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Volume 1: Main results

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Abbreviations and Acronyms

ACP	African Caribbean and Pacific
AVE	*ad valorem* equivalent
bn	billion
CES	constant elasticity of substitution
CET	constant elasticity of transformation
CGE	computable general equilibrium
DDA	Doha Development Agenda
EBA	'everything but arms' (a generalised system of preferences implemented by the EU allowing duty-free access to most products from LDCs)
EU10	EU members that acceded in 2004
EU12	EU members that acceded in 2004 and 2007 ('new Member States')
EU15	EU defined by its membership on 1 Jan 1995
EU27	EU defined by its membership since 2007 (EU15 + EU12)
FTA	free trade agreement
FTAA	Free Trade Area of the Americas
GTAP	Global Trade Analysis Project
ha	hectare
HS	Harmonised System (tariff nomenclature)
IDB	Inter-American Development Bank
LDC	least developed country
MFN	most favoured nation
mn	million
NAMA	market access for non-agricultural products
NUTS 2	Nomenclature of Territorial Units for Statistics (*nomenclature d'unités territoriales statistiques*), Level 2
PE	partial equilibrium
RAM	recently acceded member (of the WTO)
RoW	'rest of the world'
SAM	social accounting matrix
STATA	(data analysis and statistical software package)
SVE	small and vulnerable economy
TARIC	online tariff database of the EU (*Tarif Intégré de la Communauté*)
TFP	total factor productivity
TRIPS	trade-related aspects of intellectual property rights
TRQ	tariff rate quota
UAA	utilised agricultural area
VA	value added
WTO	World Trade Organisation

All units of weight in the report are metric; 'ton' denotes a metric ton (1,000 kilograms)

Executive Summary

This report presents the simulations made with two different models of two alternative hypothetical versions of a bilateral free trade agreement between the EU and Mercosur. The CGE model, GLOBE, simulates the economy-wide impacts of the trade policy changes involving all sectors of the two regional blocks. The partial equilibrium model, CAPRI, simulates only the impacts generated by changes in agricultural trade policy and incurred by the agricultural sectors of the two regions. However, CAPRI considers individual agricultural products in more detail and can generate the territorial distribution of their production within the EU at the NUTS 2 regional level.

Five hypothetical scenarios are simulated, and are compared with the reference ('no-change') scenario for the year 2020. The EU comprises the current 27 Member States and Mercosur is composed of its current members, Argentina, Brazil, Paraguay and Uruguay.

The first scenario investigated is based on the EU negotiating offer made to the countries of Mercosur in 2004, whereas the second scenario reflects the Mercosur request of 2006. These scenarios involve tariff abolition or reduction by both parties, and extensions to bilateral TRQs on the part of the EU. The extent of these concessions depends on the scenario.

The other three scenarios all assume that an agreement has been reached in the Doha Round multilateral negotiations, based on the revised draft modalities presented to the WTO Agriculture Committee in December 2008. The third scenario simulates a Doha Round agreement as the *only* set of trade policy changes with respect to the reference scenario. The fourth scenario looks at the impacts of the EU's proposal, but with smaller TRQ increases compared to its no-Doha version, in this post-Doha context. The fifth scenario assumes that the deal proposed by Mercosur is implemented, again in the post-Doha setting. The details of Mercosur's request are independent of whether a Doha Round agreement is in place or not.

It should be borne in mind that the version of a Doha Round agreement simulated by GLOBE does not allow the developed countries to exempt any sensitive products from the standard Doha tariff cuts. On the other hand, the CAPRI post-Doha simulations assume that the sensitive products of the developed countries retain some extra protection but that they are required to open new multilateral TRQs or extend existing ones in order to grant some additional controlled market access for these products.

The simulations show that, as far as agriculture is concerned, there are significant losses to EU producers and gains to Mercosur producers in all scenarios, including the Doha-only scenario. These effects are more pronounced under the scenarios based on the Mercosur request. GLOBE results show that the gains in the EU manufacturing sector outweigh the losses to the EU agrifood sector, leading to an overall increase in GDP. This increase ranges from €8.9 billion (first scenario) to €66.0 billion (fifth scenario). Non-agrifood production in Mercosur, particularly in the manufacturing sector, falls in all scenarios.

CAPRI simulates the welfare changes generated by the agricultural sector only (without food processing), including losses to agricultural producers, gains in consumer surplus due to any food price

falls and any changes in the government budget triggered by the policy changes. The CAPRI results indicate very small falls in total EU welfare for the two scenarios without a Doha-Round agreement, and slightly larger increases (0.01-0.02%) for the post-Doha scenarios. The largest increase in EU welfare (0.02%) occurs for the scenario depicting the EU offer in the post-Doha context.

However, EU agricultural producers lose income in all scenarios and their losses increase progressively from scenario to scenario. The total loss to Eu agricultural producers for the scenario corresponding to Mercosur's request post-Doha is €7.75 billion, or 3.21%, relative to the reference scenario. By contrast, EU food consumers have a welfare gain. In Mercosur, food consumers and the manufacturing sector suffer losses. Although this is not shown by either model, it is clear that on a per capita basis the losses to EU agricultural producers far outweigh the gains to those accruing in EU manufacturing (GLOBE) or to EU food consumers (CAPRI).

It is important to note that underlying this stylised breakdown of gains and losses to various stakeholder groups it is assumed that higher returns and price changes arising from the changes in trade policy are passed on by trading companies and the food supply chain to primary producers and consumers, respectively. Assumptions about who captures the substantial rents made possible by the tariff-rate quotas granted by the EU for market access of agricultural products are also relevant to these bottom-line conclusions.

The results of both models suggest that, for each assumption about the state of the multilateral trading arrangements, the greater part of these effects is already achieved in the scenarios depicting the EU offer. The effect of the Mercosur request in each case is to marginally increase the welfare gains, compared with the EU offer, while accentuating the losses to EU agriculture and the gains to Mercosur agricultural exporters. In the terminology of the economist, the EU offer appears to achieve most of the potential efficiency gains, whilst the additional impact of the Mercosur request is largely to deepen the distributional changes. In the Doha-only scenario, the EU welfare changes are comparatively small in the CAPRI simulations, whereas with GLOBE a Doha Round agreement alone already achieves much of what can be expected with a Doha Agreement *and* a bilateral one. This difference is explained largely because, first, GLOBE also models changes in the non-agricultural sector and, second, does not recognise sensitive products for agricultural commodities. The CAPRI simulations assume the opposite on both counts.

At the level of individual commodities and commodity sectors, both models project a strong increase in EU imports from Mercosur of meat, particularly beef, in all the scenarios. The smallest increase for beef imports (5 thousand tons) occurs for the EU offer with no Doha agreement, and it rises to around a quarter of a million tons with the Mercosur request. Beef imports would be 288 thousand tons higher than in the reference scenario with a Doha agreement only, and as much as 524 thousand tons above the reference scenario with the Mercosur request post-Doha. In this last case, EU beef production is lower by around 280 thousand tons, with a loss valued at €4.6 billion. The total loss to the meat sector in this scenario is over €5.8 billion, of which €0.8 billion occurs in the poultry sector. The total volume of meat production lost is 600 thousand tons. Despite the strong impacts on the beef sector in this scenario, EU meat exports to third country destinations increase, whilst Mercosur's exports of beef to non-EU destinations decline.

EU imports of vegetables and fruit from Mercosur are also higher with trade concessions. These impacts are comparable across all the scenarios involving a bilateral trade agreement, since the negotiating positions of both trading blocks envisage the abolition of tariffs on these items. The import increase is dominated by the increase for citrus and other fruits, and other vegetables. The models are not unanimous regarding the cereals sector: although they both predict very little change in wheat imports, CAPRI

simulates strong increases for EU exports of wheat to Mercosur in all scenarios with a bilateral agreement. This result is not matched in the GLOBE results.

The models also differ regarding sugar imports, which are higher in the GLOBE simulations for the post-Doha scenarios whereas in CAPRI they fall by modest amounts. Both models predict a 100% fill-rate for the sugar TRQ even at the higher level requested by Mercosur. Moreover, they both indicate very large volumes of out-of-quota sugar imports in all five scenarios. This means that at the margin sugar imports almost certainly face the MFN tariff, and will not be influenced by an increase in the TRQ ceiling for intra-marginal imports. However, it is striking that with CAPRI, EU imports of sugar in *all* scenarios are 0.55-1.00 million tons higher than they are in GLOBE (in the reference scenario, CAPRI simulates sugar imports from Mercosur to be around 1.12 million tons higher than the GLOBE figure). This indicates that, according to CAPRI, sugar imports from Mercosur were already at a higher level before the trade liberalisation began. The models also diverge from each other regarding the impacts of sugar trade with Mercosur on EU domestic production. In this respect, each model is consistent with its own prediction of what happens to the EU's sugar imports: GLOBE predicts that EU sugar production falls by over 12% in the two post-Doha scenarios with a bilateral trade agreement, whereas in CAPRI EU production increases by negligible amounts. It is worth recalling that in the GLOBE post-Doha runs, no sensitive products are assumed. Therefore, tariffs for all products including sugar receive the standard tariff cut. Hence, the change in access to the EU sugar market for Mercosur's out-of-quota sugar imports is more favourable in GLOBE than in CAPRI, and this can explain at least part of the greater responsiveness of this import flow.

Both models predict that the TRQs for sugar are filled under all scenarios, and for rice for all scenarios except Doha-only (there is no bilateral rice TRQ in this scenario). However, whereas GLOBE predicts that the TRQ for other cereals would be filled under all scenarios with a bilateral agreement, and the one for wheat filled in the two scenarios corresponding to the EU offer, CAPRI simulations show significant under-fill for both these TRQs under all relevant scenarios.

It is less easy to compare the fill rates for the various meat TRQs between the models, since GLOBE combines beef with sheep and goat meat in one of its meat categories, and aggregates pork and poultry together in the other meat category, whereas CAPRI treats these meat products separately. However, to the extent that the results can be compared, they appear to agree that TRQs for beef are filled in all scenarios, but not those for sheep meat. With GLOBE, the aggregated TRQ for pork and poultry meat is always filled, but in CAPRI the individual TRQs for pork and poultry meat are both filled separately only in the fourth scenario, and in addition the poultry meat TRQ is filled in the Doha-only scenario. Otherwise, both these meats fail to achieve a 100% fill rate.

As for dairy products, GLOBE deals with these commodities as an aggregate category and shows that their combined TRQ is not filled under any of the scenarios. By contrast, CAPRI results indicate that the small TRQ for butter offered by the EU would be filled, but that the much larger one requested by Mercosur would fall just short of being filled. The fill rates for the other separate dairy TRQs (milk powder and cheese), cannot be modelled in CAPRI for the reason in section 7.1. Overall, it has to be concluded that, although both models suggest that overall the TRQ limits requested by Mercosur appear to be in excess of what Mercosur trade could effectively fulfil by 2020, this suggestion receives more support for more products in the CAPRI results than in the GLOBE results.

The pattern for oilseeds and oils shows that, with more liberalised trade between the two blocks, the EU's imports of oilseeds would be lower, but vegetable oil imports would increase considerably. EU

exports of oilseeds and vegetable oils are very low in the reference scenario, and hence export adjustments remain small in volume. The changes in EU imports of oilseeds and oils largely involve soy beans and soya oil, whereas the adjustments in EU production in the oilseed and vegetable oil sectors concern rape seed and sunflower seed. There is a substantial increase in exports of olive oil in all scenarios.

It is important to note that changes in the cereals and oilseeds sectors are the combined effect of direct adjustments due to increased market access and indirect impacts through changes in feed use as a result of the large impacts in the livestock sectors of the two trade blocks.

The balance sheets for the main products indicate that a bilateral agreement lowers EU meat production but increases EU meat consumption. In the Mercosur-only scenarios, all the expansion comes from poultry meat, whereas in the post-Doha context, there is a shift towards both beef and poultry and away from pork and sheep meat. Mercosur meat consumption is lower in all scenarios because of higher consumer prices. The same pattern is observed for citrus fruit: consumption increases in the EU despite lower production but it is lower in Mercosur.

GLOBE provides evidence on changes in economy-wide factor incomes in the different scenarios. The pattern of the changes is consistent across the five scenarios, with the size of the changes depending on the degree of trade liberalisation. In both EU15 and EU12, factor incomes increase by very small percentages except for land, whose total income falls consistently. These changes are all smallest in the scenarios with no Doha Round agreement, increase substantially in the Doha-only scenario, and are largest for the Mercosur request in the post-Doha context. However, despite increases at the level of the whole economy in total factor income for unskilled and skilled labour, and for capital, the income of these factors *employed within agriculture* falls, and more steeply in EU15 than in EU12.

All factor incomes in Mercosur have larger percentage gains than in the EU. For each of the factors, the highest percentage gains occur when the factor concerned is employed in agriculture. However, it is notable that the returns to labour and capital *employed in the food industry* are systematically lower under the Mercosur request than for the EU offer.

One indicator of the economic impact on agriculture at Member State level is revenue from all agricultural activities per hectare of utilised agricultural area. This measure has been used to compare the impacts of the five policy scenarios. Under the scenarios without a Doha Round agreement, the impacts are negative for all except a few of the New Member States (seven with the EU offer, five with the Mercosur request). Ten Member States have reductions of between 1 and 2%, but Luxembourg and Ireland experience deeper reductions. In the post-Doha context, these impacts are all larger, and more negative. A small number of Member States, in particular the Baltic States, Hungary and the Czech Republic, experience only minor downward impacts on agricultural revenue. However, 19 Member States have declines of more than 2% under the Mercosur request. Ireland, the United Kingdom, Luxembourg and Austria all register falls of 4% or more.

At NUTS 2 level, the distribution of the production and revenue falls for individual products depends both on the pattern of specialisation for the product and the regional competitive advantage in its production. The largest percentage falls in revenue are observed for regions specialising in livestock production. In a few regions, falls in beef production are as much as 9% and the decrease in revenue from beef exceeds 20% in some regions.

In summary, the model results indicate that the economic losses and the adjustment pressures arising from a bilateral trade agreement between the EU and the countries of Mercosur would, as far as the EU is concerned, fall very heavily on the agricultural sector. The gains to other sectors would be widely diffused and, given the very small magnitude of these gains relative to the EU economy as a whole, would be easily absorbed without imposing an adjustment burden. The aggregate welfare changes for the EU, whether measured across the whole economy or on a partial basis with respect to the activities agricultural production and food consumption, would be small. However, the trade-off involved in the redistribution of income between agriculture and the rest of the economy is steeper in the scenarios depicting the Mercosur request compared with those involving the EU offer. The Mercosur request provokes a much greater downward impact on agriculture whereas the additional gains elsewhere (to non-agrifood sectors or to consumers) are relatively smaller.

1. Introduction

This study explores the impact of a free trade agreement between the EU and the countries of Mercosur, subject to different assumptions about the content of such an agreement and about the world trade context in which an agreement might be implemented. Two alternative possible states of the world trade context are envisaged, namely, a state in which there is no Doha Round agreement and hence multilateral trading rules remain as at present, and one in which a Doha Round agreement has been reached and is implemented. The alternative assumptions regarding the final content of a bilateral free trade agreement are based on the latest formally declared positions of the two negotiating blocks. The following paragraphs briefly outline recent developments in the two sets of negotiations, namely the multilateral Doha Round negotiations within the WTO and the bilateral trade negotiations between the EU and Mercosur.

The Agreement on Agriculture that formed part of the WTO's Uruguay Round Agreement (1994) contained a commitment to initiate new negotiations for continuing the reform of agricultural trade rules one year before the end of the implementation period of the Uruguay Round. Thus, the assumption that agriculture would be one of the prominent items in the next round of multilateral trade talks were built into expectations from the outset.

Multilateral talks on agriculture began in early 2000. The new round of multilateral trade negotiations was officially launched in November 2001 at the Fourth Ministerial Conference in Doha, Qatar, and was thereafter known as the Doha Round. Its mandate and work programme were later dubbed the Doha Development Agenda in explicit recognition of the formal undertaking to give high prominence to the trade-related issues and problems affecting the WTO's developing country members. Among the headings other than agriculture to be treated in the negotiations (21 in all) are services, market access for non-agricultural products (NAMA), trade-related aspects of intellectual property rights (TRIPS), trade and investment, and trade facilitation.

Regarding agriculture, the first milestone was an agreement on the framework for the negotiations in August 2004. Since then, the negotiations have continued at an uneven pace, punctuated by key documents produced by the chairman of the Agriculture Committee confirming the common ground reached up to that point and containing proposals for moving forward to consensus on outstanding issues. The scenario assuming a Doha Round agreement that is simulated in this study is based on the latest of these documents containing proposals, or "modalities"[1], for concluding the negotiations and reaching agreement on those issues related to agriculture.

The current outstanding issues concerning agriculture in the multilateral context include those relating to provisions for developed countries to retain higher rates of protection for 'sensitive products', details of the tariff-reduction formula to be used, preference erosion, tariff escalation and a number of smaller issues of special importance to various WTO members. Although the 21 topics are negotiated by separate committees and are moving ahead at different rates, many member countries – particularly large, developed countries with a wide range of relevant interests - are potentially in a position to trade off concessions made in one area

1 WTO (2008). Revised Draft Modalities for Agriculture, TN/AG/W/4/Rev.4, 6 December 2008.

against those made elsewhere. A stylised example is the potential trade-off between access to agricultural markets in developed countries and access to markets for manufactures and services in developing countries. Although the potential for this kind of trade-off can in theory bring a multilateral agreement within closer reach, it can in practice drastically slow down progress in one area if other areas are lagging behind.

Given the slow progress in the current multilateral trade negotiating arena, various countries and trading blocks have been continuing to press ahead with bilateral or regional trade agreements where consensus on a smaller number of issues and with a smaller number of negotiating partners is in theory more attainable. The EU has continued with its programme of establishing preferential trade agreements with various third countries, and the ongoing negotiations with the countries of Mercosur are part of this initiative.

Negotiations for a bilateral preferential trade agreement between the EU and Mercosur began in 1999 in the context of the EU-Mercosur Inter-regional Framework Cooperation Agreement (Council Decision 1999/279/EC). The aim of the negotiations was to move towards free trade between the two regions whilst respecting WTO commitments, involving all sectors but also taking account of sensitive areas.

After exchanging initial proposals, which were further developed after exploring various sensitive issues, negotiations were suspended in October 2004. In particular, Mercosur found the EU's offer on market access for key agricultural goods to be insufficient, whereas the EU expected greater concessions from Mercosur in sectors like textiles, footwear and vehicles. Although the closing EU and Mercosur positions concerning trade in goods, which provide the inspiration for the scenarios examined in this study, evolved considerably from the opening offers presented in 2001, they were still not close enough to finalise a deal.[2]

Following an informal dialogue between the two parties during 2009 and 2010, the Commission recommended a relaunch of the negotiations, and this was agreed at the Madrid summit of May 2010. The coverage and level of ambition (all sectors, single undertaking etc) enshrined in the framework for the previous negotiations are maintained. In addition, the context is broadened to include issues relating to sustainable development[3], and provisions for greater cooperation with the Andean Countries (Peru and Colombia) and countries of Central America and the Caribbean are also envisaged.

Whether or not a Doha Round agreement is implemented affects the impacts of a bilateral EU-Mercosur free trade agreement for two reasons. First, the EU is offering smaller increases in access to certain agricultural markets if general concessions within the framework of a Doha Round have already been applied (this affects the scenarios based on the EU's offer). Second, the additional impact of given percentage reductions in tariffs under a bilateral agreement will be less if these reductions are applied to tariff levels that have already been eroded by a Doha Round agreement. Hence it is important to assess the impacts of the bilateral agreement in both the 'no-Doha' and the 'post-Doha' contexts.

The interaction between several alternative bilateral agreements and the two possibilities regarding the success or failure of the Doha Round leads to a total of five scenarios to be explored and compared with the reference scenario, which assumes that the status quo is maintained regarding both bilateral and multilateral trading arrangements.

2 Apart from the issues related to goods, there were also disagreements regarding services, investments, government procurement and intellectual property (see Zago de Azevedo and Henz, 2006).

3 For a sustainability impact assessment of a prospective EU-Mercosur trade agreement, see http://trade.ec.europa.eu/doclib/docs/2008/november/tradoc_141394.pdf

2. Brief review of some previous studies

The recent literature contains some studies that have simulated a bilateral trade agreement between EU and Mercosur with similar modelling tools to those used in this study. It is clear that, since the background circumstances have changed somewhat over the last 10 years, and the details of the assumed scenarios vary considerably, close comparisons of the quantitative results are not appropriate. This is particularly true of our results for the post-Doha scenarios, since none of the studies reviewed below assume that a Doha Round agreement has been completed. Nonetheless, these studies can help to form expectations about directions of change and orders of magnitude, and they reveal some interesting implications of various model features. A selection of the most relevant previous work is reviewed in this section.

Diao, Díaz-Bonilla and Robinson (2003) used a global computable general equilibrium (CGE) model, quite similar to the GLOBE model used in this study, to examine the trade and income effects of a free trade area formed by the EU and Mercosur. The results are not closely comparable with those of this study for many reasons, including differences in:

- regional grouping (the EU is EU15 and Mercosur includes Chile and Bolivia)
- degree of disaggregation (38 products and 29 countries/regions are distinguished)
- 'baseline' assumptions[4]
- closure rules (in particular, the model allows total factor productivity (TFP) to be endogenously determined, which to the extent that TFP is stimulated by a trade deal[5], boosts output through each sector's value-added function)
- scenarios (full tariff liberalisation and unrestricted market access on both sides).

Nonetheless, the general conclusions are interesting to compare with those presented in this study. Full trade liberalisation between Mercosur and the EU increases real GDP in both blocks: the increase in Mercosur countries ranges from 1.3% in Uruguay to 4.4% in Argentina, with an even larger increase (5.4%) in the rest of South America. The increase in the EU is 0.34%. There is very little impact on non-participant third countries. Total EU exports and imports increase by 0.5-0.6%, whereas these increases are much higher for some Mercosur countries: 7.5% and 4.2% respectively for Brazil, 8.1% and 7.8% respectively for Argentina. Total trade between the EU and Mercosur is 1.2% higher.[6] There are strong employment effects in Mercosur and the rest of South America, for both unskilled and skilled labour.

Flôres and Watanuki (2008) used a purpose-built CGE model (AMIDA) to analyse the impact of Mercosur's membership of a series of free trade areas one by one (with the US, EU25, Mexico, the Andean Community, a full FTA in the Americas and one with China), AMIDA is a multi-region static CGE model with 25 commodity sectors (of which 6 are in agriculture and 5 in agribusiness), 10 country or regional

4 Although the scenario simulations are not reported as relating to a particular year or time period, the model is calibrated to base year 1997 using the GTAP database version 5, and hence the underlying assumptions relate to what is by now a 'historical' period.

5 It is assumed that trade liberalisation affects productivity through learning-by-doing, access to new knowledge, and scale effects; technological spillovers due to greater availability of better capital and intermediate goods for production; and increased competition in previously protected domestic markets. For discussion of the links between trade, technology and productivity, see for example Balassa (1989) or Romer (1994); for CGE applications with productivity linked to trade see de Melo and Robinson (1995) or Diao and Somwaru (2001).

6 USD 27 billion at 1997 prices.

blocks and 3 fixed factors. Its database is compiled from a variety of sources including COMTRADE, Eurostat, OECD, TRAINS, USITC, the World Bank, the IDB and GTAP, and the base year is 2001. In certain sectors it allows for economies of scale and for imperfect competition at firm level (while maintaining the assumption of perfect competition in other sectors), using parameters characterising the scale economies and the imperfectly competitive behaviour that have been estimated from recent data.

There is no explicit account of how, or whether, TRQs are modelled in the baseline (they disappear in the full bilateral liberalisation scenario assumed for the EU25 free trade area).

In the EU-Mercosur agreement scenario, total Mercosur exports to EU25 increase by more than the increase in imports from EU25. Output expands in all Mercosur's agricultural commodity sectors (except oilseeds), but by far the largest increases (of over 20%) are in the bovine and poultry meat sectors (classified under agribusiness), whereas beverage and tobacco output falls. In the heavy manufacturing sector, there are large falls in the Mercosur sectors producing motor vehicles and other transport equipment (of 14-16%). The authors conclude that including imperfect competition in the model has led to less 'drastic' outcomes than would otherwise have been the case, and consider that the model would be improved by allowing for imperfect competition also in the agribusiness sectors.

In contrast to Diao *et al.* (2004), Flôres and Watanuki (2008) find some interesting third-country impacts of a free trade area with EU25. The authors summarise the overall outcome as one where Mercosur exports are strongly channelled to the EU market such that Mercosur itself has to import more goods from *all* regions, whilst its exports to other third-country regions mostly fall.

The study by Kirkpatrick and George (2009) also uses a (unnamed) CGE model as the tool for identifying the sustainability impacts of a potential EU-Mercosur free trade agreement. Since the properties of the model used are not reported in the final study, but a warning is given that the database used relates to 2001 and may no longer reflect current realities, we do not analyse the main results here. However, it is worth reporting the overall conclusion, namely that "the economic impacts of the proposed EU-Mercosur free trade area are likely to be positive overall in both Mercosur and the EU. The projected economic welfare gain is fairly small (except in Paraguay), but additional gains can be expected from dynamic effects whereby productivity is enhanced through greater competition and economies of scale" (p.*xv*). However, economic gains could be accompanied by "increased environmental pressures", principally in the Mercosur countries, and lead to "adverse social adjustments costs", again particularly in the Mercosur countries.

Weissleder *et al.* (2008) report the results of simulations performed with an earlier version of the CAPRI model to investigate four scenarios embodying various degrees of bilateral trade liberalisation for agricultural products between EU25 and Mercosur-4. The baseline incorporates all changes agreed for the CAP as of 2003, and the AMAD database for 2004 was used for tariff data with applied rates after 2004 set to the minimum of the bound rate and the 2004 rate. The baseline assumes that tariff rate quotas (TRQs) relevant for Mercosur countries are binding and no over-quota imports occur.[7] The authors point out that this has two consequences relative to a model that allows over-quota imports: TRQ expansion *must* lead to increased trade, which need not be the case when the baseline allows over-quota imports, and per unit quota rents at the calibrated point are smaller than their maximum possible level.

7 This constraint is no longer present in the version of CAPRI used for this report.

The four scenarios examined are: (1) "EU-proposal" (based on the EU's 2004 offer, involving partial unilateral trade liberalisation for agricultural products characterised by TRQ expansion for temperate zone products for which Mercosur has a comparative advantage relative to the EU *and* a sizeable export potential, together with some tariff reductions from the side of Mercosur); (2) "Mercosur proposal" (based on Mercosur's later request, greater TRQ expansion, zero in-quota tariffs, and duty free access for commodities not subject to TRQs): (3) "EU-proposal+G20" (global multilateral trade liberalisation according to the 'G20 proposal' combined with a variant of scenario (1) featuring less TRQ expansion); (4) "full bilateral liberalisation" (zero tariffs and unrestricted market access).

The most substantive price changes in all scenarios are for the commodity groups 'meat', 'other animal products' and 'oils', and they are greatest for scenarios 3 and 4. The decrease in the price of 'cereals' is largely due to a fall in maize price, whereas the lower price for the group 'other animal products' comes from reduced egg prices. The fall in beef price dominates the price of the 'meat' group, due to TRQ expansion and, in scenarios 3 and 4, to tariff falls. In addition, some scenarios show decreases in EU poultry prices because of increased Mercosur imports.

Strong changes are observed for EU meat imports from Mercosur in all scenarios (from +30% to +460%), closely linked with the degree of liberalisation. Especially in the full bilateral liberalisation scenario 4, very high meat imports, mainly of beef, occur. Furthermore, in scenarios 2 and 4 there are sizeable increases in the volume of Mercosur's vegetable and permanent crop imports.

Although all scenarios lead to higher EU cereal imports from Mercosur countries, in the full liberalisation scenario the EU's net trade position for cereals is more positive. This is because EU feed demand for cereals falls more than its supply.

This study also presents changes in welfare for each scenario relative to the reference scenario. It must be stressed that, because this is a partial equilibrium model of the agricultural sector, only the welfare changes generated in the agricultural markets that the model covers are captured. Summarising, total EU welfare is lower in all scenarios except scenario 3 (which is characterised by both the highest gains to EU consumers and the greatest loss to EU producers, but nevertheless with a positive difference between them).[8] By contrast, the welfare change is always positive for Brazil (but smallest in scenario 3), whereas welfare improves for Argentina only in the first two scenarios, and for Paraguay and Uruguay in the first three scenarios. The lower welfare for these last three Mercosur countries in scenario 4 is because under full liberalisation they receive no quota rent from TRQs. Results for Venezuela are also shown; they indicate that, for agriculture and food, Venezuela suffers the effects of trade diversion in most of the scenarios. This contrasts sharply with the positive spin-off from EU-Mercosur trade liberalisation elsewhere in South America that was picked up in the Diao *et al*, GE study covering all economic sectors.

Piketty *et al*. (2009) also used CAPRI to examine a number of agricultural trade liberalisation scenarios involving Mercosur. Two of them are called 'EU proposal' and 'Mercosur proposal'. Although one cannot be sure they are the same in every detail as the scenarios with these names reported in Weissleder *et al*. (2008), they are extremely close.

8 Producer welfare losses are concentrated in France, followed by the Netherlands, Germany and Belgium. Total welfare gains (Scenario 3) are of course larger in Member States with greater populations.

This second CAPRI-based paper focuses on the impacts of these scenarios on Brazil, by far the largest economy and most populous country of Mercosur[9]. Results show that both scenarios cause consumers to lose consumer surplus (i.e. 'welfare'), with a much greater consumer loss in the second scenario, whereas both agricultural producer profit and total welfare are far greater in the second scenario than the first. Scenario 1 increases Brazil's exports to EU25 of pork, poultry, beef and grains by 132%, 23%, 39% and 6%, respectively, whereas the impacts of scenario 2 on these exports (relative to the baseline) are 43%, -1%, 116% and 37%, respectively. There is no explanation of why so much less pork and poultry are exported under the Mercosur request than the EU proposal, but it is clear that the Mercosur terms are very much more advantageous for beef producers. The authors point out that weak internal logistics and infrastructure may prevent some of these potential gains from being realised in the short term.

We have been unable to find other, recent studies of the potential consequences of an EU-Mercosur trade agreement that use a partial equilibrium agricultural sector model. Most PE modelling tools, even the most robust and heavily used examples like the AGLINK-COSIMO model, do not distinguish imports by source or exports by destination – each country trades 'anonymously' on the world market. Whilst this kind of model can simulate the effects of multilateral trade policy changes, it cannot handle policies involving preferential treatment awarded to particular trading partners.

In recent years, a large number of studies have appeared in which the global impacts of a Doha Round agreement, simulated using a CGE model, are presented. The multiple studies of the World Bank[10] have mainly used the LINKAGE model and those of IFPRI the MIRAGE model[11], whilst the GTAP model has been a popular choice among other researchers.[12]

A major aim of these studies has been to quantify the impact of a Doha Round agreement on global income or welfare. The published estimates of this impact vary widely, not least because different 'versions' of a possible Doha Round agreement are simulated, but also because of technical differences in model specification and implementation. There is, therefore, little to be gained in trying to make a brief summary of this literature here. In fact, in a meta-analysis covering 110 studies (468 different simulations with around 5800 individual measures of welfare gains at country or region level), Hess *et al*. (2010) were able to explain (after removing three outliers) 56% of the variation in income or welfare gain in terms of specific technical features of the models or their implementation.[13,14]

Another recurrent issue in this vast literature is the distribution of a Doha-induced welfare gain between poor and rich countries[15], and in some cases between different socio-economic strata within particular countries (see below for several examples). Here also, there is little agreement. On the one hand, World Bank results showing that "developing countries (which) as a whole account for a quarter

9 For 2010, Brazil was estimated to have about 79% of the Mercosur population and about 75% of its combined GDP. Population and GDP shares for the other three Mercosur countries are: Argentina (17% and 22%), Paraguay (2.7% and 1.1%), and Uruguay (1.4% and 1.7%).

10 See, for example, Anderson et al. (2006).

11 For example, Bouët *et al.* (2007), Bouët and Laborde (2009).

12 Such as Hertel *et al.* (2006, 2008) or Matthews and Walsh (2006).

13 Surprisingly, when dummies were added in the meta-regression to account for the involvement of the most prolific or most experienced researchers as (lead) authors, an even higher level of explanation is achieved, suggesting that "individual leading authors in the field engage in model pre-selection that incorporates their individual beliefs about how economies function and how this should be modelled into their simulations, and that this model pre-selection systematically influences the estimates of global welfare gains that they report" (p.16).

14 The data base used by Hess et al. shows the global gain (for studies that report gains in US dollars) as ranging between *minus* USD 98 billion (that is, a fall in welfare) and USD 2.59 trillion (Hess *et al.*, 2010, Table 1).

15 For example, Hertel *et al.* (2006, 2008), Polaski *et al.* (2006).

of global production at present… would be able to enjoy a third of the global gains in real income" (much of which comes from agricultural trade liberalisation by developed countries) (quoted from Dhar, 2007, p. 165) are often claimed to demonstrate the development-friendly potential of a Doha Round agreement. However, this view is challenged by authors like Polaski (2006) who underlined the wide variation in impacts across developing countries. Based on what is claimed to be more realistic modelling of developing country labour markets (such as allowing for unemployment and not treating rural and urban labour as homogeneous), she concluded that, although some developing countries may gain, "more suffer small losses from agricultural liberalisation. The losers include many of the poorest countries in the world, including Bangladesh and the countries of East Africa and the rest of Sub-Saharan Africa. Middle Eastern and North African countries, Vietnam, Mexico, and China also experience losses". And whereas World Bank authors, who are well known for their 'win-win' belief in trade liberalisation, argue that "the Doha Development Agenda is fundamentally less poverty-friendly than it could be - in large part due to the absence of tariff cuts on staple food products in developing countries" (Hertel et al., 2008), Dhar (2007) objects that this view fails to understand the crucial importance of food security in the poorest developing countries, and the vital role played by local agriculture in providing a livelihood for marginal households.

There is, however, virtually no disagreement in the literature that South American countries would gain considerably from a Doha Round agreement involving better access to developed agricultural markets. Using a variant of the IDB-INT global static CGE model that distinguishes a number of individual South American countries and 30 commodity sectors, Giordano *et al.* (2007) examined eight different Doha Round scenarios and concluded that "Latin America will be a net winner in welfare, irrespective of the Doha Round scenarios" (p.22), with Brazil and Argentina gaining the most among the countries in that region. Among commodity sectors, this study indicates that production and export of oilseeds and soybeans would receive the greatest boost, as would the beef sector, whereas pork and poultry would not expand greatly.

Going beyond sectoral and macro effects, the studies by Azzoni *et al.* (2007) and Polaski *et al*. (2009) each linked a global CGE model to a domestic model of the Brazilian economy in order to examine the distribution of Brazil's gains from Doha trade liberalisation over social groups and regions.[16] Azzoni *et al*. (2007) found that welfare gains are well distributed across household types, but that nevertheless inequality amongst agricultural producer households would increase, placing an urgent adjustment burden on small producers. The conclusions of Polaski *et al*. (2009) are more nuanced; an implication of their study is the need for a shift of unskilled labour out of manufacturing into agriculture, a shift that may be heavily impeded by labour market sluggishness, other institutional constraints and human factors.

Only one study has been found where developments in the Doha Round are considered alongside other trade liberalisation options. Harrison *et al*. (2003) compared the benefits for Brazil (together with various other countries) of an EU-Mercosur agreement, an agreement on an FTAA, and a Doha Round agreement, using a model based on the GTAP database. They found that each of these agreements would be beneficial for Brazil, but that an EU-Mercosur deal alone would be "almost twice as valuable" for Brazil as the FTAA alone, assuming that, in each case, access to the most highly protected agricultural markets in the EU and the US, respectively, is liberalized as part of the agreement. When this does not occur, the FTAA would be of much greater value to Brazil than the EU-Mercosur agreement since it includes other

16 Azzoni et al. (2007) used GTAP and a detailed SAM for Brazil, whereas Polaski et al. (2009) used GLOBE and a GE model of the Brazilian economy.

markets of interest to Brazil apart from the US. Although the specific modalities of the scenarios modelled may not be fully up to date, these results still have direct relevance for the discussion on TRQ expansion in the EU-Mercosur talks, and for the negotiations concerning special treatment for developed countries' 'sensitive products' in the multilateral trade talks.

A general result of Harrison *et al.* (2003) is that for Brazil, Argentina and Uruguay (Paraguay is not reported), an EU-Mercosur agreement, and an EU-Mercosur agreement with an FTAA agreement, give much greater gains than a multilateral liberalisation alone, in which tariffs are reduced on average by 50%. For Brazil, adding an FTAA agreement on top of an agreement with the EU doubles the gains, whereas for the other two countries there is no further benefit of an FTAA once an EU-Mercosur agreement is in place.

Harrison *et al*. (2003) consider that their results justify the strategy of the Brazilian government to negotiate *simultaneously* the FTAA and the EU-Mercosur agreement whilst also supporting multilateral liberalisation through the Doha Agenda.

Unfortunately, although Harrison *et al*. (2003) examined eight scenarios involving different agreements singly or in combination, with and without product exclusions and for high and low elasticities, there is no scenario corresponding to the Doha + EU-Mercosur agreements simulated in this study that could be compared with our results.

3. Models used in this study

The choice of modelling tools (the computable general equilibrium (CGE) model GLOBE and the partial equilibrium model CAPRI) and data sources, the time horizon and detailed specification of the scenarios, were all specified in an Administrative Agreement between DG AGRI and the JRC.

3.1. GLOBE

GLOBE is a Social Accounting Matrix (SAM)-based global Computable General Equilibrium (CGE) model that is calibrated with data from the Global Trade Analysis Project's (GTAP) database version 7.1[17]. It incorporates various developments in CGE modelling over the last 15 years, and owes a particular debt to the IFPRI standard model (Lofgren *et al*., 2002) and the PROVIDE Project model (McDonald, 2003), as well as to the GTAP model (Hertel, 1997). The model is written and solved using General Algebraic Modeling System (GAMS) software.

GLOBE consists of a set of single-country CGE models linked by their trading relationships. As in all current CGE models, price systems are linearly homogeneous and thus only changes in relative prices matter. Consequently each region in the model has its own numéraire price, typically the consumer price index (CPI), and a nominal exchange rate, while the model as a whole requires a numéraire, which is an exchange rate index for certain reference regions.[18] In this implementation of GLOBE, the reference regions are the member countries of the OECD.

The SAM on which GLOBE is based disaggregates each region's economy according to eight 'accounts'.[19] The behavioural relationships are quite standard: activities maximise profits using technology characterised by Constant Elasticity of Substitution (CES) production functions over primary inputs and Leontief production functions across intermediate inputs. The household maximises a Stone-Geary utility function (which assumes a linear expenditure system after payment of income tax and after saving a share of post-tax income). The Armington assumption is used for trade. Domestic output is distributed between the domestic market and exports according to a two-stage Constant Elasticity of Transformation (CET) function. In the first stage, a domestic producer allocates output between the domestic and export markets according to the relative prices for the commodity on the domestic market and the composite export commodity (which is a CET aggregate of the exports to different regions) whereas the distribution of the exports between regions is determined by the relative export prices to those regions. Hence domestic producers respond to prices in all markets for the product. The elasticities of transformation are commodity- and region-specific.[20] Domestic demand is satisfied by composite commodities that are constructed by means of a three-stage CES function from domestic production sold domestically and composite imports.

17 For the underlying principles of GLOBE, see de Melo and Robinson (1989) and Devarajan *et al.* (1990); for earlier models that can be described as its antecedents, see Robinson *et al.* (1990, 1993).
18 This represents a fundamentally different philosophical approach to global modelling from that of the GTAP model, which does not contain nominal exchange rates and has a single global *numéraire*.
19 Outputs, intermediate inputs, factors, households, government, capital, margins (trade costs and transport) and rest-of-the-world.
20 In GTAP, the elasticities are commodity-specific only. When the CET functions across exports are switched off so that export supplies are determined by import demands, the model functions similarly to the GTAP model.

All commodity and activity taxes are expressed as *ad valorem* tax rates, while income taxes depend on household incomes (see Appendix Table A1.3 for a summary of these behavioural relationships in GLOBE).

GLOBE distinguishes 23 product categories across the whole economy (see Annex Table A1.1). All product categories are agricultural or food-related except five: primary products[21], manufacturing, services, 'trade' and fuel.[22] Biofuels are not modelled separately.[23]

The EU is treated as two regions (EU15 and EU12), and Mercosur (of 4 countries) as one region. In addition, 11 other regions are separately identified (see Annex Table A1.2). GLOBE also contains an artificial 'dummy' area (Globe) that absorbs inter-regional trade flows where either the source or destination are not identified (for example, some trade and transportation margins and data on remittances). This construct provides a general method for dealing with any transactions data where full bilateral information is missing (see McDonald *et al*., undated).

Adjusting the database for the Mercosur Impact Assessment required updating the GTAP data and incorporating into the GLOBE model the following data:

- bilateral trade flows Mercosur-EU at 6HS digit (Eurostat and MAcMap)
- tariff rates for existing TRQs as of 2009 in- and out- of quota (TARIC)
- generic world import value units (MAcMap)
- TRQ information for 2003-2009 (DG AGRI).

Tariff concessions agreed for all Free Trade Areas currently in force and for which negotiations have been concluded (see Annex Table A1.2) are recognized in the model. Two of these FTAs also involve bilateral TRQs, which are not depicted in the model as the data were not available. Section 4.1.2 describes how the TRQs granted by the EU to Mercosur are modelled. *Erga omnes* TRQs (open to all) are not included in GLOBE.

All tax rates, including import tariffs, are modelled as *ad valorem* rates. This means that specific tariffs have to be converted to their *ad valorem* equivalent.

3.2. CAPRI

CAPRI is a spatial, partial equilibrium (PE) model specifically designed to analyse CAP measures and trade policies for agricultural products (Britz and Witzke, 2008). It consists of two interlinked modules, the supply module and the market module, such that production, demand, trade and prices can be simulated simultaneously and interactively.

The data bases aim to use well-documented, official and harmonised data sources, especially data from EUROSTAT, FAOSTAT, OECD and extractions from the EU Farm Accounting Data Network (FADN). The basic idea of the CAPRI supply module data base is an 'Activity Based Table of Accounts', where

21 Which includes forest and mining products, but also fish.
22 The product category 'trade' includes transport costs and other trade services, and margins.
23 Ethanol is included under HS code 2207 ('spirits') in 'processed food' and biodiesel under HS code 3824 ('miscellaneous chemical products') in 'manufactured products'.

activity levels (measured in hectares, livestock head etc) are linked to inputs and outputs via technical coefficients, and to values via prices. The connection between the individual activities and markets are the activity levels.

The supply module consists of regional agricultural supply models for EU27, the Western Balkans, Norway and Turkey, which depict farming decisions in detail at the NUTS 2 level (cropping and livestock activities, yields, farm income, nutrient balances, GHG emissions, etc.). Its mathematical programming approach allows a high degree of flexibility in modelling CAP measures as well as in capturing important interactions between production activities, and with the environment.

The market module is a deterministic, partial, spatial model with global coverage, where about 50 commodities (primary and secondary agricultural products) and 60 countries grouped into 28 trade blocks (see Annex Table A1.6) are modelled. It models bilateral trade flows and policies between trade blocks in the model.

Like GLOBE, the CAPRI model uses a two stage Armington system in order to model substitution between imports, and between imports and domestic sales. For this, a Constant Elasticity of Substitution (CES) function is used in CAPRI, which allows the model to capture the pure economic behaviour (through the relative changes in import price and substitution elasticities), but also to take account of a 'preference' given to a specific origin (through shares of historical import flows). This means that trade flows are not driven solely by the difference between market prices in the two trading blocks.

Within the EU, there is a perfect market (for both primary and secondary products) so that prices for all Member States move together within a market block. The parameters of the behavioural equations for supply, feed demand, processing industry and final demand are taken from other studies and modelling systems, and calibrated to projected quantities and prices in the simulation year. Major outputs of the market module include bilateral trade flows, market balances and producer and consumer prices for the agricultural commodities and world country aggregates.

Final demand functions are derived from indirect utility functions of consumer prices and per capita income, are based as Generalised Leontief functions, and observe all required theoretical properties of demand systems. Regarding traded products, the model uses a two-stage Armington system: the higher level determines the composition of total demand from imports and domestic sales as a function of the relation between the internal market price and the average import price. The lower stage determines the import shares from different origins. The substitution elasticity on the top level stage is smaller than for the second one, i.e. consumers are less flexible in substituting between domestic and imported goods than between imported goods of different origins. For most products, the substitution elasticities are 8 for the upper level and 10 for the lower level.[24] This latter elasticity is rather high compared to other models, which the CAPRI team justifies on the grounds that CAPRI's more disaggregated product groups are more uniform than the more aggregated product categories in, for example, CGE models.

CAPRI models both *erga omnes* and bilateral TRQs.[25] To deal with the discontinuity in import price caused by the TRQ, a sigmoid function is used, which effectively smoothes the 'kinks' that occur at the two

24 For dairy products and meat, both elasticities are considerably lower. For meat, they are 4 (upper) and 8 (lower).
25 CAPRI assumes that countries fill bilateral TRQs first, then attempt to profit from *erga omnes* TRQs, which are filled by countries in declining order of price-competitiveness.

points of discontinuity. CAPRI can handle both *ad valorem* and specific tariffs, both for MFN tariffs and in-quota tariff for TRQs. The FTA recently agreed between the EU and South Korea cannot be implemented in CAPRI because South Korea is not identified as a separate country in CAPRI.

Apart from the rich detail on the supply side of the model, CAPRI's strengths are that it can show results for the EU at sub-Member State (NUTS 2) level,[26] whilst at the same time being able to model global world agricultural trade, with the EU's most important trade partners separately identified and bilateral trade flows between them and the EU accounted for. This makes it well suited for the questions posed here in this study.

3.3. The relative strengths of the two models

The relative strengths and weaknesses of the two models for this study are of two kinds. First, the usual differences between a CGE model and a PE model are highly relevant to their suitability for this exercise. Second, each model has particular features, which are not necessarily typical of all models of their kind, that are more - or less - useful for the question addressed here.

An important strength of GLOBE is that, as a CGE model, it represents all sectors of the economy in all the countries and regions modelled. This provides highly relevant information about trade-offs between different sectors in the event of bilateral trade liberalisation, and in particular the trade-offs between the agricultural and manufacturing sectors in both the EU and Mercosur. It enables a panoramic view across all those economies that are distinguished separately within the model of *which sectors* might be affected, and in *what way*. On the other hand, its relatively aggregated commodity structure and somewhat standardised treatment of behavioural functions across commodities and countries (see Table A1.3) mean that certain sectoral particularities or policy constraints may be omitted or treated in a more stylised way.

CAPRI has both a more disaggregated commodity structure within agriculture, and offers a more disaggregated spatial perspective within the EU. This means that specificities of products, regions and policy features, particularly within the EU, can be captured more closely and more realistically. It also makes it easier in this study to model TRQs, which are defined for imports of specific products rather than categories of product. On the other hand, it is unable to simulate changes in sectors outside agriculture, or to take account of feedback from changes in other sectors onto the agricultural sector. CAPRI does not currently model processing activities beyond the group of Annexe A goods, and hence in this study it cannot capture trade flows in more highly processed agricultural products.

Both models have global coverage, and therefore they can each take account of repercussions of the policy changes examined on third countries and their feedback on the EU and Mercosur. However, GLOBE does so in an economy-wide perspective, whereas for CAPRI these interaction effects are limited to the links between the agricultural sectors of different countries and trade flows of agricultural products. Each model has a different global disaggregation. GLOBE's breakdown into 14 regions has been designed more from a trade perspective, and reflects realities such as the trading-block status of Mercosur (individual Mercosur countries are not separately distinguished) and of the EU (divided into two regions, EU12 and EU15), and the trading arrangements (FTA with EU or not, WTO status etc). CAPRI, with 28 different

26 It should be noted that CAPRI calculates agricultural producer prices at Member State level, so a particular 'EU producer price' is an average of these prices.

countries/regions, models a greater number of individual countries (including the four Mercosur countries separately). Within CAPRI, the three blocks of the EU (EU10, EU15, EU2) are distinguished and can be further broken down to Member State level, and as already mentioned, beyond that to NUTS 2 level.

Both models are static, and therefore when they are used to simulate policy impacts in a specific future year, it is not necessary to simulate the time-path followed in the intervening time period. In order to simulate policy outcomes in 2020, each model simply requires exogenous input about the conditions expected to prevail in that year. Both models need this information with respect to population and technological change.[27] In addition, other projections (energy prices, GDP growth, factor availability in agriculture, exchange rates and so on) have to be supplied to CAPRI exogenously in order to construct its baseline (which provides the estimates for the reference scenario) against which the policy simulations are compared. By contrast, as a CGE model, GLOBE generates many of these variables internally and requires a smaller input of 'hand-crafted' exogenous assumptions. This can be either a strength or a weakness depending on the situation. It is true that the risk of basing simulations on a set of underlying assumptions that would not be simultaneously possible in the real world can be greater for a PE model. More internal consistency might be expected from a CGE model in this respect. At the same time, by taking as many of these assumptions as possible for one's PE model from a single source (such as Global Insight, as is done here) the risk of incompatibilities is reduced.

Since CAPRI works at a more disaggregated product level and can accommodate both *ad valorem* and specific tariffs, it can depict the EU's entry price system for individual fruits and vegetables more accurately than GLOBE. For example, citrus imports from Brazil face an *ad valorem* tariff and a specific tariff; the specific tariff is triggered only when the 'entry price' is below €354 /t. Thus, CAPRI respects the rationale of this mechanism. However, it is inevitably modelled in a simplified way, since the real system is extremely complex, incorporating seasonal tariff rates and specifying entry price thresholds in terms of the c.i.f. at the 8-digit level.

The way tariff reductions have been handled in CAPRI for the products subject to this trade policy measure is described in section 5. The greater degree of product disaggregation can, however, create other problems: it increases the probability that in the calibration year some products will not have been traded, which makes it impossible to calibrate the Armington parameters for those products. The result is that zero trade will also occur in the simulations.

It follows from this brief comparison that the two models used here are highly complementary for this exercise, and should each provide insights on aspects of the policy impacts that the other one cannot offer. There is a core set of policy impacts that is provided by both models, where they would be expected to be in broad agreement. However, since each model uses a different database, has very different technical features and a different modelling philosophy, identical results are *not* expected. In fact, knowing what is covered and what is omitted from particular models can make differences in their simulated impacts very informative and revealing for users. Therefore, although the object of this exercise is not to compare the results of the two models, we shall endeavour to exploit any differences in output to enrich the interpretation of the results.

27 As explained later, in the GLOBE simulation assumptions about technological change are replaced by exogenous assumptions about GDP growth.

4. Preparatory work

4.1. GLOBE

4.1.1. Specifying the closure rules

GLOBE allows for user-defined closure rules (which determine how the macro economy behaves, factor market conditions and so on). The closure rules chosen for this study, plus other external assumptions, are shown in Table 1.

Table 1: Assumptions underlying the specification used

	Developed countries (including EU)	Middle-income developing countries (including Mercosur)	Low-income developing countries
GDP and population growth	Exogenous projections*	Exogenous projections*	Exogenous projections*
Closure rule 1: Foreign exchange account	Exchange rate exogenous (fixed projection), trade balance variable	As for developed countries	Exchange rate variable, trade balance fixed
Closure rule 2: Capital account	Volume of investment fixed, savings variable ('investment driven')	As for developed countries	Investment not fixed, savings rate fixed (savings driven')
Closure rule 3: Government account	Budget surplus/deficit fixed, household income tax rate variable	Budget surplus/deficit variable, household income tax rate fixed	As for Mercosur
Closure rule 4: Technology and efficiency	Rate of total factor productivity growth fixed so as to achieve GDP projection for 2020 in reference scenario; GDP variable in policy scenarios	As for developed countries	As for developed countries and Mercosur
Closure rule 5: Factor markets: mobility (between agriculture and non-agriculture sectors)	*Unskilled labour:* mobile *Skilled labour:* mobile *Capital:* mobile *Land:* mobile between different uses within agriculture, does not 'exist' in no-agricultural sector	As for developed countries	As for developed countries and Mercosur
Closure rule 6: Factor capacity use	*Unskilled labour:* full employment not assumed *Skilled labour:* full employment not assumed *Capital:* full capacity use not assumed *Land:* full use assumed	As for developed countries, except that full capacity use of capital assumed	As for Mercosur

* *See Table A1.4 in Vol 2: Annexes.*

CGE model simulations typically adopt the so-called standard neo-classical assumptions closure rules, namely: (1) trade balance fixed and exchange rate variable, (2) savings fixed and investment variable (´savings-driven´), (3) government budget deficit/surplus variable and household income tax rate fixed, (4) total factor productivity growth variable, (5) labour fully mobile and (6) full employment of factors.

Our main criterion when specifying the closure rules given in Table 1 was that assumptions should be reasonable and realistic, given recent trends and cross-country differences in macro-management policies. For example, regarding closure rule 1, developed country exchange rates depend not only on the trade balance but also on foreign capital movements; when significant exchange rate adjustments take place, it is more likely to be the result of several endogenous and exogenous (policy) factors rather than an automatic adjustment to changes in the trade balance. Moreover, the requirement to conform with the underlying assumptions of DG AGRI´s 2010 Outlook, where specific assumptions are made about exchange rate changes up to 2020, necessitated incorporating exogenous assumptions about exchange rate appreciation and depreciation between currencies. However, for the least developed countries, this assumption was felt to be unrealistic. Hence, a different decision regarding closure rule 1 was made for these countries. Annex 3A (see Vol 2) reports a sensitivity analysis where the scenarios are re-run under neo-classical closure rules and the results compared with those reported here. It is concluded on basis of that evidence that although the sensitivity analysis supports the *ex ante* expectation that the closure regime affects the results, in this case the differences are minor and cannot threaten or overturn any policy implications that emerge from the results shown in the main text.

4.1.2. Modelling TRQs

For this study, GLOBE had to be extended so as to include TRQs, following the approach of van der Mensbrugghe (2005: pp. 26-27). Because of time and data constraints, only bilateral TRQs offered by the EU to Mercosur are modelled and *erga omnes* (multilateral non-preferential) TRQs are not included. This implies that the increases in TRQs granted to Mercosur in the policy scenario should be interpreted as *net* increases in the total amount of preferential access offered by the EU.

Most TRQs for agricultural products are defined at the 8-digit level, and in-quota tariffs may include both *ad valorem* as well as specific tariffs. Therefore, the original in-quota tariffs had to be expressed in terms of in-quota AVEs,[28] brought to the aggregation level defined in the GLOBE model,[29] and compared with the respective out-quota AVEs for the GLOBE commodity and regional groups. Moreover, country-specific TRQ ceilings within the Mercosur block had to be aggregated and brought from original 8-digit level to product level used in GLOBE, using import quantities as weights. Data on import quantities (by tariff lines, individual MERCOSUR countries, and for the years 2004-2009) was provided by Eurostat.

Bilateral TRQs are modelled as a mixed complementarity problem (in this case, different solutions depending on the size of imports of a good relative to its TRQ). Three possibilities can occur:

- imports are below the quota limit: imports enter at the in-quota tariff rate,
- imports are equal to the quota limit (the quota is just binding): the domestic price of imported good is equal to the world price plus the in-quota tariff plus a premium, which is determined endogenously by the model,
- imports exceed the quota limit; the out-of-quota (MFN) tariff is applied to the quantity in excess of the quota limit. In this case the domestic price of import is equal to the world market price times the in-quota-tariff rate plus the premium. The premium is equal to the difference between in- and out-of-quota tariffs (= the quota rent).

28 For more detail on the construction of AVEs in GLOBE, see section 5.2.

29 Aggregation of AVEs for MFN tariffs from the HS6 level to the GLOBE product level was carried out using as weights the ratios of average quantities imported by EU27 from MERCOSUR during 2004-2009 (at HS6 level) to average total imports at GLOBE product level in the same period. Eurostat data on import quantities (by tariff lines, individual MERCOSUR countries, and years) was used and aggregation was done using STATA.

Following the standard assumption in the literature,[30] the quota rent is divided equally between importing and exporting regions. The importer's share is treated as part of government income. In a one-household model like GLOBE, this has no implications for consumer welfare. The exporter's share is modelled as an addition to export price, which increases the value of in-quota exports and accrues to 'producers' in the exporting country. Annex 3B (see Vol 2) reports a sensitivity analysis where the scenarios are re-run under two alternative assumptions: all quota rent accrues to exporting firms and all quota rent accrues (via importing firms) to tax revenue. As might be expected, the results show that EU imports of products subject to TRQs are lowest when all the quota rent goes to EU importers, and highest when it all goes to Mercosur exporters. However, the differences are relatively small, and negligible for most products in most scenarios. Results were relatively more sensitive in the scenarios reflecting the Mercosur request.

Since the EU is modelled as two separate regions, whereas TRQs apply at the level of EU27, the TRQ for each product granted by the EU to Mercosur (both in the reference run and the scenarios) has to be divided between them. Each TRQ is split between EU15 and EU12 according to the ratio of the imports of each product by the two regions in 2004 (the calibration year of the model).

4.1.3. Construction of the baseline

Unlike a partial equilibrium model, there is no need for the construction of a baseline as such. In this case, once exogenous projections of inflation rates, exchange rates, trends in the availability of the five fixed factors, population and GDP are available, the model solves for all other relevant variables. In order to use an exogenous projection of GDP (conformable with DG AGRI's 2010 Outlook baseline) in the reference scenario, the model was solved assuming the level of technological progress achieved by 2020 to be endogenous. This value was then taken as given in the policy scenarios, allowing GDP to be endogenously determined and hence different from the initial assumption in the presence of an FTA with Mercosur. However, this means that technological progress itself was assumed to be independent of a freer trading environment.

Since GLOBE is a static model, it is important to recognise that all differences simulated between the base year, 2004, and the reference scenario in 2020 are due to the trends embodied in these exogenous assumptions.

4.2. CAPRI

The baseline assumes the continuation of policies as they are at present, including policy changes already agreed and scheduled for implementation before 2020, but not yet implemented (such as the phasing out of EU milk and sugar quotas). It also includes trade agreements that have already been concluded, but not those under negotiation or under discussion.

30 See, for example, Elbehri and Pearson (2000), Berrettoni and Cicowiez (2002). The simulated trade flows may be affected by this assumption, because the rent is aggregated with price. Certainly, aggregate welfare impacts may not be neutral with respect to the proportions assumed. Decreux and Ramos (2007) assumed that all quota rent accrues to agricultural exporters. These authors write (p.14): "in some TRQs, such as the 'Hilton' beef TRQ, MERCOSUR countries manage their licenses and capture most part of the quota rent. This aspect explains the interests from some Mercosur producers to keep TRQs and not to negotiate MFN tariff reduction".

The CAPRI version of December 2010 was used for this study. Although this version incorporates a biofuel module, this module was not fully active in the simulations. In particular, biofuel demand is still not endogenous, which means that biofuel demand and trade are fixed externally and do not change between the reference run and the scenarios. To prepare the model for this study, trade information was revised and updated; in particular, this involved updating information regarding EU-Mercosur trade and the FTAs and preferential agreements operated by the EU.

The CAPRI baseline is based on the DG AGRI Outlook 2010 baseline, with its results broken down where necessary to Member State level for incorporation into CAPRI. However, it is important to clarify that, once the CAPRI baseline is recalibrated incorporating this basic information, baseline values are not always identical to those of the DG AGRI Outlook.

Tariffs and TRQs were updated from 2004 to 2009 for this study. Since the scenarios received from DG AGRI define *one* TRQ for 'milk powder' (HS0402), this had to be broken down between whole milk and skim milk powder. New TRQs were created for ethanol, rice, wheat, other cereals (maize and sorghum) and 'dairy products', combining new TRQs for skim and whole milk powder, butter and cheese. These TRQs do not exist in the baseline but can be activated in the scenarios. The model was then recalibrated with these new TRQ functions incorporated.

CAPRI simulates with three trade blocks for the EU (EU15, EU10, and EU2) and with Mercosur as separate countries. This requires that EU-granted TRQs have to be allocated between the EU trade blocks (as potential importers) and to Mercosur countries (as potential exporters). These allocations were made in proportion to domestic consumption (for EU trade blocks) and export potential (for Mercosur countries). Since the countries within each of these trading blocks trade between themselves ('intra-trade') without tariffs, this allocation should be seen as an adjustment that allows the model to provide realistic simulations, not as a literal depiction of what happens in reality.

5. The scenarios and their specification in the models

5.1. Bilateral trade concessions as applied in both models

It is assumed that the starting year for an EU-Mercosur free trade agreement is 2014 and the agreement is fully implemented by 2020. The naming of the scenarios is explained in Table 2.

Table 2: Scenario designation

	No EU-Mercosur trade agreement	EU-Mercosur trade agreement	
		EU offer accepted	Mercosur request granted
No Doha Round agreement reached	Reference scenario	Scenario 1	Scenario 2
Doha Round agreement in force	Scenario DDA	Scenario DM1	Scenario DM2

Scenario 1 and Scenario DM1

These scenarios are based on the EU offer of 2004. According to the information received from DG AGRI, this scenario involves the following changes:

EU concessions

Industrial goods: reduction of tariffs to zero on all products, with immediate effect for goods with tariffs less than 2%, by year 5 for goods with tariffs between 2 and 8%, and by year 7 for goods with tariffs in excess of 8%.

Agricultural goods:

- Goods not subject to TRQs: reduction of tariffs to zero on all products, with immediate effect for goods with tariffs less than 5%, by year 5 for goods with tariffs between 5 and 10%, by year 7 for goods with tariffs between 10 and 15%, and by year 10 for goods with tariffs in excess of 15%.
- Goods subject to TRQs: expansion of existing TRQs (except for sugar and sheep meat) on a product-by-product basis. New TRQs created for rice, wheat, other cereals, pork, skim and whole milk powder, butter, cheese and ethanol. In-quota tariff equal to zero. We assume that the expansion is fully phased in by 2020. It is important to bear in mind that EU TRQ expansion is less in Scenario DM1 than in Scenario 1 (see Table A1.7 for details).[31]

It is assumed that all tariff changes and TRQ expansions will be fully phased in by 2020, the target year for comparing the simulated scenario with the reference scenario.

31 The TRQ expansions offered under DM1 are smaller than under Scenario 1 in recognition of the interdependence between these two sets of trade negotiations, and the cumulative effect that would occur if both are concluded. The EU thus intends to limit the extent of the new bilateral concessions should a Doha Round agreement be concluded. This central to the EU's position in the bilateral talks, and is known as the 'single pocket' principle.

Mercosur concessions

Industrial goods: elimination of tariffs on 86% of tariff lines (specified at HS 8-digit level), cuts of 20% or 50% in the tariffs of the remaining 14% of goods.

Agricultural goods: reduction of tariffs to zero on 85% of tariff lines (specified at HS 8-digit level), cuts of 20% or 50% in the tariffs of the remaining 15% of goods.

For both industrial and agricultural goods, details of how the product-specific information in Mercosur's request has been converted into tariff cuts for GLOBE product categories is contained in the note to Annex Table A.7. We assume that tariff changes are fully implemented by 2020.

Scenario 2 and Scenario DM2

These bilateral trade concessions are based on the Mercosur request of 2006, and are as follows:

EU concessions

Industrial goods: as for scenarios 1 and DM1.

Agricultural goods:

- Goods not subject to TRQs: as for scenarios 1 and DM1.
- Goods subject to TRQs: greater expansion of existing TRQs than in scenario 1, including sugar, on a product-by-product basis. We assume that this expansion is fully implemented by 2020. The same increase in TRQs are assumed regardless of whether or not a Doha Round agreement is reached.

Again, it is assumed that all tariff changes and TRQ expansions are fully phased in by 2020.

Mercosur concessions

Industrial goods: reduction of tariffs to zero on 92% of tariff lines (specified at HS 8-digit level).

Agricultural goods: reduction of tariffs to zero on 100% of tariff lines.

The changes in bilateral trade arrangements in the four scenarios involving a bilateral agreement are summarised in Table 3. The changes in multilateral trade rules that are involved in moving from the 'no-Doha' to the 'post-Doha' context are discussed in sections 5.2 and 5.3 below.

Details of how this product-specific information has been converted to GLOBE product categories are contained in the note to Annex Table A.7. We assume that the elimination of these tariffs is fully implemented by 2020.

Table 3: Assumptions about bilateral trade concessions: two scenarios

	Baseline	Scenario 1 and Scenario DM1 (as fully implemented in 2020)	Scenario 2 and Scenario DM2 (as fully implemented in 2020)
Industrial goods – EU offer	2009 tariffs	All tariffs zero	All tariffs zero
Industrial – Mercosur request	2009 tariffs	Zero tariffs on 86% of tariff lines	Zero tariffs on 92% of tariff lines
Agricultural goods without TRQs – EU offer	2009 tariffs	All tariffs zero***	All tariffs zero***
Agricultural goods with TRQs – EU offer	TRQs as in 2009*,**	Expansion of TRQ limits, new TRQs for 8 products**, ****; in-quota tariff equal to zero	Greater expansion of TRQ limits; in-quota tariff equal to zero
All agricultural goods – Mercosur request	2009 tariffs	Zero tariffs on 85% of tariff lines	Zero tariffs on 100% of tariff lines

** These TRQs are aggregated starting from a total of 14 HS6 or HS8 tariff lines.*

*** See Appendix Table A1.7.*

**** In CAPRI, the ad valorem tariff for the EU's entry price system for fruit and vegetables is abolished but the specific tariff is retained in Scenario 1 and DM1; in Scenario 2 and DM2, both tariffs are abolished.*

***** TRQ expansion is less in Scenario DM1 than in Scenario 1 (see Table A1.7), in order to take account of the more favourable market access already secured under the assumed Doha Round agreement.*

5.2. GLOBE: Doha Round agreement

It is assumed that the Doha Round agreement is fully phased in by 2020.

Calculation of *ad valorem* equivalents (AVE)

The Doha Round negotiations focus on the reduction of all *ad valorem equivalents* (AVE) of final bound tariffs (i.e. all out-of-quota tariffs specified in section I-A of Members' Schedules of Concessions).[32] In order to simulate a possible Doha Round agreement in this study, IPTS calculated product-specific AVEs for all 153 WTO members and several non-WTO countries using information about *ad valorem* and *specific* tariffs available in the Market Access Maps (MAcMap-HS6, ver.2) database.

Calculation of product- and country-specific AVEs was performed according to formula (1):

AVE = *ad valorem* tariff + [specific tariff/unit value], (1)

where the *ad valorem* tariff is specified in relation to unity (=no tariff) rather than as a percentage.

This calculation required a choice among four options available in MAcMap for unit values (UV = ratio of import value to import quantity).[33] The options are: bilateral UV, exporter/importer UV, reference-group-specific UV, and world market average UV. Given the objectives of our study, two criteria guided our choice: a) need to reflect adequately the restrictive impact of a specific tariff; and b) avoidance of excessive volatility. On this basis, world unit values were chosen.

32 In-quota tariffs are subject to commitments described under other paragraphs.
33 They are calculated in MAcMap using data for 2000-2002.

It should be noted that the calculation of AVEs used here (based on the UV for each product as a weighted average of the import price in that specific trade block and the average world market import price, for historical trade flows), differs from the method agreed in the DDA negotiations (Paris, 2005) which is to be based on the EU import prices and on the COMTRADE data. Sugar prices have been calculated using a different methodology.

Agricultural products

AVEs were computed for agricultural products (as defined according to the WTO nomenclature[34]) at product (HS6) and individual country level on the basis of data extracted from MAcMap-HS6v2 using the STATA program. The computed AVE values of bound tariffs were used thereafter inter alia: a) to define "special" agricultural products for the relevant groups of countries (see below); and b) to establish a list of products exempted from 97% initiative for LDCs (see below).

Industrial goods (NAMA)

For industrial (non-agricultural) goods, AVEs were computed at product (HS6) level for all individual countries (WTO and non-WTO) on the basis of data extracted from MAcMap-HS6v2 using STATA. The computed AVE values of bound tariffs for non-agricultural products were used thereafter to select products falling under flexibility rules (see below).

For all products, calculated AVEs were then aggregated, using average import shares for the period 2004-2009 as weights, in order to fit the 23 GLOBE composite commodity categories.

All tariff cuts were implemented using the TASTE program on the basis of information about *ad valorem* and specific tariffs available from MAcMap (HS6 ver.2 data base 2004).

In the simulations, if the reduction in tariff bindings brings the bound tariff below the level of the existing applied tariff, the latter is adjusted downwards to the maximum allowed under the new binding; alternatively, if the reduced tariff binding is still above the level of the applied tariff, the latter remains unchanged.

Agricultural tariffs

The following tariff cut schemes were applied (see Table 4):

It should be noted that in the Doha-only scenario (DDA), the specific tariff of the EU's entry price system is cut but not abolished.

34 The GLOBE composite category 'food, beverages and tobacco' is classified wholly within agriculture.

Table 4: Tariff reduction to improve agricultural market access (general scheme)

Instrument / Group of countries	Initial bound tariff (*ad valorem*, %)	Average reduction rate (%)	Exceptions
Agricultural Market Access			
Developed countries[35]	>75 50-75 20-50 0<20	70.0 64.0 57.0 50.0	Tropical products (see below) Duty-free and quota-free access for at least 97% of products originating from LDCs
Developing countries (non-LDC)	>130 80-130 30-80 0<30	46.7 42.7 38.0 33.3	12% of tariff lines designated as special products (5% exempt from tariff cuts and 7% subject to a smaller reduction)
Small and vulnerable economies	>130 80-130 30-80 0<30	41.0 32.0 18.0 0.0	12% of tariff lines designated as special products (5% exempt from tariff cuts and 7% subject to a smaller reduction)
RAMs (List 2[36]**)**	>130 80-130 30-80 0<30	42.0 34.0 22.0 0.0	
Least Developed Countries (LDCs)	all	0.0	
RAMs (List 1[37]**)**	all	0.0	

Special and differential treatment

Sensitive products

For the purpose of this study, the set of developed countries consists of 37 members (EU27, Canada, Iceland, Israel, Japan, Norway, Switzerland, USA, Australia, Chile, and New Zealand). As explained in footnote 35, the Doha Round agreement simulated with GLOBE in this study does not allow these countries to designate any sensitive products. Therefore, the post-Doha results reported here reflect a 'maximum-impact' Doha outcome as regards access to agricultural markets of developed countries, and the changes in trade relative to the reference scenario should be interpreted as upper bounds to range of values that might occur with an agreement where sensitive products are implemented. Annex 3C (Vol 2: Annexes) reports a sensitivity analysis of this feature of the simulations. The results indicate that, where a difference exists between the two regimes for the same scenario, imports are always higher for the 'without sensitive products' regime than for the 'with sensitive products' regime. Although the fill rates within each scenario are not affected, out-of-quota imports are quite responsive to the presence or absence of special treatment for sensitive products. This occurs most noticeably for rice, beef and sugar.

35 According to the Revised Draft Modalities for Agriculture (WTO, TN/AG/W/4/Rev.4, 6 December 2008) developed countries may designate up to 4% of their tariff lines as sensitive products, or up to 6% if more than 30% of their tariff lines have tariffs greater than 75%). The reduction of tariffs for these products may be 1/3, ½, or 2/3 of the reduction as specified in Table 4, compensated by the creation or expansion of *erga omnes* market access quotas for those products. Due to the inability of this version of GLOBE to simulate multilateral tariff rate quotas, this aspect of the modalities is not modelled here with GLOBE. Therefore, no sensitive products are assumed, and all tariff lines in developed countries are subject to the standard tiered cuts as displayed in Table 4. We note that final agreement on the percentage of tariff lines that might be declared to be sensitive has not been reached.

36 Recently Acceded Members List 2: China Taiwan, Ecuador, Jordan, Oman, Panama, Croatia. The eighth recognised member on this list – Cape Verde – is not represented in the MAcMap data base.

37 Recently Acceded Members List 1: Albania, Armenia, Macedonia, Georgia, Kyrgyz Republic, Moldova, Mongolia, Saudi Arabia, Ukraine, Vietnam and Tonga.

Special products

We assume that developing countries and RAMs (List 2) will select the option of designating special products, as in this case they can maximise the number of tariff lines exempt from cuts (5% for both developing countries and RAMs), plus 7% (8% for RAMs) subject to moderate cuts. It was assumed that 12% of agricultural tariff lines (at HS6 level) with the highest bound AVEs will be declared as special products, of which the first 5% will be completely exempt from tariff cuts, while the remaining 7% (8% for RAMs) will be subject to tariff cuts of 19% and 16.1% respectively (an average tariff cut for special products for developing countries was 11%, and for RAMs List 2 10%) (see Table 5).

Tropical products

Based on the list of tropical products at HS6 level in the latest revised modalities,[38] a selection of tropical products subject to tariff cuts was made in each *developed* country according to whether the AVE of each product is below or above 20%. In the first group (AVE< 20%), the tariff is reduced to zero, while in the second group (AVE> 20%) the tariff is reduced by 85%.

Note that tropical products are not modelled in CAPRI. Furthermore, as the DDA scenario is based on the Revised Draft Modalities of December 2008, the GLOBE post-Doha scenarios do not reflect the 15 Dec 2009 agreement relating to bananas and other tropical products (where, *inter alia*, the cut for products with an AVE in excess of 20% is 80% rather than 85%). This is because of a strategic decision at the start of the study to model the December 2008 modalities as a package.

Differential treatment for some country groups

LDCs

The group of the least developed countries (LDCs) consists of 31 countries (UN definition). These countries are not required to cut tariffs for any of their tariff lines.

Table 5: Special and Differential Treatment

Instrument / Group of countries	Initial bound tariff (*ad valorem*, %)	Average reduction rate (%)
Developed countries	"sensitive products"*	
	>75	23.0**
	50-75	21.0
	20-50	19.0
	0<20	17.0
Developing countries and SVEs	5% with the highest tariffs	0.0
	7% with next-highest tariffs	19.0
RAM countries (List 2)	5% with the highest tariffs	0.0
	7% with next-highest tariffs	16.1

* *As explained, sensitive products are not modelled in the GLOBE simulations reported.*

** *The rates shown for developed countries are 1/3 of the standard cut.*

38 See WTO, TN/AG/W/4/Rev.4, Annex G.

Developed countries: 97% Initiative for LDCs

In all developed countries, tariffs for all other agricultural products (except 3%) are reduced to zero for agricultural imports from LDCs. The selection of the 3% of tariff lines (22 agricultural products) was carried out on the basis of previously computed AVEs (3% of the HS6 agricultural tariff lines with the highest AVEs). In the case of some groups of countries with 3% of product exclusion, some of these tariffs were already liberalised under specific FTAs.

FTAs included in the CGE database are all those signed and implemented before 2004 (i.e. EU and the EBA) for which special treatment is already considered in the GLOBE model.

Small vulnerable economies (SVEs)

The group of SVEs consists of 15 countries (Barbados, Bolivia, Cuba, Dominican Republic, El Salvador, Fiji, Guatemala, Honduras, Maldives, Mauritius, Mongolia, Nicaragua, Papua New Guinea, Paraguay, Trinidad and Tobago). General tariff cuts for these countries are implemented according to the tiered schedule in Table 4. For 'special' products, it is assumed that 12% of agricultural tariff lines (at HS6 level) with the highest bound AVEs are declared as special products, of which first 5% will be completely exempted from tariff cuts) and remaining 7% will be subject to tariff cuts by 19% (an average tariff cut for special products was 11%). This matches the case of other developing countries (see Table 5).

Non-agricultural tariffs (NAMA - Non-Agricultural Market Access)

According to the *Fourth Revision of Draft Modalities for Non-Agricultural Market Access* (WTO, TN/MA/W/103/Rev.3, 6 December 2008), industrialised countries reduce their tariffs for non-agricultural products linearly over a given number of years by applying the Swiss formula (2) with coefficient 8, while developing countries do the same but with a coefficient of 20. The formula applied is:

$$t_f = \frac{A t_0}{(A + t_0)}, \qquad (2)$$

where t_0 = initial tariff rate, t_f = (end-of-period) reduced tariff rate, and A is the (negotiable) country-specific coefficient.

Flexibility rules

The revised modalities for NAMA refer in various places to additional flexibility options for certain categories of product or country. In these simulations of a Doha Round agreement, we have adopted the following flexibility provisions:

Table 6: NAMA Tariff reduction

	Non Agricultural Market Access	
	Coefficient A	Implementation period (years)
Developed countries	8	5
Developing countries	20	9
Small Vulnerable Economies	30	-

- Less severe tariff cuts for Argentina, Brazil, Columbia, Mexico and South Africa for 10% of NAMA tariff lines. For these designated tariff lines, the actual tariff cuts were half the reduction required by applying the Swiss formula.
- Less severe tariff cuts for China, Egypt, Indonesia, Morocco, Malaysia, Philippines and Thailand for 6.5% of NAMA tariff lines. The designated lines are exempt from any tariff cut.

In the two cases above, the country-specific tariff lines selected for more 'flexible' treatment were those with the highest AVEs computed for industrial products within each country.

- Less severe tariff cuts for India. Here, the flexibility rules translate into total exemption from cuts for 5% of the tariff lines. Selection of these lines was carried out on the basis of AVEs computed for industrial products in India.
- Least Developed Countries, RAMs (List 1) and developing countries with low tariff bindings are exempt from all NAMA tariff reductions.

Abolition of export subsidies

We assume that the export subsidy ceilings approved by the WTO in the country schedules of the Uruguay Round Agreement on Agriculture are reduced to zero.

Tariff Rate Quotas (TRQ)

TRQs are explicitly recognised in GLOBE for Mercosur only, using the same procedure as described above. That is, for the Doha Round agreement only scenario, the EU's bilateral TRQs for agricultural imports from Mercosur are the same as in the reference scenario. For the combined Doha-Mercosur scenarios, see below.

Combined Doha Round and bilateral EU-Mercosur Agreements

The combined scenarios are reported in the results section as DM1 and DM2. DM1 refers to a bilateral agreement according to the EU's modified offer, in a context where a Doha Round agreement is also fully implemented. DM2 is a combined Doha Round agreement/EU-Mercosur agreement, where the latter follows the standard Mercosur request.

Given that a Doha Round agreement will involve a reduction in **bound** tariffs, and a bilateral agreement between the EU and Mercosur will focus on **applied** tariffs, the combined (Doha + Mercosur) scenarios are implemented in two steps. First, reductions in tariff binding as required by a Doha Round agreement are imposed; if this brings the bound tariff below the level of the existing applied tariff, the latter is adjusted downwards to the maximum allowed under the new binding; alternatively, if the reduced tariff binding is still above the level of the applied tariff, the latter remains unchanged. Second, the cuts in applied tariffs and increases in TRQs as specified for bilateral trade flows between Mercosur and the EU27 are implemented on top of the tariff cuts from DDA.

As the GLOBE model does not include multilateral TRQs, only changes in bilateral TRQs between Mercosur and EU have been included in the combined scenarios.

5.3. CAPRI: Doha Round agreement

It is assumed that the Doha Round agreement modelled here is fully phased in by 2020.

Calculation of *ad valorem* equivalents (AVE)

In order to simulate a possible Doha Round agreement in this study, we calculated product- specific AVEs for all countries and trade blocks represented in CAPRI, according to formula (1).

AVE = *ad valorem* tariff + [specific tariff/unit value]. (1)

The unit value was calculated for each CAPRI product as a weighted average of the import price in that specific trade block and the average world market import price, based on historical trade flows, in order to avoid large price volatility.

Agricultural tariff cuts

The same tariff cut schemes were applied as in GLOBE (see Table 4). Preferential tariffs concluded under FTAs or other agreements are subject to the same tariff cuts and conditions as MFN tariffs. This means that there is no erosion of the preferential treatment between the countries concerned.

Differential treatment by country groups

CAPRI distinguishes between three country groups in the framework of DDA: developed countries (DC), least-developed countries (LDC) and other countries (OC) (see Table 7).

Developed countries (DC)

Countries in this category are those that designate themselves as 'developed' to the WTO. The country block 'Rest of Europe' is considered to be 'developed' since its trade is dominated by trade flows to and from Switzerland. Tariff cuts according to Table 4 are applied to all agricultural products, except for sensitive products. For these products, a reduction of 2/3 of the tariff cut is applied. In-quota tariffs of developed countries with an AVE lower than 5% are set to zero, in-quota tariffs with an AVE greater than 5% are reduced by either 50% of the initial value or to a threshold of 10 %, whichever result is lower.

Least developed countries (LDC)

The group of least developed countries (LDCs) consists of 31 countries, according to the UN definition. They represent a single separate trade block in CAPRI and are exempt from tariff cuts. Imports of agricultural products coming from this group of countries is duty free, no tariffs nor quotas are applied.

Other countries (OC)

This group consists of developing countries, recently acceded members of the WTO, SVEs and non-members. The CAPRI runs assume that these countries will make **no tariff cuts**. The reasons for this are several. Developing countries will most probably use the option of declaring 'special products' instead of sensitive products. The number of tariff lines that can be declared using this option, should be enough to cover all 'sensitive' products. In other cases, countries in this group are completely exempt from tariff cuts and do not need to declare any sensitive or special products. As CAPRI uses aggregates of countries with a different status, some simplifications and assumptions had to be applied while trying to stay as close as possible to the real choices of the countries. Given the time available for conducting the study, it was not possible to go into more detail.

Table 7: Categorisation of countries or trade blocks

Country / Trade block	DC	LDC	OC
EU-15	X		
EU-10	X		
Bulgaria & Romania	X		
Norway	X		
Turkey			X
Morocco			X
Other Mediterranean countries			X
Western Balkan countries			X
Rest of Europe	X		
Russia, Belarus & Ukraine			X
USA	X		
Canada	X		
Mexico			X
Venezuela			X
Argentina			X
Brazil			X
Chile	X		
Uruguay			X
Paraguay			X
Bolivia			X
Rest of South America			X
Australia & New Zealand	X		
China			X
India			X
Japan	X		
LDC		X	
ACP (which are not LDC)			X
Rest of the World			X

Tariff Rate Quotas (TRQs)

If a country opts to declare a tariff line as sensitive, it has to open a multilateral TRQ based on domestic consumption in the base period (average of 2003-2005) as compensation. The increase of the TRQ taken in CAPRI simulations is 3%, which is a trade-off between the 4% of domestic consumption of the tariff lines declared as sensitive at *HS8 digit level* and the minimum access of 2% of domestic consumption of that *product category*.

When more precise information about the TRQ expansion was available, we used this information to calculate the TRQ expansion.

Abolition of export subsidies

As is assumed for the GLOBE simulations, the export subsidy ceilings approved by the WTO in the country schedules of the Uruguay Round Agreement on Agriculture are assumed to be reduced to zero.

6. GLOBE simulation results

6.1. GLOBE: Scenarios with a EU-Mercosur trade agreement only

6.1.1. Bilateral trade flows between the two regions

Table 8: EU exports to Mercosur

	Base year 2004	Reference scenario 2020	Scenario 1 2020	Scenario 2 2020	Scenario 1	Scenario 2
		Level	Difference from ref. scenario		Difference from ref. scenario	
Units	*€ mn. 2004 prices*	*EUR million, 2020 prices*			*Per cent*	
Rice	1.42	3.15	1.24	1.25	39.40	39.55
Wheat	2.33	6.81	0.01	0.00	0.17	-0.04
Other cereals	3.49	8.55	1.48	1.46	17.34	17.02
Vegetables, fruits	19.43	49.45	12.67	13.31	25.62	26.93
Oilseeds	1.27	2.94	0.30	0.31	10.37	10.45
Sugar cane & beet	0.00	0.01	0.00	0.00	0.04	0.07
Plant-based fibres	1.87	4.14	0.54	0.54	12.96	13.11
Other crops	36.29	85.26	12.65	12.76	14.84	14.97
Live cattle, sheep, goats, horses	3.29	7.53	0.45	0.55	6.02	7.25
Live pigs, poultry, other animals	38.34	83.75	10.27	10.95	12.27	13.07
Raw milk	0.73	1.91	0.01	0.01	0.35	0.36
Wool, silk cocoons	1.85	6.71	1.53	1.56	22.83	23.18
Meat beef, sheep, goat, horse	5.24	12.10	2.73	2.69	22.53	22.23
Meat pork, poultry, other	5.97	13.87	3.39	3.33	24.48	24.00
Vegetable oils/ fats	84.42	196.20	21.22	51.57	10.81	26.28
Dairy products	20.69	42.91	9.42	20.76	21.96	48.39
Sugar	1.02	1.88	0.50	0.50	26.69	26.63
TOTAL AGRICULTURE	**227.66**	**527.17**	**78.43**	**121.53**	**14.88**	**23.05**
Food, beverages, tobacco	384.10	889.43	200.26	359.70	22.52	40.44
TOTAL AGRIFOOD	**611.76**	**1,416.59**	**278.68**	**481.23**	**19.67**	**33.97**
Primary sectors (mining. timber)	46.79	125.72	14.21	14.27	11.30	11.35
Fuel	837.08	2,215.36	10.92	11.98	0.49	0.54
Manufactures	16,413.43	42,053.75	5,941.04	6,087.70	14.13	14.48
Trade services & communication	2,738.90	6,601.31	12.93	15.56	0.20	0.24
Services	5,561.13	13,578.69	25.32	29.54	0.19	0.22
TOTAL	**26,209.10**	**65,991.42**	**6,283.11**	**6,640.28**	**9.52**	**10.06**

Source: GLOBE simulation results.

Table 8 reports the differences between the two scenarios and the reference scenario in 2020 for the EU's exports to Mercosur.

Very few of the product categories are unaffected by the trade liberalisation.[39] However, for most of the agrifood categories, exports are rather low in the reference scenario; hence these increases do not exceed €20 million even in Scenario 2. The exceptions, in agrifood, are *vegetable oils and fats* and *food, beverages and tobacco,* where EU exports to Mercosur increase by over €21 million and €200 million (at 2020 prices), respectively, in Scenario 1. A number of the products in these two composite categories qualified for only partial reductions (20% or 50%, see Table A1.8) in tariffs, which were fully removed under Scenario 2. This explains why there is a further substantial increase in EU exports in these categories in Scenario 2 (the full difference in exports under Scenario 2 is €51.6 million for vegetable oils and fats and €359.7 million for food, beverages and tobacco). This explanation also applies to dairy products, where the difference relative to the reference scenario doubles under Scenario 2. The relative increase in processed food exports (40%) is much greater than for primary agricultural commodities (23%).

The increase in exports of manufactures and machinery is €5.9 billion under Scenario 1. As expected, Scenario 2 brings little further change in EU manufacturing exports to Mercosur, as tariff concessions are extended to only 6% more of manufacturing tariff lines (largely in the vehicle categories). This brings the difference between manufacturing exports in Scenario 2 and the reference scenario to €6.1 billion, other product categories showing relatively small additional impacts.

The total increase in EU export earnings from bilateral trade with Mercosur that results from these new trade flows is about €6.3 billion under Scenario 1 and over €6.6 billion under Scenario 2. Agrifood contributes 4.4% of the increase in Scenario 1 and 7.2% in Scenario 2.

Table 9 presents the differences in EU imports from Mercosur under the two scenarios, relative to the reference scenario. As expected, imports increase for virtually all those products that are granted unrestricted access at zero tariff under the EU offer (Scenario 1) and there is no further increase under Scenario 2. By contrast, in the case of products subject to TRQs, imports increase under Scenario 1 due to the EU's offer of zero in-quota tariffs and (in the case of products already subject to a TRQ) the increases in existing quota limits, and there is a further increase in imports of these products under Scenario 2 due to the higher quota limits demanded by Mercosur. Dairy products are an exception to this trend: imports of these products respond to the incentive offered by the new TRQs for milk powder, butter and cheese under Scenario 1, but not to their further expansion under Scenario 2. These combined TRQs have a particularly low fill rate in both scenarios (see Table 10).

Imports of rice, wheat, other cereals (maize and sorghum), meat (beef, sheep and goat) and sugar react as expected to the expansion in TRQs under the two scenarios. Under Scenario 2, the volume of imports of beef plus sheep and goat meat are 32% higher than in the reference scenario, although the value of this category increases by only 20% because import prices for this category are 8% lower in Scenario 2. It is striking that, for other categories where imports follow TRQ expansion (rice, other cereals, sugar), there is also an accompanying decline in the import price, whether or not the TRQ is filled.

The total value of EU imports from the Mercosur block is 3.5% and 4.2% higher than in the reference scenario under Scenarios 1 and 2, respectively. Agrifood's contribution to these increases is 67% and 73%, respectively, mainly from commodities with relatively little processing. As a whole the greater part of

39 The unaffected commodities are wheat, sugar cane and beet, raw milk, fuel, trade services and services. In most of cases, exports of these categories are extremely small in the reference scenario. An exception is services, for which trade policy is assumed to be unchanged by the trade agreement.

Table 9: EU imports from Mercosur

	Base year 2004	Reference scenario 2020	Scenario 1 2020	Scenario 2 2020	Scenario 1	Scenario 2
		Level	Difference from ref. scenario		Difference from ref. scenario	
Units	*€ mn. 2004 prices*	*EUR million, 2020 prices*			*Per cent*	
Rice	3.61	6.28	0.76	2.05	12.13	32.67
Wheat	46.98	63.41	62.78	119.44	99.00	188.36
Other cereals	216.67	306.07	27.66	93.30	9.04	30.48
Vegetables, fruits	857.99	1,483.49	126.39	126.29	8.52	8.51
Oilseeds	2,670.32	4,062.00	-0.69	-1.35	-0.02	-0.03
Sugar cane & beet	0.01	0.02	0.00	0.00	0.13	0.12
Plant-based fibres	64.15	112.66	0.73	0.65	0.65	0.58
Other crops	2,122.70	4,794.01	100.43	98.25	2.09	2.05
Live cattle, sheep, goats, horses	4.18	7.12	3.12	3.18	43.77	44.63
Live pigs, poultry, other animals	262.22	504.04	79.88	82.15	15.85	16.30
Raw milk	0.30	0.38	1.23	1.23	322.60	322.49
Wool, silk cocoons	26.00	35.59	4.49	4.50	12.62	12.65
Meat beef, sheep, goat, horse	1,296.15	2,157.17	179.98	444.55	8.34	20.61
Meat pork, poultry, other	1,114.33	2,042.97	120.63	207.23	5.90	10.14
Vegetable oils/ fats	3,051.47	5,328.74	616.87	612.30	11.58	11.49
Dairy products	14.69	22.34	12.58	12.58	56.32	56.32
Sugar	110.04	162.91	2.32	13.74	1.42	8.43
TOTAL AGRICULTURE	**11,861.80**	**21,089.20**	**1,339.16**	**1,820.09**	**6.35**	**8.63**
Food, beverages, tobacco	1,916.29	3,799.35	162.74	162.91	4.28	4.29
TOTAL AGRIFOOD	**13,778.09**	**24,888.55**	**1,501.90**	**1,983.00**	**6.03**	**7.97**
Primary sectors (mining, wood)	2,605.51	4,306.69	7.42	5.35	0.17	0.12
Fuel	623.80	965.69	-0.46	-0.75	-0.05	-0.08
Manufactures	11,187.59	22,905.97	745.30	736.25	3.25	3.21
Trade services & communication	2,305.38	4,056.59	-0.49	-1.65	-0.01	-0.04
Services	3,958.74	7,367.68	-3.37	-5.50	-0.05	-0.07
TOTAL	**34,459.11**	**64,491.15**	**2,250.31**	**2,716.71**	**3.49**	**4.21**

Source: GLOBE simulation results.

this contribution is due to quantity changes rather than price changes. The only other sector concerned is manufacturing and machinery, whose contribution to the increased imports is around €0.74 billion in both scenarios, whilst there is a very small relative reduction in the EU's imports of services from Mercosur.

Table 10 shows the TRQ ceilings and fill rates in the reference scenario and the two policy scenarios. When a TRQ is filled, its fill rate is given as 100%. The third column for each scenario shows additional imports outside the bilateral TRQ, which may be imported under an *erga omnes* TRQ or at the MFN tariff. These imports are shown as a percentage of the TRQ.

Table 10: Bilateral TRQ limits and fill rates

Product / product group	Reference scenario 2020			Scenario 1			Scenario 2		
	TRQ ceiling	Fill rate	Other imports*	TRQ ceiling	Fill rate	Other imports*	TRQ ceiling	Fill rate	Other imports*
	000 tons	*% of TRQ*	*% of TRQ*	*000 tons*	*% of TRQ*	*% of TRQ*	*000 tons*	*% of TRQ*	*% of TRQ*
Rice				40.0	100	324.7	150.0	100	45.0
Wheat				200.0	100	0	1000.0	23.9	0
Other cereals				700.0	100	432.5	3500.0	100	38.2
Vegetables, fruits*	19.1	**	**	29.1	**	**	39.1	**	**
Meat beef, sheep, goat†	74.8	100	595.4	174.8	100	223.3	394.8	100	66.1
Meat pork, poultry, other	180.9	100	249.0	266.9	100	153.2	450.9	100	58.9
Dairy products				37.0	3.1	0	115.0	0.99	0
Sugar	334.1	100	337.3	334.1	100	345.0	534.1	100	207.1
Food, bever-ages, tobacco*	171.8	**	**	1171.8	**	**	1171.8	**	**

Source: DG AGRI (TRQ ceilings) and GLOBE simulations.

** May be imported under an erga omnes TRQ or out of quota at MFN rate.*

*** See the text for an explanation for the missing information in these rows.*

† TRQs in product (not carcass) weight.

Regarding the new TRQs for rice, maize and sorghum, and wheat, the first two are filled and with imports in excess of the ceiling in both scenarios. The wheat TRQ is not filled in Scenario 2, whilst the fill rate is extremely low in both scenarios for the new dairy TRQs (milk powder, butter and cheese), which are combined in the category 'dairy products'.

In the reference scenario, the TRQs for poultry are applied to tariff lines that are allocated to two different GLOBE product categories. Part of their respective TRQs is used for fresh and frozen meat and appears in the category 'meat pork, poultry and other', and part is used for processed meat, which belongs in 'food, beverages and tobacco'. The additional poultry TRQ awarded in Scenarios 1 and 2 has all been allocated to the corresponding 'meat' category, assuming that the extra TRQ for poultry would indeed be filled by unprocessed (fresh and chilled) meat. The additional TRQ for beef, like the TRQ already existing in the reference scenario, is for unprocessed meat. The TRQ for pork is created for the first time in Scenario 1; here too it is assumed to be used entirely for unprocessed pork. It is important to note that the increase in the processed food category under Scenario 1 is *not* due to processed food, but to the opening of a new TRQ for ethanol (1 million tons), which remains unchanged in Scenario 2.

The fill rates shown in the table are calculated as total EU imports from Mercosur within each product category as a percentage of the TRQ (per category), up to the maximum possible limit of 100%. However, several product categories contain one or two tariff lines with TRQs that are small relative to the total volume of products aggregated within that category. Since a large part of what is traded within these categories are products without a TRQ, this calculation could produce misleading estimated 'fill rates' and out-of-TRQ imports. There are four large aggregate categories shown in the table: vegetables and fruit, meat (beef, sheep etc), meat (pork, poultry, etc) and food, beverages and tobacco. The first meat category contains TRQs for beef and sheep meat. The beef TRQ expands in Scenario 1 by 100 thousand tons, and by a further 200 thousand tons in Scenario 2, whereas the TRQ for sheep meat expands by 20 thousand

Table 11: Export earnings on bilateral trade

	Base year 2004	Reference scenario 2020	Scenario 1 2020		Scenario 2 2020	
	EUR billion, 2004 prices	EUR billion, at 2020 prices	EUR billion, at 2020 prices	Difference (€ bn)	EUR billion, at 2020 prices	Difference (€ bn)
European Union						
AgFood	0.61	1.42	1.70	0.28	1.90	0.48
Non AgFood	25.60	64.58	70.58	6.0	70.73	6.16
EU Total	**26.21**	**65.99**	**72.28**	**6.28**	**72.63**	**6.64**
Mercosur						
AgFood	13.78	24.89	26.39	1.50	26.87	1.98
Non AgFood	20.68	39.60	40.35	0.75	40.34	0.73
Mercosur Total	**34.46**	**64.49**	**66.74**	**2.25**	**67.21**	**2.72**

Source: GLOBE simulation results.

in Scenario 2. The total pork and poultry TRQs increase by 11 plus 75 thousand tons, respectively, in Scenario 1, and by a further 9 plus 175 thousand tons, respectively, in Scenario 2.[40] Since the products with TRQs within these two categories account for most of the volume of trade, the fill rates indicate that it is indeed those commodities that are responsible for the over-fill.

This is not the case with the other two categories. The only TRQ in the vegetables and fruit category is a small one for garlic, and within food, beverages and tobacco there are TRQs for a very small share of the products included in the category.[41] It follows that fill rates calculated for these categories would be misleading, and simply due to the presence of many products that are not subject to TRQs in the aggregate category. Therefore, no fill rate is shown for these aggregate categories.

Table 11 summarises the earnings on bilateral trade for each trade block under the reference scenario and the two EU-Mercosur trade agreement scenarios. As expected, earnings are higher for both blocks under the more liberal Scenario 2. However, most of these gains are already achieved under Scenario 1 for each of the blocks. In *relative* terms, the additional gain from Scenario 2 is higher for Mercosur (an extra 21% in bilateral export earnings) than for the EU (an extra 6%). Moreover, the gaining and losing sectors within each of the regions are very different.

The impacts of the two liberalisation scenarios on third countries are very small (see Volume 2, Tables A2.1-A2.2), except for beef, sheep and goat meat (particularly in Scenario 2), and to a lesser extent, live cattle, other cereals, pork and poultry meat, and vegetable oils. Mercosur's more favourable trade terms with the EU cause the exports of meats and vegetable oils to be lower for a number of third regions, although beef and sheep meat exports are slightly higher from China and Japan. The policy scenarios also cause slightly lower exports of pig and poultry meat from some third countries, except for Japan whose

40 In 2009, beef (fresh and frozen) accounted for 86.9% of the EU's imports from Mercosur within the GLOBE aggregate "meat beef sheep etc". In the aggregate "meat pigs poultry etc", in 2009 pork (fresh and frozen) accounted for 34.46% of the EU's imports from Mercosur in this category, and poultry meat had a 64.37% share (Source: Eurostat, data from 2009).

41 In 2009, the composition of this category of EU imports from Mercosur was: 15.2% coffee, tea, spices; 0.03% milled products; 7.7% processed pork, poultry, beef, and fish; 0.27% cocoa and cocoa preparations; 8.8% processed vegetables, fruits and nuts; 1.2% miscellaneous, 3.7% beverages, spirits and vinegar; 57.7% residues from food industry and feed; tobacco goods 5.7%.

exports are higher. Third country exports of wheat, other cereals and oilseeds are also a little lower for some regions. Exports of vegetable oils and fats are lower from ACP countries but higher for Japan.

There is also a decrease in imports of beef, sheep and goat meat by most trading blocs and regions, whereas imports of pork and poultry meat are slightly higher in a number of regions.

Mercosur considerably increases its imports of a number of products (including other cereals, fruit and vegetables, live cattle, live pigs and poultry, beef, sheep & goat carcasses, pig and poultry meat, vegetable oils and sugar), whilst at the same time its total exports to other countries in these categories are also higher. Much of the greater export flow is destined for the EU market. However, similar percentage changes in imports and exports of a given product may represent very different volumes, if the flows in the reference scenario are of different orders of magnitude. Therefore, detailed inspection of the volume of these trade flows is needed before drawing conclusions about whether Mercosur's higher imports of these products are effectively substituting for domestic production that is being directed away from domestic consumption towards the EU.[42] Although the model does not allow re-export (for technical reasons) and this will not occur in reality either because of rules-of-origin conditions, there is nothing in the model or in reality to prevent Mercosur orienting its own production to the EU whilst increasing its imports of the same products to satisfy its domestic demand.

6.1.2. Production changes in both regions

Table 12 reports the results for total output in each product category in the reference scenario and the two policy experiments in the EU.

The only impacts of the policy scenarios in the agrifood sector that exceed €0.5 billion (in absolute terms) are in the meat (beef, sheep & goat) sector (production lower by €0.58 billion and €1.46 billion under Scenario 1 and Scenario 2, respectively). Only a very small part of the decline in the value of production of these two meat categories is due to lower prices, the rest being a quantity reduction. Most agricultural categories are lower in both scenarios, with several showing no real change. Only dairy products receive a (very small) boost, but this occurs only in Scenario 2. In total, the value of agrifood production (including the food processing sector) is €2.10 billion and €3.23 billion lower, respectively, in Scenarios 1 and 2. The higher total agrifood exports to Mercosur (around €481 million in Scenario 2) do not translate into an overall production increase for agriculture.

The last three lines of the table show the total value added for primary agriculture and the agrifood sector (comprising primary agriculture and food processing), and the economy-wide total value-added (or 'net production value').[43] The value of total production in the economy given in the fourth last line is obtained by summing the output of the different commodity sectors in GLOBE. These totals contain an element of some double-counting, since some sectoral output is used as an intermediate input for other production sectors. Therefore, in order to gauge the **net impact** of the two trade scenarios on the sectors of interest and on the EU economy as a whole, the last three lines should be used.

42 Flôres and Watanuki (2008) found similar trade diversion for all sectors except heavy manufactures.

43 Summing the value added over an economy's production sectors is one of the ways of measuring its GDP, hence the figure of 'total value added' shown in the table can be interpreted as such.

Table 12: Production in the European Union

	Base year 2004	Reference scenario 2020	Scenario 1 2020	Scenario 2 2020	Scenario 1	Scenario 2
		Level	Difference from reference scenario		Difference from reference scenario	
Units	*€ bn. 2004 prices*	*EUR billion, 2020 prices*			*Per cent*	
Rice	5.99	10.85	0.00	-0.01	-0.02	-0.05
Wheat	21.68	38.74	-0.09	-0.13	-0.24	-0.33
Other cereals	24.68	45.93	-0.11	-0.36	-0.23	-0.78
Vegetables, fruits	107.14	193.21	-0.12	-0.10	-0.06	-0.05
Oilseeds	13.18	22.18	-0.05	-0.04	-0.25	-0.20
Sugar cane & beet	7.97	14.58	0.00	0.00	-0.01	-0.02
Plant-based fibres	8.35	15.01	-0.01	0.00	-0.04	-0.02
Other crops	88.23	160.54	-0.06	-0.05	-0.04	-0.03
Live cattle, sheep, goats, horses	38.57	70.39	-0.13	-0.32	-0.19	-0.46
Live pigs, poultry, other animals	67.77	130.11	-0.12	-0.15	-0.09	-0.12
Raw milk	56.94	104.30	-0.02	-0.01	-0.02	-0.01
Wool, silk cocoons	0.44	1.07	0.00	0.00	0.18	0.17
Meat beef, sheep, goat, horse	56.49	99.33	-0.58	-1.46	-0.59	-1.47
Meat pork, poultry, other	87.50	156.15	-0.21	-0.39	-0.14	-0.25
Vegetable oils/ fats	37.64	64.83	-0.44	-0.39	-0.68	-0.60
Dairy products	199.35	355.75	-0.02	0.03	-0.01	0.01
Sugar	26.25	46.67	-0.01	-0.05	-0.03	-0.11
TOTAL AGRICULTURE	**848.17**	**1,529.63**	**-1.99**	**-3.44**	**-0.13**	**-0.22**
Food, beverages, tobacco	985.33	1,735.64	-0.10	0.21	-0.01	0.01
TOTAL AGRIFOOD	**1,833.51**	**3,265.27**	**-2.10**	**-3.23**	**-0.06**	**-0.10**
Primary sectors (mining, wood)	156.90	287.09	0.10	0.11	0.03	0.04
Fuel	701.67	1,157.35	0.13	0.20	0.01	0.02
Manufactures	8,705.44	15,052.45	8.96	9.76	0.06	0.06
Trade services & communication	4,075.91	7,240.48	1.42	1.77	0.02	0.02
Services	9,133.70	16,030.03	0.41	1.92	0.00	0.01
TOTAL	**24,607.14**	**43,032.68**	**8.92**	**10.52**	**0.02**	**0.02**
Agricultural VA	**297.73**	**547.51**	**-0.60**	**-0.99**	**-0.11**	**-0.18**
Agrifood VA	**364.32**	**928.43**	**-0.59**	**-0.90**	**-0.06**	**-0.10**
Total Value Added	**10,898.27**	**19,231.70**	**3.71**	**4.85**	**0.02**	**0.03**

Source: GLOBE simulation results.

Agriculture's loss of value added, relative to the reference scenario, is 65% greater in Scenario 2 than in Scenario 1, whereas for agrifood as a whole (including the food processing sector), the loss is 53% greater. The increase in the EU's total value added is 31% higher under Scenario 2 than under Scenario 1; relative to the reference scenario, this represents a total increase of €4.85 billion, or about 0.25%.

The production impacts of the two policy scenarios were examined for EU15 and EU12 separately. Where any noticeable loss in production value occurs for EU27, it generally falls more heavily on EU15. For example, the production losses in the livestock and meat sectors are much greater in relative terms in

Table 13: Production in Mercosur

	Base year 2004	Reference scenario 2020	Scenario 1 2020	Scenario 2 2020	Scenario 1	Scenario 2
		Level	Difference from reference scenario		Difference from reference scenario	
Units	*€ bn. 2004 prices*	*EUR billion, 2020 prices*			*Per cent*	
Rice	1.21	4.75	0.01	0.01	0.26	0.30
Wheat	0.70	2.63	0.05	0.07	1.84	2.68
Other cereals	1.63	6.32	0.06	0.14	0.94	2.22
Vegetables, fruits	2.45	9.86	0.07	0.08	0.75	0.79
Oilseeds	5.94	27.59	0.27	0.26	0.98	0.94
Sugar cane & beet	0.93	3.86	0.00	0.01	0.06	0.17
Plant-based fibres	0.37	1.68	0.00	0.00	0.01	0.01
Other crops	6.07	24.50	0.09	0.10	0.38	0.42
Live cattle, sheep, goats, horses	3.01	11.98	0.14	0.34	1.20	2.81
Live pigs, poultry, other animals	2.29	8.83	0.11	0.19	1.29	2.18
Raw milk	1.23	5.03	0.01	0.02	0.29	0.33
Wool, silk cocoons	0.05	0.27	0.00	0.00	0.60	0.84
Meat beef, sheep, goat, horse	4.78	18.28	0.23	0.57	1.24	3.10
Meat pork, poultry, other	2.53	9.56	0.11	0.21	1.15	2.15
Vegetable oils/ fats	5.20	21.12	0.35	0.33	1.65	1.56
Dairy products	2.86	11.31	0.02	0.02	0.18	0.14
Sugar	1.89	7.01	0.01	0.02	0.12	0.30
TOTAL AGRICULTURE	**43.15**	**174.58**	**1.55**	**2.36**	**0.89**	**1.35**
Food, beverages, tobacco	13.96	54.22	0.12	0.08	0.21	0.15
TOTAL AGRIFOOD	**57.11**	**228.79**	**1.66**	**2.44**	**0.73**	**1.07**
Primary sectors (mining, wood)	4.49	25.27	-0.02	-0.03	-0.07	-0.10
Fuel	31.64	137.95	0.15	0.17	0.11	0.13
Manufactures	119.77	575.46	-1.39	-1.45	-0.24	-0.25
Trade services & communication	43.50	185.72	0.30	0.33	0.16	0.18
Services	123.77	533.86	0.77	0.81	0.14	0.15
TOTAL	**380.28**	**1,687.05**	**1.47**	**2.28**	**0.09**	**0.13**
Agricultural VA	**16.83**	**68.28**	**0.76**	**1.02**	**1.11**	**1.49**
Agrifood VA	**20.25**	**81.09**	**0.79**	**1.05**	**0.98**	**1.29**
Total Value Added	**186.57**	**813.46**	**1.24**	**1.56**	**0.15**	**0.19**

Source: GLOBE simulation results.

EU15 than in EU12.[44] Percentage production losses are also 3-4 times greater in EU15 than in EU12 for other cereals and oilseeds, and 50% greater for vegetable oils and fats. By contrast, the loss in production value for wheat is about -0.24% in EU15 as against about -0.57% in EU12. The stimulus to manufacturing relative to the reference scenario is more than twice as strong in EU15 compared to EU12, whereas the food, beverages

44 In Scenario 2, production losses in EU15 are: live cattle: -0.50%; other live animals: -0.12%; beef, sheep & goat meat: -1.58%; pork and poultry meat: -0.27%. The corresponding production losses in EU12 are -0.06%, -0.02%, -0.45% and -0.11%, respectively.

Table 14: Total incomes of factors in GLOBE simulations

		Reference scenario 2020	Scenario 1 2020	Scenario 2 2020
Factor	**Block**	*EUR million (2020 prices)*	*Percentage difference from reference scenario*	
Land	**EU15**	85.20	-0.05	-0.08
	EU12	26.30	-0.04	-0.07
	Mercosur	9.21	0.64	0.93
Unskilled labour	**EU15**	**4,427.35**	**0.02**	**0.02**
	Agriculture	191.31	-0.11	-0.18
	Food industry	102.38	0.00	0.02
	EU12	**258.89**	**0.02**	**0.02**
	Agriculture	30.41	-0.07	-0.11
	Food industry	8.70	0.02	0.03
	Mercosur	**206.58**	**0.14**	**0.18**
	Agriculture	14.73	0.89	1.36
	Food industry	3.66	0.27	0.23
Skilled labour	**EU15**	**3,209.65**	**0.02**	**0.02**
	Agriculture	26.62	-0.14	-0.25
	Food industry	32.90	0.00	0.02
	EU12	**115.90**	**0.02**	**0.03**
	Agriculture	1.26	-0.08	-0.12
	Food industry	1.73	0.02	0.03
	Mercosur	**110.82**	**0.14**	**0.16**
	Agriculture	0.81	0.86	1.43
	Food industry	0.69	0.27	0.24
Capital	**EU15**	**7,427.98**	**0.02**	**0.02**
	Agriculture	173.40	-0.14	-0.26
	Food industry	158.54	0.00	0.02
	EU12	**526.59**	**0.02**	**0.02**
	Agriculture	25.03	-0.07	-0.11
	Food industry	17.63	0.02	0.03
	Mercosur	**395.80**	**0.13**	**0.17**
	Agriculture	40.10	0.83	1.26
	Food industry	7.38	0.28	0.23
Natural resources	**EU15**	40.54	0.03	0.03
	EU12	5.64	0.02	0.03
	Mercosur	7.37	0.11	0.13

Source: GLOBE simulation results.

and tobacco sector's production value is 0.023% higher (in Scenario 2) in EU12 as against only 0.012% higher in EU15.

Table 13 shows that the differences in Mercosur's total production value relative to the reference scenario are much smaller than those in the EU in values (€1.47 billion and €2.28 billion in the two scenarios), but larger in percentage terms (0.09% and 0.13%, respectively). This reflects the relative

importance of a trade agreement to each bloc due to their relative size. The differences in *agricultural* production value in Mercosur in the two scenarios are relatively large both in absolute terms (€1.55 billion and €2.36 billion, respectively), *and* in percentage terms (0.9% and 1.35% of the reference scenario, respectively), and come very largely from primary production. Part of agrifood's contribution to the increase in total production value is cancelled out by lower values in the manufacturing sector in both scenarios. This is also true for value added where higher values in agrifood are slightly reduced by the lower value added generated in manufacturing.

The Mercosur commodity sectors where production value is most affected are those for live animals and meat, and also vegetable oils and fats. Non-negligible changes in other commodity sectors (notably wheat and other cereals) are much smaller in absolute size. It is surprising that the fruit and vegetable sectors' output expansion is less than €80 million in both scenarios, despite the EU's higher imports from this sector of around €126 million. Manufacturing output is lower in both scenarios (by €1.39 billion and €1.45 billion, respectively).

6.1.3. GDP and factor income impacts

Income changes for the five factors distinguished in GLOBE are shown for the reference scenario and the two EU-Mercosur scenarios in Table 14. In both EU15 and EU12, factor incomes increase by very small percentages, except for land whose total income *falls* under both scenarios.

Despite the very small increase at the level of the whole economy in total factor income for unskilled and skilled labour, and for capital, the income of these factors *within the agricultural and food industries* falls, and more steeply in EU15 than in EU12.

All factor incomes in Mercosur register larger percentage gains than in the EU. This underlines the fact that because the Mercosur economy is much smaller than the EU economy, a trade agreement with a large trading partner like the EU will have a larger effect in relative terms. The combined income of skilled and unskilled labour in Mercosur is €0.55 million (at 2020 prices) higher in Scenario 2 than in the reference scenario. Moreover, for each of these factors, the highest percentage gain tends to be received when they are employed in agriculture.

*Table 15: Simulated GDP at 2020 prices**

	Reference scenario 2020 EUR bn at 2020 prices	Scenario 1 EUR bn at 2020 prices	Difference from reference scenario EUR mn at 2020 prices	Percentage difference from reference scenario	Scenario 2 EUR bn at 2020 prices	Difference from reference scenario EUR mn at 2020 prices	Percentage difference from reference scenario
EU15	21,382.42	21,386.35	3,927.31	0.02	21,387.63	5,214.39	0.02
EU12	1,249.14	1,249.36	213.70	0.02	1,249.42	273.86	0.02
Mercosur	943.12	944.29	1,166.10	0.12	944.65	1,523.28	0.16

Source: GLOBE simulation results.

** It must be borne in mind that the absolute level of the figures in 2020 prices, as well as the relative size of policy impacts in the two blocs measured in EUR billion, depend on the specific assumptions made about future exchange rate adjustments and inflation rates (these assumptions are given in Volume 2, Table A1.4).*

These figures are greater than the figures for total value added reported in Tables 12 and 13 because they also include indirect taxes.

Table 15 reports the GDP changes for the three regions, EU12, EU15 and Mercosur. Not surprisingly, EU15 gains the most in terms of total GDP, since its economy is over 20 times larger than that of Mercosur, and 17 times greater than that of EU12. However, in percentage terms, this gain is very small. The largest relative improvement is seen in Mercosur.

It is important to note that 76% of Mercosur's total GDP gain under Scenario 2 is already achieved under Scenario 1. For EU15 also, 75% of its total gain in Scenario 2 is already achieved in Scenario 1, and 78% for EU12. However, the additional loss incurred by EU agriculture is disproportionately greater (approximately 72% larger) when passing from Scenario 1 to Scenario 2, whilst the additional gain to agriculture in Mercosur is also relatively greater (by about 52%) than the additional total GDP increment in that region (see Tables 12 and 13).

6.2. GLOBE: Scenarios including Doha Round agreement

6.3.1. Bilateral trade flows between the two regions

Table 16 reports the impacts of three different scenarios on EU exports to Mercosur. First, it shows the impact of a Doha Round agreement, in the absence of any additional concessions between these two trading blocks. The last four columns of the table report EU exports to Mercosur under two scenarios in which bilateral EU-Mercosur trade concessions are applied on top of this Doha Round agreement. Scenario DM1 is based on an EU offer that is conditional on a Doha agreement being in force, whereas scenario DM2 is based on Mercosur's standard request, which is independent of whether a Doha agreement is reached or not. For all three scenarios, the differences compared with the 2020 reference scenario are shown, both in values (at 2020 prices) and as a percentage of the reference scenario outcome. Comparing these impacts allows the incremental effect of bilateral trade concessions in a post-Doha setting to be assessed.

A Doha Round agreement has the effect of reducing the EU's exports to Mercosur (in value terms) for rice, other cereals, sugar beet, beef and sheep meat, pork and poultry meat, dairy products and sugar. Table A2.1 (Volume 2, Annex 2) shows that, in the case of Doha only, the EU's *total* exports of rice, dairy products and sugar also fall, whereas for beef and sheep meat, and pork and poultry meat, total EU exports increase significantly (especially to Japan and countries having FTAs with the EU). Thus, for the first set of products, the Doha Round agreement causes a net reduction of EU exports to world markets, whereas for the second set of products it causes a net expansion of EU exports to world markets while also diverting part of the reference scenario flow away from Mercosur towards third-country destinations to which the Doha Round agreement has improved market access.

Since the EU export flows of agricultural commodities to Mercosur in the reference scenario are small or very small, all the changes reported in Table 16 are quite marginal. Even the impact of a Doha Round agreement on exports of processed food exports to Mercosur is only about €4 million. By contrast, exports of manufactures to Mercosur increase by €1.8 billion, or 4.3%, following a Doha Round agreement, and this constitutes more than 97% of the total increase in EU exports to Mercosur due to the Doha Round agreement. It is worth noting that, under a Doha Round agreement, the EU's manufacturing exports to China and other WTO developing country members increase by substantially more than those to Mercosur.

Table 16: EU exports to Mercosur

	Base year 2004	Refer´ce Scenario 2020	DDA Agreement only* 2020		Scenario DM1 2020	Scenario DM2 2020	Scenario DM1 2020	Scenario DM2 2020
	Level	Level	Difference from reference scenario		Difference from reference scenario		Difference from reference scenario	
Units	*EUR mn, 2004 prices*	*EUR mn, 2020 prices*	*EUR mn, 2020 prices*	*Per cent*	*EUR million, 2020 prices*		*Per cent*	
Rice	1.42	3.15	-0.14	-4.55	1.03	1.04	32.73	32.84
Wheat	2.33	6.81	0.05	0.73	0.08	0.04	1.20	0.54
Other cereals	3.49	8.55	-0.05	-0.63	1.40	1.36	16.35	15.85
Vegetables, fruits	19.43	49.45	0.13	0.27	12.72	13.36	25.73	27.01
Oilseeds	1.27	2.94	0.02	0.67	0.32	0.32	10.95	11.03
Sugar cane & beet	0.00	0.01	0.00	-10.28	0.00	0.00	-10.25	-10.23
Plant-based fibres	1.87	4.14	0.01	0.22	0.54	0.55	13.13	13.24
Other crops	36.29	85.26	0.15	0.18	12.78	12.87	14.99	15.09
Live cattle, sheep, goats, horses	3.29	7.53	0.42	5.57	0.83	0.91	10.98	12.06
Live pigs, poultry, other animals	38.34	83.75	2.36	2.82	12.64	13.08	15.09	15.62
Raw milk	0.73	1.91	0.05	2.58	0.06	0.06	2.90	2.90
Wool, silk cocoons	1.85	6.71	0.11	1.66	1.66	1.68	24.66	24.96
Meat beef, sheep, goat, horse	5.24	12.10	-0.44	-3.68	2.17	2.12	17.96	17.52
Meat pork, poultry, other	5.97	13.87	-0.21	-1.50	3.09	3.06	22.31	22.05
Vegetable oils/ fats	84.42	196.20	0.12	0.06	21.06	51.30	10.73	26.15
Dairy products	20.69	42.91	-1.12	-2.60	7.38	17.43	17.19	40.63
Sugar	1.02	1.88	-0.62	-32.76	-0.29	-0.29	-15.16	-15.17
TOTAL AGRICULTURE	**227.66**	**527.17**	**0.84**	**0.16**	**77.47**	**118.87**	**14.70**	**22.55**
Food, beverages, tobacco	384.10	889.43	3.98	0.45	201.02	357.29	22.60	40.17
TOTAL AGRIFOOD	**611.76**	**1,416.59**	**4.82**	**0.34**	**278.49**	**476.16**	**19.66**	**33.61**
Primary sectors (mining. timber)	46.79	125.72	0.25	0.20	14.35	14.40	11.42	11.46
Fuel	837.08	2,215.36	11.92	0.54	21.77	22.69	0.98	1.02
Manufactures	16,413.43	42,053.75	1,801.74	4.28	6,529.43	6,645.13	15.53	15.80
Trade services & communication	2,738.90	6,601.31	11.28	0.17	20.90	23.06	0.32	0.35
Services	5,561.13	13,578.69	20.05	0.15	39.23	42.62	0.29	0.31
TOTAL	**26,209.10**	**65,991.42**	**1,850.06**	**2.80**	**6,904.17**	**7,224.07**	**10.46**	**10.95**

Source: GLOBE simulation results.

** It is assumed that the standard set of Doha tariff reductions is applied to all products, and no products are treated as 'sensitive'. This assumption is examined more closely in Volume 2, Annex 3C.*

When bilateral concessions between the EU and Mercosur are applied on top of the Doha Round agreement, the reductions in EU exports to Mercosur due to Doha alone are reversed except in the case of sugar, although the reduction in sugar exports becomes less marked. For all other agricultural commodities, export flows to Mercosur increase and in most cases quite strongly relative to the low levels

in the reference scenario. The total increase in the value of agricultural exports to Mercosur, relative to the reference scenario, is 14.7% according to the EU offer (DM1) and 22.6% according to the Mercosur request (DM2), although in money terms (even at 2020 prices) these increases are still small (€77.5 mn and €118.9 mn, respectively). The increase in processed food exports to Mercosur is more substantial (€201.9 mn and €357.3 mn, respectively, or 22.6% and 40.2%). Nevertheless, the contribution of the agrifood sectors to the total increase in EU exports to Mercosur is still only 4.6% (DM1) and 6.6% (DM2).[45]

Table A2.3 (Volume 2, Annex 2) shows that the increase in total EU exports is a little greater in Scenarios DM1 and DM2 than with DDA alone for some products, but slightly smaller for others (notably, rice, wheat, oilseeds and services). The decline in total EU exports of dairy products with only a Doha Round agreement is a little less when the bilateral trade concessions are included on top of Doha.

It is interesting to note that the addition of bilateral concessions affects a number of the changes in Mercosur's *total* imports caused by a Doha Round agreement. Table A2.4 shows that the bilateral agreement with the EU strongly enhances the Doha-caused import increases for rice, other cereals and oilseeds (largely from Canada), vegetable oils (from ACP countries, Oceania and India) and processed foods, and to a lesser extent for live pigs and poultry and manufactures. In addition, in the cases of vegetables and fruit, other crops, beef and sheep meat, pork and poultry meat, and dairy products, the fall in Mercosur's total imports caused by Doha alone, is fully reversed so that Mercosur imports more than in the reference scenario when it enjoys greater bilateral access to EU markets.

The total increase in EU export earnings from bilateral trade with Mercosur that results from these new trade flows is about €6.9 billion in Scenario DM1 and over €7.2 billion in Scenario DM2. These increases are 3.7 and 3.9 times the size of the change in EU exports to Mercosur that is delivered by the Doha Round agreement alone.

Table 17 presents the differences in EU imports from Mercosur under the same three scenarios, relative to the reference scenario. In order to keep these differences in perspective, it is useful to know the broader context in which they occur: Mercosur's *total* exports are higher by 1.6%, 2.0% and 2.2% in the scenarios DDA only, DM1 and DM2, respectively, and the share of Mercosur's total exports that is imported by the EU increases from 25.5% in the reference scenario to 26.0%, 26.4% and 26.5% under these three scenarios, respectively.

Regarding the individual product flows, the effect of a Doha Round agreement alone is to reduce EU imports of oilseeds and vegetable oils from Mercosur considerably, although Mercosur's *total* exports of these product categories are all higher following a Doha Round agreement. With the addition of bilateral concessions in DM1 and DM2, the Doha-induced fall in EU oilseeds imports from Mercosur is hardly changed whereas EU imports of vegetable oils are substantially higher than in the reference scenario. Apart from these two cases, for all other products that are important for bilateral imports, a Doha Round agreement alone already increases the EU's imports from Mercosur, and this effect is enhanced by the addition of a bilateral agreement. In particular, the impact of Doha alone on the meat categories is already substantial (notably, beef and sheep meat imports more than double), and these effects are further strengthened under DM1 and DM2. It is important to bear in mind that the Doha Round scenario

45 In the scenarios without a Doha Round agreement, the shares were similar: 4.4% and 7.2%, respectively.

Table 17: EU imports from Mercosur

	Base year 2004	Refer´ce Scenario 2020	DDA Agreement only* 2020		Scenario DM1 2020	Scenario DM2 2020	Scenario DM1 2020	Scenario DM2 2020
	Level	Level	Difference from reference scenario		Difference from reference scenario		Difference from reference scenario	
Units	*EUR mn, 2004 prices*	*EUR mn, 2020 prices*	*EUR mn, 2020 prices*	*Per cent*	*EUR million, 2020 prices*		*Per cent*	
Rice	3.61	6.28	8.13	129.52	8.36	9.31	133.12	148.34
Wheat	46.98	63.41	10.91	17.21	26.32	115.87	41.50	182.74
Other cereals	216.67	306.07	-1.59	-0.52	15.49	90.56	5.06	29.59
Vegetables, fruits	857.99	1,483.49	146.30	9.86	242.36	242.23	16.34	16.33
Oilseeds	2,670.32	4,062.00	-19.39	-0.48	-19.09	-19.61	-0.47	-0.48
Sugar cane & beet	0.01	0.02	0.00	-1.64	0.00	0.00	-1.60	-1.59
Plant-based fibres	64.15	112.66	-0.22	-0.20	0.57	0.50	0.50	0.44
Other crops	2,122.70	4,794.01	1.68	0.03	-0.30	-2.16	-0.01	-0.05
Live cattle, sheep, goats, horses	4.18	7.12	0.50	7.02	3.24	3.30	45.51	46.29
Live pigs, poultry, other animals	262.22	504.04	57.04	11.32	85.20	86.81	16.90	17.22
Raw milk	0.30	0.38	0.00	0.22	1.23	1.23	323.42	323.42
Wool, silk cocoons	26.00	35.59	0.04	0.13	4.56	4.58	12.82	12.85
Meat beef, sheep, goat, horse	1,296.15	2,157.17	2,659.76	123.30	2,743.80	3,002.55	127.19	139.19
Meat pork, poultry, other	1,114.33	2,042.97	727.82	35.63	804.99	858.55	39.40	42.02
Vegetable oils/ fats	3,051.47	5,328.74	-167.10	-3.14	423.96	420.00	7.96	7.88
Dairy products	14.69	22.34	10.15	45.45	12.54	12.54	56.13	56.14
Sugar	110.04	162.91	351.25	215.61	357.80	367.39	219.63	225.51
TOTAL AGRICULTURE	**11,861.80**	**21,089.20**	**3,785.27**	**17.95**	**4,711.02**	**5,193.64**	**22.34**	**24.63**
Food, beverages, tobacco	1,916.29	3,799.35	135.34	3.56	141.17	141.71	3.72	3.73
TOTAL AGRIFOOD	**13,778.09**	**24,888.55**	**3,920.61**	**15.75**	**4,852.20**	**5,335.35**	**19.50**	**21.44**
Primary sectors (mining. timber)	2,605.51	4,306.69	2.84	0.07	6.14	4.36	0.14	0.10
Fuel	623.80	965.69	1.28	0.13	1.02	0.77	0.11	0.08
Manufactures	11,187.59	22,905.97	157.62	0.69	624.61	616.67	2.73	2.69
Trade services & communication	2,305.38	4,056.59	-0.31	-0.01	-0.17	-1.22	0.00	-0.03
Services	3,958.74	7,367.68	3.03	0.04	1.24	-0.70	0.02	-0.01
TOTAL	**34,459.11**	**64,491.15**	**4,085.07**	**6.33**	**5,485.04**	**5,955.23**	**8.51**	**9.23**

Source: GLOBE simulation results.

** It is assumed that the standard set of Doha tariff reductions is applied to all products, and no products are treated as 'sensitive'.*

simulated here assumes **no sensitive products** for developed countries, and hence all products benefit from the standard Doha tariff cuts according to the schedule shown in Table 4.

Table 18: Bilateral TRQ limits and fill rates

Product / product group	Reference scenario 2020			DDA only			Scenario DM1			Scenario DM2		
	TRQ ceiling	Fill rate	Other imports*	TRQ ceiling	Fill rate	Other imports*	TRQ ceiling	Fill rate	Other imports*	TRQ ceiling	Fill rate	Other imports*
	000 tons	*% of TRQ*	*% of TRQ*	*000 tons*	*% of TRQ*	*% of TRQ*	*000 tons*	*% of TRQ*	*% of TRQ*	*000 tons*	*% of TRQ*	*% of TRQ*
Rice							26.0	100	949.1	150.0	100	99.3
Wheat							120.0	100	32.0	1000.0	23.6	0.0
Other cereals							400.0	100	789.4	3500.0	100	37.8
Vegetables, fruits*	19.1	**	**	19.1	**	**	25.1	**	**	39.1	**	**
Meat beef, sheep, goat†	74.8	100	595.4	74.8	100	1088.5	134.8	100	558.4	394.8	100	138.3
Meat pork, poultry, other	180.9	100	249.0	180.9	100	330.2	231.9	100	247.4	450.9	100	84.3
Dairy products							18.5	6.14	0	115.0	1.0	0
Sugar	334.1	100	337.3	334.1	100	832.1	334.1	100	848.4	534.1	100	509.5
Food, beverages, tobacco*	171.8	**	**	171.8	**	**		**	**	1171.8	**	**

Source: DG AGRI (TRQ ceilings) and GLOBE simulations.

** May be imported under an erga omnes TRQ or out of quota at MFN rate.*

*** See the text for an explanation for the missing information in these rows.*

† TRQs in product (not carcass) weight.

The product categories where the incremental increase in EU imports from bilateral concessions is greatest, relative to Doha alone, are wheat (especially in DM2) and vegetables and fruit. In both cases, this is accompanied by an increase in *total* Mercosur exports of these products. However, whereas in the case of wheat, exports to other destinations are maintained, in the case of vegetables and fruit there is diversion of some exports away from other destinations including North America, China and Russia, towards the EU.

A Doha Round agreement gives a modest stimulus to the EU's imports from Mercosur of processed food, which hardly changes when bilateral concessions are added. Bilateral concessions are somewhat more favourable to the EU's imports of manufactures from Mercosur, but the effect is still relatively small, and virtually the same in the two bilateral scenarios.

The total value of the EU's imports from Mercosur is 6.3%, 8.5% and 9.2% higher under the three scenarios, respectively. The contribution of the agrifood sectors to this increase is 96.0%, 84.5% and 89.6%, respectively.

Table 18 shows the TRQ ceilings and fill rates in the reference scenario and the three policy scenarios. When a TRQ is filled, its fill rate is given as 100%. The third column for each scenario shows additional imports outside the bilateral TRQ, which may be imported under an *erga omnes* TRQ or at the MFN tariff. These imports are shown as a percentage of the TRQ.

In the reference scenario, the TRQs for poultry are applied to tariff lines that are allocated to two different GLOBE product categories. Part of their respective TRQs is used for fresh and frozen meat and appears in the category "meat pork, poultry and other", and part is used for processed meat, which belongs in "food, beverages and tobacco". The additional poultry TRQ awarded in scenarios DM1 and DM2 has all been allocated to the corresponding "meat" category, assuming that the extra TRQ for poultry would indeed be filled by unprocessed (fresh and chilled) meat. The additional TRQ for beef, like the TRQ already existing in the reference scenario, is for unprocessed meat. The TRQ for pork is created for the first time in DM1; here too it is assumed to be used entirely for unprocessed pork. The increase in the processed food category under DM1 is not due to processed food, but to the opening of a new TRQ for ethanol (1 million tons), which remains unchanged in DM2.

The fill rates shown in the table show total EU imports from Mercosur within each product category as a percentage of the TRQ (per category). However, several product categories contain one or two tariff lines with TRQs that are small relative to the total volume of products aggregated within that category. Since a large part of what is traded within these categories are products without a TRQ, this calculation could produce misleading estimated "fill rates" and out-of-TRQ imports. There are four large aggregate categories shown in the table: vegetables and fruit, meat (beef, sheep etc), meat (pork, poultry, etc) and food, beverages and tobacco. The first meat category contains TRQs for beef and sheep meat. The beef TRQ expands in DM1 by 60 thousand tons, and by a further 240 thousand tons in DM2, whereas the TRQ for sheep meat expands by 20 thousand in DM2. The total pork and poultry TRQs increase by 6 plus 45 thousand tons, respectively, in DM1, and by a further 19 plus 205 thousand tons, respectively, in DM2.[46] Since the products with TRQs within these two categories account for most of the volume of trade, the fill rates indicate that it is indeed those commodities that are responsible for the over-fill.

This is not the case with the other two categories. The only TRQ in the vegetables and fruit category is a small one for garlic, and within food, beverages and tobacco there are TRQs for a very small share

Table 19: Export earnings on bilateral trade

	Base year 2004	Ref'ce scenario 2020	DDA only 2020		Scenario DM1 2020		Scenario DM2 2020	
	EUR bn, 2004 prices	EUR bn, at 2020 prices	EUR bn, at 2020 prices	Difference (€ bn)	EUR bn, at 2020 prices	Difference (€ bn)	EUR bn, at 2020 prices	Difference (€ bn)
European Union								
AgFood	0.61	1.42	1.42	0.01	1.70	0.28	1.89	0.48
Non AgFood	25.60	64.58	66.42	1.85	71.20	6.63	71.32	6.75
EU Total	**26.21**	**65.99**	**67.84**	**1.85**	**72.90**	**6.90**	**73.22**	**7.22**
Mercosur								
AgFood	13.78	24.89	28.81	3.92	29.74	4.85	30.22	5.34
Non AgFood	20.68	39.60	39.77	0.16	40.24	0.63	40.22	0.62
Mercosur Total	**34.46**	**64.49**	**68.58**	**4.09**	**69.98**	**5.49**	**70.45**	**5.96**

Source: GLOBE simulation results.

46 In 2009, beef (fresh and frozen) accounted for 86.9% of the EU's imports from Mercosur within the GLOBE aggregate "meat beef sheep etc". In the aggregate "meat pigs poultry etc", in 2009 pork (fresh and frozen) accounted for 34.46% of the EU's imports from Mercosur in this category, and poultry meat had a 64.37% share (Source: Eurostat, data from 2009).

of the products included in the category.[47] Fill rates calculated for these categories would be misleading, and simply due to the presence of many products that are not subject to TRQs in the aggregate category. Therefore, no fill rate is shown for these aggregate categories.

All TRQs that existed in the reference scenario remain filled in the Doha-only scenario. In the bilateral liberalisation scenarios, the new TRQs for rice, maize and sorghum, and wheat are all filled and with imports in excess of the ceiling in DM1, but the wheat TRQ is not filled in DM2. The fill rate is extremely low in both bilateral scenarios for the new dairy TRQs (milk powder, butter and cheese), which are combined in the category 'dairy products'. This same pattern of fill and under-fill was also found for the two bilateral liberalisation scenarios in the absence of a Doha Round agreement (see Table 10). In that case, however, the out-of-quota imports were somewhat lower, although a comparison between the two versions (with and without Doha) of the EU offer is not straightforward since the TRQ ceilings offered by the EU to Mercosur are somewhat lower in a post-Doha setting (see Table A1.7).

Table 19 summarises the earnings on bilateral trade for each trade block under the reference scenario, with a Doha Round agreement only and when each FTA scenario is combined with a Doha settlement. As expected, earnings are highest for both blocks under the most liberalised scenario DM2. However, the greater part of these gains is already achieved in DM1 for each of the blocks. In *relative* terms, the additional gain from DM2 is a little higher for Mercosur (an extra 8.6% in bilateral export earnings) than for the EU (an extra 4.6%). Moreover, greatest gains in the EU go to the non-agrifood sectors and to a lesser extent to the processed food sector, whereas in Mercosur gains go principally to primary agricultural products. A more surprising feature of the results shown in Table 19 is that a Doha Round agreement alone provides the EU with only about 26% of the total gain in export earnings in DM2, whereas Mercosur can already capture nearly 69% of this hypothetical maximum gain simply with a Doha Round agreement.

However, it is again very relevant to recall that the Doha Round agreement depicted here does not allow developed countries to designate 'sensitive' products. If the EU were able to shield its more heavily protected agricultural products (especially the main livestock products, sugar and some cereals) from the standard tariff cuts assumed here for the Doha Round agreement, Mercosur's market access for these products under the Doha-only scenario may be lower (despite the accompanying multilateral TRQ increases that would be mandated by a WTO agreement that includes sensitive products), and the incremental bilateral access provisions under DM1 and DM2 would be more attractive. Moreover, with higher out-of-quota tariffs on these sensitive products, potential quota rent earnings would be greater for Mercosur exporting companies.

It is also interesting to compare these changes in the bilateral export earnings of the two regions with those simulated for the context without a Doha agreement at all (see Table 11). In that case, the EU would earn an extra €6.28 bn and €6.64 bn with bilateral concessions matching its own offer and Mercosur's request, respectively, whereas Mercosur would earn an extra €2.25 bn and €2.72 bn, respectively. Clearly, the gains from bilateral liberalisation – relative to the reference scenario - are higher, particularly for Mercosur, in a post-Doha setting. However, especially for Mercosur, two-thirds of these gains are already available under the Doha Round agreement alone, for the version of that agreement simulated here.

47 In 2009, the composition of this category of EU imports from Mercosur was: 15.2% coffee, tea, spices; 0.03% milled products; 7.7% processed pork, poultry, beef, and fish; 0.27% cocoa and cocoa preparations; 8.8% processed vegetables, fruits and nuts; 1.2% miscellaneous, 3.7% beverages, spirits and vinegar; 57.7% residues from food industry and feed; tobacco goods 5.7%.

The impacts of a Doha Round agreement on the 14 trading regions and 23 sectors identified in GLOBE are shown in Annex 2, Tables A2.3 and A2.4. Not surprisingly, a Doha Round agreement without sensitive products for developed countries has strong impacts on trade flows for those agricultural products that are currently most protected, and concern mainly those countries with the highest current rates of protection (namely rice (especially Japan), other cereals, beef and sheep meat, poultry meat (Canada), dairy products and sugar). By contrast, the bilateral liberalisation scenarios have virtually no additional effect on the total exports or imports third countries in a post-Doha setting (see Annex 2, Tables A2.3-A2.4).

6.2.2. Production changes in both regions

Table 20 reports the results for total output in the EU in each product category in the reference scenario and the three policy experiments.

The last three lines of the table show the total value added for primary agriculture and the agrifood sector (comprising primary agriculture and food processing), and the economy-wide total value-added (or 'net production value').[48] The value of total production in the economy given in the fourth last line is obtained by summing the output of the different commodity sectors in GLOBE. These totals contain an element of double-counting, since some sectoral output is used as an intermediate input for other production sectors. Therefore, in order to gauge the **net impact** of the three trade scenarios on the sectors of interest and on the EU economy as a whole, the last three lines should be used.

The Doha Round agreement alone leads to changes exceeding €0.5 billion in nine of the 17 primary agriculture sectors in the EU, namely rice, vegetables and fruit, sugar beet, live cattle and sheep, beef and sheep meat, pork and poultry meat, vegetable oils and fats, dairy products and sugar. In every case except pork and poultry meat, these impacts are negative. The largest output losses are for beef and sheep meat, and for vegetables and fruit (both around €3.9 bn), and for sugar (€5.7 bn), and the total loss in gross agricultural output is about €16.5 billion. As for sectoral value added, agriculture loses €5.5 billion, which is reduced by a slight gain in food processing to produce a loss of €4.8 billion for agrifood as a whole. Total value added across all sectors of the economy increases by over €33.8 billion.

When the two bilateral trade policy scenarios are introduced in the post-Doha setting, the overall effect is to reinforce or leave unchanged the changes simulated for the case of a Doha Round agreement alone. Production losses for beef and sheep meat increase to over €4 billion (DM1) and to nearly €4.6 billion (DM2), and remain at around €4 billion for vegetables and fruit and €5.7 billion for sugar. The smaller positive impact of Doha in the EU pork and poultry sectors is reduced. At the same time, losses in the output of other cereals and vegetable oils increase. The negative impact on agrifood value added increases by a further €290 million (DM1) and €490 million (DM2), making total losses in agrifood value added of €5.1 billion and €5.3 billion, respectively. This is offset by positive impacts in the manufacturing and services sectors, which lead to net impacts on total value added of €36.5 billion and €37.3 billion, in DM1 and DM2 respectively. However, it must be stressed that over 90% of these gains in value added are already achieved in the scenario with a Doha Round agreement alone, and must not be attributed wholly to a bilateral trade agreement with Mercosur. In fact, once a Doha Round agreement is in force, the impact of each bilateral scenario on total value added is smaller by over €1 billion than those found for Scenarios 1 and 2 in the context assuming no Doha agreement.

48 Summing the value added over an economy's production sectors is one of the ways of measuring its GDP, hence the figure of 'total value added' shown in the table can be interpreted as such.

Table 20: Production in the European Union

	Base year 2004	Refer´ce Scenario 2020	DDA Agreement only 2020		Scenario DM1 2020	Scenario DM2 2020	Scenario DM1 2020	Scenario DM2 2020
		Level	Difference from reference scenario		Difference from reference scenario		Difference from reference scenario	
Units	*€ bn, 2004 prices*	*€ bn, 2020 prices*	*€ bn, 2020 prices*	*Per cent*	*EUR billion, 2020 prices*		*Per cent*	
Rice	5.99	10.85	-1.18	-10.83	-1.18	-1.18	-10.83	-10.84
Wheat	21.68	38.74	-0.13	-0.33	-0.17	-0.23	-0.43	-0.61
Other cereals	24.68	45.93	-0.07	-0.15	-0.13	-0.42	-0.29	-0.91
Vegetables, fruits	107.14	193.21	-3.90	-2.02	-3.99	-3.97	-2.06	-2.05
Oilseeds	13.18	22.18	-0.03	-0.14	-0.08	-0.07	-0.38	-0.33
Sugar cane & beet	7.97	14.58	-0.63	-4.35	-0.63	-0.63	-4.35	-4.35
Plant-based fibres	8.35	15.01	0.02	0.12	0.01	0.01	0.09	0.10
Other crops	88.23	160.54	-0.01	-0.01	0.00	0.02	0.00	0.01
Live cattle, sheep, goats, horses	38.57	70.39	-0.68	-0.96	-0.72	-0.83	-1.02	-1.19
Live pigs, poultry, other animals	67.77	130.11	0.32	0.25	0.27	0.25	0.21	0.19
Raw milk	56.94	104.30	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04
Wool, silk cocoons	0.44	1.07	0.01	0.50	0.01	0.01	0.68	0.68
Meat beef, sheep, goat, horse	56.49	99.33	-3.87	-3.90	-4.04	-4.58	-4.07	-4.61
Meat pork, poultry, other	87.50	156.15	1.25	0.80	1.12	1.03	0.72	0.66
Vegetable oils/ fats	37.64	64.83	-0.79	-1.22	-1.21	-1.16	-1.86	-1.78
Dairy products	199.35	355.75	-1.05	-0.29	-1.07	-1.03	-0.30	-0.29
Sugar	26.25	46.67	-5.70	-12.20	-5.71	-5.72	-12.24	-12.26
TOTAL AGRICULTURE	**848.17**	**1,529.63**	**-16.48**	**-1.08**	**-17.57**	**-18.55**	**-1.15**	**-1.21**
Food, beverages, tobacco	985.33	1,735.64	1.17	0.07	1.18	1.47	0.07	0.08
TOTAL AGRIFOOD	**1,833.51**	**3,265.27**	**-15.31**	**-0.47**	**-16.39**	**-17.08**	**-0.50**	**-0.52**
Primary sectors (mining, wood)	156.90	287.09	1.24	0.43	1.32	1.33	0.46	0.46
Fuel	701.67	1,157.35	3.02	0.26	3.10	3.15	0.27	0.27
Manufactures	8,705.44	15,052.45	26.30	0.17	33.29	33.88	0.22	0.23
Trade services & communication	4,075.91	7,240.48	16.67	0.23	17.69	17.98	0.24	0.25
Services	9,133.70	16,030.03	25.97	0.16	25.65	26.73	0.16	0.17
TOTAL	**24,607.14**	**43,032.68**	**57.89**	**0.13**	**64.65**	**65.99**	**0.15**	**0.15**
Agricultural VA	**297.73**	**547.51**	**-5.46**	**-1.00**	**-5.77**	**-6.05**	**-1.05**	**-1.10**
Agrifood VA	**364.32**	**928.43**	**-4.82**	**-0.52**	**-5.11**	**-5.31**	**-0.55**	**-0.57**
Total Value Added	**10,898.27**	**19,231.70**	**33.85**	**0.18**	**36.45**	**37.32**	**0.19**	**0.19**

Source: GLOBE simulation results.

Table 21: Production in Mercosur

	Base year 2004	Refer´ce Scenario 2020	DDA Agreement only 2020		Scenario DM1 2020	Scenario DM2 2020	Scenario DM1 2020	Scenario DM2 2020
		Level	Difference from reference scenario		Difference from reference scenario		Difference from reference scenario	
Units	*EUR bn, 2004 prices*	*EUR bn, 2020 prices*	*EUR bn, 2020 prices*	*Per cent*	*EUR billion, 2020 prices*		*Per cent*	
Rice	1.21	4.75	0.02	0.48	0.03	0.03	0.61	0.63
Wheat	0.70	2.63	0.05	1.94	0.07	0.11	2.66	4.12
Other cereals	1.63	6.32	0.13	2.12	0.17	0.25	2.66	3.97
Vegetables, fruits	2.45	9.86	0.11	1.09	0.16	0.16	1.63	1.66
Oilseeds	5.94	27.59	0.20	0.74	0.46	0.45	1.66	1.62
Sugar cane & beet	0.93	3.86	0.09	2.34	0.09	0.10	2.40	2.48
Plant-based fibres	0.37	1.68	0.00	0.26	0.00	0.00	0.27	0.26
Other crops	6.07	24.50	0.28	1.12	0.30	0.31	1.24	1.26
Live cattle, sheep, goats, horses	3.01	11.98	0.80	6.66	0.87	1.04	7.27	8.67
Live pigs, poultry, other animals	2.29	8.83	0.31	3.51	0.37	0.42	4.19	4.79
Raw milk	1.23	5.03	0.04	0.84	0.05	0.05	1.03	1.06
Wool, silk cocoons	0.05	0.27	0.00	1.11	0.00	0.00	1.63	1.83
Meat beef, sheep, goat, horse	4.78	18.28	1.38	7.56	1.49	1.79	8.16	9.79
Meat pork, poultry, other	2.53	9.56	0.30	3.17	0.37	0.43	3.91	4.50
Vegetable oils/ fats	5.20	21.12	0.13	0.63	0.46	0.44	2.19	2.10
Dairy products	2.86	11.31	0.08	0.68	0.09	0.09	0.80	0.76
Sugar	1.89	7.01	0.30	4.26	0.31	0.32	4.40	4.53
TOTAL AGRICULTURE	**43.15**	**174.58**	**4.24**	**2.43**	**5.31**	**6.00**	**3.04**	**3.44**
Food, beverages, tobacco	13.96	54.22	0.32	0.58	0.33	0.30	0.62	0.55
TOTAL AGRIFOOD	**57.11**	**228.79**	**4.56**	**1.99**	**5.65**	**6.30**	**2.47**	**2.75**
Primary sectors (mining, wood)	4.49	25.27	0.05	0.20	0.03	0.03	0.14	0.11
Fuel	31.64	137.95	0.37	0.27	0.48	0.50	0.35	0.36
Manufactures	119.77	575.46	-1.19	-0.21	-2.33	-2.38	-0.41	-0.41
Trade services & communication	43.50	185.72	0.33	0.18	0.56	0.59	0.30	0.32
Services	123.77	533.86	0.39	0.07	1.01	1.04	0.19	0.19
TOTAL	**380.28**	**1,687.05**	**4.50**	**0.27**	**5.40**	**6.07**	**0.32**	**0.36**
Agricultural VA	**16.83**	**68.28**	**1.51**	**2.21**	**1.87**	**2.12**	**2.74**	**3.11**
Agrifood VA	**20.25**	**81.09**	**1.59**	**1.96**	**1.96**	**2.21**	**2.42**	**2.73**
Total Value Added	**186.57**	**813.46**	**2.11**	**0.26**	**2.89**	**3.18**	**0.35**	**0.39**

Source: GLOBE simulation results.

Table 21 shows that for Mercosur the differences in total gross production value and in value added, relative to the reference scenario, are much smaller than those in the EU in value terms, but larger in

Table 22: Total incomes of factors in GLOBE simulations

		Reference scenario 2020	Scenario DDA	Scenario DM1	Scenario DM2
Factor	**Block**	*EUR million (2020 prices)*	*Percentage difference from reference scenario*		
Land	**EU15**	85.20	-0.59	-0.62	-0.65
	EU12	26.30	-0.14	-0.15	-0.19
	Mercosur	9.21	1.50	1.91	2.18
Unskilled labour	**EU15**	**4,427.35**	**0.17**	**0.18**	**0.19**
	Agriculture	191.31	-1.09	-1.15	-1.20
	Food industry	102.38	0.18	0.19	0.21
	EU12	**258.89**	**0.14**	**0.15**	**0.15**
	Agriculture	30.41	-0.31	-0.35	-0.40
	Food industry	8.70	0.08	0.09	0.11
	Mercosur	**206.58**	**0.26**	**0.35**	**0.39**
	Agriculture	14.73	2.42	3.00	3.43
	Food industry	3.66	0.68	0.75	0.70
Skilled labour	**EU15**	**3,209.65**	**0.18**	**0.19**	**0.20**
	Agriculture	26.62	-1.40	-1.48	-1.55
	Food industry	32.90	0.17	0.18	0.20
	EU12	**115.90**	**0.19**	**0.20**	**0.21**
	Agriculture	1.26	-0.57	-0.62	-0.65
	Food industry	1.73	0.06	0.07	0.09
	Mercosur	**110.82**	**0.16**	**0.26**	**0.28**
	Agriculture	0.81	3.01	3.58	4.06
	Food industry	0.69	0.73	0.79	0.76
Capital	**EU15**	**7,427.98**	**0.18**	**0.19**	**0.19**
	Agriculture	173.40	-1.18	-1.25	-1.32
	Food industry	158.54	0.17	0.18	0.20
	EU12	**526.59**	**0.17**	**0.18**	**0.19**
	Agriculture	25.03	-0.38	-0.42	-0.45
	Food industry	17.63	0.07	0.08	0.10
	Mercosur	**395.80**	**0.27**	**0.36**	**0.40**
	Agriculture	40.10	2.25	2.79	3.16
	Food industry	7.38	0.67	0.75	0.70
Natural resources	**EU15**	40.54	0.35	0.37	0.38
	EU12	5.64	0.22	0.24	0.24
	Mercosur	7.37	0.28	0.35	0.37

Source: GLOBE simulation results.

percentage terms. Even in the most liberalised scenario (DM2), the increase in EU total value added is only 0.19%, whereas for Mercosur the corresponding impact is an increase of 0.39%. Moreover, as well as showing a greater total impact in relative terms than the EU for Doha alone (0.26% rather than 0.18%), Mercosur also has a larger incremental impact for bilateral agreements between the two countries on top of Doha.

The impact of the Doha Round agreement alone on *gross* agricultural production value is larger for Mercosur than for the EU in both absolute terms (€4.24 billion) and percentage terms (2.4%), and unlike the EU, these impacts are positive. When bilateral trade concessions are added, these impacts increase to €5.3 billion and €6 billion, for DM1 and DM2 respectively, or 3.0% and 3.4% respectively. At the same time, the negative impact of the Doha Round agreement on Mercosur's manufacturing output (a loss of €1.2 billion, or 0.21%) is virtually doubled when either version of a bilateral trade agreement is contracted on top of the Doha Round agreement (losses increase to €2.3 and €2.4 bn, respectively, or about -0.41%).

The commodity groups where Mercosur's production value is boosted the most by the Doha Round agreement are live cattle and sheep, and beef and sheep meat, and to a lesser extent live pigs and poultry, pork and poultry meat, and sugar. A bilateral agreement with the EU enhances somewhat the gains in the live animals and meat sectors (especially in DM2), gives much stronger stimulus to oilseeds and vegetable oils, but has virtually no incremental effects on sugar output.

6.2.3. GDP and factor income impacts

Income changes for the five factors distinguished in GLOBE are shown for the reference scenario and the three trade policy scenarios in Table 22. For both EU15 and EU12, factor incomes in the economy as a whole, except for agricultural land, increase progressively by very small percentages when moving from a Doha Round agreement alone to post-Doha bilateral liberalisation. By contrast, the returns to land *decrease* progressively under these three scenarios.

Despite the very small increases at the level of the whole EU economy in total factor income for unskilled and skilled labour, and for capital, the income of these factors when they are employed within the EU agricultural and food industries falls under the three trade scenarios, and more steeply in EU15 than in EU12. All factor incomes in Mercosur register larger percentage gains than in the EU. Moreover, for each of these factors, the *highest* percentage gain tends to be received when they are employed in agriculture.

Table 23 shows the GDP changes for the three regions, EU12, EU15 and Mercosur, under the three trade scenarios. Not surprisingly, EU15 gains the most in terms of total GDP, since its economy is over 20

*Table 23: Simulated GDP at 2020 prices**

	Ref'ce scenario 2020	DDA only			Scenario DM1			Scenario DM2		
	Level	Level	Difference from reference scenario		Level	Difference from reference scenario		Level	Difference from reference scenario	
	€ bn at 2020 prices	€ bn at 2020 prices	€ mn at 2020 prices	Per cent	€ bn at 2020 prices	€ mn at 2020 prices	Per cent	€ bn at 2020 prices	€ mn at 2020 prices	Per cent
EU15	21,382.42	21,418.33	35,910.5	0.17	21,421.06	38,641.8	0.18	21,422.01	39,594.2	0.19
EU12	1,249.14	1,251.06	1,915.1	0.15	1,251.19	2,050.1	0.16	1,251.26	2,119.3	0.17
Mercosur	943.12	945.35	2,228.5	0.24	946.15	3,026.2	0.32	946.46	3,331.8	0.35

Source: GLOBE simulation results.

** It must be borne in mind that the absolute level of the figures in 2020 prices, as well as the relative size of policy impacts in the two blocks measured in EUR billion, depend on the specific assumptions made about future exchange rate adjustments and inflation rates (these assumptions are given in Table A1.4).*

These figures are greater than the figures for total value added reported in Tables 20 and 21 because they also include indirect taxes.

times larger than that of Mercosur, and 17 times greater than that of EU12. However, in percentage terms, this gain is very small. The largest relative improvement is seen in Mercosur.

It should be noted that 73.6% and 66.9% of Mercosur's total GDP gain in the scenarios DM1 and DM2, respectively, is already achieved with a Doha Round agreement alone (but it must be borne in mind that the Doha Round agreement assumed here involves no special protection for sensitive products in developed countries). For EU15, 92.9% and 90.7% of the gains simulated for DM1 and DM2, respectively, are already achieved with a Doha Round agreement, and for EU12 these shares are 93.4% and 90.4%.

6.3. Summary of GLOBE results

EU exports to Mercosur

When there is no Doha Round agreement, EU exports of nearly all product categories are affected by an EU-Mercosur agreement. However, the impacts are mostly very small except for *vegetable oils and fats* and *food, beverages and tobacco,* where EU exports to Mercosur are higher by €21 mn and €200 mn (at 2020 prices), respectively, in Scenario 1. Some products in these two categories qualify for partial tariff reductions only in Scenario 1, which are fully removed under Scenario 2. Therefore, the differences relative to the reference scenario for these categories are greater in Scenario 2, totalling €52 mn and €360 mn, respectively. This explanation also applies to EU export of dairy products to Mercosur, where the impact under Scenario 2 is twice as great as under Scenario 1.

The increase in exports of manufactures and machinery is nearly €6 billion under Scenario 1, but Scenario 2 brings little further change as there are few additional tariff concessions.

A Doha Round agreement boosts the EU's agrifood exports to Mercosur by €4.8 million, most of which is due to processed food; other, much smaller positive impacts are for live animals, other crops (potatoes) and vegetables and fruit, but there are negative impacts on meat, dairy products, rice and sugar. At the same time, a Doha agreement alone has a very considerable impact on the EU's exports of manufactured products to Mercosur (an increase of €1.8 billion) and to a much lesser extent services (€20 million).[49]

Agrifood's contribution to EU exports to Mercosur is larger when bilateral trade concessions are added to the effects of a Doha Round agreement. This is mainly due to strong increases in exports of food, beverages and tobacco, and vegetable oils, with smaller increased contributions from other crops, vegetables and fruit, live animals and dairy However, the overwhelming share of the EU's total exports to Mercosur, under the more liberalised post-Doha scenario (DM2), is still in non-agricultural sectors, notably manufacturing.

The summary in Table 24 highlights the fact that a bilateral trade agreement favours EU agrifood exports to Mercosur (i.e. in all the scenarios with a bilateral agreement, agrifood's share of the increase in earnings is greater than its share in earnings in the reference scenario) relatively more than a Doha Round agreement alone. A Doha Round agreement alone achieves less than a third of the increase in total exports to Mercosur that would occur with a bilateral agreement alone.

49 Important reminder: services are not included in the Doha Round agreement simulated here.

Table 24: Summary of EU export earnings on bilateral trade

Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
EUR billion	Difference from reference scenario, EUR billion				
66.0	6.3	6.6	1.9	6.9	7.2
	Percentage difference from reference scenario, %				
	9.5	10.1	2.8	10.5	10.9
Share agrifood, %	*Share of difference due to agrifood, %*				
2.1	4.4	7.2	0.3	4.0	6.6

Source: GLOBE simulation results.

EU imports from Mercosur

Among the products subject to TRQs, imports of rice, wheat, other cereals (maize and sorghum), meat (beef, sheep and goat) and sugar react to the expansion in TRQs under both the no-Doha bilateral liberalisation scenarios. In particular, under Scenario 2, imports of beef and sheep meat are 21% (€445 mn) higher than in the reference scenario. Most TRQs are filled in both these scenarios. However, the higher wheat imports in Scenario 2 are well short of the huge TRQ increase demanded for wheat in this scenario, and the new dairy product TRQs are not filled in either scenario. Among the products not subject to a TRQ, EU imports of oils and fats, and vegetables and fruit from Mercosur, show considerable increases in both scenarios.

At the same time, Mercosur increases (by 2% or more) its own imports of other cereals, fruit and vegetables, live cattle, live pigs and poultry, beef, sheep & goat carcasses, pork and poultry meat, vegetable oils and sugar, whilst simultaneously increasing its total exports of these categories to other countries. Much of this higher total export flow is destined for the EU market. This evidence suggests that a bilateral agreement triggers a complex process of trade creation and diversion.

The results of the two no-Doha simulations suggest that (a) tariff abolition for non-TRQ commodities (already complete in Scenario 1) is effective in stimulating EU imports from Mercosur for a number of commodities (b) some TRQ concessions requested by Mercosur under Scenario 2 are in excess of that region's export capacity within the time horizon to 2020 and (c) the large out-of-quota imports of some products subject to bilateral TRQs suggest that expanding these TRQs is not a necessary condition for their access (although the model cannot reveal whether these out-of-quota imports are still competitive after payment of MFN tariffs or whether they make use of *erga omnes* TRQs to enter).

A Doha Round agreement has a much greater impact on the EU's imports from Mercosur than on its exports to Mercosur, and in fact two thirds of the increase in imports from Mercosur that would be achieved under the more liberalised bilateral scenario in a post-Doha setting (DM2) are already achieved by Doha alone. However, it must be stressed that the version of the Doha agreement simulated here assumes no special protection for sensitive products by developed countries, which almost certainly means greater EU market access for agricultural products (at least for low-cost exporters) than is likely when sensitive products, even when accompanied by TRQ expansion, are allowed. Therefore, the simulated import increases should be considered as 'upper bounds' to the likely range of import increases for any products that might be treated as sensitive products in a final agreement.[50]

50 In Annex 3C (see Vol 2 Annexes) a sensitivity analysis is performed on this assumption, which establishes both upper *and* lower limits to this range.

Table 25: Summary of Mercosur's export earnings on bilateral trade

Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
EUR billion	**Difference from reference scenario, EUR billion**				
64.5	2.3	2.7	4.1	5.5	6.0
	Percentage difference from reference scenario, %				
	3.5	4.2	6.3	8.5	9.2
Share agrifood, %	***Share of difference due to agrifood, %***				
39	67	73	96	89	90

Source: GLOBE simulation results.

The commodity group for which EU imports from Mercosur expand the most is beef and sheep meat, where imports in Scenario DM2 are €3 billion (139%) higher than in the reference scenario. However, 89% of this increase is already achieved under the Doha-only scenario. Of course, if beef were to be treated as a sensitive product in a Doha Round agreement, then beef imports from Mercosur would be lower in the DDA-only scenario, and the effect of a bilateral agreement on top of that would be more marked.

Other commodity groups whose imports increase markedly in the post-Doha scenarios are pork and poultry meat, sugar, vegetable oils and fats, and vegetables and fruit. EU imports of vegetable oils and fats from Mercosur actually decline in the DDA-only scenario relative to the reference scenario, but this movement is reversed once a bilateral agreement comes into force.

All the bilateral TRQs offered by the EU to Mercosur in the Doha-only scenario are filled, and all the expanded and newly created TRQs corresponding to the EU's offer are also filled in DM1, with the exception of dairy products. Apart from dairy products and wheat, the TRQs requested by Mercosur (DM2) are also filled. It should be noted that, in the post-Doha setting as modelled here, the out-of-quota tariffs for products subject to TRQs are lower than they would be if sensitive products were allowed. Therefore, once a TRQ is filled, additional out-of-quota imports face lower tariffs than they would if these products could be treated as 'sensitive', and this should be borne in mind when interpreting the very large quantities of out-of-quota imports, for example, beef and sugar, found in the three policy scenarios. Again, these increases represent upper limits to the possible range.

Table 25 summarises the change in Mercosur's earnings on bilateral EU trade under all scenarios. The increases in Mercosur's export earnings from bilateral trade are smaller in percentage terms relative to the reference scenario than those of the EU in the no-Doha scenarios, but are in line with those of the EU in scenarios DM1 and DM2. In all scenarios, the additional earnings are overwhelmingly from agrifood products. Most of this contribution is due to quantity changes rather than price changes. The only other sector contributing to the earnings increase is manufacturing and machinery, whose contribution in absolute and relative terms to earnings from EU trade is higher in the no-Doha scenarios than post-Doha.

For each assumption regarding the world trade context (no-Doha/post-Doha), bilateral trade earnings for both blocks are higher in the scenario based on the Mercosur request than in the one based on the EU offer. Yet most of the gains are already achieved under the EU offer.

EU Production

EU agrifood value added is €590 million lower in Scenario 1, and €900 million lower in Scenario 2, as against increases in value added for the economy as a whole of €3.71 and €4.85 billion, respectively. But the loss in value added for *agriculture* is 66% higher under Scenario 2 than Scenario 1, whereas the gain in value added to the whole economy is only 31% higher when moving from Scenario 1 to Scenario 2.

Regarding individual agricultural product groups, where any noticeable production impact occurs for EU27, it tends to fall more heavily on EU15. This is particularly true in the livestock and meat sectors, and in production of other cereals, oilseeds and vegetable oils. However, the stimulus to the manufacturing sector is also more than twice as great, relative to the reference scenario, in EU15 as in EU12.

The sectoral pattern is different in the post-Doha context: the biggest hit to value added in agriculture and agrifood occurs because of the Doha Round liberalisation whereas the additional falls due to a bilateral trade agreement are small by comparison. Not surprisingly, the changes in value added generally are greater by an order of magnitude in the post-Doha context than without a Doha Round agreement, but they are largely due to the Doha Round agreement itself and not to the bilateral agreement with Mercosur. Again, we stress that the large falls due to a Doha Round agreement *per se* represent one extreme of the likely range: that is, the impact that would occur in the absence of any special protection for sensitive products. With some protection for sensitive agricultural products in Doha, the impact of a Doha Round agreement would be smaller and the additional impact of trade concessions to Mercosur should be more marked. The aggregate changes are summarised in Table 26.

The Doha Round agreement alone leads to changes exceeding €0.5 billion in nine of the 17 primary agriculture sectors in the EU. In every case but one, these impacts are negative. The largest output losses are for beef and sheep meat, and for vegetables and fruit (both around €3.9 bn), and for sugar (€5.7 bn). The total loss in gross agricultural output is about €16.5 billion. Agriculture loses €5.5 billion in value added, which is reduced by a slight gain in value added in food processing to produce a net loss of €4.8 billion for agrifood as a whole. Total value added across all sectors of the economy increases by over €33.8 billion.

The effect of adding bilateral concessions in the post-Doha context is to reinforce or leave unchanged the impacts of a Doha Round agreement alone. Production losses for beef and sheep meat increase to over

Table 26: Changes in EU aggregate production and value added

	Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
EU gross production	*EUR bn*		*Difference from reference scenario, EUR bn*			
Agriculture	1,529.63	-1.99	-3.44	-16.48	-17.57	-18.55
Agrifood	3,265.27	-2.10	-3.23	-15.31	-16.39	-17.08
Total	43,032.68	8.92	10.52	57.89	64.65	65.99
EU value added	*EUR bn*		*Difference from reference scenario, EUR bn*			
Agriculture	547.51	-0.60	-0.99	-5.46	-5.77	-6.05
Agrifood	928.43	-0.59	-0.90	-4.82	-5.11	-5.31
Total	19,231.70	3.71	4.85	33.85	36.45	37.32

Source: GLOBE simulation results.

€4 billion (DM1) and to nearly €4.6 billion (DM2), and remain at around €4 billion for vegetables and fruit and €5.7 billion for sugar. The smaller positive impact of Doha in the EU pork and poultry sectors is reduced. At the same time, output losses for other cereals and vegetable oils increase. The negative impact on agrifood value added increases, making total losses in agrifood value added of €5.1 billion and €5.3 billion, for DM1 and DM2 respectively.

Elsewhere, positive impacts in the manufacturing and services sectors lead to net impacts on total value added of €36.5 billion and €37.3 billion, in DM1 and DM2 respectively. However, 90% of these value added gains are already achieved in the scenario with a Doha Round agreement alone, and cannot be attributed to a bilateral trade agreement with Mercosur. Note that here we should not interpret these estimates as 'upper limits', but rather as central values. The concept of 'sensitive products' does not apply to the non-agricultural sector, and the flexibility proposals for NAMA trade are not available to developed countries. Thus, for non-agricultural sectors we can conclude on firmer ground than for agriculture that the main gains to the economy are delivered by a Doha Round agreement, and the bilateral scenarios add little to this.

Production in Mercosur

For all scenarios, the order of magnitude of the differences in Mercosur's total value added, relative to the reference scenario, is much smaller than for the EU in value terms, but larger in percentage terms, underlining the difference in importance of a trade agreement for each bloc due to their relative size. Even in the most liberalised scenario (DM2), the increase in EU total value added is only 0.19%, whereas for Mercosur the corresponding impact is an increase of 0.39%.

The sectors where production value is boosted the most are, in all scenarios, those for live animals and meat.

In all scenarios, agrifood's contribution to the increase in total value added is partly cancelled out by lower output in manufacturing.

Not only is the total impact of Doha alone greater in relative terms for Mercosur than for the EU (0.26% rather than 0.18%), but also the incremental impact of a bilateral agreement between the two countries, on top of Doha, is greater for Mercosur. At the same time, the negative impact of the Doha Round agreement on Mercosur's manufacturing output (a loss of €1.2 billion, or 0.21%) is virtually doubled when either version of a bilateral trade agreement is included on top of the Doha Round agreement (losses increase to €2.3 bn and €2.4 bn, respectively, or about -0.41%).

Table 27 summarises the impacts of all the scenarios on aggregate production and value added.

Factor income changes

Income changes for the five fixed factors distinguished in GLOBE are the result of the trade-driven production and price changes. In both EU15 and EU12, factor incomes increase by very small percentages, except for land whose total income *falls* under all scenarios. These changes are all smallest in the scenarios with no Doha Round agreement, increase substantially in the Doha-only scenario, and are largest for the Mercosur request in the post-Doha context.

Table 27: Changes in Mercosur's aggregate production and value added

	Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
M'sur gross production	*EUR bn*		*Difference from reference scenario, EUR bn*			
Agriculture	174.58	1.55	2.36	4.24	5.31	6.00
Agrifood	228.79	1.66	2.44	4.56	5.65	6.30
Total	1,687.05	1.47	2.28	4.50	5.40	6.07
M'sur value added	*EUR bn*		*Difference from reference scenario, EUR bn*			
Agriculture	68.28	0.76	1.02	1.51	1.87	2.12
Agrifood	81.09	0.79	1.05	1.59	1.96	2.21
Total	813.46	1.24	1.56	2.11	2.89	3.18

Source: GLOBE simulation results.

Despite increases at the level of the whole economy in total factor income for unskilled and skilled labour, and for capital, the income of these factors *employed within agriculture* falls, and more steeply in EU15 than in EU12.

All factor incomes in Mercosur have larger percentage gains than in the EU. For each of the factors, the highest percentage gains occur when the factor concerned is employed in agriculture. However, it is notable that the returns to labour and capital *employed in the food industry* is systematically lower under the Mercosur request than for the EU offer.

Total GDP

Three quarters (76%) of Mercosur's total GDP gain under Scenario 2 is already achieved under Scenario 1. This is also very similar for EU27. However, the additional losses incurred by EU agriculture are disproportionately greater (by approximately 72%) when passing from Scenario 1 to Scenario 2, whereas the additional gains to agriculture in Mercosur are also greater in relative terms (and also by about 52%) than the additional total GDP increment in that region.

Mercosur's manufacturing sector shrinks under both scenarios, as does the EU's primary agricultural sector. However, most of the loss to Mercosur manufacturing occurs under Scenario 1, whereas there are still considerable gains to Mercosur agricultural exporters under Scenario 2. By contrast, the loss to EU agriculture is somewhat contained under Scenario 1, but strikes deeper in Scenario 2 whilst further gains to EU manufacturing tend to level off.

This general pattern continues in the post-Doha context. A large share (73.6% and 66.9%) of Mercosur's total GDP gain in the scenarios DM1 and DM2, respectively, is already achieved with a Doha Round agreement alone. However, it must be borne in mind that the Doha Round agreement assumed here involves no special protection for sensitive products in developed countries. For EU15, 92.9% and 90.7% of the gains simulated for DM1 and DM2, respectively, are already achieved with a Doha Round agreement, and for EU12 these shares are 93.4% and 90.4%.

Underlying these net changes in GDP, there are strongly contrasting changes in the distribution of gains and losses between sectors in the two blocks. Mercosur's manufacturing sector shrinks post-Doha, and this production loss is then doubled in the two bilateral scenarios. The EU's primary agricultural sector

also shrinks in all three post-Doha scenarios, though relatively less, and most of the decline occurs already due to the Doha Round agreement alone.

As has been stressed at various points in this report, the Doha Round agreement as simulated here does not include a provision for the EU or any other developed country to nominate sensitive products for smaller tariff cuts whilst concurrently increasing or creating market access opportunities via multilateral TRQs. This is because the version of GLOBE used cannot depict *erga omnes* TRQs, which makes it impossible to model the effects of this policy package realistically. To shed more light on this issue, a sensitivity analysis was conducted in which the scenarios reported here, with no sensitive products (which can be thought of as 'maximum Doha impact' scenarios) are compared with scenarios in which it is assumed that developed countries can retain more protection for their sensitive products *but do not offer compensatory additional market access*. Given the negligible probability attached to such a Doha outcome, this alternative assumption depicts a 'minimum Doha impact' context that is starkly unrealistic. Nevertheless, it is useful for setting a 'safe' lower limit to the responses of EU trade flows. The sensitivity analysis is reported in Annex 3C (Volume 2). The results of this analysis show that the range between the two extremes is small except for a few products (notably, rice, beef and sugar).

7. CAPRI simulation results

7.1. CAPRI: Scenarios with a EU-Mercosur trade agreement only

7.1.1. Bilateral trade flows between the two regions

Table 28 shows the changes in the EU's exports to Mercosur in the two policy simulations relative to the reference simulation in 2020. Exports of cereals are much higher in both scenarios, with a large share of the increment (mainly wheat) coming from EU10, whereas EU15's much smaller contribution to the difference consists mainly of barley. The much more modest difference in rapeseed exports comes entirely from EU10.

The extra EU exports of permanent crops in the two scenarios originate in EU15. It must be noted that the large percentage differences in some individual commodities in this category are relative to very small quantities in the reference scenario. Pig carcasses and pork benefit from only a 20% tariff reduction in Scenario 1, but (like all other agricultural products) from complete tariff abolition in Scenario 2. This may explain the higher exports of pork from the EU under Scenario 2. As with pork, cheese, concentrated milk and olive oil also face a 20% tariff reduction in Scenario 1, but in these cases it is enough to stimulate exports relative to the reference situation. Again, these large percentage differences are relative to a very small reference value.

Table 29 reports the changes in the EU's imports from Mercosur in the two policy simulations relative to the reference simulation. Imports of cereals increase modestly under the two scenarios, and less in Scenario 2 than in Scenario 1. This is largely due to lower exports of maize from Brazil, and in spite of the new TRQ opened for maize and sorghum in Scenario 1 and extended very considerably in Scenario 2.[51] The rise in wheat imports comes mainly from Brazil.

Brazil is also by far the largest supplier of oilseeds to the EU in the reference situation, although the other three Mercosur countries also contribute a share of this trade flow. The small decline in oilseeds exports to the EU is shared by all four Mercosur countries roughly in proportion to their contribution in the reference situation. In Scenario 2, the EU still imports 8.48 million tons of oilseeds from Mercosur.

The substantially higher exports of vegetables and permanent crops are driven by tariff reductions, not TRQ concessions. This explains why the full adjustment of import flows is already virtually complete in Scenario 1.

The aggregate meat category reacts to the TRQ expansions under the two scenarios as expected, but this is not true of all the individual meats within the aggregate. EU imports of beef from Mercosur increase following the TRQ expansions in each scenario, and the increase is very large in Scenario 2 in line with the TRQ expansion of over 300%. Under both scenarios, the TRQ is filled and out-of-quota imports occur

51 Sorghum does not appear as a separate product in CAPRI. It is included in 'other cereals'. Therefore, the corresponding TRQ in the model has been scaled down from the full 700 and 3500 thousand tons (in Scenarios 1 and 2, respectively) in proportion to the share of sorghum in recent imports of these two coarse grains.

Table 28: EU exports to Mercosur

Product** / Units	Base year 2004*	Reference scenario 2020	Scenario 1	Scenario 2	Scenario 1	Scenario 2
			Difference from reference scenario			
	1000 tons		1000 tons		%	%
Cereals	**780.7**	**3077.7**	**1948.7**	**1981.2**	**63.3**	**64.4**
Wheat	430.3	2808.2	1870.6	1892.8	66.6	67.4
Barley	350.4	269.6	78.1	88.4	29.0	32.8
Maize, other cereals	0.0	0.0	0.0	0.0	0.0	0.0
Oilseeds	**1.5**	**18.0**	**3.6**	**3.6**	**19.7**	**20.2**
Rape seed	1.5	18.0	3.6	3.6	19.7	20.2
Sunflower seed	0.0	0.0	0.0	0.0	0.0	0.0
Soybeans	0.0	0.0	0.0	0.0	0.0	0.0
Other arable crops	**31.0**	**11.1**	**24.2**	**26.8**	**218.2**	**241.5**
Pulses	1.4	10.8	24.0	25.1	223.0	232.7
Veg. & permanent crops	**110.8**	**113.0**	**73.6**	**74.7**	**65.1**	**66.1**
Tomatoes	5.4	34.2	66.5	67.5	194.3	197.4
Other vegetables	17.0	1.7	0.4	0.4	22.8	22.8
Table grapes	0.0	0.0	0.0	0.0	0.0	0.0
Citrus fruits	0.7	0.1	0.4	0.4	585.7	571.4
Other fruits	8.0	1.8	1.1	1.1	61.2	61.7
Table olives	3.0	3.0	3.1	3.1	103.7	104.7
Wine	76.7	72.2	2.1	2.1	2.9	3.0
Flax and hemp	4.9	2.3	3.8	3.8	163.2	163.2
Meat	**2.9**	**0.6**	**0.0**	**0.3**	**5.1**	**50.8**
Beef	0.0	0.0	0.0	0.0	0.0	0.0
Pork	2.9	0.6	0.0	0.3	5.1	50.8
Sheep and goat meat	0.0	0.0	0.0	0.0	0.0	0.0
Poultry meat	0.0	0.0	0.0	0.0	0.0	0.0
Dairy products	**15.1**	**27.5**	**1.3**	**1.7**	**4.7**	**6.3**
Butter	0.0	0.0	0.0	0.0	0.0	0.0
Skimmed milk powder	0.0	0.0	0.0	0.0	0.0	0.0
Cheese	1.2	0.1	0.0	0.2	25.0	133.3
Concentrated milk	0.6	0.4	1.5	1.5	341.9	344.2
Whole milk powder	1.5	0.2	0.0	0.0	0.0	6.3
Whey powder	11.7	26.7	-0.2	0.1	-0.8	0.3
Oils	**6.1**	**0.7**	**0.1**	**0.9**	**18.2**	**134.8**
Olive oil	6.1	0.7	0.1	0.9	18.2	134.8
Oil cakes	0.0	0.0	0.0	0.0	0.0	0.0
Sugar	0.0	0.0	0.0	0.0	0.0	0.0
Biodiesel***	780.7	3077.7	0.0	0.0	0.0	0.0
Ethanol***	430.3	2808.2	0.0	0.0	0.0	0.0

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of EU27.*

*** CAPRI products for which there is no bilateral trade in either direction are not shown in the table.*

**** CAPRI does not simulate trade in these products. The level of these trade flows is fixed exogenously and therefore does not change in the policy scenarios.*

Table 29: EU imports from Mercosur

Product** / Units	Base year 2004*	Reference scenario 2020	Scenario 1	Scenario 2	Scenario 1	Scenario 2
			Difference from reference scenario			
	1000 tons		1000 tons		%	%
Cereals	**468.9**	**22.4**	**1.9**	**1.0**	**8.5**	**4.4**
Wheat	11.2	2.3	1.1	1.1	48.5	47.2
Barley	1.2	0.3	0.2	0.2	59.4	50.0
Grain maize	332.4	5.0	0.1	-0.2	2.6	-3.0
Other cereals	124.1	14.9	0.5	-0.1	3.2	-0.5
Oilseeds	**11,177.2**	**8,595.5**	**-79.5**	**-117.7**	**-0.9**	**-1.4**
Rape seed	1.1	0.1	0.1	0.1	54.5	54.5
Sunflower seed	203.6	321.7	-44.2	-45.6	-13.7	-14.2
Soybeans	10,972.6	8,273.7	-35.3	-72.1	-0.4	-0.9
Other arable crops	**106.5**	**1.1**	**0.5**	**0.5**	**50.9**	**44.3**
Pulses	106.5	1.1	0.5	0.5	50.9	44.3
Potatoes	0.0	0.0	0.0	0.0	0.0	0.0
Veg & permanent crops	**4,053.6**	**5,046.3**	**2,155.1**	**2,204.7**	**42.7**	**43.7**
Tomatoes	17.5	1.8	3.4	3.4	188.8	187.7
Other vegetables	168.1	340.8	168.5	167.8	49.5	49.2
Table grapes	464.7	275.7	112.9	111.2	41.0	40.4
Citrus fruits	3,217.2	4,329.4	1,499.0	1,553.9	34.6	35.9
Other fruits	186.1	98.6	371.1	368.4	376.3	373.5
Table olives	0.1	0.0	0.1	0.0	0.0	0.0
Flax and hemp	85.1	0.9	0.0	0.0	-1.2	-1.2
Meat	**599.0**	**569.2**	**48.0**	**510.4**	**8.4**	**89.7**
Beef	334.2	302.2	5.2	254.2	1.7	84.1
Pork	1.4	6.6	7.0	11.0	106.4	167.3
Sheep and goat meat	7.5	3.4	-0.3	-0.5	-8.5	-14.4
Poultry meat	255.9	257.1	36.0	245.7	14.0	95.6
Dairy products	**0.6**	**4.6**	**-0.1**	**15.3**	**-1.5**	**336.3**
Butter	0.6	4.6	-0.1	15.3	-1.5	336.3
Skimmed milk powder	0.0	0.0	0.0	0.0	0.0	0.0
Cheese	0.0	0.0	0.0	0.0	0.0	0.0
Concentrated milk	0.0	0.0	0.0	0.0	0.0	0.0
Whole milk powder	0.0	0.0	0.0	0.0	0.0	0.0
Whey powder	0.0	0.0	0.0	0.0	0.0	0.0
Oils	**209.5**	**675.6**	**224.6**	**222.1**	**33.2**	**32.9**
Sunflower seed oil	205.2	518.7	166.3	164.1	32.1	31.6
Soya oil	4.4	156.9	58.3	58.0	37.2	36.9
Olive oil	0.0	0.0	0.0	0.0	0.0	0.0
Oil cakes	**22,501.2**	**15,460.4**	**-0.2**	**-201.5**	**0.0**	**-1.3**
Milled rice	17.8	150.8	2.7	2.1	1.8	1.4
Sugar	7.5	1,793.9	-23.8	-41.7	-1.3	-2.3
Biodiesel***	0.0	1,323.6	0.0	0.0	0.0	0.0
Ethanol***	293.6	4,426.4	0.0	0.0	0.0	0.0

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of EU27.*

*** CAPRI products for which there is no bilateral trade in either direction are not shown in the table.*

**** CAPRI does not simulate trade in these products. The level of these trade flows is fixed exogenously and therefore does not change in the policy scenarios.*

(see Table 30 on fill rates). Imports of pork increase quite robustly with the policy changes but the TRQ, introduced in Scenario 1, is also not filled in either scenario. EU poultry meat imports from Mercosur are higher by one third in Scenario 1 despite the modestly higher TRQ, and are nearly twice as high in Scenario 2 as in the reference scenario. Nonetheless, this TRQ is not filled in either scenario. By contrast to these three meats, imports of sheep and goat meat are not stimulated by the TRQ expansion under Scenario 2, and are actually lower than the reference scenario level in both policy scenarios. The TRQ fill rate for these meats is very low.

Within Mercosur, Brazil is by far the largest exporter of beef and poultry to the EU in the reference scenario, and the only exporter of pork to the EU. Under Scenario 1, most of the increment in meat exports comes from Brazil. Under Scenario 2, however, the four Mercosur countries all contribute to the higher level of beef imported from Mercosur, and Brazil and Argentina contribute to the higher poultry imports. Pork is exported only by Brazil. Under Scenario 2, the breakdown of beef imports from the four Mercosur partners is Brazil: 59%, Argentina: 31%, Uruguay: 9%, and Paraguay: less than 1%.

Butter exports react to the new TRQs available to Mercosur in the policy scenarios, but not until Scenario 2. The text below Table 30 explains why there is no apparent stimulus to the other dairy products receiving new TRQs. The higher imports of oils in the two policy scenarios consist mainly of sunflower oil and to a lesser extent soya oil, with the increases coming mainly from Argentina. The reaction of rice and sugar under the policy scenarios is counter-intuitive. Rice receives a new TRQ under Scenario 1, which increases strongly under Scenario 2. Nonetheless, rice exports are not much higher than the reference scenario in both the policy scenarios. The existing TRQ for sugar is maintained under Scenario 1, and strongly increased in Scenario 2, and yet here too imports from Mercosur hardly change.

Table 30: Bilateral TRQ limits and fill rates*

Commodity Group**	Reference scenario 2020			Scenario 1			Scenario 2		
	TRQ ceiling	Fill rate	Imports outside bilateral TRQ***	TRQ ceiling	Fill rate	Imports outside bilateral TRQ2	TRQ ceiling	Fill rate	Imports outside bilateral TRQ2
	000 tons	*% of TRQ*	*000 tons*	*000 tons*	*% of TRQ*	*000 tons*	*000 tons*	*% of TRQ*	*000 tons*
Rice				40	100.0	113.5	150	100.0	2.9
Wheat				200	1.7	0	1000	0.3	0
Maize				658	0.8	0	3293	0.2	0
Beef	59.3	100.0	242.9	188.3	100.0	119.2	444.3	100.0	112.1
Pork				13.8	98.3	0	25	70.2	0
Poultry meat	227.3	100.0	29.8	320.3	91.5	0	537.3	93.6	0
Sheep/goat meat	28.8	11.8		28.8	10.8	0	52.3	5.6	0
Butter				4.0	100.0	0.5	20	99.3	0
Sugar	334.1	100.0	1,459.9	334.1	100.0	1,436.1	534.1	100.0	1,218.1

Source: DG AGRI (TRQ ceilings) and CAPRI simulations.

** Those for meat are expressed in carcass weight.*

*** The TRQ for ethanol (among the TRQs under negotiation) is not shown in the table because CAPRI does not simulate trade in ethanol.*

**** May be imported under an erga omnes TRQ or out of quota at MFN rate.*

Apart from beef and poultry meat (and, at a much lower level, pork), the positive changes in the EU's imports from Mercosur, relative to the reference situation, are not very different in the two policy scenarios. This is because trade is fully liberalised for most products within the EU offer. It is only for those products where tariffs remain but for which Mercosur has requested higher TRQs, that one might expect to see a further import increase when comparing Scenario 2 with Scenario 1.

Despite the higher imports of citrus fruit from Mercosur, total EU imports of citrus are only about 4% higher in the two scenarios than in the reference scenario. The share of Mercosur citrus in total citrus imports increases from 45% to 58%, largely at the expense of the ACP countries, the USA, Turkey, Morocco and other South American countries. The category of 'other fruits' is dominated here by imports of melons, and in second place, bananas.

Table 30 shows the bilateral TRQs for imports from Mercosur under the three scenarios. Under Scenario 1, TRQs are not filled for wheat, maize, pork, poultry meat and sheep meat. Under Scenario 2, only the TRQs for rice, beef and sugar are filled. The fill rates for wheat, maize and sheep meat are particularly low, and even the one for pork is not much more than two thirds filled. Table 30 does not include the TRQs for cheese (4 thousand and 60 thousand tons in the two scenarios) and for milk powder (6.5 and 17.5 thousand tons in the two scenarios). This is because neither of these products were traded from Mercosur to the EU in the base year, and so their trade is constrained to be zero in the simulations (this is explained in section 3.3), resulting in a predetermined fill rate of zero. Since this 'outcome' does not have the same status as those generated endogenously in the model, these TRQs are not shown.

Tables 29 and 30 taken together suggest that (a) tariff abolition (already complete in Scenario 1) on the non-TRQ commodities is effective in stimulating Mercosur's exports of a number of commodities to the EU and (b) the TRQ concessions requested by Mercosur under Scenario 2 appear to be in excess of that region's export capacity within the time horizon to 2020 except for beef, rice and sugar.

7.1.2. Production in the EU and in Mercosur

Table 31 reports the differences in EU production between the two policy scenarios and the reference scenario in 2020. The only sizeable negative impacts are for beef and poultry meat production in Scenario 2, which are lower by 1.7% and 1.0%, respectively (falls of 132 thousand tons and 125 thousand tons). Otherwise, the changes appear quite modest. Nonetheless, it is worth noting that, apart from a small increase for cereals, the differences for all other commodity groups are negative. At the level of individual products, the policy changes lead to higher wheat production (by more than half a million tons under both scenarios) and much smaller increases for other cereals, rape seed and soybeans, and tomatoes.

The main message from this table is that, in aggregate, most of the changes in commodity production are relatively small, except for those in the livestock sector. We therefore refrain from commenting on other changes for individual products.

Table A4.1 (Volume 2, Annex 4) reports the corresponding changes in the value of EU production at EU producer prices. This table shows that when price falls are also taken into account, the total loss in production value in the meat sector in Scenario 2 relative to the reference scenario amounts to 3%, with a loss of over 7.5% (€2.1 billion) accruing in the beef sector and 2.9% (over €450 million) in pork and poultry meat taken together. The other noteworthy result reported in Table A4.1 concerns the production of citrus and other fruits. Although the volume changes for these products shown in Table 31 are relatively

Table 31: Production in the European Union

	Base year 2004*	Reference scenario 2020	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Units	1000 tons		*Difference from reference scenario*			
			1000 tons		%	%
Cereals	**279,130.1**	**301,004.2**	**934.8**	**555.2**	**0.3**	**0.2**
Wheat	129,315.4	141,920.3	885.4	764.3	0.6	0.5
Rye and meslin	8,053.9	9,407.2	-43.7	-37.6	-0.5	-0.4
Barley	56,882.8	60,312.9	-37.2	-116.1	-0.1	-0.2
Oats	13,005.7	12,146.6	-22.6	-34.1	-0.2	-0.3
Grain maize	61,514.2	66,169.2	126.6	-43.4	0.2	-0.1
Other cereals	10,358.1	11,048.0	26.4	22.1	0.2	0.2
Oilseeds	**21,394.9**	**32,378.4**	**-13.4**	**-8.6**	**0.0**	**0.0**
Rape seed	14,022.5	22,782.4	9.7	13.5	0.0	0.1
Sunflower seed	6,343.7	7,900.3	-26.8	-28.7	-0.3	-0.4
Soybeans	1,028.7	1,695.8	3.7	6.5	0.2	0.4
Other arable crops	**63,467.3**	**52,556.3**	**-32.4**	**-48.7**	**-0.1**	**-0.1**
Pulses	4,603.2	3,876.3	-2.0	-3.5	-0.1	-0.1
Potatoes	58,864.1	48,680.0	-30.4	-45.2	-0.1	-0.1
Veg & permanent crops	**131,960.7**	**142,182.7**	**-244.3**	**-258.8**	**-0.2**	**-0.2**
Tomatoes	18,780.1	22,166.0	3.7	2.1	0.0	0.0
Other vegetables	53,175.1	57,330.6	-112.3	-122.5	-0.2	-0.2
Table grapes	2,924.8	2,545.8	-7.3	-7.4	-0.3	-0.3
Citrus fruits	10,985.6	12,809.2	-73.1	-73.9	-0.6	-0.6
Other fruits	10,433.5	11,299.4	-50.0	-49.8	-0.4	-0.4
Meat	**42,739.1**	**45,017.8**	**-48.4**	**-267.8**	**-0.1**	**-0.6**
Beef	8,614.6	7,735.3	-5.4	-132.2	-0.1	-1.7
Pork	21,890.9	23,647.5	-12.6	-9.9	-0.1	0.0
Sheep and goat meat	1,207.4	959.8	-0.4	-0.4	0.0	0.0
Poultry meat	11,026.2	12,675.2	-30.0	-125.3	-0.2	-1.0
Dairy products	**65,635.1**	**71,048.6**	**2.0**	**-9.7**	**0.0**	**0.0**
Butter	2,179.5	1,982.5	-0.2	-4.6	0.0	-0.2
Skimmed milk powder	1,098.5	799.1	-0.6	-4.8	-0.1	-0.6
Cheese	8,393.2	9,623.9	-2.5	-9.1	0.0	-0.1
Fresh milk products	47,918.7	52,014.6	7.2	16.9	0.0	0.0
Cream	2,385.4	3,247.3	-1.8	-0.4	-0.1	0.0
Concentrated milk	1,221.0	1,413.6	-0.5	-1.1	0.0	-0.1
Whole milk powder	841.0	777.3	0.6	0.3	0.1	0.0
Casein	139.3	106.2	-0.1	-0.7	-0.1	-0.6
Whey powder	1,458.4	1,084.1	-0.2	-6.2	0.0	-0.6
Oils	**13,121.0**	**19,647.3**	**-49.2**	**-54.7**	**-0.3**	**-0.3**
Rapeseed oil	5,544.1	10,997.2	4.4	3.8	0.0	0.0
Sunflower seed oil	2,590.0	3,621.7	-48.6	-48.7	-1.3	-1.3
Soya oil	2,568.6	2,258.2	-4.9	-9.4	-0.2	-0.4
Olive oil	2,381.1	2,693.9	0.0	-0.3	0.0	0.0
Oil cakes	**22,115.1**	**30,697.7**	**-74.5**	**-96.5**	**-0.2**	**-0.3**
Rapeseed cake	7,225.7	16,220.7	6.7	5.2	0.0	0.0
Sunflower seed cake	3,364.8	4,450.1	-59.3	-59.7	-1.3	-1.3
Soya cake	11,524.6	10,027.0	-21.9	-42.1	-0.2	-0.4
Milled rice	2,108.6	2,284.9	-0.3	-0.5	0.0	0.0
Sugar	21,150.7	16,813.8	36.9	68.4	0.2	0.4

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of EU27.*

Note: to save space, the table omits certain products that are represented in CAPRI but which had no change, or a very small change in production (< 1 thousand tons) under the scenarios, and for which trade with Mercosur is for the most part negligible. These products are table olives, flax & hemp, and apples, pears and peaches.

Table 32: Production in Mercosur

	Base year 2004*	Reference scenario 2020	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Units	1000 tons		*Difference from reference scenario*			
			1000 tons		%	%
Cereals	**82,528.1**	**124,461.9**	**-837.3**	**-670.7**	**-0.7**	**-0.5**
Wheat	20,037.8	23,802.5	-842.0	-902.2	-3.5	-3.8
Rye and meslin	54.3	137.3	2.2	2.6	1.6	1.9
Barley	1,163.5	1,598.5	6.8	7.1	0.4	0.4
Oats	769.1	1,058.6	15.9	18.1	1.5	1.7
Grain maize	55,559.5	91,949.3	-40.4	176.3	0.0	0.2
Other cereals	4,943.9	5,915.8	20.2	27.3	0.3	0.5
Oilseeds	**94,959.5**	**189,105.0**	**-303.7**	**-454.8**	**-0.2**	**-0.2**
Rape seed	110.7	106.4	-3.9	-4.1	-3.6	-3.8
Sunflower seed	4,291.2	6,651.2	143.5	138.9	2.2	2.1
Soybeans	90,557.6	182,347.5	-443.4	-589.7	-0.2	-0.3
Other arable crops	**8,236.5**	**10,660.8**	**-21.9**	**-28.3**	**-0.2**	**-0.3**
Pulses	3,268.0	3,918.9	-18.1	-21.2	-0.5	-0.5
Potatoes	4,968.5	6,741.9	-3.8	-7.1	-0.1	-0.1
Veg & permanent crops	**55,148.7**	**68,595.6**	**1,821.3**	**1,856.0**	**2.7**	**2.7**
Tomatoes	4,346.8	5,811.4	-106.8	-110.8	-1.8	-1.9
Other vegetables	6,228.0	7,959.0	120.1	119.1	1.5	1.5
Apples pears, peaches	3,286.2	4,108.5	-2.7	-3.2	-0.1	-0.1
Table grapes	3,697.6	3,504.7	94.8	92.2	2.7	2.6
Citrus fruits	22,261.9	30,872.1	1,410.8	1,463.6	4.6	4.7
Other fruits	15,222.8	16,238.8	305.9	296.0	1.9	1.8
Flax and hemp	2,267.1	1,961.8	-13.4	-15.3	-0.7	-0.8
Meat	**23,743.7**	**29,179.1**	**3.5**	**250.5**	**0.0**	**0.9**
Beef	11,277.1	14,232.3	-12.2	106.8	-0.1	0.8
Pork	2,865.5	4,143.6	7.0	13.2	0.2	0.3
Sheep and goat meat	209.7	295.0	-0.8	-0.9	-0.3	-0.3
Poultry meat	9,391.4	10,508.3	9.4	131.3	0.1	1.2
Dairy products	**1,873.6**	**2,801.6**	**-10.3**	**-1.7**	**-0.4**	**-0.1**
Butter	135.0	189.0	-0.3	9.6	-0.2	5.1
Cheese	862.3	1,475.0	-5.2	-6.0	-0.4	-0.4
Concentrated milk	50.3	48.4	-0.3	-0.4	-0.6	-0.8
Whole milk powder	667.3	930.0	-3.6	-3.9	-0.4	-0.4
Whey powder	114.5	114.0	-0.7	-0.7	-0.6	-0.6
Oils	**12,655.6**	**23,036.9**	**94.0**	**88.2**	**0.4**	**0.4**
Sunflower seed oil	1,863.6	2,879.7	101.8	100.4	3.5	3.5
Soya oil	10,546.2	19,711.7	-6.9	-10.6	0.0	-0.1
Oil cakes	**46,419.3**	**86,233.9**	**11.9**	**8.3**	**0.0**	**0.0**
Rape seed cake	61.5	68.1	1.0	1.0	1.4	1.5
Sunflower seed cake	2,025.9	3,125.3	87.3	85.8	2.8	2.7
Soya cake	44,331.9	83,040.6	-76.4	-78.5	-0.1	-0.1
Rice milled	10,258.0	11,293.5	-3.4	-23.3	0.0	-0.2
Sugar	41,762.6	127,698.7	-126.9	-200.1	-0.1	-0.2

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of Mercosur.*

Note: to save space, the table omits certain products that are represented in CAPRI but which had no change, or a very small change in production (< 1 thousand tons) under the scenarios, and for which trade with the EU is for the most part negligible. These products are eggs, table olives, olive oil, cream, SMP.

modest, when price changes are also taken into account the loss to the corresponding production sectors is valued at €697 million, or around 4.5%.

Table 32 shows the differences in Mercosur production between the two policy scenarios and the reference scenario in 2020. Table A4.2 (Volume 2, Annex 4) gives Mercosur's production valued at producer prices. In both tables, the percentage differences between the two policy scenarios and the reference scenario are greater for Mercosur than for the EU for many products, reflecting the difference in size of the agricultural sectors of the two trade blocs.

Surprisingly, these changes do not always follow the changes in Mercosur's export flows towards the EU that are reported in Table 29. In particular, the large upward impact of Scenario 2 on beef exports to the EU is accompanied by an increase in Mercosur's beef production of less than half that volume. A similar discrepancy occurs between the increase in the EU's poultry meat imports from Mercosur and the much smaller increase in Mercosur's production of poultry meat. This suggests possible trade diversion of Mercosur exports away from other export destinations tpwards the EU and/or lower domestic consumption of these meats. A second striking feature is that total production in the majority of sectors – cereals, oilseeds, and (marginally) rice and sugar - is lower in both the liberalisation scenarios. The only sectors apart from meat where there is a clear production increase are vegetables and permanent crops (where production is more than 2% higher in both scenarios) and the vegetable oil sector (0.4% higher).

As regards individual products, pork production changes only modestly despite the new TRQ introduced in Scenario 1 and expanded in Scenario 2, whereas production of sheep and goat meat is lower compared with the reference scenario in both the policy scenarios. Production of other vegetables, table grapes, citrus and other fruits, expands in line with – but slightly less than – the increase in Mercosur's exports to the EU. The difference in production of vegetable oils is much less than the extra volume of the EU's vegetable oil imports under both Scenarios 1 and 2, but the production of oilcakes is higher, despite lower exports to the EU, in both scenarios, indicating greater domestic consumption as animal feed in the expanded livestock sector. The fact that Mercosur's domestic output of oilseeds falls by much more than its exports to the EU, whilst at the same time production of oilcakes increases, suggests significant changes for these commodities in trade flows with third countries. The fall in Mercosur's total oilseeds exports is three times greater than the fall in the EU's imports of oilseeds from Mercosur (Table A4.9). This explains how Mercosur can both increase its exports of vegetable oils to the EU under both scenarios, and under Scenario 2 expand its production of oilcakes significantly for domestic use, despite lower oilseed production.

For the products for which the EU does not impose a TRQ and whose tariffs are fully liberalised in Scenario 1, production differences relative to the reference scenario are quite similar under Scenarios 1 and 2. For the products that are subject to TRQs, most of which expand incrementally in each of the two scenarios, or are created for the first time in Scenario 1, the reactions are not always as expected. Products whose production is lower under Scenario 1 only but higher under Scenario 2 are maize, beef and butter. For wheat, sheep and goat meat, other dairy products, rice and sugar, Mercosur's production is lower in both scenarios despite greater export access to EU market.

Thus, overall, it is impossible to conclude on the basis of these simulation results that the trade concessions granted to Mercosur in the two policy scenarios systematically 'drive' either the export flows to the EU or the production changes within Mercosur. However, this conclusion appears to be well supported for the meat sector.

Table 33: Producer price impacts in EU27

Units	Reference scenario 2020	Scenario 1	Scenario 2
	(€ / ton)	%	%
Cereals			
Soft wheat	138.8	0.3	0.1
Rye and meslin	97.0	0.7	0.5
Barley	123.7	0.2	0.0
Oats	119.0	0.4	0.2
Grain maize	134.1	0.1	-0.1
Other cereals	128.4	0.3	0.1
Oilseeds			
Rapeseed	285.4	0.0	-0.1
Sunflower seed	283.9	-0.2	-0.3
Soybeans	294.4	0.0	0.0
Other arable crops			
Pulses	193.8	0.1	-0.2
Potatoes	171.6	0.1	0.0
Vegetables & permanent crops			
Tomatoes	432.6	0.0	0.0
Other vegetables	530.8	-0.6	-0.7
Apples, pears and peaches	528.1	-0.2	-0.3
Table grapes	982.2	-2.3	-2.3
Citrus fruits	453.6	-4.5	-4.5
Other fruits	861.1	-3.7	-3.7
Table olives	3,067.7	0.2	0.1
Meat			
Beef	3,597.3	-0.1	-6.0
Pork	1,421.7	0.0	-0.1
Sheep and goat meat	5,335.0	-0.1	-0.6
Poultry meat	1,423.5	-0.2	-1.2
Dairy products			
Butter	2,568.4	-0.1	-0.6
Skimmed milk powder	1,994.4	0.0	0.1
Whole milk powder	2,356.5	0.0	0.1
Casein	4,399.3	0.0	0.2
Whey powder	446.4	0.0	0.2
Oils			
Rape seed oil	752.2	-0.6	-0.6
Sunflower seed oil	1,199.1	-1.3	-1.3
Soya oil	823.1	-2.1	-2.2
Olive oil	2,468.0	0.0	-0.1
Oil cakes			
Rape seed cake	142.6	0.0	-0.4
Sunflower seed cake	158.0	0.2	-0.2
Soya cake	350.0	0.1	-0.2
Rice milled	504.0	0.0	-0.1
Sugar	555.6	0.1	0.2

Source: CAPRI simulation results.

Table 34: Producer price impacts in Mercosur

Units	Reference scenario 2020	Scenario 1	Scenario 2
	(€ / ton)	%	%
Cereals			
Soft wheat	195.7	-3.6	-3.6
Rye and meslin	159.2	-2.5	-1.8
Barley	207.5	-3.7	-3.2
Oats	209.4	-3.0	-2.5
Grain maize	206.8	0.0	0.6
Other cereals	178.0	-0.3	0.0
Oilseeds			
Rapeseed	380.6	-4.0	-3.9
Sunflower seed	346.2	3.2	3.2
Soybeans	409.1	0.1	0.3
Other arable crops			
Pulses	890.7	0.4	0.6
Potatoes	115.6	0.9	1.0
Vegetables & permanent crops			
Tomatoes	317.6	-1.1	-1.0
Other vegetables	592.8	2.3	2.4
Apples pears and peaches	643.7	0.9	1.1
Table grapes	1,568.5	3.2	3.2
Citrus fruits	469.0	5.2	5.6
Other fruits	669.7	2.4	2.6
Table olives	847.4	0.1	0.4
Meat			
Beef	2,505.7	0.2	1.4
Pork	1,706.3	0.1	0.5
Sheep and goat meat	2,530.2	0.7	1.0
Poultry meat	1,881.0	0.4	1.9
Dairy products			
Butter	1,165.9	0.1	5.6
Skimmed milk powder	2,047.5	0.2	0.4
Cheese	2,911.8	0.5	0.6
Concentrated milk	2,415.9	-0.5	-0.4
Whole milk powder	1,721.8	0.5	0.6
Oils			
Rape seed oil	932.7	-0.3	-0.2
Sunflower seed oil	1,596.9	2.7	2.6
Soya oil	900.7	0.5	0.5
Olive oil	2,602.0	0.1	0.1
Oil cakes			
Rape seed cake	104.9	-0.2	0.2
Sunflower seed cake	151.8	-1.0	-1.1
Soya cake	192.4	0.1	0.2
Rice milled	358.8	-0.3	-0.2
Sugar	192.5	0.3	0.5

Source: CAPRI simulation results.

Table 33 shows that most of the price impacts in the EU are relatively small. The downward impact on the prices of some vegetables and permanent crops, and in the meat sector, can be explained by higher (and cheaper) imports from Mercosur of these products. The much lower EU producer price for beef in Scenario 2 is particularly striking. Direct trade impacts also explain the fall in prices for sunflower and soya oil. However, prices also change for some products that are not directly influenced by the changes in trade policies or in trade flows. These cases (e.g. rye, oats, other vegetables) indicate substitution relationships in both production and consumption between these products and products whose trade flows have been directly affected.

Mercosur producer prices are shown in Table 34. Prices (producer and consumer prices) increase for most products in Mercosur in the policy scenarios. Exceptions are wheat, rye, barley, oats, potatoes, rapeseed, tomatoes, sunflower seed cake, rice and concentrated milk. Prices of fruit, especially citrus, increase quite strongly. By contrast, meat prices, including even beef and poultry (which see the largest impacts on production and exports to the EU in Scenario 2), are less than 2% higher than in the reference scenario.

Producer prices in the reference scenario are higher in Mercosur than in the EU for cereals, oilseeds, other arable crops and vegetable oils. The opposite is true for oil cakes, milled rice and sugar. In the meat sector, EU reference scenario prices are lower than those of Mercosur for pork and poultry meat, and higher for beef and sheep meat.[52] In other sectors, the relative levels vary by commodity.

7.1.3. Sector level effects and welfare

Tables 35 to 43 show the changes in EU and Mercosur balances for certain products due to the proposed policy changes. In these tables, not all the minor categories of use (such as processing) are shown, therefore the numbers given in the tables do not always balance as one would expect.

Table 35 shows the EU27 balance sheet for the main meat products. The following overall conclusions can be drawn. First, EU production falls for all meats for both scenarios. Second, human consumption declines in all scenarios for pork and for sheep and goat meat. Human consumption of poultry increases in Scenario 1 and even more in Scenario 2. A small increase for beef in Scenario 2 occurs due to the strong EU price fall for beef. Third, total imports increase incrementally as one moves from Scenario 1 to Scenario 2 for beef, poultry and pork, but they decline for sheep and goat meat. EU exports of all four meats are higher in Scenario 2 than in the reference scenario, and to a lesser extent in Scenario 1 (except for sheep and goat exports, that hardly changes under Scenario 1).

The bottom line is that in Scenario 2, the EU produces about 268 thousand tons of meat less, and consumes about 80 thousand tons more. Production and human consumption both decline for pork and (marginally) sheep meat, whereas for beef the production decline is accompanied by a consumption increase. At the same time, the EU's overall position relative to the world market hardly changes: the EU remains a large net exporter of pork, a very small net exporter of poultry meat, becomes somewhat more dependent on imports for beef, but a little less dependent on imports for sheep and goat meat.

52 One implication of the Armington assumption, used in both models to allow both imports and exports of the same goods, is that the relative level of current producer prices does not fully determine trade flows. Other elements, such as 'historically' observed preferences for domestic goods relative to imports from particular countries and substitution elasticities, are also relevant.

Table 35: Impact on EU balances for meats (thousand tons)

	Beef			Pork		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	7,735.3	-5.4	-132.2	23,647.5	-12.6	-9.9
Human consumption + losses	7,712.0	-2.3	3.4	21,246.9	-5.3	-6.1
Processing	133.2	0.6	13.5	119.0	-0.3	0.0
Imports	347.3	5.1	244.7	15.4	8.0	11.9
Exports	180.7	1.1	82.7	2,297.0	1.1	8.1

	Poultry meat			Sheep & goat meat		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	12,675.2	-30.0	-125.3	959.8	-0.4	-0.4
Human consumption + losses	12,553.1	9.4	90.5	1,124.0	-0.5	-7.6
Processing	70.5	0.5	2.7	51.9	0.1	0.5
Imports	280.4	46.7	253.2	242.0	0.0	-6.5
Exports	331.9	6.7	34.7	25.9	0.0	0.3

Source: CAPRI simulation results.

Table 36: Impact on Mercosur balances for meats (thousand tons)

	Beef			Pork		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	14,232.3	-12.2	106.8	4,143.6	7.0	13.2
Human consumption + losses	13,291.5	-9.4	-64.6	3,894.3	4.3	14.3
Imports	0.0	0.0	0.0	1.1	0.0	0.3
Exports	940.8	-2.8	171.4	250.3	2.7	-0.8

	Poultry meat			Sheep & goat meat		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	10,508.3	9.4	131.3	295.0	-0.8	-0.9
Human consumption + losses	9,610.8	-13.4	-53.8	291.6	-0.5	-0.4
Imports	0.0	0.0	0.0	0.0	0.0	0.0
Exports	897.5	22.9	185.1	3.4	-0.3	-0.5

Source: CAPRI simulation results.

Table 36 shows the meat balances for Mercosur. Consumption of all meats except pork is lower in Mercosur under both policy scenarios. Since the prices for pork increase the least, this favours some substitution away from the other meats towards pork. Nonetheless, in Scenario 2, aggregate meat consumption is about 105 thousand tons lower than in the reference scenario although aggregate production is about 250 thousand tons higher. At the same time, under both scenarios, Mercosur's net exporting position strengthens considerably, led by beef and poultry meat.

Table 37: Impact on EU balances for certain fruits and sugar (thousand tons)

	Citrus fruit			Other fruits		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	12,809.2	-73.1	-73.9	11,299.4	-50.0	-49.8
Human consumption + losses	22,262.6	312.3	340.9	12,326.1	151.2	148.5
Imports	9,690.5	400.7	435.0	1,481.4	225.9	221.5
Exports	95.8	5.5	5.1	140.9	12.0	12.2

	Table grapes			Sugar		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	2,545.8	-7.3	-7.4	16,813.8	36.9	68.4
Human consumption + losses	3,339.9	17.9	15.3	16,623.7	14.0	33.2
Industrial use (biofuels)	-	-	-	3,585.5	3.3	-7.6
Imports	887.1	32.1	29.6	3,791.8	-18.7	-41.6
Exports	52.7	6.7	6.7	237.5	0.8	1.3

Source: CAPRI simulation results.

Table 38: Impact on Mercosur balances for certain fruits and sugar (thousand tons)

	Citrus fruit			Other fruits		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	30,872.1	1,410.8	1,463.6	16,238.8	305.9	296.0
Human consumption + losses	26,503.0	-75.0	-76.6	16,354.2	-46.2	-52.3
Imports	0.2	0.5	0.5	308.9	14.0	14.6
Exports	4,369.3	1,486.2	1,540.6	181.9	366.5	363.4

	Table grapes			Sugar		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	3,504.7	94.8	92.2	127,698.7	-126.9	-200.1
Human consumption + losses	3,181.2	-6.4	-7.1	10,517.2	-10.2	-19.7
Industrial use (biofuels)	-	-	-	75,061.0	-0.2	-0.2
Imports	1.9	0.6	0.6	0.3	0.0	0.0
Exports	325.4	101.8	99.9	42,109.8	-116.5	-180.2

Source: CAPRI simulation results.

Table 37 presents the EU balance sheets for citrus fruit, other fruits and table grapes, which are the main products affected in the category of vegetables and fruit, and for sugar. The pattern is consistent for the three fruit groups: EU production is lower by roughly the same amount under both scenarios, consumption is higher in the reference scenario due to lower prices, and the EU becomes more import-dependent for all three categories of fruit.

As for sugar, production is incrementally higher in the two policy scenarios but by small quantities, with smaller increases in human consumption. Use of sugar in biofuel processing remains around the same level, and in Scenario 2 the EU's trade balance of sugar improves slightly.

Table 38 reports the change in the Mercosur balance sheet for the same three fruit categories. Production of all three categories increases, but domestic consumption falls. Here, as in the EU, there is little difference between the two scenarios. The net exporting position of Mercosur strengthens considerably for all three fruit categories. Mercosur's production and human consumption of sugar also fall with increasingly free access to the EU market. The lower exports of sugar are to be expected, given that the consumption decline is only 8-10% as great as the production decline. The quantity of sugar used for ethanol production is assumed unchanged.

The balance sheets for these two product sectors – meats and fruits – prompt a few more general comments. Consumers in Mercosur consume less meat under both the policy scenarios, whereas (considering only the three fruit categories reported in the tables) more fruit is consumed in the EU but less in Mercosur. These consumption declines raise questions about a potentially harmful impact on vulnerable socio-economic groups in Mercosur given the greater inequality in the distribution of purchasing power and standard of living in these countries compared with the EU. It is beyond the scope of the models used here to pursue this question. Finally, we note that the EU becomes more dependent on imported food, whereas Mercosur increases its exporting position.

Table 39: Impact on EU balances for cereals (thousand tons)

	Total cereals			Wheat		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	301,004.2	934.8	555.2	141,920.3	885.4	764.3
Human consumption + losses	68,253.7	-0.7	47.0	57,743.0	-0.9	42.3
Processing (non-biofuel)	18,527.6	-43.8	8.1	5,574.3	-9.7	9.2
Processing (biofuels)	30,822.0	-17.9	5.7	7,286.9	-100.8	-102.7
Feed use	159,483.3	-311.3	-1,035.2	48,871.8	-290.3	-609.1
Imports	3,960.5	23.3	-21.7	710.1	-0.9	-7.4
Exports	28,033.2	1331.8	1507.8	23,251.6	1,286.2	1,417.1

	Barley			Maize		
	Reference	**Scenario 1**	**Scenario 2**	**Reference**	**Scenario 1**	**Scenario 2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	60,312.9	-37.2	-116.1	66,169.2	126.6	-43.4
Human consumption + losses	767.3	-0.2	-0.2	5,706.9	2.3	5.6
Processing (non-biofuel)	7,221.6	-5.0	1.7	4,291.8	-8.2	11.0
Processing (biofuels)	10,119.1	5.3	10.9	8,251.1	83.8	95.8
Feed use	38,836.2	-85.8	-208.2	48,563.3	59.5	-162.4
Imports	44.4	2.7	2.4	866.7	8.8	-2.4
Exports	3,471.0	51.4	82.0	222.9	-2.1	4.3

Source: CAPRI simulation results.

Table 40: Impact on Mercosur balances for cereals (thousand tons)

	Total cereals			Wheat		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	124,461.9	-837.3	-670.7	23,802.5	-842.0	-902.2
Human consumption + losses	36,909.8	199.7	143.8	23,923.8	205.8	165.6
Processing (non-biofuel)	7.3	0.0	-0.1	0.0	0.0	0.0
Feed use	75,609.2	45.1	603.1	1,117.5	80.2	96.4
Imports	3523.5	1778.7	1811.5	3,244.4	1701.9	1724.2
Exports	15,459.1	696.6	394.1	2,005.7	574.0	560.0

	Barley			Maize		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	1,598.5	6.8	7.1	91,949.3	-40.4	176.3
Human consumption + losses	102.5	-1.1	-1.1	12,138.6	-10.1	-25.8
Processing (non-biofuel)	0.0	0.0	0.0	7.3	0.0	-0.1
Feed use	1,479.3	58.7	72.3	68,059.8	-94.2	403.1
Imports	271.5	77.1	87.4	3.6	-0.1	0.1
Exports	288.2	26.3	23.3	11,747.2	63.7	-200.7

Source: CAPRI simulation results.

Table 39 reports the impacts on EU cereals balances under the two scenarios. Total cereal production is higher under both than in the reference scenario, although the difference is less for Scenario 2. Human consumption of wheat, by contrast, is higher (but by much less) in Scenario 2. However, barley and maize production fall in Scenario 2. Total EU cereal use (human consumption, processing and animal feed use) is lower in both policy scenarios, due to a strong downward impact on animal feed use. Changes in industrial use of wheat and barley are very slight, whereas there is a slightly more pronounced increase in use of maize for industrial use (both for biofuel production and for other industrial processes) between the scenarios. For cereals as a whole, the EU strengthens its exporting position - exports rise, with imports showing a smaller increase.

As Table 40 shows, Mercosur's total production of cereals is lower in both policy scenarios than in the reference scenarios, although the difference is less in Scenario 2 due to higher production of maize. The fall in both scenarios is driven by substantially lower wheat production. Feed use is progressively higher in the two policy scenarios, two thirds of the increase in Scenario 2 in the form of maize. Mercosur continues to be a strong net exporter of cereals, even though the increase in imports of wheat and barley exceeds the corresponding increase in exports. This is largely because the strong export performance of maize is maintained, despite a small drop under Scenario 2.

Tables 41 and 42 summarise the changes in dairy balances for the two blocks. EU production and consumption fall marginally in both policy scenarios (except for a slightly higher consumption of butter in Scenario 2). The EU remains a net importer of butter, and a net exporter of SMP, cheese and cream. In Mercosur, production and consumption changes are small, and generally downwards (except for butter in Scenario 2), and Mercosur remains a net exporter of all four products shown, although its net trade flows are on a smaller scale than those of the EU.

Table 41: Impact on EU balances for dairy products (thousand tons)

	Butter			Skimmed milk powder		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	1,982.5	-0.2	-4.6	799.1	-0.6	-4.8
Human consumption + losses	2,060.1	-0.4	2.9	361.8	-0.4	-1.2
Processing (non-biofuel)	89.7	0.1	1.3	22.4	0.0	0.0
Feed use	0.0	0.0	0.0	250.8	-0.3	-2.8
Imports	181.6	-0.1	9.6	2.1	0.0	0.0
Exports	18.1	0.0	0.2	157.2	0.0	-0.4

	Cheese			Cream		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	9,623.9	-2.5	-9.1	3,247.3	-1.8	-0.4
Human consumption + losses	8,870.7	-2.2	-8.4	3,028.9	-1.9	-0.9
Processing (non-biofuel)	321.0	0.1	-0.3	0.6	0.0	0.0
Imports	11.9	0.0	0.0	15.4	0.0	-0.2
Exports	444.0	-0.4	-0.5	233.2	0.1	0.3

Source : CAPRI simulation results.

Table 42: Impact on Mercosur balances for dairy products (thousand tons)

	Butter			Whole milk powder		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	189.0	-0.3	9.6	930.0	-3.6	-3.9
Human consumption + losses	166.9	0.0	-1.6	832.5	-0.5	-0.6
Processing (non-biofuel)	0.0	0.0	0.0	0.0	0.0	0.0
Imports	0.0	0.0	0.0	0.5	0.0	0.0
Exports	22.1	-0.3	11.2	98.0	-3.0	-3.3

	Cheese			Concentrated milk		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	1,475.0	-5.2	-6.0	48.4	-0.3	-0.4
Human consumption + losses	1,243.5	-0.9	-1.3	28.3	0.1	0.1
Processing (non-biofuel)	0.0	0.0	0.0	0.0	0.0	0.0
Imports	0.3	0.0	0.2	0.4	1.5	1.5
Exports	231.8	-4.3	-4.5	20.5	1.1	1.0

Source : CAPRI simulation results.

Finally, changes in the EU's balances for olive oil and milled rice are given in Table 43. For both products, the changes in production and consumption relative to the reference scenario are very small, albeit all of them in a downward direction. Exports of both products increase marginally, and in Scenario 2, imports adjust downwards.

Table 44 summarises the welfare changes in the EU, for several stakeholder groups and in the aggregate. It must be stressed that these figures measure only the changes due to impacts in agricultural markets, since other sectors of the economy are not treated in CAPRI. The total welfare effect is extremely small. The positive change in consumer surplus[53] is about 50% higher than the absolute value of the loss in agricultural income[54] in Scenario 1, and 35% higher in Scenario 2, but given a worsening of the budget (due to offsetting movements in tariff revenues and CAP market support costs), the overall welfare effect originating from changes in agricultural markets is negative.

Table 45 gives the corresponding figures for welfare changes in Mercosur.[55] Total welfare increases marginally. The agricultural sector gains substantially and there is considerable redistribution away from consumers towards agriculture.

In the figures shown in Tables 44 and 45, the quota rent that is available from the application of the TRQs is not included. In essence, the maximum potential quota rent that can be earned under a TRQ is the difference in the out-of-quota tariff (or, possibly, the next best alternative in quota tariff if the exporter has a choice between preferential arrangements) and the in-quota tariff of the particular TRQ, times the amount that is imported under the TRQ up to the quota ceiling. Administration costs have to be deducted. How that rent is allocated between players in the exporting and importing countries varies greatly, depending on the type of TRQ involved and its manner of implementation. With bilateral TRQs, exporting countries like to control the implementation themselves as it gives them, potentially, the greatest control over the allocation of the rent.

The potential quota rent to be allocated among market participants has been calculated from the CAPRI simulation results for the TRQs listed in Table 30 at €352 million, €831 million and €1,738 million under the reference scenario and the two policy scenarios, respectively. These figures take into account the fill rates shown in Table 30. In Scenario 1, 52% of the rent comes from the beef TRQ and a further 30% from the TRQ for poultry meat. For Scenario 2, these shares become 59% and 25%, respectively. Clearly, if all the potential quota rent were allocated to the exporting countries, it would be included as an increase in Mercosur agricultural income, which should be interpreted as a gain to the agribusiness sector as a whole and not necessarily to farmers if it is not transferred back up the supply chain to primary producers. If the rent is shared between exporters and trading companies in the EU, then the impact of the rent on Mercosur welfare would be less. In order to avoid making assumptions about quota rent allocation, quota rents are omitted from the welfare summaries in Tables 44 and 45. The quota rent amounts are too small to make any difference to the welfare outcome for the EU, but full capture of the rent by Mercosur countries would contribute visibly to their welfare result.

53 Based on the money metric concept. Consumer surplus is the minimal expenditure to reach the utility in the equilibrium point at prices from the calibration point. Whether or not this welfare change actually reaches consumers depends on whether price changes are fully transmitted along the food chain to retail markets.

54 For EU countries, this corresponds to the gross value added concept. Agricultural income = value of output + premiums – input costs (excluding land, capital and labour).

55 CAPRI calculates agricultural income for non-EU countries directly from the underlying profit functions of the production activities.

Table 43: Impact on EU balances for olive oil and rice (thousand tons)

	Olive oil			Rice		
	Reference	Scenario 1	Scenario 2	Reference	Scenario 1	Scenario 2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*		*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*	
Net production	2,693.85	-0.03	-0.26	2,284.93	-0.32	-0.51
Human consumption + losses	2,773.14	-0.40	0.66	3,568.83	-1.79	-2.38
Processing	66.26	0.00	0.09	29.07	0.02	0.04
Feed Use	119.30	0.39	-2.43	312.11	1.33	-2.46
Imports	296.76	0.09	-0.60	1,652.55	0.19	-3.42
Exports	31.91	0.07	0.81	56.06	0.30	0.85

Source: CAPRI simulation results.

Table 44: Welfare changes in the EU

	Reference scenario	Scenario1		Scenario 2	
		Difference		Difference	
	EUR millions	EUR mn	%	EUR mn	%
Total Welfare	7,766,893	-344	0.00	-180	0.00
Consumer surplus	7,628,878	1,603	0.02	4,064	0.05
Agricultural income	241,526	-983	-0.41	-2,978	-1.23
Tariff revenues	4,834	-957	-19.80	-1,229	-25.42
Taxpayer cost	108,344	6	0.01	37	0.03

Source: CAPRI simulation results.

Table 45: Welfare changes in Mercosur

	Reference scenario	Scenario1		Scenario 2	
		Difference		Difference	
	EUR millions	EUR mn	% difference	EUR mn	% difference
Total Welfare	938,450	870	0.09	947	0.10
Consumer surplus	789,747	-751	-0.10	-1,458	-0.18
Agricultural income	148,162	1,766	1.19	2,549	1.72
Tariff revenues	541	-145	-26.82	-144	-26.68

Source: CAPRI simulation results.

7.1.4. Policy impacts at EU Member State level

The impact of these two scenarios on agricultural revenue per hectare of UAA is shown in Table 46, where the Member States are listed in decreasing order of the revenue loss under Scenario 2. CAPRI allows the total UAA in each Member State to adapt to market conditions in each scenario. However, these changes are small.

Table 46 shows that there is considerable variation across Member States both in the impact of the two policy scenarios on total revenue per hectare, and in the extent to which the impact worsens as one moves from Scenario 1 to Scenario 2. Under Scenario 1, seven Member States – all of them from EU10 – experience a marginal increase in revenue per hectare. The largest decrease is observed in Spain, but this is a fall of only -0.63%.

By contrast, the revenue losses under Scenario 2 are above 1% for twelve Member States. The greatest losses per average hectare occur in the Republic of Ireland (-3.14%) and Luxembourg (-2.15%). Nonetheless, there are still ten Member States with decreases of less than 1% under Scenario 2 (in decreasing order of loss, Greece, Cyprus, Bulgaria, Germany, Netherlands, Denmark, Malta, Romania, Malta, Slovak Republic, Poland). Five Member States (the new Member States Hungary, Estonia, Czech Republic, Lithuania and Latvia) still show a tiny improvement in revenue per hectare relative to the reference scenario. The losses in those Member States that lose revenue in both scenarios are greater under Scenario 2 than under Scenario 1. It is in Ireland and Slovenia where the loss increases most dramatically, when moving from Scenario 1 to Scenario 2 (more than 20-fold), followed by Denmark and Sweden.

The information given in Table 46 is reproduced at NUTS 2 level in Table A4.5 and Figure A6.20 (see Volume 2, Annexes 4 and 6). Other impacts at NUTS 2 level are summarised and discussed in section 7.3 below.

Table 46: Agricultural revenue per ha UAA at MS level

Member States	Euros per hectare UAA			Percentage difference	
	Reference	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Ireland	2,283.19	2,281.06	2,211.51	-0.09	-3.14
Luxembourg	3,514.16	3,500.61	3,438.71	-0.39	-2.15
United Kingdom	2,109.20	2,105.11	2,069.13	-0.19	-1.90
Austria	2,081.50	2,076.87	2,046.42	-0.22	-1.69
France	2,757.65	2,752.22	2,714.95	-0.20	-1.55
Portugal	2,156.59	2,147.81	2,123.41	-0.41	-1.54
Belgium	7,458.98	7,445.15	7,346.44	-0.19	-1.51
Spain	1,983.23	1,970.80	1,953.57	-0.63	-1.50
Italy	3,913.74	3,896.30	3,854.85	-0.45	-1.50
Slovenia	2,588.67	2,587.49	2,555.21	-0.05	-1.29
Sweden	1,758.34	1,756.59	1,736.20	-0.10	-1.26
Finland	1,785.55	1,783.07	1,764.52	-0.14	-1.18
Greece	2,249.30	2,237.20	2,227.23	-0.54	-0.98
Cyprus	5,386.80	5,363.31	5,334.97	-0.44	-0.96
Bulgaria	910.68	909.23	902.60	-0.16	-0.89
Germany	3,510.93	3,507.36	3,480.67	-0.10	-0.86
Netherlands	14,337.72	14,320.56	14,216.61	-0.12	-0.84
Denmark	4,024.89	4,023.41	3,999.25	-0.04	-0.64
Romania	1,412.06	1,410.40	1,403.43	-0.12	-0.61
Malta	15,955.09	15,944.73	15,859.72	-0.06	-0.60
Slovak Republic	1,026.88	1,030.86	1,023.96	0.39	-0.29
Poland	1,273.32	1,277.69	1,270.18	0.34	-0.25
Hungary	1,332.00	1,338.73	1,333.22	0.51	0.09
Estonia	800.34	805.36	801.80	0.63	0.18
Czech Republic	1,279.75	1,288.66	1,282.40	0.70	0.21
Lithuania	886.03	892.00	888.39	0.67	0.27
Latvia	593.81	598.65	595.40	0.82	0.27

Source: CAPRI simulation results.

7.2. CAPRI: Scenarios including Doha Round agreement

7.2.1. Bilateral trade flows between the two regions

Table 47 shows the changes in the EU's exports to Mercosur in the three policy simulations relative to the reference scenario in 2020. The column 'DDA only' reports the impact of the Doha Round agreement without any additional concessions between the EU and Mercosur. Bilateral EU-Mercosur trade concessions, on top of the Doha Round agreement, are taken into account in DM1 and DM2.

A Doha Round agreement slightly increases the volume of all the EU's exports to Mercosur except for milled rice. Since the quantities of the EU's exports of agricultural commodities to Mercosur in the reference scenario are small, all the Doha-only changes reported in Table 47 are also small, with the largest increase being for wheat (about 17 thousand tons). When bilateral concessions are added on top of the Doha agreement, the increases in exports to Mercosur of a number of crop and dairy products are somewhat larger. However, apart from increases in wheat exports of about 2 million tons, the volume of these impacts remains relatively small.

Table A5.6 (Volume 2, Annex 5) shows that a Doha-only agreement has relatively far more effect on *total* EU exports than on exports to Mercosur: there are upward impacts on exports of most crop products, on vegetables and fruit, dairy products, vegetable oils and oilcakes. In the meat sector, exports of beef and pork increase modestly, whereas total exports of poultry meat fall and rice exports are reduced by over 90%. A bilateral agreement with Mercosur tends to reinforce or leave unchanged the impacts on total EU exports of crop products, except for the large surge in wheat exports, which goes largely to Mercosur as does the increase in the EU's exports of tomatoes. The fall in the EU's meat exports induced by the Doha Round agreement is reversed, and the EU's total exports of meat are higher in both DM1 and DM2 than in the reference scenario. This is mainly due to a greater volume of beef exports, particularly in DM2, none of which is directed to Mercosur. It suggests that, with the bilateral agreement, some Mercosur beef is diverted from other markets to the EU and is at least marginally replaced in those third-country markets by exports from the EU, which become more competitive thanks to globally improved market access after Doha. Such an effect may also be produced for poultry, where the fall relative to the reference scenario observed in the Doha-only scenario is less than half as steep in DM2.

A large share of the increment in EU cereal exports to Mercosur in DM1 and DM2 comes from EU10, whereas EU15's much smaller contribution to the higher level of cereals consists mainly of barley. The much more modest difference in rapeseed exports comes entirely from EU10. The large relative increase in potato exports comes entirely from EU15.

The extra EU exports of permanent crops in the two scenarios also originate in EU15. It must be noted that the large percentage differences in individual commodities in this category are relative to very small quantities in the reference run.

Table 48 reports the changes in the EU's imports from Mercosur in the three post-Doha policy simulations relative to the reference scenario. The more substantial impacts of a Doha agreement alone on EU imports from Mercosur involve declines for oilseeds and oilcakes, and more sizeable increases for citrus fruits, meats and vegetable oils. These impacts all tend to be reinforced under the two bilateral scenarios in the post-Doha context. Imports of sugar from Mercosur fall a little further below the level of the reference scenario as one moves from the Doha-only scenario to DM1 and DM2.

Table 47: EU exports to Mercosur

	Base year 2004*	Refernce scenario 2020	DDA only	Scenario DM 1	Scenario DM 2	DDA only	Scenario DM 1	Scenario DM 2
Units	1000 tons		*Difference from reference scenario*					
			1000 tons			%	%	%
Cereals	**780.7**	**3,077.7**	**16.8**	**1,985.0**	**2,013.1**	**0.5**	**64.5**	**65.4**
Wheat	430.3	2,808.2	10.2	1,895.7	1,913.3	0.4	67.5	68.1
Barley	350.4	269.6	6.6	89.4	99.7	2.4	33.2	37.0
Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grain maize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other cereals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oilseeds	**1.5**	**18.0**	**0.2**	**3.8**	**3.8**	**1.3**	**20.8**	**21.2**
Rape seed	1.5	18.0	0.2	3.8	3.8	1.3	20.8	21.2
Sunflower seed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soybeans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other arable crops	**31.0**	**11.1**	**0.7**	**26.2**	**28.9**	**6.7**	**236.3**	**260.6**
Pulses	1.4	10.8	0.7	26.0	27.1	6.8	241.4	251.8
Potatoes	29.7	0.3	0.0	0.2	1.7	6.7	53.3	573.3
Vegetables and Permanent crops	**110.8**	**113.0**	**1.5**	**75.7**	**76.8**	**1.4**	**67.0**	**68.0**
Tomatoes	5.4	34.2	1.1	67.9	68.9	3.2	198.7	201.6
Other vegetables	17.0	1.7	0.0	0.4	0.4	0.6	22.8	23.4
Table grapes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Citrus fruits	0.7	0.1	0.0	0.4	0.4	28.6	557.1	557.1
Other fruits	8.0	1.8	0.2	1.3	1.4	10.9	73.2	74.3
Table olives	3.0	3.0	0.2	3.6	3.6	6.4	119.5	120.2
Wine	76.7	72.2	0.0	2.1	2.2	0.0	3.0	3.0
Meat	**2.9**	**0.6**	**0.0**	**0.1**	**0.4**	**6.8**	**11.9**	**62.7**
Beef	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pork	2.9	0.6	0.0	0.1	0.4	6.8	11.9	62.7
Sheep, goat meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poultry meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dairy products	**15.1**	**27.5**	**0.0**	**1.3**	**1.8**	**-0.1**	**4.9**	**6.5**
Butter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cheese	1.2	0.1	0.0	0.0	0.2	8.3	33.3	150.0
Concentrated milk	0.6	0.4	0.1	1.7	1.7	16.3	402.3	402.3
Whole milk powder	1.5	0.2	0.0	0.0	0.0	6.3	6.3	12.5
Whey powder	11.7	26.8	-0.1	-0.4	-0.1	-0.4	-1.6	-0.5
Oils	**6.1**	**0.7**	**0.9**	**1.1**	**2.4**	**137.9**	**171.2**	**356.1**
Olive oil	6.1	0.7	0.9	1.1	2.4	137.9	171.2	356.1
Oil cakes	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Rice milled	2.8	0.2	-0.2	-0.2	-0.2	-94.1	-88.2	-88.2
Sugar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of EU27.*

*** CAPRI products for which there is no bilateral trade in either direction are not shown in the table.*

Table 48: EU imports from Mercosur

	Base year 2004	Refer'ce scenario 2020	DDA only	Scenario DM 1	Scenario DM 2	DDA only	Scenario DM 1	Scenario DM 2
Units	1000 tons		*Difference from reference scenario*					
			1000 tons			%	%	%
Cereals	**468.9**	**22.4**	**0.0**	**1.8**	**0.9**	**0.0**	**8.1**	**4.0**
Wheat	11.2	2.3	0.0	1.1	1.0	-0.4	46.7	45.4
Rye and meslin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barley	1.2	0.3	0.0	0.1	0.1	-6.3	43.8	37.5
Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grain maize	332.4	5.0	-0.3	-0.1	-0.4	-5.0	-2.8	-8.0
Other cereals	124.1	14.9	0.3	0.7	0.2	1.9	4.9	1.0
Oilseeds	**11,177.2**	**8,595.5**	**-94.6**	**-146.2**	**-184.8**	**-1.1**	**-1.7**	**-2.1**
Rape seed	1.1	0.1	0.0	0.1	0.1	0.0	54.5	54.5
Sunflower seed	203.6	321.7	-19.5	-42.8	-44.2	-6.1	-13.3	-13.7
Soybeans	10972.6	8273.7	-75.0	-103.4	-140.7	-0.9	-1.2	-1.7
Other arable crops	**106.5**	**1.1**	**0.0**	**0.3**	**0.2**	**3.8**	**25.5**	**19.8**
Pulses	106.5	1.1	0.0	0.3	0.2	3.8	25.5	19.8
Potatoes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Veg. & perm. crops	**4,053.6**	**5,046.3**	**135.8**	**1,812.2**	**1,863.7**	**2.7**	**35.9**	**36.9**
Tomatoes	17.5	1.8	2.7	2.8	2.8	149.7	157.0	155.9
Other vegetables	168.1	340.8	21.8	165.9	165.2	6.4	48.7	48.5
Table grapes	464.7	275.7	27.0	84.0	82.5	9.8	30.5	29.9
Citrus fruits	3,217.2	4,329.4	63.6	1,233.1	1,289.1	1.5	28.5	29.8
Other fruits	186.1	98.6	20.7	326.4	324.2	21.0	330.9	328.7
Table olives	0.1	0.0	0.0	0.1	0.1	200.0	500.0	500.0
Meat	**599.0**	**569.2**	**287.7**	**354.5**	**792.8**	**50.5**	**62.3**	**139.3**
Beef	334.2	302.2	161.2	232.7	524.0	53.3	77.0	173.4
Pork	1.4	6.6	14.3	14.5	14.6	218.3	220.9	222.5
Sheep, goat meat	7.5	3.4	-0.4	-0.6	-0.8	-12.4	-18.8	-23.8
Poultry meat	255.9	257.1	112.6	107.9	255.0	43.8	42.0	99.2
Dairy products	**0.6**	**4.6**	**3.9**	**3.9**	**15.3**	**86.2**	**85.7**	**336.9**
Butter	0.6	4.6	3.9	3.9	15.3	86.2	85.7	336.9
Oils	**209.5**	**675.6**	**61.4**	**175.2**	**172.8**	**9.1**	**25.9**	**25.6**
Rape seed oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sunflower oil	205.2	518.7	47.6	131.6	129.5	9.2	25.4	25.0
Soya oil	4.4	156.9	13.9	43.5	43.2	8.8	27.8	27.6
Oil cakes	**22,501.2**	**15,460.4**	**-251.0**	**-294.6**	**-521.5**	**-1.6**	**-1.9**	**-3.4**
Rape seed cake	0.0	1.7	-0.1	-0.1	-0.2	-5.9	-5.9	-12.9
Sunflower	1,366.1	567.3	-13.2	-2.1	-20.7	-2.3	-0.4	-3.6
Soya cake	21,135.0	14,891.4	-237.7	-292.4	-500.6	-1.6	-2.0	-3.4
Rice milled	17.8	150.8	-4.2	-1.8	-2.4	-2.8	-1.2	-1.6
Sugar	7.5	1,793.9	-41.6	-60.4	-77.0	-2.3	-3.4	-4.3

Source: CAPRI simulation results.

The most striking incremental effects of a post-Doha bilateral trade agreement occur for vegetables and permanent crops, beef and poultry, and vegetable oils. EU imports from Mercosur of vegetables and permanent crops are 36-37% above the reference scenario level in the post-Doha bilateral scenarios. Two thirds of the increase is due to citrus fruits, but the categories 'other fruits' and 'other vegetables' also make a marked contribution. The upward impact of DM1 on EU imports of beef and poultry meat from Mercosur is 23% higher than the Doha-only impact, and Doha-only impact more than doubles under DM2. By contrast, the strong incremental impact of a post-Doha bilateral agreement on vegetable oils is already established under DM1, and hardly changes under DM2.

Under DM1 and DM2, the EU's *total* imports of vegetables and permanent crops are about 1 million tons higher than in the reference scenario (Annex 5, Table A5.7), whereas the increase in its imports of these commodities from Mercosur is nearly 1.9 million tons higher (Table 48). This indicates that only 54% of the import increase from Mercosur represents trade creation (substitution of domestic production by imports), the rest being due to trade diversion (shift away from previous import suppliers).

A comparison of Tables A5.6 and A5.7 shows that the impact of the three scenarios on the EU's total imports goes in the opposite direction to the impact on its total exports for some products (lower imports plus higher exports of cereals, oilseeds and oil cakes) and these changes are line with changes in bilateral trade with Mercosur. However, for some other products, trade flows are greater in *both* directions post-Doha. More specifically, for other arable crops, vegetables and fruit, dairy products and vegetables oils, both total exports and total imports are higher in all three post-Doha scenarios than in the reference scenario. For sugar, both trade flows are lower. For meat, under Doha-only, exports are lower and imports higher; however, when the bilateral agreements are added, both imports and exports are higher (although the increase in exports is a mere fraction of the increase in imports). The positive impact on trade flows in both directions is possibly due to a combination of seasonal differences, and quality and variety differences, between imported and exported products.

When the bilateral concessions are applied on top of the Doha agreement, the slight decline in both bilateral and total EU imports of maize under Doha alone is partly reversed under the EU offer but is then accentuated under the Mercosur request. This is because of lower exports of maize from Brazil, due to a strong increase in domestic feed demand. Thus, imports fall in spite of the new TRQ opened for maize and sorghum in Scenario DM1 and extended very considerably in Scenario DM2.[56]

Brazil is by far the largest supplier of oilseeds to the EU in the reference situation, although the other three Mercosur countries also contribute a share of this trade flow. The reduction in oilseeds exports to the EU is shared by all four Mercosur countries roughly in proportion to their contribution in the reference situation. Despite this fall relative to the reference scenario, the EU still imports 8.4 million tons of oilseeds from Mercosur under Scenario DM2.

The higher imports from Mercosur of vegetables and permanent crops are driven by tariff reductions (already offered by the EU in DM1) since there are no TRQ concessions for these products (except the small TRQ for garlic, which is increased by a few thousand tons). This explains why for all the products in

56 Sorghum does not appear as a separate product in CAPRI. It is included in 'other cereals'. Therefore, the corresponding TRQ has been scaled down from the full 700 (DM1) and 3500 (DM2) thousand tons in proportion to the share of sorghum in recent imports of these two coarse grains.

the category vegetables and permanent crops the impacts of DM1 and DM2 are very similar.[57] Although the specific tariff of the EU's entry price system is retained in DM1 but abolished in DM2 for citrus fruits, tomatoes and tables grapes, this appears to have made no difference to the effective degree of market access for these commodities in the two scenarios. A likely explanation is that for most or all of the items concerned, the entry price did not fall to the level of the entry price threshold that would trigger the specific tariff in DM1.

In the aggregate, EU imports of meat from Mercosur react to the TRQ expansions under the two scenarios as expected, but this is not always the case for individual meats within the aggregate. Beef imports increase following the expansions in each scenario, and the increase is large in Scenario DM2 in line with the TRQ expansion of over 300%. By contrast, imports of sheep and goat meat from Mercosur are not stimulated by the TRQ expansion under Scenario DM2, and are actually lower under DM2 than in all the other scenarios, including the reference scenario. EU imports of pork remain at around 14 thousand tons higher than in the reference scenario under the three policy scenarios. As a consequence, the expanded TRQ for pork is not filled under DM2. Finally, EU imports from Mercosur of poultry meat receive a considerable boost under the Doha Round agreement. This change is slightly reduced in DM1 but then more than doubles under DM2. Nevertheless, the much larger TRQ requested by Mercosur under DM2 for poultry meat is not completely filled.

Brazil is also the largest exporter of beef and poultry to the EU in the reference scenario, and the only exporter of pork. However, under the policy scenarios, Argentina's share of the EU's meat imports from Mercosur increases. Under Scenario DM2, the three largest Mercosur countries all contribute to the higher level of beef and poultry exports, whereas pork is still exported only by Brazil. Under Scenario DM2, the breakdown of meat (beef) imports from the four Mercosur partners is Brazil: 74 (58)%, Argentina: 22 (35)%, Uruguay: 4 (7)%, and Paraguay: <1 (<1)%.

Butter imports increase with the new TRQs available to Mercosur in the policy scenarios, but not substantially until Scenario DM2. These imports come solely from Argentina. The text below Table 49 explains why there is no apparent stimulus to the other dairy products receiving new TRQs. The higher imports of oils in the two policy scenarios consist mainly of sunflower oil (from Argentina) and to a lesser extent soya oil (from Argentina, and at a lower rate from Brazil). The reaction of rice and sugar under the policy scenarios is counter-intuitive. Rice receives a new TRQ under Scenario DM1, which increases strongly under Scenario DM2. Nonetheless, the downward impact of the Doha-only scenario on the EU's rice imports from Mercosur is not fully reversed by either of the bilateral agreements. The existing TRQ for sugar is maintained under DM1, and strongly increased in DM2, yet EU sugar imports from Mercosur follow a slight downward trend. The changes in the EU's sugar imports from Mercosur in each scenario are more or less matched by the differences in the EU's total imports of sugar (Table A5.7). It must be recalled that in all these scenarios, the EU's imports of sugar are well in excess of the bilateral and *erga omnes* TRQ ceilings. The MFN tariff cut for sugar in the DDA scenario is not enough to improve access to the EU market for Brazilian sugar. The import price would need to drop even more in order to have a significant effect. This means that an expansion in the TRQ has little impact on the marginal units imported, which almost certainly face the MFN tariff (rather than coming in under an *erga omnes* TRQ). In these circumstances, an increase in the TRQ merely increases the amount of quota rent to be captured.

57 Section 3.3 contains information about how the entry price system is handled in CAPRI, and section 5.1 state exactly how this system was treated in the different scenarios.

Table 49: Bilateral TRQ limits and fill rates*

Product Group**	Reference scenario 2020			DDA			DM1			DM2		
	TRQ ceiling	Fill rate	Other imports ***	TRQ ceiling	Fill rate	Other imports ***	TRQ ceiling	Fill rate	Other imports ***	TRQ ceiling	Fill rate	Other imports ***
	000 tons	*% of TRQ*	*000 tons*	*000 tons*	*% of TRQ*	*000 tons*	*000 tons*	*% of TRQ*	*000 tons*	*000 tons*	*% of TRQ*	*000 tons*
Rice							26.0	100.0	123.0	150.0	98.9	
Wheat							120.0	2.8		1000.0	0.3	
Maize							376.0	1.3		3293.0	0.1	
Beef	59.3	100.0	242.9	59.3	100.0	404.1	136.3	100.0	398.6	444.3	100.0	381.9
Pork							7.5	100.0	13.6	25.0	84.8	
Poultry	227.3	100.0	29.8	227.3	100.0	142.3	283.3	100.0	84.4	537.3	95.3	
Sheep & goat	28.8	11.8		28.8	11.5		28.8	9.6		52.3	5.0	
Butter							2.0	100.0	6.5	20	99.4	
Sugar	334.1	100.0	1,459.9	334.1	100.0	1,418.3	334.1	100.0	1,399.5	534.1	100.0	1,182.9

Source: DG AGRI (TRQ ceilings) and CAPRI simulations.

** Those for meat are expressed in carcass weight.*

*** The TRQ for ethanol (classified as an agricultural product and among the TRQs under negotiation) is not shown in the table because CAPRI does not simulate trade in ethanol.*

**** May be imported under an erga omnes TRQ or out of quota at MFN rate.*

Along with the higher imports of citrus fruit from Mercosur under DM2, *total* EU imports of citrus are also higher (by nearly 4%) in the two scenarios than in the reference scenario. The share of Mercosur citrus in total citrus imports increases from 45% to 56%, largely at the expense of the ACP countries and the USA. The category of 'other fruits' is dominated here by imports of melons, and in second place, bananas. The large change (from a relatively small base) of imports in this category boosts Mercosur's share of EU imports from 7% to 24%, mainly at the expense of the ACP, other South American countries and least developed countries (LDCs).

Table 49 shows the bilateral TRQs for imports from Mercosur under the three scenarios. For the Doha Round scenario, no changes in bilateral TRQ ceilings relative to the reference scenario are foreseen. Under Scenario DM1, TRQs are not filled for wheat, maize, and sheep meat. Under Scenario DM2, only the TRQs for beef and sugar are filled, while those for rice and butter are nearly filled. Under the latter scenario, fill rates for wheat, maize and sheep meat are particularly low, and even the one for pork is well below 100%. Table 49 does not include the TRQs for cheese (10 thousand and 60 thousand tons in the two scenarios) or for milk powder (6.5 and 35 thousand tons in the two scenarios). Since neither of these products were traded from Mercosur to the EU in the base year, their trade is constrained to be zero in the simulations (this is explained in section 3.3), resulting in a predetermined fill rate of zero. Since this 'outcome' does not have the same status as those generated endogenously in the model, these TRQs are not shown.

7.2.2. Production in the EU and in Mercosur

Table 50 reports the impacts on EU production of each agricultural commodity in the three policy scenarios relative to the reference scenario 2020. With a few exceptions (wheat, other cereals, soybeans, sugar), the three scenarios reduce agricultural production in the EU. This reduction is particularly marked in the meat sector. In percentage terms, the largest changes are registered for beef and poultry meat, olive

Table 50: Production in the European Union

	Base year 2004*	Reference scenario 2020	DDA	Scen DM 1	Scen DM 2	DDA	Scen DM 1	Scen DM 2
Units	1000 tons		*Difference from reference scenario*					
			1000 tons			%	%	%
Cereals	**279,130.1**	**301,004.2**	**-503.2**	**426.6**	**17.5**	**-0.2**	**0.1**	**0.0**
Wheat	129,315.4	141,920.3	-259.6	625.1	497.0	-0.2	0.4	0.4
Rye and meslin	8,053.9	9,407.2	14.0	-25.9	-21.0	0.1	-0.3	-0.2
Barley	56,882.8	60,312.9	-42.0	-78.4	-165.0	-0.1	-0.1	-0.3
Oats	13,005.7	12,146.6	2.1	-16.4	-31.1	0.0	-0.1	-0.3
Grain maize	61,514.2	66,169.2	-253.4	-144.7	-322.6	-0.4	-0.2	-0.5
Other cereals	10,358.1	11,048.0	35.8	66.7	60.2	0.3	0.6	0.5
Oilseeds	**21,394.9**	**32,378.4**	**-65.2**	**-66.8**	**-64.3**	**-0.2**	**-0.2**	**-0.2**
Rape seed	14,022.5	22,782.4	-36.4	-27.6	-25.3	-0.2	-0.1	-0.1
Sunflower seed	6,343.7	7,900.3	-31.5	-44.5	-46.5	-0.4	-0.6	-0.6
Soybeans	1,028.7	1,695.8	2.7	5.3	7.6	0.2	0.3	0.4
Other arable crops	**63,467.3**	**52,556.3**	**-587.2**	**-619.9**	**-636.1**	**-1.1**	**-1.2**	**-1.2**
Pulses	4,603.2	3,876.3	-24.8	-26.7	-29.6	-0.6	-0.7	-0.8
Potatoes	58,864.1	48,680.0	-562.4	-593.3	-606.5	-1.2	-1.2	-1.2
Veg. & perm. crops	**131,960.7**	**142,182.7**	**-206.1**	**-393.5**	**-408.2**	**-0.1**	**-0.3**	**-0.3**
Tomatoes	18,780.1	22,166.0	-24.1	-19.3	-20.9	-0.1	-0.1	-0.1
Other vegetables	53,175.1	57,330.6	-79.6	-169.5	-179.0	-0.1	-0.3	-0.3
Apples pears etc	2,924.8	2,545.8	-8.2	-12.0	-12.1	-0.3	-0.5	-0.5
Table grapes	10,985.6	12,809.2	-32.2	-88.1	-89.1	-0.3	-0.7	-0.7
Citrus fruits	10,433.5	11,299.4	-51.7	-89.8	-90.4	-0.5	-0.8	-0.8
Meat	**42,739.1**	**45,017.8**	**-365.8**	**-413.7**	**-601.5**	**-0.8**	**-0.9**	**-1.3**
Beef	8,614.6	7,735.3	-121.6	-156.2	-279.2	-1.6	-2.0	-3.6
Pork	21,890.9	23,647.5	-58.3	-61.8	-56.8	-0.2	-0.3	-0.2
Sheep, goat meat	1,207.4	959.8	-5.9	-6.0	-5.8	-0.6	-0.6	-0.6
Poultry meat	11,026.2	12,675.2	-180.0	-189.8	-259.7	-1.4	-1.5	-2.0
Dairy products	**65,635.1**	**71,048.6**	**-49.2**	**-52.5**	**-67.8**	**-0.1**	**-0.1**	**-0.1**
Butter	2,179.5	1,982.5	-9.5	-10.9	-14.7	-0.5	-0.6	-0.7
Sk'd milk powder	1,098.5	799.1	-23.5	-26.1	-28.0	-2.9	-3.3	-3.5
Cheese	8,393.2	9,623.9	8.2	5.2	-4.1	0.1	0.1	0.0
Cream	2,385.4	3,247.3	-6.7	-8.7	-8.0	-0.2	-0.3	-0.2
Concentrated milk	1,221.0	1,413.6	0.7	2.6	-0.3	0.0	0.2	0.0
Whole milk powder	841.0	777.3	3.7	5.0	2.9	0.5	0.6	0.4
Whey powder	1,458.4	1,084.1	-42.3	-44.1	-49.1	-3.9	-4.1	-4.5
Oils	**13,121.0**	**19,647.3**	**-171.2**	**-197.3**	**-205.8**	**-0.9**	**-1.0**	**-1.0**
Rape seed oil	5,544.1	10,997.2	-16.5	-14.4	-15.9	-0.1	-0.1	-0.1
Sunflower seed oil	2,590.0	3,621.7	-52.1	-76.6	-76.8	-1.4	-2.1	-2.1
Soya oil	2,568.6	2,258.2	-13.8	-17.4	-22.6	-0.6	-0.8	-1.0
Olive oil	2,381.1	2,693.9	-87.8	-87.8	-89.3	-3.3	-3.3	-3.3
Oil cakes	**22,115.1**	**30,697.7**	**-150.4**	**-193.2**	**-218.5**	**-0.5**	**-0.6**	**-0.7**
Rape seed cake	7,225.7	16,220.7	-24.9	-21.5	-23.6	-0.2	-0.1	-0.1
Sunflower seed cake	3,364.8	4,450.1	-64.0	-93.9	-94.2	-1.4	-2.1	-2.1
Soya cake	11,524.6	10,027.0	-61.5	-77.8	-100.6	-0.6	-0.8	-1.0
Rice milled	2,108.6	2,284.9	-12.1	-12.4	-12.7	-0.5	-0.5	-0.6
Sugar	21,150.7	16,813.8	72.9	106.3	138.0	0.4	0.6	0.8

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of EU27.*

Table 51: Production in Mercosur

	Base year 2004*	Reference scenario 2020	DDA	Scen DM 1	Scen DM 2	DDA	Scen DM 1	Scen DM 2
Units	1000 tons		*Difference from reference scenario*					
			1000 tons			%	%	%
Cereals	**82,528.1**	**124,461.9**	**66.7**	**-722.1**	**-558.2**	**0.1**	**-0.6**	**-0.4**
Wheat	20,037.8	23,802.5	-51.8	-895.6	-957.0	-0.2	-3.8	-4.0
Barley	1,163.5	1,598.5	3.1	4.3	4.6	0.2	0.3	0.3
Oats	769.1	1,058.6	3.1	15.9	18.1	0.3	1.5	1.7
Grain maize	55,559.5	91,949.3	114.7	129.1	343.8	0.1	0.1	0.4
Other cereals	4,943.9	5,915.8	-2.5	22.3	29.9	0.0	0.4	0.5
Oilseeds	**94,959.5**	**189,105.0**	**-487.3**	**-754.4**	**-923.3**	**-0.3**	**-0.4**	**-0.5**
Rape seed	110.7	106.4	-0.3	-4.0	-4.1	-0.3	-3.7	-3.9
Sunflower seed	4,291.2	6,651.2	44.8	113.3	108.5	0.7	1.7	1.6
Soybeans	90,557.6	182,347.5	-531.8	-863.7	-1,027.7	-0.3	-0.5	-0.6
Other arable crops	**8,236.5**	**10,660.8**	**-8.8**	**-26.4**	**-32.6**	**-0.1**	**-0.2**	**-0.3**
Pulses	3,268.0	3,918.9	-8.2	-23.5	-26.4	-0.2	-0.6	-0.7
Potatoes	4,968.5	6,741.9	-0.6	-3.0	-6.2	0.0	0.0	-0.1
Veg. & perm. crops	**55,148.7**	**68,595.6**	**121.2**	**1,521.6**	**1,559.9**	**0.2**	**2.2**	**2.3**
Tomatoes	4,346.8	5,811.4	-0.8	-103.2	-106.4	0.0	-1.8	-1.8
Other vegetables	6,228.0	7,959.0	17.5	122.1	121.3	0.2	1.5	1.5
Apples pears etc	3,286.2	4,108.5	-0.1	-2.1	-2.7	0.0	-0.1	-0.1
Table grapes	3,697.6	3,504.7	22.6	69.6	67.1	0.6	2.0	1.9
Citrus fruits	22,261.9	30,872.1	61.4	1,162.9	1,217.1	0.2	3.8	3.9
Other fruits	15,222.8	16,238.8	20.7	273.1	264.3	0.1	1.7	1.6
Table olives	105.5	101.3	0.0	-0.8	-0.9	0.0	-0.7	-0.9
Flax and hemp	2,267.1	1,961.8	-36.1	-45.3	-46.9	-1.8	-2.3	-2.4
Meat	**23,743.7**	**29,179.1**	**210.4**	**231.4**	**467.8**	**0.7**	**0.8**	**1.6**
Beef	11,277.1	14,232.3	108.1	132.4	274.8	0.8	0.9	1.9
Pork	2,865.5	4,143.6	11.6	15.9	19.9	0.3	0.4	0.5
Sheep, goat meat	209.7	295.0	-0.3	-0.9	-0.9	-0.1	-0.3	-0.3
Poultry meat	9,391.4	10,508.3	91.0	84.0	174.0	0.9	0.8	1.7
Dairy products	**1,873.6**	**2,801.6**	**9.4**	**2.5**	**8.8**	**0.3**	**0.1**	**0.3**
Butter	135.0	189.0	3.8	3.5	11.0	2.0	1.9	5.8
Sk'd milk powder	40.7	41.7	0.0	-0.1	-0.1	0.1	-0.1	-0.3
Cheese	862.3	1,475.0	8.7	4.9	4.1	0.6	0.3	0.3
Cream	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
Concentrated milk	50.3	48.4	0.1	-0.3	-0.2	0.2	-0.7	-0.5
Whole milk powder	667.3	930.0	-3.2	-5.0	-5.6	-0.3	-0.5	-0.6
Whey powder	114.5	114.0	0.0	-0.5	-0.4	0.0	-0.4	-0.3
Oils	**12,655.6**	**23,036.9**	**43.8**	**90.7**	**85.5**	**0.2**	**0.4**	**0.4**
Rape seed oil	45.0	50.0	0.1	0.9	0.9	0.2	1.7	1.7
Sunflower seed oil	1,863.6	2,879.7	37.5	87.9	86.6	1.3	3.1	3.0
Soya oil	10,546.2	19,711.7	6.1	2.5	-0.2	0.0	0.0	0.0
Olive oil	18.2	25.4	-0.7	-0.8	-1.0	-2.8	-3.3	-3.8
Oil cakes	**46,419.3**	**86,233.9**	**-43.1**	**-41.9**	**-49.9**	**0.0**	**0.0**	**-0.1**
Rape seed cake	61.5	68.1	0.0	1.1	1.1	0.0	1.6	1.6
Sunflower seed cake	2,025.9	3,125.3	26.1	68.3	66.4	0.8	2.2	2.1
Soya cake	44,331.9	83,040.6	-69.2	-111.2	-117.3	-0.1	-0.1	-0.1
Rice milled	10,258.0	11,293.5	-20.1	-17.9	-36.0	-0.2	-0.2	-0.3
Sugar	41,762.6	127,698.7	96.6	-3.5	-71.6	0.1	0.0	-0.1

Source: CAPRI simulation results.

** Average of 2003, 2004 and 2005 for the countries of Mercosur.*

oil, sunflower seed oil and sunflower seed cake, skimmed milk powder and whey power. Although these falls lie (depending on the scenario) between 2% and 4.5%, in terms of both total quantities and values they are quite substantial for most of these products.

Once a Doha Round agreement is in force, the incremental effect of both versions of a bilateral agreement with Mercosur is generally to reinforce the Doha-induced changes for individual products. Production losses for beef increase to over 156 thousand tons (DM1) and to 279 thousand tons (DM2), for pork the losses are of 62 thousand tons (DM1) and 57 thousand tons (DM2), and poultry meat is lower by 190 thousand tons (DM1) and 260 thousand tons (DM2).

Table A5.1 (Volume 2, Annex 5) translates these volume reductions in output into value terms. The loss to the meat sector of the Doha Round agreement alone is over €2.7 billion; this loss increases to €3.4 billion under DM1 and to €5.8 billion under DM2 (with nearly 80% of the revenue loss occurring in the beef sector, the rest shared between the poultry and pork sectors). Furthermore, the revenue losses in the vegetable and fruit sectors are each €1.6-1.7 million in DM1 and DM2. For the vegetable oils sector, the lost production value is €1.3 billion in the Doha-only scenario, increasing to €1.4-1.5 billion in the other two scenarios.

It is interesting to distinguish here between the commodities whose production decline is triggered by a Doha Round agreement alone, without much further incremental impact from a bilateral trade agreement, and those commodities whose Doha-induced losses are exacerbated by one or both versions of a bilateral agreement with Mercosur. In the latter category are oils and oil cakes, vegetables and permanent crops (especially citrus fruit), and meat (beef and poultry meat). Table A5.1 shows that in these cases a fall in price reinforces the revenue effect of the incremental quantity reduction.

Table 51 shows the differences for Mercosur production relative to the reference scenario 2020. The percentage differences in production between the three policy scenarios and the reference scenario are greater for Mercosur than for the EU for many products, reflecting the difference in importance of trade for the agricultural sectors of the two trade blocks. The impacts vary across the commodity groups. We can distinguish three different types of impact: first, products for which the Doha Round agreement has a negative production effect that is reinforced by a bilateral trade agreement with the EU (wheat, oilseeds (especially soybeans), pulses and potatoes, olive oil and soya cake); second, products for which the Doha Round agreement has an upward impact on production that is reversed by a bilateral trade agreement (maize, sugar), and third, products whose output is stimulated by the Doha Round agreement and where a bilateral trade deal either reinforces this stimulus, or leaves it more or less unchanged (vegetables and fruit (especially citrus and other fruit), beef, pork, poultry, and sunflower oil, where the Doha effect is enhanced, and dairy products for which the positive Doha effect is maintained in DM2).

Some of the changes in Mercosur production reported in Table 51 directly reflect the changes in EU imports from Mercosur (Table 47). In particular, some positive impacts of the policy changes on beef exports to the EU in the three policy scenarios are matched by higher production within Mercosur. The same holds true for vegetable oils and citrus fruit. However, the production increases for beef and vegetable oils are considerably lower than the increased EU imports from Mercosur for these products, suggesting that export flows to other destinations are diverted to the EU market and/or domestic consumption is lower.

In the case of citrus fruit, the higher exports to the EU are more or less matched in equal quantity by higher production. In the case of cereals, there is no relationship between the movements in Mercosur's

Table 52: Producer price impacts in EU27

	Reference scenario 2020 (€ / ton)	DDA %	DM1 %	DM2 %
Cereals	**132.2**	**-0.3**	**0.0**	**-0.2**
Wheat	138.8	-0.2	0.0	-0.1
Rye and meslin	97.0	-0.3	0.3	0.2
Barley	123.7	-0.3	-0.1	-0.3
Oats	119.0	-0.2	0.1	-0.1
Grain maize	134.1	-0.3	-0.2	-0.4
Other cereals	128.4	-0.1	0.2	0.0
Oilseeds	**285.5**	**-0.3**	**-0.3**	**-0.4**
Rape seed	285.4	-0.2	-0.2	-0.3
Sunflower seed	283.9	-0.4	-0.5	-0.5
Other arable crops	**173.2**	**-0.5**	**-0.5**	**-0.5**
Pulses	193.8	-1.3	-1.3	-1.7
Potatoes	171.6	-0.4	-0.4	-0.4
Vegetables & permanent crops	**635.6**	**-0.8**	**-1.6**	**-1.6**
Tomatoes	432.6	-0.4	-0.3	-0.3
Other vegetables	530.8	-0.4	-0.9	-1.0
Apples pears and peaches	528.1	-0.6	-0.8	-0.9
Table grapes	982.2	-2.6	-3.8	-3.8
Citrus fruits	453.6	-2.0	-5.4	-5.5
Other fruits	861.1	-3.7	-6.6	-6.6
Table olives	3,067.7	0.6	0.8	0.8
Meat	**1,879.5**	**-2.4**	**-3.1**	**-5.6**
Beef	3,597.3	-5.1	-6.9	-13.4
Pork	1,421.7	-0.6	-0.5	-0.7
Sheep and goat meat	5,335.0	-1.0	-1.2	-1.8
Poultry meat	1,423.5	-1.6	-1.6	-2.4
Dairy products	**1,179.3**	**-1.0**	**-0.9**	**-1.0**
Butter	2,568.4	-6.6	-6.6	-7.0
Skimmed milk powder	1,994.4	0.9	0.8	1.0
Cheese	3,377.5	-0.2	-0.2	-0.2
Fresh milk products	640.1	-0.5	-0.4	-0.4
Cream	1,795.7	-3.7	-3.7	-3.9
Casein	4,399.3	1.3	1.3	1.5
Whey powder	446.4	0.7	0.7	0.9
Oils	**1,078.5**	**-5.4**	**-5.8**	**-5.8**
Rape seed oil	752.2	-1.2	-1.5	-1.5
Sunflower seed oil	1,199.1	-1.5	-2.2	-2.2
Soya oil	823.1	-1.9	-3.0	-3.0
Olive oil	2,468.0	-12.7	-12.7	-12.9
Oil cakes	**212.6**	**-1.2**	**-1.3**	**-1.8**
Rice milled	504.0	-1.9	-2.0	-2.1
Sugar	555.6	-0.1	0.0	0.0

Source: CAPRI simulation results.

Table 53: Producer price impacts in Mercosur

	Reference scenario 2020 (€ / ton)	DDA %	DM1 %	DM2 %
Cereals	**203.3**	**0.3**	**-0.4**	**0.0**
Soft wheat	195.7	-0.1	-3.6	-3.6
Rye and meslin	159.2	0.2	-1.6	-0.7
Barley	207.5	0.3	-3.1	-2.5
Oats	209.4	0.4	-2.1	-1.5
Grain maize	206.8	0.4	0.3	0.9
Other cereals	178.0	0.1	-0.2	0.1
Oilseeds	**406.8**	**-0.1**	**0.0**	**0.1**
Rapeseed	380.6	0.0	-4.1	-4.0
Sunflower seed	346.2	0.8	2.6	2.6
Soybeans	409.1	-0.1	0.0	0.1
Other arable crops	**400.5**	**0.0**	**0.1**	**0.2**
Pulses	890.7	0.0	0.2	0.4
Potatoes	115.6	0.2	0.8	0.9
Vegetables & permanent crops	**585.2**	**0.4**	**2.8**	**3.0**
Tomatoes	317.6	0.2	-1.1	-1.0
Other vegetables	592.8	0.4	2.2	2.3
Apples pears and peaches	643.7	0.2	0.8	0.9
Table grapes	1,568.5	0.7	2.4	2.5
Citrus fruits	469.0	0.4	4.4	4.8
Other fruits	669.7	0.3	2.2	2.4
Meat	**2,167.5**	**1.0**	**1.3**	**2.5**
Beef	2,505.7	1.0	1.5	2.8
Pork	1,706.3	0.4	0.4	0.8
Sheep and goat meat	2,530.2	0.2	0.7	0.9
Poultry meat	1,881.0	1.1	1.2	2.3
Dairy products	**2,277.5**	**0.6**	**0.9**	**1.0**
Butter	1,165.9	2.7	2.7	6.9
Skimmed milk powder	2,911.8	0.6	0.9	1.0
Cheese	1,068.2	0.1	0.1	0.4
Cream	2,415.9	1.4	0.9	0.9
Concentrated milk	1,721.8	-0.1	0.2	0.3
Oils	**989.4**	**0.3**	**0.9**	**0.9**
Rape seed oil	932.7	0.2	-0.1	-0.1
Sunflower seed oil	1,596.9	0.7	2.1	2.1
Soya oil	900.7	0.1	0.4	0.3
Olive oil	2,602.0	-2.5	-2.5	-2.6
Oil cakes	190.8	-0.9	-0.9	-0.9
Rice milled	358.8	0.0	-0.3	-0.2
Sugar	192.5	0.2	0.5	0.6

Source: CAPRI simulation results.

production and those of EU imports from Mercosur, suggesting additional adjustments not involving trade with the EU. Some light is cast on these issues by the analysis of the balance sheets of the two trading blocks (see below).

Many of the production changes triggered in Mercosur by the DDA agreement alone are of a smaller order of magnitude than those stimulated by a subsequent bilateral agreement with the EU. The incremental changes triggered by a bilateral agreement post-Doha concern primarily products subject to TRQs (most of which expand in DM1 and DM2, or are created for the first time as part of a bilateral agreement). Here, the reactions are not always as expected. Products under TRQs whose production increases in line with greater market access are maize and butter. However, the lower output level of sheep meat under DM2 is unexpected, given the higher TRQ assumed in this scenario. Other unexpected behaviour in reaction to higher or new TRQs occurs for wheat, rice, and sugar in scenarios DM1 and DM2, where production is lower than in the Doha-only scenario despite greater access to the EU market. Table 53 shows that a bilateral deal causes a fall in the Mercosur producer price for some of these products. However, in the cases of sheep meat and rice, the Mercosur producer price is higher, which would be expected to trigger a *positive* producer supply response.

Table 52 reports changes in producer prices for the EU27. Producer prices decrease for most of the products in the EU. With a DDA agreement alone, producer price falls for all commodities except SMP and casein. The greatest price falls are for olive oil, butter, milk, cream, and some fruits, followed by milled rice, sunflower seed and soya oils, beef and poultry meat, and pulses. In many cases, most of the fall already occurs as a result of the Doha Round agreement, with the incremental effect of a post-Doha bilateral agreement being small. However, this is not true for citrus and other fruits, and meat – particularly beef.

In contrast, the pattern of producer price changes in Mercosur (Table 53) in the three policy scenarios is more mixed. The largest producer price increases are in scenario DM2 for butter (6.9%), citrus fruits (4.8%), beef (2.8%), poultry meat (2.3%) and sunflower seed (2.6%). Producer price falls (wheat, barley, oats, rapeseed, soya oil, olive oil and oil cakes) are always less than 5% regardless of scenario.

7.2.3. Sector level effects

Tables 54 to 62 show the changes in EU and Mercosur balances in the three scenarios for certain key products. In these tables, not all minor categories of use (like processing) or stocks are shown, therefore the numbers given in the tables do not always balance as one would expect.

Table 54 reports the EU27 balance sheet for the main meats. First, EU production falls for all meats in all three scenarios. Second, in all three scenarios, human consumption increases for beef and poultry meat (considerably, in DM2), but decreases for pork and sheep meat. Third, imports increase strongly for beef and poultry meat (particularly in DM2), less so for pork. Exports of beef and pork also increase, but poultry meat exports are lower.

Summarising, under DM2, the EU produces 601.5 thousand tons of meat less than in the reference scenario (of which beef : -279.2, pork: -56.8; poultry meat: -259.7), and consumes 143.5 thousand tons more, with substitution towards beef and (especially) poultry and away from pork and sheep meat. At the same time, the EU's overall position relative to the world market is hardly modified: the EU remains a net exporter of pork and poultry meat, and consolidates its net import position for beef.

Table 54: Impact on EU balances for meats (thousand tons)

	Beef				Pork			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	7,735.3	-121.6	-156.2	-279.2	23,647.5	-58.3	-61.8	-56.8
Human consumption + losses	7,712.0	18.7	24.2	59.0	21,246.9	-17.8	-20.1	-20.5
Processing	133.2	12.8	16.4	29.3	119.0	1.3	1.1	1.5
Imports	347.3	177.2	244.8	526.3	15.4	49.3	50.5	53.2
Exports	180.7	13.4	33.1	127.3	2,297.0	7.5	7.8	15.5

	Poultry meat				Sheep and goat meat			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	12,675.2	-180.0	-189.8	-259.7	959.8	-5.9	-6.0	-5.8
Human consumption + losses	12,553.1	94.3	79.6	128.4	1,124.0	-14.0	-16.0	-23.4
Processing	70.5	4.5	4.6	6.4	51.9	0.8	1.0	1.4
Imports	280.4	241.2	238.7	379.3	242.0	-5.4	-7.0	-13.9
Exports	331.9	-37.5	-35.3	-15.1	25.9	1.9	2.0	2.2

Source: CAPRI simulation results.

Table 55: Impact on Mercosur balances for meats (thousand tons)

	Beef				Pork			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	14,232.3	108.1	132.4	274.8	4,143.6	11.6	15.9	19.9
Human consumption + losses	13,291.5	-47.6	-70.3	-134.0	3,894.3	6.2	12.2	22.2
Imports	0.0	0.0	0.0	0.0	1.1	0.1	0.1	0.4
Exports	940.8	155.8	202.6	408.9	250.3	5.4	3.8	-2.0

	Poultry meat				Sheep and goat meat			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	10,508.3	91.0	84.0	174.0	295.0	-0.3	-0.9	-0.9
Human consumption + losses	9,610.8	-28.6	-26.5	-49.0	291.6	0.1	-0.2	-0.1
Imports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	897.5	119.6	110.5	223.0	3.4	-0.4	-0.6	-0.8

Source: CAPRI simulation results.

Table 55 shows the meat balances for Mercosur. Consumption of beef and poultry meat is lower under all three policy scenarios, with the strongest change in DM2. At the same time, production increases. These changes are in line with the increases in producer and consumer prices for these two meat categories.

Table 56: Impact on EU balances for certain fruits and sugar (thousand tons)

	Citrus fruit				Other fruits			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	12,809.2	-32.2	-88.1	-89.1	11,299.4	-51.7	-89.8	-90.4
Human consumption + losses	22,262.6	12.3	241.4	267.4	12,326.1	60.7	181.6	178.8
Processing	63.9	3.3	8.0	11.9	190.8	5.3	10.5	10.5
Feed use	77.4	0.7	3.5	4.9	123.0	1.5	6.1	4.3
Imports	9,690.5	50.4	347.4	379.2	1,481.4	135.8	315.6	311.8
Exports	95.8	1.9	6.4	6.0	140.9	16.7	27.7	27.9

	Table grapes				Sugar			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	2,545.8	-8.2	-12.0	-12.1	16,813.8	72.9	106.3	138.0
Human consumption + losses	3,339.9	26.2	32.0	29.3	16,623.7	39.6	52.5	71.4
Processing (non-biofuels)	40.4	0.5	0.6	0.6	115.9	0.2	0.3	0.3
Processing (biofuels)					3,585.5	-4.1	-0.5	-9.9
Feed use	-	-	-	-	48.1	-0.1	-0.1	-0.4
Imports	887.1	42.6	56.1	53.5	3,791.8	-39.8	-56.0	-77.8
Exports	52.7	7.7	11.5	11.5	237.5	-2.5	-1.9	-1.4

Source: CAPRI simulation results.

These two impacts result in much higher exports of both meats, whose increase is twice as great (relative to the reference scenario) in DM2 compared with DM1 due to the much higher TRQ associated with DM2. Sheep and goat meat production and consumption show only very small differences in absolute and relative terms. Pork on the other hand tells a different story, namely small, nearly self-balancing increases in production and consumption, which leave trade flows more or les unchanged.

In summary, with a Doha Round agreement only, Mercosur's total meat production is higher by 210 thousand tons whereas its total meat consumption shrinks by 70 thousand tons. In DM2, consumption is much lower, by a total of 161 thousand tons relative to the reference scenario, although aggregate production is above the level of the reference scenario by 468 thousand tons, due largely to higher beef and poultry production. At the same time, under DM2, Mercosur's net exporting position strengthens considerably for beef and poultry, very slightly for pork and remains more or less unchanged for sheep and goat meat.

Table 56 presents the EU balance sheets for citrus fruit, other fruits and table grapes (the main products affected in the category of vegetables and fruit) and for sugar. The pattern is consistent for the three fruit groups: EU production is lower under all three scenarios, but consumption is higher due to lower prices, and therefore the EU becomes more import-dependent for all three categories of fruit. The strong increase in consumption and imports of citrus fruits in DM1 and DM2 in absolute and relative terms is striking. For sugar, production increases progressively in all three scenarios, while increases in internal use are about half as large as the production increases.

Table 57: Impact on Mercosur balances for certain fruits and sugar (thousand tons)

	Citrus fruit				Other fruits			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	Difference relative to reference scenario (thousand tons)			Situation in 2020	Difference relative to reference scenario (thousand tons)		
Net production	30,872.1	61.4	1,162.9	1,217.1	16,238.8	20.7	273.1	264.3
Human consumption + losses	26,503.0	-0.4	-58.1	-59.4	16,354.2	-7.3	-45.5	-51.1
Feed use	-	-	-	-	11.6	0.0	-0.4	-0.4
Imports	0.2	0.0	0.5	0.5	308.9	-3.5	7.3	7.9
Exports	4,369.3	61.9	1,221.4	1,277.0	182.0	24.4	326.2	323.7

	Table grapes				Sugar			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	Difference relative to reference scenario (thousand tons)			Situation in 2020	Difference relative to reference scenario (thousand tons)		
Net production	3,504.7	22.6	69.6	67.1	127,698.7	96.6	-3.5	-71.6
Human consumption + losses	3,181.2	-1.8	-5.4	-6.2	10,517.2	-9.1	-16.6	-25.5
Processing (non-biofuels)	-	-	-	-	11.2	-0.1	-0.1	-0.1
Processing (biofuels)	-	-	-	-	75,061.0	0.0	-0.1	-0.1
Imports	1.8	0.0	0.4	0.4	0.3	0.0	0.0	0.0
Exports	325.4	24.4	75.3	73.6	42,109.8	105.8	13.3	-45.8

Source: CAPRI simulation results.

Table 58: Impact on EU balances for cereals (thousand tons)

	Citrus cereals				Wheat			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	Difference relative to reference scenario (thousand tons)			Situation in 2020	Difference relative to reference scenario (thousand tons)		
Net production	301,004.2	-503.2	426.6	17.5	141,920.3	-259.6	625.1	497.0
Human consumption + losses	68,253.7	101.4	103.2	150.3	57,743.0	96.4	96.8	139.6
Processing (non-biofuels)	18,527.6	72.7	39.0	86.4	5,574.3	30.2	23.9	41.0
Processing (biofuels)	30,822.0	21.5	3.4	24.4	7,286.9	-3.9	-106.6	-108.8
Feed use	159,483.3	-1,786.5	-2,161.0	-2,872.9	48,871.8	-717.1	-1,035.8	-1,336.7
Imports	3,960.5	-237.0	-221.0	-260.0	710.1	-28.9	-30.3	-35.8
Exports	28,033.2	850.6	2,220.8	2,369.3	23,251.6	305.9	1,616.5	1,726.1

	Barley				Maize			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	Difference relative to reference scenario (thousand tons)			Situation in 2020	Difference relative to reference scenario (thousand tons)		
Net production	60,312.9	-42.0	-78.4	-165.0	66,169.2	-253.4	-144.7	-322.6
Human consumption + losses	767.3	-0.7	-0.8	-0.8	5,706.9	4.4	7.4	10.6
Processing (non-biofuels)	7,221.6	7.4	3.6	9.8	4,291.8	26.7	22.3	40.1
Processing (biofuels)	10,119.1	7.0	12.4	17.4	8,251.1	14.1	98.1	109.1
Feed use	38,836.2	-499.7	-596.4	-722.3	48,563.3	-350.1	-315.7	-541.4
Imports	44.4	-0.4	2.2	1.9	866.7	-28.3	-22.0	-31.6
Exports	3,471.0	443.6	505.1	532.8	222.9	23.2	21.2	27.3

Source: CAPRI simulation results.

Table 57 reports the change in the Mercosur balance sheet for the same three fruit categories, where quite opposite reactions can be observed. Citrus fruit production increases strongly, consumption declines and exports are much higher in the two bilateral scenarios. Changes for other fruits and table grapes are more or less similar in direction, but on a smaller scale. Domestic consumption falls due to the price increases reported in Table 53. Mercosur's production of sugar expands under a Doha Round agreement alone but is lower than the reference scenario level in DM1 and DM2. Internal use also falls in all three scenarios, but by less than the production drop in DM2, so that exports are lower in this scenario.

Table 58 reports the impacts on EU cereals balances under the three scenarios. Production of total cereals is lower under the Doha-only scenario than in the reference scenario, due to lower levels of wheat, barley and maize production. Under the combined scenarios, this decline is reversed for wheat, which reaches a level of more than half a million tons about the reference scenario level. However, for barley and maize, the production decline is maintained or deepens. The result of these differential impacts is that total cereal production is considerably higher in DM1 than in the reference scenario but only 17.5 thousand tons above the reference level in DM2. Increases in human consumption of cereals (mainly wheat) are reinforced by higher processing demand (for biofuels and for non-biofuel uses). However, feed use (again, especially for wheat) is progressively lower in all three scenarios due to lower livestock production. For cereals as a whole, the EU strengthens its trade position - exports rise while imports decrease. This is also the case for each of the cereals shown separately (except for barley, whose imports hardly change), although rates of export increase and import decrease differ between grains.

Table 59 shows how Mercosur cereals balances react under the three scenarios. Total cereal production is higher in the DDA-only scenario, 722 thousand tons lower in DM1 and 558 thousand tons lower in DM2. The movements of the total mask opposite changes in individual cereals: wheat production

Table 59: Impact on Mercosur balances for cereals (thousand tons)

	Total cereals				Wheat			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	124,461.9	66.7	-722.1	-558.2	23,802.5	-51.8	-895.6	-957.0
Human consumption + losses	36,909.8	-57.6	160.7	101.2	23,923.8	-43.9	177.8	134.5
Feed use	75,609.2	485.1	590.7	1,136.5	1,117.5	14.2	95.0	109.5
Imports	3,523.5	28.7	1,823.3	1,851.9	3,244.4	21.5	1,734.7	1,752.6
Exports	15,459.1	-332.0	349.8	56.2	2,005.7	-0.5	566.2	551.5

	Barley				Maize			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	1,598.5	3.1	4.3	4.6	91,949.3	114.7	129.1	343.8
Human consumption + losses	102.5	-0.2	-1.0	-0.9	12,138.6	-13.8	-20.1	-36.0
Feed use	1,479.3	10.4	70.7	85.3	68,059.8	433.5	392.8	873.5
Imports	271.5	6.7	88.5	98.8	3.6	0.2	0.1	0.3
Exports	288.2	-0.4	23.0	19.1	11,747.2	-304.8	-243.4	-493.3

Source: CAPRI simulation results.

Table 60: Impact on EU balances for dairy products (thousand tons)

	Butter				Cheese			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	1,982.5	-9.5	-10.9	-14.7	9,623.9	8.2	5.2	-4.1
Human consumption + losses	2,060.1	4.3	3.4	5.8	8,870.7	6.8	1.7	-4.0
Processing	89.7	11.2	11.1	11.9	321.0	1.4	1.2	0.9
Imports	181.6	48.1	48.8	56.3	11.9	24.9	24.7	25.1
Exports	18.1	14.1	14.5	14.3	444.0	25.0	27.0	24.1

	Skimmed milk powder				Cream			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	799.1	-23.5	-26.1	-28.0	3,247.3	-6.7	-8.7	-8.0
Human consumption + losses	361.8	-4.3	-4.5	-5.4	3,028.9	21.2	19.3	19.6
Processing	22.4	-0.3	-0.3	-0.3	0.6	0.1	0.1	0.1
Feed use	250.8	-5.2	-5.3	-7.4	-	-	-	-
Imports	2.1	7.8	7.8	7.9	15.4	36.7	36.8	36.6
Exports	157.2	-4.5	-6.8	-5.3	233.2	8.8	8.7	8.9

Source: CAPRI simulation results.

Table 61: Impact on Mercosur balances for dairy products (thousand tons)

	Butter				Cheese			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	189.0	3.8	3.5	11.0	1,475.0	8.7	4.9	4.1
Human consumption + losses	166.9	-0.9	-1.1	-2.1	1,243.5	-2.3	-2.7	-3.2
Imports	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2
Exports	22.1	4.7	4.6	13.1	231.8	10.9	7.6	7.5

	Skimmed milk powder				Cream			
	Reference	DDA	DM1	DM2	Reference	DDA	DM1	DM2
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	930.0	-3.2	-5.0	-5.6	48.4	0.1	-0.3	-0.2
Human consumption + losses	832.5	0.2	-0.1	-0.1	28.3	-0.1	0.1	0.1
Imports	0.5	0.0	0.1	0.1	0.4	0.1	1.7	1.7
Exports	98.0	-3.4	-4.9	-5.4	20.5	0.3	1.4	1.4

Source: CAPRI simulation results.

becomes progressively lower when moving from DDA to DM2, barley production becomes progressively higher (but at a small scale), whereas maize production increases, with an impact in DM2 that is more than double the impact in DM1. Impacts on human consumption are also specific to cereal type and scenario.

However, feed use of the different grains follows a strong common pattern: already above the reference scenario in the DDA scenario, it increases more sharply under DM1 and DM2. The higher demand for feed is met by internal production, much higher imports of wheat and modestly higher imports of barley. Nonetheless, Mercosur also exports more wheat and, to a small extent, more barley than in the reference scenario. Maize exports, on the other hand, are lower in all three scenarios, and at their lowest in DM2.

Tables 60 and 61 show the balance sheets for dairy products. Apart from cheese in Doha-only and DM1, the impacts on EU production are consistently in a downward direction but the changes are small relative to the reference scenario levels. Human consumption is mostly higher, except for SMP. Internal use of SMP for animal feed is progressively lower with declining livestock production. Exports are higher in all the scenarios for all the products shown except SMP, but these increases are offset by increases in imports.

In Mercosur, production of butter and cheese increases whereas their consumption declines. This permits a small increase in exports, while maintaining imports constant. SMP production, consumption and exports all decline progressively over the three scenarios. Changes in the balance sheet for cream are very small in magnitude. Thus, we can conclude that for Mercosur, the impacts of the policy changes on dairy markets and trade are of secondary importance. At the same time, it is clear that lower levels of meat consumption are *not* offset by higher consumption of dairy protein under the policy scenarios. In fact, a review of these balance sheets together suggests that the lower levels of meat, fruit and dairy protein consumption in the Mercosur domestic diet are to an extent compensated by higher consumption wheat, at least under DM1 and DM2.

Finally, Table 62 summarises the EU balances for olive oil and milled rice. Production of both these outputs is lower than in the reference scenario by very similar amounts regardless of the policy change. In other words, the production falls triggered by the Doha Round agreement are maintained unmodified in the two combined scenarios. This is also true of the consumption changes: for olive oil, consumption is lower by about 85% of the production fall, and for rice it is slightly higher than the reference scenario. Both trade flows for olive oil are higher under the three policy scenarios than in the reference scenario (small increases in exports, larger increases in imports), such that the EU remains a net importer. For rice, trade flows in both directions are lower in the three policy scenarios than in the reference scenario, with the fall in exports steeper than that in imports, so that the EU's net importing status for rice marginally increases.

Table 62: Impact on EU balances for olive oil and milled rice (thousand tons)

	Olive oil				Milled rice			
	Reference	**DDA**	**DM1**	**DM2**	**Reference**	**DDA**	**DM1**	**DM2**
	Situation in 2020	*Difference relative to reference scenario (thousand tons)*			*Situation in 2020*	*Difference relative to reference scenario (thousand tons)*		
Net production	2,693.9	-87.8	-87.8	-89.3	2,284.9	-12.1	-12.4	-12.7
Human consumption + losses	2,773.1	-73.8	-73.8	-72.4	3,568.8	4.1	2.7	2.1
Processing	66.3	7.1	7.1	7.2	29.1	0.7	0.8	0.8
Feed use	119.3	103.6	102.7	97.8	312.1	23.2	24.1	20.7
Imports	296.8	145.6	145.6	144.4	1,652.6	-11.2	-11.3	-15.1
Exports	31.9	20.9	21.8	22.5	56.1	-51.4	-51.4	-51.3

Source: CAPRI simulation results.

7.2.4. Welfare

Table 63 summarises the welfare changes in the EU, for several stakeholder groups and in the aggregate. It must be stressed that these figures measure only the changes due to policy impacts in agricultural markets, since other sectors of the economy are not treated in CAPRI.

Total EU welfare increases under all three scenarios, but relative to welfare in the reference scenario, these increases are extremely small. The increase in total welfare is €0.41 billion with a Doha Round agreement alone, reaches a maximum of €1.29 billion in DM1, and is lower again at €1.09 billion in DM2. The upward changes in consumer welfare (€5.3 billion with Doha alone, €6.9 billion under DM1, and €9.5 billion under DM2) outweigh the total losses (relative to the reference scenario) occurring from a decrease in agricultural incomes (€4.6 billion with Doha alone, €5.7 billion under DM1, and €7.8 billion under DM2) and the higher net taxpayer costs (calculated as a sum of foregone tariff revenues and total CAP costs). However, it has to be borne in mind that, for the stakeholder groups affected, the *per capita* increase in consumer surplus is of a much smaller order of magnitude than the income loss to the agricultural sector.

Our analysis shows that in Mercosur the Doha-only scenario produces an imperceptibly small decline in welfare, whereas in the two combined scenarios welfare is higher than in the reference scenario, by €590 million and €626 million, respectively. The distribution of the welfare changes in Mercosur differs diametrically from that in the EU. The primary beneficiary in Mercosur under the three scenarios is the agricultural sector, where incomes are higher by €0.89 billion, €2.14 billion, €3.26 billion under DDA, DM1 and DM2, respectively, while consumer welfare is lower by €0.67 billion, €1.21 billion, and €1.90 billion respectively under the three scenarios. The contribution of the lower tariff revenue to the overall welfare indicator is far greater in the two combined scenarios than in the Doha-only scenario. This illustrates the importance of the EU as a trade partner for Mercosur: the complete abolition of tariffs for nearly all imports from the EU alone in DM1 and DM2 has a much greater impact on tariff revenue than the partial lowering of tariffs against all imports (but not to zero) in the Doha-only scenario.

While total welfare effects in money terms are much higher under all scenarios in the EU compared with those in Mercosur, losses in agricultural income in EU27 in both DM1 and DM2 are more than double the increase in agricultural income achieved in Mercosur (for example, in DM2 EU producers lose €7.75 billion whereas the agricultural sector in Mercosur gains €2.69 billion in extra income).

It is important to note that in Tables 63 and 64, the quota rent that is derived from the trade taking place within the TRQs is not included. In essence, the maximum potential quota rent that can be earned by filling a TRQ is the difference between the out-of-quota tariff (or, possibly, the next best alternative in-quota tariff if the exporter has a choice between preferential arrangements) and the in-quota tariff of the particular TRQ, times the amount that is imported under the TRQ up to the quota ceiling. Administration costs have to be deducted. In general, how that rent is allocated between players in exporting and importing countries operating with TRQs varies greatly, depending on the type of TRQ involved and its manner of implementation. With bilateral TRQs, exporting countries like to control the implementation themselves as it gives them, potentially, the greatest control over the allocation of the rent.

The potential quota rent to be allocated was for the three post-Doha scenarios presented in this section is estimated to be €352 million in the reference scenario, and at €636 million and €1,542 million under a scenarios corresponding to the EU offer and the Mercosur request, respect. Under the EU offer, the share

Table 63: Welfare changes in the EU

	Reference scenario 2020	Scen DDA		Scen DM1		Scen DM2	
		Difference		*Difference*		*Difference*	
	EUR million	**EUR mn**	**%**	**EUR mn**	**%**	**EUR mn**	**%**
Total Welfare	7,766,893	414.0	0.01	1,285.0	0.02	1,091.5	0.01
Consumer surplus	7,628,878	5,282.0	0.07	6,947.5	0.09	9,506.0	0.12
Agricultural income	241,526	-4,604.3	-1.91	-5,725.0	-2.37	-7,750.9	-3.21
Tariff revenues	4,834	-481.7	-9.96	-143.6	-2.97	-864.7	-17.89
Taxpayer cost	108,344	-218.0	-0.20	-205.8	-0.19	-201.3	-0.19

Source: CAPRI simulation results.

Table 64: Welfare changes in Mercosur

	Reference scenario 2020	DDA		Scenario DM1		Scenario DM2	
		Difference		*Difference*		*Difference*	
	EUR million	**EUR mn**	**%**	**EUR mn**	**%**	**EUR mn**	**%**
Total Welfare	938,450	14	0.00	592	0.06	648	0.07
Consumer surplus	789,747	-666	-0.08	-1,208	-0.15	-1,897	-0.24
Agricultural income	148,162	679	0.46	1,947	1.31	2,691	1.82
Tariff revenues	541	1	0.20	-147	-27.09	-146	-26.98

Source: CAPRI simulation results.

of the total quota rent earned by beef and poultry meat imports under their bilateral TRQs are 38% and 27%, respectively. With the Mercosur request, these shares become 51% (beef) and 22% (poultry meat).

If all the potential quota rent were to be allocated to the Mercosur countries, it would have to be added in to the welfare gain shown for Mercosur in Table 64. If the rent is shared between exporters and trading companies in the EU, then the impact of the rent on Mercosur's welfare would be less. How the rent would be distributed between stakeholder groups (i.e. primary producers, importing companies) within trading blocks is not known.

7.2.5. Policy impacts at EU Member State level

The simulation results show that implementing a bilateral EU-Mercosur trade agreement in a post-Doha context would negatively affect agricultural revenues in all EU Member States (see Table 65). The largest percentage decrease in agricultural incomes, measured as agricultural revenue per ha of UAA, would take place in Ireland (-3.9% in DM1 and -7.4% in DM2) and the UK (-3.2%, -5.0%), followed by Luxembourg (-2.8%, -4.9%) and Austria (-2.3%, -4.0%). On the other hand, the lowest relative impact on agricultural revenues would occur in new Member States, especially Lithuania (-0.1%, -0.5%), Estonia (-0.1%, -0.5%), Latvia (-0.2%, -0.7%), Hungary (-0.4%, -0.7%) and the Czech Republic (-0.4%%, -0.8%). The median revenue fall under DM2 is -2.6% (Cyprus).

For the seven new Member States with the smallest revenue losses in DM2 (Lithuania, Estonia, Latvia, Hungary, the Czech Republic, the Slovak Republic and Poland), their agricultural revenue loss under a Doha-only agreement (DDA) is actually greater for the combined scenario DM1. For Poland and the

Table 65: Agricultural revenue per ha UAA at MS level

Member State	Revenues per ha UAA*				Percentage change		
	Reference	DDA	DM1	DM2	DDA	DM1	DM2
Ireland	2,283.2	2,217.6	2,193.9	2,115.4	-2.9	-3.9	-7.4
United Kingdom	2,109.2	2,056.4	2,042.8	2,002.8	-2.5	-3.2	-5.0
Luxemburg	3,514.2	3,444.0	3,414.1	3,343.5	-2.0	-2.8	-4.9
Austria	2,081.5	2,046.2	2,033.4	1,999.1	-1.7	-2.3	-4.0
Italy	3,913.7	3,839.5	3,815.1	3,770.1	-1.9	-2.5	-3.7
France	2,757.7	2,713.1	2,698.3	2,657.0	-1.6	-2.2	-3.7
Belgium	7,459.0	7,346.2	7,306.1	7,198.2	-1.5	-2.0	-3.5
Portugal	2,156.6	2,122.7	2,109.9	2,083.5	-1.6	-2.2	-3.4
Spain	1,983.2	1,949.0	1,934.9	1,916.2	-1.7	-2.4	-3.4
Greece	2,249.3	2,196.8	2,185.5	2,174.6	-2.3	-2.8	-3.3
Sweden	1,758.3	1,732.7	1,725.4	1,702.8	-1.5	-1.9	-3.2
Finland	1,785.6	1,760.3	1,753.3	1,732.7	-1.4	-1.8	-3.0
Slovenia	2,588.7	2,551.0	2,543.3	2,515.8	-1.5	-1.8	-2.8
Cyprus	5,386.8	5,290.7	5,270.4	5,246.8	-1.8	-2.2	-2.6
Germany	3,510.9	3,472.9	3,462.8	3,433.2	-1.1	-1.4	-2.2
Bulgaria	910.7	900.7	898.4	891.3	-1.1	-1.4	-2.1
Netherlands	14,337.7	14,196.9	14,154.2	14,039.4	-1.0	-1.3	-2.1
Denmark	4,024.9	3,991.0	3,983.9	3,956.8	-0.8	-1.0	-1.7
Romania	1,412.1	1,400.2	1,397.8	1,390.4	-0.8	-1.0	-1.5
Malta	15,955.1	15,809.1	15,782.8	15,718.3	-0.9	-1.1	-1.5
Poland	1,273.3	1,258.1	1,261.5	1,255.0	-1.2	-0.9	-1.4
Slovak Republic	1,026.9	1,016.1	1,018.9	1,012.9	-1.1	-0.8	-1.4
Czech Republic	1,279.8	1,266.8	1,275.1	1,269.7	-1.0	-0.4	-0.8
Hungary	1,332.0	1,320.4	1,326.7	1,322.1	-0.9	-0.4	-0.7
Latvia	593.8	588.3	592.6	589.7	-0.9	-0.2	-0.7
Estonia	800.3	795.3	799.3	796.3	-0.6	-0.1	-0.5
Lithuania	886.0	879.8	884.8	881.5	-0.7	-0.1	-0.5

Source: CAPRI simulation results.

** UAA in each Member State and in each NUTS 2 region remains unchanged across scenarios.*

Slovak Republic, this position changes with DM2; however, it continues to hold for the other five countries mentioned, for whom even DM2 provokes smaller losses in average agricultural revenue per hectare than a Doha-only agreement.

For the remaining Member States, 70-85% of the revenue loss in DM1 has already occurred with a Doha-only agreement; with DM2, the magnitude of the Doha-alone loss lies between 39% (Ireland) and 70% (Greece) of the total loss. It is important to recall that, unlike the simulations reported with the GLOBE model, the Doha Round agreement simulated here *does* allow for developed countries to mitigate the standard tariff cuts for sensitive products. Therefore, this is not a 'worst-case' scenario. Instead, it corresponds to one of a number more plausible potential outcomes of a Doha Round agreement.

Table A5.5 (Volume 2, Annex 5) shows the losses in agricultural revenue per UAA at NUTS 2 level. The 20 NUTS 2 regions with the largest losses are in France (4 regions), Austria (4 regions), the UK (4

regions, of which the three countries Scotland, Wales and Northern Ireland), Ireland (2 regions), Belgium (2 regions), Greece (2 regions), Spain (1 region) and Italy (1 region). They tend to be upland or remote regions specialising in livestock production (e.g. Limousin, Auvergne, Scotland, Wales and the North East of England). The median loss is about 2.74%. Of the 20 regions with the smallest revenue loss in DM2, nineteen are in new Member States, and have relatively low agricultural revenue per hectare (less than €1.5 thousand) in the reference scenario. The exception is the Dutch region of Zeeland, which generates over €20 thousand per hectare of agricultural income per hectare in the reference scenario, and loses only around 0.8% of it under DM2. This table emphasises that at NUTS 2 level regions are extremely heterogeneous in terms of their commodity mix and the productivity of their agriculture, which leads to very different degrees of vulnerability to changes in trade policies.

Table A5.3 (Annex 5) shows, at NUTS 2 level, the change in beef production per hectare of utilised agricultural area (UAA) and Table A5.4 reports how this translates into changes in beef revenue per hectare of UAA. Beef production in *all* the EU regions except Estonia and Latvia is lower under a Doha Round agreement, although the falls are particularly small in Denmark and Lithuania. Production falls are deeper under DM1 and DM2, and only the four regions just mentioned register falls of less than 1.5% in DM2. Some of the largest downward impacts on production in percentage terms are in regions for which beef production is relatively unimportant. The median fall is about 4.8%.

The regional distribution of revenue losses for beef tends to follow that of the production losses, but with some variation, due to differences between Member States in the size of the fall in the beef price. In DM2, four Dutch regions and one in Greece have losses in beef revenue per hectare of more than 20%, but their beef revenue per hectare was already low suggesting it is a marginal product in those regions. In decreasing order of the size of the loss, the first regions for which beef revenue is important are Piemonte and Umbria, and here the revenue falls are of 19% or more. The median revenue loss is about 16.3%, and even in the Baltic states the loss in beef revenue per hectare is over 8.5%.

The impact at NUTS 2 level on production and revenue for other commodities can be found in Figures A6.1- A6.14 (Volume 2, Annex 6). This evidence is discussed in section 7.3 below.

7.3. Comparison of regional impacts of the five scenarios

The second volume of the report (Volume 2, Annexes 4, 5, and 6) contains tables (Tables A4.3-A4.5, A5.3-A5.5) and figures (A6.1-A6.16) showing the impacts of the policy changes in the five scenarios at NUTS 2 level. The results presented include changes in agricultural revenue per hectare of utilised agricultural area (UAA), and changes in both production and revenue per hectare of UAA for a number of key individual products. This section summarises the changes. For more detail, the reader should examine the tables and maps in Volume 2.

Table 66 summarises the regional distribution of production and revenue changes for a few commodities. It should be pointed out that for the commodity group vegetables and permanent crops, the losses are widely distributed and few regions stand out as having very large impacts. However, the picture is different for individual items within this category. The maps for table grapes and citrus fruit have not been shown, because the regional distribution of losses merely reproduces the regional distribution of the cultivation of these fruits. In both cases, the losses fall in Mediterranean countries and, for citrus, most of France as well. The distribution of production and revenue losses for tomatoes is quite different: without

Table 66: Distribution of changes in production and revenue for selected products

Product	Production impacts	Revenue impacts
Beef	Scenario 1: falls of less than 1% in most regions. Scenario 2, DDA, DM1: falls of 5-10% nearly everywhere, less steep in the Baltic States. Scenario DM2: falls of 5-9.5% in much of France, Spain, Romania, Italy, all of the UK, Greece. Elsewhere, except the Baltics, falls of 1-5%.	Scenario 1: losses less than 1% in most regions. Scenario 2, DDA, DM1: losses of 5-10% in most regions. DM2: virtually all regions with losses of 10-21% except the three Baltic States (5-10%).
Poultry meat	Scenario 1: falls of less than 1% in most regions. Scenario 2: deeper losses in S. Spain, N. France, Belgium, the Netherlands, Poland, the Baltic States, N. Sweden. Post-Doha: losses of 1-3.5% extend to nearly all regions,	Without Doha, falls follow the production changes. With DDA, most regions have losses of 2.5-6%, except Sweden, Portugal, Greece, parts of Spain. DM1 and DM2: loss of 2.5-6% extends to all regions.
Wheat	Scenario 1: most of EU15 with losses under 1%; Netherlands, parts of UK and Scotland with losses up to 4%. Romania, Bulgaria, the Baltic states, Poland, Portugal, Hungary and Ireland increase production. This pattern continues for the other scenarios.	The regional pattern of revenue changes follows the one for production. Poland, Portugal, the Baltic States, some regions in Romania, S. Spain, have a revenue increase even in DM2.
Vegetables and permanent crops	Scenario 1 : falls of less than 1% all over EU Scenario 2 : some regions in France increase, all others show losses of less than 1%. Doha-only is the scenario with the least extensive losses. Post-Doha: in all scenarios S. Spain. S. Italy, S. Greece have losses of 1-4.3%.	All scenarios: losses of at least 1% in all but a few regions. DM1, DM2: parts of the Netherlands, S. Greece. NW. Scotland, S. Italy have losses of 5-14.3%. Losses between 1 and 5% are widespread.
Tomatoes	Scenarios 1 & 2: very small losses in the NMS, slight increase in other EU regions, Romania and Bulgaria with slightly deeper losses. These small losses extend to most regions in the Doha-only scenario. Scenarios DM1 and DM2: fewer regions with falls in France, Spain and Germany than for Doha-only,	Revenue losses follow the pattern of production falls. In the post-Doha scenarios, nearly all regions have losses of up to 1%.
All agricultural activities		Scenario 1: losses of under 1% in all regions except most regions in seven NMS. Scenario 2: losses increase to 1-2.5% in Italy, Portugal, Belgium, the Netherlands, Scandinavia, England and Wales, most of Spain. Losses between 2.5 and 9% for Scotland and central France. The Baltic states and parts of Poland still not affected. Post-Doha: deepening losses extend to all regions. DM2: very few regions with losses less than 1%. France, UK, Italy, Ireland, Slovenia, Scandinavia, Portugal, most of Spain, Belgium, Austria and Greece have losses between 2.5 and 9%.

Source: CAPRI simulation results.

a Doha Round agreement, the downward impacts are concentrated in EU10. However, in the post-Doha scenarios, nearly all regions are affected. For table grapes, the impacts occur in Spain, Southern France, Italy, Slovenia, Hungary, Romania and Bulgaria.

7.4. Summary of CAPRI results for all scenarios

This section summarises the results obtained with the CAPRI model for the five policy scenarios. It aims to make a synthesis of the main trends and more robust messages they contain, and will inevitably miss much of the detail of the earlier sections. For a more complete picture at the level of individual products, and for exceptions to the overall tendencies, the reader is referred to sections 7.1 and 7.2.

EU exports to Mercosur

In the reference scenario, EU exports to Mercosur are very small relative to EU production levels. Although exports increase for most products, the increases are also very small in volume terms (even if, given the very low starting levels, some of them look large in percentage terms). The exception to this is the reaction of wheat imports. In all four scenarios with some form of bilateral EU-Mercosur agreement (that is, Scenarios 1 and 2, and the two post-Doha scenarios DM1 and DM2), EU exports of wheat to Mercosur are about 2 million tons (63-65%) higher than in the reference scenario. This represents an increase in export earnings from wheat of about €290 million. By contrast, with a Doha Round agreement only, wheat exports to Mercosur increase by a mere 17 thousand tons.

EU imports from Mercosur

The largest impacts of the policy scenarios on the EU's imports from Mercosur occur in the meat sector and for the category vegetables and permanent crops. Imports of beef and poultry meat increase from levels that were already quite substantial in the reference scenario, in line with increases in their TRQs under the scenarios incorporating a bilateral trade agreement. Thus, the greatest increases for these meats occur under the scenario based on the Mercosur request in the post-Doha context (DM2), namely 525 thousand tons for beef and 255 thousand tons for poultry meat. Increases in meat imports for the Doha-only scenario are somewhat smaller.

The large increase in imports of vegetables and permanent crops is driven largely by citrus fruit, followed by other fruit and vegetables other than tomatoes. These commodities are not imported under a TRQ, and so their full increase is similar in all the scenarios with a bilateral agreement.

Table 67 summarises the fill rates for the bilateral TRQs offered to Mercosur under the five scenarios. It should be recalled that the TRQ ceilings are specific to each scenario (see Table A1.7). The TRQs for beef and sugar are always filled under all scenarios, and for these two products there are always large volumes of imports in addition to the TRQ quantities. In addition, TRQs for rice and butter are filled in both the scenarios representing the EU offer. With respect to the higher TRQs requested by Mercosur, only three products reach or exceed their ceiling in the no-Doha context (namely, rice, beef and sugar) whereas in the post-Doha context, rice imports just fall short of the ceiling in the scenario incorporating Mercosur's request. Fill rates for some of the newly opened TRQs for wheat and maize are extremely low in all the bilateral scenarios, as is the fill rate for the sheep and goat meat TRQ, which already exists in the reference scenario and is expanded at Mercosur's request.

EU Production

Table 68 summarises the most notable changes in the value of EU production across the five scenarios. For most products, the effect of lower production volumes is exacerbated by falls in producer price. Although wheat production increases in all the bilateral scenarios, this is partly offset by lower prices.

The reduction in the production value of vegetables and fruit is between €874 million (Doha-only) and over €1.6 billion, with nearly half the fall due to citrus fruit. The fall in the value of beef production is relatively modest in the scenario reflecting the EU offer in the absence of a Doha Round agreement. However, in all the other policy scenarios, it exceeds €2.0 billion and is close to €5 billion in the scenario representing Mercosur's request in the post-Doha context. The same progression across scenarios is

Table 67: Summary of TRQ fill rates in the five policy scenarios

Product	Reference scenario		Scenario 1		Scenario 2		Scenario DDA only		Scenario DM1		Scenario DM2	
	Fill rate	Other imports	Fill rate	Other imports	Fill rate	Other imports	Fill rate	Other imports	Fill rate	Other imports	Fill rate	Other imports
	000 tons	*%*	*000 tons*	*%*	*000 tons*	*%*	*000 tons*	*%*	*000 tons*	*%*	*000 tons*	*%*
Rice			100.0	113.5	100.0	2.9			100.0	123.0	98.9	
Wheat			1.7		0.3				2.8		0.3	
Maize			0.8		0.2				1.3		0.1	
Beef	100.0	242.9	100.0	119.2	100.0	112.1	100.0	404.1	100.0	398.6	100.0	381.9
Pork			98.3		70.2				100.0	13.6	84.8	
Poultry meat	100.0	29.8	91.5		93.6		100.0	142.3	100.0	84.4	95.3	
Sheep/goat meat	11.8		10.8		5.6		11.5		9.6		5.0	
Butter			100.0	0.5	99.3				100.0	6.5	99.4	
Sugar	100.0	1459.9	100.0	1,436.1	100.0	1,218.1	100.0	1,418.3	100.0	1,399.5	100.0	1,182.9

Source: CAPRI simulation results.

Table 68: Production value of selected commodities in the EU (at producer prices)

Product	Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
	EUR million	Difference from reference scenario, EUR million				
Cereals, of which	**39,798.9**	**231.5**	**107.6**	**-168.2**	**47.2**	**-72.9**
Wheat	19,691.7	175.2	127.7	-83.3	85.5	40.6
Vegetables & perm. crops, of which	**90,370.9**	**-1,025.9**	**-1,067.7**	**-873.6**	**-1,649.5**	**-1,692.6**
Other vegetables	30,431.0	-253.1	-268.3	-167.2	-369.2	-384.0
Citrus fruit	5,810.2	-291.9	-294.9	-130.2	-353.0	-356.8
Other fruit	9,730.0	-397.8	-402.3	-405.8	-712.1	-716.4
Meat, of which	**84,610.5**	**-132.6**	**-2,597.0**	**-2,712.1**	**-3,359.3**	**-5,837.3**
Beef	27,826.4	-44.4	-2,109.0	-1,823.9	-2,443.2	-4,601.1
Pork	33,619.7	-4.4	-59.7	-269.3	-265.1	-318.4
Poultry meat	18,043.7	-78.4	-395.9	-534.9	-557.6	-796.2
Vegetable oils	**21,189.3**	**-202.1**	**-221.2**	**-1,314.5**	**-1,420.2**	**-1,448.3**
Sugar	9,341.9	33.6	54.3	31.4	59.1	78.8

Source: CAPRI simulation results.

observed for the value of poultry meat, but at a far lower level. Maximum loss in production value for poultry occurs also in DM2, but remains under €0.8 billion.

There are also sizeable losses for vegetable oil production, which are much greater in all the post-Doha scenarios. Finally, for sugar there are modest increases in the volume and value of production. It has to be recalled that in all scenarios, EU imports of sugar are vastly in excess of TRQ ceilings. Thus, TRQ expansion would have virtually no impact on marginal sugar imports from Mercosur, and the cut in the MFN tariff appears not to have increased EU market access for out-of-quota imports from Mercosur. Technical reasons lying behind this result are also discussed in section 8.

Production in Mercosur

Table 69 summarises the main changes in production values in Mercosur.

The overall pattern in Mercosur is for higher production volumes and values for all the major products. The exception is in the cereals sector, where higher production of maize and other cereals is insufficient to offset the fall in wheat (which, as discussed above, is replaced by imports from the EU). For both vegetables and fruit, and meat, the aggregate increases in production value are in excess of €2 billion in DM2, with an increase in beef value alone in this scenario of €1.7 billion. This is, however, almost one-third in absolute amount of the fall in EU's value of beef production in the same scenario.

Product balances and welfare changes

The balance sheets for the main agricultural commodities in the two trading blocks indicate that, as a result of the bilateral scenarios, meat consumption falls in Mercosur in all scenarios, while beef and poultry meat consumption is increasing in the EU. Consumption of citrus and other fruit is higher in the EU, but lower in Mercosur. Feed use of crop products is lower in the EU because of lower livestock production, whilst it is higher in Mercosur. Overall, the policy scenarios reinforce the trading position of the two blocs, so that net-importing or net-exporting profiles are maintained or reinforced.

Table 69: Production value of selected commodities in Mercosur (at producer prices)

Product	Reference scenario	Scenario 1	Scenario 2	DDA	Scenario DM1	Scenario DM2
	EUR million	Difference from reference scenario, EUR million				
Cereals, of which	**25,297.8**	**-346.7**	**-198.4**	**82.1**	**-257.6**	**-116.1**
Wheat	4,658.8	-324.7	-336.9	-14.0	-338.3	-349.9
Vegetables & perm. crops, of which	**40,143.2**	**2,388.0**	**2,501.3**	**251.3**	**2,031.0**	**2,136.4**
Other vegetables	4,717.8	180.2	185.3	29.6	178.4	183.2
Citrus fruit	14,478.2	1,443.0	1,530.9	87.7	1,208.4	1,291.8
Other fruit	10,874.3	468.8	485.7	49.9	430.7	445.6
Meat, of which	**63,245.2**	**152.7**	**1,478.1**	**1,082.8**	**1,321.0**	**2,594.3**
Beef	35,662.5	26.8	785.5	646.3	859.1	1,706.2
Pork	7,070.0	21.0	61.2	50.3	58.1	89.1
Poultry meat	19,766.4	101.6	626.3	385.2	400.9	794.5
Vegetable oils	**22,791.6**	**380.7**	**369.5**	**114.0**	**303.2**	**292.0**
Sugar	24,576.8	61.5	91.2	72.2	118.1	144.1

Source: CAPRI simulation results.

Table 70: Welfare changes in the EU

	Reference scenario	Scenario 1	Scenario 2	DDA-only scenario	Scenario DM1	Scenario DM2
	EUR billion	% difference relative to the reference scenario				
Total Welfare	7,766.89	-0.00	-0.00	0.01	0.02	0.01
Consumer surplus	7,628.88	0.02	0.05	0.07	0.09	0.12
Agricultural income	241.53	-0.41	-1.23	-1.91	-2.37	-3.21
Tariff revenues	4.83	-19.80	-25.42	-9.96	-2.97	-17.89
CAP cost	108.34	0.01	0.03	-0.20	-0.19	-0.19

Source: CAPRI simulation results.

Table 71: Welfare changes in Mercosur

	Reference scenario	Scenario 1	Scenario 2	DDA-only scenario	Scenario DM1	Scenario DM2
	EUR billion	% difference relative to the reference scenario				
Total Welfare	938.45	0.09	0.10	0.00	0.06	0.07
Consumer surplus	789.75	-0.10	-0.18	-0.08	-0.15	-0.24
Agricultural income	154.05	1.19	1.72	0.46	1.31	1.82
Tariff revenues	0.54	-26.82	-26.68	0.20	-27.09	-26.98

Source: CAPRI simulation results.

Tables 70 and 71 summarise the welfare changes for the two regions across the five policy scenarios. In percentage terms, the welfare changes are particularly low for the EU and Mercosur.

Within the EU there is redistribution away from the agricultural sector to consumers, whereas the reverse is true Mercosur. Within each region, the absolute gain of the winning stakeholder group is

generally greater than the loss of the losing group, hence the very small welfare increase. In both regions, there is also a minor negative impact on government budgets, largely due to a fall in tariff revenues. Tables 70 and 71 show all changes in percentage terms. However, as was discussed in section 7.2.4, the losses in EU27 agricultural income in money terms under both DM1 and DM2 are more than double the increases in agricultural income achieved in Mercosur (for example, in DM2 EU producers lose €7.75 billion whereas the agricultural sector in Mercosur gains €2.69 billion in extra income). Thus, there is redistribution away from EU agricultural producers towards those in Mercosur, but at a rate of transfer of less than one; i.e. the loss of €100 by EU agriculture results in a gain of less than half that amount by a producer in Mercosur.

National and regional impacts in the EU

Table 72 summarises the changes in agricultural revenue per hectare of utilised agricultural area for the five policy scenarios. Shading is used to highlight two phenomena: under the scenarios without a Doha

Table 72: Change (%) in agricultural revenue per ha of UAA, by Member State

Scenario / Member State	1	2	DDA	DM1	DM2
	Percentage change, %				
Austria	-0.22	-1.69	-1.70	-2.31	-3.96
Belgium	-0.19	-1.51	-1.51	-2.05	-3.50
Bulgaria	-0.16	-0.89	-1.10	-1.35	-2.13
Cyprus	-0.44	-0.96	-1.78	-2.16	-2.60
Czech Republic	0.70	0.21	-1.01	-0.36	-0.79
Denmark	-0.04	-0.64	-0.84	-1.02	-1.69
Estonia	0.63	0.18	-0.63	-0.13	-0.51
Finland	-0.14	-1.18	-1.41	-1.81	-2.96
France	-0.20	-1.55	-1.61	-2.15	-3.65
Germany	-0.10	-0.86	-1.08	-1.37	-2.21
Greece	-0.54	-0.98	-2.34	-2.84	-3.32
Hungary	0.51	0.09	-0.87	-0.40	-0.74
Ireland	-0.09	-3.14	-2.87	-3.91	-7.35
Italy	-0.45	-1.50	-1.90	-2.52	-3.67
Latvia	0.82	0.27	-0.94	-0.21	-0.70
Lithuania	0.67	0.27	-0.70	-0.14	-0.51
Luxembourg	-0.39	-2.15	-2.00	-2.85	-4.86
Malta	-0.06	-0.60	-0.92	-1.08	-1.48
Netherlands	-0.12	-0.84	-0.98	-1.28	-2.08
Poland	0.34	-0.25	-1.19	-0.93	-1.44
Portugal	-0.41	-1.54	-1.57	-2.17	-3.39
Romania	-0.12	-0.61	-0.84	-1.01	-1.54
Slovak Republic	0.39	-0.29	-1.06	-0.78	-1.36
Slovenia	-0.05	-1.29	-1.46	-1.75	-2.82
Spain	-0.63	-1.50	-1.72	-2.44	-3.38
Sweden	-0.10	-1.26	-1.46	-1.87	-3.16
United Kingdom	-0.19	-1.90	-2.51	-3.15	-5.04

Round agreement being in place, a number of New Member States register a small increase (diagonal shading), but this remains under 1% and is more difficult to realise under the Mercosur request than the EU offer. In addition, solid shading is used to highlight the changes, under the post-Doha scenarios, of Member States whose fall in agricultural revenue per hectare under DM2 is at least 3.5%. These seven countries are all from EU15.

At the product level, there is considerably more variation between countries regarding the impact of the scenarios. In the most extreme case, the beef sector, variation in revenue per hectare changes at NUTS 2 level ranges between losses of 8.7% and 21%.

8. Comparison of the two sets of results and caveats

8.1. Comparison of model results

Table 73 summarises some of the main results across the two models. Information in shaded cells provides information on model features that is relevant to the comparison of their results.

The models both project a strong response of EU imports of meat from Mercosur, particularly beef, in all the scenarios. When comparing the simulated post-Doha trade flows in the two models, it is important to bear in mind that the GLOBE simulations do not allow sensitive products whereas the CAPRI simulations do. This means that, in the GLOBE simulations, all agricultural tariffs undergo the standard percentage cuts and there is no product-specific expansion of *erga omnes* TRQs, whereas with CAPRI, tariffs on the most sensitive products are cut by only one-third of the standard cut and there is a compensatory expansion in the corresponding *erga omnes* TRQ. In the discussion of the GLOBE results, it was explained that the increased imports in the Doha-only run should be interpreted as *upper limits* to what would probably occur if sensitive products were part of the scenario, and that the incremental effect of a bilateral agreement once a Doha Round agreement is in place is likely to be under-estimated.

Given this, it is interesting to see that CAPRI also shows quite strong increases for a number of sensitive products even in the Doha-only rounds, despite the fact that sensitive products are assumed to retain more tariff protection.

GLOBE predicts the EU's imports of the composite category pork and poultry to be higher in all scenarios. CAPRI disaggregates this category and shows pork and poultry reactions separately: pork imports (which start from a low level in the reference scenario) are relatively unresponsive to the greater EU market access, whereas imports from Mercosur of poultry meat increase sharply as trade concessions become more permissive. The impacts on EU production values are of a similar order of magnitude in the two models.

The models also agree strongly regarding the positive response of EU imports of vegetables and fruit from Mercosur when EU tariffs are abolished under all the scenarios with a bilateral agreement. CAPRI is able to show that this response is dominated by the behaviour of citrus and other fruits, and other vegetables. However, with GLOBE the impact of higher imports in this category on the corresponding EU production value is relatively small in the two scenarios without a Doha Round agreement. It is only in the post-Doha context (including the Doha-only scenario) that significant downward impacts on EU fruit and vegetable production occur. By contrast, CAPRI suggests a significant reduction in the value of production for this product category of around €1 billion (-1.1%) also for the two no-Doha scenarios. These losses reach nearly €1.7 billion in the two post-Doha scenarios with a bilateral agreement. The models do not fully agree concerning cereals, in particular wheat. GLOBE shows very small upward impacts on both EU exports and imports of wheat to Mercosur under all scenarios. CAPRI agrees with this for EU imports, but simulates very large increases for EU exports of wheat to Mercosur in all scenarios except Doha-only, where the impact is negligible.

Table 73: Comparison of the results for the two models

	GLOBE	CAPRI
Bilateral trade flows	All sectors of the economy covered. Impacts shown in value terms.	Only agricultural commodities covered. Impacts shown in quantities in main text, in values in Vol 2 (Annexes).
EU exports to Mercosur	Impacts on agricultural exports are small in all scenarios, except for vegetable oils and processed foods in scenarios with a bilateral trade agreement. Earnings on exports to Mercosur increase around 10% with a bilateral agreement, 3% with Doha agreement only. In all cases, agriculture's contribution is minor.	Large increases for wheat in all scenarios except Doha agreement only. For other products, since exports in the reference scenario are small, even substantial percentage changes relate to small volumes.
EU imports from Mercosur	Increases for fruit and vegetables, vegetable oils, beef and sheep meat, pork & poultry in all scenarios. In post-Doha scenarios, very large increases for beef, and increases for sugar. Mercosur's export earnings on EU trade increase 4-9%, depending on scenario. Agriculture is the main contributor to the increases.	Increase of imports for fruit and vegetables in all scenarios with bilateral trade agreement. Large increases in meat imports in all scenarios, more than doubling in scenario depicting the Mercosur request post-Doha.
TRQ fill rates	Some TRQs modelled for composite categories, with fill rates as averages.	TRQs specified at a more disaggregated product level.
	TRQs mainly filled in no-Doha scenarios. TRQ for dairy products never filled, TRQ for wheat not filled in the scenarios depicting the Mercosur request.	TRQs for wheat, maize and sheep meat largely unfilled in all scenarios. For other products, TRQs substantially or fully filled. Post-Doha, TRQs requested by Mercosur filled only for sugar and beef.
Production	Impacts reported in value terms.	Impacts shown in quantity terms, at a more disaggregated product level than with GLOBE. Impacts in value terms reported in Volume 2.
EU production	Production is lower for agriculture for nearly all agricultural sectors in all scenarios, and for agrifood as a whole. Largest fall in each scenario is for beef. Sugar much lower in all post-Doha scenarios. Increases of less than 1% for manufactures in all scenarios.	Falls for most products under all scenarios. Largest impacts in the meat sector.
Mercosur production	Increases in all scenarios in all agricultural product groups, especially the two meat groups and (to a lesser extent) vegetable oils. Knock-on impact on food processing much lower in post-Doha scenarios. Lower output in the manufacturing sector in all scenarios.	Wheat production lower, otherwise most products increase. Increases in the meat sector lower than expected since somewhat offset by lower domestic consumption.
Factor incomes	For the EU in all scenarios, slightly higher in the economy as a whole, but lower in agriculture and the food industry. Lower returns to land and capital in agriculture. For Mercosur in all scenarios, small upward impacts for all factors.	Not available with CAPRI
Prices	Not available with GLOBE	Agricultural producer prices tend to be lower in the EU, higher in Mercosur. Largest impacts in the EU are for beef, also for fruit in the scenarios with bilateral agreement.
GDP/welfare changes	For the aggregate economy	Not comparable with GLOBE, because only the agricultural sector is simulated in CAPRI
	Very small GDP increases for both blocks, with larger percentage change in Mercosur than in the EU. For both, most of the GDP gain from Mercosur request is already achieved with EU offer. Post-Doha, bilateral agreement adds little to EU GDP gain from Doha agreement. Mercosur's agriculture gains at the expense of manufacturing; the reverse occurs in the EU.	Small welfare impacts, positive in Mercosur In all scenarios, negative in the EU in no-Doha scenarios, but positive post-Doha. Greater redistribution between consumers and agricultural producers with the Mercosur request scenarios (redistribution towards consumers in the EU, towards agricultural producers in Mercosur).
Regional impacts	Not available with GLOBE	Losses in production and revenue are not distributed uniformly in the EU, and depend on the product. Impact is greater for beef in EU15 regions, for pork in EU12. Poultry production is affected in most regions.

Source: GLOBE and CAPRI simulations, main results.

There is also a marked difference between the models regarding sugar imports, which increase in the GLOBE simulations for the post-Doha scenarios whereas in CAPRI they fall by modest amounts. The models agree with each other in that they both predict a 100% fill-rate for the sugar TRQ even at the higher level requested by Mercosur. Moreover, both models simulate very large volumes of out-of-quota sugar imports in all five scenarios. This means that the marginal sugar imports almost certainly face the MFN tariff, and will not be influenced by an increase in the TRQ ceiling for intra-marginal imports. Moreover, in CAPRI, the reduction in the MFN tariff for sugar is insufficient to improve EU market access for out-of-quota imports. However, it is striking that with CAPRI, EU imports of sugar in *all* scenarios are 0.550-1.00 million tons higher than they are in GLOBE (in the reference scenario, CAPRI simulates sugar imports from Mercosur to be around 1.12 million tons higher than the GLOBE figure). This indicates that, according to CAPRI, sugar imports from Mercosur were already at a higher level before the trade liberalisation began. The models also diverge from each other regarding the impacts of sugar trade with Mercosur on EU domestic production. In this respect, each model is consistent with its own prediction of what happens to the EU's sugar imports: GLOBE predicts that EU sugar production falls by over 12% in the two post-Doha scenarios with a bilateral trade agreement, whereas in CAPRI EU production increases by negligible amounts. It is worth recalling that in the GLOBE post-Doha runs, no sensitive products are assumed. Therefore, tariffs for all products including sugar receive the standard tariff cut. Hence, the change in access to the EU sugar market for Mercosur's out-of-quota sugar imports is more favourable in GLOBE than in CAPRI, and this can explain at least part of the greater responsiveness of this import flow. We return to this issue below in section 8.2.

Both models predict that the TRQs for sugar are filled under all scenarios, and for rice for all scenarios except Doha-only (there is no bilateral rice TRQ in this scenario). However, whereas GLOBE predicts that the TRQ for other cereals would be filled under all scenarios with a bilateral agreement, and the one for wheat filled in the two scenarios corresponding to the EU request, CAPRI simulations show significant under-fill for both these TRQs under all relevant scenarios.

It is not so easy to compare the fill rates for the various meat TRQs between the models, since GLOBE combines beef with sheep and goat meat in one of its meat categories, and aggregates pork and poultry together in the other meat category, whereas CAPRI treats these meat products separately. However, to the extent that the results can be compared, they appear to agree that TRQs for beef are filled in all scenarios, but not those for sheep meat. With GLOBE, the aggregated TRQ for pork and poultry meat is always filled, but in CAPRI the TRQs for pork and poultry meat separately are both filled only in DM1, and in addition the poultry meat TRQ is filled in Doha-only. Otherwise, both these meats fail to achieve a 100% fill rate.

As for dairy products, GLOBE deals with these commodities as an aggregate category and shows that their combined TRQ is not filled under any of the scenarios. By contrast, CAPRI results indicate that the small TRQ for butter offered by the EU would be filled under Scenario 1 and DM1, but that the much larger one requested by Mercosur under Scenario 2 and DM2 would fall just short of being filled. The fill rates for the other separate dairy TRQs (milk powder and cheese) cannot be modelled in CAPRI for the reason in section 7.1. Thus, it has to be concluded that, although both models suggest that overall the TRQ limits requested by Mercosur appear to be in excess of what Mercosur

trade could fulfil by 2020, this suggestion receives more support for more products in the CAPRI results than in the GLOBE results.

8.2. Caveats

The two models used in this study are designed as tools for conducting policy experiments, in which a reference scenario or baseline is first simulated over a future period and then, after changing one or more underlying assumptions (e.g. about policy settings, or about exogenous macroeconomic developments, weather trends etc), a new scenario incorporating these changes is run, also over the same time period. Comparison of the new scenario with the reference scenario at a given point in the simulation period, usually in terms of *percentage differences*, establishes the direction and relative magnitude of the impacts on all the endogenous variables of the change that is depicted in the hypothetical scenario at that point in time. In other words, these models are intended to allow comparisons *for the same moment in time* (i.e. holding time constant) between the outcomes prevailing in two or more different hypothetical 'states of the world' that might prevail at that point in time. In the context of this study, the time period of interest is the year 2020, and the alternative states of the world correspond to different, hypothetical rules for bilateral trade between the EU and the countries of Mercosur.

Although these models *can* be used to project individual values of particular variables, it must be stressed that ***they are not forecasting models*** and users should be aware that the particular values projected for, say, 2020 may be unreliable predictions of what will happen in that year. However, the simulated *impact of a particular policy change* in 2020, relative to the 'no change' situation, is more likely to be reliable since the influences of any imperfections in the model and of unforeseen exogenous shocks are likely to be cancelled out across the two scenarios being compared, leaving a deviation between the two that has a lower component of error.

Although this type of model is calibrated so as to fit a given year very closely, its solutions become less reliable the further into the future it is used to simulate outcomes. Given the very large number of assumptions, estimated or calibrated parameters, and stylised specification features that these models assemble, each of which is 'correct' only up to an (unknown) probability, it is impossible to establish confidence intervals or margins of error around individual projected numbers. For this reason, users should be cautious about making elaborate interpretations of rather small changes, or rejecting overall model outcomes because a few details of a relatively minor order of magnitude appear counter-intuitive. Such results may simply be due to 'noise' in the model, and could well be revealed as not significantly different from zero if only their true probability distribution (given the large 'probabilistic' content of the model) could be calculated.

Regarding the two models used here, although both are used (as requested) to simulate outcomes valued in 2020 nominal prices, and although the same policy settings are used in each model for the reference scenario and the two policy scenarios, not to mention comparable assumptions about GDP and population growth etc, the way each of the models incorporates inflation and the assumptions made about changes in the general price level up to 2020 are very different. Therefore, the user is strongly warned against comparing individual nominal values provided by one model with those for apparently similar

variables[58] calculated by the other model, since the units of measurement that each model generates for expressing 2020 values may be somewhat different. It is, however, scientifically more justifiable, and hence more reliable, to compare *percentage differences* in variables valued at 2020 prices between the scenarios, *within each model*, across the two models.

A further shortcoming of both models concerns the level of aggregation at which tariffs are modelled. Both GLOBE and CAPRI specify products or product categories at a level of aggregation that is higher than that used for designating tariff cuts. GLOBE products are specified on the 6-digit level or higher, and CAPRI products at sectoral level, based on sectoral balance sheets, which in practice mainly involve groups of 6-digit and some 8-digit tariff lines. However, the tariff cuts will be determined on the basis of disaggregated 8-digit tariff lines. This means that both models work with 'aggregated tariffs' for aggregate commodities that do not exist in reality. This tariff is calculated by using the trade weighted-average of the tariffs for 8-digit tariff lines belonging to each 6-digit group (GLOBE) or sector (CAPRI). The 'aggregated tariff' is then subjected to the respective cut (depending on which tariff band the aggregated tariff falls into). This implies that the cut is too high for some 8-digit tariff lines and too low for the others. For example, in the pork sector, the *ad valorem* equivalent for 8-digit tariff lines ranges from 11.5% to 65.5% (ignoring zero tariff lines); therefore, the aggregate tariff of the 6-digit product group lies somewhere within this range. It follows that the tariff cut for applied to the aggregated tariff is too high for some 8-digit tariff lines and too low for the others.

Unfortunately, the problem of product aggregation is present in all models like those we have used. Furthermore, it is impossible to check whether by performing tariff cuts at HS6 instead of HS8 digit level we systematically over- or under-estimate the effect since it depends on the country's specific current level of bound tariff lines (at HS8) and the number of HS8 lines within each HS6 cell.

The level of aggregation also has implications for the handling of sensitive and special products in the Doha scenarios. The designation of sensitive products in the DDA will in reality also be carried out on the basis of disaggregated 8-digit tariff lines in the DDA. In both models, the number of lines subject to a sensitive-product cut (2/3 deviation from the formula cut) is calculated by adding all products to the sensitive-product list that contain an 8-digit tariff line within them. Therefore, the sensitive-product coverage includes a number of 8-digit tariff lines that may well not be declared sensitive, and is expected to lead to a greater number of sensitive products (in total, around 10% of all tariff lines) than allowed by the December 2008 modalities (4% of tariff lines). The model applies a smaller cut to the whole 'product' regardless of how many of the 8-digit lines included in it will be declared sensitive. The same applies to special products in developing countries.

58 In addition, even if the variables seem comparable at a conceptual level, the specific way they are defined and quantified in each model may reduce this comparability in a practical sense.

9. Conclusions

This report presents the simulations made with two different models of alternative hypothetical versions of a bilateral free trade agreement between the EU and Mercosur. The models are quite different in their philosophy, construction and coverage. In particular, one model – GLOBE, a CGE model – is able to simulate the impact on all sectors of the two regional blocks. The other model – CAPRI, a partial equilibrium model – simulates only the effects generated by and incurred by the agricultural sectors of the two regions. However, CAPRI is able to look more closely at individual agricultural products and at the territorial distribution of their production within the EU, and hence it adds additional important information to the study of trade policy changes for which agriculture is expected to be one of the sectors that is most affected. CAPRI also simulates production and price changes within the EU over Member States, and production changes can be disaggregated to NUTS 2 level.

Five hypothetical scenarios are simulated, and are compared with the reference ('no-change') scenario for the year 2020. The first scenario investigated is based on the EU negotiating proposal made to the countries of Mercosur in 2004, whereas the second scenario reflects the Mercosur request of 2006.

The other three scenarios assume that an agreement has been reached in the Doha round multilateral negotiations, based on the revised draft modalities for an agreement on agriculture presented to the WTO agriculture Committee in December 2008. The third scenario simulates a Doha Round agreement as the *only* set of trade policy changes compared with the reference scenario. The fourth scenario looks at the impacts in this post-Doha context of the EU's offer albeit a little scaled down compared with its no-Doha version. The fifth scenario assumes the request from Mercosur is implemented, again in the post-Doha setting. It should be borne in mind that the version of a Doha Round agreement simulated by GLOBE does not allow for the developed countries to exempt any sensitive products from the standard Doha tariff cuts. On the other hand, the CAPRI post-Doha simulations assume that the sensitive products of the developed countries retain some extra protection but that they are required to open new multilateral TRQs or extend existing ones in order to grant some additional controlled market access for these products.

All the scenarios depicting a bilateral trade agreement between the EU and Mercosur involve a high degree of liberalisation (in the form of tariff abolition) for a very wide range of products that are not considered 'sensitive' by either of the parties. Specifically, this means tariff-free access to the EU market for all industrial goods and for all but a relatively short list of agricultural products, and tariff-free access to the Mercosur market for 85% of agricultural commodity tariff lines and 86% of industrial goods tariff lines. The two scenarios reflecting the Mercosur requests involve greater concessions regarding EU market access for key agricultural products that are subject to TRQ limits than under the EU offer, in exchange for the removal of all Mercosur tariffs remaining on agricultural commodities and of a further 6% of Mercosur tariffs remaining on industrial goods. *Changes in trade measures for the services sector and in non-tariff measures in any of the sectors are not considered in this study*.

The simulations show that, as far as agriculture is concerned, there are significant losses to EU producers and gains to Mercosur producers in all scenarios, including the Doha-only scenario. These effects are more pronounced under the scenarios based on the Mercosur request. GLOBE is able to show that the gains in the manufacturing sector outweigh the losses to the EU agrifood sector, leading to an overall increase in

GDP. This increase ranges from €8.9 billion (first scenario) to €66.0 billion (fifth scenario). Non-agrifood production in Mercosur, particularly in the manufacturing sector, falls in all scenarios.

CAPRI simulates the welfare changes generated by the agricultural sector only (without food processing), including losses to agricultural producers, gains in consumer surplus due to any food price falls and any changes in the government budget triggered by the policy changes. The CAPRI results indicate very small falls in total EU welfare for the two scenarios without a Doha-Round agreement, and slightly bigger increases (0.01-0.02%) for the post-Doha scenarios. The largest increase in EU welfare (0.02%) occurs for the scenario depicting the EU offer in the post-Doha context.

However, EU agricultural producers lose income in all scenarios and their losses increase progressively from scenario to scenario. The total loss for the scenario corresponding to Mercosur's request post-Doha is €7.75 billion, or 3.21%, relative to the reference scenario. By contrast, EU food consumers have a welfare gain, whereas in Mercosur both food consumers and the manufacturing sector suffer losses. Although this is not shown by either model, it is clear that on a per capita basis the losses to EU agricultural producers far outweigh the gains to those accruing in EU manufacturing (GLOBE) or to EU food consumers (CAPRI).

It is important to note that underlying this stylised breakdown of gains and losses to various stakeholder groups it is assumed that higher returns and price changes arising from the changes in trade policy are passed on by trading companies and the food supply chain to primary producers and consumers, respectively. Assumptions about who captures the substantial rents made possible by the tariff-rate quotas granted by the EU for market access of agricultural products are also relevant to these bottom-line conclusions.

The results of both models suggest that the greater part of the potential impacts is already achieved in the scenarios depicting the EU offer, given each state of the multilateral trading arrangements. The effect of the Mercosur request in each case is to marginally increase the welfare gains, compared with the EU offer, while accentuating more strongly the losses to EU agriculture and the gains to Mercosur agricultural exporters. In the terminology of the economist, the EU offer appears to achieve most of the potential efficiency gains, whilst the additional impact of the Mercosur request is largely to deepen the distributional changes. In the Doha-only scenario, the EU welfare changes are comparatively small in the CAPRI simulations, whereas with GLOBE a Doha Round agreement alone already achieves much of what can be expected with a Doha Agreement *and* a bilateral one. This difference is explained largely because, first, GLOBE also models changes in the non-agricultural sector and, second, does not recognise sensitive products for agricultural commodities. The CAPRI simulations assume the opposite on both counts.

At the level of individual commodities and commodity sectors, both models project a strong increase in EU imports of meat from Mercosur, particularly beef, in all the scenarios. The smallest increase for beef imports (5 thousand tons) occurs for the EU offer with no Doha agreement, and rises to around a quarter of a million tons with the Mercosur request. Beef imports would be 288 thousand tons higher than in the reference scenario with a Doha agreement only, and as much as 524 thousand tons above the reference scenario with the Mercosur request post-Doha. In this last case, EU beef production would be lower by around 280 thousand tons, with a loss valued at €4.6 billion. The total loss to the meat sector in this scenario is over €5.8 billion, of which €0.8 billion occurs in the poultry sector. The total volume of meat production lost is 600 thousand tons. Despite these strong impacts, EU meat exports to third country destinations would increase, whilst Mercosur's exports of beef to non-EU destinations would decline.

There is also a strong upward response from EU imports of vegetables and fruit from Mercosur. These impacts are comparable across all the scenarios involving a bilateral trade agreement, since the negotiating positions of both trading blocks envisage the abolition of tariffs on these items. The import increase is dominated by the behaviour of citrus and other fruits, and other vegetables. The models are not unanimous regarding the cereals sector: although they both predict very little change in wheat imports, CAPRI simulates strong increases for EU exports of wheat to Mercosur in all scenarios with a bilateral agreement. This result is not matched in the GLOBE results.

The models also differ regarding sugar imports, which increase in the GLOBE simulations for the post-Doha scenarios whereas in CAPRI they fall by modest amounts. Both models predict a 100% fill-rate for the sugar TRQ even at the higher level requested by Mercosur. Moreover, they both indicate very large volumes of out-of-quota sugar imports in all five scenarios. This means that at the margin sugar imports almost certainly face the MFN tariff, and will not be influenced by an increase in the TRQ ceiling for intra-marginal imports. However, it is striking that with CAPRI, EU imports of sugar in *all* scenarios are 0.55-1.00 million tons higher than they are in GLOBE (in the reference scenario, CAPRI simulates sugar imports from Mercosur to be around 1.12 million tons higher than the GLOBE figure). This indicates that, according to CAPRI, sugar imports from Mercosur were already at a higher level before the trade liberalisation began. The models also diverge from each other regarding the impacts of sugar trade with Mercosur on EU domestic production. In this respect, each model is consistent with its own prediction of what happens to the EU's sugar imports: GLOBE predicts that EU sugar production falls by over 12% in the two post-Doha scenarios with a bilateral trade agreement, whereas in CAPRI EU production increases by negligible amounts. It is worth recalling that in the GLOBE post-Doha runs, no sensitive products are assumed. Therefore, tariffs for all products including sugar receive the standard tariff cut. Hence, the change in access to the EU sugar market for Mercosur's out-of-quota sugar imports is more favourable in GLOBE than in CAPRI, and this can explain at least part of the greater responsiveness of this import flow.

Both models predict that the TRQs for sugar are filled under all scenarios, and for rice for all scenarios except Doha-only (there is no bilateral rice TRQ in this scenario). However, whereas GLOBE predicts that the TRQ for other cereals would be filled under all scenarios with a bilateral agreement, and the one for wheat filled in the two scenarios corresponding to the EU offer, CAPRI simulations show significant under-fill for both these TRQs under all relevant scenarios.

It is not so easy to compare the fill rates for the various meat TRQs between the models, since GLOBE combines beef with sheep and goat meat in one of its meat categories, and aggregates pork and poultry together in the other meat category, whereas CAPRI treats these meat products separately. However, to the extent that the results can be compared, they appear to agree that TRQs for beef are filled in all scenarios, but not those for sheep meat. With GLOBE, the aggregated TRQ for pork and poultry meat is always filled, but in CAPRI the TRQs for pork and poultry meat separately are both filled only in DM1, and in addition the poultry meat TRQ is filled in Doha-only. Otherwise, both these meats fail to achieve a 100% fill rate.

As for dairy products, GLOBE deals with these commodities as an aggregate category and shows that their combined TRQ is not filled under any of the scenarios. By contrast, CAPRI results indicate that the small TRQ for butter offered by the EU would be filled, but that the much larger one requested by Mercosur would fall just short of being filled. The fill rates for the other separate dairy TRQs (milk powder and cheese, cannot be modelled in CAPRI for the reason in section 7.1. Thus, it has to be concluded that, although both models suggest that overall the TRQ limits requested by Mercosur appear to be in excess

of what Mercosur trade could effectively fulfil by 2020, this suggestion receives more support for more products from the CAPRI results than from the GLOBE results.

The pattern for oilseeds and oils shows that, with more liberalised trade between the two blocks, the EU's imports of oilseeds would be lower, but vegetable oil imports would increase considerably. EU exports of oilseeds and vegetable oils are very low in the reference scenario, and hence trade adjustments remain small in volume. The changes in EU imports of oilseeds and oils largely involve soy beans and soya oil, whereas the adjustments in EU production in these sectors concern rape seed and sunflower seed. There is a substantial increase in exports of olive oil in all scenarios, but the EU remains a net importer of this commodity.

It is important to note that changes in the cereals and oilseeds sectors are the combined effect of direct adjustments due to increased market access and indirect impacts through changes in feed use as a result of the large impacts in the livestock sectors of the two trade blocks.

The balance sheets for the main products indicate that a bilateral agreement lowers EU meat production but increases EU meat consumption. In the Mercosur-only scenarios, EU meat consumption shifts towards beef and poultry and away from pork sheep meat. Mercosur meat consumption is lower in all scenarios despite higher production levels. The same pattern is observed for citrus fruit: consumption increases in the EU despite lower production but is lower in Mercosur.

GLOBE provides evidence on changes in economy-wide factor incomes in the different scenarios. The pattern of the changes is consistent across the five scenarios, with the size of the changes depending on the degree of trade liberalisation. In both EU15 and EU12, factor incomes increase by very small percentages, except for land whose total income falls consistently. These changes are all smallest in the scenarios with no Doha Round agreement, increase substantially in the Doha-only scenario, and are largest for the Mercosur request in the post-Doha context. However, despite increases at the level of the whole economy in total factor income for unskilled and skilled labour, and for capital, the income of these factors *employed within agriculture* falls, and more steeply in EU15 than in EU12.

All factor incomes in Mercosur have larger percentage gains than in the EU. For each of the factors, the highest percentage gains occur when the factor concerned is employed in agriculture. However, it is notable that the returns to labour and capital *employed in the food industry* is systematically lower under the Mercosur request than for the EU offer.

An indicator of the economic impact on agriculture at Member State level takes the form of revenue from all agricultural activities per hectare of utilised agricultural area. This measure has been used to compare the impacts of the five policy scenarios. Under the scenarios without a Doha Round agreement, the impacts are negative for all except a few of the New Member States (seven with the EU offer, five with the Mercosur request). Ten Member States have reductions of between 1 and 2%, but Luxembourg and Ireland experience deeper reductions. In the post-Doha context, these impacts are all larger, and more negative. A small number of Member States, in particular the Baltic States, Hungary and the Czech Republic, experience only minor downward impacts on agricultural revenue. However, 19 Member States have declines of more than 2% under the Mercosur request. Ireland, the United Kingdom, Luxembourg and Austria all register falls of 4% or more.

At NUTS 2 level, the distribution of the production and revenue falls for individual products depends both on the pattern of specialisation for the product and the regional competitive advantage in its production. The largest percentage falls in revenue are observed for regions specialising in livestock production. In a few regions, falls in beef production are as much as 9% and the decrease in revenue from beef exceeds 20%.

In summary, the model results indicate that the economic losses and the adjustment pressures arising from a bilateral trade agreement between the EU and the countries of Mercosur would, as far as the EU is concerned, fall very heavily on the agricultural sector. The gains to other sectors would be widely diffused and, given the very small magnitude of these gains relative to the EU economy as a whole, would be easily absorbed without an imposing adjustment burden. The aggregate welfare changes for the EU, whether measured across the whole economy or, on a partial basis, with respect to the activities agricultural production and food consumption, would be small. However, the trade-off involved in the redistribution of income between agriculture and the rest of the economy is steeper in the scenarios depicting the Mercosur request compared with those involving the EU offer. The Mercosur request provokes a much greater downward impact on agriculture whereas the additional gains elsewhere (to non-agrifood sectors or to consumers) are relatively smaller.

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Title: **Potential EU-Mercosur Free Trade Agreement: Impact Assessment – Volume 1: Main results**

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Abstract
This report presents the simulations made with two different models of two alternative hypothetical versions of a bilateral free trade agreement between the EU and Mercosur. The two versions of the agreement are based on the final negotiating positions of each party in the previous unresolved negotiating round. A global CGE model, GLOBE, simulates the economy-wide impacts of the trade policy changes involving all sectors of the two regional blocks. A global partial equilibrium model, CAPRI, simulates only the impacts generated by changes in agricultural trade policy and incurred by the agricultural sectors of the two regions. However, CAPRI considers individual agricultural products in more detail and can generate the territorial distribution of their production within the EU at the NUTS 2 regional level.

The simulation results show that the economic losses and the adjustment pressures arising from a bilateral trade agreement between the EU and the countries of Mercosur would, as far as the EU is concerned, fall very heavily on the agricultural sector. The gains to other sectors would be widely diffused and, given the very small magnitude of these gains relative to the EU economy as a whole, would be easily absorbed without imposing an adjustment burden. The aggregate welfare changes for the EU, whether measured across the whole economy or on a partial basis with respect only to the activities agricultural production and food consumption, would be small. However, the trade-off involved in the redistribution of income between agriculture and the rest of the economy is steeper in the scenarios depicting the terms requested by Mercosur than in those involving the terms offered by the EU. The Mercosur request provokes a much greater downward impact on EU agriculture whereas the additional gains elsewhere (to non-agrifood sectors or to consumers in the EU) are relatively smaller.

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