



Economic Implications of the Doha Round

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ABSTRACT:

In this study the key elements of the WTO Doha round are simulated and the main implications for international trade and national income are analysed. Based on negotiation positions at the recent Hong Kong ministerial conference, a number of Doha scenarios are carefully designed and implemented. All scenarios encompass goods, services and agricultural liberalisation as well as trade facilitation. For goods liberalisation, a so-called Swiss formula with two coefficients is used to cut bound tariff rates. Agricultural tariffs are cut according to a tiered linear formula with four bands. Considerable attention has been given to the modelling of trade facilitation. Indirect as well as direct trade transaction costs are modelled, using detailed cross-country data. For simulation of the services liberalisation we use quantitative estimates of the indirect trade barriers for each region and sector.

The simulation results show that all regions in the aggregation gain in the simulated Doha scenarios, with a particularly strong result for developing countries. In this respect, the Doha round can be called a development round. A conservative estimate is that global income increases with 0.2-0.7 percent of initial GDP per year, depending on the level of liberalisation. Trade facilitation contributes the most to these results, with increased market access for non-agricultural goods coming in second place. However, services reforms contribute the least, as small real market openings are expected. Overall, simulations indicate the importance of countries' own liberalisation for their national income gains. Therefore, a "round for free" does not seem to be a valid concept. Furthermore, the importance of a broad-based round is underlined. Excluding some elements of liberalisation from the round may turn potential gains into losses, for some countries.

Keywords: Doha round; trade liberalisation; CGE; trade facilitation; services; WTO
JEL codes: F2, F12, F13

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1 Introduction

In 2001, the fourth ministerial meeting of the World Trade Organisation (WTO) was held in Doha, Qatar. This resulted in the launch of a new round of trade liberalisation negotiations, based on the so-called Doha Development Agenda (DDA), referring to the agreed central role of the development perspective in the negotiations. Since then several deadlines have passed without members reaching consensus in important areas. Negotiations still continue, but many view the end of 2006 as the make or break moment for the Doha round, in its current form.

Whether industrial and developing countries will be able to bridge their remaining differences is an open question. The area of agriculture, which has caused deadlocks in the negotiations several times, seems to be a key to the Doha negotiations. Many industrial countries, including the European Union (EU),² have considerable protectionist interests in this area, while at the same time, the agricultural sector is important for many developing countries and for development and poverty alleviation. Industrial countries, such as the EU, want a focus on increased market access in manufacturing and services sectors, areas where they have a comparative advantage.³

The aims of this study are to simulate and compare the effects of three potential Doha outcomes on national income and trade, with a particular focus on results for Sweden. Evidently, much remains to be agreed in the negotiations but already some important features of a possible outcome can be discerned. This allows three illustrative scenarios to be crafted, encompassing the areas of agriculture, non-agricultural market access (NAMA), services and trade facilitation. The scenarios draw upon available information from the WTO-negotiations at the time around the Hong Kong ministerial meeting, in December 2005. Trade facilitation has received special attention, in order to try to capture its appropriate contribution to overall gains. The scenarios are simulated using a quantitative framework, a so-called computable general equilibrium (CGE) model. Such models are commonly used in trade policy analysis, for example, in the Organisation for Economic Cooperation and Development (OECD) and the World Bank. It should be added that the model used is highly stylised and the world is abstracted into only a few sectors and regions. For this reason, the results should be interpreted with great care.

The simulation results indicate that all groups of countries in this study benefit, with a particularly strong result for developing countries, including the LDCs. A conservative estimate is that real global income in-

² The EU is a common market, but for simplicity it will be regarded as a country in the following.

³ Though this can be perceived as a general pattern, individual industrial and developing countries have very different economic structures and trade interests and should not be perceived as homogeneous groups.

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creases with 0.2-0.7 percent of initial Gross Domestic Product (GDP) per year, depending on how far-reaching liberalisation takes place (when adding a dynamic link to the model, this figure rises).⁴ Trade facilitation contributes the most to these national income results, with increased market access for non-agricultural goods coming second in place. The key role of trade facilitation is not surprising considering that costs of delays in trade caused by cumbersome border procedure have been estimated at some 1-15 percent of the value of world trade, and may be still higher for agro-food trade and for developing countries, including the LDCs.⁵ To this can be added direct costs of border procedures, such as fees and formalities. Services liberalisation contributes the least, as small real market openings are simulated. However, major gains from services liberalisation could be expected if more far-reaching liberalisation takes place. Furthermore, the small gains from services liberalisation are partly attributed to the fact that Foreign Direct Investment (FDI) is not explicitly modelled. The simulation results further indicate that agricultural liberalisation in industrial countries has no important effect on the national income of developing countries, on an aggregate level. This result is somewhat surprising, considering this area's central role in the negotiations. However, when looking at a more disaggregate level it can be noted that some developing countries or regions lose and other benefit from industrial countries' liberalisation of agriculture. The outcome for an individual country will to a large extent depend on if a country benefits or loses from changes in prices on agricultural products (net-importer or net-exporter). Nevertheless, it is interesting to note that developing countries as a group, including the LDCs, has more to win from agricultural liberalisation in other developing countries' than in industrial countries.

Overall, simulations indicate the importance of countries' own liberalisation for their national income gains. It is also concluded that income gains appear to be roughly proportional to how far-reaching liberalisation takes place. For Sweden, results are considerably above the average for industrial countries. Sweden's real national income increases with 0.2.-0.6 percent, depending on the level of trade liberalisation. The most important part of these gains derives from non-agricultural market access, followed by liberalisation in the agricultural sector, trade facilitation and finally services.

⁴ Henceforth, changes in national income are expressed in percent of initial GDP, if not stated otherwise.

⁵ OECD (2003b).

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Compared to global gains estimated in other recent simulations of potential outcomes of the Doha round, the results obtained in this study may seem somewhat low, 0.4 percent of initial GDP in the core scenario. With the inclusion of the same liberalisation elements and using the same model, Francois et al (2005) find global income gains of 0.5 percent. However, this is mainly due to more moderate scenarios in this study. Compared to the simulation results in a Carnegie (2006) study and in another one at the World Bank (2005),⁶ the results in this study also seem fairly reasonable, considering that the two studies do not consider liberalisation in the areas of services liberalisation and trade facilitation.⁷

The outline of the paper is as follows. In the next section, section 2, the method used and the design of the Doha scenarios are briefly explained. In section 3, the global pre- and post liberalisation environment is given. Section 4 presents the results on trade and national income, both on a global and on a more detailed level. In the two chapters that follow, chapter 5 and 6, the focus is on the Swedish economy. Finally, key findings are summarised in the section 7. Tables are available in Annex 1, if not in the text. (More detailed information on the set-up of the study and the robustness of the results is available in the technical annex, Annex 2.

2 Method and scenarios

The global system of international trade constitutes a complex web of inter-linkages in the form of flows of goods, capital and services. Through these linkages even moderate changes in a sector or country may have effects elsewhere. When several changes are implemented simultaneously, for example in reforming the trade policy of a country, it can be even more difficult to foresee what the overall outcome will be on different sectors and countries. In order to capture these linkages, computable general equilibrium models (CGE-models) are often used.⁸

In CGE models, sectors and countries are inter-linked and all markets are presumed to clear i.e. demand equals supply, both initially and after markets have adjusted to the policy reforms, indicating a medium run perspective. CGEs are useful to display *relative* changes in variables such as real national income, export, import, prices etc, at sector as well as at country level. The results are primarily useful to rank policies and to act as a basis for discussion of potential effects of trade liberalisation. National income gains are represented by the change in the real value of

⁶ Authors of these studies are Polaski (2006) and Anderson et al (2005).

⁷ If including gains from these areas, results can be expected to be substantially higher. As shown in this and other studies, trade facilitation may contribute largely to global income gains, potentially as much as 40-50 percent. For more comparisons, see the section on sensitivity analysis in the technical annex (annex 2).

⁸ For an introduction to these types of economic models and their limitations, see e.g. Piermartini and Teh (2005).

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consumption caused by the liberalisation, considering income as well as price changes.⁹ Several assumptions about actors' behaviour and the character or availability of goods and services are always present in CGE models. For example, the employment level of factors of production, such as labour, is commonly presumed to be constant, as in this study. This might underestimate national income gains for some countries and overestimate gains for others. The assumptions of the model will influence the simulation results and may constitute limitations.¹⁰

In this study, a modified version of a standard CGE model – GTAP – has been used.¹¹ GTAP is a widely used model, with a connected database, that has been applied in several of the recent analyses of trade liberalisation.¹² The standard model has been modified to incorporate scale economies and imperfect competition,¹³ along the lines of Francois et al (2005). This is due to trade not only being generated by the traditional neo-classical argument of comparative advantage,¹⁴ but also by economies of scale and a demand for more diversified goods (“love of variety”). By including these features, additional effects of the trade liberalisation that are linked to increased competition and specialisation can be captured. In this study imperfect competition and scale economies are only modelled in manufactures and in the processed food sectors. Although there are arguments for modelling some of the services sectors with imperfect competition and economies of scale, this has not been done here, mainly because a lack of data. The results of this model are compared with results of the standard GTAP model and a modified version of the main model that also captures dynamics between changes in income, savings and capital accumulation.¹⁵ Still it should be recognised that even in the reference model with dynamics from capital accumulation, general productivity growth is not incorporated.

The latest version of the GTAP database, version 6, provides a snapshot of world trade, production and relevant policies in 2001.¹⁶ To facilitate the analysis, countries and industry sectors have been aggregated in this study into 16 regions and 21 sectors, see table A1.1-2. The choice of aggregation reflects the fact that the focus of the study is on Sweden. Al-

⁹ Technically, national income gains are changes in economic welfare, which in turn is measured as equivalent variation (EV).

¹⁰ For more on assumptions and their implications, see the technical annex, annex 2.

¹¹ Global Trade Analysis Project, Hertel (1997)

¹² The model and database have recently been used in e.g. Matthews and Walsh (2005) and Francois et al (2005), and the database in e.g. Anderson et al (2005).

¹³ Monopolistic competition, more specifically.

¹⁴ The two main sources of comparative advantage are differences in the global distribution of factors of production and differences in production technologies of countries.

¹⁵ Although more likely to capture further gains than the other models do not, adding dynamics involves further assumptions. Therefore, the dynamic model is mainly used for comparison.

¹⁶ Version 6.2 of the GTAP database. For complementary data sources that have been used, see the technical annex.

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though aggregation is useful to facilitate analysis and is common practice in this type of simulation efforts, it should be noted that it may affect simulation outcomes by underestimating the global gains. Moreover, the aggregate results may also conceal highly diverging results on a more detailed level. The database has been updated in a pre-experiment to account for some important economic policy changes preceding full implementation of the Doha round outcome, here interpreted as 2015 (see figure 1, Annex 1). Only those economic changes that have been judged most relevant for this specific study have been included, namely: implementation of previously agreed WTO commitments; China's accession to the WTO; addition of new members to the EU; reforms of EU's agricultural policy; and implementation of the EU's Everything But Arms Initiative (EBA).¹⁷ The updated database constitutes the reference scenario, that is, the baseline with which results from the simulations of the Doha scenarios will be compared.¹⁸ It should be noted, however, that economic changes that are not considered in the baseline may be important for simulation results at a more detailed level. For example, China and India's economic structures have already undergone substantial changes since 2001 and, considering the rapid economic changes taking place today, can be expected to look very different in 2015. Also, the database is not updated to account for factors such as projected economic growth, changes in demography and in endowments of natural resources. It is, however, important to keep in mind that this is not a forecast for the world economy, but a model simulation that aims to allow comparisons between different scenarios, everything else unchanged. The model as well as all scenarios are based on several assumptions and abstractions. All results should therefore be interpreted with great caution.

Three reform scenarios have been outlined for this study (see figure A2). Although carefully crafted, the scenarios are illustrative rather than descriptive and draw upon available negotiation information around the time of the Hong Kong ministerial meeting, in December 2005. The main difference between the three is the extent of liberalisation in the different areas is. The focus should therefore not be on the actual reduction rates used in the scenarios, but more on the *comparison* of the effects of different levels of liberalisation. The core scenario constitutes middle ground, and will be compared with results from less and more far-reaching liberalisation scenarios. In all three scenarios, elements included are: tariff reductions; removal of agricultural export subsidies; lowering of agricultural domestic support; increased services market access; and trade facilitation. However, apart from trade facilitation, the least developed countries (LDCs) are in this study not expected to undertake any commitments in the round.¹⁹ Other elements, such as commitments on

¹⁷ For details, see figure 1 of annex 1 and the technical annex (annex 2).

¹⁸ Other changes such as population growth and technological change are not considered, for simplicity.

¹⁹ With the exception of a commitment to bind tariffs.

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non-tariff barriers to trade and rules reform, are not considered. Finally, a full liberalisation scenario, encompassing the same negotiation areas, is simulated for reference purpose.

To illustrate the level of liberalisation in the scenarios it can be noted that in the core scenario, the weighted average *applied* tariff is reduced with 16 percent for manufactures and 22 percent for agricultural goods, globally. (These estimates are weighted on trade flows before and after the simulated Doha Round and should therefore not be confused with other estimates of average tariff reductions which have been weighted on existing trade flows.) For services, the core scenario implies that global costs related to services market barriers are reduced with approximately 0.7 percent of the value of the imported service, on average. Regarding trade facilitation, costs arising from export and import waiting times and from border fees, formalities etc are reduced. Taking Brazil as an example, the average waiting time in Brazil is modelled to be reduced with some 1-5 days, for manufactures,²⁰ depending on how far-reaching facilitation efforts are made. The costs savings of these efforts in Brazil are simulated to be 0.5-2.6 percent of the value of the traded goods, for manufactures.²¹ In the core scenario, it is assumed that global trade costs arising from border delays are reduced with 0.73 percent of the value of the traded goods, on average. At the same time direct costs are reduced, resulting in a further average cut of 1.05 percent in global trade costs.²²

In the scenarios, reductions of tariffs and agricultural domestic support are performed in two steps. First, the new bound rates are estimated by applying the reduction formulas to the bound base rates.²³ Secondly, real reductions are simulated in the model, but only to the extent that the new bound levels are lower than the actually applied ones.²⁴ This two-step procedure is used in order to avoid overestimating liberalisation efforts, since it is a relatively frequent practice to have a significant gap between the bound and applied tariff rates – a so-called “binding overhang”.

In the area of non-agricultural market access (NAMA), tariffs are cut using a so-called Swiss tariff reduction formula.²⁵ The formula is harmonising, which means that higher tariff rates are reduced the most, as displayed in figure 3 below. In this study, two different coefficients are used

²⁰ From an initial waiting time of 12.4 days.

²¹ To this should be added cost-savings from shorter export waiting times elsewhere and from reductions in fees and formalities when imported.

²² Simple averages across countries.

²³ Members' tariff rates are bound in the WTO, i.e. they constitute the maximum rates that a member may apply.

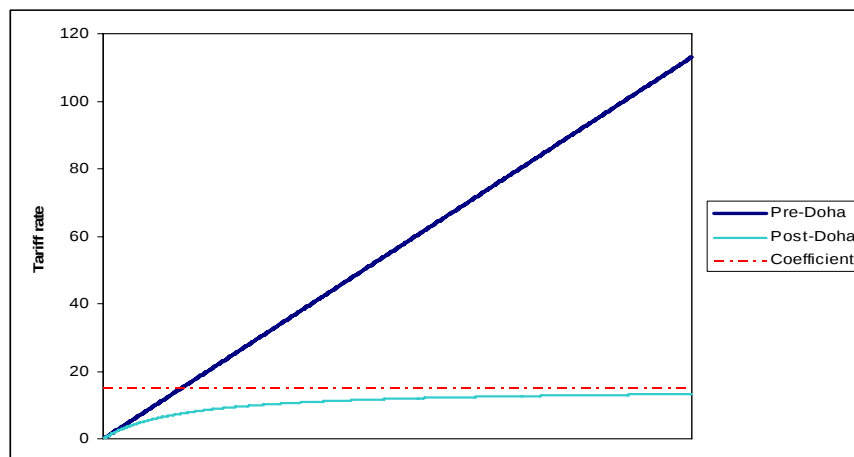
²⁴ Applied rates in year 2001 are used in the GTAP database.

²⁵ At the Hong Kong ministerial (WTO 2005c) it was decided that a Swiss formula should be used, with coefficients. In this study the following formula will be used with two coefficients: $T1 = (T0 * a) / (T0 + a)$; with new tariff (T1), current tariff (T0), and coefficient (a).

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for industrial and developing countries, excluding the LDCs, whereby industrial countries liberalise the most. In addition, very low tariffs (“nuisance tariffs”) in industrial countries are removed in the scenario with more far-reaching liberalisation.²⁶ It has been estimated that EU’s average *bound* tariff on manufactures is 2.9 percent before the liberalisation. The reduction formula and rates used in this study’s core scenario, has been estimated to imply a decrease of EU’s average bound rate with approximately 59 percent.²⁷

Figure 3: The Swiss harmonising tariff reduction formula, with coefficient 15



Source: own calculations

Agricultural liberalisation includes reduction of tariffs, again by using a harmonising approach. The reduction rates of the core scenario have previously been estimated to lead to a reduction of the average agricultural *bound* tariff in EU by 55 percent.²⁸ For developing countries, the percentage cuts in bound tariffs are two thirds of the tariff cuts of industrial countries. In the scenario with more far-reaching liberalisation, so-called “caps” on tariffs will be implemented. This implies that no tariff rates are allowed above a maximum limit. Exemptions from tariffs reductions for so-called sensitive and special products are not included in any scenario.²⁹ Another element of agricultural liberalisation is reductions in domestic support. Because of difficulties in representing reductions in domestic support, only the most trade-distorting form of domestic sup-

²⁶ Here defined as tariffs equal to or lower than 3%.

²⁷ Own calculations, weighted on global rates and using countries’ own estimates of base rates submitted to the WTO.

²⁸ Calculations by the Swedish Board of Agriculture. In these estimates an agricultural tariff cap of 100% is assumed in these calculations, something which in this study only is simulated in the scenario with more far-reaching liberalisation.

²⁹ Not taking these exemptions into account can be expected to overestimate the global gains from liberalisation. On the other hand, the sectoral aggregation in this study is likely to lead to underestimation of the potential gains, as discussed in annex 2, and this particularly applies to agriculture.

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port, the so-called amber support, will be reduced.³⁰ Reductions are made using a harmonising method. As there is a substantial gap between bound and applied levels for most regions this only results in real cuts in some regions and sectors. The final element of agricultural liberalisation that will be implemented in this study is the complete removal of agricultural export subsidies.

The simulation of services trade liberalisation is highly stylised and involves cutting tariff equivalents of estimated barriers to trade in different sectors and regions. The reductions take the form of partial convergence to “best practice”.³¹ It can be assumed that most commitments under the Doha Round will just involve binding existing practice and that new real market opportunities therefore will be limited. The reduction rates that we use are rather modest and the convergence ratio is the same for all countries and sectors. The average cost reduction for the global services sector is approximately 0.7 percent of the value of services import.

In the highly stylised trade facilitation scenarios, all countries undertake commitments but their absolute commitments differ, as it is related to how far from best practice they are. The scenarios imply that improvements in border procedures are modelled in most countries. This seems realistic considering progress in this area of the Doha negotiations. Still, to a large extent, these trade facilitation efforts hinge on fulfilment of expected commitments by industrial countries to provide necessary financial and technical support to the LDCs and to other developing countries.³² In technical terms, reduction in the tariff equivalents of border procedures is simulated by a (partial) convergence to best practice. Tariff equivalents are estimated for indirect as well as for direct costs of border procedures (trade transaction costs, TTCs), such as costs for border delays and for fees and documentation costs respectively. As a result of removing direct TTCs governments will, at least initially, lose revenue from fees and charges, and employees engaged in border procedures will have to move to other employment. These adjustment costs are considered in the model, while implementation costs for the reforms are not. Generally, tariff equivalents of border procedures are modelled to be higher for countries not belonging to the OECD and for agricultural

³⁰ Reductions in market price support (mps) is not modelled. For more information on this and other details see annex 2 .

³¹ Best practice in a specific sector is the lowest tariff equivalent of all regions in our aggregation.

³² It can be added that, with respect to trade facilitation, there are a number of reforms that are relatively cheap, easy to implement and that can constitute the first basic steps in improving border procedures (Swedish National Board of Trade, 2003). Two examples of such reform are to limit requirements for duplicate information and to apply new laws only after their publication.

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products. This approach is also modelled in this study.³³ Moreover, trade facilitation efforts are in this study presumed to reduce costs for exports as well as imports, but there is somewhat more an emphasis on the potential for cost-savings on the import side.

3 The world economy pre and post liberalisation

In order to get a better understanding of the changes taking place after trade liberalisation, it can be useful to look at the economic structures and policy environment, before and after the reform. To get a schematic overview, the world economy is divided into four country groups – the EU27³⁴, other industrial countries (OICs), the LDCs and other developing countries (ODCs) – and three aggregate sectors – agricultural goods, manufactures and services.

The first section gives an overview of the reference scenario – the baseline – to which the outcome of the simulated Doha round will be compared.³⁵ In the second section the simulation results from the core Doha scenario, as described in the introductory chapter, are used for the representation of the post Doha situation. Data displayed are based on own calculations of data deriving from the GTAP database, if not mentioned otherwise.

The pre-liberalisation economy

The pre-liberalisation trade and production structures

In the reference scenario EU27, other industrial countries and the developing countries have approximately the same sectoral import structures (table 2). Manufactures represent the largest share of world trade (approximately 70% of total import), followed by services (around 20%), and finally agricultural goods (6-8%). For the LDC group, the size order of the different import sectors is the same, but the distribution between the three sectors is more even: 50, 33 and 17 percent.

³³ Non-OECD TTCs are assumed to be 12,5% higher, because of a higher ratio of SMEs, and TTCs for agricultural products are assumed to be 50% higher, as done in OECD (2003b).

³⁴ The present 25 member states plus Romania and Bulgaria

³⁵ The database used for the baseline scenario has been updated to account for major changes that have taken place since 2001 or are expected before 2015, as described in section 1.

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Table 2: Trade and production, pre-Doha (in % of total)

	EU27	OIC	LDC	ODC	Total
Import					
Agriculture	8	6	17	8	7
Manufactures	70	75	50	72	72.1
Services	23	19	33	20	21
Export					
Agriculture	7	6	19	8	7
Manufactures	69	72	65	75	72
Services	24	22	17	18	22
Production					
Agriculture	7	6	24	15	8
Manufactures	30	26	27	39	30
Services	62	68	48	47	62

Source: own calculations based on GTAP-simulation results

On the export side, the sectors' shares in total value mirrors to a large extent the import side, but some differences can be observed. For example, in the other industrial countries (OICs), export of services represents a slightly larger share at the cost of manufacture exports. The opposite can be observed for other developing countries (ODCs). For the LDC group, the sector with manufactures constitutes the largest share of total exports, but in contrast to the other groups, exports of agricultural goods come in second place.

The most important share in global production is the services sector, representing 62 percent of total global production. For the group of other industrial countries, it represents more than two thirds of the total value of production. The share of agriculture seems to have an inverted relationship to the level of development, as it is largest in LDCs, and decrease in importance as the level of development increases.

The pre-liberalisation policy environment

The policy environment for manufactures and agricultural goods prior to liberalisation is shown in table 3. The figures represent *applied* ad valorem tariff rates, which have been estimated by taking the total value, *including* taxes/subsidies, divided by the value *excluding* taxes/subsidies. It should be noted that these rates may differ greatly from the rates that have been bound in the WTO, as many countries do not fully utilise their bound rate. Also, the average weighted tariff rates are contingent on the sources of a country's import as well as the mix of the import products. Thus, a region's applied weighted tariff rate will decrease (even without a policy change) if they start importing products that are subject to lower tariff rates, or start importing more products from regions with which they have a special trade arrangement. This way of estimating distortions can also conceal substantial taxes and subsidies as these are evened out

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on the net level. The estimates also include the direct costs for trade procedures that have been added in the database as additional border taxes.

Table 3: Net tariffs and subsidies, pre-Doha (in % of value)

Policy instruments	EU27	OIC	LDC	ODC	Global average
Import tariffs (tms)					
Agricultural goods	15.8	19.2	28.2	26.5	21.7
Manufactures	4.4	4.7	78.7	12.1	7.9
Agricultural export subsidies (txs)					
(neg value= nettax)	3.4	-3.5	-3.5	-3.6	-2.5
Agricultural domestic support					
Output subsidies (to) (neg value=nettax)	-1.0	-1.8	-2.1	-1.8	-1.7
Intermediate input subsidies on domestic goods (tfd) (neg value=net subsidy)	0.8	-0.7	0.0	0.1	-0.0
Intermediate input subsidies on imported goods (tfm) (neg value=net subsidy)	0.8	-0.5	0.1	0.0	0.2
Effective tariff equivalents*					
Services	4.0	4.9	11.4	14.5	7.4

Source: calculations based on own GTAP-simulation results

* The estimated cost of a tariff minus the benchmark cost in the region which represents 'best practice' (simple averages).

Market access for non-agricultural goods

In the initial data, industrial countries' tariffs on manufactures are comparatively low, on average around 4-5 percent (table 3). However, this figure does not tell the whole story, as almost 10 percent of industrial countries' tariff rates are substantially higher (de Córdoba et al 2004, p. 5), so-called tariff peaks. Developing countries in general have higher bound tariffs on manufactures, but there is often a significant gap between bound and applied most-favoured-nations (MFN) tariff rates – a so-called “binding overhang”.³⁶ In addition, developing countries still have comparatively low binding coverage. When looking at the average *applied* tariff rate for other developing countries', as seen in table 3, it is higher than for industrial countries. The group of LDCs has by far the highest average tariff, an average on almost 80 percent. Again, it should be noted that this figure includes direct costs related to cumbersome border procedures. Finally, it can be noted that the difference between the tariffs of industrial and developing countries is much larger for manufactures than for agricultural goods. One reason for this difference is that industrial countries to a larger extent have participated fully in extensive multilateral industrial liberalisation efforts since the creation of the

³⁶ For example, the average G20 bound tariff is 30 percent, while the applied MFN duty is 13 percent (WTO, 2002). The MFN rule is a core WTO principle that i.a. means that a tariff concession to one member automatically has to be extended to all others and the new rate constitutes the MFN duty.

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GATT (the precursor of the WTO). Another reason is that many industrial countries have pursued sectoral liberalisation of manufactures in the WTO, resulting in low or zero tariffs for substantial parts of their tariffs for manufactures.

Agriculture

Unlike the tariffs for manufactures, most WTO members, including the developing countries, have bound their agricultural tariffs within the WTO. The global average for bound agricultural tariffs has been estimated to 62 percent, with large variation between countries and products (ERS/USDA, 2001). As seen in table 3, the applied tariffs are much lower, indicating the existence of high binding overhang. Also, because of the existence of high and sometimes prohibitive tariffs for some agricultural goods – leading to no or only very limited trade – a non-trade-weighted average would be considerably higher. According to the data, the group of LDCs has the highest average agricultural tariff, followed by the other developing countries.

Regarding the net agricultural export subsidies, these are only observed for agricultural goods exported from the EU, as seen in table 3.³⁷ As to domestic support, all regions have a net tax on this aggregate level, and only the estimate for the group of other industrial countries shows positive production subsidies; this although 25 countries/regions (EU27 counted as one) have bound their levels of such support in WTO. When looking at a more detailed level it can be noted that this is mainly due to taxes in the processed food and beverages sector (processed food sector).

The services sector

Restrictions on trade in services add an extra cost on the imports of services, which can be estimated as a tariff equivalent. In turn, the term ‘effective’ tariff equivalents will in this study be used to indicate the protection above best practice.³⁸ The averages of the effective tariff equivalents used in this study are shown in table 3. The EU and the other industrial countries (OIC) have the lowest barriers to trade in services, followed by developing countries (ODCs), and finally the LDCs. This data should be treated with caution, as they are only rough estimates deriving from the scarce data that exists on the subject,³⁹ which have further been adjusted to fit for this specific study. Moreover, since the estimates derive from

³⁷ In all other regions, except agricultural exports of LDCs, the figures indicate an export tax. However, this is on an aggregate level, and the figures of other regions may hide substantial export subsidies for specific products. The rates also include the estimated direct costs for cumbersome border procedures.

³⁸ The estimated tariff equivalent minus the benchmark in the region that represents ‘best practice’.

³⁹ For data used, see the technical annex (annex 2).

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studies of different services sectors in the late 1990's, they do not account for the changes that have taken place in the services sectors since.⁴⁰

The post-liberalisation economy

The simulation results from the core Doha scenario are used for the representation of the post liberalisation situation, for scenario details, see figure 2 in Annex 1.

Table 4: Trade and production, post-Doha (in % of total)

	EU27	OIC	LDC	ODC	Total
Import					
	8	7	18	8	8
Agriculture	(+5.3)	(+10.2)	(+5.8)	(+2.7)	(+7.0)
	70	76	51	74	73
Manufactures	(-0.1)	(+0.9)	(+3.0)	(+2.8)	(+1.1)
	22	17	31	18	20
Services	(-2.2)	(-7.1)	(-6.7)	(-11.9)	(-6.3)
Export					
	6	7	19	9	7
Agriculture	(-7.2)	(+15.5)	(+1.1)	(+17.3)	(+7.2)
	70	72	65	76	73
Manufactures	(+1.0)	(+0.8)	(+0.9)	(+1.3)	(+1.1)
	24	21	16	15	20
Services	(-0.8)	(-6.7)	(-4.8)	(-13.1)	(-6.5)
Production					
	7	6	25	15	8
Agriculture	(-5.4)	(0.0)	(+0.4)	(+2.7)	(0.0)
	30	26	27	38	30
Manufactures	(0.0)	(-0.4)	(-2.6)	(-2.1)	(-0.7)
	63	69	49	47	62
Services	(+0.5)	(+0.1)	(+1.2)	(+0.6)	(+0.5)

Source: GTAP-simulation results

Trade structures after liberalisation

When comparing the import structure in the simulated post Doha scenario with the baseline, some changes can be observed: import of services has become a smaller part of total import for all country groups, whereas the shares of manufactures and agriculture have increased (except in the EU where manufacture share has decreased marginally), see table 4. The largest increase takes place in the share of imports of agriculture in the group of other industrial countries', followed by the group of LDCs and the EU.

⁴⁰ For example, in the 1990's the telecommunications sector was highly regulated in several countries. Since then many countries have opened up for competition in this sector. This implies that the benchmark levels used in this study may be substantial higher than they are today. However, since the reductions are modelled as convergence towards best practice, the actual level is less relevant for the results.

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On the export side the simulation results indicate similar effects: the export of services decrease while the exports of merchandise increase in all regions (also here with the exception of EU for which the share of agriculture decline). This reflects the assumption in this study that real liberalisation efforts are primarily made in manufactures and agriculture, rather than in services, resulting in different impacts on shares of overall trade.

The largest change takes place in the export shares of agriculture in other developing countries (ODCs) which increases with 17 percent, at the cost of services which decreases with about 13 percent. The production structures in industrial countries and developing countries are almost unchanged, after the simulated Doha round. In most country groups there are mainly small changes in the production shares of agriculture and manufactures. In the EU, the share of agriculture in overall production has decreased with almost 5 percent, while it has increased with almost 3 percent in developing countries (ODCs). In the two developing groups, the share of manufactures has declined with 2-3 percent, while the sector's share in the two industrial groups remains rather intact. The share of the services sectors' have increased in all groups, but only marginally, as the largest change is just above 1 percent.

The post Doha policy environment

In the post Doha scenario, import tariffs have been considerably reduced, in regions that are simulated to undertake commitments in this area, in particular tariffs on agricultural goods that enter the EU (table 5). Globally, however, the average tariffs are cut the most for manufactures, by 22 percent. However, it should be added that the reduction rates also include cuts in the direct costs, associated with cumbersome border procedures (trade facilitation).

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Table 5: Tariffs and subsidies, post-Doha, in percent of value (% change within brackets)

Policy instruments	EU27	OIC	LDC	ODC	Global average
Import tariffs (tms)					
Agricultural goods	9.5 (-39.9)	15.5 (-19.3)	27.4 (-2.8)	21.8 (-17.7)	17.0 (-21.7)
Manufactures	3.5 (-20.5)	3.7 (-21.3)	78.1 (-0.8)	10.0 (-17.4)	6.65 (-15.8)
Agricultural export subsidies (txs) (neg value=net tax)					
Agricultural goods	-3.4	-3.2	-3.1	-3.1	-3.2
Agricultural domestic support					
Output subsidies (to) (neg value = net tax)	-1.0	-1.7	-1.8	-2.1	-1.7
Intermediate input subsidies on domestic goods (tfd) (neg value= net subsidy)	0.8	-0.7	0.00	0.1	-0.0
Intermediate input subsidies on imported goods (tfm) (neg value= net subsidy)	0.8	-0.5	0.1	0.0	0.1
Effective tariff equivalents*					
Services	3.6 (-10)	4.4 (-10)	13.1 (-10)	10.2 (-10)	6.7 (-10)

Source: GTAP-simulation results

* The estimated cost of a tariff minus the benchmark cost in the region which represents 'best practice' (simple averages).

In the simulation of the Doha scenario, all the agricultural export subsidies were removed in countries that had commitments in the area. As shown in the table, this reform mainly affected the EU which had an initial high net subsidy. For the other industrial countries and the developing country group (ODCs), the figure is negative, still indicating a net tax on agriculture in the post simulation environment at the highly aggregated level. For the group of other industrial countries (OICs) the net tax has increased as a consequence of the eliminated agricultural subsidies. When looking at the different domestic support rates, only marginal changes can be observed compared to the pre-liberalisation scenario. This is because of the assumption that only a few countries would be affected by the reduction rates in the bound levels. For services imports, effective tariff equivalents are reduced by 10 percent across regions, as specified in the core scenario.

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4 The global economic implications of the round

In the following section, results from the model simulations of the Doha scenarios are presented and analysed.⁴¹ The section is divided into two parts; the first considers the overall global effects, while the second looks closer at consequences on a more disaggregate level. If not otherwise indicated, the results are based on simulations with the *main model*, i.e. the model with imperfect competition and increasing returns to scale. Results from the perfect competition model and the model with a dynamic link are mainly used for reference purposes.⁴² Supporting tables to this section are found either in the text or in annex 1.

Multilateral trade liberalisation can be expected to create trade as well as change trade patterns. Starting with the trade creating effect, the simulation results indicate an increase in global exports with 7 percent in the core scenario (table A6). Results of the scenario with more far-reaching liberalisation show an increase in trade value with 16 percent, while the export growth is 4 percent in the scenario with a lower level of liberalisation. Turning to the simulation results on the effects on trade patterns, the change in trade flows between the different groups can be observed in the table below.⁴³

Table 7.1: Exports by source & destination (% change, value f.o.b.) – core scenario

↓ From → To	EU27	OIC	LDC	ODC	<i>Total exports</i>
EU27	-3	5	1	14	2
OIC	6	6	6	15	9
LDC	1	14	16	10	8
ODC	13	12	11	16	14
Total imports	2	8	7	15	7

Source: GTAP model simulation results.

⁴¹ For an overview of the scenarios, see figure 2 of annex 1.

⁴² Interpretation of the results from these two models therefore lies outside the scope of this paper.

⁴³ For trade patterns of the other scenarios, see tables 7.2-3 in annex 1.

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Looking at the top row of the first column, the results indicate a decline in the intra-EU trade with some 3 percent. This is explained by the eroding “preferences” for intra-EU goods and services as other imports become less expensive as a consequence of the reduced tariffs. However, exports to other industrial countries and especially other developing countries (ODCs) increase. As EU trade is dominated by trade within the Union, the increase only results in a slightly higher overall export figure, as the Doha commitments are implemented. This result is maintained even in the scenario with more far-reaching liberalisation (table A6). Looking at the second row of table 7.1 above, the change in export value for the other industrial countries is positive to all regions, but also especially to the group of developing countries (ODCs).

The trade of developing countries, including the LDCs, grows more than the trade of industrial countries, and their share of world trade increases as more far-reaching liberalisation takes place (tables A7.1-3). In particular, overall trade between developing countries grows considerably. This is the effect of liberalisation of trade in merchandise and services as well as of trade facilitation.⁴⁴

As for the LDCs, their export to the EU27 increases only marginally. Prior to the simulated liberalisation, LDCs had preferential access to the EU market, through the EBA and the Cotonou agreement. This preference is eroded when import barriers for goods and services from other regions are reduced in the simulations.

The simulated effect of the Doha Round on regions’ integration in the global economy is indicated in table 8 below. The opening up of developing countries, excluding the LDCs, is noticeable, changing from a trade/GDP-ratio of 60 percent to 68 percent.

Table 8: Ratio of trade/GDP before and after the core Doha scenario (%)

	Pre-Doha	Post-Doha	% Change
EU27	26	28	9
Other ind. countries	27	30	9
LDCs	35	38	7
Other dev. countries	60	68	14
Total	44	47	7

Source: GTAP model simulation results.

⁴⁴ The increase in overall trade between developing countries should not be sensitive to exceptions from liberalisation in a single issue area. For example, even if flexibility in agricultural liberalisation would result in few real market openings in most developing countries, overall trade (incl. manufactures and services) between developing countries is still likely to expand. This is based on the presumption that developing countries provide real market openings for manufactures and/or services imports from other developing countries and that they reform cumbersome border procedures.

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So far focus has been on the effects of the simulations on trade and production patterns. These changes can be expected to lead to effects on national income.⁴⁵ In the following table the simulation effects on income from the different Doha scenarios are given.

Table 9: National income effects for country groups (million USD and % of initial GDP)

	<i>Less</i>		<i>Core</i>		<i>More</i>		<i>Full</i>	
	mn USD	%	Mn USD	%	mn USD	%	mn USD	%
<i>EU27</i>	15 646	0.2	22 988	0.3	28 667	0.4	65 374	0.8
<i>OIC</i>	22 970	0.1	37 153	0.2	64 842	0.4	171 037	1.0
<i>LDC</i>	2 738	0.7	5 001	1.3	12 066	3.0	35 974	9.0
<i>ODC</i>	29 415	0.5	51 390	0.8	123 740	2.0	267 440	4.4
<i>GLOBAL</i>	70 769	0.2	116 532	0.4	229 314	0.7	539 826	1.8

Source: GTAP-simulation results

The results from a simulation of the core Doha scenario show an increase in global income by 0.4 percent per year. This is equivalent to 117 billion US dollars (in 2001 dollars).⁴⁶ Simulations of the scenario with less far-reaching liberalisation indicate that gains are reduced to 65 percent of the core scenario (0.2% of GDP), whereas with more liberalisation the gains from the core scenario double (0.7% of GDP). In other words, income gains correspond to liberalisation efforts.⁴⁷ For reference, these results can be compared with the gains from a full liberalisation scenario, where global income increases with 1.71 percent, per year (or 539 bn USD). In all three main scenarios, the LDCs benefit the most in relation to initial GDP, followed by other developing countries and finally the industrial countries, including the EU. When more far-reaching liberalisation takes place – including larger commitments for developing countries, including the LDCs – developing countries' part in the global gains increases, and constitutes 60 percent of global gains (table A12).

⁴⁵ Technically, "national income" stands for economic welfare gains, measured as Equivalent variation (EV). EV is a measure of how much more money (in 2001 years mn USD) a consumer would need, in the pre-liberalisation situation to be as well off as in the post liberalisation situation.

⁴⁶ In this report, real national income changes are either expressed as percentage changes in initial GDP, or in 2001 dollars or SEK.

⁴⁷ Looking at single elements, across scenarios, for trade facilitation and services liberalisation, and (very roughly) for non-agricultural market access, gains are proportional to liberalisation efforts.

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Table 10: The economic sources of gains from the Core Doha Scenario simulation (million USD and % of total gains)

<i>The Core Doha Scenario</i>	Resource allocation		Productivity		Terms of Trade		Terms of saving and investment		Total
	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD
<i>EU27</i>	16 995	74	3 163	14	1 683	7	1 147	5	22 988
<i>OIC</i>	30 425	82	7 410	20	-728	-2	46	0	37 153
<i>LDC</i>	4 359	87	506	10	139	3	-3	0	5 001
<i>ODC</i>	51 481	100	2 252,87	4	-1 174	-2	-1 169	-2	51 390
<i>GLOBAL</i>	103 260	89	13 332	11	-79	0	20	0	116 532

Source: GTAP-simulation results

The largest share of the global economic gains can be derived from more efficient allocation of resources, i.e. resources are moved to sectors where they are more productive (table 10, above). This effect accounts for 89 percent of the total global gains in the core scenario. Of these gains, the textiles, clothing and footwear sector (“textiles”) represents 30 to 40 percent, depending on how far-reaching liberalisation takes place (table A10.2).

Another important source of global national income gains is changes in technology/productivity, i.e. less input is needed to produce the same amount of output. This effect represents approximately 11 percent of the global gains. The contribution of this factor in the overall national income effect becomes more important as more liberalisation takes place. The gains from improved technology/productivity are partly due to the pro-competitive effect of trade liberalisation. Liberalisation results in higher competition and better exploitation of economies of scale. This implies lower prices and more variety in consumption as well as in the composition of input used in production, all to the benefit of producers and consumers. The other explanation for these gains is the decrease of the indirect trade barriers to services and goods, which are modelled as reducing the effective price of imports, that is, more imports are made available at the same price.

The third factor that may influence the income effects from liberalisation is the terms-of-trade effect. A positive terms-of-trade effect implies that prices of a region’s export increases in relation to the prices of that region’s import. When simulating the effects of the core Doha round, the EU and the LDC group experience positive terms-of-trade effects, while the groups of other industrial and developing countries are affected negatively. Finally, in the last column, income effects related to changes in the prices of savings and investments are presented. For the EU, this effect represents 5 percent of the overall income gains.

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Table 11.1: National income effects deriving from liberalisation in different country groups (% of total gains)

<i>CORE SCENARIO</i>	Own liberalisation	IC liberalisation (excl. own)	DC and LDC* liberalisation (excl. own)
<i>EU27</i>	28	31	41
<i>OIC</i>	35	29	37
<i>LDC</i>	45	34	21
<i>ODC</i>	50	27	22
<i>Total</i>	<i>41</i>	<i>29</i>	<i>31</i>

Source: GTAP-simulation results

* LDCs are only simulated to make commitments in trade facilitation

It can also be of interest to look closer at the geographical sources of the national income effects, i.e. whose liberalisation benefits whom. As seen in table 11.1, above, the largest gains for developing countries, including the LDCs, derive from own liberalisation. As discussed further on, for most countries domestic liberalisation contributes substantially to a country's gain from the Round.

Table 12.2: National income effects - whose liberalisation benefits whom (% of total global gains), core scenario

Liberalising region <i>Benefiting region</i>	Agriculture	Manufactures	Services	Trade facilitation	Total
IC					
<i>IC</i>	9	12	2	9	32
<i>DC</i>	-1	5	0	9	14
Total	8	17	2	1,8	45
DC					
<i>IC</i>	2	12	0	6	20
<i>DC</i>	6	5	3	22	35
Total	7	17	3	28	55
All					
<i>IC</i>	10	24	2	15	52
<i>DC</i>	5	9	3	31	48
Total	16	34	5	46	100

Source: GTAP-simulation results

Divided into the different negotiation areas, results from the simulation of the core Doha scenario indicate that almost half of the economic gains, 46 percent, derives from trade facilitation (table 12, above). Especially reforms in developing countries (including the LDCs) contribute to these gains, and developing countries gain the most from reforms in this area. The role of trade facilitation for global gains is not surprising considering the substantial costs related to cumbersome border procedure that have

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been estimated by for example the OECD (2003b). The second most important source for national income gains is increased market access for manufactures, representing about a third of all the gains from the simulation.

Gains from agricultural liberalisation come in third place, with 16 percent. Somewhat unexpected, the results indicate that the agricultural liberalisation of industrial countries that is simulated has a negligible effect on national income in developing countries. These results may seem surprising considering agriculture's central role in the negotiations. However, this is on an aggregate level. When looking at a more detailed level, the individual regions or countries show diverging results, as some win and other lose from industrial countries' liberalisation. The outcome for an individual country will to a large extent depend on if a country benefits or loses from changes in prices on agricultural products (net-importer or net-exporter). Also, for developing countries as a group, the share of agriculture in trade in goods has decreased dramatically over the last three decades. Moreover, industrial countries' reductions in domestic and export subsidies is generally benefiting themselves rather than developing countries, as this allows resources in industrial countries to be used more efficiently.⁴⁸ Nevertheless, considering the importance of the agricultural sector for many developing countries and for development and poverty alleviation, these results underline the need for more far-reaching agricultural commitments than in the two scenarios with lower levels of liberalisation. This is necessary in order to realise the potential of agricultural liberalisation to contribute significantly to the gains of developing countries.⁴⁹

Finally, the liberalisation of services only corresponds to 5 percent of the global income gains. This is lower than in most other studies. Besides the fact that rather modest reductions rates are used in this study (because of the high expected rate of binding overhang), this is most likely a consequence of letting the barriers converge towards a benchmark, instead of using zero as an estimate for a liberalised market. Moreover, since most of the services are produced and consumed in the same country, cross-border trade in services only accounts for approximately a quarter of the total trade, as seen in table 2, above.⁵⁰

⁴⁸ The aggregation of many sectors into only a few agricultural sectors is also likely to dampen the overall results from agricultural liberalisation. On the other hand, the omission of so-called flexibilities where tariffs on some products are not reduced is likely to overestimate gains from increased agricultural market access.

⁴⁹ The agricultural sector employs over 60 percent of the population in developing countries, and over 70 percent in LDCs. It is also estimated that 70 percent of the world's poorest people live in rural areas, which makes it central for the alleviation of poverty.

⁵⁰ Only one of the four modes of supply within the area of services liberalisation is explicitly modelled in the GTAP model. Taking into account the value shares of these modes in total services trade, therefore, only approximately a third of the value of the services trade is liberalised in the simulations.

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The size order of the negotiation areas' contribution to national income remains with more far-reaching liberalisation. However, with a lower level of liberalisation, market access for manufactures replaces trade facilitation as the key contributor to global gains. The share of trade facilitation increases with more liberalisation, and the contribution of such reforms to developing countries in particular. However, when interpreting the results it is important to keep in mind that no implementation costs have been modelled in this study. In order for developing countries, and especially LDCs, to be able to implement agreements on trade facilitation, substantial capacity building is required.

By comparing the national income results from simulations with the main model in this study to the model with perfect competition, effects of trade liberalisation on competition can be captured. According to the results in table A13, pro-competitive effects explain almost 50 percent of the global income gains. For the industrial countries, the pro-competitive effect is important, as the gains increase with approximately 100 percent when using the model with imperfect competition rather than a standard perfect competition model. For developing countries, as a group, the pro-competitiveness effect is weak. This is caused by negative pro-competitive effects in China, India and Brazil, that is, contraction in sectors which are modelled to exhibit increasing returns to scale. However, for other developing countries, national income is substantially higher when pro-competitive effects are accounted for. When comparing global gains in the main model with the results from a model with dynamics from capital accumulation, gains triple. The increase for industrial countries (excluding the composite region Rest of the World (ROW)) is approximately 200 percent (depending on how far-reaching liberalisation takes place), and the gains of developing countries increase in a similar proportion.

The disaggregate simulation results

In this section somewhat more detail is provided as regards effects on the country and the sector level. Moreover, some examples of the effects and mechanisms that are initiated as a consequence of the liberalisation process are highlighted. All tables mentioned in this section can be found in Annex 1.

The effects on trade

All regions in this study increase their overall trade as a consequence of the simulated liberalisation scenarios (table A6.1-6.6). But the growth rates vary significantly between regions: the overall export growth ranges from 0.5 percent (Sweden) to 32 percent (India), in the core scenario. For half of the industrial countries the effects on exports are fairly modest compared with the global average. For other industrial countries exports

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grow more than globally. In developing countries, including the LDCs, the rates are generally somewhat higher, and particularly high for China, India and Brazil. The more far-reaching liberalisation, the greater the share of world trade is captured by developing countries, including the LDCs. On sector level, the simulation results indicate that all export sectors expand as a consequence of liberalisation. The largest change takes place in the textiles sector, which in the core scenario experiences an increase in export with as much as 39 percent. This is because the pre-liberalisation average import tariff on textiles is high compared to other manufactured products and, according to the tariff reduction formula of the simulations, high tariffs are cut the most.

Trade in manufactures

In general, *industrial country* exports of manufactures grow rather moderately (tables A6.1-3). For most industrial countries – with the exception of the US and the Rest of the World (ROW) group – the textiles export sector contracts, while the import of textiles increases in all industrial countries.

Developing country exports of manufactures increase considerably more than globally, and across most sectors, with the exception of China. The manufactures trade pattern for China is one of specialisation, primarily exporting more textiles and increasing imports across all sectors. Already in the pre-simulation scenario, China is the most important player on the global textiles market – a market characterised by high integration but exceptionally high tariffs (tables A14.1-2). When the tariffs are lowered, China becomes more competitive, reinforced by the assumption of economies of scale in this sector.⁵¹ Considerable increases in the export of textiles can also be noted for South Korea and India, and more moderate effects in Brazil and the group of LDCs, while other developing countries lose market shares. On average, developing country imports of manufactures grow with some 50 percent more than globally. Across developing countries, imports of machinery as well as motor vehicles and parts (“cars”) increase notably.

Trade in agriculture

Industrial countries show distinctly higher export growth figures in agriculture than in manufactures and services (tables A6.1-3). On a sector level, it is mainly the exports of dairy and processed food industries that increase in the industrial countries. The two exceptions from the rise in overall agricultural exports of industrial countries are the EU26 and Sweden, which experience a decrease. Regarding exports of dairy, European regions deviate from the pattern for other industrial countries. Con-

⁵¹ It can be added that the remarkable expansion in textiles export has been enabled by the removal of the quota-system of the former Agreement on Textiles and Clothing (ATC), implemented in the baseline.

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cerning processed food exports, only the European country groups deviate from the general pattern, as their exports in this sector decline.⁵² Since these sectors are modelled to exhibit economies of scale, liberalisation enables some regions already well established in these sectors to become more competitive.

Agricultural import to industrial countries grows substantially in all three scenarios, but on a sector level, the effects are mixed. Once again, the greatest changes take place in the dairy and processed food sectors. Especially imports of dairy show very diverse results, with substantial increase of imports in Canada and the composite region of Norway, Iceland and Lichtenstein (NOIC), and much slower growth or a decrease in all other industrial countries.

For *developing countries*, apart from the LDCs, agricultural exports grow faster than the global average, and considerably faster than the export of manufactures (with the exception of China, India and the LDCs). Similar to what was noted for the industrial countries, dairy and processed food exports increase the most. As a consequence, developing countries' share of the global market for dairy and processed food increases (table A14.3).

Trade in services

In *industrial countries*, the value of services exports contracts or increases with a few percent (table A6.1-3.). The largest decrease take place in Japan's services export (-4%) whereas the largest increase can be noted in the US (3%) On the import side, most industrial countries' services import increases with a few percent (except the US that experiences a small negative effect on import). The highest increase of services import is in Japan where a 3 percent increase is seen in the core scenario simulation.

For the *developing countries* the export growth of the services sectors is particularly strong in India, but exports increase also in the LDCs and Brazil. In India the export increases strongly in all of the services sectors, in all three scenarios. On a global level, the average change in the export and import of services is below 1 percent in all three scenarios.

⁵² EU26, Sweden, Norway/Iceland/Lichtenstein and Switzerland. This result contrasts with indications in some other studies, where the processed food sector experiences an export expansion.

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Effects on national income

All regions and countries in this study show net profits from the three simulated Doha scenarios.

In relative terms, i.e. national income effect in relation to initial domestic GDP, the largest net gainers in all three scenarios are South Korea and South Africa, followed by the LDCs in two of the scenarios (table A13). As confirmed above, for most countries a substantial part of the income gains can be derived from the country's (or regional group's) own liberalisation (tables A11.1-2). Only two countries do actually lose on own liberalisation, across most scenarios: the US and India. Primarily, this is due to effects on the terms of trade.

It can be added that the effect of liberalisation on national income is affected by which sectors are expanding. For example, the expansion in the services industries of India may not be an entirely positive one, if it is assumed that the services industries exhibit no or low economies of scale.⁵³ In contrast, South African expansion in the other manufactures sector contributes to income gains, as the sector is modelled to exhibit important economies of scale. Still, it should be recognised that although sectoral expansion matters for national income it does not substantially alter the overall outcome for any country in the study.

For *industrial countries*, the core scenario results in below average relative national income gains, but roughly half of the absolute global income gains (table 9 and A12). South Africa and Switzerland stand out, with gains of 0.9 percent of initial GDP for Switzerland and 1.3 percent for South Africa. The US receives the lowest relative national income gain, 0.05 percent. For the US, relative prices on exports decrease compared with import prices, that is, terms of trade deteriorate and considerably reduce overall income gains (table A10.1). The US has comparatively large gains from services and, therefore, more commitments in services liberalisation would have the potential of boosting the overall national income gains for the US (table A19). Also, if we would assume imperfect competition and scale economies in services, gains would tend to be larger. By and large, for industrial countries, real GDP changes resulting from liberalisation mirror national income results (table A15).

Developing countries' relative benefit from liberalisation is more than twice as high as gains on a global level, and constitutes 0.9 percent of their initial GDP (table A13) in the core scenario. Especially South Korea experiences considerable gains (2.3 percent in the core scenario). Also for LDCs, the result is positive; roughly three times the global average. Also the LDCs, which do not participate in other elements than trade facilitation, reap their major gain from their own liberalising efforts by

⁵³ Still, considering other positive effects of trade liberalisation such as improved resource allocation, India experiences substantial overall gains in national income.

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improving border procedures (tables A11.1-2). From a poverty perspective, it can be added that on average the real wage of unskilled labour increases with 1.3 percent globally and with 2.1 percent for developing countries. When looking at the LDCs separately, it can be observed that their real wages for unskilled labour rise considerably less than globally, although the situation improves with more far-reaching liberalisation.⁵⁴

Non-agricultural market access

The single most important component of the core Doha scenario for *industrial countries* is non-agricultural market access -47 percent of total gains, in the core scenario (table A12). However, more far-reaching liberalisation means that trade facilitation gains in importance. Apart from in the scenario with the lowest level of liberalisation, tariff reductions in developing countries are at least as important for the national income gains of industrial countries as is liberalisation in industrial countries themselves. The result is expected. Tariff rates of developing countries are, on average, higher than in industrial countries. Lowering these high tariffs has an important impact on trade with industrial countries.

Developing countries as a group is neither the major winner from industrial, nor from agricultural liberalisation (table A12). However, with more far-reaching liberalisation in manufactures, there is a slight advantage for developing countries, capturing some 53 percent of total gains.

Agricultural liberalisation

Agricultural liberalisation brings important national income gains to *industrial countries* in the simulations, but only comes third in place to contribute to total gains (around 20 percent). In particular, agricultural reforms are positive for Canada, Switzerland and the NOIC group (table A16). More generally, for industrial countries, the share of agriculture in the overall income results diminishes if more far-reaching liberalisation takes place. Among *developing countries*, LDCs lose out from agricultural liberalisation in all scenarios. The negative numbers are partly explained by unfavourable developments of their terms of trade in agriculture and partly by expansion in agricultural sectors that are modelled as perfectly competitive, while at the same time contracting in agricultural sectors with scale economies.⁵⁵

Services liberalisation

Developing countries as a group receive the major share of gains from services reforms and trade facilitation (tables A12 and A16). Another

⁵⁴ It should be noted that this is under the model assumption of constant levels of employment.

⁵⁵ Apart from manufactures sectors, two agricultural sectors are modelled as imperfectly competitive: the dairy and processed food sectors.

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finding is that industrial countries' services liberalisation results in income losses, although minor, for developing countries, and vice versa. The explanation is that as one regions' market access to another region improves, resources are relocated from sectors with scale economies to the services sectors that are not modelled with economies of scale. On the contrary, opening up for services imports makes resources available for use in other parts of the economy. Among *industrial countries*, Switzerland is the main beneficiary of services reform, measured as percent of initial GDP (table A16). Relative to a country's total national income gains, the US benefits the most, across all three scenarios (table A19). In absolute numbers, however, national income increases the most for the EU, in the core scenario.

Trade facilitation

Trade facilitation brings some 29 percent of *industrial countries'* overall national income gains in the core scenario; this despite them already having rather efficient border procedures (see table A12). Most notably, trade facilitation contributes more the more liberalisation takes place, as do services but at a slower pace. In fact, trade facilitation is the key contributor to overall national income gains of industrial countries in the scenario with more far-reaching liberalisation (45 percent), as trade increases with other regions, whose border procedures are improved more in absolute terms. Notably, for the US, trade facilitation is the main source of gains from the round (table A16).

For *developing countries* and for the LDC group, trade facilitation is the key contributor to the national income gains (table A12). In the core scenario and the one with a higher level of liberalisation, this element brings more than 64 percent of the total gains. For India, trade facilitation completely overshadows the gains from services and agricultural liberalisation (table A16). In the core scenario the benefit of the LDC group is actually in the magnitude of overall GDP. The developing country that benefits the least is South Korea, for which agricultural and manufactures liberalisation dominates (table A19).

Considering the two parts of trade facilitation simulated in this study – reducing indirect as well as direct costs of border procedures – some relevant observations can be made. As to the effects of reductions in direct costs, it can be noted that China actually experiences a decline in national income in the core scenario. This is explained by losses in government revenues and reallocation of labour to other sectors. Regarding the income effects of reducing the indirect costs it can be noted that all countries in the aggregation benefit.⁵⁶ In fact, almost all countries reap their major gains of trade facilitation from the reduction of indirect costs.

⁵⁶ Except NOIC that experiences a insignificant loss.

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Indeed, globally, this element constitutes about 70 percent of the total gains from trade facilitation.

A final observation is that without trade facilitation in the round, two countries would actually experience national income losses – India across scenarios and the US in the one with more far-reaching liberalisation. In other words, this indicates the importance of a broad-based round to ensure that there is something in the round for everyone.⁵⁷

5 The pre and post liberalisation Swedish economy

The pre-liberalisation economy

The pre-liberalisation economic environment in Sweden is presented in the following section.⁵⁸ The aggregate results are given in tables in the text, whereas more detailed results can be found in Annex 1.

Table 20.1: The Swedish trade and production, pre-Doha

	IMPORT (% of total value)	EXPORT (% of total value)	PRODUCTION (% of total value)
<i>Agriculture</i>	6 (8)	2 (7)	5 (7)
<i>Manufactures</i>	67 (70)	78 (69)	34 (30)
<i>Services</i>	28 (23)	20 (24)	61 (62)

Source: GTAP-simulation results

Values for the EU27 within brackets.

As seen in table 20.1 below, the Swedish imports of agricultural and manufactured goods constitute a smaller share of the total import value than in other industrial countries (including the EU). Instead, the share of services is somewhat larger than in the other industrial countries, and above the EU average. The sub-sectors with the largest import shares of the total value are: “other industrial goods”, machines; and the business services sector.

The Swedish export of agriculture is less than half the share of the EU average. Also, the export of services represents a slightly smaller share in Sweden than in the rest of EU and the world average. However, the

⁵⁷ Alternatively, with only manufactures and services liberalisation there are four countries that are net losers in one or several of the scenarios.

⁵⁸ Data displayed are based on own calculations of data deriving from the GTAP-database, if not mentioned otherwise. This after having updated the GTAP-database to account for some of the important changes that has taken place since 2001 or are expected before 2015 (for more details, see annex 2).

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Swedish export of services has been growing rapidly since 2001.⁵⁹ Instead, the export share of manufactures is well above the EU average. Looking at a more disaggregate level, the machinery and “other industrial goods” sectors are the ones where most trade takes place, both regarding import and export.

The Swedish production structure is similar to that of the EU average and other industrial countries, though manufactures represent a slightly larger share in the overall production. The largest Swedish manufactures sectors are (when excluding the “other industrial goods” sector): machines; paper products; and medicines and chemicals (medicines) – each contributing to 5-6 percent of total production value.⁶⁰ The agricultural sector that contributes to the largest value share is the composite processed food sector, followed by the pig and poultry sector, as they contribute 1-2 percent each to the overall production value. The most important services sector by far, contributing with about a third of the total production in Sweden, is the aggregate “other services”, which consists of services such as national defence and public administration, but also recreational services.⁶¹ Hence, much of these services are only produced for domestic use, and could therefore be regarded as less important from a trade perspective. On second place comes the distribution sector (approximately 8%), followed by the financial services sector (6%).

It is important to keep in mind that the database reflects what the world economy looked like in 2001. Thus, structural changes that have taken place in Sweden (as well as in other countries) since this year are not accounted for in the database.

The Swedish policy environment

As observed in the previous section, agriculture is relatively less important in the overall value of Swedish trade and production than it is globally. The weighted average import tariff (excluding intra EU-trade) for agricultural goods is well below the global average, but only slightly below the EU average, see table below. Recall that this is a weighted average and therefore contingent on the mixture of products that Sweden imports. Naturally, Sweden applies the same tariffs as the rest of the EU for each product. On a more detailed level, it can be noted that the most protected agricultural products in Sweden are grain and dairy products (table A20.2).

⁵⁹ Swedish services exports increased with 29% between 2001 and 2005 (own calculations based on Statistics Sweden, 2005 and 2006).

⁶⁰ For details on what the different aggregate sectors include see table 1, annex 1.

⁶¹ GTAP sectors 55 and 56.

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Table 20.2a: Agricultural tariffs and subsidies in Sweden, pre-Doha (in % of value), calculated on the basis of Swedish trade flows and production

AGRICULTURE	BORDER MEASURES		DOMESTIC SUPPORT		
	Import tariffs (tms)	Export subsidies (txs)	Production subsidies (to) (neg value=net tax)	Input subsidies on domestics (tfd) (neg value=net subsidy)	Input subsidies on imports (tfm) (neg value=net subsidy)
	15.6 (15.8)	4.15 (3.4)	-3.1 (-1.0)	-0.5(-0.8)	0.4(0.8)

Source: GTAP-simulation results

Note: Values for the EU27 within brackets.

The import tariffs of manufactures are just below the average of the EU, as seen in the table below. On a more detailed level, the highest tariffs can be discerned in the textiles sector, followed by the cars sector.

Table 20.2b: Tariffs on manufactures and tariffs equivalents for services in Sweden, pre-Doha (in % of value), calculated on the basis of Swedish trade flows

MANUFACTURES	SERVICES
Import tariffs (tms)	Effective tariff equivalent
3.2	4.4

Source: GTAP-simulation results

The average effective tariff equivalent (ETE) for services is just above other EU countries and below the average of other industrial countries. In most services sectors, Sweden is close to best practice, and no or small openings will therefore be modelled in these sectors. The sector with the highest initial tariff is the telecommunications sector. This is a bit misleading, as this sector has undergone substantial changes during the last few years.

As seen in table A21.1, the EU is by far the main source for Swedish imports, followed by the US, the group of developing countries (DCs)⁶² and the NOIC group.⁶³

⁶² This aggregate of developing countries includes 21 developing countries and 10 regional groups, see table A1.

⁶³ In the aggregation of this study, NOIC consists of Norway, Iceland and Lichtenstein. Please note that since Sweden joined the EU, in 1995, statistics on Sweden's import may be somewhat biased in favour of imports from the EU. This since the statistics no longer contain information on the actual origin of the imported goods, if the good comes from a 3rd country and enters another EU country only to be re-exported to Sweden.

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Table 21.1a: Main sources of Swedish import, pre-Doha (in % of total sector import)

Source of import share	Agriculture	Manufactures	Services	Total
<i>EU26</i>	76	70	46	64
	3	6	22	10
<i>USA</i>	8	5	12	7
<i>DC group</i>	5	8	2	6
<i>NOIC</i>	1	3	5	3
<i>China</i>				

Source: GTAP-simulation results

On sector level, imports from other EU countries contribute with the largest value share for all the aggregate sectors, but especially for agriculture and manufactures import.⁶⁴ In the services sector, the US is an important source representing over a fifth of the overall services import to Sweden. It can further be noted that the group of developing countries contributes with a larger share of the services sector than in the other sectors. This is also true for China.

Also on the export side, the EU is the most important market for Sweden, as more than half of Swedish export goes to this group. In fact, the five most important export regions for Sweden are the same as on the import side.

Table 21.2b: Main destination for Swedish exports, pre-Doha (in %)

Destination of export	Agriculture	Manufactures	Services	Total
<i>EU26</i>	60	57	46	55
<i>USA</i>	17	12	16	13
<i>DC group</i>	7	9	13	10
<i>NOIC</i>	9	7	3	6
<i>China</i>	1	4	4	4

Source: GTAP-simulation results

It can be of interest to note that almost 90 percent of all agricultural export goes to the three regions: EU26, the US and the NOIC group.

⁶⁴ In annex 1, table 21.2, it can be observed that the Swedish import of agriculture from LDCs is only 0.5 percent, even though there is a zero tariff on imports from LDCs.

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The post liberalisation policy environment

In the agricultural sector the average import tariff has decreased with an average of 42.4 percent, and similar to other EU-countries export subsidies have been removed.⁶⁵ Since no changes to the applied domestic support levels were implemented in the core scenario (for further discussion see annex 2), these levels are unchanged after the simulated Doha Round.

Table 22.1a: Agricultural tariffs and subsidies, post-Doha (% of value), calculated on the basis of Swedish trade flows and production

<i>Agriculture</i>	tms	txs	To	Tfd	tfm
	9.1(-42.4)	-2.7	-3.1	-0.4	0.4

Source: GTAP-simulation results

Note: Percentage change in brackets.

The average import tariffs for manufactures have been reduced with an average of 19 percent.⁶⁶ The effective tariff equivalents for all the services sectors have been reduced with 10 percent.

Table 22.1b: Tariffs on manufactures and tariffs equivalents for services in Sweden, post-Doha (in % of value), calculated on the basis of Swedish trade flows

<i>Manufactures</i>	Import tariff (tms)	Services	Effective tariff equivalent
	2.6 (-18.8)		4 (-10)

Source: GTAP-simulation results

Note: Percentage change within brackets.

The post-liberalisation economy

The trade and production structures in Sweden after the simulated liberalisation scenario can be observed in table A22.2.⁶⁷ Overall, the largest relative changes take place in the agricultural sector, where tariffs are cut the most. However, since this sector only represents a smaller share in trade and production, the absolute changes are rather moderate. Looking at the import side, the largest relative change in manufactures can be observed in the previously highly protected textiles sector (a decrease with about 3 percent). On the export side, the largest relative change takes place in the textiles industry, which experiences a decrease in exports with about 50 percent. However, considering that the textiles industry only contributes with approximately 1.2 percent of the total export value in the pre-Doha scenario, the absolute value change is rather modest. The export in all agricultural sectors contracts, except in the pig and poultry sector which increases. The changes in production shares are largest for the agricultural sector which experiences an overall decrease of 3 per-

⁶⁵ The average mentioned is a trade-weighted estimate, intra-EU trade is not included in this average.

⁶⁶ The average import tariff mentioned is a trade-weighted estimate.

⁶⁷ The core scenario has been used to illustrate the post Doha environment

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cent. Especially the grains sector loses its importance in the overall production value. Of all the sub-sectors, it is the share of the textiles sector that decreases the most (a reduction of about 53%). The largest increase in shares can be found in the cars, wood and the transport services sectors. On an aggregate sector level the services sector increases slightly (0.4%) whereas the shares of agriculture and manufactures decline with 2.2 and 0.6 percent, respectively.

Table 22.2a: The Swedish trade and production, post-Doha

	IMPORT		EXPORT		PRODUCTION	
	Share of total import	% change of value share	Share of total export	% change of value share	Share of total production	% change of value share
<i>Agriculture</i>	6	+3.6	2	-8.3	4	-2.2
<i>Manufactures</i>	67	0.0	79	+0.4	34	-0.6
<i>Services</i>	28	-1.1	19	-1.0	62	+0.5

Source: GTAP-simulation results

6 Economic implications for Sweden

In this section, Doha simulation results for Sweden are examined, starting with more details on the effects on trade and continuing with implications for national income.⁶⁸

Effects on Trade

Overall, Swedish trade is relatively unchanged as a result of the Doha simulations. Sweden is already deeply integrated in the world economy as indicated by the trade/GDP-ratio of 78 percent,⁶⁹ and the simulation of the core Doha scenario does not result in any considerable changes of this ratio. Imports increase the most, with 1.5 percent, while exports expand with 0.5 percent in the core scenario (table A6). This results in a slight deterioration in the Swedish trade balance in all the simulated Doha scenarios. With a higher level of liberalisation, overall Swedish exports and imports can be expected to increase more. In all three scenarios, trade decreases between Sweden and the rest of the enlarged EU, as reduced import tariffs lower the price on imports from third countries. Sweden's export to the rest of the EU contracts with 4 percent in the core scenario (table A7.4-6). However, this is compensated by an increase in exports to developing countries and other industrial countries. Exports increase with approximately 13 percent to developing countries, excluding LDCs, and with 2 percent to other industrial countries. Notably, the simulation results from the core scenario indicates an increase in the Swedish export to China with 38 percent (see table A21.). This rise in exports is primarily due to a substantial increase in the exports of machines and cars (the relative change is largest for the machines sector,

⁶⁸ For an overview of the scenarios, see figure 2 of annex 1.

⁶⁹ Calculations based on data from the reference scenario.

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whereas the change in absolute value is greatest for the cars sector). The expansion in exports to China contributes importantly to a positive export development overall, even though China is not the major export market for Sweden (table A22.2). The pattern is similar on the import side, but the overall change is somewhat more substantial, and imports from the LDCs contract as their preferences are eroded.

Looking at the effects on Swedish exports on a more detailed level, the major relative increase takes place in the pig- and poultry and the wood sectors, while it is in cars and machinery the largest absolute value increase takes place. On the import side, the main increases can be observed in processed foods and textiles. The largest decline of the import value, in absolute terms, derives from the import of business services.

According to the simulation results shown in tables A6.1-3, the Swedish export of manufactures increases with 1-2 percent. The main expanding export sectors are: wood, cars, machinery and other manufactures. The largest contraction takes place in the export sector of textiles. Also on the import side a 1-3 percent overall increase can be noted. This increase is more evenly spread over sectors, though the increase in textiles dominates also on the import side (an increase with approximately 5 percent). In the simulated Doha scenarios Sweden's total export of agricultural products decreases (6-7% depending on the level of liberalisation). This decrease is noted in all agricultural sectors, except in the pig and poultry sector where the export increases rather considerably (up to 20% in the scenario with more far-reaching liberalisation). As a contrast, the total agricultural import increases, with 4-9 percent depending on the level of liberalisation. This increase is seen in practically all sectors and in all scenarios (except for the dairy sector in the scenario with less liberalisation, in which case there is a marginal decrease).⁷⁰

The total Swedish export of services increases slightly (around 1 percent) in all the simulated scenarios. No large changes in export can be noted on the sector level. The largest change on a sector level is taking place in the transport sector that is reduced by 0-2 percent (depending on how far-reaching liberalisation). The overall import of services also increases marginally, with approximately the same rate as the increase in export. On a sector level, only the export of transport services exceeds the average increase.

⁷⁰ Regarding changes in sectoral exports, please note that the data input to the simulations are for 2001, with up-dates only for major occurrences that have taken place, or are expected to take place, until 2015. This implies that other changes post-2001, such as increased productivity in certain sectors, that may affect the outcome of a Doha deal, is not accounted for and this is a limitation of the study.

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Effects on Welfare

Sweden experiences national income gains of 0.2-0.6 percent, per year (equivalent to 0.5-1.2 bn USD or 5.6-12.3 bn SEK), depending on the level of liberalisation (table A13).⁷¹ This is substantially above the average across industrial countries and translates into 110-270 USD (1,200-2,800 SEK) per Swedish household and year.⁷² However, improvements in real wages, for both skilled and unskilled labour, are below the average for industrial countries (table A23).⁷³ About half of the national income gains come from liberalisation in other industrial countries while a fourth of Sweden's income gains can be derived from own liberalisation (A11.2). At the country level, reforms in the US and in Japan matter the most for Sweden, bringing approximately 20 percent of total gains each, in the core scenario. For Sweden, the factor contributing the most to the increase in national income can be derived from more favourable terms of trade, followed closely by improvements in resource allocation (table A10). In the core scenario, prices of Swedish exports of medicines and textiles rise, while the world prices in those sectors decrease (Table A24). These changes explain important parts of the improvements in terms of trade. In contrast to what is observed at the global level, productivity changes in different sectors of the economy affect national income negatively. Mainly, this is due to contraction of some sectors with scale economies such as textiles and medicines, the latter which exhibits considerable economies of scale and is Sweden's fourth largest manufactures sector.

With respect to the four elements of the simulated Doha round, the largest gains by far for Sweden are linked to increased market access for non-agricultural goods, which is 65 percent in the core scenario (table A19). Agricultural liberalisation comes in second place, with a contribution of 20 percent. However, agricultural reforms are surpassed by trade facilitation in the scenario with more far-reaching liberalisation, where 19 percent of overall gains come from trade facilitation. Liberalisation in the services sector contributes the least to the overall income effects in Sweden in all three scenarios and is about 2 percent in the core scenario. The contribution of trade facilitation to the overall Swedish gains may seem unexpected, as Sweden already has border procedures that in this study have been identified as 'best practice'. The explanation is that improved border procedures in other countries benefit Swedish imports and exports. A closer look at the simulation results shows that income gains from global agricultural liberalisation mainly derive from increased market access for these goods (Table A25.1-6), both for Sweden and globally. However, the removal of export subsidies also has an important

⁷¹ National income changes are expressed in percent of initial GDP, if not stated otherwise. On the exchange rate, in 2001, the mean value of 1 USD was 10.326 SEK, according to the Swedish central bank homepage.

⁷² 2004 household data from the Statistics Sweden webpage.

⁷³ The real wages is defined as the nominal wage divided by the consumer price index.

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positive impact for Sweden and the rest of the EU, in contrast to the negative effects experienced in most other countries. Since export subsidies primarily exist in the EU, and have a distorting effect on the allocation of resources, removing them is likely to lead to efficiency gains in the economy. In fact, when only considering the effects from agricultural liberalisation in Sweden, gains mainly come from the removal of agricultural export subsidies, in the core scenario.

A comparison of the standard perfect competition model with the main model of this study⁷⁴ indicates that Sweden benefits much more from the pro-competitive effect of trade liberalisation than is experienced globally. In the core scenario, 70 percent of national income gains are due to this effect, and more liberalisation means an even higher contribution by improved competition. With the dynamics of capital accumulation, the main results are boosted with as much as 50-100 percent (depending on the scenario).

7 Conclusions

In this study the effects of potential outcomes of the WTO Doha trade negotiations on national income and trade have been analysed. A particular focus has been on results for Sweden. The analysis has been performed by applying a computable simulation model of the world economy (GTAP) that is commonly used internationally. Three highly stylised outcomes are simulated: one core scenario, and two scenarios involving more and less far-reaching liberalisation, respectively. The scenarios build upon some important features of a possible outcome that can already be discerned. Four elements are included in all scenarios: non-agricultural market access, agricultural liberalisation, services liberalisation and trade facilitation. None of the scenarios constitute far-reaching services liberalisation. These types of simulations are mainly useful in comparing medium-run effects (approximately 10 years) of the different scenarios and to display and be the basis for discussion of relative, rather than absolute, changes in variables such as national income and trade. As any economic model, the one used in this study provides a simplified picture of the world economy (demand and supply relations). For this reason, the results should be interpreted with great care. One example on abstraction from reality is the assumption that no changes take place in demography or in the endowments of natural resources. Furthermore, countries and sectors are aggregated into a smaller number of regions and sectors. This may affect simulation outcomes by underestimating global gains and conceal diverging results for individual countries or sectors within an aggregate group. Finally, dynamic effects of trade liberalisation

⁷⁴ The main model incorporates features of monopolistic competition and scale economies.

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that are related to capital accumulation and general productivity growth are not incorporated into the main model. National income gains are therefore likely to be considerably underestimated, as indicated by results of the simple dynamic model.

In the core scenario, liberalisation of trade in merchandise and services is simulated, with larger commitments for industrial countries than for developing countries. On a global level, this implies that the weighted average *applied* tariff is estimated to be reduced by 16 percent for manufactures and 22 percent for agricultural goods. (These estimates are weighted on trade flows before and after the simulated Doha Round and should therefore not be confused with other estimates of average tariff reductions which have been weighted on existing trade flows.) For services trade, the core scenario implies that global costs related to services market barriers are reduced with approximately 0.7 percent of the value of the imported service, on average. Furthermore, a new agreement on trade facilitation is simulated to reduce costs of border procedures.⁷⁵ For example, this implies that the average import waiting times in Brazil are modelled to be reduced with some 1-5 days,⁷⁶ for manufactures, depending on how far-reaching facilitation efforts are made. The costs savings of these efforts are assumed to be 0.5-2.6 percent of the value of the traded goods, for manufactures.⁷⁷ In the core scenario, it is assumed that global trade costs arising from border delays are reduced with 0.7 percent of the value of the traded goods, on average. At the same time direct costs are reduced, resulting in a further average cut of 1.1 percent in global trade costs.⁷⁸ The Least Developed Countries (LDCs) do not make any commitments on manufactures, agriculture and services. However, on trade facilitation, LDCs are expected to make commitments.⁷⁹

The simulations of the stylised Doha scenarios indicate potential global income gains of 0.2-0.7 percent (70-230 bn USD) per year, depending on the level of trade liberalisation.⁸⁰ (With dynamics from capital accumulation results are magnified substantially, 0.7-2.5 percent (or 220-770 bn USD). These results may seem somewhat low when compared with the results of similar studies, but they can mainly be explained by more mod-

⁷⁵ It is assumed that countries' costs related to border procedures is reduced and thereby is closing in on the country with the lowest costs. In the core scenario, the reduction is 20% of the difference between their costs and the costs in the country with "best practice".

⁷⁶ From an initial waiting time of 12.4 days.

⁷⁷ To this should be added cost-savings from shorter export waiting times elsewhere and from reductions in fees and formalities when imported.

⁷⁸ Simple averages across countries.

⁷⁹ Developing countries, incl. LDCs, are presumed to receive technical and financial assistance on trade facilitation, as needed.

⁸⁰ Changes in national income are expressed in percent of initial GDP, if not stated otherwise.

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erate scenarios than in other previous work. This is due to more detailed negotiation information being available, which can be drawn upon.

The results from the model simulations indicate that all regional groups in the study would gain from implementing the Doha scenarios if national income effects are looked at. However, if some elements of the Doha agenda are excluded from the simulations, a few turn out to be losers. This indicates that a broad-based round is key to boost global and national income while avoiding or at the least minimising the risk of some countries turning out to be net losers. Finally, it should be noted that even with a broad-based round, if all countries were separate entities in the simulations, a few developing countries might lose. What may be needed therefore, to ensure that every WTO member is better off from trade liberalisation, is assistance to take advantage of new trade opportunities in combination with compensation for eroded preferences and losses of tariff revenues.

Developing countries, including the LDCs, are the major winners of the simulated Doha scenarios. The results from the scenario simulation indicate that gains for developing countries, in proportion to GDP, are twice as large as for industrial countries (for LDCs three times). The developing countries' share in the total gains increases as more far-reaching liberalisation takes place. The largest share of these gains derives from trade facilitation.

Another conclusion is that a "round for free" does not seem to be a valid concept. In other words, countries refraining from making commitments in the round may do so at a price. Trade liberalisation of developing countries benefits these countries the most, and the same applies to industrial countries. Moreover, the simulations underscore the importance of countries' own liberalisation. It is also concluded that countries with the highest trade barriers benefit the most from liberalising trade.

Global trade increases in all scenarios, from 4 percent in the scenario with a lower level of liberalisation to 16 percent in the one with more far-reaching liberalisation. The simulations also indicate that trade between developing countries rises particularly much, and that the developing countries' share of world trade increases with the level of liberalisation. For the EU, however, there is a decrease in intra-regional trade as a consequence of Doha liberalisation, as imports from other regions become less expensive when tariffs are reduced or removed.

Of the four elements of the Doha simulations, trade facilitation is the one that contributes the most to global gains, followed by non-agricultural market access and agricultural liberalisation. According to the simulation results, liberalisation of services has the smallest effect. The size order of the negotiation areas' contribution to national income remains with more

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far-reaching liberalisation. However, with a lower level of liberalisation, market access for manufactures replaces trade facilitation as the key contributor to global gains.

The key role of trade facilitation that is indicated by the simulations is not surprising. First, this is the result of non-trivial commitments being modelled in this area, something which seems reasonable given the progress made in this area of the Doha negotiations. Second, costs of delays in trade caused by cumbersome border procedure are considerable – these costs have been estimated at some 1-15 percent of the value of world trade, and may be still higher for agro-food trade and for developing countries.⁸¹ To this can be added direct costs of border procedures, such as fees and formalities. The result indicates that reform of cumbersome border procedures for trade in manufactures and agricultural goods leads to national income gains for all regions in the study and can play a key role for development. Most gains for developing countries derive from trade facilitation, especially from own reforms but also from reforms in industrial countries. However, also industrial countries gain from trade facilitation, from own as well as from developing countries' reforms. Still, it is, important to keep in mind that only minor adjustment and no implementation costs are modelled in this study. In order for developing countries, and especially LDCs, to be able to implement agreements on trade facilitation, substantial capacity building is required.⁸² Since such reforms also would benefit industrial countries, there are also economic incentives for contributing to the implementation of these reforms.

Industrial countries benefit more from liberalisation of manufactures trade than developing countries do. This is due to the assumption, in this study, of economies of scale in manufactures and processed food sectors. Of the sectors with scale economies that expand, most are located in industrial countries.

On agricultural liberalisation, the simulation results further indicate that agricultural liberalisation in industrial countries has no considerable effect on the national income of developing countries, on an aggregate level. These results may seem surprising considering agriculture's central role in the negotiations. However, this is on an aggregate level. When looking at a more detailed level, the individual regions or countries show diverging results, as some win and other lose from industrial countries' liberalisation. The effects on an individual country or region will be con-

⁸¹ OECD (2003b).

⁸² It can be added that, with respect to trade facilitation, there are a number of reforms that are relatively cheap, easy to implement and that can constitute the first basic steps in improving border procedures (Swedish National Board of Trade, 2003). Two examples of such reform are to limit requirements for duplicate information and to apply new laws only after their publication.

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tingent on the trade patterns, as some products may benefit from industrial countries' liberalisation and others lose. The impact of the price effects on national income, caused by the agricultural liberalisation in industrial countries, will depend on if a country is net-exporter or net-importer of a specific product. In addition, for developing countries as a group, the share of agriculture in trade in goods has dropped dramatically over the last three decades. Nevertheless, considering the importance of the agricultural sector for many developing countries and for development and poverty alleviation, these results underline the need for more far-reaching agricultural commitments. This is necessary in order to realise the potential of agricultural liberalisation to contribute substantially to the gains of developing countries.⁸³

As to the relatively small gains from services liberalisation, it should first be noted that small real market openings for services trade are modelled. Important gains from services liberalisation could be expected if more far-reaching commitments are made. Second, the market access to different countries and sectors is simulated to converge towards best practice, rather than to markets without any trade barriers at all, a difference compared to some previous studies. Third, the small gains in this study are partly attributed to the fact that FDI is not explicitly modelled.

For Sweden, simulation of the Doha scenarios result in real national income gains of 0.2-0.6 (0.5-1.2 bn USD or 5.2-12.3 bn SEK), per year, depending on how far-reaching liberalisation that takes place. This is considerably above the average for industrial countries and translates into 110-270 USD per Swedish household and year. The most important part of these gains derives from non-agricultural market access, followed by liberalisation in the agricultural sector and trade facilitation. Liberalisation in the US and in Japan contributes considerably to the national income result. Sweden is already prior to the Doha Round implementation deeply integrated in the global economy and the post-Doha situation does not constitute major changes in overall production and trade structures. Most importantly, the already small agricultural sector contracts and most agricultural exports decrease, in particular to the rest of the EU. The decrease in trade with the rest of the EU is a general trend, as Doha liberalisation of the EU makes imports from other regions less expensive when tariffs are reduced or removed. On the export side, Sweden's export to developing countries, excluding the LDCs, expands, in particular to the relatively small but increasingly important export market of China.

⁸³ The agricultural sector employs over 60 percent of the population in developing countries, and over 70 percent in LDCs. It is also estimated that 70 percent of the world's poorest people live in rural areas, which makes it central for the alleviation of poverty.

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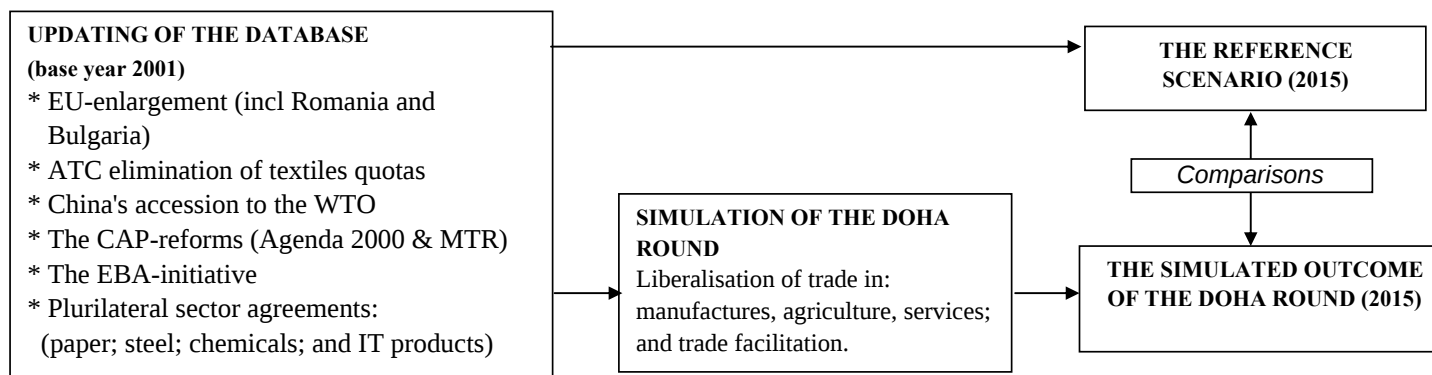
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Figure 1. The implementation process in GTAP



Source: own figure.

Figure 2: Trade liberalisation scenarios

Manufactures

<i>Market access</i> (Swiss formula: $T1=(T0*a)/(T0+a)$.)				
<u>Coeff's:</u>	More	Core	Less	Full
ICs	5	10	15	0
DCs	15	20	30	0
LDCs	-	-	-	0

Nuisance tariffs (3%) removed for ICs in scenarios More and Full.

Services

<i>Market access</i> (Tariff equivalents reduction)				
<u>Convergence ratio:</u>	More	Core	Less	Full
ICs	20%	10%	5%	100%
DCs	20%	10%	5%	100%
LDCs	-	-	-	100%

Trade facilitation

<i>Trade transaction costs related to border protection</i> (Direct and indirect costs)				
<u>Convergence to best practice:</u>				
	More	Core	Less	Full
All countries	50%	20%	10%	100%

Agriculture

More ambitious scenario

Market access

	<i>Tier 1</i>	<i>Tier 2</i>	<i>Tier 3</i>	<i>Tier 4</i>
	0-30%	31-60%	61-90%	>90%
ICs	53%	63%	68%	78%
	0-30%	31-80%	81-130%	>131%
DCs	37%	43%	47%	53%
LDCs	0%	0%	0%	0%

Ceilings

ICs	100%
DCs	150%

Domestic support

	EU	US,JPN	Other regions*
AMS	90%	80%	70%

* Developing countries are assumed to make reductions by 2/3 the rate of industrial countries

Export subsidies

Export subsidies are removed in all regions.

Core scenario

Market access

	<i>Tier 1</i>	<i>Tier 2</i>	<i>Tier 3</i>	<i>Tier 4</i>
	0-30%	31-60%	61-90%	>90%
ICs	43%	53%	58%	68%
	0-30%	31-80%	81-130%	>131%
DCs	30%	37%	40%	47%
LDCs	0%	0%	0%	0%

Ceilings

ICs	NO
DCs	NO

Domestic support

	EU	US,JPN	Other regions
AMS	80%	70%	60%

Export subsidies

Export subsidies are removed in all regions.

Less ambitious scenario

Market access

	Tier 1	Tier 2	Tier 3	Tier 4
	0-30%	31-60%	61-90%	>90%
ICs	35%	45%	50%	60%
	0-30%	31-80%	81-130%	>131%
DCs	23%	30%	33%	40%
LDCs	0%	0%	0%	0%

Ceilings

ICs	NO
DCs	NO

Domestic support

	EU	US,JPN	Other regions
AMS	70%	60%	50%

* Developing countries are assumed to make reductions by 2/3 the rate of industrial countries

Export subsidies

Export subsidies are removed in all regions.

Full liberalisation

Market access

	Tier 1	Tier 2	Tier 3	Tier 4
	0-30%	31-60%	61-90%	>90%
ICs	35%	45%	50%	60%
	0-30%	31-80%	81-130%	>131%
DCs	23%	37%	43%	50%
LDCs	0%	0%	0%	0%

Ceilings

ICs	100%
DCs	150%

Domestic support

	EU	US,JPN	Other regions
AMS	70%	60%	50%

* Developing countries are assumed to make reductions by 2/3 the rate of industrial countries

Export subsidies

Export subsidies are removed in all regions.

Source: own figure, primarily based on negotiation information around the Hong Kong ministerial meeting.

Table 1.1 Regions of the study

Regions of the study	Regions in GTAP database	Regions of the study	Regions in GTAP database
Australia (AUS)	Australia	The Least developed countries (LDC)	Rest of Southeast Asia
Brazil (BRA)	Brazil		Bangladesh
Canada (CAN)	Canada		Madagascar
China (CHN)	China		Uganda
	Hong Kong		Rest of Sub-Saharan Africa
European Union (EU26)	Austria	Developing countries (DCs)	Malawi
	Belgium		Mozambique
	Denmark		Tanzania
	Finland		Zambia
	France		Taiwan
	Germany		Rest of East Asia
	United Kingdom		Indonesia
	Greece		Malaysia
	Ireland		Philippines
	Italy		Singapore
	Luxembourg		Thailand
	Netherlands		Vietnam
	Portugal		Colombia
	Spain		Peru
	Cyprus		Venezuela
	Czech Republic		Rest of Andean Pact
	Hungary		Argentina
	Malta		Sri Lanka
	Poland		Rest of South Asia
	Romania		Mexico
	Slovakia		Chile
	Slovenia		Uruguay
	Estonia		Rest of South America
	Latvia		Central America
	Lithuania		Rest of FTAA
India (IND)	India	Rest of the World (ROW)	Zimbabwe
Japan (JPN)	Japan		Rest of SADC
Rest of WFTA (NOIC)	Norway, Iceland, Liechtenstein		Albania
South Africa (SAF)	South Africa		Rest of South African CU
South Korea (KOR)	South Korea		Rest of Former Soviet Union
Sweden (SWE)	Sweden		Turkey
Switzerland (CHE)	Switzerland		Rest of Middle East
United States (US)	United States		Morocco
			Tunisia
			Rest of North Africa
			Botswana
			Rest of Oceania
			Rest of North America
			Croatia
			Rest of the Caribbean
			Rest of Europé
			Russian Federation
			New Zealand

Table 1.2 Sectors of the study

Sectors of the study	Sectors in GTAP database	Sectors of the study	Sectors in the GTAP database
Grains (GRAINS)	Paddy rice Wheat Cereal grains nec	Iron and steel products (FERROUS)	Ferrous metals
Pig and poultry meat (PPMEAT)	Animal products nec Meat products nec	Motor vehicles and parts (CARS)	Motor vehicles and parts
Dairy products (DAIRY)	Raw milk Dairy products	Machinery and equipment (MACHINES)	Machinery and equipment nec
Processed foods (PFOOD)	Vegetable oils and fats Processed rice Sugar Food products nec Beverages and tobacco products	Textiles (TEXT)	Textiles Wearing apparel Leather products Petroleum, coal products Mineral products nec Metals nec Metal products Electronic equipment Manufactures nec
Other agricultural products (OAGRI)	Vegetables, fruit, nuts Oil seeds Sugar cane, sugar beet Plant-based fibers Crops nec Cattle,sheep,goats,horses Forestry Meat: cattle,sheep,goats,horse	Other industrial products (OIND)	
Extraction industries (EXTR)	Wool, silk-worm cocoons Fishing Coal Oil Gas Minerals nec	Telecommunications (TELE)	Communication
Wood products (WOOD)	Wood products	Financial services (FINANCE)	Financial services nec Insurance
Paper products (PAPER)	Paper products, publishing	Construction (CONSTR)	Construction
Medicine and chemicals (MEDCHE)	Chemical,rubber,plastic prods	Transport services (TRANS)	Transport nec Sea transport Air transport Transport equipment nec
		Distribution services (DISTR)	Trade
		Business services nec (BUSIN)	Business services
		Other services (OSVCS)	Electricity Gas manufacture, distribution Water Recreation and other services PubAdmin/Defence/Health/Educat Dwellings

Table 1.3: Proxies for GTAP-services sectors

GTAP-sector	Proxies
Financial services	Banking services
Distribution services	Distribution services
Construction services	Construction services. A different restrictiveness index has been used (OECD calculations).
Business services	Architectural, legal, accounting and engineering services
Transport services	Air transport services. Maritime (only estimated for the US).
Other services	Cross-border supply of higher education. Electricity sector.

Table 6.1: Exports by source (percent change, value f.o.b.)

<i>LESS LIBERALISATION</i>	<i>Australia</i>	<i>ROW</i>	<i>China</i>	<i>Japan</i>	<i>Korea</i>	<i>DCs</i>	<i>LDCs</i>	<i>India</i>	<i>Canada</i>	<i>USA</i>	<i>Brazil</i>	<i>EU26</i>	<i>Sweden</i>	<i>CHE</i>	<i>NOIC</i>	<i>S. Africa</i>	<i>Total</i>
<i>Agricultural goods</i>	19,8	28,4	13,1	19,3	135,3	20,6	3,5	23,6	14,3	15,8	27,9	-6,4	-8,0	-0,3	13,2	12,0	9,2
Grains	5,7	1,0	48,1	17,1	128,8	15,9	2,5	36,8	10,4	8,9	37,3	-17,5	-35,6	39,0	11,2	4,8	6,0
Pig and poultry meat	6,2	7,1	8,4	17,4	85,2	12,0	5,6	8,5	9,1	23,9	35,1	-5,9	8,8	60,4	-12,6	4,0	5,0
Dairy products	83,5	113,7	27,7	26,4	152,4	29,9	30,5	32,1	41,5	33,3	71,0	-17,2	-16,5	-52,0	-59,8	33,2	7,3
Processed food	28,3	13,0	13,7	22,0	167,2	31,2	9,4	32,3	26,2	18,9	57,1	-2,0	-6,1	9,5	13,9	23,4	14,8
Other agricultural products	5,4	0,3	7,9	3,6	30,4	7,8	0,6	9,7	3,3	12,8	11,4	-9,1	-16,1	-10,9	71,8	-0,9	3,4
<i>Manufactures</i>	0,7	4,9	22,3	10,2	4,8	2,9	5,2	26,6	1,8	5,8	0,4	1,9	0,9	3,1	0,3	8,3	5,2
Extraction industries	0,8	1,3	9,3	10,2	13,9	1,2	2,3	24,8	1,0	2,2	5,6	0,5	-0,2	2,4	0,0	0,0	1,4
Wood products	1,6	-6,4	-3,8	5,0	3,3	2,4	4,6	16,6	0,2	6,8	4,0	2,1	5,0	0,7	0,9	10,0	1,6
Paper products	1,3	2,7	-2,6	2,5	1,8	5,9	4,0	21,9	0,8	5,7	7,7	1,6	-1,1	-1,3	-1,5	4,4	2,2
Medicines & Chemicals	1,3	13,5	-5,3	3,4	13,2	4,4	5,0	14,5	1,4	4,8	2,2	0,6	-2,1	4,6	4,1	7,6	2,6
Iron and steel	5,6	9,1	-12,6	13,4	-22,6	7,8	5,6	11,0	2,2	9,0	3,4	3,1	0,1	-2,9	-9,4	15,1	4,3
Cars	8,9	-19,8	-45,8	47,1	23,7	-1,3	9,8	0,5	6,2	2,1	-20,4	3,7	5,7	-1,7	-1,1	-6,0	9,9
Machinery	-0,8	12,4	-16,6	1,6	-16,2	6,9	-1,0	26,5	2,1	8,4	3,0	3,2	2,6	5,6	1,2	9,8	3,1
Textiles, clothing & shoes	-24,7	14,7	83,0	-17,7	51,6	-4,6	15,9	42,2	-21,0	4,9	5,2	-3,6	-36,5	-5,3	-13,4	-7,0	25,7
Other manufactures	0,4	1,1	-7,2	-0,7	-9,3	4,6	1,7	17,3	0,5	5,3	2,2	1,9	0,7	-1,1	1,4	13,6	1,5
<i>Services</i>	-1,6	-1,6	-2,7	-2,9	-6,5	-0,1	1,0	9,2	0,9	2,0	1,5	0,6	-0,2	-0,7	-1,0	2,1	0,2
Telecommunications	-0,4	-0,9	-2,4	-1,5	-5,0	0,7	1,8	9,4	1,7	2,7	2,0	0,4	-0,1	0,1	0,1	1,5	0,6
Financial services	-1,3	-1,6	-2,5	-2,3	-6,6	0,0	0,9	8,8	1,0	1,8	1,5	0,6	0,0	-1,0	-0,7	0,6	0,4
Construction services	-0,7	-1,0	-4,3	-1,9	-6,4	0,8	1,2	9,2	1,6	2,3	2,0	1,2	0,4	0,0	-0,1	3,4	0,5
Transport services	-2,2	-1,8	-5,1	-3,7	-7,4	-0,1	1,1	12,8	1,0	2,5	2,3	0,7	-0,4	-0,7	-1,5	3,3	0,1
Distribution services	-0,8	-0,9	-1,7	-1,7	-0,8	0,3	1,4	8,4	1,6	1,5	1,7	1,0	0,4	0,0	-0,4	1,4	0,0
Business services	-1,4	-1,7	-2,5	-2,5	-6,3	-0,4	0,5	7,9	0,5	1,4	0,7	0,3	-0,2	-0,8	-0,2	1,3	0,2
Other services	-1,4	-1,5	-3,2	-2,4	-5,7	-0,2	0,8	9,2	0,8	2,2	1,1	0,4	-0,4	-0,8	-0,9	0,6	0,6
<i>Total</i>	4,3	5,4	16,6	8,6	4,8	4,0	4,2	22,5	2,6	5,3	8,4	1,0	0,5	2,0	0,7	8,0	4,4

Table 6.2: Exports by source (percent change, value fob)

CORE SCENARIO	Australia	ROW	China	Japan	Korea	DCs	LDCs	India	Canada	USA	Brazil	EU26	Sweden	CHE	NOIC	S. Africa	Total
<i>Agricultural goods</i>	33,9	43,4	18,1	31,7	189,4	30,7	9,4	34,2	18,3	23,1	43,1	-6,0	-6,6	8,4	19,8	24,5	15,3
Grains	8,6	2,3	63,9	31,1	171,9	23,0	9,9	49,6	16,2	12,8	34,1	-18,2	-35,6	44,9	17,0	-3,5	10,0
Pig and poultry meat	7,3	7,9	2,0	28,3	115,1	17,2	13,8	8,9	14,6	34,9	47,9	-5,6	14,3	76,6	-9,0	6,2	8,1
Dairy products	131,4	173,6	41,7	61,6	204,8	46,4	45,2	46,3	23,5	65,1	111,1	-16,1	-16,8	-44,1	-52,5	45,2	19,1
Processed food	59,8	20,1	23,9	34,8	236,4	46,9	20,6	49,0	33,1	29,1	90,8	-0,7	-4,9	19,5	19,4	38,7	23,8
Other agricultural products	5,9	0,8	8,7	7,1	35,7	11,2	4,0	12,3	3,7	16,9	18,4	-11,1	-17,8	-9,8	102,5	12,6	5,5
<i>Manufactures</i>	0,9	9,5	34,9	15,8	8,8	6,9	9,0	38,4	3,6	9,2	3,7	2,8	1,0	4,7	0,5	12,6	8,6
Extraction industries	0,8	3,5	14,8	15,7	19,5	2,7	4,7	39,2	1,5	4,4	11,9	0,3	-0,6	3,4	-0,2	2,0	2,9
Wood products	2,8	-6,9	-2,7	11,8	8,0	4,6	11,9	27,2	0,3	12,9	11,8	4,7	5,6	1,4	2,7	13,4	3,8
Paper products	4,1	5,9	-1,8	5,3	5,2	11,7	10,3	30,8	1,5	10,0	17,7	2,6	-1,5	-1,3	-1,4	5,9	4,2
Medicines & Chemicals	3,6	18,9	-7,3	6,1	21,3	9,1	9,0	22,4	1,7	7,5	6,4	1,4	-3,6	6,8	5,4	7,9	4,5
Iron and steel	8,1	14,1	-17,9	23,1	-33,6	17,0	6,5	17,6	3,7	14,5	11,6	4,2	0,0	-3,9	-9,9	20,9	7,6
Cars	7,6	-21,0	-67,9	67,7	27,9	3,4	16,3	7,9	12,8	4,9	-33,6	6,2	7,9	-4,1	-1,3	8,1	15,5
Machinery	-1,9	15,1	-23,4	4,4	-21,0	19,4	1,6	39,8	3,1	12,8	9,4	4,8	3,5	9,1	2,9	9,9	5,9
Textiles, clothing & shoes	-39,0	37,8	126,8	-22,2	84,0	-12,1	22,8	57,7	-28,7	6,8	9,5	-6,6	-49,7	-11,0	-16,1	-13,0	38,7
Other manufactures	1,3	3,8	-9,8	-0,7	-12,0	10,1	5,2	27,1	0,4	8,1	6,6	2,2	0,6	-2,1	2,0	19,3	3,1
<i>Services</i>	-2,1	-2,6	-3,5	-3,9	-9,2	0,2	2,9	12,3	1,1	3,3	4,0	0,7	-0,3	-1,3	-1,6	1,8	0,4
Telecommunications	0,1	-1,4	-2,7	-1,4	-6,7	1,7	4,2	12,8	2,7	4,6	4,7	0,3	-0,2	0,4	0,6	1,7	1,1
Financial services	-1,6	-2,8	-2,9	-2,9	-9,2	0,3	2,7	11,7	1,5	3,0	3,7	1,0	0,3	-1,7	-1,0	0,3	0,8
Construction services	-0,9	-1,4	-5,9	-2,5	-9,1	1,7	2,9	12,7	2,2	3,5	4,3	1,6	0,5	-0,3	-0,4	4,2	0,8
Transport services	-3,2	-2,8	-6,8	-5,0	-10,4	0,4	3,4	17,2	1,1	3,8	5,7	0,8	-0,8	-1,5	-2,6	3,1	0,3
Distribution services	-1,1	-1,8	-2,1	-2,1	-2,2	0,6	3,2	10,9	2,1	2,8	3,8	1,2	0,5	-0,4	-0,7	1,0	0,1
Business services	-1,9	-2,8	-3,1	-3,2	-8,9	-0,3	1,8	10,5	0,6	2,3	2,3	0,3	-0,2	-1,4	-0,2	1,3	0,3
Other services	-1,7	-2,2	-4,0	-3,0	-8,0	0,0	2,5	12,2	1,1	3,6	3,1	0,4	-0,5	-1,3	-1,4	0,2	1,0
<i>Total</i>	7,2	9,9	26,2	13,4	8,5	7,9	8,0	32,3	4,2	8,3	14,9	1,7	0,5	3,3	1,0	12,5	7,3

Table 6.3: Exports by source (percent change, value fob)

<i>MORE LIBERALISATION</i>	<i>Australia</i>	<i>ROW</i>	<i>China</i>	<i>Japan</i>	<i>Korea</i>	<i>DCs</i>	<i>LDCs</i>	<i>India</i>	<i>Canada</i>	<i>USA</i>	<i>Brazil</i>	<i>EU26</i>	<i>Sweden</i>	<i>CHE</i>	<i>NOIC</i>	<i>S. Africa</i>	<i>Total</i>
<i>Agricultural goods</i>	69,4	67,1	37,6	65,1	342,7	55,3	31,5	55,6	31,5	42,0	83,6	-3,5	-6,1	24,4	41,8	48,8	31,3
Grains	9,2	8,3	87,3	69,0	250,8	42,8	39,8	70,8	29,5	18,2	77,8	-17,6	-34,3	56,9	35,1	1,5	19,6
Pig and poultry meat	10,6	6,9	-2,3	57,4	157,8	29,7	40,0	10,0	25,3	54,5	70,9	-4,6	22,7	107,2	-1,8	14,3	14,7
Dairy products	248,7	276,5	89,0	100,6	273,7	90,4	100,4	78,3	7,1	129,7	193,1	-13,3	-19,6	-33,2	-44,7	91,3	43,6
Processed food	148,7	28,2	58,4	69,2	437,4	85,7	53,6	83,4	56,9	66,0	191,8	4,6	-5,5	38,2	40,9	82,7	49,3
Other agricultural products	5,0	1,6	15,7	16,4	46,5	17,9	20,8	17,6	7,0	24,3	30,0	-14,0	-21,9	-5,6	162,7	16,7	10,1
<i>Manufactures</i>	4,0	21,3	60,6	39,9	19,1	18,3	21,9	56,3	3,7	28,3	16,0	5,2	1,8	18,5	2,9	22,8	18,9
Extraction industries	3,7	8,7	37,4	61,7	10,7	8,1	13,3	66,3	3,1	18,3	36,3	0,8	-1,7	20,4	1,3	12,9	8,3
Wood products	28,8	10,5	22,2	20,2	26,2	14,1	51,3	51,9	8,5	36,3	56,3	9,5	3,1	5,3	47,1	26,4	14,9
Paper products	24,7	4,5	1,8	14,5	13,4	24,4	28,3	45,0	9,1	23,5	39,8	7,5	-2,5	-9,6	0,0	11,7	11,0
Medicines & Chemicals	11,4	31,2	-9,6	15,5	43,1	18,1	20,5	37,2	2,4	21,4	19,2	5,9	-4,9	2,0	10,4	6,5	11,2
Iron and steel	8,7	25,1	-24,9	51,5	-51,7	29,3	-10,0	27,8	5,8	34,0	22,8	10,2	-0,1	-11,3	-16,4	30,3	16,2
Cars	-16,6	-39,3	-90,5	143,0	22,0	-9,7	24,0	9,8	7,7	6,4	-48,6	11,8	14,7	-7,2	3,0	10,0	27,9
Machinery	0,6	35,6	-29,4	18,7	-26,9	48,0	3,8	58,7	6,3	36,6	18,4	7,9	5,3	55,7	16,2	7,5	17,2
Textiles, clothing & shoes	-43,2	46,5	194,5	-24,4	113,6	-25,8	51,5	78,0	-34,2	11,6	20,8	-10,1	-68,5	-24,1	-27,2	-18,1	57,1
Other manufactures	7,4	18,3	-2,6	6,5	0,3	30,1	7,6	43,7	-3,6	33,5	21,4	0,8	1,2	-13,3	-0,7	37,6	12,8
<i>Services</i>	-4,2	-7,9	-5,6	-5,8	-14,6	-2,9	6,1	12,8	3,1	7,2	4,9	2,0	-0,6	-3,3	-2,7	-0,8	0,9
Telecommunications	0,5	-5,6	-4,2	-1,4	-10,8	0,1	8,7	15,3	6,4	9,7	6,9	1,3	-0,4	-1,0	1,7	0,0	2,0
Financial services	-2,9	-8,2	-4,8	-4,4	-15,0	-2,0	5,7	12,9	4,4	6,4	4,8	2,8	0,9	-5,5	-1,2	-2,3	1,7
Construction services	-2,1	-5,3	-9,2	-3,9	-13,9	0,5	5,6	15,8	4,6	7,0	6,3	3,3	0,4	0,4	-0,5	5,5	1,5
Transport services	-6,3	-8,6	-11,1	-7,7	-15,7	-3,4	7,2	17,7	2,9	8,3	7,5	2,3	-1,7	0,2	-4,5	0,4	0,6
Distribution services	-2,0	-6,5	-3,2	-2,6	-5,9	-2,0	6,7	11,5	5,1	6,7	5,1	3,1	0,9	-3,4	-0,8	-1,7	0,3
Business services	-3,6	-8,0	-5,6	-4,9	-14,9	-3,4	3,8	11,0	2,2	4,9	2,1	1,2	-0,5	-4,1	-0,1	-0,8	0,5
Other services	-3,3	-7,4	-6,4	-3,9	-13,4	-3,0	5,7	12,7	3,4	7,7	3,6	1,6	-1,1	-4,5	-2,2	-2,4	2,0
<i>Total</i>	16,1	19,9	45,7	34,2	18,3	18,1	21,1	46,9	5,6	22,6	33,2	3,8	1,1	13,2	3,7	22,7	15,9

Table 6.4: Imports by destination (percent change, value c.i.f.)

<i>LESS LIBERALISATION</i>	<i>Australia</i>	<i>ROW</i>	<i>China</i>	<i>Japan</i>	<i>Korea</i>	<i>DCs</i>	<i>LDCs</i>	<i>India</i>	<i>Canada</i>	<i>USA</i>	<i>Brazil</i>	<i>EU26</i>	<i>Sweden</i>	<i>CHE</i>	<i>NOIC</i>	<i>S. Africa</i>	<i>Total</i>
<i>Agricultural goods</i>	0,0	20,7	50,4	9,8	-4,8	5,0	3,4	0,9	25,1	6,6	8,6	5,4	3,6	15,5	17,4	0,6	9,3
Grains	14,3	-4,6	36,8	3,7	52,8	4,9	1,2	23,5	-1,9	2,2	14,2	-2,2	6,1	17,6	59,7	0,0	6,0
Pig and poultry meat	2,5	5,3	24,5	5,4	13,2	8,6	1,2	0,0	21,4	0,1	10,3	-0,1	1,5	44,9	41,7	4,1	5,1
Dairy products	-18,3	-33,5	53,9	38,7	28,8	-10,0	-24,2	-24,8	682,9	-24,1	-3,3	8,1	-0,8	-42,9	80,7	-37,1	7,2
Processed food	0,2	47,1	147,2	14,2	-46,2	8,2	7,9	-1,0	15,0	13,2	4,4	10,8	5,6	19,8	13,8	1,5	15,1
Other agricultural products	4,7	2,2	18,7	3,7	13,3	3,6	1,2	3,2	1,3	0,5	9,1	-0,1	1,7	9,9	13,6	0,5	3,3
<i>Manufactures</i>	5,5	9,0	21,5	12,4	7,3	5,4	6,0	31,5	2,1	4,3	12,2	1,2	1,1	1,7	1,9	14,0	5,2
Extraction industries	3,4	3,4	-1,9	0,2	-5,2	7,6	9,9	3,0	2,2	1,7	2,1	0,6	0,3	-1,7	2,8	12,6	1,4
Wood products	2,4	22,6	12,1	5,1	6,1	7,5	6,4	55,5	1,4	-2,2	38,2	-0,1	0,2	-1,6	-0,3	6,5	1,6
Paper products	3,2	13,6	12,8	9,8	11,5	4,9	5,6	15,2	1,1	-1,7	5,5	-0,3	1,5	3,3	3,2	13,4	2,3
Medicines & Chemicals	2,1	-0,2	25,8	7,1	8,0	1,8	3,8	38,7	-0,9	0,2	2,6	-0,1	0,2	0,6	0,0	-0,5	2,7
Iron and steel	1,3	1,7	22,8	-5,0	27,6	2,7	4,1	116,1	1,0	-2,6	7,7	0,1	0,3	4,5	0,4	-4,6	4,3
Cars	6,5	86,3	151,5	-10,1	17,6	18,7	7,9	286,1	1,8	5,4	85,6	2,0	2,0	6,4	2,9	54,0	10,0
Machinery	2,7	1,2	35,6	7,9	15,4	1,1	1,7	39,2	0,4	-2,0	5,2	0,3	0,7	1,0	1,9	-1,0	3,1
Textiles, clothing & shoes	38,3	21,9	18,3	75,8	13,4	27,8	15,6	109,3	27,9	42,8	39,3	9,2	3,9	1,5	5,6	92,5	26,2
Other manufactures	1,7	5,0	6,8	5,7	5,4	1,6	5,3	21,1	0,6	-1,8	4,0	0,1	1,3	1,8	1,7	-2,9	1,5
<i>Services</i>	1,1	1,3	2,0	1,9	2,0	0,6	0,1	-2,4	0,1	-0,9	-4,0	0,0	0,4	0,7	1,0	0,4	0,2
Telecommunications	0,7	1,2	3,4	1,9	3,9	1,0	0,0	-3,1	0,5	0,0	-0,6	0,2	-0,4	1,7	0,6	0,7	0,6
Financial services	1,5	1,6	3,0	1,8	6,8	1,4	-0,3	-2,7	-0,1	-1,0	-0,9	-0,2	0,0	0,9	1,1	1,1	0,4
Construction services	1,2	4,7	2,8	1,9	5,9	0,4	-0,3	-4,1	-0,2	-1,1	-0,1	-0,4	0,2	0,6	0,7	-0,9	0,5
Transport services	1,1	1,6	2,1	2,0	1,7	0,4	0,1	-2,7	0,1	-0,8	-10,8	0,1	1,2	0,3	1,3	0,0	0,1
Distribution services	0,9	-0,5	1,6	1,7	2,4	-0,2	-0,4	-4,3	-0,6	-1,5	-0,6	-0,2	-0,3	0,7	-0,5	0,2	0,0
Business services	0,7	0,9	0,7	1,7	0,7	0,5	0,1	-0,7	0,2	-0,9	-0,1	0,0	0,1	1,0	0,3	-0,7	0,2
Other services	1,3	1,9	3,2	2,3	5,8	1,3	0,3	-4,8	0,2	-0,9	0,1	0,1	0,4	1,4	1,4	1,5	0,6
<i>Total</i>	4,4	8,4	20,0	9,8	5,5	4,4	3,6	22,3	3,0	3,6	7,7	1,2	1,0	2,3	2,3	10,8	4,5

Table 6.5: Imports by destination (percent change, value cif)

CORE SCENARIO	Australia	ROW	China	Japan	Korea	DCs	LDCs	India	Canada	USA	Brazil	EU26	Sweden	CHE	NOIC	S. Africa	Total
<i>Agricultural goods</i>	2,1	32,0	70,4	20,8	2,2	11,5	11,4	3,5	38,0	10,5	16,4	8,2	5,0	22,7	29,4	8,4	15,5
Grains	28,3	-4,4	49,8	14,2	68,6	8,4	2,8	36,6	-2,6	4,7	22,5	-2,2	9,6	21,6	78,6	4,7	10,1
Pig and poultry meat	5,3	11,6	37,6	9,0	23,7	13,2	4,8	2,3	26,9	0,7	17,1	0,1	2,1	55,6	59,2	8,7	8,2
Dairy products	-17,1	-31,7	92,8	87,9	61,9	1,2	-17,6	-16,3	1094,2	-16,7	8,9	12,1	0,4	-28,1	173,7	-30,3	19,1
Processed food	1,7	67,0	197,1	31,2	-45,8	18,1	19,4	1,0	20,9	19,3	12,1	15,8	7,7	28,7	26,3	11,6	24,3
Other agricultural products	9,0	6,1	28,0	5,1	21,2	5,4	3,3	6,3	1,5	1,4	15,9	0,3	2,2	12,9	18,8	5,0	5,4
<i>Manufactures</i>	9,3	16,2	34,8	18,8	12,3	10,5	9,8	44,9	3,6	6,7	21,4	2,0	1,5	2,9	2,9	21,2	8,7
Extraction industries	5,0	14,3	-2,1	-0,1	-7,6	16,6	20,0	6,9	3,3	2,1	5,6	0,5	0,2	-2,6	4,5	20,3	2,9
Wood products	4,4	31,2	20,4	8,7	11,8	22,6	10,4	73,3	3,4	-2,6	63,7	0,2	0,5	-2,6	0,0	23,0	4,0
Paper products	5,3	20,4	21,8	16,5	18,7	9,4	9,5	34,9	2,8	-2,2	10,0	-0,3	2,0	5,5	5,7	28,0	4,3
Medicines & Chemicals	3,4	7,7	39,8	11,4	12,5	2,9	6,3	55,7	-0,5	0,4	5,2	0,0	0,5	1,3	0,5	4,2	4,6
Iron and steel	6,4	4,5	38,4	-6,1	46,0	5,5	7,1	161,2	2,6	-2,6	18,3	0,5	0,4	7,1	0,2	1,3	7,7
Cars	17,5	112,8	217,8	-10,4	31,8	32,5	14,0	385,8	3,8	9,1	136,5	3,1	2,9	10,9	4,7	66,7	15,6
Machinery	4,5	9,9	59,0	13,7	24,2	1,6	2,4	53,5	0,9	-1,1	9,9	0,8	0,9	1,8	3,2	4,1	5,8
Textiles, clothing & shoes	53,1	31,4	32,8	104,1	27,8	56,1	24,4	165,0	36,1	57,5	89,0	13,7	4,9	2,4	5,2	113,9	39,5
Other manufactures	3,1	6,9	11,7	10,7	8,4	3,3	9,1	28,9	1,7	-1,5	7,0	0,8	1,8	3,0	3,1	-0,7	3,1
<i>Services</i>	1,6	2,2	2,8	2,7	3,1	1,1	-0,3	-2,9	0,4	-1,3	-6,9	0,1	0,6	1,4	1,6	1,1	0,4
Telecommunications	1,1	2,3	5,3	2,8	5,6	2,0	-0,5	-3,9	1,3	0,4	-1,2	0,4	-0,8	3,2	0,9	2,0	1,1
Financial services	2,3	2,8	4,6	2,7	10,7	2,8	-1,1	-2,2	0,0	-1,6	-1,9	-0,2	0,1	1,5	1,9	2,4	0,8
Construction services	1,8	7,3	4,1	2,7	8,7	0,6	-1,1	-5,2	0,0	-1,6	-0,8	-0,4	0,3	1,2	1,1	-0,8	0,8
Transport services	1,7	2,6	2,9	3,0	2,6	0,7	-0,1	-3,3	0,4	-1,2	-17,6	0,2	2,0	0,7	2,1	0,4	0,2
Distribution services	1,3	0,2	2,2	2,3	4,1	-0,2	-1,2	-5,2	-0,6	-2,1	-1,6	-0,2	-0,4	1,3	-0,4	1,0	0,1
Business services	1,0	1,5	0,9	2,3	1,1	1,0	-0,2	-0,9	0,6	-1,3	-0,9	0,1	0,1	1,6	0,5	-0,4	0,3
Other services	1,9	3,0	4,8	3,3	8,8	2,2	0,0	-5,7	0,5	-1,3	-0,4	0,3	0,6	2,6	2,3	2,9	1,0
<i>Total</i>	7,4	14,7	31,6	15,4	9,8	8,7	6,8	32,1	4,9	5,5	13,6	2,0	1,5	3,7	3,8	16,9	7,4

Table 6.6: Imports by destination (percent change, value cif)

<i>MORE LIBERALISATION</i>	<i>Australia</i>	<i>ROW</i>	<i>China</i>	<i>Japan</i>	<i>Korea</i>	<i>DCs</i>	<i>LDCs</i>	<i>India</i>	<i>Canada</i>	<i>USA</i>	<i>Brazil</i>	<i>EU26</i>	<i>Sweden</i>	<i>CHE</i>	<i>NOIC</i>	<i>S. Africa</i>	<i>Total</i>
<i>Agricultural goods</i>	7,6	57,4	122,0	56,7	13,9	36,1	41,2	31,7	53,8	16,7	48,1	12,6	8,6	35,3	50,0	31,7	31,6
Grains	67,6	-5,8	63,5	26,9	99,6	19,7	8,9	68,3	1,0	11,5	52,8	-1,7	10,9	26,9	111,6	18,4	19,8
Pig and poultry meat	14,0	22,7	67,0	17,0	30,5	27,9	18,1	13,0	35,7	2,3	41,3	0,3	3,5	72,3	92,2	20,8	14,9
Dairy products	-16,4	-15,2	192,3	187,0	130,3	40,4	3,9	25,3	1560,4	-4,7	61,3	18,2	5,1	2,1	393,7	-9,3	43,8
Processed food	5,5	112,8	351,6	95,2	-42,2	57,3	62,2	48,8	28,5	28,5	49,8	23,8	13,2	44,7	46,0	43,3	50,3
Other agricultural products	21,1	12,4	44,1	7,1	33,0	12,8	13,1	16,8	3,2	3,8	39,1	1,1	3,2	17,9	27,5	14,7	9,9
<i>Manufactures</i>	20,8	33,6	60,8	48,3	25,8	22,3	21,6	62,4	5,1	18,8	44,5	5,3	3,4	15,7	11,2	36,1	19,1
Extraction industries	9,4	36,6	4,0	-0,3	-4,7	44,5	51,6	11,1	2,3	5,2	17,7	0,4	-0,1	-18,5	15,5	51,2	8,4
Wood products	15,6	51,3	35,5	41,8	23,3	59,2	23,9	94,0	4,8	7,2	110,1	3,1	3,5	-18,3	4,1	58,8	15,3
Paper products	12,5	53,1	45,1	35,8	38,5	26,6	24,4	68,6	3,3	-0,8	39,9	-0,9	5,0	24,4	27,7	63,3	11,3
Medicines & Chemicals	8,7	17,3	67,1	40,5	20,7	10,2	15,3	72,3	-0,2	10,4	18,7	0,3	2,1	8,9	2,5	18,4	11,3
Iron and steel	25,2	24,0	76,8	-7,4	87,8	20,5	15,5	215,8	4,0	-5,4	69,6	-1,2	0,4	28,5	-2,3	29,7	16,5
Cars	52,0	174,9	265,4	-13,5	82,8	51,1	41,1	505,0	2,8	31,5	197,8	4,9	5,4	33,1	7,6	81,1	28,3
Machinery	11,7	20,0	108,0	56,0	49,3	6,3	4,6	74,4	0,2	14,1	29,6	5,3	2,5	6,1	12,3	16,3	17,3
Textiles, clothing & shoes	65,8	54,0	61,3	145,4	62,9	94,0	40,2	241,5	44,1	74,5	172,6	19,8	6,0	5,9	12,0	136,2	58,4
Other manufactures	12,5	22,0	23,9	51,1	13,6	9,7	24,0	41,3	7,6	6,7	23,2	6,7	4,7	27,4	15,4	3,0	12,9
<i>Services</i>	2,9	6,2	5,3	4,3	6,6	4,0	-0,5	-2,2	-0,4	-2,9	-9,2	-0,4	1,1	3,3	3,1	3,9	0,9
Telecommunications	2,1	6,2	10,2	4,7	9,5	6,1	-1,1	-3,7	1,0	0,3	-2,1	0,2	-1,7	7,2	1,6	5,9	2,0
Financial services	4,4	7,6	8,6	4,5	19,4	7,4	-2,2	1,0	-0,8	-3,6	-1,6	-0,9	0,2	4,0	3,5	6,5	1,7
Construction services	3,4	17,4	7,1	4,3	14,1	3,0	-1,6	-4,3	-0,8	-3,6	-0,1	-1,3	0,6	1,9	1,7	0,4	1,5
Transport services	3,1	6,6	5,4	4,8	5,1	2,8	-0,2	-2,5	-0,1	-2,7	-25,2	0,0	4,0	0,9	4,3	2,2	0,6
Distribution services	2,4	3,5	3,9	3,2	8,4	2,1	-2,6	-4,4	-2,1	-4,5	-1,5	-1,1	-0,8	4,2	-2,6	4,0	0,3
Business services	1,8	4,1	1,9	3,6	4,0	3,6	-0,4	-0,8	-0,2	-3,0	-0,1	-0,6	0,1	6,7	0,8	1,5	0,5
Other services	3,5	8,3	9,0	5,4	15,9	6,6	0,2	-4,3	-0,5	-3,1	0,6	-0,2	1,2	5,7	4,3	7,4	2,0
<i>Total</i>	16,4	30,0	55,2	39,2	21,3	19,7	17,7	46,7	6,7	15,1	30,3	4,6	3,1	14,6	10,0	30,3	16,2

Source: Own GTAP simulation results.

Table 7.1: Export by source & destination (% change
CORE SCENARIO

↓ From → To	EU27	OIC	LDC	ODC	Total exports
EU27	-2,6	4,5	1,3	13,9	1,6
OIC	5,8	5,8	5,5	14,5	8,6
LDC	0,5	13,8	15,6	10,0	8,0
ODC	13,0	12,4	11,4	15,7	13,5
Total imports	1,9	8,0	6,5	14,8	7,3

Table 7.2: Export by source & destination (% change, value f.o.b.)

LESS LIBERALISATION

↓ From → To	EU27	OIC	LDC	ODC	Total exports
EU27	-1,6	2,7	-0,3	8,7	1,0
OIC	3,5	3,6	3,7	9,2	5,4
LDC	-1,7	9,2	8,0	5,1	4,2
ODC	8,0	7,8	6,5	8,2	8,0
Total imports	1,1	5,0	3,5	8,7	4,4

Table 7.3: Export by source and destination (% change, value f.o.b.)

MORE LIBERALISATION

↓ From → To	EU27	OIC	LDC	ODC	Total exports
EU27	-6,4	14,7	10,4	26,3	3,7
OIC	18,0	18,3	12,4	28,2	21,4
LDC	10,1	26,0	42,2	28,1	21,1
ODC	24,2	24,3	24,2	31,3	26,4
Total imports	4,3	19,6	17,0	28,8	15,9

Table 7.4: Export by source & destination, with Sweden specified (% change, value f.o.b.)

CORE SCENARIO

↓ From → To	Sweden	EU26	OIC	DC	LDC	Total exports
Sweden	0,0	-3,9	2,3	12,6	1,0	0,5
EU26	-0,7	-2,6	4,6	14,0	1,3	1,7
OIC	3,0	5,9	5,8	14,5	5,5	8,6
DC	9,6	13,0	12,4	15,7	11,4	13,5
LDC	-4,6	0,5	13,8	10,0	15,6	8,0
Total imports	1,4	1,9	8,0	14,8	6,5	7,3

Table 7.5: Export by source & destination, with Sweden specified (% change, value f.o.b.)

LESS LIBERALISATION

↓ From → To	Sweden	EU26	OIC	DC	LDC	Total exports
Sweden	0,0	-2,2	1,5	7,8	0,6	0,5
EU26	-0,3	-1,6	2,7	8,7	-0,3	1,0
OIC	1,9	3,6	3,6	9,2	3,7	5,4
DC	6,5	8,0	7,8	8,2	6,5	8,0
LDC	-4,9	-1,6	9,2	5,1	8,0	4,2
Total imports	1,0	1,1	5,0	8,7	3,5	4,4

Table 7.6: Export by source and destination, with Sweden specified (% change, value f.o.b.)

MORE LIBERALISATION

↓ From → To	Sweden	EU26	OIC	DC	LDC	Total exports
Sweden	0,0	-10,4	11,1	22,3	4,8	1,1
EU26	-1,3	-6,4	14,8	26,4	10,5	3,8
OIC	9,4	18,2	18,3	28,2	12,4	21,4
DC	13,4	24,4	24,3	31,3	24,2	26,4
LDC	-1,9	10,3	26,0	28,1	42,2	21,1
Total imports	2,9	4,3	19,6	28,8	17,0	15,9

Source: Own GTAP simulation results.

Table 10.1: National income decomposition of the simulated Doha scenarios (mn USD and % of GDP)

<i>Less liberalisation scenario</i>	Resource allocation		Changes in productivity		Terms of Trade		Terms of saving and investment	
	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD	Total
Australia	701	56	-46	-4	549	44	42	1 246
RoW	3 773	99	397	10	-389	-10	45	3 826
China	10 953	307	-4 908	-138	-1 207	-34	-1 274	3 563
Japan	4 722	48	2 683	28	2 301	24	32	9 738
South Korea	5 692	82	-332	-5	2 089	30	-498	6 950
DCs	10 661	63	4 448	26	1 028	6	748	16 885
LDCs	2 426	89	217	8	68	2	27	2 738
India	3 364	666	-919	-182	-2 041	-404	101	505
Canada	2 449	110	89	4	-496	-22	175	2 216
USA	6 398	223	162	6	-3 238	-113	-447	2 876
Brazil	1 297	86	-156	-10	331	22	40	1 511
EU26	11 882	78	1 836	12	570	4	855	15 143
Sweden	282	56	-77	-15	283	56	16	503
Switzerland	1 216	80	161	11	132	9	19	1 528
Norway	366	68	-27	-5	235	43	-32	541
South Africa	831	83	266	27	-258	-26	161	1 000
<i>Total</i>	<i>67 013</i>	<i>95</i>	<i>3 791</i>	<i>5</i>	<i>-45</i>	<i>0</i>	<i>10</i>	<i>70 769</i>

<i>The Core Doha Scenario</i>	Resource allocation		Changes in productivity		Terms of Trade		Terms of saving and investment	
	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD	Total
Australia	1 142	57	-6	0	799	40	56	1 990
RoW	5 779	90	1 048	16	-557	-9	167	6 436
China	16 213	309	-6 762	-129	-2 309	-44	-1 891	5 251
Japan	8 258	52	4 139	26	3 464	22	-33	15 828
South Korea	7 757	81	-416	-4	2 998	31	-758	9 580
DCs	20 871	63	10 275	31	662	2	1 319	33 128
LDCs	4 359	87	506	10	139	3	-3	5 001
India	4 494	473	-873	-92	-2 807	-295	136	950
Canada	3 352	100	363	11	-572	-17	199	3 342
USA	8 592	171	1 208	24	-4 288	-85	-489	5 023
Brazil	2 147	87	28	1	281	11	24	2 482
EU26	16 592	74	3 306	15	1 259	6	1 158	22 316
Sweden	403	60	-143	-21	424	63	-11	672
Switzerland	1 705	74	307	13	283	12	2	2 297
Norway	508	66	-40	-5	385	50	-85	769
South Africa	1 090	74	392	27	-241	-16	228	1 468
<i>Total</i>	<i>103 260</i>	<i>89</i>	<i>13 332</i>	<i>11</i>	<i>-79</i>	<i>0</i>	<i>20</i>	<i>116 532</i>

<i>More liberalisation scenario</i>	Resource allocation		Changes in productivity		Terms of Trade		Terms of saving and investment	
	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD	Total
Australia	1 974	51	130	3	1 640	43	111	3 855
RoW	9 761	64	3 199	21	2 232	15	170	15 362
China	26 585	151	-5 653	-32	-797	-5	-2 579	17 556
Japan	12 799	51	8 264	33	3 720	15	374	25 157
South Korea	12 086	73	1 095	7	4 477	27	-1 116	16 541
DCs	43 119	54	30 114	38	4 384	6	2 080	79 696
LDCs	10 108	84	1 399	12	596	5	-37	12 066
India	6 615	176	-121	-3	-2 962	-79	235	3 766
Canada	3 833	97	422	11	-762	-19	448	3 941
USA	13 018	243	6 192	116	-11 447	-214	-2 414	5 350
Brazil	4 431	72	794	13	897	15	59	6 181
EU26	24 757	90	5 622	20	-5 092	-19	2 189	27 475
Sweden	678	57	-272	-23	784	66	1	1 191
Switzerland	6 300	90	-592	-8	1 104	16	208	7 019
Norway	596	44	-165	-12	953	70	-16	1 367
South Africa	1 571	56	884	32	23	1	312	2 790
<i>Total</i>	<i>178 230</i>	<i>78</i>	<i>51 311</i>	<i>22</i>	<i>-251</i>	<i>0</i>	<i>24</i>	<i>229 314</i>

<i>Full liberalisation</i>	Resource allocation	Changes in productivity		Terms of Trade		Terms of saving and investment		
	mn USD	% of total gains	mn USD	% of total gains	mn USD	% of total gains	mn USD	Total
Australia	3 247	41	276	3	4 272	54	114	7 908
RoW	14 578	50	7 036	24	7 559	26	-275	28 898
China	39 040	486	-9 994	-124	-18 916	-235	-2 090	8 040
Japan	35 825	54	17 839	27	12 456	19	-317	65 803
South Korea	50 711	119	252	1	-3 470	-8	-4 886	42 606
DCs	100 550	54	79 580	43	1 347	1	4 563	186 040
LDCs	46 127	128	3 407	9	-11 168	-31	-2 393	35 974
India	22 640	127	4 745	27	-9 842	-55	344	17 887
Canada	5 510	54	3 071	30	1 678	16	29	10 288
USA	21 362	51	16 307	39	1 373	3	2 588	41 630
Brazil	7 372	57	2 806	22	2 718	21	-28	12 868
EU26	42 853	68	12 264	19	5 154	8	3 054	63 326
Sweden	1 279	62	-518	-25	1 663	81	-376	2 048
Switzerland	7 263	77	747	8	1 389	15	4	9 402
Norway	1 264	61	-604	-29	1 925	93	-508	2 077
South Africa	2 447	49	1 487	30	820	16	276	5 030
<i>Total</i>	402 068	74	138 701	26	-1 043	0	99	539 826

Table 10.2 National income gains deriving from more efficient use of resources

	More	Less	Core scenario
Land	-0,1	0,1	0,0
Unskilled labour	0,2	0,2	0,3
Skilled labour	0,0	0,1	0,1
Capital	0,5	0,8	0,6
Natural resources	0,0	0,0	0,0
Grains	3,6	5,0	4,3
Pig & Poultry meat	1,6	1,4	1,6
Dairy products	3,2	3,2	3,4
Processed food	13,4	10,1	11,1
Other agricultural prod	3,3	4,5	4,0
Extraction industries	1,6	0,7	1,0
Wood products	1,1	0,5	0,7
Paper products	0,8	0,4	0,5
Medicine & chemical	4,2	3,8	3,9
Ferrous products	1,0	0,6	0,7
Motor vehicles	12,3	15,3	13,9
Machines	7,9	4,4	5,5
Textiles & clothing	31,9	40,9	39,3
Other industrial produ	11,7	6,2	7,3
Telecommunications	0,0	0,0	0,0
Financ	-0,2	-0,2	-0,2
Construction	1,0	0,7	0,8
Transportation	-0,3	-0,3	-0,2
Distribution	0,7	0,7	0,7
Business	0,2	0,2	0,2
Other services	0,3	0,5	0,5
All sectors	100,0	100,0	100,0

Source: Own GTAP simulation results.

Table 11.1 Contribution to regional national income gains, in % of total (from own liberalisation, other IC and DC liberalisation)

	LESS			CORE SCENARIO			MORE		
	Own liberalisation	IC liberalisation (excl. own)	DC liberalisation (excl. own)	Own liberalisation	IC liberalisation (excl. own)	DC liberalisation (excl. own)	Own liberalisation	IC liberalisation (excl. own)	DC liberalisation (excl. own)
Australia	21	55	24	22	52	25	15	64	21
RoW	56	16	28	47	22	31	30	44	25
China	35	32	33	24	32	44	18	56	25
Japan	26	31	43	32	27	41	16	44	40
South Korea	57	21	22	52	22	26	43	33	24
DCs	55	24	21	57	25	18	51	36	13
LDCs*	41	38	22	45	34	21	49	34	17
India	-25	93	32	-12	77	35	29	44	28
Canada	92	1	7	85	8	7	93	-4	11
USA	-48	68	80	-32	55	77	-301	248	153
Brazil	31	54	16	32	52	16	27	53	20
EU26	33	30	38	28	31	42	-9	55	54
Sweden	30	42	28	28	36	36	24	45	31
Switzerland	84	9	7	76	18	6	69	28	3
Norway	90	10	-1	83	18	-1	57	45	-2
South Africa	59	18	23	54	21	26	43	32	25
Global gains	41	29	30	41	29	31	27	46	27

*LDCs are only simulated to make commitments in trade facilitation.

Table 11.2 Contribution to Swedish national income gains, in % of total

	More					
	Core scenario		liberalisation		Less liberalisation	
	(mn USD)	% of total gains	(mn USD)	% of total gains	(mn USD)	% of total gains
Australia	3	0	9	1	1	0
ROW	58	9	95	8	43	8
Japan	146	22	226	19	92	18
China	21	3	63	5	16	3
S Korea	5	1	10	1	3	1
DCs	22	3	29	2	4	1
LDCs	5	1	11	1	2	0
India	47	7	53	4	36	7
Canada	6	1	22	2	5	1
USA	127	19	398	33	93	18
Brazil	16	2	44	4	2	0
EU26	4	1	-118	-10	36	7
Switzerland	-3	-1	-29	-2	-2	0
NOIC	16	2	79	7	9	2
S Africa	10	2	11	1	9	2
Industrial coun	432	64	531	45	210	42
All developing	241	36	374	31	140	28
Sweden	189	28	285	24	153	30
Total	672	100	1191	100	503	100

Source: Own GTAP simulation results.

Table 12.1: National income effects - whose liberalisation benefits whom, share of total global gains (%)

LESS LIBERALISATION

Liberalising region <i>Benefiting region</i>	Agriculture	Manufactures	Services	Trade facilitation	Total
IC					
IC	9,8	15,8	1,7	7,3	34,5
DC	-1,4	6,5	0,0	7,5	12,6
Total	8,4	22,2	1,7	14,8	47,1
DC					
IC	1,9	13,1	-0,1	5,1	20,0
DC	8,0	4,5	2,3	18,0	32,8
Total	9,9	17,6	2,2	23,2	52,9
All					
IC	11,7	28,9	1,6	12,4	54,6
DC	6,6	11,0	2,3	25,5	45,4
Total	18,3	39,9	3,9	37,9	100,0

Table 12.2: National income effects - whose liberalisation benefits whom, share of total global gains (%)

CORE SCENARIO

Liberalising region <i>Benefiting region</i>	Agriculture	Manufactures	Services	Trade facilitation	Total
IC					
IC	8,9	12,2	2,1	8,6	31,8
DC	-0,5	4,9	0,0	9,2	13,6
Total	8,4	17,1	2,0	17,8	45,4
DC					
IC	1,5	12,1	-0,1	6,4	19,8
DC	5,6	4,5	2,8	21,8	34,8
Total	7,1	16,6	2,7	28,3	54,6
All					
IC	10,4	24,3	1,9	15,0	51,6
DC	5,2	9,4	2,8	31,0	48,4
Total	15,5	33,7	4,7	46,0	100,0

Table 12.3: National income effects - whose liberalisation benefits whom, share of total global gains (%)

MORE LIBERALISATION

Liberalising region <i>Benefiting region</i>	Agriculture	Manufactures	Services	Trade facilitation	Total
IC					
IC	6,7	5,0	2,1	9,8	23,7
DC	0,1	11,8	0,0	11,2	23,1
Total	6,8	16,8	2,1	21,1	46,8
DC					
IC	1,0	7,8	-0,2	8,4	17,1
DC	3,5	2,7	2,9	27,0	36,1
Total	4,5	10,5	2,7	35,4	53,2
All					
IC	7,7	12,8	2,0	18,2	40,8
DC	3,6	14,5	2,8	38,2	59,3
Total	11,4	27,4	4,8	56,5	100,0

Source: Own GTAP simulation results.

Table 13: National income effects across scenarios and models (in mn USD and % of GDP)

Simulation results from the MAIN MODEL

	Initial GDP	Less liberalisation		Core scenario		More liberalisation		Full liberalisation	
		mn USD	%	mn USD	%	mn USD	%	mn USD	%
Australia	353 547	1 246	0,35	1 990	0,56	3 855	1,09	7 908	2,24
RoW	735 827	3 826	0,52	6 436	0,87	15 362	2,09	28 898	3,93
China	1 324 445	3 563	0,27	5 251	0,40	17 556	1,33	8 040	0,61
Japan	4 202 929	9 738	0,23	15 828	0,38	25 157	0,60	65 803	1,57
South Korea	439 181	6 950	1,58	9 580	2,18	16 541	3,77	42 606	9,70
DCs	3 390 823	16 885	0,50	33 128	0,98	79 696	2,35	186 040	5,49
LDCs	398 814	2 738	0,69	5 001	1,25	12 066	3,03	35 974	9,02
India	479 467	505	0,11	950	0,20	3 766	0,79	17 887	3,73
Canada	718 248	2 216	0,31	3 342	0,47	3 941	0,55	10 288	1,43
USA	10 091 942	2 876	0,03	5 023	0,05	5 350	0,05	41 630	0,41
Brazil	519 984	1 511	0,29	2 482	0,48	6 181	1,19	12 868	2,47
EU26	8 081 081	15 143	0,19	22 316	0,28	27 475	0,34	63 326	0,78
Sweden	216 002	503	0,23	672	0,31	1 191	0,55	2 048	0,95
Switzerland	243 919	1 528	0,63	2 297	0,94	7 019	2,88	9 402	3,85
Norway	175 891	541	0,31	769	0,44	1 367	0,78	2 077	1,18
South Africa	113 006	1 000	0,88	1 468	1,30	2 790	2,47	5 030	4,45
Ind. Countries	24 932 391	38 617	0,15	60 141	0,24	93 509	0,38	236 412	0,95
Dev. Countries	6 552 714	32 152	0,49	56 391	0,86	135 806	2,07	303 414	4,63
Total	31 485 106	70 769	0,22	116 532	0,37	229 314	0,73	539 826	1,71

Simulation results from the STANDARD GTAP MODEL

Scenarios Regions	Initial GDP	Less liberalisation		Core scenario		More liberalisation		Full liberalisation	
		mn USD	%	mn USD	%	mn USD	%	mn USD	%
Australia	353 547	735	0,21	1 118,75	0,32	2 177	0,62	4 863,40	1,38
RoW	735 827	1 624	0,22	3 368,52	0,46	8 973	1,22	16 133,66	1,20
China	1 324 445	7 335	0,55	12 115,66	0,91	27 412	2,07	47 569,84	2,08
Japan	4 202 929	3 515	0,08	6 310,33	0,15	12 860	0,31	28 789,35	0,34
South Korea	439 181	4 860	1,11	6 664,46	1,52	11 062	2,52	20 070,60	2,75
DCs	3 390 823	11 684	0,34	24 090,31	0,71	55 839	1,65	129 995,03	1,66
LDCs	398 814	1 579	0,40	3 340,92	0,84	8 836	2,22	28 890,92	2,17
India	479 467	1 662	0,35	2 469,92	0,52	4 793	1,00	10 301,56	1,03
Canada	718 248	762	0,11	1 257,61	0,18	818	0,11	6 721,83	0,11
USA	10 091 942	1 485	0,01	2 779,81	0,03	7 202	0,07	23 446,23	0,08
Brazil	519 984	2 035	0,39	3 496,15	0,67	8 180	1,57	17 930,22	1,55
EU26	8 081 081	5 820	0,07	8 101,39	0,10	6 336	0,08	15 414,59	0,11
Sweden	216 002	229	0,11	208,47	0,10	348	0,16	517,92	0,17
Switzerland	243 919	1 662	0,68	2 478,12	1,02	10 204	4,18	12 043,46	4,22
Norway	175 891	446	0,25	655,05	0,37	1 507	0,86	2 231,40	0,73
South Africa	113 006	692	0,61	1 168,71	1,03	2 269	2,01	4 394,31	2,03
Ind. Countries	24 932 391	16 969	0,07	27 446,76	0,11	52 694	0,21	114 556,15	0,46
Dev. Countries	6 552 714	29 155	0,44	52 177,42	0,80	116 123	1,77	254 758,17	3,89
Total	31 485 106	46 124	0,15	79 624,22	0,25	168 816	0,54	369 314,31	1,17

Simulation results from the DYNAMIC MODEL

	Initial GDP	Less liberalisation		Core scenario		More liberalisation		Full liberalisation	
		mn USD	%	mn USD	%	mn USD	%	mn USD	%
Australia	353 547	2369	0,67	3900	1,10	8429	2,38	17889	5,06
RoW	735 827	72393	9,84	108969	14,81	207781	28,24	290065	39,42
China	1 324 445	-1099	-0,08	-1948	-0,15	17590	1,33	-15237	-1,15
Japan	4 202 929	14949	0,36	24057	0,57	42133	1,00	89241	2,12
South Korea	439 181	13091	2,98	19019	4,33	36423	8,29	90258	20,55
DCs	3 390 823	63305	1,87	124358	3,67	293842	8,67	669251	19,74
LDCs	398 814	6881	1,73	12279	3,08	29493	7,40	109537	27,47
India	479 467	4776	1,00	7629	1,59	16258	3,39	51625	10,77
Canada	718 248	3323	0,46	5134	0,71	6129	0,85	17152	2,39
USA	10 091 942	4079	0,04	8146	0,08	21651	0,21	84649	0,84
Brazil	519 984	3062	0,59	5456	1,05	15446	2,97	42663	8,20
EU26	8 081 081	24493	0,30	36543	0,45	51382	0,64	80276	0,99
Sweden	216 002	762	0,35	1015	0,47	1928	0,89	2929	1,36
Switzerland	243 919	2338	0,96	3574	1,47	11825	4,85	15302	6,27
Norway	175 891	1341	0,76	2047	1,16	4308	2,45	6690	3,80
South Africa	113 006	2982	2,64	4608	4,08	8845	7,83	17163	15,19
Ind. Countries	24 932 391	129 029	0,52	197 993	0,79	364 412	1,46	621 355	2,49
Dev. Countries	6 552 714	90 017	1,37	166 793	2,55	409 052	6,24	948 098	14,47
Total	31 485 106	219 046	0,70	364 787	1,16	773 463	2,46	1 569 453	4,98

Source: Own GTAP simulation results.

Table 14.1: Share of global export market, pre-Doha scenario (% , values in world prices)

	AUS	ROW	China	Japan	Korea	DCs	LDCs	IND	CAN	USA	BRA	EU26	SWE	CHE	NOIC	S. Africa
Grains	8,0	1,3	2,7	2,8	0,0	16,6	0,4	2,0	10,2	29,9	1,9	22,8	0,6	0,2	0,0	0,7
Pig and poultry meat	2,0	2,5	6,1	0,4	0,3	10,8	0,6	0,3	5,7	15,7	3,3	50,8	0,6	0,2	0,3	0,4
Dairy products	5,3	10,6	0,1	0,0	0,1	7,0	0,2	0,3	1,1	2,7	0,1	69,8	0,7	1,5	0,3	0,3
Processed food	1,8	3,8	3,6	1,0	0,8	23,8	1,7	1,6	3,2	9,1	2,7	43,2	0,6	0,9	1,4	0,9
Other agricultural products	4,2	2,8	2,9	0,2	0,3	26,4	5,6	1,8	4,0	15,8	7,7	26,9	0,1	0,2	0,1	1,0
Extraction industries	4,4	11,7	1,5	0,1	0,0	51,9	6,7	0,4	5,3	1,6	1,2	6,9	0,2	0,1	6,8	1,2
Wood products	0,6	3,9	9,6	0,4	0,3	17,7	1,2	0,3	13,9	6,7	1,7	38,8	3,1	0,7	0,5	0,7
Paper products	0,5	2,8	2,7	1,8	1,5	8,2	0,1	0,2	12,3	13,3	1,6	45,9	5,9	1,3	1,2	0,7
Medicines & Chemicals	0,5	3,6	3,4	5,8	2,5	10,7	0,2	0,9	3,0	13,5	0,6	49,8	1,4	3,3	0,5	0,4
Iron and steel	0,9	8,3	2,2	10,4	4,3	14,3	0,1	1,0	2,1	4,8	2,1	43,8	2,4	0,8	0,8	1,8
Cars	0,5	0,7	0,5	15,1	2,9	6,9	0,0	0,1	8,9	10,7	1,0	50,1	1,8	0,2	0,1	0,4
Machinery	0,3	2,6	5,6	11,3	1,9	9,9	0,1	0,3	3,3	16,2	0,5	42,5	1,7	3,0	0,4	0,3
Textiles, clothing & shoes	0,2	4,3	28,1	3,2	5,0	21,1	2,0	3,4	0,9	4,2	0,7	26,2	0,2	0,4	0,1	0,2
Other manufactures	0,9	6,0	9,1	8,1	4,3	22,1	0,4	0,9	2,5	11,5	0,6	30,1	1,1	1,2	0,5	0,8
Telecommunications	1,8	4,0	2,8	2,2	1,5	15,2	0,9	0,1	3,9	16,3	0,7	45,4	1,9	2,3	0,9	0,2
Financial services	1,2	1,9	3,1	2,0	0,8	10,3	0,4	0,4	3,3	18,5	0,6	48,7	1,0	6,7	0,7	0,5
Construction services	0,2	2,6	3,5	14,3	0,3	11,1	0,6	0,1	0,8	9,5	0,1	54,8	1,8	0,2	0,3	0,0
Transport services	1,1	3,5	4,6	5,3	2,9	12,9	0,8	0,6	4,3	19,1	0,9	40,2	0,7	1,2	1,4	0,4
Distribution services	1,1	1,6	30,7	4,1	0,8	12,0	0,5	1,3	0,8	7,9	0,4	35,1	1,3	1,3	0,4	0,5
Business services	0,6	2,1	3,8	3,2	1,5	13,1	0,6	1,7	3,0	17,8	1,2	47,5	1,6	1,1	1,0	0,0
Other services	1,4	2,8	1,9	1,2	1,5	12,4	1,2	0,5	2,7	30,4	0,4	38,2	1,6	2,9	0,5	0,4
Total	1,0	4,1	7,1	6,5	2,6	16,9	1,0	0,9	3,9	12,8	1,0	38,0	1,3	1,6	0,9	0,6

Table 14.2: Change in share of global export market, core scenario (% change)

	AUS	ROW	China	Japan	Korea	DCs	LDCs	IND	CAN	USA	BRA	EU26	SWE	CHE	NOIC	S. Africa
Grains	-1,3	-7,0	49,0	19,2	166,7	11,9	0,0	36,1	5,7	2,6	21,9	-25,7	-41,4	31,8	0,0	-12,3
Pig and poultry meat	-0,7	-0,2	-5,7	18,6	98,6	8,4	5,3	0,7	6,0	24,7	36,8	-12,6	5,7	63,2	-15,5	-1,8
Dairy products	94,2	129,7	19,2	34,9	155,7	22,8	21,9	23,0	3,6	38,6	77,5	-29,6	-30,1	-53,1	-60,0	22,1
Processed food	29,0	-3,0	0,0	8,9	171,5	18,6	-2,6	20,4	7,5	4,3	54,1	-19,8	-23,3	-3,5	-3,6	12,1
Other agricultural products	0,4	-4,4	3,0	1,9	28,9	5,4	-1,4	6,4	-1,7	10,8	12,3	-15,8	-22,0	-14,7	93,2	6,7
Extraction industries	-2,1	0,6	11,6	13,2	15,9	-0,2	1,8	35,2	-1,3	1,5	8,8	-2,5	-3,2	1,9	-3,0	-0,8
Wood products	-0,9	-10,4	-6,3	7,5	4,0	0,8	7,8	22,6	-3,3	8,8	7,7	0,9	1,7	-2,4	-1,0	9,1
Paper products	-0,2	1,6	-5,8	1,0	0,9	7,1	5,7	25,5	-2,7	5,5	12,9	-1,6	-5,5	-5,3	-5,4	1,7
Medicines & Chemicals	-0,9	13,7	-11,3	1,5	16,0	4,4	4,4	16,9	-2,7	2,8	1,8	-3,0	-7,8	2,2	0,9	3,0
Iron and steel	0,5	6,1	-23,6	14,5	-38,3	8,7	-1,0	9,3	-3,6	6,5	3,8	-3,1	-7,1	-10,7	-16,3	12,4
Cars	-6,9	-31,7	-72,2	45,2	10,8	-10,4	0,0	-7,0	-2,4	-9,2	-42,6	-8,0	-6,6	-17,3	-14,6	-6,5
Machinery	-7,2	8,7	-27,6	-1,4	-25,4	12,8	-4,9	32,1	-2,6	6,5	3,4	-1,0	-2,2	3,0	-2,7	3,7
Textiles, clothing & shoes	-56,1	-0,7	63,5	-43,9	32,7	-36,7	-11,4	13,7	-48,6	-23,0	-21,1	-32,6	-63,7	-35,8	-40,0	-37,2
Other manufactures	-1,6	0,7	-12,5	-3,6	-14,6	6,8	2,1	23,3	-2,6	4,9	3,4	-0,8	-2,4	-4,9	-1,0	15,7
Telecommunications	-1,0	-2,4	-3,7	-2,5	-7,8	0,5	3,1	11,4	1,6	3,5	3,6	-0,7	-1,2	-0,7	-0,6	1,1
Financial services	-2,4	-3,6	-3,6	-3,6	-10,0	-0,4	1,9	10,9	0,7	2,2	2,8	0,2	-0,4	-2,4	-1,8	-0,6
Construction services	-2,1	-2,3	-6,7	-3,3	-10,0	0,9	2,0	11,3	1,3	2,6	3,0	0,8	-0,3	-0,6	-1,3	5,9
Transport services	-3,4	-3,1	-7,0	-5,3	-10,6	0,2	3,2	16,9	0,8	3,5	5,5	0,5	-1,0	-1,7	-2,8	2,7
Distribution services	-1,1	-1,9	-2,2	-2,2	-2,4	0,5	3,1	10,7	2,0	2,7	3,9	1,1	0,3	-0,5	-0,7	0,8
Business services	-2,2	-3,0	-3,4	-3,5	-9,2	-0,6	1,6	10,2	0,3	2,0	2,0	0,0	-0,5	-1,7	-0,6	2,9
Other services	-2,7	-3,2	-4,9	-4,0	-9,0	-1,0	1,6	11,2	0,1	2,6	2,1	-0,6	-1,5	-2,3	-2,4	-0,8
Total	-0,1	2,4	17,6	5,7	1,1	0,6	0,6	23,3	-2,9	1,0	7,1	-5,2	-6,3	-3,7	-5,8	4,8

Table 14.3: Share of global export market for dairy and processed food, pre- and post-Doha core scenario (% , value at world prices)

	Pre-Doha	Post-Doha
Dairy products	92 (8)	90 (10)
Processed food	66 (34)	58 (42)

Values displayed are for industrial countries and () for developing countries, respectively

Source: Own GTAP simulation results.

Table 15: Changes in real GDP (%)

<i>qgdp</i>	<i>Less liberalisation scenario</i>	<i>Core scenario</i>	<i>More liberalisation scenario</i>
Australia	0,19	0,31	0,60
RoW	0,57	0,87	1,76
China	0,45	0,73	1,57
Japan	0,18	0,28	0,50
South Korea	1,22	1,56	2,99
DCs	0,45	0,83	2,16
LDCs	0,65	1,10	2,83
India	0,51	0,73	1,36
Canada	0,35	0,50	0,59
USA	0,07	0,10	0,19
Brazil	0,22	0,42	1,01
EU26	0,17	0,24	0,38
Sweden	0,09	0,11	0,19
Switzerland	0,56	0,76	2,34
NOIC	0,19	0,28	0,24
South Africa	0,97	1,28	2,18

Source: Own GTAP simulation results.

Table 16.1: National income effects of different elements (% of initial GDP) - *LESS LIBERALISATION*

Region	Agriculture	Manufactures	Services	Trade fac.	Total
Australia	0,08	0,21	0,00	0,05	0,35
ROW	-0,01	0,33	0,01	0,20	0,52
China	0,06	-0,01	0,03	0,19	0,27
Japan	0,02	0,16	0,00	0,04	0,23
Korea	0,81	0,53	0,02	0,23	1,58
DCs	0,00	0,14	0,03	0,32	0,50
LDCs	-0,07	0,26	0,00	0,48	0,67
India	0,01	-0,07	0,01	0,16	0,10
Canada	0,18	0,05	0,01	0,07	0,31
USA	0,00	0,01	0,00	0,02	0,03
Brazil	0,09	0,01	0,01	0,17	0,29
EU26	0,06	0,09	0,00	0,03	0,19
Sweden	0,05	0,14	0,00	0,03	0,23
Switzerland	0,17	0,33	0,02	0,11	0,63
NOIC	0,16	0,12	0,01	0,03	0,31
S. Africa	0,02	0,62	0,01	0,24	0,89
Total	0,04	0,09	0,01	0,09	0,22

Table 16.2: National income effects of different elements (% of initial GDP) - *CORE SCENARIO*

Region	Agriculture	Manufactures	Services	Trade fac.	Total
Australia	0,14	0,31	0,01	0,11	0,56
ROW	0,03	0,43	0,02	0,40	0,88
China	0,07	-0,09	0,05	0,35	0,39
Japan	0,07	0,22	0,01	0,08	0,38
Korea	0,94	0,75	0,04	0,45	2,18
DCs	0,02	0,24	0,06	0,65	0,98
LDCs	-0,08	0,32	0,00	0,98	1,23
India	0,00	-0,14	0,02	0,31	0,20
Canada	0,24	0,06	0,02	0,14	0,47
USA	0,00	0,01	0,01	0,03	0,05
Brazil	0,12	-0,02	0,03	0,35	0,48
EU26	0,07	0,14	0,01	0,06	0,28
Sweden	0,06	0,20	0,01	0,04	0,31
Switzerland	0,21	0,47	0,04	0,22	0,94
NOIC	0,21	0,15	0,02	0,06	0,44
S. Africa	0,04	0,76	0,02	0,48	1,30
Total	0,06	0,12	0,02	0,17	0,37

Table 16.3: National income effects of different elements (% of initial GDP) - *MORE LIBERALISATION*

Region	Agriculture	Manufactures	Services	Trade fac.	Total
Australia	0,25	0,56	0,02	0,27	1,09
ROW	0,08	0,93	0,05	1,04	2,09
China	0,09	0,20	0,11	0,92	1,32
Japan	0,13	0,27	0,02	0,18	0,60
Korea	1,18	1,36	0,07	1,16	3,76
DCs	0,03	0,68	0,13	1,51	2,35
LDCs	-0,07	0,47	0,01	2,55	2,97
India	0,03	-0,11	0,04	0,83	0,78
Canada	0,31	-0,14	0,03	0,35	0,55
USA	0,01	-0,05	0,01	0,08	0,05
Brazil	0,18	0,04	0,05	0,91	1,19
EU26	0,08	0,10	0,02	0,15	0,34
Sweden	0,07	0,36	0,02	0,10	0,55
Switzerland	0,26	1,99	0,07	0,55	2,87
NOIC	0,27	0,32	0,03	0,16	0,78
S. Africa	0,08	1,11	0,04	1,24	2,47
Total	0,08	0,20	0,03	0,41	0,73

Source: Own GTAP simulation results.

Table 17: Elasticities and markup ratios across sectors

	ESUBD	ESUBM	Markup ratio*
Grains	3,52	5,96	
Pig and poultry meat	2,90	6,94	
Dairy products	7,09	7,09	1,16
Processed food	7,09	7,09	1,16
Other agricultural products	2,37	4,72	
Extraction industries	7,14	7,14	1,16
Wood products	6,63	6,63	1,18
Paper products	6,36	6,36	1,19
Medicines & Chemicals	4,90	4,90	1,26
Iron and steel	6,77	6,77	1,17
Cars	9,17	9,17	1,12
Machinery	8,20	8,20	1,14
Textiles, clothing & shoes	8,67	8,67	1,13
Other manufactures	5,30	5,30	1,23
Telecommunications	1,90	3,80	
Financial services	1,90	3,80	
Construction services	1,90	3,80	
Transport services	2,29	5,75	
Distribution services	1,90	3,80	
Business services	1,90	3,80	
Other services	2,01	4,06	

* Only specified for sectors modelled as imperfectly competitive

Source: own calculations based on data, which sources are specified in the technical annex

Table 18: Estimated costs of cumbersome trade procedures, tariff equivalents

	<i>Direct costs</i>		<i>Indirect costs</i>	
	Manufactures	Agricultural goods	Manufactures	Agricultural goods
Australia	3,58	5,37	2,76	4,14
Brazil	8,77	12,63	13,95	20,09
Canada	3,28	4,91	3,20	4,80
Switzerland	2,58	3,86	2,69	4,04
China	5,92	8,52	8,55	12,31
EU26	4,23	6,34	2,79	4,19
India	7,93	11,43	7,43	10,69
Japan	7,54	11,31	2,76	4,14
South Korea	6,82	10,23	3,18	4,77
LDCs	10,55	15,19	12,51	18,02
Norway	4,58	6,86	2,52	3,78
ROW	5,49	7,90	4,33	6,24
South Africa	6,80	9,80	6,98	10,04
Sweden	2,20	3,30	1,70	2,55
DCs	9,43	13,58	7,55	10,87
USA	3,45	5,18	2,40	3,60

Best practice in italics

Source: own calculations based on data, which sources are specified in the technical annex

Table 19: National income effects of different elements (% of total income gains)

<i>CORE</i>				
<i>SCENARIO</i>	Agriculture	Manufactures	Services	Trade facilitation
Australia	25	54	2	19
RoW	3	49	3	46
China	18	-22	13	90
Japan	18	58	2	21
South Korea	43	34	2	21
DCs	2	25	6	67
LDCs	-6	26	0	80
India	1	-68	11	157
Canada	53	13	4	31
USA	3	16	12	67
Brazil	25	-5	6	74
EU26	25	49	3	23
Sweden	20	65	3	12
Switzerland	23	50	4	23
Norway	48	35	4	13
South Africa	3	59	2	37
Total	16	34	5	46
<i>LESS</i>				
<i>LIBERALISATION</i>	Agriculture	Manufactures	Services	Trade facilitation
Australia	24	60	1	15
RoW	-2	63	2	38
China	22	-4	10	73
Japan	10	71	2	17
South Korea	51	34	1	14
DCs	1	29	6	64
LDCs	-10	38	0	72
India	5	-67	10	152
Canada	59	16	3	23
USA	1	27	11	60
Brazil	32	3	5	60
EU26	32	48	2	17
Sweden	23	60	2	15
Switzerland	28	52	3	17
Norway	51	38	3	9
South Africa	2	70	1	27
Total	18	40	4	38
<i>MORE</i>				
<i>LIBERALISATION</i>	Agriculture	Manufactures	Services	Trade facilitation
Australia	23	51	2	24
RoW	4	45	2	50
China	7	16	8	70
Japan	22	45	3	30
South Korea	31	36	2	31
DCs	1	29	5	64
LDCs	-2	16	0	86
India	3	-14	5	105
Canada	56	-25	6	63
USA	12	-91	23	155
Brazil	15	4	4	77
EU26	24	28	5	43
Sweden	13	65	3	19
Switzerland	9	69	3	19
Norway	35	41	4	20
South Africa	3	45	2	50
Total	11	27	5	56

Source: Own GTAP simulation results.

Tables 20: The pre-liberalisation economy in SWEDEN

Table 20.1: The Swedish trade and production, pre-Doha

ECONOMIC STRUCTURE	IMPORT	EXPORT	PRODUCTION	Value of production (mn USD)
Grains	0,0	0,2	0,1	441
Pig and poultry	0,6	0,3	0,9	3 420
Dairy products	0,3	0,2	0,8	3 329
Processed food	2,9	1,5	2,0	7 851
Other agricultural goods	1,7	0,1	0,7	2 840
<i>TOTAL Agriculture</i>	5,6	2,4	4,5	17 881
Extraction industries	4,3	0,9	1,3	5 194
Wood products	2,1	4,1	1,3	5 067
Paper products	2,1	9,5	5,4	21 211
Medical and chemistry	10,1	10,6	5,4	21 329
Ferrous products	2,5	3,7	1,1	4 211
Cars	7,1	10,6	3,4	13 346
Machines	16,7	19,2	5,6	22 069
Textiles	4,3	1,2	0,4	1 713
Other industrial goods	17,4	18,5	10,3	40 777
<i>TOTAL Manufactures</i>	66,6	78,2	34,1	134 916
Telecommunications	1,0	0,8	1,7	6 798
Financial services	1,5	1,0	6,4	25 177
Construction services	0,5	0,6	5,9	23 384
Transport services	7,3	4,0	5,7	22 446
Distribution services	2,3	2,6	7,6	30 236
Business services	12,0	6,6	3,0	11 736
Other services	3,4	3,8	31,2	123 572
<i>TOTAL Services</i>	27,9	19,5	61,4	243 350
Total	100,0	100,0	100,0	396 147

Source: Own GTAP simulation results.

Table 20.2: Swedish tariffs and subsidies, pre-Doha (in % of value)

Table 20.2: Swedish farms and subsidies, pre-Dona (in % of value)					
	tms	txs (neg value = tax)	to (neg value = tax)	tfd (neg value = subsidy)	tfm (neg value = subsidy)
AGRICULTURE					
Grains	29,4	18,5	0,79	-2,9	3,3
Pig and poultry	8,8	0,2	0,01	0,1	-1,3
Dairy products	20,2	24,8	0,15	-0,3	0,1
Processed food	12,5	-0,2	-6,92	0,5	-1,3
Other agricultural goods	20,0	21,2	0,12	-3,6	4,3
<i>TOTAL Agriculture</i>	<i>15,6</i>	<i>4,2</i>	<i>-3,10</i>	<i>-0,5</i>	<i>-0,4</i>
MANUFACTURES	tms	SERVICES		ete*	
Extraction industries	1,39	Telecommunications		26,67	
Wood products	1,72	Construction services		0,51	
Paper products	1,34	Distribution services		2,61	
Medical and chemistry	2,78	Financial services		0,02	
Ferrous products	1,32	Transport services		0,85	
Cars	6,19	Business nec		0,42	
Machines	2,32	Other services		0,00	
Textiles	9,08				
Other industrial goods	2,53				
<i>TOTAL Manufactures</i>	<i>3,22</i>	<i>TOTAL Services</i>		<i>4,43</i>	

* The estimated cost of a tariff minus the benchmark cost in the region
which represents 'best practice' (simple averages).

21.1a: Different regions share in Swedish imports, pre-Doha

	Australia	ROW	China	Japan	S. Korea	DC group	LDC group	India	Canada	USA	Brazil	EU26	Switzerland	NOIC	S. Africa	Total
Grains	0,2	1,1	1,0	0,0	0,0	13,2	1,4	14,6	0,4	10,6	0,0	57,2	0,0	0,3	0,1	100
Pig and poultry	0,4	1,8	2,4	0,1	0,0	3,4	0,1	0,1	0,2	1,0	0,3	85,9	0,6	3,8	0,0	100
Dairy products	0,1	0,6	0,0	0,0	0,1	1,2	0,1	0,2	0,1	0,8	0,0	94,5	0,2	2,1	0,0	100
Processed food	0,6	0,8	1,4	0,1	0,1	6,0	0,1	0,3	0,4	2,2	0,6	76,8	1,0	9,0	0,5	100
Other agricultural goods	0,1	1,3	0,9	0,0	0,1	15,4	1,2	0,5	0,1	4,4	3,3	70,0	2,3	0,5	0,2	100
TOTAL Agriculture	0,4	1,0	1,3	0,1	0,1	8,4	0,5	0,5	0,3	2,8	1,4	76,3	1,3	5,4	0,3	100
Extraction industries	2,4	3,9	0,2	0,0	0,0	20,9	1,2	0,0	1,4	1,5	0,0	25,8	0,2	42,4	0,0	100
Wood products	0,1	2,0	3,8	0,0	0,1	6,9	0,2	0,3	1,3	2,7	0,8	70,8	0,2	10,7	0,1	100
Paper products	0,1	0,3	0,4	0,3	0,1	1,1	0,0	0,0	2,2	4,8	0,0	77,0	0,8	12,9	0,0	100
Medical and chemistry	0,1	0,8	0,8	2,8	0,6	1,7	0,0	0,1	0,1	3,6	0,1	79,0	2,6	7,7	0,0	100
Ferrous products	0,0	3,1	0,3	0,9	0,2	1,7	0,0	0,4	0,2	0,9	0,1	83,3	0,7	7,8	0,4	100
Cars	0,1	0,2	0,2	4,9	1,4	1,6	0,0	0,0	0,1	3,5	0,5	83,7	0,2	3,5	0,1	100
Machines	0,1	1,0	1,4	3,7	0,5	2,4	0,0	0,1	0,4	11,4	0,2	71,7	2,9	3,9	0,3	100
Textiles	0,1	0,9	26,1	0,2	3,4	13,6	2,2	4,3	0,1	1,1	0,2	46,3	0,4	1,1	0,1	100
Other industrial goods	0,1	2,5	3,2	2,3	0,9	3,8	0,1	0,2	0,3	5,8	0,2	72,9	1,2	6,3	0,1	100
TOTAL Manufactures	0,2	1,5	3,2	2,5	0,9	4,5	0,3	0,4	0,4	5,7	0,2	70,4	1,6	8,0	0,1	100
Telecommunications	1,8	3,1	2,8	2,0	1,4	14,4	0,8	0,0	4,1	18,6	0,6	47,0	2,3	0,9	0,2	100
Financial services	1,1	1,4	3,3	2,1	0,9	8,1	0,3	0,2	2,3	23,2	0,6	48,8	6,9	0,6	0,3	100
Construction services	0,2	2,0	3,4	16,2	0,3	10,1	0,5	0,0	0,7	8,6	0,1	57,5	0,2	0,3	0,0	100
Transport services	1,1	2,9	4,5	2,6	1,0	13,0	0,6	0,5	2,8	21,4	0,8	43,1	1,7	3,5	0,4	100
Distribution services	1,7	1,7	14,4	3,7	1,0	12,8	0,5	1,2	1,1	14,4	0,4	44,5	1,8	0,5	0,6	100
Business services	0,5	1,2	3,5	3,1	1,6	12,0	0,5	1,6	3,2	20,5	1,1	49,1	1,1	1,0	0,0	100
Other services	1,4	2,3	2,1	0,7	1,4	10,0	0,3	0,3	1,5	31,9	0,1	42,7	1,4	3,7	0,4	100
TOTAL Services	1,0	1,9	4,5	2,8	1,3	11,9	0,5	1,0	2,7	21,5	0,8	46,4	1,7	1,9	0,2	100
Total	0,5	1,6	3,4	2,5	0,9	6,8	0,3	0,6	1,0	10,0	0,4	64,0	1,6	6,2	0,2	100

21.2b: Different regions share in Swedish exports, pre-Doha

	Australia	ROW	China	Japan	S. Korea	DC group	LDC group	India	Canada	USA	Brazil	EU26	Switzerland	NOIC	S. Africa	Total
Grains	0,0	2,3	0,0	0,0	0,0	40,1	2,7	0,0	0,0	14,9	0,0	38,5	0,1	1,4	0,0	100
Pig and poultry	0,2	4,9	2,7	2,1	1,7	4,1	0,3	0,2	0,6	4,8	0,1	72,3	0,3	5,7	0,0	100
Dairy products	0,2	4,0	0,4	0,3	0,2	11,4	1,3	0,0	0,2	2,3	0,0	79,0	0,2	0,4	0,0	100
Processed food	0,6	2,0	0,4	1,4	0,2	3,3	0,4	0,0	1,1	22,7	0,1	54,8	1,0	12,0	0,1	100
Other agricultural goods	0,2	1,2	0,6	1,6	0,2	3,1	0,1	0,1	1,0	2,7	0,1	71,0	1,8	16,2	0,1	100
TOTAL Agriculture	0,4	2,6	0,7	1,3	0,4	7,2	0,6	0,1	0,9	16,6	0,1	59,0	0,8	9,4	0,0	100
Extraction industries	0,0	0,3	0,3	0,3	0,0	21,0	0,0	0,0	0,0	0,7	0,0	68,2	0,1	9,1	0,0	100
Wood products	0,2	1,0	0,8	5,8	0,1	6,6	0,3	0,0	0,7	5,6	0,1	61,5	1,5	15,7	0,0	100
Paper products	0,5	1,7	1,9	0,5	0,2	6,8	0,5	0,3	0,3	2,2	0,1	78,0	1,6	5,1	0,2	100
Medical and chemistry	1,9	1,8	1,4	3,0	0,5	5,2	0,2	0,2	3,0	13,0	0,6	59,2	0,8	8,7	0,3	100
Ferrous products	0,6	3,8	2,1	1,2	1,5	4,2	0,2	0,8	1,2	8,7	0,8	67,6	1,8	5,0	0,7	100
Cars	1,0	2,0	1,6	3,6	0,5	4,6	0,2	0,1	1,1	24,6	1,0	55,2	1,2	2,9	0,4	100
Machines	1,5	2,9	5,1	2,4	0,9	10,1	0,6	0,6	2,0	12,9	1,9	50,3	1,2	6,9	0,6	100
Textiles	0,4	2,2	2,0	1,7	0,7	5,7	0,1	0,2	0,7	3,7	0,2	65,1	1,2	15,8	0,4	100
Other industrial goods	0,9	2,5	7,2	4,2	0,5	14,8	0,8	1,0	1,2	9,7	1,3	46,9	1,1	7,7	0,4	100
TOTAL Manufactures	1,1	2,3	3,8	2,9	0,6	9,0	0,5	0,5	1,5	11,6	1,0	56,6	1,2	7,1	0,4	100
Telecommunications	2,3	1,9	3,8	3,4	2,7	9,5	0,7	0,1	3,7	18,4	0,6	49,9	2,3	0,6	0,2	100
Financial services	1,0	2,1	5,7	5,3	0,4	22,7	1,4	0,9	5,9	11,7	1,2	39,3	0,8	1,1	0,5	100
Construction services	0,0	2,1	8,2	18,3	0,1	15,2	0,8	0,0	0,4	1,2	0,0	53,3	0,0	0,2	0,0	100
Transport services	1,2	2,6	2,0	5,0	1,4	9,9	1,0	0,3	1,8	30,9	0,5	35,5	1,4	6,2	0,3	100
Distribution services	0,4	1,4	11,6	10,3	1,1	14,0	1,6	2,0	1,0	3,4	0,7	51,6	0,3	0,4	0,2	100
Business services	0,6	2,6	2,4	6,7	2,6	13,2	1,5	1,3	2,9	12,5	1,9	50,2	0,5	1,0	0,1	100
Other services	1,1	3,4	3,1	4,9	1,4	11,8	1,2	0,4	2,4	17,2	1,4	43,5	1,1	6,7	0,4	100
TOTAL Services	0,9	2,5	4,1	6,6	1,7	12,8	1,3	0,9	2,4	15,9	1,2	45,6	0,9	3,1	0,2	100
Total	1,0	2,3	3,8	3,6	0,8	9,7	0,7	0,6	1,6	12,5	1,0	54,5	1,1	6,4	0,3	100

Source: Own pre-simulation results.

Table 21.3 Change in Swedish exports (after simulation of the CORE SCENARIO), by destination (%)

	Australia	RoW	China	Japan	South Korea	DCs	LDCs	India	Canada	USA	Brazil	EU26	Switzerland	Norway	South Africa	Total
Grains	-50,0	-39,6	-75,0	-70,0	-100,0	-49,9	-15,8	-100,0	-50,0	-67,6	0,0	-15,9	-36,3	142,7	-100,0	-35,6
Pig and poultry meat	-13,9	69,1	5,4	-3,3	48,0	-24,7	-16,6	-2,1	-65,2	6,2	-8,5	-12,3	-27,7	353,7	14,5	14,3
Dairy products	-83,3	-70,0	-67,5	-81,7	-65,0	-77,0	-75,1	-80,9	316,4	-61,2	-65,1	-3,7	117,0	13,9	-80,1	-16,8
Processed food	-8,3	15,7	100,8	-13,0	-62,4	-28,8	-43,0	-21,8	6,8	-7,6	-10,1	-8,2	17,1	15,4	-42,8	-4,9
Other agricultural products	-80,8	-67,1	20,7	-19,8	-88,2	-41,9	-71,1	-24,9	-17,6	-42,1	-36,2	-12,0	-35,6	-27,8	-28,8	-17,8
Extraction industries	1,0	9,4	-8,1	-5,0	-21,0	12,5	13,8	62,1	0,4	-0,5	2,1	-4,8	-6,0	1,0	16,3	-0,6
Wood products	8,1	49,1	23,1	11,7	9,1	68,8	8,8	98,7	0,7	-0,7	43,5	-0,4	-3,5	-0,2	0,0	5,6
Paper products	3,0	16,1	16,5	12,1	14,7	4,9	5,3	29,1	-3,3	-5,2	13,4	-3,7	0,8	3,5	43,3	-1,5
Medicines & Chemicals	-1,2	10,3	28,8	6,4	-0,4	-1,9	0,9	78,2	-5,3	-4,9	6,3	-5,7	-3,6	-3,0	-0,9	-3,6
Iron and steel	9,3	2,7	49,2	9,5	44,8	2,7	3,3	161,4	-2,4	-4,4	23,4	-4,4	1,6	-3,5	-1,0	0,0
Cars	8,8	143,6	256,6	-7,8	35,7	11,4	13,4	270,9	23,0	3,5	40,8	-4,2	6,2	1,3	188,7	7,9
Machinery	3,9	17,0	70,4	16,3	26,8	0,0	1,1	58,7	-3,2	-1,9	3,8	-2,9	-1,7	1,3	2,5	3,5
Textiles, clothing & shoes	-58,5	-36,1	-40,6	-37,1	-44,4	-43,9	-42,1	108,9	-57,4	-42,9	4,5	-53,7	-41,7	-43,5	-76,4	-49,7
Other manufactures	2,0	13,8	12,1	9,2	6,4	0,3	4,7	5,7	-1,6	-0,7	12,7	-2,7	-6,7	0,8	-3,0	0,6
Telecommunications	1,0	2,1	5,2	2,8	5,3	1,9	-0,6	-3,4	1,2	0,8	-1,2	-2,2	3,1	0,8	1,9	-0,2
Financial services	1,6	2,1	3,9	2,1	9,8	2,1	-1,7	-2,7	-0,6	-1,6	-2,4	-0,8	0,6	1,3	1,7	0,3
Construction services	1,2	6,8	3,8	1,9	7,9	0,3	-1,4	-5,4	-0,4	-1,9	-1,3	-0,6	0,4	0,8	-1,3	0,5
Transport services	0,1	1,7	1,4	1,5	0,7	0,0	0,3	-4,0	-1,7	-1,8	-19,0	-1,0	-1,3	1,4	-1,7	-0,8
Distribution services	2,0	2,3	4,2	2,6	4,9	0,2	-0,9	-4,5	-0,3	-0,7	-1,4	-0,5	1,4	-0,7	1,3	0,5
Business services	0,6	1,1	0,4	1,7	0,5	0,5	-0,6	-1,1	0,1	-1,3	-1,2	-0,5	1,1	0,0	-0,8	-0,2
Other services	0,7	2,0	3,8	2,2	7,4	0,9	-1,3	-6,6	-0,7	-1,5	-1,3	-1,8	1,5	1,3	1,3	-0,5
<i>Total</i>	<i>2,2</i>	<i>23,1</i>	<i>37,7</i>	<i>5,3</i>	<i>13,2</i>	<i>2,1</i>	<i>1,0</i>	<i>32,0</i>	<i>-0,9</i>	<i>-1,4</i>	<i>9,0</i>	<i>-3,9</i>	<i>-1,4</i>	<i>0,6</i>	<i>25,6</i>	<i>0,5</i>

The post-liberalisation economy in SWEDEN

Table 22.2: The Swedish trade and production, post-Doha

ECONOMIC STRUCTURE	IMPORT		EXPORT		PRODUCTION	
	Share in production	% change of share	Share in production	% change of share	Share in production	% change of share
Grains	0,1	8,0	0,1	-35,9	0,1	-25,3
Pig and poultry	0,6	0,7	0,4	13,7	0,9	0,7
Dairy products	0,3	-1,1	0,2	-17,3	0,8	-1,6
Processed food	3,1	6,2	1,4	-5,4	1,9	-4,0
Other agricultural goods	1,8	0,7	0,1	-18,2	0,7	-5,5
<i>TOTAL Agriculture</i>	<i>5,8</i>	<i>3,5</i>	<i>2,2</i>	<i>-7,1</i>	<i>4,4</i>	<i>-3,4</i>
Extraction industries	4,3	-1,3	0,9	-1,1	1,3	0,5
Wood products	2,0	-0,9	4,3	5,1	1,3	4,2
Paper products	2,1	0,5	9,3	-2,1	5,3	-1,1
Medical and chemistry	10,0	-1,0	10,1	-4,1	5,2	-3,3
Ferrous products	2,5	-1,1	3,7	-0,6	1,1	-0,5
Cars	7,2	1,4	11,3	7,3	3,5	4,7
Machines	16,6	-0,5	19,8	3,0	5,7	2,4
Textiles	4,4	3,4	0,6	-49,9	0,2	-53,2
Other industrial goods	17,5	0,4	18,5	0,0	10,3	0,0
<i>TOTAL Manufactures</i>	<i>66,6</i>	<i>0,1</i>	<i>78,5</i>	<i>0,4</i>	<i>33,9</i>	<i>-0,3</i>
Telecommunications	1,0	-2,2	0,8	-0,7	1,7	0,0
Financial services	1,5	-1,3	1,0	-0,2	6,4	0,0
Construction services	0,5	-1,1	0,6	0,0	5,9	0,2
Transport services	7,3	0,5	3,9	-1,3	5,8	3,2
Distribution services	2,3	-1,8	2,6	-0,1	7,6	0,2
Business services	11,8	-1,3	6,5	-0,7	3,0	-0,1
Other services	3,4	-0,8	3,8	-1,0	31,3	0,2
<i>TOTAL Services</i>	<i>27,6</i>	<i>-0,8</i>	<i>19,3</i>	<i>-0,8</i>	<i>61,7</i>	<i>0,4</i>
Total	100,0	0,0	100,0	0,0	100,0	0,0

Source: Own GTAP simulation results.

Table 22.1: Swedish tariffs and subsidies, post-Doha (in % of value)

	tms	txs (neg value = tax)	to (neg value = tax)	tfd (neg value = subsidy)	tfm (neg value = subsidy)
<i>AGRICULTURE</i>					
Grains	15,2	-5,0	0,8	-2,9	-3,2
Pig and poultry	5,2	-2,8	0,0	0,1	1,3
Dairy products	10,3	-4,3	0,2	-0,3	-0,2
Processed food	8,0	-2,4	-6,9	0,5	1,2
Other agricultural goods	10,7	-3,0	0,1	-3,5	-4,2
<i>TOTAL Agriculture</i>	<i>9,1</i>	<i>-2,7</i>	<i>-3,1</i>	<i>-0,4</i>	<i>0,4</i>

<i>MANUFACTURES</i>	tms	SERVICES	ete*
Extraction industries	1,3	Telecommunication	24,0
Wood products	1,6	Construction	0,5
Paper products	1,3	Distribution	2,3
Medical and chemistry	2,1	Financial	0,0
Ferrous products	1,3	Transport	0,8
Cars	4,1	Business nec	0,4
Machines	2,1	Other services	0,0
Textiles	5,6		
Other industrial goods	2,3		
<i>TOTAL Manufactures</i>	<i>2,6</i>	<i>TOTAL Services</i>	<i>4,0</i>

* The estimated cost of a tariff minus the benchmark cost in the region
which represents 'best practice' (simple averages).

Table 23.1: Change in real wages (%), pfactreal

	Core scenario		Less		More	
	UnSkLab	SkLab	UnSkLab	SkLab	UnSkLab	SkLab
Australia	0,56	0,39	0,26	0,16	1,65	1,06
RoW	2,21	2,12	0,90	0,99	6,84	6,94
China	2,67	0,43	1,64	0,30	6,42	2,04
Japan	0,48	1,02	0,23	0,56	1,48	2,58
South Korea	6,86	6,48	4,36	4,31	13,51	12,71
DCs	1,01	1,31	0,44	0,43	3,37	4,63
LDCs	0,28	0,66	0,17	0,27	0,94	2,09
India	1,63	0,38	0,97	0,08	2,74	1,09
Canada	0,50	1,02	0,24	0,59	1,07	1,71
USA	-0,06	0,18	-0,06	0,12	0,05	0,38
Brazil	0,13	0,32	0,03	0,12	0,78	1,30
EU26	0,29	0,62	0,16	0,40	0,64	1,12
Sweden	0,34	0,39	0,23	0,27	0,70	0,72
Switzerland	1,17	1,53	0,75	0,99	6,62	8,28
Norway	0,68	0,82	0,42	0,52	1,62	1,87
South Africa	1,57	2,78	0,82	1,66	4,16	6,37
<i>Ind. countries</i>	<i>0,77</i>	<i>1,09</i>	<i>0,40</i>	<i>0,63</i>	<i>2,48</i>	<i>3,10</i>
<i>Dev. countries</i>	<i>2,10</i>	<i>1,60</i>	<i>1,27</i>	<i>0,92</i>	<i>4,63</i>	<i>3,98</i>
Total	1,27	1,28	0,72	0,74	3,29	3,43

Table 23.2: Price index for private consumption expenditure (change in %), ppriv

ppriv	Core	Less	More
Australia	0,25	0,26	0,19
RoW	-0,18	-0,01	0,16
China	0,63	0,56	0,05
Japan	0,52	0,52	0,20
South Korea	-0,62	-0,75	-0,04
DCs	-0,32	-0,06	-0,32
LDCs	-0,72	-0,30	-1,13
India	-2,68	-2,20	-2,50
Canada	-0,86	-0,61	-2,10
USA	-0,82	-0,55	-1,55
Brazil	-0,88	-0,40	-0,99
EU26	-0,48	-0,37	-1,07
Sweden	-0,18	-0,13	-0,41
Switzerland	-0,60	-0,48	-3,06
Norway	0,04	-0,02	-0,39
South Africa	-1,20	-1,08	-1,22
<i>Ind. countries</i>	<i>-0,35</i>	<i>-0,25</i>	<i>-0,92</i>
<i>Dev. countries</i>	<i>-0,77</i>	<i>-0,52</i>	<i>-0,82</i>
Total	-0,51	-0,35	-0,89

Source: Own GTAP simulation results.

Table 24: Price changes in the core scenario (%)

SWEDEN	Market price (pm)	World price of composite imports (piw)	World price of composite export (pxw)	World price index of total good i supplies (pw)
Land	-26,49	-	-	-
Unskilled labour	0,16	-	-	-
Skilled labour	0,20	-	-	-
Capital	0,21	-	-	-
Natural Resources	1,61	-	-	-
Grains	-2,88	-1,40	9,12	-0,09
Pig and poultry	-0,14	-0,69	1,07	0,24
Dairy products	0,05	0,55	3,83	2,94
Processed food	0,22	-0,26	1,24	-0,75
Other agricultural goods	-0,74	-0,80	5,13	0,36
Extraction industries	0,19	0,01	0,03	-0,53
Wood products	-0,64	-0,40	-0,77	-0,62
Paper products	0,27	-0,23	0,19	-0,38
Medical and chemistry	0,68	-0,41	0,57	-0,36
Ferrous products	0,06	-0,56	-0,04	0,13
Cars	-0,57	-0,71	-0,68	-0,88
Machines	-0,32	-0,52	-0,48	-0,23
Textiles	7,00	-2,47	6,88	-1,70
Other industrial goods	-0,01	-0,39	-0,20	-0,42
Telecommunications	-0,03	-0,08	-0,03	-0,09
Financial services	0,12	-0,11	0,12	-0,26
Construction services	0,05	-0,04	0,05	-0,08
Transport services	0,12	-0,18	0,12	-0,09
Distribution services	0,09	0,02	0,09	-0,07
Business services	-0,01	-0,20	-0,01	-0,20
Other services	0,13	-0,20	0,13	-0,08
Capital goods	-0,21	-	-	-

Source: Own GTAP simulation results.

Table 25.1: National income effects of different elements of GLOBAL agricultural reform (mn USD)

-- CORE SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies (to)	Input subsidies on domestics (tfd)	Input subsidies on imports (tfm)	Total
Australia	483	19	0	0	0	502
RoW	1 170	-948	-4	0	0	218
China	1 250	-280	-5	-1	0	964
Japan	3 359	-548	-4	-1	-1	2 805
South Korea	4 179	-46	2	12	0	4 146
DCs	2 374	-1 763	-11	-2	-1	597
LDCs	-53	-252	-1	0	0	-307
India	37	-33	0	0	0	5
Canada	2 139	-375	-4	-1	0	1 759
USA	526	-370	0	0	-1	155
Brazil	629	-2	-1	0	0	626
EU26	3 474	2 134	-22	-1	-7	5 578
Sweden	79	51	5	1	-1	135
Switzerland	542	-53	23	4	2	518
NOIC	434	-131	43	18	5	369
South Africa	59	-15	0	0	0	44
<i>Total</i>	<i>20 680</i>	<i>-2 612</i>	<i>21</i>	<i>29</i>	<i>-4</i>	<i>18 115</i>

Effects of reform decomposed without including cuts in direct border procedures barriers

Table 25.2: National income effects of different elements of GLOBAL agricultural reform (mn USD)

-- LESS SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies (to)	Input subsidies on domestics (tfd)	Input subsidies on imports (tfm)	Total
Australia	281	16	0	0	0	297
RoW	876	-946	-3	0	0	-72
China	1 051	-276	-3	-1	0	771
Japan	1 523	-535	-3	-1	-1	984
South Korea	3 574	-44	1	9	0	3 541
DCs	1 891	-1 746	-7	-1	-1	136
LDCs	-35	-248	-1	0	0	-283
India	59	-32	0	0	0	27
Canada	1 646	-338	-2	0	0	1 305
USA	400	-365	0	0	-1	34
Brazil	494	-3	0	0	0	491
EU26	2 829	2 082	-15	0	-5	4 891
Sweden	63	50	3	1	-1	117
Switzerland	462	-54	12	1	1	421
NOIC	347	-124	34	14	4	275
South Africa	34	-15	0	0	0	19
<i>Total</i>	<i>15 496</i>	<i>-2 577</i>	<i>14</i>	<i>22</i>	<i>-3</i>	<i>12 951</i>

Effects of reform decomposed without including cuts in direct border procedures barriers

Table 25.3: National income effects of different elements of GLOBAL agricultural reform (mn USD)

--MORE SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies (to)	Input subsidies on domestics (tfd)	Input subsidies on imports (tfm)	Total
Australia	845	24	3	7	2	881
RoW	1 602	-978	-20	-10	-5	589
China	1 515	-291	-38	-27	-5	1 153
Japan	6 197	-567	-69	-41	-9	5 511
South Korea	5 220	-47	-14	8	-2	5 165
DCs	3 201	-1 845	-110	-55	-20	1 171
LDCs	-2	-272	0	3	-2	-273
India	173	-37	-3	-1	-1	130
Canada	2 632	-407	-14	-2	-8	2 200
USA	793	-402	168	61	27	647
Brazil	929	0	2	3	-1	933
EU26	4 223	2 317	3	34	0	6 578
Sweden	98	54	4	2	-1	158
Switzerland	644	-57	31	7	-2	623
NOIC	543	-141	52	20	6	480
South Africa	101	-15	0	0	0	86
Total	28 714	-2 665	-4	9	-24	26 030

Effects of reform decomposed without including cuts in direct border procedures barriers

Table 25.4: National income effects of different elements of SWEDISH agricultural reform (mn USD)

-- CORE SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies* (to)	Input subsidies on domestics* (tfd)	Input subsidies on imports* (tfm)	Total
Australia	1	1	0	0	0	2
RoW	1	-6	0	0	0	-5
China	0	-4	0	0	0	-4
Japan	-1	-8	0	0	0	-9
South Korea	0	-1	0	0	0	-1
DCs	5	-41	0	0	0	-36
LDCs	-1	-2	0	0	0	-2
India	0	-1	0	0	0	-1
Canada	1	-1	0	0	0	0
USA	2	-11	0	0	0	-9
Brazil	1	0	0	0	0	2
EU26	-1	-10	0	0	0	-12
Sweden	34	45	0	0	0	80
Switzerland	0	-4	0	0	0	-3
NOIC	4	-23	0	0	0	-19
South Africa	1	0	0	0	0	1
Total	47	-65	0	0	0	-18

*Effects of reform decomposed without including cuts in direct border procedures barriers***No Swedish reforms are assumed in this scenario*

Table 25.5: National income effects of different elements of SWEDISH agricultural reform (mn USD)

-- LESS SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies* (to)	Input subsidies on domestics* (tfd)	Input subsidies on imports* (tfm)	Total
Australia	1	1	0	0	0	1
RoW	1	-6	0	0	0	-5
China	0	-4	0	0	0	-4
Japan	-1	-8	0	0	0	-8
South Korea	0	-1	0	0	0	-1
DCs	4	-40	0	0	0	-37
LDCs	-1	-2	0	0	0	-2
India	0	-1	0	0	0	-1
Canada	1	-1	0	0	0	0
USA	2	-11	0	0	0	-10
Brazil	1	0	0	0	0	1
EU26	-1	-10	0	0	0	-11
Sweden	30	45	0	0	0	75
Switzerland	0	-4	0	0	0	-3
NOIC	3	-23	0	0	0	-20
South Africa	0	0	0	0	0	1
Total	40	-65	0	0	0	-24

*Effects of reform decomposed without including cuts in direct border procedures barriers***No Swedish reforms are assumed in this scenario*

Table 25.6: National income effects of different elements of SWEDISH agricultural reform (mn USD)

-- MORE SCENARIO

	Market access (tms)	Export subsidies (txs)	Production subsidies* (to)	Input subsidies on domestics* (tfd)	Input subsidies on imports* (tfm)	Total
Australia	1	1	0	0	0	2
RoW	1	-6	0	0	0	-5
China	0	-4	0	0	0	-4
Japan	-1	-8	0	0	0	-9
South Korea	0	-1	0	0	0	-1
DCs	7	-42	0	0	0	-35
LDCs	-1	-2	0	0	0	-2
India	0	-1	0	0	0	-1
Canada	1	-1	0	0	0	0
USA	2	-12	0	0	0	-10
Brazil	2	0	0	0	0	2
EU26	-1	-9	0	0	0	-11
Sweden	37	46	0	-1	0	84
Switzerland	0	-4	0	0	0	-4
NOIC	5	-23	0	0	0	-18
South Africa	1	0	0	0	0	1
Total	54	-66	0	-1	0	-13

*Effects of reform decomposed without including cuts in direct border procedures barriers***No Swedish reforms are assumed in this scenario*

Source: Own GTAP simulation results.

Table 26: Change in Swedish production volume (%)

		LESS	MORE
	CORE Doha	liberalisation	liberalisation
Volume changes (go large)	scenario	scenario	scenario
Grains	-23,1	-22,4	-23,7
Pig & Poultry meat	0,8	0,3	1,4
Dairy products	-1,4	-1,3	-2,1
Processed food	-3,7	-3,2	-5,7
Other agricultural products	-4,8	-4,0	-6,7
Extraction industries	0,2	0,4	-1,1
Wood products	4,1	3,7	1,0
Paper products	-1,2	-0,8	-2,0
Medicine & chemical industry	-3,2	-2,0	-5,2
Ferrous products	-0,5	-0,3	-1,0
Motor vehicles	4,7	3,4	9,0
Machines	2,4	1,8	2,8
Textiles & clothing	-51,9	-38,4	-70,2
Other industrial products	0,0	0,1	-0,4
Telecommunications	0,0	0,0	0,0
Financ	-0,1	-0,1	-0,2
Construction	0,1	0,1	0,3
Transportation	3,0	1,8	6,3
Distribution	0,1	0,1	0,2
Business	-0,1	-0,1	-0,3
Other services	0,0	0,0	0,0

Source: Own GTAP simulation results.

Table 27: Estimates of gains from trade liberalisation, in % of GDP and billions of US dollars.

Study	Model	Liberalisation elements				Global gains	
		Agriculture	Manufactures	Services	Trade facilitation	Doha scenario	Full liberalisation
Swedish National Board of Trade (2006)	Standard*	X	X	X	X	0.3% (\$80 bn)	1.2% (\$369 bn)
	Imperfect competition**	X	X	X	X	0.4% (\$117 bn)	1.7% (\$540 bn)
<i>Carnegie (2006)**</i>	Standard but with technological change, sluggish real wages and two forms of unskilled labour	X	X			0.2% (\$59 bn)	0.5% (\$168 bn)
<i>World Bank (2005)***</i>	Model with dynamics, macro-economic projections and high elasticities	X	X			0.2% (\$96 bn)	0.7% (\$287 bn)
<i>Matthews and Walsh (2005)</i>	Standard but with macro-economic projections	X	X	X	X	0.3% (\$120 bn)	
<i>Francois et al (2005)</i>	Imperfect competition**	X	X	X	X	0.5% (\$158 bn)	

For references, see the bibliography in the report. In bold is this study and its main model results.

* Signifying a static CGE-model with perfect competition and constant returns to scale

** Static CGE-model with monopolistic competition and increasing returns to scale

*** Author: Polaski (2006).

**** Author: Anderson et al (2005).

Tabel 28: Results from systematic sensitivity analysis (SSA)

<i>National income</i>				95% probability		75% probability	
	Result	Mean	St Dev	lower	upper	lower	upper
Australia	1 875	2 066	643	-810	4 942	-1 149	5 281
RoW	5 381	6 108	2 344	-4 374	16 590	-5 611	17 827
China	5 339	-2 069	18 597	-85 240	81 101	-95 056	90 918
Japan	14 534	16 414	5 992	-10 384	43 212	-13 547	46 375
South Korea	8 750	8 619	432	6 688	10 550	6 460	10 778
DCs	25 434	29 506	11 257	-20 836	79 849	-26 778	85 791
LDCs	3 724	3 873	613	1 133	6 614	809	6 938
India	583	547	233	-494	1 588	-617	1 711
Canada	3 071	3 403	1 245	-2 165	8 971	-2 823	9 629
USA	4 624	6 809	5 611	-18 283	31 901	-21 245	34 863
Brazil	2 207	2 264	204	1 351	3 178	1 243	3 286
EU26	21 361	23 926	7 835	-11 114	58 966	-15 249	63 102
Sweden	661	710	179	-89	1 509	-184	1 604
Switzerland	2 105	2 090	122	1 544	2 636	1 480	2 701
NOIC	683	714	125	154	1 273	88	1 339
South Africa	1 339	1 400	279	151	2 650	3	2 798

Note: SCALE, ETRAE, ESUBD varied together, all with 20%

The results in this table exclude improvements in border procedures related to direct costs.

Source: Own GTAP simulation results.

TECHNICAL ANNEX (ANNEX 2): Method, data and the design of scenarios

Introduction

In this technical annex, more detailed information on the set-up of the study is provided. This includes choice of method and data, details on how the baseline has been updated, as well as a more detailed presentation of the scenarios. In the final section, the sensitivity of the results to changes in key parameters and assumptions is briefly discussed.

Method

The global system of international trade constitutes a complex web of inter-linkages in the form of flows of goods, capital and services. Even moderate changes in a sector or country may have unexpected effects elsewhere, through these linkages. In order to capture these linkages when evaluating the expectedly broad policy changes of the Doha Round, we use a computable general equilibrium model (CGE).

As with any abstractions, the use of a CGE model means making several assumptions about actors' behaviour and the character or availability of goods and services. The assumptions made will influence simulation results, and may constitute limitations and complicate comparisons between studies significantly. In this model, as in most other similar studies, resources of production are presumed to be limited and fully utilised. The input factors capital and labour can move between sectors but not between countries. Producers and consumers are assumed to maximise profits and utility. Tax payments generate government income but also utility from government consumption. In the main (static) model, savings by actors are invested and affect production activity but not capacity. Moreover, foreign direct investment is not explicitly considered in the standard model. Generally, intra-industry trade is modelled by presuming that countries' produce of (say) cars differ to some extent, the so-called Armington assumption. Commonly, this type of analysis is not modelled to involve adjustment costs, lead to changes in total employment, or bring technology transfer and development. Another caveat is that values of behavioural parameters have to be specified and this influences simulation results. Moreover, the sectoral and regional aggregation as well as the design of reform scenarios will affect simulation outcomes. In addition, available data is often not up to date. Updating the so-called baseline is by nature selective and choices are made according with the focus of the study. The process of updating the baseline may have an impact on the outcome from trade liberalisation.

The main model used in this study is a modified version of the widely used GTAP model. The standard static GTAP model involves perfect

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competition and constant returns to scale.¹ In contrast, the modified version used in this study incorporates scale economies and imperfect competition, along the lines of Francois et al (2005). For comparison, we also perform simulations using the standard model. The reason for modifications of the main model is that it adds to the understanding of the underlying mechanisms that generate trade. The existence of economies of scale can partly explain intra-industry trade in manufactures (Markusen et al, 1995, p. 230f.) By including scale economies and imperfect competition, the effects of trade liberalisation linked to increased competition and specialization can be captured.

In this study, imperfect competition and scale economies is modelled as monopolistic competition in the manufactures sectors as well as the dairy and processed food sectors. This is primarily appropriate when the goods or services are heterogeneous and entry is free. For manufactures trade, especially among industrial countries, this seems to be a reasonable assumption.² In contrast, primary products are more homogenous and fixed costs such as advertising can be expected to be lower on average. In addition, availability of data has affected the choice not to model monopolistic competition in some of the primary and services sectors.

The model specification in this study is based on the assumption that there are many firms, acting as monopolistic competitors, differentiating their products but setting prices at average cost, since free entry drives profits down to zero. In production, more variety, that is more differentiated inputs, leads to proportional improvements in productivity. The overall result of the specification is scale effects external to the firm. In fact, *both* firms and consumers have a “love of variety” in sourcing inputs and consuming, and demand for a good is less than perfectly elastic. As policy changes have an effect on the number of varieties, national income is affected through changes in consumer utility and productivity. Key parameters in this study are substitution elasticities for domestic and imported goods, as well as scale elasticities, see table A17.

Some simplifying assumptions are made: (1) firms of an industry, within a region, produce equal quantities and set the same price, in equilibrium; (2) firms and consumers in a region demand exactly the same quantity from each firm producing the good in a specific region; and (3) expansion in production takes the form of new varieties, implying that no rationalisation gains are modelled. The share of a particular firm in that other region goes towards zero with the number of firms, which is assumed to be large, and markups are constant.³ A result is that complete exit of a region’s firms producing a good is possible, if capital and labour

¹ Hertel (1997) provides full technical documentation on the model and connected database and GTAP (2006) accounts for recent improvements.

² See also Swaminathan and Hertel (1996, p. 3).

³ The so-called Chamberlinian “large-group” assumption.

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can move perfectly between sectors. In order to avoid the less realistic case of complete exit some sluggishness is presumed, by setting the elasticity of transformation (ETRAE) for primary factors to less than infinity.⁴ This makes the supply of those factors to each sector less price-elastic, or put another way, for a unit of factor supply to move to another sector, a higher price incentive is needed. Finally, since medium to long run changes are to be modelled in this study, net capital flows, and thereby also the trade balance, are fixed for all regions. This allows enough time to pass to enable shifts in regional specialisation, when changes in prices and productivity occur. For further technical details, see Francois et al (2005).

Results of the main model are also compared with those from a simple dynamic one, having modified the main model along the lines of Francois, McDonald and Nordström (1996). This is done in order to capture important longer term effects related to changes in the capital stock. Such effects are likely to magnify the results of a reform. Even simple growth models assume a positive relationship between savings, investment and income. Income growth induced by trade policy reforms is therefore not only likely to raise savings levels and economic activity, but also to increase the capital stock, and thereby raise productivity and income.⁵ However, static results might also be partly reversed, e.g. if price of capital goods rises substantially more than income, leading to a decrease in the capital stock. It is further assumed that savings rates do not change as a result of trade policy changes.⁶ Finally, it can be added that even with this model, dynamic effects of trade liberalisation that are related to general productivity growth are not captured. National income gains are therefore likely to be underestimated.

Data

The latest version (version 6.2) of the GTAP database, used in this study, provides a snapshot of world trade, production and relevant policies in 2001. In this study, the global economy has then been aggregated into 16 regions and 21 sectors (see table A1.1-1.2). Important actors in the WTO negotiations have been selected, including: the EU, the US, India and Brazil. Also three composite regions are defined in the study: developing countries; least developed countries (LDCs); and a residual group called “rest of the world” (ROW).⁷ The sectoral aggregation has a slight bias

⁴ Values are set to 5 for labour and 50 for capital.

⁵ Thus, income growth resulting from reform could, at least in the medium-run be augmented and sustained.

⁶ Some support for this can be found in Kotlikoff (1989, p. 169 & 456ff). However, as shown by the same author (ch. 7), the relation between fiscal policy and savings rates is not clear cut.

⁷ The definition of developing countries, including least developed countries, follow the definitions by the WTO. Since developing countries define themselves in WTO, this

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towards the manufacturing sector. The database has been updated in pre-experiments to account for some important economic policy changes preceding full implementation of the Doha round outcome, here interpreted as 2015, as described below (see also figure A1).⁸ The updated database (in 2001 dollar values) constitutes the reference scenario, that is, the baseline with which results from the simulations of the Doha scenarios are compared.⁹

A number of complementary data sources have been used. For the specification of monopolistic competition, additions to as well as modifications of the existing parameter data in GTAP have been made. In order to account for the degree of competitiveness in different monopolistic sectors, a new parameter, SCALE, is added in the GTAP database. This parameter is derived from Oliviera Martins et al's (1996) estimates of mark-up ratios for manufacturing industries in 14 OECD countries (for regions not covered, OECD averages have then been calculated). As developing countries' industries are presumed to be less exposed to competition the difference between OECD average mark-up ratios and unity has been multiplied by 1.5, following Hedi Bchir et al (2002). The result is estimates of mark-up ratios for all the regions and sectors of the study. Weighted average ratios across countries have then been calculated, using GDP as weights. The mark-up ratios that are used are displayed in table A17. The SCALE parameter is then used to modify the substitution elasticities between different imports (ESUBM) and between domestic produce and imports (ESUBD) in sectors assumed to exhibit economies of scale.¹⁰

The tariff and trade data for calculating tariff cuts in industrial and agricultural goods are derived from the WITS dataset, mainly 2001 data.¹¹ Data on domestic support in the agricultural sector has primarily been taken from OECD's yearly report *Monitoring and Evaluation* (OECD, 2005), as well as from the WTO's online database with notifications by member states (WTO, 2005). Where more updated estimates have been required, complementary sources have been relied upon, for example

group consists of countries with a wide span of economic development level. The rest of the world consists of all other countries.

⁸ In the pre-experiments, the standard GTAP model, which includes perfect competition and constant returns to scale, has been used.

⁹ No other changes, such as population growth and technological change, are considered for simplicity.

¹⁰ SCALE can be derived from the Cost-Disadvantage Ratio (CDR), which in turn is derived from the mark-up ratio (μ). $\mu = P/MC$. The Cost-Disadvantage Ratio = $(P - MC)/P$, and alternatively CDR can be expressed: $CDR = (\mu - 1)/\mu$. $SCALE = CDR/(1 - CDR)$. Finally, it can be shown that, for our specification, $ESUBM = 1 / CDR$. Finally, as the specification involves direct competition between domestic and foreign varieties – the non-nested case – $ESUBD$ is set to the modified value of $ESUBM$.

¹¹ World Integrated Trade Solution (WITS). Specifically, UNCTAD's TRAINS database, and, on trade flows for Sweden and the rest of the EU (EU26), UN's COM-TRADE database.

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estimates by the Swedish Board of Agriculture, and the Canadian Ministry of Agriculture (Swedish Board of Agriculture, 2005 and Brink, 2005).

In order to model the different liberalisation scenarios in the services sector, quantitative estimates of the cost impact of the barriers to trade in services are needed. The data used in this study is based on the extensive work by the Australian Productivity Commission (APC), which includes estimates of both restrictiveness indices and cost/price impact for several different services sectors and regions.¹² In those cases where cost estimates are missing, regression analysis has been applied, using the relationship between restrictiveness and cost impact in other sectors. For one sector that was not covered by the APC, data from the OECD (2003a) has been used. All data has been adjusted to the regional and sector aggregation used in this study.

To account for indirect and direct trade transaction costs (TTCs), World Bank (2005) data, complemented by datasets used in Batra et al (2003) and OECD (2003b) have been used.¹³ Where data on indirect costs have not been found, estimates from regressions of indirect costs on GDP (both logs) have been used, with GDP figures from IMF (2005). The resulting tariff equivalents of indirect and direct costs related to border procedures are displayed in table A18.

Import tariffs for China, after their accession to the WTO have been obtained from WITS. Information on implementation of plurilateral and sectoral commitments derives from the WTO (2005), the WTO Secretariat and the Swedish National Board of Trade.

Updating the baseline

The baseline data has been updated in relative detail. This has been done in order to have a more accurate reference scenario, against which the outcome of the Doha round can be measured. At the international level, China's 2001 accession to the WTO has been included, involving adjustments of tariffs and removal of export subsidies. Plurilateral agreements to remove or harmonise tariffs on trade in the following sectors are modelled to be fully implemented: paper and paper products, steel, chemicals, and information technology.¹⁴ Moreover, the last step of a reformed multilateral textiles and clothing trade, i.e. a complete removal of export quotas, is modelled.¹⁵

¹² Studies at APC has been conducted by Kalirajan, K. (2000), McGuire et al. (2000), McGuire, G. & Schuele, M. (2000) Nguyen-Hong D. (2000), and Warren, T. (2000)

¹³ Both latter datasets have been made available by Peter Walkenhorst.

¹⁴ The exception is harmonisation of tariff levels in chemicals trade, for technical reasons. However, a maximum tariff rate of 6.5% has been implemented.

¹⁵ Export quotas are modelled as export taxes in the GTAP database. The variable for export taxes or subsidies is txs, while the one for import tariffs is tms.

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With respect to the EU, the enlargement with the 10 new member countries in 2004, as well as the expected membership of Romania and Bulgaria in 2007, is modelled in the pre-simulation. Tariffs, subsidies and quotas are removed or adjusted between new and old member countries and all other regions. Other EU reforms included in the baseline are the removal of tariffs and quotas on imports from the LDCs, through the Everything But Arms (EBA) initiative, and the internal reform of the EU's Common Agricultural Policy (CAP). The latter includes full implementation of the Agenda 2000 and the Mid-Term Review reform from 2003.¹⁶ The agricultural budget of the EU is assumed to be constant. Since agriculture is not the focus of our study, being a small part of the Swedish and the rest of the EU's economy, only a stylised representation of these reforms has been made.

Doha scenarios

The Doha negotiations are yet to enter into their final stages, but already some key features of a possible outcome can be discerned. Based on this information and recent negotiation positions three illustrative reform scenarios have been formed (see figure A2). The main difference between the three is the level of liberalisation. The focus should when interpreting the results should primarily not be on the, implications of the different reduction rates used in the scenarios, but more on the *comparison* of the different levels of liberalisation. The core scenario constitutes middle ground, while this is compared with results from less and more far-reaching liberalisation scenarios. In all three scenarios, elements included are: tariff reductions, removal of agricultural export subsidies, lowering of agricultural domestic support, increased services market access, and trade facilitation. However, apart from trade facilitation, LDCs are not assumed to undertake any commitments in the Round. Other elements, such as commitments on non-tariff barriers to trade and rules reform, are not considered. This includes the agreement of the Hong Kong Ministerial to provide LDCs with almost tariff and quota free access to industrial country markets for imports of manufactures and agricultural goods.¹⁷

¹⁶ Reforms are implemented in a separate pre-baseline simulation, for EU14 and Sweden, to achieve the new rates for the whole EU26. Cuts in the **intervention prices** are in the model achieved by reductions in the border protection, txs and tms. To compensate for the loss in income caused by reductions in intervention prices, **direct payments** are increased with the same amount. The increases in direct payments are in the model represented by increases in land subsidies, tf_{land} , (for grains, rice and raw sugar sector) and capital subsidies, $tf_{capital}$, (in the case of beef, processed sugar and dairy). For the representation of decoupling of domestic support, products specific land and capital subsidies are redistributed to represent non product specific agricultural support.

¹⁷ One reason for not including this element in the scenarios is that as much as 3 percent of tariff lines may be excluded from this deal. Another reason is that there already is almost free entry to many of these markets, for LDCs' products, through initiatives by e.g. the EU, the US and New Zealand. All this seems to reduce the additional value of

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Finally, a full liberalisation scenario, encompassing the same negotiation areas, is simulated for comparison. Below, each element of the scenarios will be introduced.

It can be added that special focus has in this study been given to the representation of trade facilitation. Some of the most recent studies on the WTO negotiations have pointed at the importance of trade facilitation in the overall gains from liberalisation (e.g. Francois et al, 2005). Also, trade in services has been identified as an important area for liberalisation and has therefore been given some attention in this study. Furthermore, a rather detailed representation of potential implications on market access in agricultural and non-agricultural goods has also been modelled.

Non-agricultural market access

In the Doha negotiations on non-agricultural market access, members have discussed formulas for reducing bound tariff rates, coefficients, exceptions, the treatment of unbound tariffs, possible sectoral initiatives and removal of very low tariffs (nuisance tariffs). Other items on the agenda include preference erosion and the situation for small vulnerable economies. There is now an agreement to use a Swiss tariff reduction formula, already used in the Tokyo Round.¹⁸ The formula is harmonising - it addresses tariff peaks, high tariffs and tariff escalation. Coefficients are currently being discussed but it seems likely that two coefficients will be used, one for industrial and another for developing countries, with LDCs excluded from tariff reductions. Possible exceptions to tariff reductions include carve outs for a certain percentage of developing countries' tariff lines – so-called flexibility. There are no details yet on this, or on the binding of unbound tariffs. Regarding sectoral initiatives, uncertainty abounds.

Considering this, and in contrast to some earlier studies such as Francois et al (2005), we cut bound tariffs (ad valorem equivalents, where available) using the Swiss formula (see figure 2 in the paper). This is done at the aggregate GTAP sector level, despite the risk of resulting in a too low estimate of tariff reductions, as tariff peaks are smoothened out. The reason is that a more detailed application would be very time-consuming.¹⁹ In the formula, two different coefficients are used for industrial and de-

the deal. Finally, important details of the element remain to be seen, also making it difficult to simulate it at this stage.

¹⁸ At the Hong Kong ministerial (WTO 2005c) it was decided that a Swiss formula should be used, with coefficients. In this study the following formula will be used with two coefficients: $T1 = (T0 * a) / (T0 + a)$; with new tariff (T1), current tariff (T0), and coefficient (a).

¹⁹ AVEs at the 6 digit level have been weighed with bilateral import flows, all data from the WITS database. The endogeneity problem pointed to by Brockmeier et al (2005) should be noted. Very high tariffs can disrupt trade and constitute severe barriers to trade, but still not be accounted for, when using import flows as weights.

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veloping countries, whereby industrial countries liberalise the most. Additionally, in the more far-reaching liberalisation scenario, nuisance tariffs in industrial countries are removed. Flexibility is not considered. Outcomes in the form of cuts to applied effective rates, are then simulated in the model.²⁰ Other parts of the negotiations, such as non-tariff barriers (NTBs) and various exceptions, are not considered, partly as it is yet too unclear what will come out of the discussions, and partly for simplicity. It can be added that full liberalisation is also simulated, which means removing tariffs globally.

Agricultural liberalisation

Agriculture was first introduced as an area for binding multilateral commitments in the Agricultural Agreement following the Uruguay Round. Until then, the agricultural sector had only been subject to less extensive regulations. The Agricultural Agreement (URAA) includes three main areas of negotiations: market access, domestic support and export subsidies. In the following sections these three areas will be dealt with separately.

Market access

Unlike the tariffs for industrial goods, most of the agricultural tariffs have been bound within the WTO. The global average for bound agricultural tariffs has been estimated to 62 percent, with large variation between countries and products (ERS/USDA, 2001). In this study, the simulation scenarios for agricultural market access draw upon the ongoing negotiations positions of some large actors, but should not be perceived as an attempt to predict the actual outcome of the Doha negotiations.²¹ It is therefore primarily the comparison of the different scenarios that is of interest.

In the July Package from 2004 it was agreed that the reductions of agricultural tariffs would follow a harmonising approach, whereby larger tariffs would have to be reduced more than lower tariffs. In the ministerial meeting in Hong Kong, in December 2005, it was concluded that there was convergence among the member states towards a linear four band reduction method. According to this formula, tariff lines are put into four different bands, according to their current bound rate. The tariff rates in the highest band will be cut with the highest percentage rate, while the tariffs in the lowest band will be cut with the lowest rate. In this study, so called “caps” on tariffs will only be implemented in the more far-

²⁰ This by changing the value of the import tax variable (tms).

²¹ The proposal by the EU (October 2005) is used for the less far-reaching liberalisation scenario for industrial countries. The negotiation climate indicates that a scenario with lower reduction levels would not lead to an agreement at all. The band intervals used for both industrial and developing countries, follow the proposal by the EU.

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reaching liberalisation scenario, both for developing and industrial countries. This implies that no tariff rates are allowed above a maximum limit. Since there is a consensus among the WTO member countries that the percentage cuts for developing countries should be no more than two thirds of the tariff cuts of industrial countries, this is the principle applied in this study. Finally, a full liberalisation scenario is simulated, where all barriers are completely removed.

In the July Package from 2004, it is stipulated that a certain amount of products/tariff lines could be chosen as “sensitive”, and be exempted from the normal reduction formula. The member states’ requests for sensitive products can be expected to be higher the more far-reaching is the reduction formula. Other exceptions from the normal reduction formula are the so called “special products” that are to be self-designated by developing countries. There are still many uncertainties about the selection criteria and the extent of these products. Other areas that still are to be dealt with within the negotiations are: special safeguard mechanisms, tariff quotas and geographical indications (GI). Because of technical and theoretical difficulties, and given that focus for this analysis is not the agricultural sector, the scenario representation in the GTAP model will not explicitly include these areas.

Domestic support

Domestic support to the agricultural sector is another area negotiated in the Doha Round. In the WTO, agricultural support is divided into three different categories according to how distorting they are to trade. The categories, or “boxes” as they are known as in WTO terminology, have been given different colours: amber, blue and green. The most trade distorting support falls in the amber box, followed by support in the blue box, while the least trade distorting is placed in the green box. According to the negotiations so far, only support in the amber and blue boxes will be subject to reductions. Furthermore, among the most trade-distorting support, 5 percent of the total value of agricultural production in developing countries, and 10 percent in developed countries have been exempted from reduction commitments within the WTO. These exemptions, known as “de minimis”, will according to the on-going negotiations also be subject to reductions. It has also been agreed that the overall trade distorting support (ODS) – including amber, de minimis and blue box support - will be reduced according to a harmonised reduction method.

In the scenario simulation of domestic support, the reduction of the blue box supports and de minimis will not be included. Because of technical difficulties, the uncertainties of how different support will be categorised and the small expected effect on these supports, these support systems are excluded from our simulations. This also implies that the reduction of

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ODS will not explicitly be represented. In this study only the amber support measures will be reduced.

As regards the blue box, only a few WTO members notify that they are using or have used support in this category: the EU, Norway, Japan, and the US.²² According to estimates of the Canadian Ministry of Agriculture and the Swedish Board of Agriculture²³, only the US and Norway can be expected to be affected by the restrictions on blue support. As regards de minimis, only Canada and the US are envisaged to have problems with their de minimis support, according to the same estimates.

The amber box

The support in the amber box will be reduced according to a harmonising approach based on a region's total initial bound support level, i.e. countries with higher bound levels will have to make larger cuts, according to the July Package from 2004. The member states' bound and applied support levels in the amber box are found in the latest notifications to the WTO (2005)²⁴ More recent estimates of applied support, from studies by the Swedish Board of Agriculture and the Canadian Ministry of Agriculture, have been relied upon for support levels in the EU and the US (2005).²⁵ According to these estimates, only a few of the regions will be affected by the reduction rates assumed in this study (see figure 2, annex 1), considering the substantial binding overhang that exist in several countries.²⁶

In the GTAP database market price support (MPS) is only modelled indirectly in the border protection rates, and will therefore not be explicitly modelled here. The reductions will be implemented as shocks to output subsidies (to) and intermediate subsidies (tfd and tfm).

Export subsidies

The third agricultural area under negotiations is the reduction of export subsidies. In the three Doha scenarios simulated in this study, all export subsidies for agricultural products will be completely removed, as agreed

²² According to WTO:s homepage, last updated in 2001

²³ Calculations for EU25 has been done by the Swedish Board of Agriculture, whereas estimates for the other countries has been conducted by the Canadian Ministry

²⁴ TN/AG/S/13.

²⁵ The reductions of the amber support will in the simulation be modelled as a shock to output subsidies and intermediate input subsidies in all agricultural sectors. In GTAP this is represented by to, tfd and tfm

²⁶ The following regions would be affected by the above reduction rates: EU, Sweden, the US, Switzerland, the NOIC group, South Korea and Australia.

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in the July Package. The demand for parallelism, referring to restrictions in other export competition policies, such as export credit and food aid, is not considered in this simulation because of the uncertainties of how this will be dealt with in the negotiations, and the difficulties of modelling these support systems. As agreed at the Hong Kong Ministerial Meeting in December 2005, the phasing out of the export support is assumed in this case to be completed by 2014.

Services liberalisation

The inclusion of trade in services under the Uruguay Round led to the WTO General Agreement on Trade in Services (GATS). Within GATS, countries make binding commitments for trade in different services sectors. These commitments can be used as a basis for estimating the restrictions to trade in a sector and region. However, similar to the binding overhang that exists for trade in goods, trade in services is often more open in reality than what is bound in WTO. Therefore, new bindings may just imply committing to what is already in practice, and will in that case not lead to actual market openings. Nevertheless, binding commitments already made could have real effects by lowering of risks and simplifying trade

Restrictions on trade in services add an extra cost on imports of services, which can be estimated as a tariff equivalent. In this study, estimates of the tariff equivalents mainly draw upon the restrictiveness indices and cost impact estimates by the Australian Productivity Commission (APC).²⁷ When a services sector is liberalised, as a consequence of the Doha Round, the tariff equivalents are reduced. The region with initial 'best practice', i.e. the lowest tariff equivalent, will in the scenario simulation be used as a benchmark to which other region will converge.²⁸ The reduction in tariff equivalents is modelled as import-augmenting technological change, a standard procedure to simulate services liberalisation in GTAP.²⁹ For example, if the tariff equivalent is 20, with a convergence factor of 10 to best practice, which is 5, the reduction is $(20-5)*0.10 = 1.5$. This is then modelled as a 1.5 percent increase in import-augmenting technological change. The increase could also be interpreted as a 1.5 percent cost saving effect in imports of a service.

According to the GATS negotiation guidelines, industrial countries will be required to make more bindings than developing countries. However,

²⁷ In cases where estimates of the cost impact are missing, the relationship between restrictiveness (explanatory variable) and cost impact (dependent variable) in other sectors are used and regression analysis is carried out in order to fill the empty gaps.

²⁸ Put another way, the region with the lowest tariff equivalent will signify a 'fully liberalised sector'. This seems reasonable, since the restriction for establishment is not likely to equal zero even in a completely liberalised market.

²⁹ This is represented by an increase in the bilateral import technology variable (ams), for each services sector

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since several countries have large gaps between the bound and actual levels, countries can be assumed to mostly bind already open markets. Also, the number of new bindings can be expected to differ in different sectors, according to how sensitive the sector is for a specific country. Here, however, the same rate of reduction for all regions and sectors is assumed, irrespective of level of development.³⁰ The equal treatment of all regions is due to the difficulties in measuring what new bindings would mean for actual market openings in different regions and sectors. Hence, it has not been possible within the realms of this study to differentiate the liberalisation rates in different regions and sectors. Nevertheless diverging sector openness should to some extent already be reflected in the benchmark, which can be expected to be higher in traditionally more protected sectors.

The reduction rates used for services liberalisation are rather modest. Since no commitments need to be made by the LDCs, they are exempted in all scenarios, except for in the full liberalisation scenario.

Clearly, there are several limitations to the representation of services liberalisation in this study. First, only reductions of barriers for cross-border trade of services are explicitly modelled. Second, because of the structure of the negotiations it is a complex task to foresee the actual outcome on different regions and sectors and to estimate the real market openings. Finally, since not all sectors are included in the data, estimates of sub-sectors have been used as proxies for some of the sectoral aggregates in this study (table 1.3). This is a restriction that should be kept in mind when interpreting the results. Even though this way of differentiating between sectors could be misleading in some cases, it ought to be an improvement from the alternative method of not considering initial restrictiveness of regions and sectors.

Trade facilitation

Trade facilitation is essentially about reforming trade procedures. This means to simplify, standardise, harmonise and, where possible, remove procedures, data requirements and administrative burdens involved in pursuing an international trade transaction.³¹ The WTO trade facilitation negotiations are aimed at improving procedures and reduce fees related to border crossing and transparency measures and do not comprehend all element of trade procedures.³²

³⁰ Most countries are in reality open to trade in a large number of services sectors, irrespective of the level of development

³¹ Swedish National Board of Trade (2002).

³² The WTO trade facilitation negotiations are aimed a clarifying and improving three GATT articles: art. V – Freedom of Transit; art. VIII – Fees and Formalities connected with Importation and Exportation; and art. X – Publication and Administration of Trade Regulations.

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Trade procedures incur direct as well as indirect trade transaction costs (TTCs), e.g. in the form of fees or documentation costs and border delays, respectively. Having surveyed the literature, OECD (2003b) suggests that, overall, direct as well as indirect TTCs could constitute 1-15 percent of the value of world trade in goods. However, transaction costs differ between countries, sectors and companies of different sizes. They are particularly high in the agro-food sector, since delays at the border are more costly for these perishable goods (OECD, 2006). Agricultural products are also subject to additional border procedure and documentation requirements related to sanitary and phytosanitary requirements. The costs of complying with cumbersome procedures are also proportionally higher for small and medium sized enterprises. TTCs are also higher in developing countries that has not undertaken trade facilitation measures and therefore still have less efficient border procedures,

In the WTO negotiations, after the so-called July Package, there appears to be agreement on basic commitments to facilitate trade of goods, encompassing all member countries. Developing countries and LDCs, which generally have lower marginal costs for trade facilitation efforts, have promised undertakings, but only in return for the necessary technical and financial assistance. However, the details of a possible outcome in this area still remain. Therefore, the value added of any simulation of this element is to allow comparison between outcomes of different levels of liberalisation for various countries and sectors, rather than putting a number on the results from a potential Doha outcome on trade facilitation.

In our highly stylised trade facilitation scenarios, attention is paid to differences in TTCs between countries and sectors and to adjustment costs. TTCs are modelled to be higher for non-OECD countries and for agricultural products.³³ All countries undertake trade facilitation commitments, according to the level of liberalisation in the scenario, but their absolute commitments differ, as it is related to how far from best practices they are. Consequently, direct as well as indirect TTCs decrease for traded goods. A convergence factor of 10-50 percent to best practice is applied in the respective scenarios.³⁴ Countries with high trade to GDP ratios and large potentials for trade facilitation could be expected to gain the most. The reduction in TTCs are partly modelled as cuts in tariff equivalents on imports and exports and partly as import-augmenting technological change respectively. The approach follows the OECD (2003b).

³³ Non-OECD TTCs are assumed to be 12,5% higher, because of a higher ratio of SMEs, and TTCs for agricultural products are assumed to be 50% higher, as done in OECD (2003b).

³⁴ Trade facilitation is not modelled to take place within the EU.

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The first part of trade facilitation concerns *direct* TTCs, including fees and formalities. These costs could range between 1-15 percent of the value of the traded good. Using this information together with an index of border process quality for 99 countries (OECD 2003b), tariff equivalents that are related to direct TTCs have been calculated and split between the export and import side.³⁵ The tariff equivalents are implemented in the model database, while minimising other subsequent changes that may arise.³⁶ Trade facilitation is partly modelled as reduction of these costs.³⁷ As a result of removing direct TTCs, governments will, at least initially, lose revenue from fees and charges (and employees engaged in trade procedures will be made redundant and forced to move to other sectors). These adjustment costs are considered in the model. However, costs for implementing the reforms are not.

The second part of trade facilitation concerns *indirect* TTCs. Cost estimates are based on World Bank (2003 and 2005) data on average border waiting times for imports and the assumption of a similar pattern when exported.³⁸ Drawing on Hummels (2001), where every day saved by an exporter is valued at some 0.5 percent of the goods value traded (disregarding outliers), this results in tariff equivalents of 1-15 percent on the value of traded goods. In contrast to direct TTCs, which in our model contribute to governmental revenue and employment, indirect TTCs provide income for no one – they constitute a deadweight loss. Hence, they can be interpreted as a depreciation cost. Reducing that cost through trade facilitation means that exports can be sold at lower price, similar to a rise in productivity in export sectors. In the model, this is implemented as import augmenting technological change.³⁹ Trade facilitation efforts on the export and import sides are combined, while putting somewhat more emphasis on the potential for cost-savings on the import side. Consequently, trade facilitation will have the largest impact for trade between countries that are the furthest from best practice.

Sensitivity analysis

All economic models are based on different assumptions on actors' behaviour and on underlying mechanisms in the economy. Generally, the

³⁵ Best and worst practice is set to be the equivalent to 1-15% TTCs. For groups of countries, simple averages have been used. The border process quality index is based on survey data on customs efficiency, hidden import barriers and administrative integrity combined with data on earlier trade facilitation efforts. The gains from reforms on the export and import side are combined (relation 40/60), assuming that import procedures are somewhat more costly than export procedures.

³⁶ Raising the value of the tax variables on import and export, tms and txs, respectively.

³⁷ As a variable can be shocked only once, the NAMA and trade facilitation shocks to import tariffs and export subsidies/taxes had to be performed one step at a time, updating the database in-between.

³⁸ For 5 of our regions, regression estimates have been used, due to lack of data (logged border delays against logged GDP).

³⁹ The variable is ams.

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focus of a study, as well as the availability of data, influences the assumptions and the parameter values of a study. Although such choices are necessary to make, they may constitute limitations and make comparisons between studies difficult, even if elements and specifications of the liberalisation scenarios are the same. The purpose of this section is therefore briefly to give an indication of the robustness of the simulation results with respect to important modelling specifications.

A *comparison with the results from other studies* may act as a “reality check”. This although different model assumptions, as well as choices involved in updating the baseline and designing the scenarios, make comparisons inherently difficult. An overview of some recent simulation exercises and their findings is provided in table A27.⁴⁰ Compared to global gains estimated in other recent simulations of potential outcomes of the Doha round, the results obtained in this study may seem somewhat low, 0.4 percent of initial GDP in the core scenario. With the inclusion of the same liberalisation elements and using the same model, Francois et al (2005) find global income gains of 0.5 percent. However, this is mainly due to more moderate scenarios in this study.⁴¹ In Matthews and Walsh (2005), where the standard static GTAP-model is applied to simulate partial liberalisation,⁴² global income gains are 0.3 percent, to be compared with 0.3 percent in this study, when applying the same model but without macro-economic projections. Compared to the simulation results in a Carnegie study by Polaski (2006) and in another one by Anderson et al (2005) at the World Bank, the estimates attained here also seem fairly reasonable, considering that these two studies excludes services liberalisation and trade facilitation and that by including them global gains are likely to be substantially higher.⁴³ As shown in this and other studies, trade facilitation may contribute substantially to global income gains, potentially as much as 40-50 percent.

Turning to *key parameters* in the model, central to results are elasticities of substitution between products from different countries. Recent studies indicate that the previous versions of the GTAP-database had lower substitution elasticities than is empirically justified (Hertel et al, 2004). However, in the most recent version of the model these values have been adjusted upwards on the basis of the econometric evidence. Still, because

⁴⁰ For details on model assumptions, updates as well as scenarios, please see the referred studies.

⁴¹ The main scenario in Francois et al (2005) contains the following elements (for all countries if not indicated otherwise): 50% cut in tariffs on merchandise; 50% cut in services barriers; 50% cut in export subsidies and OECD-countries’ domestic agricultural subsidies; and a cost-saving on imported merchandise equivalent to 1.5% of the value of the traded goods, due to trade facilitation.

⁴² Involving perfect competition and constant returns to scale.

⁴³ Of course, it should be recognised that the model and scenario features differ between these two studies as well as between them and the simulations run here.

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of their expected importance the sensitivity of the gains from trade liberalisation with respect to these key parameters is tested.

Systematic sensitivity analysis has been applied to the following three parameters of the study: the demand elasticity of substitution (ESUBD); the elasticity of transformation of capital and labour (ETRAE); and the parameter indicating the level of mark up in different sectors modelled with imperfect competition (SCALE).⁴⁴ In table A28 results from this analysis are displayed, including the mean, the standard deviations, and a probability interval indicating the lower and upper boundaries.⁴⁵ To facilitate the interpretation of the results, the simulation of direct trade facilitation is not included in the sensitivity analysis. As can be seen in table A28, varying the parameter values significantly influences the overall results. This underlines the nature of this type of exercise, to be a basis for discussion of issues of trade liberalisation rather than to provide precise numbers on overall gains. It can be added that in some other studies by e.g. Anderson et al (2005) at the World Bank, significantly higher elasticities of substitution are assumed, in particular for agricultural goods. Consequently, liberalisation leads to substantially higher global income gains, especially from agricultural liberalisation.

Besides parameter values, the results are also very much contingent on the *assumptions on the functioning of the economy*, as already indicated. For example, it is observed in the analysis that the assumption of imperfect competition and scale economy in a specific sector will play an important part on the outcome for that sector, but might also be crucial for a whole economy. Therefore, in this study three types of models have been used: a model with perfect competition and constant returns to scale (the standard GTAP-model); a model with imperfect competition and increasing returns to scale (the main model of this study); and a model that also includes dynamics from capital accumulation. In table 13 national income results from these three models are presented. The diverging results from the scenario simulations with these three models indicate the importance of the underlying assumptions on competition, scale economies and dynamics. As can be noted, all regions win in all the three models and in all the scenarios, but the relative distribution of gains from liberalisation differs.⁴⁶ For example, adding imperfect competition and economies of scale boosts the global results with some 50 percent but only with 10 percent for developing countries. With dynamics from capital accumulation added, global gains increase with about 200 percent.

⁴⁴ The software of the GTAP-package includes the programme that has been used for the systematic sensitivity analysis.

⁴⁵ Chebyshev's inequality (Hogg and Craig, 1970) is used to create a 95 per cent confidence interval for the result. The three parameters are varied together, each with 20 per cent.

⁴⁶ One exception to this result is the outcome for China in the less far-reaching and the core liberalisation scenarios, when using the dynamic model.

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Another assumption concerns the *labour markets*. The common assumption modelled in these types of studies, including this one, is that overall employment levels do not change. However, in some studies, such as Polaski (2006), it is assumed that employment levels change with the stated reason that this is more realistic for developing countries. Rather than fixing employment levels, real wages in the sector with unemployment are made sluggish or fixed. This alternative modelling specification may affect the results. In Polaski's report, unemployment among unskilled urban labours (assuming fixed real wage rates), results in larger gains in national income for developing countries with a competitive edge in manufactures, and less gains in other developing countries. Still, the assumption of fixed real wages is also a strong assumption.

National income results of simulations are also affected by the specifics of the liberalisation scenarios. An example from this study is that by omitting so-called flexibility in agricultural liberalisation – whereby some products are excluded from liberalisation – gains are likely to be overestimated. In a recent study by the Anderson and Martin (2005) it is concluded that if 2 and 4 percent of developed and developing countries' agricultural products are exempted from tariff cuts, respectively, the overall gains from agricultural liberalisation will be reduced by 75 percent.

As mentioned in the report, *aggregation* of sectors and regions also matters. For example, tariff peaks in a particular sector is smoothened out when that sector and another sector are combined into one aggregate sector. Underestimation of tariff cuts and gains from liberalisation is therefore not unlikely if the total number of sectors is small. In this study, the focus on manufactures has led to a relatively small number of agricultural sectors in the aggregation. This is likely to have affected the results of agricultural liberalisation.

The *closure* of the model is also of importance. In this study, the trade balance is fixed in order to model medium run changes. However, fixing the trade balance implies that net capital flows are hampered. This may lead to an underestimation of gains for developing countries. Developing countries could be expected to experience negative terms-of-trade effects of trade liberalisation and therefore need to export more to pay for these losses, especially if net capital inflows could not balance the negative effects.⁴⁷

⁴⁷ Valenzuela, E. et al (2006).

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