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D7
A series of country-specific comparative static CGE models presenting CGE-based simulations of WTO entry and different types of EU-CIS FTA for several CIS countries:
Russia

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Economic Impact of a Potential Free Trade Agreement (FTA) Between the European Union and the Commonwealth of the Independent States

Russia

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1 Introduction

Russia is the EU's third trading partner, after the USA and China. Moreover, the EU's trade with Russia has been growing rapidly, for example in 2006 it increased by 25.7%. On the other hand, the EU is Russia's main trading partner, accounting for more than 54% of its overall trade. EU's exports to Russia are more diversified while imports from Russia are mainly concentrated on energy and mineral fuels.

The Partnership and Co-operation Agreement (PCA) which entered into force in 1997 has been the framework of the EU-Russia relationship for a decade. The agreement regulates the political, economic and cultural relations between the EU and Russia and is the legal basis for the EU's bilateral trade with Russia. In 2003 the EU and Russia agreed to create four EU-Russia "common spaces", within the framework of the existing Partnership and Co-operation Agreement (PCA). The Common Economic Space (CES) aims at increasing economic cooperation with creating grounds for establishing a more open and integrated market between the EU and Russia.

After the Russian WTO accession takes place the EU is planning to negotiate with Russia a comprehensive economic integration agreement. The potential new agreement would aim at reducing trade barriers between the EU and Russia including also various non-tariff barriers.

The rest of the study is organized as follows: Chapter 2 offers a general background to the production and trade of Russia. Chapter 3 describes methodology, data and the different scenarios. Since the methodology used in this study is the same as the one which was employed when looking at the CIS region as a whole and also used for looking at the effects of different FTAs on other individual CIS countries in the different studies undertaken under this project, the description in this chapter is identical to the description of the model and data in the other studies. Therefore we suggest to those readers who are

already familiar with this description to skip this section and continue with the discussion of the results. Chapter 4 discusses the results. Concluding comments can be found in Chapter 4.

2 Trade and Production structure of Russia

Figure 2-1 Share of sectors in output

Share of sectors in output

- OthServices 12%
- Agriculture 9%
- ProcFood 5%
- TextWapp 1%
- Extraction 2%
- oil 4%
- gas 3%
- PubAdmin 13%
- LightMnfc 8%
- TransComm 16%
- HeavyMnfc 14%
- Util_Cons 13%
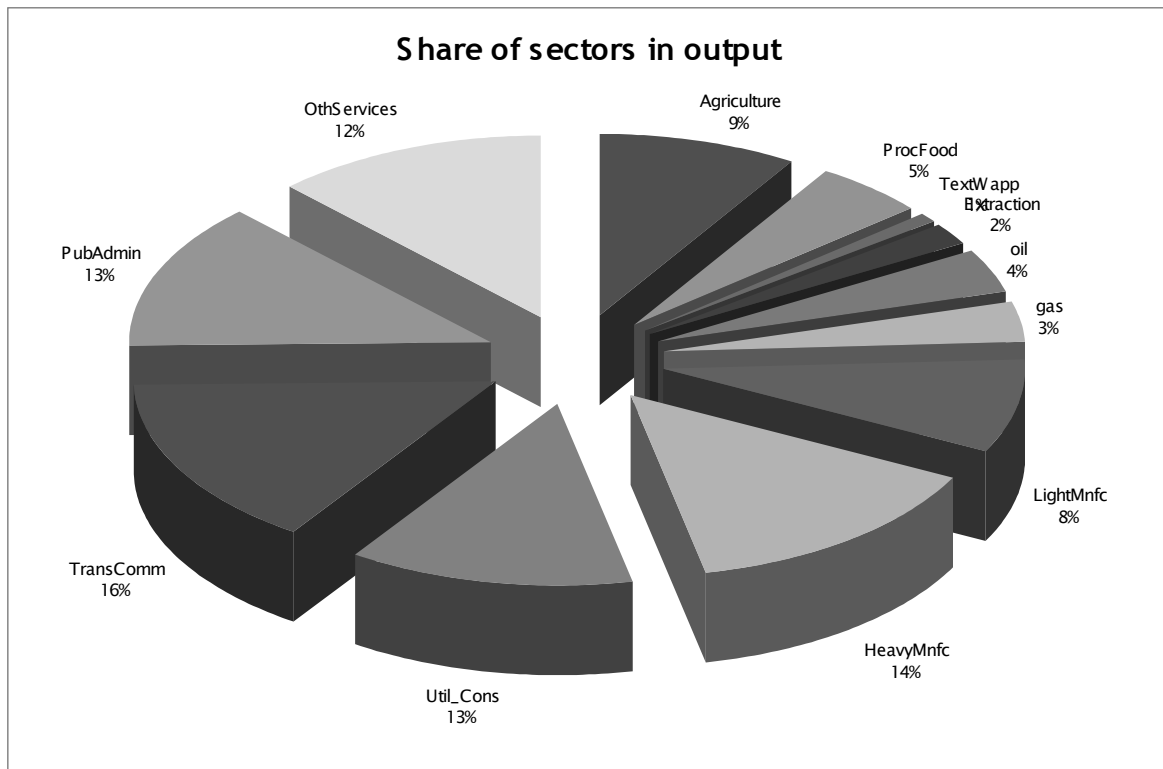
Source: own calculations, data come from GTAP database version 7

Services represent about 54% of total output in Russia. Oil, gas, and other mineral extractions all together represent about 9% of total output on average in Russia which is depicted in Figure 2-1. Heavy manufacturing (which includes petroleum, coal products, chemical, rubber, plastic prods, mineral products, ferrous metals, metals, electronic equipment, machinery and equipment, and manufactures nec) contributes to 14% of output. Output in light manufacturing sectors is only about half of the output share of the heavy manufacturing sectors representing only 8% of total output. The agricultural output together with output in the processed food sector represents about 14% of total output.

Figure 2-2 Share of regions in exports
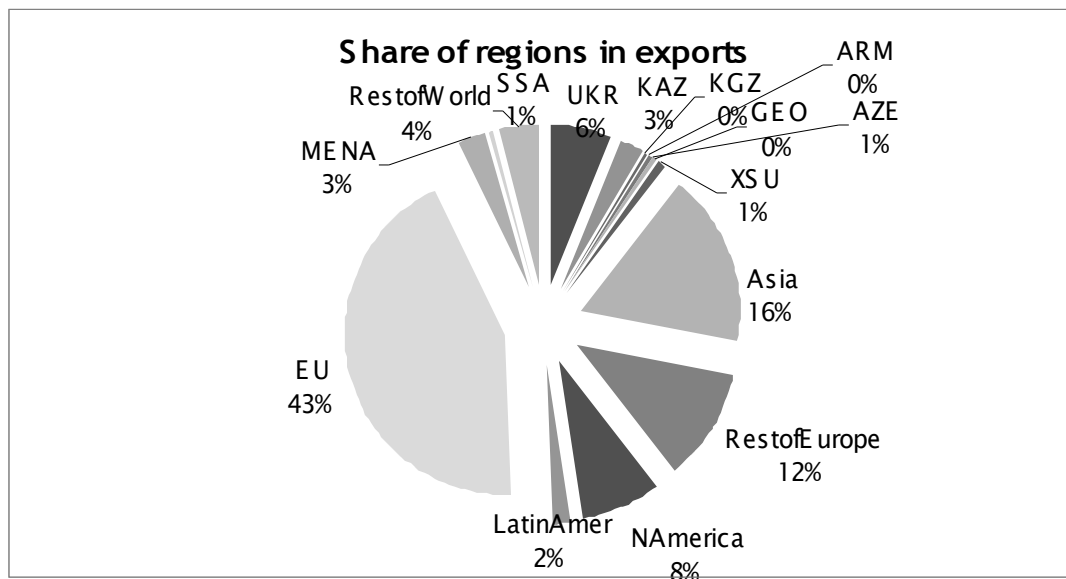
Source: own calculations, data come from GTAP database version 7

Figure 2-2 depicts the importance of different regions and countries in Russia's exports. The EU is the most important export destination for Russia. About 43% of all Russian exports are directed to the EU. The second biggest export destination is also outside the CIS region, about 16% of exports go to Asia. Furthermore, an important part of Russian imports, 12% go to rest of European countries outside the CIS and the EU. Relatively little exports go to North America (only about 8% of total exports). Within the CIS region Ukraine is the

most important export destination with 6% of total Russian exports going to Ukraine. The other countries in the region absorb a rather small share of Russian exports compared to other countries.

Figure 2-3 Imports and import protection
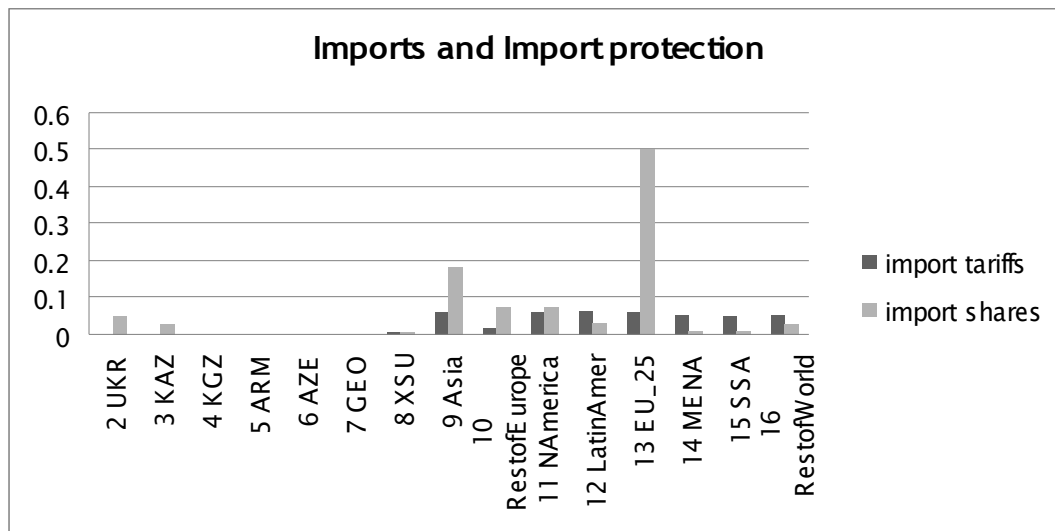
Source: own calculations, data come from GTAP database version 7

Figure 2-3 depicts Russian imports coming from different destinations together with the applicable import tariffs. Similarly to exports, the EU is the most important import partner with imports coming from the EU representing about half of total Russian imports. Average import tariffs on EU imports are around 6% which is about the same as the average tariff for other third regions. There are no import tariffs for other countries in the CIS region; nevertheless the share of imports coming from these countries is rather small. About 5% of imports are coming from Ukraine and about 2.5% from Kazakhstan, imports from other CIS countries are smaller than 1%.

Figure 2-4 EU imports and import tariffs

EU import tariffs and imports from Russia
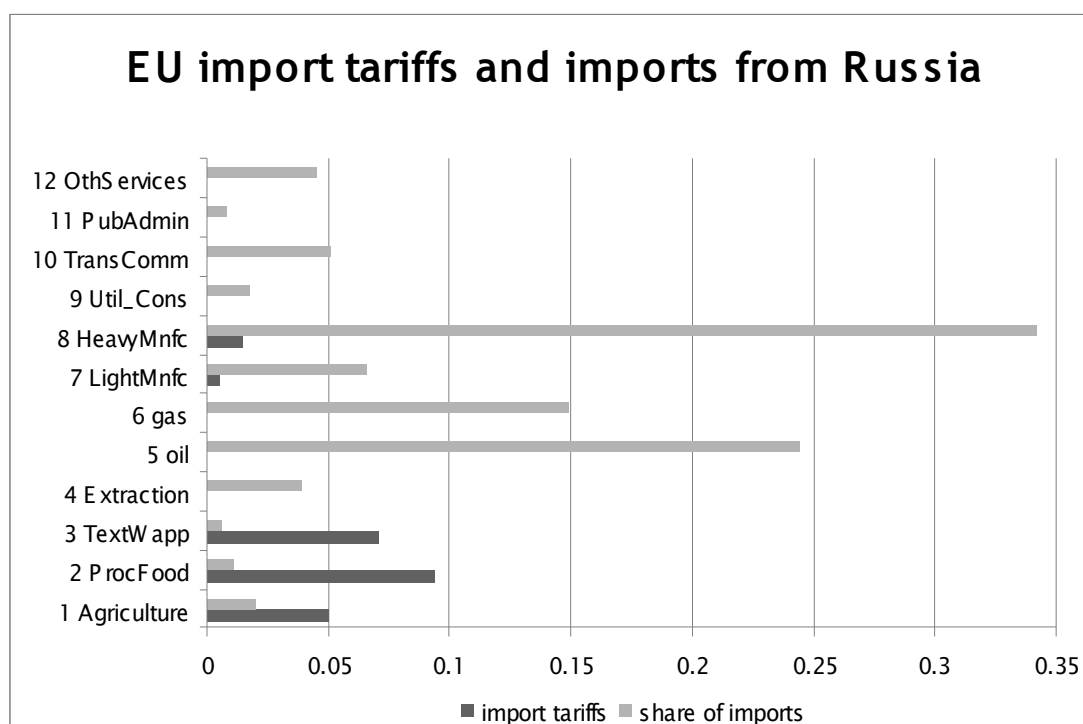
Source: own calculations, data come from GTAP database version 7

Figure 2-4 shows EU import tariffs and import in different sectors originating from Russia. The highest import tariffs are in the processed food sector, in agricultural products and in textiles and clothing. The share of imports in these sectors for Russia is relatively small. The sector with the highest share of imports is heavy manufacturing which represents about one-third of total imports. Although there are some import tariffs applicable to imports in this sectors these are very small, smaller than 1%. Imports of gas and oil are very significant, together representing almost half of total imports. Import tariffs in these sectors are zero.

These figures suggest that if the FTA between the EU and Russia would be limited only to reduction of tariffs in goods the benefits for Russia with the current trade structure are likely to be very limited or even negative.

3 The Model and the Data

3.1 The CGE model

The methodology is comparable with recent policy analyses of the World Bank, the IMF and the OECD, incorporating a similar quantitative modeling framework. This section provides a brief overview of the global computable general equilibrium (CGE) model used in this study.

The CGE-model is based on an input-output structure (which stem from national input-output tables) which explicitly links industries through chain of value added in production, from primary goods, through stages of intermediate processing, to the final assembling of goods and services for consumption. This inter-sectoral linkage works both through direct linkages, e.g. the use of steel in the production of transport equipment, and indirect, i.e. via intermediate use in other sectors. These linkages are captured in the model by the usage of firms' use of factors and intermediate inputs. An overview of the model is provided in Box 3.1 below, while a more detailed description is available in the Technical Annex.

Recent developments in international trade and economic geography focus on the importance of scale economies (e.g. starting from Krugman (1979), (1980), Helpman and Krugman (1989) and onwards) and imperfect competition in determining the patterns of production and trade. In order to incorporate this development into the analysis, our model is expanded to take into account differences in underlying market structures across sectors.

Furthermore, in order to further increase the quality of the analysis, we employ estimates on elasticities as reported in the recent paper by Antweiler and Trefler (2002).

Impediments to trade in services are not as clearly visible as is the case with tariffs for trade in merchandise. Rather, trade barriers in the service sector often entail prohibitions, quantitative restrictions and government regulations, which

are designed to limit the market access of foreign suppliers. These are not easy to quantify. In order to remedy this lack of data, we follow Francois (2003) in estimating tariff equivalents for the service sector through the use of a gravity type equation. These estimates are then incorporated into the analysis. Further information about these estimates is available in the Technical Annex.

3.2   Model data

The GTAP database, version 7, provides the majority of the data for the empirical implementation of the model. The database is the best and most updated source for internally consistent data on production, consumption and international trade by country and sector. For more information, please refer to Dimaranan and McDougall (2006).

The GTAP version 7 dataset is benchmarked to 2004, and includes detailed information on input-output, trade and final demand structures for the whole world this year. However, there are some important changes to the trade policy environment that have happened since then, that we wish to include in the basic dataset. Therefore, before conducting any policy experiments, we first run a 'pre-experiment', where we include the ATC phase-out and EU enlargement. Moreover, several of the CIS countries are currently in the process of joining the WTO. The EU would most probably only negotiate FTAs if the given partner country would already be a WTO member. Therefore, we implement the result from WTO accessions of all non-WTO members of CIS as well in our baseline.

For the purpose of this study, the GTAP database has been aggregated into 16 regions and 12 sectors. The list of sectors and regions is shown in . The detailed mapping between the aggregated sectors and the original GTAP sectors, together will a list of regions used in the model can be found in the Technical Appendix to the main report.

Table 3.1: Sectors in the model

Sectors	Regions
Agricultural products, food	Russia
Processed Food	Ukraine
Textiles and Clothing	Kazakhstan
Coals and other minerals	Kyrgyztan
Oil	Armenia
Gas	Azerbaijan
Light Manufacturing	Georgia
Heavy Manufacturing	Rest of Former Soviet Union
Utilities and Construction	East, Southeast and South Asia
Transport and Communication	Rest of Europe
PubAdmin/Defence/Health/Educat	North America
Other Services	Latin America
	European Union 25
	Middle East and North Africa
	Sub-Saharan Africa
	Rest of World

3.3 Setting up the analysis; baselines and trade liberalization scenarios

All results are compared to the baseline, which takes into account the effects of a successful WTO accession, the EU enlargement and the phase-out of the ATC.

The core of our analysis is structured around a set of scenarios. We simulate these three scenarios assuming that all CIS countries have the same FTAs with the EU. These scenarios are based on alternative liberalization approaches for agriculture, manufactured goods and services trade, as well as measures to facilitate trade. Trade facilitation measures aim to reduce less transparent trade barriers, such as customs procedures, product standards and conformance certifications, licensing requirements, and related administrative sources of trading costs. The scenarios which we use as basis for our analysis are summarized in the table below.

Table 3.2: Scenarios

		Assumptions			
Nr	Description	Food	Non-food	Services	Trade facilitation
1	Partial 1 trade agreement	No tariff reductions	Full bilateral tariff reductions	no reduction	None
2	Partial 2 trade agreement	Full bilateral tariff reductions	Full bilateral tariff reductions	no reduction	None
3	Full FTA	Full bilateral tariff reductions	Full bilateral tariff reductions	Full services liberalisation	2% of value of trade

The partial trade agreements imply more realistic outcomes of the trade negotiations than the Full FTA scenario described above. With regards to the outcome of the bilateral trade agreements on non-food, the assumption is the same as in the full FTA, namely full bilateral tariff reduction. The second partial trade agreement scenario offers a deeper liberalisation between the regions implying full bilateral reduction in not only manufacturing goods but also in the food sector. No trade facilitation is assumed to take place in the partial scenarios.

The Full FTA agreement implies full bilateral tariff reductions for manufacturing goods, full bilateral tariff reductions in the agriculture and processed food sectors, full liberalization of trade in services and trade facilitation measures corresponding to 2 percent of value of trade. From a policy point of view, this scenario can be seen as quite radical in its assumptions. Nonetheless it is very useful in providing an upper benchmark for the effect of potential measures to liberalize trade.

4 Results

4.1 Real Income Effects

Trade liberalization would have a negative income effect for Russia under all the different scenarios which is shown in Table 4.3. The smallest loss would occur under the full FTA scenario which would result in a 0.4% real income decrease.

On the other hand the biggest decrease would occur in case of the second scenario amounting to a 1.33% real income decrease. These negative effects under the first two scenarios are mainly due to the important negative terms of trade effects taking place in Russia. Compared to the real income effects of Russia, the average effects in the CIS countries would be less negative and would result in an improvement under the third scenario. On the other a small positive net income effects would occur in the EU. The gains form liberalization for the EU would be the highest under the full FTA scenario and very similar in magnitude under the first two scenarios

Table 4.3. Real Income Effects (percentage change from baseline)

Scenario	Partial 1 trade agreement	Partial 2 trade agreement	Full FTA
EU	0.14	0.13	0.21
CIS	-0.53	-0.83	0.62
Russia	-1.09	-1.33	-0.4

Source: Model simulations.

## *4.2 Changes in sectoral output in Russia*

Our analyses of the expected changes in sectoral output as a result of different forms of trade liberalisation show that important changes would occur in the sectoral output of Russia. Figure 4-1 depicts changes in the output of different sectors in Russia after the three different FTA would take place.

The most pronounced decrease would take place in the light manufacturing sectors with the drop in the production being very similar under all the three scenarios. The decrease of production in average would be around 16%. There are several other sectors where smaller reduction in output would occur under the different scenarios. The sector which would experience the second most important drop in sectoral output is processed food sector. This sector would have a 4% reduction in output under the two second FTAs which involve liberalization of trade in agriculture and processed food sector. However, there

would be an increase in the sectoral output under the first FTA which would not involve any liberalization of trade in this sector.

The sectors where increases in sectoral output would take place are the heavy manufacturing sectors and textiles and apparel. For both sectors the biggest increase would occur in case of full FTAs amounting to about 5% increase in their output.

Figure 4-5 Changes in sectoral output
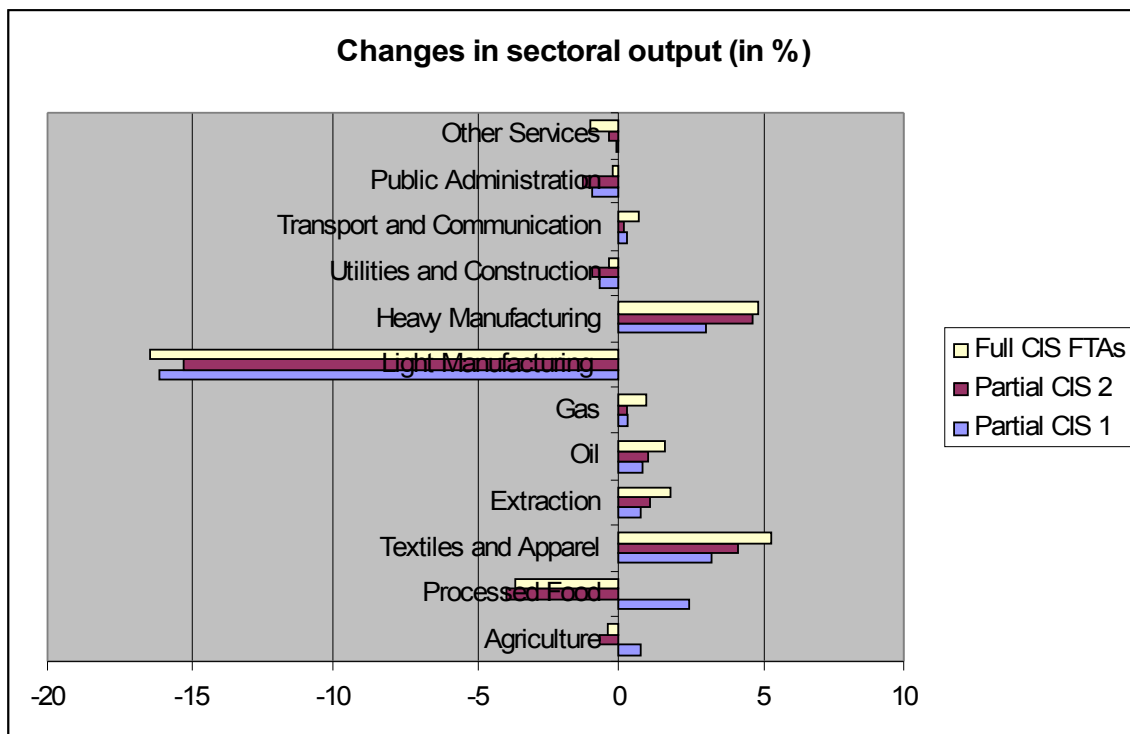
Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

4.3 Effects on bilateral trade flows

In this section we provide detailed results on trade impacts in the three scenarios, and we present the changes in trade flows by sector.

The figure below depicts changes in EU exports towards Russia after the three different FTA scenarios. The services sectors experience a small reduction in the first two scenarios. Under the third scenario, trade in services sectors belonging to 'other services' is liberalised. As a consequence of this there would be an

important, about 42% increase in EU exports in other services sectors towards Russia. An important increase would occur in exports of textiles and apparel under all scenarios, the biggest increase occurring under the third scenario. The exports in these sectors would more than double towards Russia. Light manufacturing exports would also increase about 94-103% depending on the scenarios. When trade liberalisation would occur also in agriculture and processed food sectors, these sectors would also experience an important increase in their exports towards Russia. There would be an increase in gas exports, which according to the graph is important in terms of percentage change compared to the baseline scenario. The table below shows the percentage changes compared to the baseline together with the share of exports in each sector. The share of gas and oil sector's exports is very close to zero, thus the increase shown in the graph in the exports of gas to Russia in terms of level is minimal.

Figure 4-6 Changes in EU exports by sector.
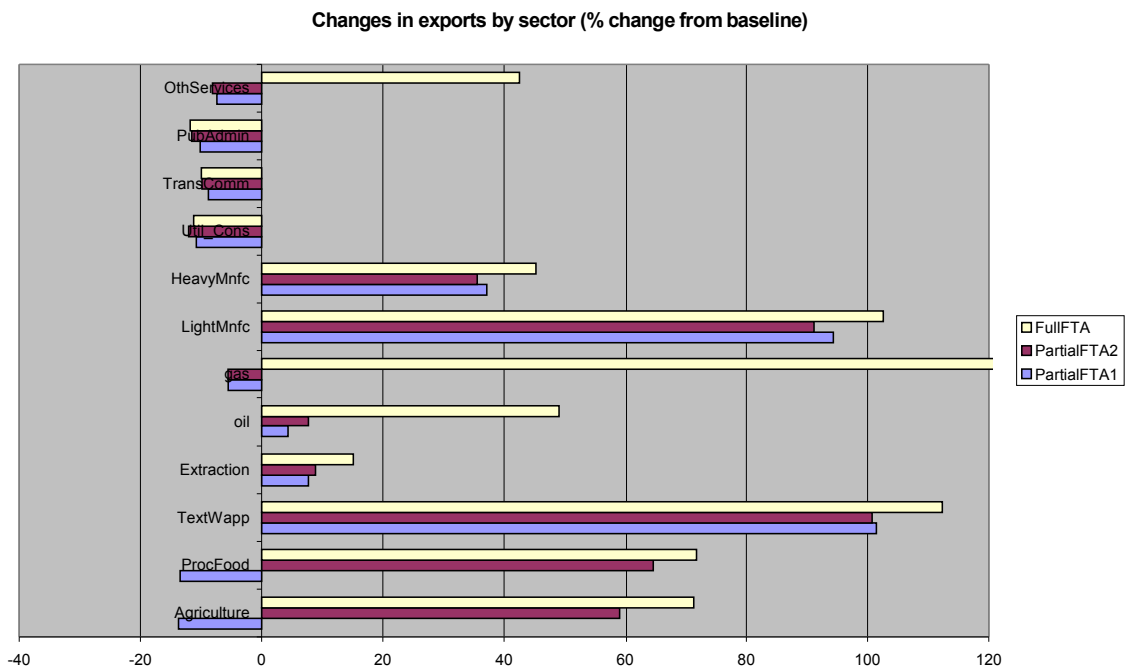
Changes in exports by sector (% change from baseline)

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

Table 4 Percentage changes in sectoral exports of the EU

|	Partial CIS 1	Partial CIS 2	Full CIS FTAs	share in total exports
Agriculture	-13.94	59.09	71.31	3.46%
Processed Food	-13.44	64.36	71.43	5.74%
Textiles and Apparel	101.46	100.75	112.33	4.17%
Extraction	7.73	8.9	15.08	0.22%
Oil	4.36	7.74	49.07	0.00%
Gas	-5.5	-5.55	248.14	0.00%
Light Manufacturing	94.34	91.17	102.58	18.83%
Heavy Manufacturing	37.17	35.57	45.27	45.65%
Utilities and Construction	-10.78	-12.05	-11.22	3.37%
Transport and Communication	-8.78	-9.84	-9.95	7.24%
Public Administration	-10.4	-11.53	-11.78	1.29%
Other Services	-7.39	-8.1	42.56	10.03%

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

Figure 4-3 shows percentage changes in exports of Russia by each sector towards the EU. Similarly to the case of EU exports in services, an important increase would occur in other services exports if trade would be liberalised between the EU and the CIS in these sectors.

While there would be a few percentage points reduction in exports of oil under the second FTA scenario, in all other cases there would be increases in exports from Russia toward the EU. The most pronounced increase would occur in the textiles and apparel sectors. Under the first and second scenarios, the increase would be around 120% and would be around 145% in case of full liberalisation. Exports in heavy manufacturing would increase by 35-38% under the two first scenarios and by 54% in case of full liberalisation. Increase in exports of processed food and agricultural products would take place under all three scenarios, the effect being small in case of no liberalisation in agriculture and becoming important once liberalisation in the agriculture and food sectors would also take place.

Figure 4-7 Changes in Russian exports to the EU by sector.
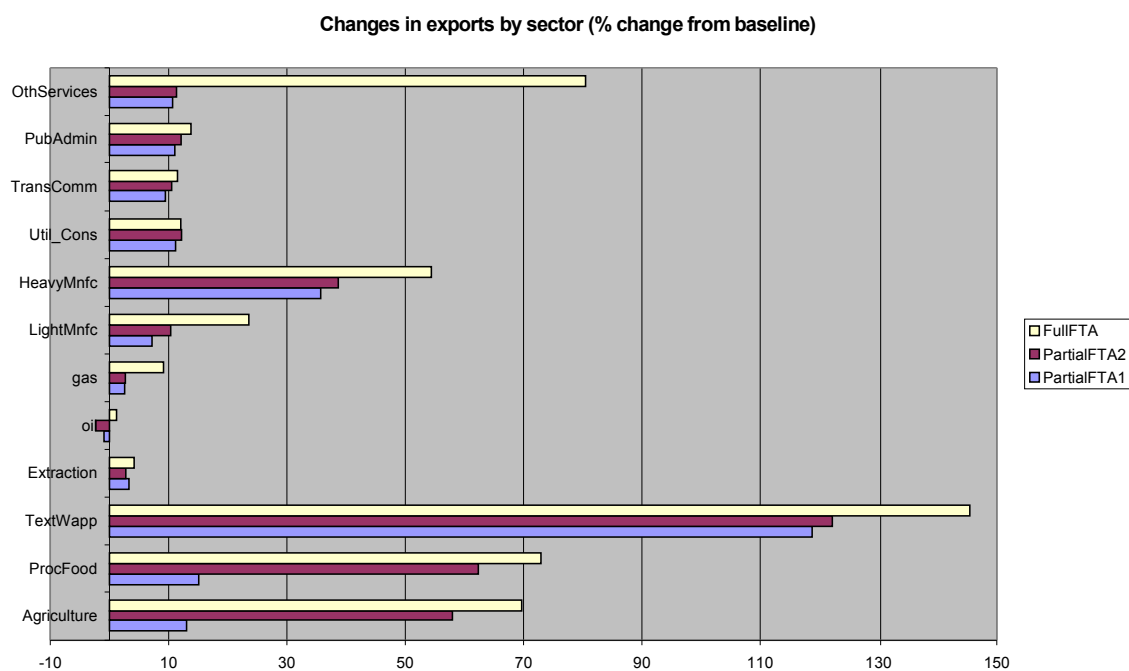
Changes in exports by sector (% change from baseline)

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

Table 5 shows the percentage changes in sectoral exports together with the share of each sector in total exports towards the EU in the baseline. Although the most important increase would occur in the textiles and apparel sector with exports to the EU increasing by 120-145% depending on the scenario, this sector only represents a small share of exports in total exports. Less than 1% of exports occur in these sectors. In the exports of goods the second most important increase would occur in processed food followed by the increase in exports of agricultural products. Again, these sectors represent only a very small share of total exports therefore the change after the different FTAs in level would be only very small.

Table 5 Percentage changes in sectoral exports of Russia

	Partial CIS 1	Partial CIS 2	Full CIS FTAs	share in total exports
Agriculture	13.03	57.98	69.67	2.01%
Processed Food	15.04	62.35	72.94	1.11%
Textiles and Apparel	118.79	121.88	145.43	0.81%
Extraction	3.29	2.77	4.17	3.68%

Oil	-0.93	-2.32	1.21	22.63%
Gas	2.42	2.69	9.15	14.64%
Light Manufacturing	7.19	10.08	23.17	6.57%
Heavy Manufacturing	35.71	38.69	54.43	35.77%
Utilities and Construction	11.19	12.19	12.07	1.77%
Transport and Communication	9.45	10.53	11.51	5.21%
Public Administration	11.06	12.11	13.78	0.86%
Other Services	10.69	11.33	80.48	4.92%

4.4 Other Macroeconomic Results

In this section other macroeconomic results, such us changes in wages and GDP are discussed. These results are summarized in Table 4.6 and Table 4.65 below. Although the change in GDP indicates a slightly bigger gain for the CIS on average than for the EU in case of full FTA, Russia would have a decrease in its GDP under all scenarios. This decrease would be the smallest in the case of full FTA, amounting to a 0.05% decrease, and the highest in case of the second scenario with a 0.9% decrease. The resulting changes are shown in Table 4.6 below for the full FTA scenario.

Russia would experience an increase in wages for both the skilled and unskilled workers. These increases would be much smaller than those reported for the average of CIS. The increase in Russian wages would be around 0.25% for unskilled workers, and about 0.62% for skilled workers.

Table 4.6: Macroeconomic results from Full FTA (in %)

	EU	CIS	Russia
Change in GDP	0.18	1.195	-0.05
Unskilled worker wage	0.26	1.56	0.25
Skilled worker wage	0.24	1.47	0.62

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

The results with regards to the effect on other macroeconomic variables of the more realistic scenarios of trade agreements are summarized in Table 4.7 below. These results are different not only in magnitudes but also the sign of the change is reversed for the wages for Russia. While the full FTA would result in an

increase in wages, the first two scenarios with lower level of trade liberalisation would imply a reduction in wages in Russia. Both skilled and unskilled workers in Russia would experience a drop in their wage unlike the workers in the EU or average workers in the CIS. The decrease in wages in Russia would be the highest under the first scenario in which case both unskilled and skilled workers would experience a close to half percent reduction in wages. Furthermore, the reduction in GDP would be more pronounced under the first two scenarios being the highest, around 0.91 under the second scenario.

Table 4.7: Macroeconomic results from Partial 1 & 2 trade agreement

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	**CIS**	**Russia**	**EU**	**CIS**	**Russia**
Change in GDP	0.12	-0.13	-0.71	0.10	-0.35	-0.91
Unskilled worker wage	0.18	0.22	-0.47	0.18	0.16	-0.39
Skilled worker wage	0.16	0.32	-0.42	0.15	0.36	-0.22

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

4.5 Terms of Trade Effects

The table below shows terms of trade effects in the case of full free trade agreement with liberalization in not only agriculture and manufacturing products but also services trade and reduction in technical barriers. While the EU would have small terms of trade improvement amounting to about 0.11%, the CIS on average would experience 0.83% deterioration and the terms of trade deterioration would amount to 1.63% in the case of Russia.

Table 4.8: Terms of trade results from Full FTA (in %)

	EU	**CIS**	**Russia**
Terms of trade effects	0.11	-0.83	-1.63

Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

The terms of trade effects for the two other forms of trade liberalisation are presented in the table below. Russia again, similarly to the full FTA case would experience a terms of trade deterioration. This decrease in terms of trade would be very similar in magnitude under the first scenario and the full FTA while being slightly higher under the second FTA scenario. On the other hand the terms of

trade gains for the EU would be significantly much smaller than for Russia and always positive.

Table 4.9: Terms of trade results from Partial 1 & 2 trade agreement

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	CIS	Russia	EU	CIS	Russia
Terms of trade effects	0.09	-0.63	-1.62	0.10	-0.76	-1.83

Source: Model simulations. Note: All results are reported as percentage change compared to baseline

5 Conclusions

In this study we explore the economic effects of potential measures to liberalize trade between the European Union and Russia. In so doing, we have a Computable General Equilibrium Model, CGE Model, based on the most recent version of the GTAP data base, i.e. GTAP 7, which is benchmarked to data from 2004. Our CGE model follows recent research in trade theory in taking differences in underlying industry specific market structures and elasticities into account. Furthermore, the model incorporates estimated non-tariff trade barriers to trade in services, stemming from industry-specific gravity equation, which enhances the analysis of the service sector. The results are compared to a baseline which incorporates recent developments in the trade policy environment, i.e. the phase out of ATC, enlargement of the EU and CIS accessions to the WTO. The analysis takes agricultural liberalization, liberalization in industrial tariffs, and liberalization in services trade as well as trade facilitation measures into account.

The EU is a very important trading partner for Russia. On the other hand, Russia is also an important trading partner for the EU but to a much smaller extent. Furthermore, CIS as a region represents only a relatively small share of EU trade. As a consequence of this asymmetric relationship the effects of an FTA between the EU and the CIS would have asymmetric effects on the EU and Russia. The impact of an FTA would be more pronounced for Russia and rather marginal for the EU.

Only a rather limited income effect would occur in the EU as a consequence of the FTAs while the income effect in Russia would be higher in magnitude. While Russia would experience a negative income effect under all different FTA scenarios the effect for the EU would be small but positive.

The change in GDP in the two regions reflects similar developments. A reduction in GDP would take place under the different FTA scenarios in Russia with this reduction being the highest under the second FTA scenario and close to zero but negative under the full FTA scenario. These negative effects are mainly due to the important negative terms of trade effects taking place in Russia.