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This paper is from the
GTAP Annual Conference on Global Economic Analysis
https://www.gtap.agecon.purdue.edu/events/conferences/default.asp

A Global Baltic

- Potential Gains from Trade Liberalisation in the Baltic Sea States

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APRIL 2008

ABSTRACT:

What would a "Global Baltic", liberalised to the rest of the world, mean for national income and trade patterns of the Baltic Sea region? Although the countries have displayed substantial economic growth and relatively high trading activity over the last decade, facilitated by politico-economic reforms, significant trade barriers still exist in the region. Their removal might further boost the economies of the region. The aim of this study is to analyse the potential effects from unilateral trade liberalisation, using a CGE-model with monopolistic competition in most aggregate sectors. Besides addressing the "usual suspects" (tariffs, subsidies and tariff-equivalents for restrictions to services trade) as well as trade facilitation in the main simulation, we also address some core non-tariff-measures (NTM) in a separate simulation. The NTM-simulation is based on recently released data.

The effect of a "Global Baltic" would be a substantial boost to national income and trade of the region: a 1 and 0.9 percent increase in regional income, in the main and the NTM-scenario, respectively. In other words, liberalisation would sustain growth in the area. Particularly strong results are found for the group of emerging market economies of the region. The largest income gains stem from a country's own liberalisation. With respect to the different simulation elements, trade facilitation and reductions in NTMs bring the major sources of gains. In the main as well as the NTM scenario, effects on national income are primarily due to elimination of dead-weight losses caused by rules and regulations at, or behind the border and more efficient allocation of resources. The income effects from scale economies are slightly negative in both scenarios on an aggregate level. On a country level, the results show that different reforms create different incentives for production, and that the net-effect on a country's national income will to a large extent be related to which sectors are expanding/contracting. Structurally, the expected joint effect of the two simulation scenarios is a move towards services and industrial production and export.

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1. Introduction

The Baltic Sea region is a dynamic area with several countries displaying substantial economic growth over the last decade. Geographically, the area is well connected through commercial waterways, which for centuries has contributed to high trading activities in the region. Besides historical explanations, recent political and economic developments have contributed to the countries' performances. This includes reforms in Russia, as well as in the Baltic States and Poland and the EU-partnership/membership of the latter countries. Trade policy has also been affected and is arguably more liberal now than in many decades.

Nevertheless, a brief review of the external trade policies of the countries around the Baltic Sea shows that significant barriers to trade still exist.[2] For example, import procedures have on an average been estimated to take some 36 days in Russia and 27 days in Poland, compared with three days in Singapore.[3] The tariff equivalent of technical rules and other core non-tariff-measures is estimated to be 50 per cent higher in EU-countries than globally, for trade in goods (see section three, below). Lowering such barriers to trade could be expected to provide an important boost to the economies of the region, as well as a non-negligible effect on the global economy.[4] With respect to the region, consumers would benefit from goods and services at lower costs and producers could become more competitive as inputs would become less costly. Liberalisation would allow the resources of the economies to be used more efficiently and their competitive advantages to be more fully exploited. At the same time, for better or for worse, changes in prices and re-direction of trade may also affect the overall result through changes in countries' terms-of-trade.

The aim of the study is to analyse what a "Global Baltic", liberalised to the rest of the world, would mean for national income and trade patterns of the region. Two different types of trade liberalisation scenarios are simulated using a computable general equilibrium (CGE) model with monopolistic competition. In the main scenario, the "usual suspects" (tariffs, subsidies and tariff-equivalents for restrictions to services trade) are addressed and cumbersome border procedures are reduced. In a separate scenario, cuts in the tariff equivalents of some core non-tariff-measures (NTM) are simulated. The NTM-simulation is based on recently released data. The countries included are all members of the Council of the Baltic Sea States (CBSS), which is a political forum for intergovernmental cooperation around the Baltic Sea.[5]

The outline of the study is as follows. In the next section the modelling approach, the liberalisation scenarios and some main limitations are provided. In section three a brief overview of the overall economic trade environment in the countries of the region is given. In section four the outcome of the liberalisation scenarios are presented and discussed. In the fifth and final section key conclusions are drawn and final comments are made.

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[2] Apart from this study, see the qualitative analysis of Swedish National Board of Trade (2007).
[3] Indicator of the World Bank (2008), based on survey data from 2005.
[4] The region constitutes almost a tenth of the global economy, in purchasing power parity GDP terms.
[5] CBSS country members: Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

2. Modelling approach and scenarios

A Global Trade Model

The global economy constitutes a complex web of linkages in the form of flows of goods, services and capital. When trade policy is changed in one country and sector it may therefore have effects elsewhere in the economy, as well as elsewhere in the world. In order to capture the effects that are set off by several such policy changes, a computable general equilibrium model (CGE model) is often used.[6] In CGE models, different sectors and countries are inter-linked through demand and supply equations, and all markets are presumed to be in equilibrium (demand equals supply) both before and after the policy change. In order for markets to adjust to new conditions and return to a new level of equilibrium, a medium run perspective (some 10 years) is assumed.

This type of model, as all models, has its limitations (see below). Still it is very useful for tracking the direct and indirect effects of a policy change, as well as for comparing and ranking the outcome of different scenarios on variables such as national income and trade. National income gains are here represented by the change in the real value of consumption and savings, considering income as well as price changes.[7]

The chosen modelling approach is based on the GTAP-framework.[8] GTAP is a global project of researchers and institutions, initiated to facilitate economic modelling of international trade. The project provides a standard static computable general equilibrium (CGE) model and an associated database of the world economy. The framework has been used in several analyses of trade liberalisation, not least regarding potential outcomes of the Doha round.[9]

In an attempt to make the model more realistic the standard GTAP-model is modified a long the lines of Francois et al. (2005). The standard assumption of perfect competition and constant returns to scale is replaced with the assumption of monopolistic competition and scale economies in all sectors except the non-processed agricultural sectors.[10] This results in trade not only being driven by differences in the global distribution of factors of production and production technologies, but also by economies of scale and a demand for more diversified goods ('love of variety').

The main data set used is the GTAP database, version 6.2, in which a snapshot of the world economy in year 2001 is provided. We have updated the database through a pre-simulation in order to account for some important policy changes that have taken place since 2001, or can be expected take place within the next-coming 10 years.[11] The following policy changes have to different extents been accounted for in the pre-simulation: the EU-enlargement (including the accession of Bulgaria and Romania); the Everything But Arms Agreement (tariff- and quota-free entry for goods exports from the least developed countries to the EU); the full

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[6] For an introduction to these types of economic models and their limitations, see Piermartini and Teh (2005).

[7] Income changes include changes in factor returns (wages and returns to capital and land) as well as in net government transfers. Technically, national income gains are changes in economic welfare, which in turn is measured as equivalent variation (EV).

[8] Global Trade Analysis Project (Hertel, 1997).

[9] E.g. Hertel and Keeny (2006) and in Kinnman and Lodefalk (2007).

[10] The use of the term scale economies in this model specification differs somewhat from the common definition of the term. Here, it implies effects from changes in the *number of available product varieties*. In effect, this mimics scale economy effects *external* to the firm. Free market entry and constant mark-up ratios are assumed in the monopolistic competition sectors, which means that prices are driven down to average costs. The mark-up ratios in different industries have been estimated using data from Oliviera et al (1996)

[11] The representation of the policy changes are by necessity highly stylized. This is due to restrictions in the model as well as incomplete information about future policy changes, e.g. Russia's WTO accession.

implementation of the Agreement on Textiles and Clothing (abolishment of the textile quotas); a highly stylised implementation of reforms under the Common Agricultural Policy in the EU;[12] a simplified representation of Russia's expected accession to the WTO;[13] implementation and extension of the EU-Norway agreements on agricultural products[14]; as well as complete implementation of some of the plurilateral agreements.[15]

The outcome of this pre-simulation is an updated data set on the world economy which will serve as the *baseline scenario.* The baseline scenario is the benchmark to which the results from the simulated liberalisation scenarios will be compared, and serves as a representation of the world economy *without* further liberalisation.[16]

In the aggregation of the database, all of the 11 CBSS country members are treated separately, with the exception of Norway and Iceland, which are treated as one entity.[17] Furthermore, the world economy is divided into 21 aggregate sectors, of which five are agriculture, nine are industrial; and seven are services sectors. An overview of the different sectors can be found in Table 2.1 below.[18]

Table 2.1 The different sectors

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

* nec = Not Elsewhere Classified
*** Includes e.g. real estate activities, renting of equipment, computer and related activities, R&D, other business activities
** Retail and whole sale of goods, i.e. firms operating as middle men between producers and final consumers.

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[12] A very simplified representation of the implementation of the Mid Term Review and Agenda 2000.

[13] Based on publicly available information on the negotiations.

[14] The 1 July 2003 and the 1 November 2004 two additional agreements between the EES-member Norway and the EU entered into force, the first concerns agricultural products in general and the second processed agricultural products.

[15] Plurilateral agreements on paper, steel, chemicals and IT, under the WTO.

[16] For a graphical picture of the implementation process, see Figure A1 in Annex 1.

[17] By necessity, since they and Lichtenstein form the composite region "rest of EFTA", in the GTAP-database.

[18] In the GTAP database version 6.2 the world economy is divided into 57 sectors (here under the header: "sectors in GTAP database"). For details on sectoral coverage, see the GTAP homepage, www.gtap.org.

The liberalisation scenarios

Two different types of liberalisation scenarios are simulated: one which is referred to as the *main liberalisation scenario* and another which will be referred to as the *Non-Tariff-Measure (NTM)-scenario*.[19] These two scenarios complement each other as they focus on different types of trade barriers. However, because of some overlapping elements in the two scenarios the results should not simply be added together.[20]

In common for both scenarios is the assumption that trade barriers of non-CBSS countries, including other countries belonging to the EU, are not reduced.[21] Hence, it must be stressed that the scenarios are theoretical illustrations, merely suggesting the impact of a more open Baltic Sea region.

In the <u>main liberalisation scenario</u> the following reforms are included:

- *Industrial liberalisation* - including elimination/reduction of <u>import tariffs</u>, elimination of <u>export taxes</u>, and improved procedures at the border for industrial goods (<u>trade facilitation</u>).[22]

- *Agricultural liberalisation[23]*, including elimination/reduction of <u>import tariffs</u>, elimination/reduction of <u>export subsidies</u>, and improved border procedures for trade with agricultural goods (<u>trade facilitation</u>); and

- Services liberalisation: reducing the tariff equivalents for some <u>barriers to trade in services</u>.[24]

Since barriers to trade in services as well as costs from cumbersome border procedures create *indirect* costs they are difficult to estimate. In this study estimates of *tariff equivalents* are used to represent additional costs at the border. To simulate trade liberalisation for services as well as trade facilitation, we let the estimated tariff equivalents converge towards what we identify as *best practice*.[25] The concept of best practice is defined as the country/or aggregate group of countries with the lowest trade barriers in a specific services sector, or the most efficient border procedures for agricultural and industrial goods, of all the countries/country groups in the study. Hence, 'full' liberalisation means that all the countries that take part in the liberalisation scenario adopt the level of best practice.[26]

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[19] In the full report, referred to in footnote 1, the results of a partial liberalisation scenario is also accounted for.

[20] E.g. administrative pricing considered in the NTM-simulation is already indirectly represented in the import tariffs for agricultural goods and some other NTM-barrier assumed might overlap with cumbersome border procedures of the main scenario.

[21] There are no tariffs or subsidies between EU-countries. As to customs procedures, there may still be some additional costs related to crossing country borders within the EU. In this study these costs are assumed to be 20% of the costs on trade with non-EU members, while it is assumed that the same services barriers apply between non-EU and EU-countries.

[22] Only indirect costs at the border, i.e. delays in customs, are modelled here. Also, reforms of measures not directly at the border, such as changes of licensing systems and efficiency improvements at various intermediaries, are not considered.

[23] Only agricultural reforms at the border are modelled e.g elimination/reduction of export subsidies and import tariffs. This leaves domestic farm support unchanged, which often is much larger than the export subsidies. Thus, the bulk of agricultural subsidies is still in place, even if the most trade distorting element is eliminated.

[24] Tariff equivalents are based on data from 1997. In some sectors the original estimates from Park (2002) have been adjusted to account for changes since 1997. For more information on these changes see the technical annex.

[25] For a more thorough description of the method for calculating the tariff equivalents, see technical annex.

[26] Hence, there may still be room for more improvements. In other words, if the country most open for services trade is not very open in absolute terms, countries could go beyond the present day's best practice. Since service trade in general is regarded as less open than merchandise trade there is probably a large untapped potential left.

The second liberalisation scenario concerns reduction of <u>Non-Tariff Measures (NTMs) on trade in goods</u>. With import tariffs down to very low levels (especially on industrial goods), NTMs are becoming new targets for potential liberalisation.[27] There are clear indications that governments' use of NTMs has risen over the last decade, in particular when it comes to the application of technical rules.[28] This is an area where very limited research has been conducted so far, and the results from this simulation should therefore be interpreted with great caution.[29] However, considering the growing importance of NTMs, an effort to capture the effects from reducing these measures is still motivated.

In a broad sense, NTMs can be said to cover all government policies that affect trade, other than tariffs.[30] They can be applied for various reasons, such as health and safety concerns and most often it is done without deliberately restricting trade. While recognising that some such NTMs may in fact also have positive effects on trade and income,[31] most studies however point to extra costs imposed on firms and higher prices borne by consumers, resulting in negative implications for trade and national income.[32]

In this study, one part of the NTMs is assumed to lower national income by creating inefficiencies in the economies ('sand in the wheels'), while the other part is assumed to act like a tariff, obstructing imports and bringing revenues.[33] This seems somewhat more realistic than assuming that all included measures would affect the economies in only one way.

Similar to the representation of services liberalisation and trade facilitation in the main scenario, we let estimated barriers converge towards the country/region with best practice. This way of representing 'full' NTM-liberalisation is arguably more reasonable than a complete removal of all non-tariff measures, considering that some measures may indeed be required. The scenario excludes reforms in the services sectors, as only NTMs on agricultural and industrial goods are modelled.[34] Due to data limitations, cost-estimates are not available for the individual EU-members in the CBSS, but only for the EU as a whole.[35] Also, due to data limitations, the results of the simulation do not, on its own, allow singling out which non-tariff measures are more or less important from an income perspective.[36]

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[27] NTBs are included in the current round of multilateral trade negotiations, as a part of the NAMA (non-agricultural market access) element.

[28] According to UNCTAD (2005), the number of tariff lines notified to be subject to such barriers has risen from some 100.000 to almost 550.000 between 1994 and 2004.

[29] For an excellent overview of the area, see Ferrantino (2006).

[30] The term non-tariff-measures (NTMs) is used here, as non-tariff-barriers (NTBs) is a wide concept and could include not only NTMs but also language barriers etc.

[31] E.g. technical regulations that differ between countries can create technical barriers to trade, but when a measure is implemented in order to adhere to international standards it may facilitate business and avoid unnecessary obstacles in the form of (de facto or implicit) country specific standards. For more information on the positive effects of standards on trade or productivity, see e.g. Moenius (2000) and DTI (2005).

[32] For example, using data for the beginning of this decade, Kee et al (2006) found indications that NTMs constituted the major restrictions to world trade, with NTMs representing on average 70 per cent of total trade restrictions across the countries studied.

[33] 40 percent of the NTM ad valorem equivalents (AVE) is assumed to constitute "sand in wheels", creating inefficiencies in the imports of goods. Reductions of these indirect barriers are modelled as import-augmenting technological change. The other 60 per cent are implemented as import tariffs (added to the baseline database by using Altertax, the GEMPACK feature) and reduced in the simulation. For details, see the technical annex.

[34] A complete absence of NTM-barriers is assumed for trade within the EU.

[35] To some extent this is realistic since many NTMs can be assumed to be harmonised within the Union. On the other hand, application may differ, and this constitutes a limitation to the simulation that should be recognised.

[36] Research needed includes quantifying price effects of different NTMs, establishing where they enter the supply chain and finding ways to model them.

The outcome from the NTM-scenario is compared with a modified baseline scenario with tariff equivalents of NTMs added to the existing tariffs.

Study Limitations

There are several limitations to this type of modelling exercise that should be kept in mind and results need to be interpreted cautiously. To start with, any CGE model is necessarily based on simplified assumptions on actors' behaviour and the character or availability of goods and services. One example of an important parameter is the set of price elasticities. Although the elasticities in the GTAP-database are based on recent and improved empirical estimates, the parameter values are still estimates and their values may substantially affect simulation results. Another example concerns aggregation. Aggregation of sectors and countries is needed to facilitate simulation and analysis but may obscure disaggregate effects. Therefore results might be overestimated for some countries or sectors while underestimated for others.

Since this is a medium-term model, short-term costs, e.g. costs related to adjusting the production to the new conditions are not fully taken into account. On the other hand, positive important long-term growth effects, which could be expected from trade liberalisation, are not included. This means that dynamic effects such as knowledge and technological spillover, as well as general and long run productivity growth (through increased savings and capital accumulation) are excluded from the simulation.[37] The overall effects could therefore be expected to be considerably underestimated.

Another important restriction in the GTAP-model is that there is no explicit representation of foreign direct investments (FDI). This is a serious constraint considering that a more open investment climate could be expected to have a significant economic impact on the economic growth of the region. Perhaps most importantly is the fact that most services trade in the world, 60 per cent, is channelled via commercial presence[38], i.e. firms investing in another country to offer their services directly to the consumers of that country.

Our updating of the database is also stylised. Only key policy changes that are known, or that consulted experts could foresee in sufficient detail, and that could implemented in the database with reasonable effort are modelled. One example of a development that for such reasons was not possible to include is the extensive changes that Russia has undergone since 2001.

Data collection, as well as modelling, of trade barriers to services trade and costs for border procedures are still in an early stage of development. This is even more so for estimates of NTMs. Data on NTM-prevalence is still a problem (relying on self-notification), and research in quantifying and measuring their cost impact is still in its infancy. In addition, only a number of central NTMs are considered in this study, which might lead to an underestimation of overall gains from liberalisation.[39] Moreover, modelling practice with respect to NTMs differs, which may lead to relatively large discrepancies in simulation results, both in levels and in the distribution of gains. This further underlines the indicative nature of the results from the NTM-simulation.[40]

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[37] Since it would significantly add theoretical and modelling complexity, if 'properly' considered, something which was not possible within the remit of the study.
[38] World Bank (2003).
[39] See the section below, on barriers to trade.
[40] For a discussion of difficulties involved and modelling implications, see Ferrantino (2006) and Fugazza and Maur (2006).

Finally, as with most economic models of this type, interaction with "soft" factors could hardly be captured. These effects include potential benefits from trade such as raised level of trust and better language skills. Such factors could, in turn, promote trade by creating more stable trade relations and facilitate communication and cooperation between the different economies.

3. The Economic Structures of the Baltic Sea Region

In order to assist the analyses of the simulated liberalisation scenarios, a brief outline is given in this section on the economies and trade policies of the CBSS countries, as depicted in the baseline scenario. We look at the different sectoral groups, i.e. agriculture, industry and services, and their shares in different economic activities. To facilitate the analysis, the countries are also divided into three groups: mature market economies (comprising the Nordic countries and Germany); emerging market economies[41] (the Baltic states and Poland); and Russia.[42]

Agricultural sector

As expected, we find that agriculture represents the smallest share of total value of *production* in all the country groups of the region. It can be noted that the agricultural production is most important for the emerging economies, where it contributes to about 16 per cent of the group's total production value (Table 3.1).

Table 3.1 The agricultural sector's share of total production, import and export value (in %)

Agriculture	Emerging market economies	Mature market economies	Russia	The whole region
Production	15.9	5.9	10.2	7.1
Import	12.1	6.8	14.4	7.9
Export	15	5.1	4.9	5.7

Source: Own GTAP simulation results from the baseline scenario

The share of agricultural *import* value is relatively small in all the country groups, and constitutes approximately 8 per cent of the region's total import. There is however a clear distinction between the mature economies and the two other groups, as the share of the agriculture import in the mature economies is only half the size of the other two country groups' shares.

Similar to the import side, agriculture also represents a smaller share of total *export* in the region. In the mature market economies and in Russia, agricultural export only represents five per cent of total export. In the emerging economies agriculture export contributes with substantially more, approximately 15 per cent of total exports.

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[41] The two groups are henceforth referred to as mature economies and emerging economies.

[42] Russia will because of its size and because of its economic structures be regarded as a separate region. Moreover, Russia is neither a member of the EU/EEA nor, as yet, of the WTO, further motivating why the country should be treated as a unique entity within the CBSS.

Industrial sector

In the following table the share of industrial goods in production and trade, for the three main countries and groups of countries according to the baseline scenario, can be observed.

Table 3.2 The industrial sector's share of total production, import and export value (in %)

Industrial sector	Emerging market economies	Mature market economies	Russia	The whole region
Production	31.7	33.1	40.6	33.8
Import	77.2	70.5	60.3	70.2
Export	67.9	80.4	87.5	80.4

Source: Own GTAP simulation results from the baseline scenario

The industrial sector represents about a third of the total *production* value of the region. The sector is especially important in Russia, where it contributes to 41 per cent of total domestic production, much more than in the other country groups.[43]

The region's industrial *import* constitutes a 70 per cent share in total import. The group of emerging economies has the largest share of industrial goods import (77 %), followed by the group of mature economies (71 %) and finally Russia (60 %).

Industrial goods also dominate the *export* side, and contribute to approximately 80 per cent of the countries' total exports. Notably, among the country groups, Russia is a strong net-exporter of industrial goods as it has both the largest export share, and the lowest import share of industrial goods (88 and 60 per cent, respectively).

Services sector

In all three groups of countries, the service sectors is the most important contributor to the overall production value: in the group of mature economies it contributes to an average of 61 per cent of the total production value, whereas it represents nearly half the production value in Russia (49 per cent) and just above half (52 per cent) in the group of emerging economies (Table 3.3).

Even though the services sector is the largest contributor to the overall production value in all three country groups, trade in services is still quite limited. Services trade only represents 14 per cent of total export value in the region and 22 per cent of total import value.[44] The import share of services is largest in Russia and smallest in the group of emerging economies. In fact, the share of services in the group of emerging economies' import is less than half of the sector's share in the other two country groups.

Table 3.3 The services sector's share of total production, import and export value (in %)

Services	Emerging market economies	Mature market economies	Russia	The whole region
Production	52.3	61.1	49.2	59.2
Import	10.8	22.6	25.2	21.9
Export	16.7	14.4	7.6	13.8

Source: Own GTAP simulation results from the baseline scenario

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[43] The extraction industry is the largest industrial sector in Russia and Russia ranks top ten in the world oil reserves and has the world's largest gas reserves.

[44] Recall that services trade mode 3, i.e. commercial presence, is not included in the data and represents about 60 per cent of the total value of trade in services.

The composition of Russia's export, with its strong concentration in the industrial goods sector, is also reflected here, as Russia's share of services exports is roughly half the share of the other two groups.

Trade Flows

Looking at the trade flows of and within the region, only about 18 per cent of total export is destined for other countries in the region (Table 3.4). This implies that the region from an aggregate perspective already is quite globalised. However, the picture is more complex when comparing the different country groups. The group of emerging economies clearly stands out with 42 per cent of its exports destined for other countries of the region and as much as a third of its export for the group of mature economies.[45] Russia's intra-regional trade is also dominated by export to the mature economies of the region. The group of mature economies has the smallest export share destined for other countries around the Baltic Sea (16 per cent).

Table 3.4 Trade flows to country groups within the CBSS region

From ↓ To →	Mature	Emerging	Russia	All CBSS
Russia	12	6	0	19
ME	12	3	2	16
EE	33	5	4	42
CBSS	13	3	2	18

Source: Own GTAP-simulation results from the baseline scenario.

Barriers to Trade

The multitude, variety as well as great complexity of barriers to trade makes it a challenging task to make a detailed representation of these measures. In this study we have covered some of them in the two liberalisation scenarios. In the main scenario the reductions/eliminations of five kinds of barriers is simulated: tariffs on all goods;[46] export subsidies on agricultural goods; export taxes on industrial goods; tariff equivalents[47] for cumbersome border procedures[48]; and tariff equivalents for barriers to cross border trade in services.[49] The import tariffs have been estimated from the updated GTAP data from the year 2001, and reflect the effectively *applied* rates.[50] This is especially important to remember for barriers on agricultural trade that often change from year to year depending on the world market price.

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[45] Commonly, intra-EU trade is not referred to as exports and imports. Here, however, no distinction is made between external EU trade and intra-EU trade. This means that in this study an EU-country's exports and imports include trade with other EU-countries.

[46] The data for the tariffs and export subsidies/taxes are calculated from the updated GTAP-database, version 6.2.

[47] A tariff equivalent is an estimation of how high a non-tariff measure would be if it was a tariff. It is a method to estimate the restrictiveness of a non-tariff measure.

[48] Only indirect costs, due to delays in customs etc, at the border are considered here. Direct costs of border procedures, such as fees and documentation costs are not included

[49] It should be noted that the estimates for the import tariffs and export subsidies/taxes are weighted on the import and export composition for each country. This implies for example, that even if the same import tariff rates apply to all EU members, the weighted average displayed in the tables may differ between country X and country Y, due to differences in the two countries' composition of imported goods.

[50] Applied rates mean the tariffs actually paid at the border, i.e. tariff revenue/import value. It takes preferences, like lower tariffs for developing countries, into account.

Table 3.5 Estimates of ad valorem tariffs (or tariff equivalents) in different sector and country groups (%)

	Emerging market economies	Mature market economies	Russia	The whole region
Agricultural barriers				
*Import tariffs**	2.1	3.9	12.4	5.0
Export subsidies	8.9	2.9	0.0	9.0
*Cumbersome border procedures***	4.6	4.8	8.9	6.1
Industrial barriers				
Import tariffs	0.5	0.7	4.6	1.0
Export taxes	0	0	-3.3	0
Services barriers				
*Tariff equivalents****	26	22	24	24

* Estimates for tariffs and subsidies/taxes have been taken from the updated GTAP database
** Own calculations based on data from Batra et al (2003), World Bank (2005) Hummels (2001) and IMF (2005)
*** Own calculations based on data from Park (2002)

Starting with barriers to *agricultural trade*, the average applied tariff (weighted on import composition) in Russia is just above 12 per cent (Table 3.5).[51] In the other two country groups, these rates are lower: 4 per cent in mature economies and 2 percent in the emerging economies. The low rates are explained by the fact that the tariffs are weighted on *total* cross-border trade (including intra-EU trade). Considering that most of the countries in these two groups are members of the EU and a large part of the EU countries' total trade takes place within the Union, this will lower the estimated overall average.

Like the import tariffs, the countries' export subsidies are also weighted on the countries' total export flows, including intra-EU trade. The group of emerging economies has the highest export subsidies on agricultural goods, weighted on export composition (average 9 per cent).[52] Russia does not, according to the database, have any export subsidies on agricultural goods.

It is not only tariffs and subsidies that create barriers to agricultural trade; delays in customs and other agencies at the border add additional costs on a good and implicitly reduce its value. This is especially true for agricultural goods that often are more perishable. The un-weighted average cost of border delays for agricultural goods in the CBSS region has been estimated to 6 per cent of the good's import value. Russia has the highest cost for border delays among the country groups.[53]

As to the tariffs on *industrial goods*, they are in general much lower than on agricultural goods. The region's average tariff on industrial goods is 1 percent compared to 5 per cent on agricultural goods. Of the three country groups, Russia has the highest average import tariff on industrial goods (5 %), while the averages for the two other country groups are both below one per cent.

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[51] Generally, tariffs in the GTAP Data Base are trade-weighted preferential rates consisting of the *ad valorem* tariffs (including tariff rate quotas) plus the *ad valorem* equivalents (AVEs) of specific tariffs used.
[52] The subsidy rates are calculated by taking a good's value before the border (i.e. the domestic price) and divide it by the good's value after the border. A positive value indicates that the price is higher on the home market and that the export must be subsidised.
[53] Costs for border procedures have been considered both on imports and exports, 70 % of the costs are here assumed to be imposed on the import side and 30 % on the export side.

With the exception of Russia, all CBSS countries are members of the WTO, where no export subsidies are allowed for industrial goods. However, also for Russia, as seen in the table, no export subsidies are recorded at the sectoral level. In fact, the rates on industrial exports from Russia are negative, indicating net export taxes.[54]

It should again be acknowledged that the low tariff rates for both agricultural and industrial goods to a great extent are due to zero tariffs between the countries of the European Economic Area, as a lot of the trade takes place within this region and therefore will have a great impact on the weighted average.

The un-weighted average cost for border delays on industrial goods is estimated to 4 per cent of a good's value, in the CBSS region. As detected for agricultural goods, the highest costs for border procedures can be observed in Russia.

Looking at the rough estimates of tariff equivalents for services import (simple average) of the whole CBSS region, they are considerably higher than is the case for industrial goods but also in comparison with agricultural tariffs. In general, the mature economies have the lowest trade barriers, followed by Russia and finally the emerging economies. That the emerging economies are found to have the highest services barriers may seem surprising, considering their fairly recent EU-membership. An important explanation is likely to be that the services tariff equivalents are based on 1997 data (Park, 2002), in lack of more recent estimates. Although some of the estimates have been adjusted in this study, the tariff equivalents for some countries may still be overestimated, due to liberalisation that is not accounted for.[55]

Another explanation for the relatively high estimates overall is that we assume that barriers between EEA-countries still exist, to a great extent.

In the NTM scenario the following measures are included: price control measures (e.g. minimum import prices); quotas in various forms; monopolistic measures (e.g. state trading administration); and technical rules (e.g. packaging or testing requirements).[56] The total costs of these measures are estimated to ad valorem[57] tariff equivalents (AVEs) for all industrial and agricultural sectors as well as all countries and regions of the study. This is done by using the most recent tariff-line level and econometrically derived AVEs available (Kee et al, 2006),[58] but weighted with import values from the 2003-2006 period.[59] Kee et al's dataset is in turn based on frequency ratios of the core NTMs early this decade, with some updates.[60] The four NTMs are analysed as one in the model since the data is constituted by tariff equivalents of the four as a group. Hence, the effects from a removal of, for example, only quotas cannot be estimated.

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[54] The rates are estimated by taking the difference between the value of total export of a good *before* the Russian border with the total value of a Russian good on the world market, divided by the latter. If the rate is negative, i.e. the price is higher on the world market, an export tax must exist.

[55] Values that our expertise consider exceptionally high have been adjusted in this study. For some countries estimates were not available and averages were therefore used. This was the case for Russia, Norway/Iceland, Estonia, Latvia and Lithuania.

[56] The definition includes UNCTAD Trains codes: 6100, 6200 and 6300; 3100, 3200 and 3300; 7000; and 8100. A number of other NTM-barriers such as pre-shipment inspection are already represented in the elements of the main scenario, while others, for example, anti-dumping measures are not covered in this study.

[57] Ad Valorem tariffs means a certain percentage level is paid on the value of the imported goods.

[58] Kee et al's cost-estimates for the NTMs have been calculated by comparing the predicted import quantities to the real import quantities, by using a factor endowments based model. This estimated impact of NTMs on import quantities, is then translated into ad valorem rates, by using econometrically calculated price elasticities, for the countries in the study. It should be noted that the elasticities are calculated using a perfect competition framework, which may be non-optimal for use in a model such as GTAP. It can be added that a few direct export measures are covered by the NTM-definition used here. However, Fugazza and Maur (2006, p. 12) found that

	Agriculture	Industry	Weighted average
EU	38.0	10.7	12.8
Norway/Iceland	33.5	1.1	3.8
Russia	37.4	18.2	21.6
DCs	22.5	6.8	7.9
ROW	27.8	5.1	6.6
World	*28.4*	*7.0*	*8.5*

Source: Own calculations based on NTM-data by Kee et al (2006).

Note: Members of the EU, are here assumed to have the same AVEs.)

Generally, these measures tend to be more frequently used by richer countries, by countries with lower tariffs and especially on agricultural goods.[61] This is a pattern which, by and large, is confirmed here (Table 3.6). The import-weighted tariff equivalent of the EU (13 per cent) is substantially above the global average (9 per cent) and world agricultural barriers are more than four times as high as those to trade in industrial goods.

4. Simulation results

In this chapter the simulation outcomes from the two liberalisation scenarios, as described in chapter 2, will be presented and discussed. We start by looking at the effects on trade, production and national income from the simulation of the main liberalisation scenario, and then we turn to the main results from the separate NTM simulation.

4.1 Outcome from the Main Liberalisation Scenario

Effects on trade and production

Agricultural sector

The agricultural sector was prior to the simulated liberalisation, highly protected by import tariffs as well as export subsidies. Also, the cost for cumbersome border procedures for agricultural goods was high in comparison to industrial goods. Removal of these barriers could therefore be expected to have substantial effects on the sector, both when it comes to production and trade.

The simulation results from the main liberalisation scenario, show that the import of agricultural goods to the countries of the region increases with almost 20 per cent, while total export falls with 5 per cent (Table 4.1). Not surprisingly, the increase of agricultural *import* is especially high in the 'group' with the highest weighted import tariffs, that is, Russia. Still, it is also Russia's agricultural export that rises (7 per cent). For the region as a whole agricultural *export* declines (some 5 per cent). The reforms also affect total agricultural *production* of the region in all the country groups . The availability of less costly import and a more competitive world market benefits consumers and presumably some producers, but total

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these measures only constituted a very small number of all NTMs (besides the NTMs covered in this study they also included agricultural domestic support).

[59] For reference, see Kee et al (2006).

[60] With respect to Russia and reforms that may have taken place since early this decade, with respect to adoption of international standards, the age of the data is potentially a weakness. However, as far as business is concerned, there are indications that Russia still is the CBSS country where technical rules are the most problematic for trade (Swedish National Board of Trade, 2007).

[61] Kee et al (2006).

domestic agricultural production of the region declines, and the most in Russia. However, though these relative changes especially in trade are notable, it is important to remember that for most countries the agricultural sector constitutes a small share of the total value of production and trade,

Table 4.1 Simulation results: effects on the agricultural sector, volume changes in %

	Mature	Emerging	Russia	All CBSS
Imports	*15.2*	*7.0*	*49.7*	*19.5*
Exports	*-2.1*	*-23.2*	*7.1*	*-4.6*
Production	*-4.3*	*-4.8*	*-13.0*	*-5.7*

Source: Own GTAP-simulation results from the main scenario

Industrial sector
Even though the <u>industrial sector</u> is fairly open in most countries prior to the simulated scenario, the liberalisation results in a 5 per cent rise in the region's total *imports* (Table 4.2). All three country groups increase import of industrial goods, though in the group of emerging countries the change is only marginal. The largest increase by far takes place in Russia. The rise in Russian import is explained by liberalisation of an industrial sector that is highly protected from foreign competition, due to relatively high import tariffs and costs from cumbersome border procedures. When Russian barriers are lowered in the simulation, domestically produced goods become more expensive in relation to import prices. Since most of Russia's trade takes place in the industrial sector, this is where the largest absolute value difference is observed, on the import as well as the export side.

Table 4.2 Simulation results: effects on the industrial sector, volume changes in %

	Mature	Emerging	Russia	All CBSS
Imports	*3.3*	*0.3*	*24.0*	*4.6*
Exports	*7.1*	*17.4*	*19.9*	*9.1*
Production	*2.1*	*5.0*	*3.3*	*2.5*

Source: Own GTAP-simulation results from the main scenario

Equally, there is a general increase in industrial export in all the CBSS countries (9 per cent). However, emerging economies and Russia experience the largest relative changes: a 17 and 20 per cent rise in exports, respectively.

In contrast to the agricultural sector, *industrial production* expands in all countries of the Baltic Sea region, in total with almost 3 per cent. However, the results vary between the different industrial sub-sectors and between countries.

Services sector
As indicated in the previous chapter the <u>services sector</u> is highly regulated and subject to several restricting barriers to trade. As a consequence of simulating a reduction of these barriers, services import becomes less expensive relative to the domestic price, affecting trade and production in the sector. Still, when considering the effects from the simulation, it should once more be acknowledged that foreign establishment is not represented in the standard GTAP model.[62]

The CBSS-countries' trade in services is largely affected by the simulated liberalisation scenario, as import increases with 13 per cent and exports with 4 per cent (Table 4. 3). Looking at the effects on services production, only marginal relative changes are indicated.

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[62] This mode of service delivery represents 60 per cent of the value of all trade in services.

Table 4.3 Simulation results: effects on the services sector, volume changes in %

	Mature	Emerging	Russia	All CBSS
Imports	*11.1*	*36.8*	*15.0*	*12.5*
Exports	*3.2*	*6.0*	*7.2*	*3.6*
Production	*-0.5*	*-0.4*	*-0.5*	*-0.4*

Source: Own GTAP-simulation results from the main scenario

As a consequence of liberalisation, all of the CBSS countries increase *imports of services*. The group of emerging economies has the highest relative increase in services import. Since the demand for imports increase in the countries of the region on the export side as well as on the import side of the partner country, the *export of services* increases in all groups. The largest relative increase in service export takes place in Russia, followed by the group of emerging economies. With respect to production effects, only marginal changes are detected, principally since most services are produced and consumed within the domestic market.

Effects on trade flows

From the simulation outcome we see that when barriers are removed, trade flows between different countries are altered. On a global level the simulation of the main liberalisation scenario increases total world trade by almost 2 per cent, as seen in Table 4.4. Looking at the trade effects on the region, both total exports and imports (i.e. trade with both countries within the region and outside the region) increase with about 8 per cent, while intra-regional trade increases with 10 per cent.

Table 4.4 Simulation results: Changes in trade flows between different country groups (in %)

From ↓ To →	Mature	Emerging	Russia	All CBSS	World
Mature	6.0	-0.9	31.9	7.8	*6.3*
Emerging	8.4	4.0	31.6	10.1	*7.2*
Russia	28.2	13.1	0.0	23.1	*22.0*
All CBSS	8.5	2.6	26.3	9.8	*8.0*
Total	*6.1*	*5.4*	*31.9*	*7.7*	*1.6*

Source: Own GTAP-simulation results from the main scenario

A general outcome is increased trade between and within most country groups. Focusing on changes in trade flows between the three country groups, there is a minor decline in the total export from the group of mature economies to the group of emerging economies. On the contrary, trade between the two country groups and Russia increases substantially. This is not surprising considering that Russia was the only country of the region not part of the European Economic Area. Total export from both groups to Russia increases with about 32 per cent, and exports from Russia to the mature economies and the emerging economies increase with 28 and 13 per cent, respectively. In fact, Russia increases its trade with all the countries and country groups of the study. It may be added that a slight trade diversion effect is noted (though not displayed in the table) with respect to imports from the rest of the EU to the Baltic Sea region. This is because other EU countries lose their advantage of having duty free access to the EU countries around the Baltic, in other words the "EU preferences" are removed.

Effects on national income

The changes in trade and production will have effects on national income of the CBSS countries. As a whole, the simulation results from the main liberalisation scenario indicate that the countries could gain about 30 billion USD from the 'full' liberalisation scenario,

which is equivalent to 1.0 per cent of the region's initial GDP (Table 4.1.5). Looking at the results for the three country groups, it can be noted that Russia and the group of emerging economies have relatively more to gain from the liberalisation, 1.9 and 1.2 per cent of GDP, respectively. The mature economies experience an overall national income gain of 0.8 per cent.

Table 4.5 Simulation results: Effects on national income

	mn USD (2001 year's value)	% of initial GDP
Denmark	1505	0.9
Finland	1430	1.2
Germany	13933	0.8
Sweden	1641	0.8
Estonia	135	2.5
Latvia	131	1.7
Lithuania	475	4.0
Poland	1754	1.0
Norway/Iceland	2854	1.6
Russia	6021	1.9
Mature economies	21363	0.8
Emerging economies	2495	1.2
Total CBSS	29879	1.0

Source: Own GTAP-simulation results from the main scenario

In order to better understand the mechanisms that are initiated by a trade liberalisation, it can be of value to decompose the different sources of the income gains. With the model of the study, the national income gains can be derived from four different sources: import efficiency (less costly import); re-allocation of resources; scale economies; and changes in the terms of trade.

Table 4.6 Simulation results: Explanatory factors to the national income effects (% of total)

	Import efficency	Resource allocation	Scale effects	Terms of trade	TOTAL
Mature	89	21	-19	8	99
Emerging	77	28	24	-21	107
Russia	97	29	-38	16	104
All CBSS	*90*	*23*	*-19*	*7*	*100*

Note: All rows do not sum up due to the omission of small financial balance effects
Source: Own GTAP-simulation results from the main scenario

As seen in Table 4.6, the largest gains by far (90 per cent), for all country groups, derive from *increased efficiency* in the imports of goods and services. This is a consequence of cost-reductions for imports, reductions that stem from cuts in indirect trade barriers to services trade as well as improved border procedures for goods trade. The reforms make imports of goods and services available to consumers and producers at lower prices, by eliminating dead-weight losses, leading to national income gains.[63] Moreover, in contrast to tariff reductions these reforms do not come at the cost of foregone government revenues. This factor seems especially important for positive performance of Russia.

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[63] It may be added that a general decline in private consumption prices is noted (almost all sectors and countries), and regarding real returns to land owners; while labour as well as capital owners benefit from higher returns.

The second largest contributor to the region's total income gains is an improved *resource allocation*, i.e. resources move to sectors where they are more productive. This effect accounts for 23 per cent of the region's total gains, and derive from the simulated removal of import tariffs and export subsidies/taxes.

Moving on to the *scale economies* effect[64], this effect is positive for the group of emerging economies, but negative for the mature economies and in particular for Russia. The sign and magnitude of the scale economies effect is related to which sectors are expanding: if expansion takes place in sectors modelled with no (or low) economies of scale at the cost of production in sectors with higher economies of scale, the effect will be negative.

A fourth factor that may influence the impact on national income is changes in the *terms of trade*. On a global level, the terms-of-trade effect will be zero as one country's gain means another countries loss in relative prices. 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. Overall, the region seems to experience positive terms-of-trade effects, but among and within the groups of countries there are large differences. Changes in terms-of-trade have a negative effect on the group of emerging economies, whereas it has a positive effect on especially Russia.

National income effects of reforms in different sectors

Because of countries' differences in economic structures and trade regimes, different types of reforms will have different effects on national income. A closer look at the income effects from reforms in different areas, shows that industrial liberalisation accounts for the largest share of the overall gains in the region (42 per cent), followed by services (32 per cent) and finally agricultural liberalisation (26 per cent), see Table 4.7.[65] This may seem surprising considering that the industrial sector is comparatively open prior to liberalisation. However, since this is the sector in which most trade takes place, even small reforms may lead to substantial gains in absolute terms. Moreover, the scope for trade facilitation is certainly non-trivial. Data indicate tariff equivalents four times as high as import tariffs, on average for the region, and even somewhat higher for one of the major mature economies.

Table 4.7 Simulation results: The different sector's contribution to national income effects

	Industrial liberalisation	Agricultural liberalisation	Services liberalisation
Mature economies	*45*	*22*	*33*
Emerging economies	*16*	*54*	*29*
Russia	40	30	30
All CBSS	*42*	*26*	*32*

Source: Own GTAP-simulation results from the main scenario

Nevertheless, the emerging economies, which have relatively large agricultural sector, acquire the largest gains from agricultural liberalisation, in fact, over half of their total gains come

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[64] The use of the term *scale economy* in this context differs somewhat from the common definition of the term. Here, it implies effects from changes in the *number of available products varieties*, which, in effect, mimics (external) scale economy effects. The modelling approach is based on the assumption that consumers benefit from more product varieties whereas producers benefit from more varieties in intermediate goods.

[65] The sequencing of reforms may affect simulation gains attributed to each reform. This is considered here by using the decomposition algorithm of Harrison et al (2000), which is included in the GEMPACK software accompanying GTAP v. 6.

from this area. As to liberalisation of services trade, it seems to contribute with approximately one third of the gains in all three country groups.

Since separate liberalisation elements are included in the simulated trade reforms for agricultural and industrial goods, it may also be of interest to display the contribution of each of these elements to overall gains. The major part of gains from *agricultural liberalisation* in the region comes from trade facilitation, followed by removal of export subsidies and finally the elimination of import tariffs. The large gains from improved border procedures are mainly due to the positive effects in Russia. Removal of agricultural export subsidies brings the largest gains for emerging and mature economies.

Table 4.8 Simulation results: The different elements' contribution to gains from industrial and agricultural liberalisation (in % of total)

	Industrial liberalisaton			Agricultural liberalisation		
	Import tariffs	Export taxes	Trade facilitation	Import tariffs	Export subsidies	Trade facilitation
Mature economies	-10	8	102	26	44	30
Emerging economies	-3	-28	131	2	90	8
Russia	-14	-46	160	41	-28	87
All CBSS	*-10*	*-4*	*114*	*25*	*35*	*40*

Source: Own GTAP-simulation results from the main scenario

Again, regional gains are dominated by reforms in the *industrial sector*. As seen in Table 4.8, these gains mainly derive from trade facilitation for industrial goods for all the country groups. In contrast, removing tariffs and export taxes have a negative effect on the region as a whole. The improvement in resource allocation does not make up for the expansion in sectors modelled with no (or low) economies of scale at the cost of production in sectors with high economies of scale.

Studies have often shown that the largest gains from liberalisation comes from trade reforms in the own country. This is also indicated in this study where more than 90 per cent of the total gains come from own reforms.

4.2 Results from the Non-Tariff Measures-scenario

Effects on Trade and National Income

Turning to the results from the NTM-scenario, the simulated reduction of non tariff measures boosts exports as well as of imports with some 4 per cent (Table 4.9). As Russia's relatively high NTMs converge to best practice, its trade increases more than twice as much as the two other country groups. The region's net-import of agricultural products increases substantially, when NTMs, which are more frequently used in agricultural trade, are reduced allowing for less expensive imports to enter the market. Notably, the net-import of services to the region declines and contributes positively to trade balances. Overall, the region's net-export of industrial goods decreases. At a more detailed level, changes in the emerging economies' agriculture and services trade develops positively, with strong growth in net-exports.

Table 4.9: Simulation results: Overall trade changes (%)

| | Export | | | | Import | | | |
	Agriculture	Industry	Services	*Total*	Agriculture	Industry	Services	*Total*
Mature	**4,3**	3,1	**1,8**	*3,0*	**7,3**	4,9	**-2,0**	*3,4*
Emerging	18,3	**-0,8**	3,4	*2,7*	4,1	**2,5**	-4,2	*1,9*
Russia	**27,0**	8,7	**6,5**	*9,3*	**60,8**	12,4	**-5,1**	*13,9*
All CBSS	*8,4*	*3,6*	*2,2*	*3,6*	*14,3*	*5,2*	*-2,4*	*4,2*

Note: Sectoral figures in bold indicate net-importers, otherwise sectoral figures indicate net-exporters

Source: Own GTAP-simulation results from the NTM-scenario

In brief, the tentative simulation results indicate that there may be substantial gains for the region (the equivalent of about 27 billion USD, or 0.9 per cent increase in initial GDP), see Table 4.10. Russia could receive remarkable gains, almost 3 per cent. For the emerging economies, a less than average overall performance masks average or substantial gains for all but one country, which experiences a net loss. Still, the latter country benefits the most in the main simulation. This underlines the importance of including several measures in the liberalisation efforts in order to ensure that *all* of the participating economies find it truly worthwhile.

A country's own reduction of NTMs represents the largest source of gains for that country. This is true for the groups of mature and emerging economies as well as for Russia. Decomposition of the results with respect to removal of NTM-barriers to agricultural and industrial goods shows that industrial liberalisation contributes far more to the overall gains than agricultural liberalisation, 60 versus 40 per cent. The situation differs for Russia, where agricultural liberalisation seems to be approximately as important as industrial liberalisation to its national income gains.

Table 4.10 Simulation results: National income gains and contributions by elements

| | Income gains (% of initial GDP) | Contributions by elements (%) | | |
		Agriculture	Industry	*Total*
Mature economies	0.64	35	65	*100*
Emerging economies	0.56	14	86	*100*
Russia	2.90	50	50	*100*
CBSS	0.87	40	60	*100*

Source: Own GTAP-simulation results from the NTM-scenario

Reducing the NTMs to trade appears to improve resource allocation significantly in the region. Better access to foreign products also facilitates efficiency in the import of goods. For most countries, these two elements dominate the income gains. On the negative side, a minor worsening of terms of trade and a relatively small negative scale economies effect seems to be a consequence. The latter is the result of changes in production. Sectors with less potential for scale economies expand and/or sectors where larger degree of scale economies are assumed such as services contract. This is the key explanation for the poor performance of one of the emerging economies, where the existing specialisation pattern in one agricultural sector is significantly reinforced by reductions of NTMs in neighbouring export markets.[66] In fact, were it not for two countries, the region as a whole would experience a positive scale economy effect.

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[66] The negative scale effect in the NTM simulation would seem to be more than counterbalanced by reforms of the main simulation.

6. Conclusions and Final Comments

In this study, the potential effects of a more liberalised Baltic Sea Region have been analysed by using an economic simulation model and two scenarios. In the first and main scenario, 'full' trade liberalisation on behalf of the region is simulated, with respect to tariffs, export subsidies/taxes and unnecessarily cumbersome border procedures and services trade barriers. In the second and additional scenario, reduction of core non-tariff-measures (NTMs) pertaining to the agricultural and industrial sector is simulated, for the region. As always in this type of modelling exercise, it should be recognised that the model is by definition merely an illustration of the real world and is based on a number of simplifying assumptions. For example, although scale economies are included in the model, dynamics from capital accumulation are omitted. Another example is that foreign direct investment is not explicitly represented. All in all, the limitations are likely lead to considerable underestimations of the overall gains from liberalisation in this study. Nevertheless, the simulation provides us with indications on directions and likely lower limits of effects from trade liberalisation in the Baltic Sea area.

Turning to the results from the main liberalisation scenario, it shows that trade is created both within the Baltic Sea region and between most of its country groups as well as with the rest of the world. From this scenario we concluded that it is mainly imports of agricultural goods and services that increase, due to high initial trade barriers. This leads to an expansion of industrial production. In the additional simulation, unilateral cuts to NTM trade barriers facilitate imports for everything but services, inducing an increase in services production and exports. Even though the results from the main scenarios cannot simply be added to the results from separate scenario regarding NTMs, looking at the results jointly could at least give an indication of the agglomerate effects when addressing both these areas. Keeping this in mind, the joint effect of the two scenarios could therefore be expected to be a move towards services and industrial production and export (rather than agriculture).

With respect to national income effects, the joint overall effect would be an enforced income boost. If the already dynamic region 'goes global' it would mean a 1 and 0.9 percent increase in regional income, in the main and additional scenarios, respectively. Particularly strong results are found for the emerging economies of the region. The largest income gains stem from a country's own liberalisation. For the region, industrial liberalisation boosts income the most, whereas the group of emerging economies, which has the largest agricultural sector, reaps most of its gains from agricultural liberalisation including removal of export subsidies.

The results clearly indicate the untapped potential of income gains from addressing cumbersome border procedures and tackling unnecessary NTMs. Trade facilitation and reductions in NTMs are the elements that bring the major sources of gains. Nevertheless, liberalisation across the board – involving several issue areas - may be important to ensure that all participating countries find the effort worthwhile.

What primarily lies behind the income effects in the simulation results, in the main as well as the NTM scenario, is the elimination of dead-weight loss costs (increased efficiency in imports), as well as improved resource allocation. The overall income effects from scale economies are slightly negative in both scenarios. On a country level, the results show that different reforms create different incentives for production, and the net-effect on a country's national income will to a large extent be related to which sectors are expanding/contracting.

A final comment is that in a world where efforts to cut tariff barriers have been rather successful, more complex trade structures involving NTMs are evolving. This is unfortunate, since NTMs generally are less transparent than tariffs. This together with the early stage of development of estimation and modelling of non-tariff measures calls for intensified research and analyses in the area.

References

DTI (2005), 'The Empirical Economics of Standards', DTI Economics Paper 12, Department for Trade and Industry, UK.

Ferrantino, M. (2006), 'Quantifying the trade and economic effects of non-tariff measures', *OECD Trade Policy Working Paper 28* (TD/TC/WP(2005)26/FINAL), Paris.

Francois, J.F.(1998), 'Scale Economies and Imperfect competition in the GTAP Model' GTAP Technical Paper, No. 14.

Fugazza, M. and J-C Maur (2006), 'Non-tariff barriers in a non-tariff world', Draft paper (21 July) for the 2006 ETSG-conference in Vienna.

GTAP (2007), GTAP web site: http://www.gtap.agecon.purdue.edu/

Hertel, T. ed. (1997), *Global Trade Analysis: Modelling and Applications.* Cambridge University Press.

Hertel, T.W. and R. Keeney (2006), 'What's at Stake: The Relative Importance of Import Barriers, Export Subsidies and Domestic Support', Ch. 2 in *Agricultural Trade Reform and the Doha Development Agenda* edited by K. Anderson and W. Martin, New York: Palgrave Macmillan.

Kee, H. L., A. Nicita and M. Olarreaga (2006), 'Estimating Trade Restrictiveness Indices', *World Bank Policy Research Working Paper* 3840, Washington, D.C. (The most recent AVEs dataset is available at the World Bank webpage on Overall Trade Restrictiveness Indices.)

Kinnman, S. and M. Lodefalk (2007), 'What is at Stake in the Doha Round?', *The World Economy*, Vol. 30, No. 8.

Moenius, J. (2000), 'Three Essays on Trade Barriers and Trade Volumes', Ph.D. Dissertation, University of California, San Diego.

Park, Soon-Chan (2002), ' Measuring Tariff Equivalents in Cross-Border Trade in Services'Korea Institute for International Policy (KIEP) Working Paper 02-15

Piermartini, R. and R. Teh (2005), 'Demystifying Modelling Methods for Trade Policy', WTO Discussion Paper, No. 10. Geneva.

Rutherford, T., D. Tarr and O. Shepotylo (2005), World Bank, World Bank Policy Research Working Paper

Swedish National Board of Trade (2005), 'Open for Business? A Comparative Analysis of the Trade Policies of the European Union, the United States, Canada and Japan', *Report*.

Swedish National Board of Trade (2007), 'Obstacles to trade with the Baltic Sea region: An assessment of the most important barriers to increased trade', Report.

UNCTAD (2005), 'Methodologies, Classifications, Quantification and Development Impacts of Non-Tariff Barriers', *Note by the UNCTAD Secretariat* (TD/B/COM.1/EM.27/2), 23 June 2005.

World Bank (2003), 'Global Economic Prospects 2004: Realizing the Development Promise of the Doha Agenda'

World Bank (2005), Enterprise Surveys: Trade Data (at http://rru.worldbank.org/EnterpriseSurveys/). World Bank, Washington D.C.

World Bank (2008), 'Doing Business', website (www.doingbusiness.org), accessed 2008-01-27.

World Bank (2007), Access to data provided by Peter Walkenhorst, World Bank, at request.