steers	Twice in life	122	136	150
	Young bulls	Once in life	160	185	210
Extensification premium optional:	Additional suckler cow or special beef premium				
- either single rate		< 1,4 LU/ha	100	100	100
- or two-tier rate		1.6 - 2.0 LU/ha	33	33	
		< 1.6 LU/ha	66	66	
		1.4 - 1.8 LU/ha			
		< 1.4 LU/ha			40
					80

Source: CAP Monitor 2002

- compensate for the reductions in the intervention price (slaughtering premium and the special beef premium);
- support incomes to producers who are specialised in beef production (suckler cow premium);
- encourage producers towards extensive farming (extensification payment);
- assist producers in less favoured areas or in Member States highly specialised in beef production (additional suckler cow premium);
- balance the market throughout the year (deseasonalisation premium);
- permit Member States to support specific production systems for which national envelopes (financial plafonds) are agreed upon as a financial tool.

The beef special premium is a payment per head granted per calendar year and per holding[6] once in a lifetime for bulls older than 9 months or at a minimum carcass weight of 185 kg and twice in a lifetime for steers, respectively at the age of 9 months and after 21 months. These premiums are subject to regional ceilings (CAP Monitor, 2002).

Suckler cow premiums are paid annually to producers provided that the percentage requested equals at least 80 % for suckler cows. This premium is limited by an individual ceiling.[7] It may be complemented by an additional national premium of up to 50 € per animal. These premiums are granted provided that the stocking density on the holding is not more than 2 livestock units per unit of forage area used for these animals. National ceilings to cover all suckler cow premium rights are set. Other slaughter premiums are applicable at slaughter or export to a non-EU country. The animals eligible for this premium are bulls, steers, dairy cows, suckler cows and heifers from the age of 8 months (80 € per head) and calves at the age of more than 1 month but less than 7 months and less than 160 kg of carcass weight (50 € per head). The premium is subject to particular proof that the animal is slaughtered or exported to a third country. The national ceilings for this premium are given in the Commission's application regulation – these conditions apply almost exclusively to Ireland (COM-EU 2002a). Further premiums like "deseasonalisation"[8], "extensification"[9] premiums are granted and additional national payments[10] are allowed for.

Member States are also empowered to make additional payments. These can be granted in the form of headage payments on male cattle, suckler or dairy cows and heifers, either within the terms of the basic premium schemes or as supplements to the slaughter premium for adult cattle. They may also make area payments in respect

6 Within the limits of regional ceilings for not more than 90 animals per farm, but Member States may derogate this limit according to their objective criteria.

7 Additionally it may be limited by an optional farm ceiling related to milk quota which is currently 120 000 kg milk; but Member States may also fix a different limit.

8 The "deseasonalisation" premiums are available in Member States where steer slaughters in a given year account for more than 60 % of total slaughters of male animals and where more than 35 % of the slaughters take place between September 1 and November 30. The premium levels depend on the time of slaughter (from 72.45 € for animals slaughtered in the first 15 weeks of the year, to 18.11 € for animals slaughtered between 22nd and 23rd weeks of the year) (COM-EU 2002a).

9 Producers may qualify for an additional payment of 100 € per premium, provided that during the calendar year the stocking density on their holding is less than 1.4 livestock units per hectare. Member States may decide to grant the "extensification" premium payment with some refinements (COM-EU 2002a).

10 Member States are also empowered to make additional payments. These can be granted in the form of headage payments on male cattle, suckler or dairy cows and heifers, either within the terms of the basic premium schemes or as supplements to the slaughter premium for adult cattle. They may also make area payments in respect to permanent pasture. The total funds for this aid are fixed at national levels (COM-EU 2002a).

Table 5:
Special import schemes (Tariff Rate Quotas-TRQs) of the European Union

Special import scheme	Quantities	Tariff or duty reduction
frozen beef and veal quota	53000 t boneless beef equivalent	customs duty applied
specified mountain breeds	5000 heads of heifers and cows for breeding	6 % customs duty (ad valorem)
	additional 5000 heads of bulls, heifers and cows for breeding	4 % customs duty (ad valorem)
high quality cuts	58100 t boneless beef equivalent of which 28000 t for ARG, 5000 t for BRA, 6300 t for URU	20 % customs duty (ad valorem)
frozen buffalo meat	2250 t	20 % customs duty (ad valorem)
frozen thin skirt quota	1500 t (of which 700 t for ARG)	4 % customs duty (ad valorem)
tariff quota for frozen beef	40000 t preserved beef products with a high proportion of beef and a min. of 20 % of lean beef	tariff free
	10700 t most other cooked manufactured beef products	45 % of normal levy
young male animals	169000 heads of young male cattle	import duty 583 €/t
balance sheet	for fattening (regulary estimated)	+ 16 % customs duty (ad valorem)
ACP scheme	52100 t boneless beef equivalent	8 % of tariff, customs duty free
Europe Agreements	37125 beef (subject to increases, distributed to specific countries)	20 % of tariff, 20 % of duty
	9800 t beef from Slovenia	20 % duty
	700 t beef from Swizweland	normal duty
	1950 t fresh or frozen beef and 250 t processes beef from Estonia, Latvia, Lithuania	preferential rates for duties and tariffs
	7000 heads of special mountain breeds from Hungary, Poland, Czech Republic, Slovakia, Slovenia, Romania, Lithuania, Latvia and Estonia	6 % customs duty (ad valorem)
calf imports	178000 heads up to 80 kg	20 % of tariff
	153000 heads between 160 and 300 kg from Hungary, Poland, Czech Republic, Slovakia, Slovenia, Romania, Lithuania, Latvia and Estonia	20 % of duty

Source: CAP Monitor 2002

to permanent pasture. The total funds for this aid are fixed at national levels (COM-EU 2002a).

3.2 Foreign trade regime applied under the CAP regulation

An import or export licence must accompany all beef and veal traded across borders. Imports of beef and veal are subject to the rates of duty fixed in the common customs tariff. Different schemes may also regulate certain imports as described in Table 5.

Concerning exports to third (i.e. non-EU) countries, refunds are paid on EU exports of cattle, calves, beef and veal to enable exporters to compete on the world market. The fixing of these subsidies takes into account:

- the current situation on the Community and the world markets and likely developments;
- the objectives of the common organisation of the market in beef and veal;
- any restrictions arising from international agreements (World Trade Organisation etc);
- the need to avoid disturbances on the Community market;
- the economic aspect of the proposed exports.

Refunds may vary according destination where certain markets have specific requirements. They are generally fixed for longer periods but may be altered in the light of more recent developments.

Both volume of subsidised exports and also expenditure on export subsidies are liable to reduction under the WTO Agreement. The maximum volume of subsidised export is 817000 t in 2000/01. To govern the limit, a set of rules was given. Export licences have to fix in advance the rate of the refund and be accompanied by appropriate securities. The Commission can adapt the rules if the probability exists of exceeding the limit. The Commission can scale back quantities applied for, refuse applications not yet granted, or suspend the lodging of application. If exporters receive less than 90 % of the volume applied for, they may withdraw their application.

4 Theoretical Framework and Database

4.1 Standard GTAP Model

The quantitative analyses in this paper are based on the comparative-static standard multi-regional GTAP model. It provides an elaborate representation of the economy including the linkages between farming, agribusiness, industrial, 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 is 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 maximising behaviour 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 (http://www.gtap.agecon.purdue.edu/).

4.2 Database

The GTAP database version 5 with 1997 as the base year was used. There are 66 regions including the 15 EU Member States, Brazil, Argentina, Chile, Uruguay, Peru, Colombia, Rest of Andean Pact, Venezuela, Mexico, Central America and the Caribbean, Rest of South America, USA, Canada, and 38 other regions. The database covers 56 sectors including 11 primary agricultural sectors and 8 food processing sectors. One of the primary agricultural sectors is the sector "bovine cattle, sheep and goats, horses" and one of the food processing sectors "bovine meat products". Furthermore, the database comprises 5 factors, land, capital, unskilled labour, skilled labour and natural resources. To limit simulations the database was aggregated into a set of 6 countries or regions, 15 sectors and 5 factors (see Table 6).

4.3 Extension of the GTAP Model

Agriculture is characterised by a high level of public interventions. For this reason it is of major importance to explicitly model agricultural policy instruments (Nielsen, 1999). In the present analysis we therefore adapt the GTAP model to include important institutional features of the CAP which have been described in greater detail in Brockmeier, Herok and Salamon (2001).

Table 6:
Aggregation of GTAP database 5 used for simulation

Shortname	Region
EU	EU-15
BRA	Brazil
RMERC	Argentinia, Chile, Uruguay
RSAM	Rest of Latin America (Central America and Caribean, Colombia, Peru, Venezuela, rest of Andean Pact, Rest of South America)
NAFTA	North American Free Trade Area (Canada, United States, Mexico)
ROW	All other countries
Shortname	**Sector**
CATTLE	Cattle, sheep, goats, horses
OTHANIN	Other animals (pigs, poultry)
MILK	Raw milk
CEREAL	Paddy rice, wheat, cereal grains nec
OILSEEDS	Oil seeds
OTHCROP	Vegetables, friut ans nuts, crops nec
SUGPLANT	Sugar cane, sugar beet
CATMEAT	Meat of cattle, sheep, goats, horses
OTHMEAT	Other meat products nec. (Meat of pigs, poultry)
DAIRY	Dairy products
SUGAR	Sugar
PROCESS	Other Processed food (vegetable oils and fats, processed rice, food products nec, beverages and tobacco products)
OthPrimary	Other primary products (fibers, wool, silkworm cocoons, forestry, fishing, coal, oil, gas, minerals nec)
Mnfcs	Other manufactured products
Svces	All services

Direct payments

Direct payments to livestock and land are important instruments of the CAP. Several approaches to implement them in models can therefore be found in the literature. Bach and Frandsen (1998), Jensen, Frandsen and Bach (1998) and Gohin, Guyomard and Mouël (2000) introduced direct payments to land as an exogenous input subsidy to land. Suckler cows and breeding ewes are assumed to be part of the production capital, which is used to produce slaughter animals. Accordingly, the premiums for them are implemented as a fixed input subsidy to capital.

In contrast, male animals and steers are considered to be final products and sold directly to the market. Those premiums are included in the model as output subsidies. If the base area for land or the ceiling on premium rights for breeding ewes, male animals and steers is fully utilised, the total amounts of direct payments are set exogenously, whereas the tax rate is allowed to adjust. Following this approach van Meijl and van Tongeren (2000) also implement compensatory payments as input subsidies. Given the fact that the area payments in 1995 (the base year of their data base) were much larger than total land costs in

the data base, they introduce hectare and head premiums as an input subsidy to value added. A more extreme approach is followed by Blake, Rayner and Reed (1998) who treat compensatory payments as a transfer from government to the "farm household". Compensatory payments are therefore paid to sector specific agricultural factors.

In contrast to earlier versions of the GTAP database, the version 5 includes direct payments along the lines of Bach and Frandsen (1998) and Jensen, Frandsen and Bach (1998). We used the share of input subsidies for each agricultural sector in the GTAP data base entitled to direct payments, but implemented more recent numbers taken from the statistics of the EU Commission (European Commission, 1998) and integrated them into the GTAP data base using a slightly different procedure than the one described in Malcom (1998).[11] Furthermore, it is assumed that the hectare and head premiums are fully utilised, so that an exogenous input to capital and land is accompanied by an adjustable input subsidy rate.

Restriction in Production

One restriction the CAP puts on inputs is the compulsory set-aside. This policy instrument is handled in different ways in quantitative analysis. Kilkenny (1991), Blake, Rayner and Reed (1998) and von Lampe (1999) make land specific to cereals production, so that it is immobile between sectors. Set-aside can then be modeled as a reduction in the volume of land used in the specific sector (Blake, Rayner and Reed, 1998).[12] A set-aside restriction can also be implemented as a reduction in production specific land. Bach and Frandsen (1998) show that set-aside requirements can also be modelled as a negative productivity shock to agricultural land in the specific grain sectors. The allocation of one hectare of land to these sectors has therefore a reduced productivity of the equivalent of 0.95 hectare if the set-aside rate is 5 %. The advantage of this approach is that no ad hoc assumption like factor specificity is necessary. For this paper the last option was chosen.

Another quantitative restriction within the CAP is formed by the quota regimes for milk and sugar. Again there are several options for this problem (van Meijl and van Tongeren, 2000). We chose the general idea of fixing the production of quota products by making output exogenous. This variable is then swapped with another instrument, in our case output subsidy, allowing for necessary adjustments that occur within a simulation. The increase or decrease in the output subsidy can then be interpreted as a change in the quota rent.

EU Budget

The fiscal impact of CAP reform on the European Union's budget is a much debated issue. Several studies based on general equilibrium models are able to cover elements of the common budget of the EU. Hertel, Brockmeier and Swaminathan (1997) introduce a new fiscal entity in their model called "Brussels" which makes disbursement to member countries in order to finance their food and agricultural policy expenses. Brussels' revenue contributions in the model are 90 % of all import tariffs receipts and a GDP contribution calculated as an endogenous tax to cover any deficit in the EU budget. Liapis and Tsigas (1998) employ a similar procedure calculating the budget expenditures and the tax rate on income required to generate the revenues necessary to finance the CAP and to balance the budget. Bach and Frandsen (1998), Jensen, Frandsen and Bach (2000) and Nielsen (1999) introduce a single equation that captures the cost of introducing compensatory payments as well as output and export subsidies in CEECs net of new members' contribution to the CAP expenses. The latter consists of an exogenous share of GDP and nearly all tariff revenues from agricultural imports (about 90 %).

The EU budget is absent in the standard GTAP model. In this paper we therefore follow the approach of Hertel, Brockmeier and Swaminathan (1997), but use a newly developed Social Accounting Matrix (SAM) to introduce the European Agricultural Guidance and Guarantee Fund (EAGGF) of the EU budget into the GTAP model (Brockmeier, forthcoming in 2002). In a SAM, receipts are usually listed along rows, whereas expenditures are given down the columns. The EU receives 90 % of all trade generated import taxes from producers, private households, government, and capital account. Additional income is obtained in form of contributions made relative to GDP and value added tax and paid by the regional household to the EU budget. This income is used to cover output and export subsidies, direct payments of the agricultural sector as well as a net income transfer to or from other EU member countries. The EU budget is balanced by an endogenous GDP tax common to all member countries.

The EU budget is implemented in the GTAP model with the help of dummy variables in the equation calculating the income of the regional household and the parts of the EU budget described earlier. This allows switching on whichever component the user would like to be part of the EU budget by shifting the receipts and expenditures from the regional household to the EU account. This extension of the GTAP model does not provide a comprehensive projection of the change of the EU budget due to the fact that the disbursement of structural funds is not included.

---

11 The shocks to implement direct payments are rather high. A solution of the model is much easier to achieve when the input subsidy is set exogenously and shocked to the desired amount, while the input tax rate is allowed to adjust.

12 This approach might especially be an option in an analysis with a short run focus.

5 Results and discussion

5.1 Scenarios

Agenda 2000

Before the actual simulations were realised some preparatory simulations had to be carried out in order to gain an updated database to include the desired GTAP extensions (Table 7).

Table 7:
Scenarios included

Step	simulations
	Preparatory simulations
1	implementing EU Budget and quota system for sugar plants and milk
2	re-distribution of quota rents from regional household to producers
3	adjusting direct payments
	Simulatin Agenda 2000 and EU-MERCOSUL Trade Agreement
4	Agenda 2000 + EU-MERCONSUR
5a Agenda 2000	Trade Agreementin non-agricultural sectors reducing trade protection by 30 % + EU-MERCONSUR Trade Agree-
5b Agenda 2000	ment in all sectors reducing trade protection by 30 %

The simulation deriving effects of Agenda 2000 were based on the updated database. The direct payments in the model were increased for cereals, cattle and raw milk and decreased for other crops according to the Agenda 2000. The cut in intervention prices for cattle was simulated by a reduction in the level of protection of 17 %,[13] and for cereals and raw milk by a reduction of 15 %.[14] The milk quota was expanded by 2.4 %. Finally, the set-aside restriction was implemented. Here we assumed that the 1997 database includes a compulsory set-aside rate of 15 % which is reduced under the Agenda 2000. Therefore, we have implemented an increase in the efficiency of land in the cereals and other crops sectors.

Possible outcome of EU-MERCOSUR Trade Agreement

Based on the effects of Agenda 2000, two different simulations concerning a possible outcome of an EU-MERCOSUR Trade Agreement were simulated:

- a trade agreement including only the non-agricultural sectors, and
- a trade agreement including both, the non-agricultural and the agricultural sector.

In both cases not a full liberalisation of the bilateral trade is assumed, but a reduction in trade protection of 30 % (Kurzweil, 2001; von Ledebur, 2001).

5.2 Results

The Agenda 2000 implies some reduction of import protection and export subsidies. Major adjustments in trade protection with Brazil concern the trade in cattle (CAT), cattle meat (CMEAT), cereals (CEREAL) and dairy products (DAIRY) (Figure 1 and 3). The situation is comparable with RMERC (Rest of MERCOSUR), and therefore not indicated in the Figures.

In the case of a Trade Agreement in non-agricultural products (TA non-agriculture), European import protection was only lowered for manufactured goods (Mnfcs) whereas the level of import protection was already quite low. The EU doesn't make use of any export subsidies in the non-agricultural sectors. A Trade Agreement including all products and services implies additional cuts in import protection and export refunds of most agricultural sectors. Especially pronounced are reductions in the cattle, cereal, sugar and dairy sectors and accordingly in the processing sectors of these products.

Agenda 2000 had no impact on Brazil's trade protection at all (Figure 2 and 4). In the case of a Trade Agreement concerning non-agricultural goods and services, protection on imports of other primary goods (OthPrim) and especially manufactured goods is lowered. In Brazil, instead of export refunds, taxes rise with decreasing processing degree. These taxes are reduced under a Trade Agreement.

In the case of a Trade Agreement comprising all products, import protection in all agricultural sectors of Brazil will be reduced with bigger cuts (exception: milk) in the processing sectors. Export subsidies will increase because of Brazil's taxation regarding the price wedge compared to the world market.

[13] The original cut in intervention price for cattle was 20 %, but the proportion of goats, sheep and horses had to be taken into account.

[14] This approach is a rather rough estimate of the effects resulting from a decrease in intervention prices. Another possibility would be the introduction of an intervention price system like it is done by Van Meijl and Van Tongeren (2000) based on a concept of Surry (1992).

5.3 Impacts on production, prices and trade

Agenda 2000 implied some production changes (Table 8). Changes are higher in the EU than in all other regions but nevertheless, Latin America is influenced by Agenda 2000 as well. Admittedly the changes obtained through the simulations are small, but in the rest of MERCOSUR with a more important agricultural sector, changes are

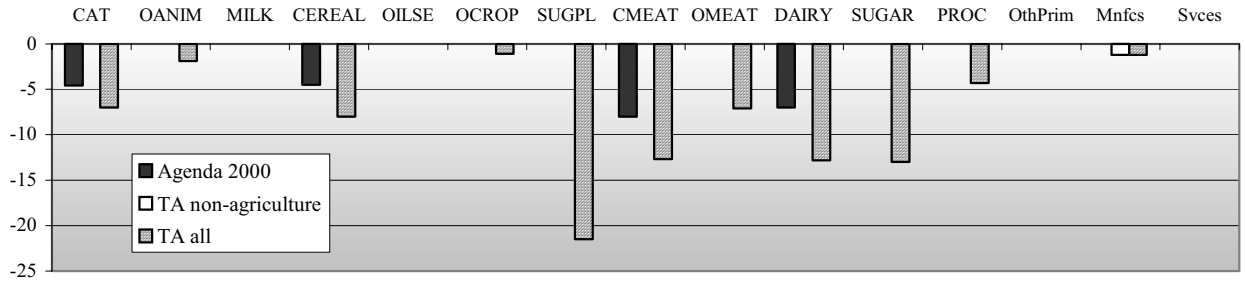


Fig. 1:
Change in European import protection concerning imports from Brazil (in percentage points)

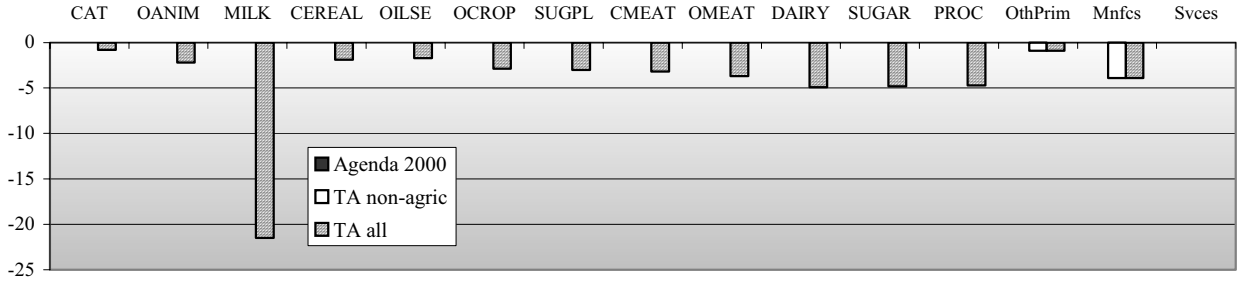


Fig. 2:
Change in Brazilian import protection concerning imports from the EU (in percentage points)

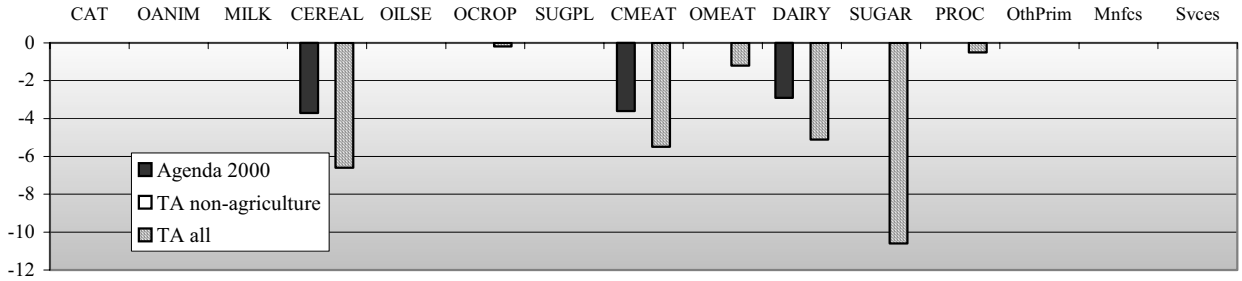


Fig. 3:
Change in European export subsidies concerning exports to Brazil (in percentage points)

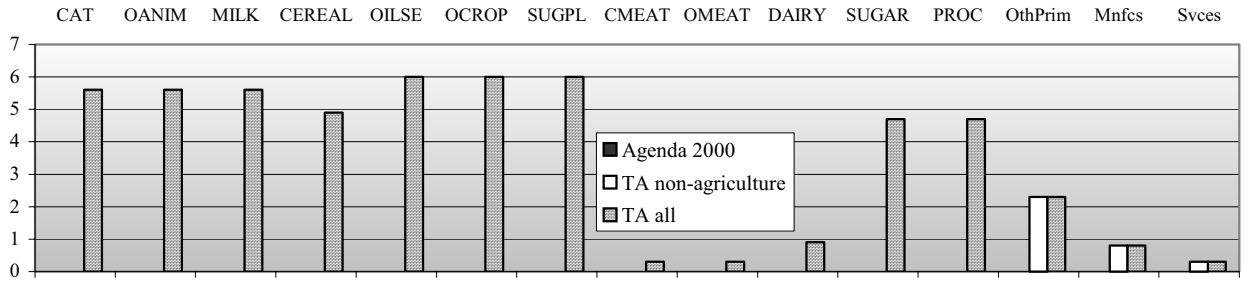


Fig. 4:
Change in Brazilian export subsidies concerning exports to the EU (indicating a negative change in export taxation) (in percentage points)

more significant than in Brazil. Within the EU, the most affected sectors were oilseeds with a decline in production of nearly 4 % and milk and dairy with an increase due to additional quotas. The reduction in oilseed production is caused by the cut of direct payments which leads to a decrease in competitiveness of oilseeds compared to cereals. Instead, cereal production is growing.

Within Europe, Agenda 2000 leads in most cases to a drop in supply prices. The most prominent exception is the oilseed sector with rising prices due to decreased production. The greatest price reduction in the agricultural primary sector is expected for cattle and milk. But one has to keep in mind that the EU milk production is regulated by a quota system. The decline in producer rent of milk is more pronounced, inducing the decline in the processing

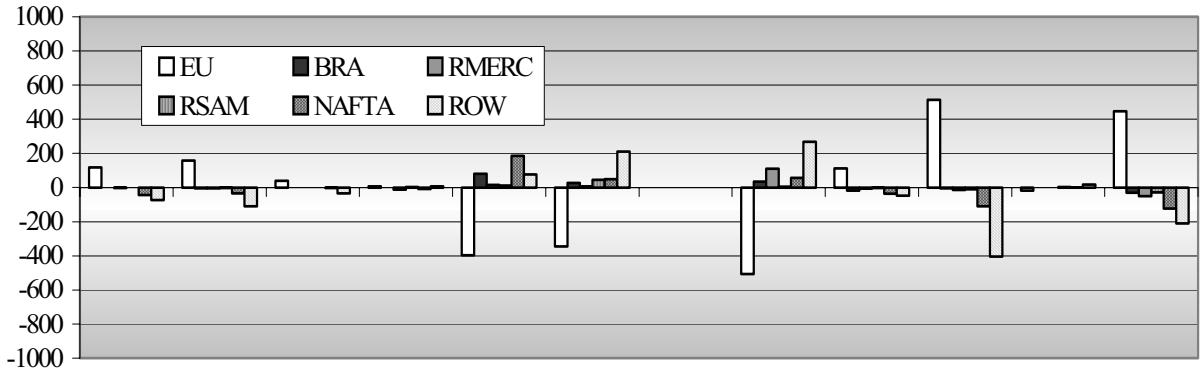


Fig. 5:
Impact of Agenda 2000 on the Trade Balance concerning agricultural products (Mill. '97 US$)

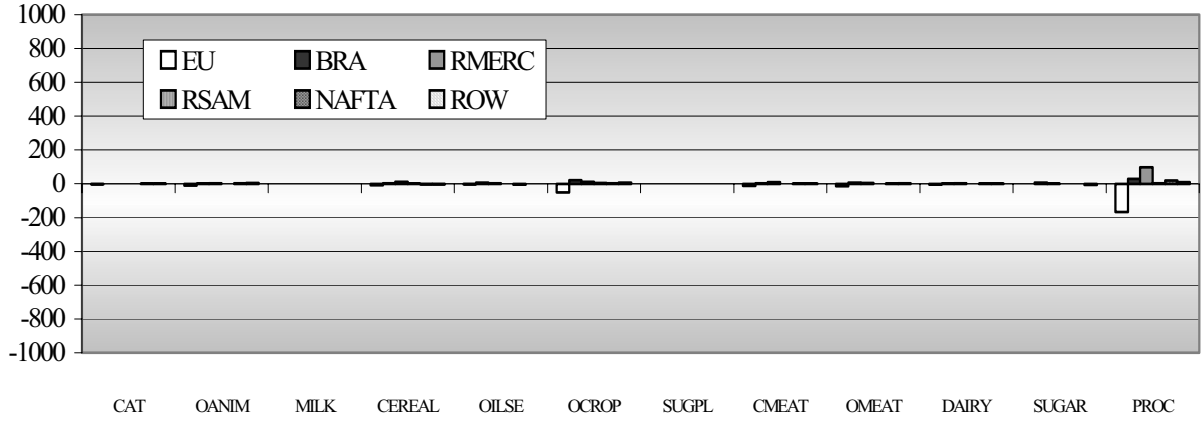


Fig. 6:
Impact of a Trade Agreement of Non-agricultural Products on the Trade Balance concerning agricultural products (Mill. '97 US$)

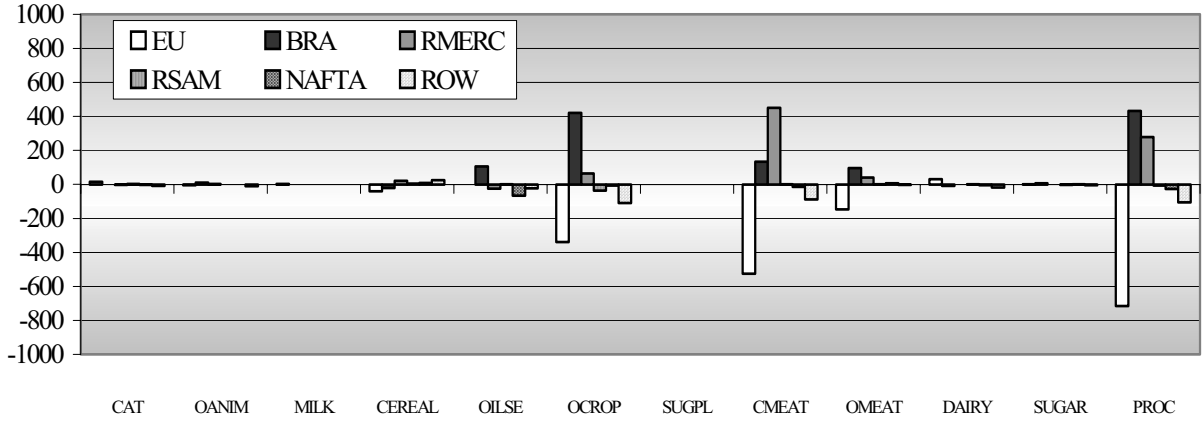


Fig. 7:
Impact of a Trade Agreement of All Goods and Services on the Trade Balance concerning agricultural products (Mill. '97 US$)

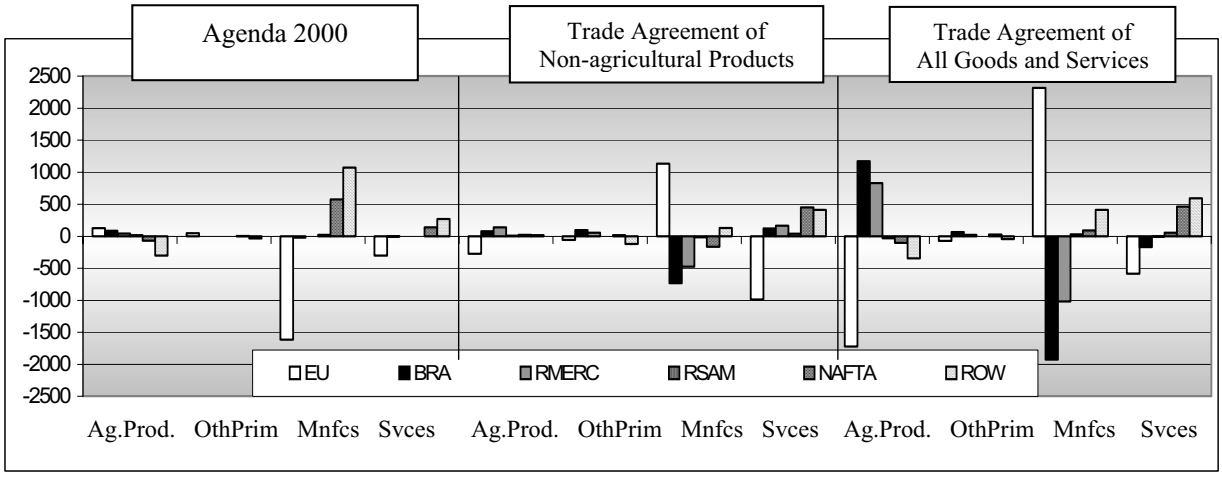


Fig. 8:
Impact of the 3 different policy scenarios on the Trade Balance concerning 4 product categories (Mill. '97 US$)

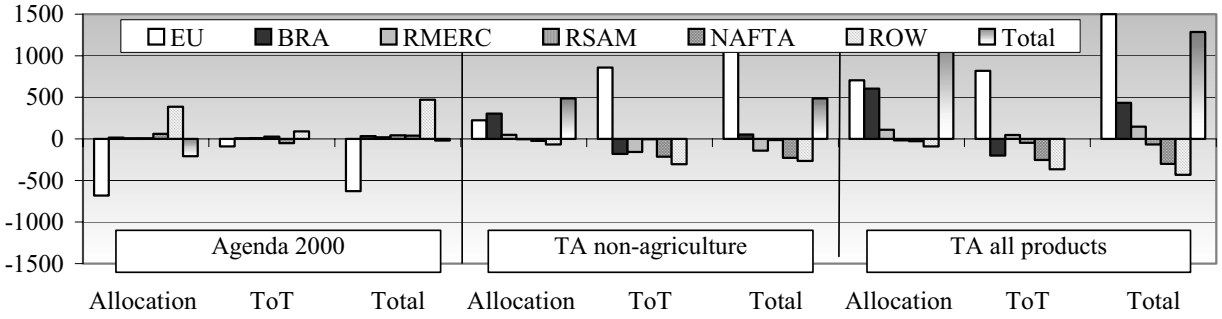


Fig. 9:
Development of Welfare (Mill. '97 US$)

sector (DAIRY). The supply price of cattle meat (CATMEAT) also shows a significant reduction.

Effects on third countries are minor but quite diverse in different sectors. Reduction in protection and a decline in production of the cattle sector induce rising supply prices and production increases in the rest of MERCOSUR and Brazil. The impact is even slightly more pronounced concerning cattle meat (Table 8). In the oilseed sector, the production decline in the EU causes an additional import requirement which might be met by Latin America and NAFTA (Figure 5). In Latin America the increased exports to the EU imply a minor increase in supply price. The effect on cattle and cattle meat production is greater in the rest of MERCOSUR than in Brazil. Regarding oilseeds it is just the other way around (Table 8).

A Trade Agreement on non-agricultural goods will only lead to very small effects (Figure 6). In the EU, this implies minor adjustment in production and prices because there will be only a small reduction in the import protection of manufactured goods. Anyhow, prices in the manufacturing sector as in some others are increasing very slightly. On the other hand, prices in Brazil and especially in the rest of MERCOSUR decline. The biggest reduction occurs in the manufactured goods sector subject to a bigger (absolute) cut in import protection compared the EU. The imports of manufactured goods from the EU to MERCOSUR go up as well as production and prices in MERCOSUR. Released factors move into agriculture increasing production in some sectors. The additionally produced agricultural goods are exported.

The overall picture changes when the Trade Agreement also includes agricultural products. In general, reduction of import protection of agricultural products is higher in the EU than in MERCOSUR. The same applies to export subsidies. In the case of Brazil, export support even rises because export taxation is reduced. Exceptions are, for example, oilseeds, other crops, and other animals (Table 8).

An effect on the EU are growing imports of agricultural products with emphasis on cattle, sugar, cattle meat and dairy (Figure 7). EU exports are characterised by a diverse development with decreases in the cereal, sugar and cattle meat sectors. Altogether, supply prices for agricultural goods are declining with the strongest cut in the cattle and cattle meat sectors. Agricultural production is curbed, but the manufacturing sector is expanding.

Table 8:
Change in production, supply prices and producer rents after the three different policy scenarios

	Agenda 2000						Trade Agreement non-agriculture						Trade agreement all products					
	EU	BRA	RMERC	RSAM	NAFTA	ROW	EU	BRA	RMERC	RSAM	NAFTA	ROW	EU	BRA	RMERC	RSAM	NAFTA	ROW
	impact on production (%)																	
CATTLE	-0.1	0.2	0.8	0	0	-0.1	0	0	0.1	0	0	0	-0.9	0.9	3.5	0	0	-0.1
OTHANIN	0.6	-0.1	-0.2	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	0	-0.2	0.7	0.4	0	0	0
MILK	2.4	-0.1	0.2	-0.2	-0.3	-0.4	0	0	0.1	0	0	0	0	-0.1	1.4	0	0	0
CEREAL	0.5	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.2	0	0	0	-0.3	0.5	0.4	0.1	0	0
OILSEEDS	-3.6	0.7	0.1	0.5	0.8	0.2	-0.1	0.1	0.1	0	0	0	-0.8	1.8	-0.2	0.1	0	0
OTHCROP	-0.3	0	0	0.1	0	0.1	-0.1	0	0.1	0	0	0	-0.5	1.1	0.3	-0.1	0	0
SUGPLANT	0	0	-0.1	0	0	0	0	0	0.1	0	0	0	0	0.1	0.3	0	0	0
CATMEAT	-0.8	0.3	0.9	0.1	0.1	0.5	0	0	0.1	0	0	0	-1.2	0.9	3.8	0	0	-0.1
OTHMEAT	0.4	-0.2	-0.1	0	-0.1	-0.2	0	0.1	0	0	0	0	-0.2	0.7	0.4	0	0	0
DAIRY	1.8	-0.1	-0.2	-0.6	-0.4	-1.3	0	0	0	0	0	0	0.1	-0.1	0	0	0	-0.1
SUGAR	0	0	-0.1	0	0	0	0	0.1	0.2	0	0	0	0	0.1	0.3	0	0	0
PROCESS	0.3	0	-0.1	-0.1	0	0	0	0	0.2	0	0	0	-0.2	0.6	0.4	0	0	0
OthPrimary	0	0	0	0	0	0	-0.1	0.3	0.2	0	0	0	0	-0.1	-0.2	0	0	0
Mnfcs	-0.1	0	0	0	0	0	0	-0.2	-0.2	0	0	0	0.1	-0.6	-0.6	0	0	0
Svces	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0	0
	impact on supply prices (%)																	
CATTLE	-4.9	0.1	0.2	0	0	-0.1	0	-0.1	-0.2	0	0	0	-0.2	0.9	1.5	-0.1	0	-0.1
OTHANIN	-1.0	0	0	0	0	-0.1	0	-0.1	-0.2	0	0	0	-0.1	0.9	0.8	-0.1	0	0
MILK	-4.1	0	0.1	0	0	-0.1	0	-0.2	-0.2	0	0	0	-0.1	0.7	1.1	-0.1	0	0
CEREAL	-3.9	0	0.1	0	0	-0.1	0	-0.1	-0.2	0	0	0	-0.1	0.8	0.9	-0.1	0	0
OILSEEDS	4.3	0.1	0.1	0.1	0	0	0	-0.1	-0.2	0	0	0	-0.3	1.0	0.9	-0.1	-0.1	-0.1
OTHCROP	0.4	0	0.1	0.1	0	0	0.1	-0.1	-0.2	0	0	0	-0.1	0.9	0.9	-0.1	0	-0.1
SUGPLANT	-0.2	0	0.1	0	0	-0.1	0.1	-0.1	-0.3	0	0	0	0	0.8	0.6	-0.1	0	-0.1
CATMEAT	-2.8	0	0.1	0	0	-0.1	0	-0.2	-0.3	0	0	0	-0.2	0.7	0.8	-0.1	0	0
OTHMEAT	-0.7	0	0.1	0	0	-0.1	0.1	-0.2	-0.2	0	0	0	-0.1	0.6	0.7	-0.1	0	0
DAIRY	-7.7	0	0	-0.1	0	-0.2	0	-0.2	-0.3	0	0	0	-0.2	0.5	0.4	-0.1	0	0
SUGAR	0.2	0	0	0	0	0	0	-0.2	-0.3	0	0	0	-0.3	0.5	0.2	-0.1	0	0
PROCESS	-0.3	0	0	0	0	0	0.1	-0.2	-0.3	0	0	0	-0.1	0.5	0.2	0	0	0
OthPrimary	0	0	0	0	0	0	0	0.1	-0.2	0	0	0	0	0.3	0	0	0	0
Mnfcs	0	0	0	0	0	0	0.1	-0.3	-0.5	0	0	0	0	0.2	-0.1	0	0	0
Svces	0	0	0	0	0	0	0.1	-0.2	-0.4	0	0	0	0	0.3	0.1	-0.1	0	0
	impact on producer rents (%)																	
MILK	-17.7	0	0	0	0	0	-0.1	0	0	0	0	0	-0.6	0	0	0	0	0
SUGPLANT	0.9	0	0	0	0	0	-0.3	0	0	0	0	0	-1.0	0	0	0	0	0

In MERCOSUR, supply prices are increasing due to rising exports and improving domestic demand. Price increases are higher in the primary agricultural production than in processing. But the sectors mostly affected are cattle, cattle meat, and oilseeds. Impacts are more marked in the rest of MERCOSUR than in Brazil. However, production factors needed in agriculture imply a reduction in manufacturing and partly in production of other primaries. The trade balance shows a negative development in the case of manufactured goods from Brazil and the rest of MERCOSUR (Figure 8).

5.4 Impacts on welfare

Effects of policy measures considered in the simulations on welfare are diverse (Figure 9). The range covers negative welfare effects of the Agenda 2000 to overall positive impacts of a Trade agreement. Welfare losses of Agenda 2000 are mainly provoked by allocation losses in the EU and only to a very small degree due to negative Terms of Trade. Smaller gains in welfare are supposed to occur in all other regions.

A Trade Agreement of non-agricultural goods between EU and MERCOSUR leads to a welfare gain. In this case, the most prominent effects are related to the Terms of Trade. A positive development in the Terms of Trade of the EU is combined with losses in the other regions, especially in the MERCOSUR. Allocation gains in Brazil could balance the negative influence of the Terms of Trade effect, but this doesn't happen in the case of rest of MERCOSUR.

Major welfare gains accompany a Trade agreement including all products. Cuts in trade protection and export subsidies of agricultural goods imply a better allocation of factors in the regions which are part of the Agreement and dominate the other effects. Additionally, the Terms of Trade of the EU and in the rest of MERCOSUR evolve positively. In contrast, Terms of Trade are negative for all other regions. But nevertheless, overall welfare in Brazil is expected to increase.

5.5 Qualification

This paper is our first attempt to look at the effects of a Trade Agreement between the EU and MERCOSUR in the presence of Agenda 2000. Even though a bundle of CAP instruments were covered, there is, however, space for additions and improvements. Therefore we would like to discuss some major points:

Generally, the simulations could be improved by the implementation of exogenous projections concerning e.g., GDP, population and technical change in all sectors and regions. Due to the main focus of the paper, we decided to exclude those developments, which otherwise would lead to further interactions between the sectors.

Thus we concentrate on some main effects only. We have conducted the analysis at a highly aggregated regional level. Additionally, the regional coverage of MERCOSUR of the GTAP database does not correspond exactly with the real trading block. But with Brazil and Argentina we have included the economically most important regions. Further disaggregation of the rest of MERCOSUR in the GTAP database would be desirable to improve the results. So far, the base year 1997 was unaffected by erratic disruptions caused by BSE in the EU, FMD in the EU and MERCOSUR and the monetary crisis in Argentina. To the degree that these events have induced changes in general economic attitudes the simulation results can be distorted.

Additionally, the inclusion of CAP instruments could be even more detailed than in our extended GTAP model, for example by modelling intervention prices or Tariff Rate Quotas (TRQs) in bilateral trade. We have also not been able to deal with other important economic aspects like the impact of investment flows from the EU to MERCOSUR, which might result in productivity being stronger than anticipated. Finally, we did not address the issue of a change of inflation in our paper.

6 Conclusion

The simulation results indicate that the implementation of the Agenda 2000 mainly leads to an EU internal adjustment while its positive welfare effects on the rest of the World are quite disperse. Regarding the simulation results achieved by the Trade Agreement scenario designs corroborate the well known sensitivity of agricultural trade. In particular, the results of the trade balance show how diverse the economic structures of the trade partners are. From the MERCOSUR countries, specially the smaller members, point of view, it will be politically difficult to assent to a Trade Agreement that excludes the agricultural sector. In practice the smaller members have not much capacity to reallocate production factors. Since Brazil is the MERCOSUR member with the most complex economy, the structural adjustment to reduced protection would result, as theory suggests, in very favourable allocation effects. Important to note is the fact that the starting levels of protection determine the absolute range of relative reduction simulated here. Within the agricultural sector the most prominent positive effects of the Trade Agreement with the EU are likely to arise in the meat sector, specially beef. But also the dairy and the sugar sectors would be positively affected.

7 Acknowledgement

Thanks are due to Dirk Manegold and Friedrich-Wilhelm Probst for helpful comments and suggestions on earlier drafts of this paper.

Literature

Bach CF, Frandsen SE (1998) European integration and the Common Agricultural Policy. Koebnhavn : SJFI, SJFI-working paper 1998/1

Bach CF, Frandsen SE, Jensen HG (2000) Agricultural and economic-wide effects of European enlargement : modelling the Common Agricultural Policy. J Agric Econ 51(1/2):162-180

Blake AT, Rayner AJ, Reed GV (1998) A CGE analysis of agricultural liberalisation : the Uruguay Round and CAP Reform. In: First Annual Conference on Global Trade Analysis, Purdue University, West Lafayette, June 8-10, 1998

Brockmeier M (im Druck) Ökonomische Auswirkungen der EU-Osterweiterung auf den Agrar- und Ernährungssektor der EU15 - Simulationen auf der Basis eines Allgemeinen Gleichgewichtsmodells.

Brockmeier M, Herok CA, Salamon P (2001) Technical and institutional changes in an enlarged EU : welfare effects for old and new members with a focus on the agri-food chain ; paper prepared for the Forth Annual Conference on Global Economic Analysis, Purdue University, June 27 - June 29, 2001 [online]. Braunschweig : FAL, 20 p, zu finden in <http:// www.agecon.purdue.edu/gtap/resources/download/359.doc> [zitiert am 18.10.2001]

Brockmeier M, Hertel TW, Swaminathan PV (1997) Economywide analysis of alternative strategies to integrate Central and Eastern European Countries into the European Union. West Lafayette, USA : Selbstverl, Working Paper / Purdue University, Lafayette, Ind

CAP Monitor (2002) Regularly updated loose-leaf-collection. Tunbridge Wells, Kent : Agra Europe

European Commission (1998) 27th Financial report on the European Agricultural Guidance and Guarantee Fund (EAGGF) / Guarantee Section, Brussels

European Commission (2000) Agriculture in the European Union : statistical and economic information 1999 : Tab 3.1.1. Luxembourg : Office for official Publications of the European Communities

EUROSTAT (several issues) Intra- and extra-EU trade (annual data–combined nomenclature).

FAOStat [online] (2002) zu finden in <http://apps.fao.org/page/collections > [zitiert im Oktober 2002]

Gohin A, Guyomard H, Le Mouël C (2000) AGE assessment of CAP reform : implications of policy modelling choices. In: Third Annual Conference on Global Trade Analysis, Melbourne, Australia, June 27-30, 2000

Hertel TW (ed) (1997) Global trade analysis : modelling and applications. Cambridge : Cambridge Univ Press, 403 p

Kilkenny M (1991) Computable general equilibrium modelling of agricultural policies : documentation of the 30-Sector FPGE GAMS Model of the United States. Washington : US Department of Agriculture, Staff report AGES 9125

Kurzweil M (2001) Agricultural trade between the European Union and the MERCOSUR countries. 123 p, Berlin : Humboldt Univ [Dissertation]

Lampe M von (1999) A modeling concept for the long-term projection and simulation of agricultural world market developments : World Agricultural Trade Simulation Model WATSIM. Aachen : Shaker, 154 p, Studien zur Agrar- und Umweltpolitik [Dissertation]

Ledebur O von (2000) Der Agraraußenhandel der MERCOSUL-Länder : Handelsliberalisierung, regionale und überregionale Integration. Kiel : Wissenschaftsverl Vauk, 220 p, Agrarökonomische Monographien und Sammelwerke [Dissertation]

Liapis PS, Tsigas M (1998) CEEC accession to the EU : a general equilibrium analysis. In: Burfisher ME, Jones EA (eds) Regional trade agreements and US agriculture : an economic research service report. Washington, DC : US Deportment of Agriculture, 144 p, Agricultural economic report 771

Malcom G (1998) Adjusting tax rates in the GTAP data base.West Lafayette, USA : GTAP, Technical Paper / Global Trade Analysis Project 12, zu finden in: <http://www.agecon. purdue. edu/ gtap/resources>

Meijl H van, Tongeren F van (2000) The Agenda 2000 CAP reform, world prices and URAA GATT-WTO export constraints : paper prepared for the Third Annual Conference on Global Economic Analysis, Melbourne

Nielsen C (1999a) Enlargement of the European Union. Koebnhavn : SJFI, SJFI rapport 106

Nielsen C (1999b) EU enlargement and the Common Agricultural Policy : modelling issues. Koebnhavn : SJFI, SJFI-working paper 1999/7

Surry Y (1992) Un modèle de transmission des prix garantis des céréales dans la Communauté économique européenne. Cahiers d'économie et sociologie rurales 22:10-35