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

Ukraine

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Table of contents

1 Introduction

With the EU enlargement, the EU became the main trading partner of Ukraine, replacing Ukraine as Ukraine's foremost commercial partner. Ukraine's trade with the EU accounts for about one third of its external trade.

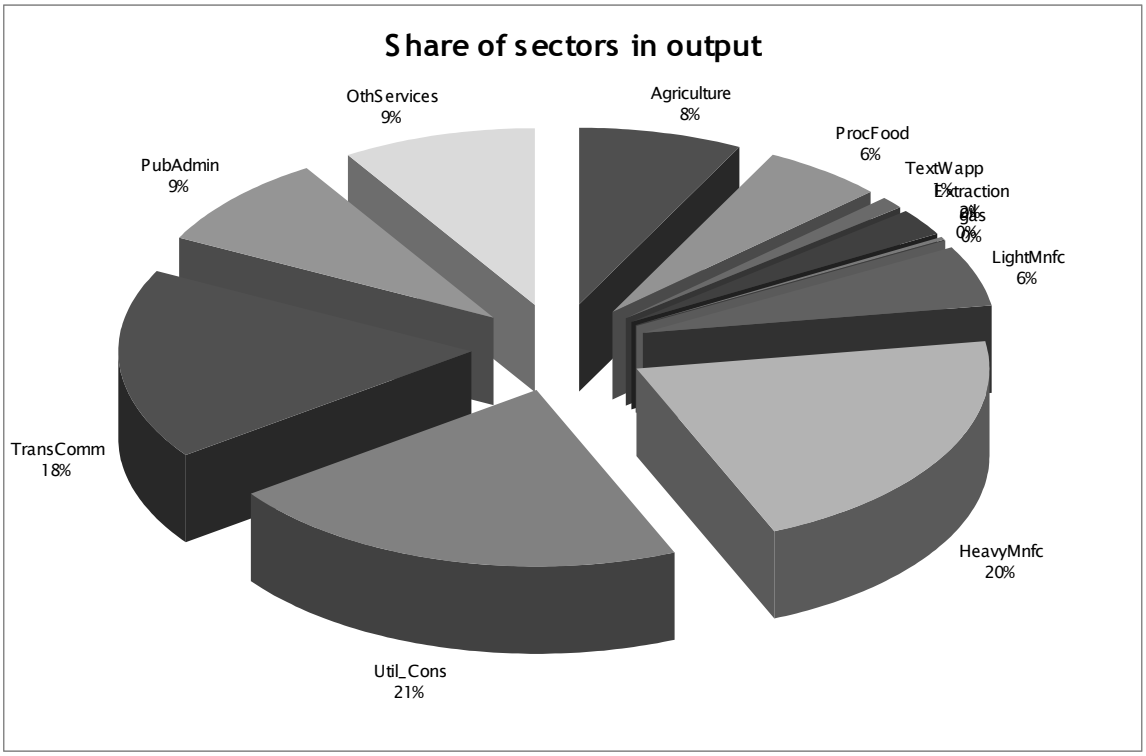
Ukraine together with many other CIS countries is part of the European Neighbourhood Policy. Currently, the EU-Ukraine economic relations are mainly based on the Partnership and Co-operation Agreement (PCA) which entered into force in 1998. The agreement regulates the political, economic and cultural relations between the EU and Ukraine and it is the current legal basis for the EU's bilateral trade with Ukraine. Furthermore, following the future completion of the WTO accession, the EU intends to negotiate a bilateral Free Trade Agreement. In 2007, the EU and Ukraine launched bilateral negotiations of a new Enhanced Agreement that will replace the present PCA and will include a potential future FTA. However, the negotiations of the FTA elements of the new Agreement will only start once Ukraine becomes a WTO member.

The rest of the study is organized as follows, Chapter 2 offers a general background to the production and trade of Ukraine. 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 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 Ukraine

The importance of different sectors in Ukraine's output is depicted in the figure below. Output in services represents a bit less than two-third of total output in Ukraine. Among manufacturing sectors heavy manufacturing sectors take up the most important part of total output, representing about 20%. On the other hand light manufacturing sectors represent only 6%. Agricultural output is about 8% of total output which is similar to the importance of the sector in the Russian economy where it represented about 9% of total output. Processed food contributes to 6% of total output.

Figure 2-1 Share of sectors in output

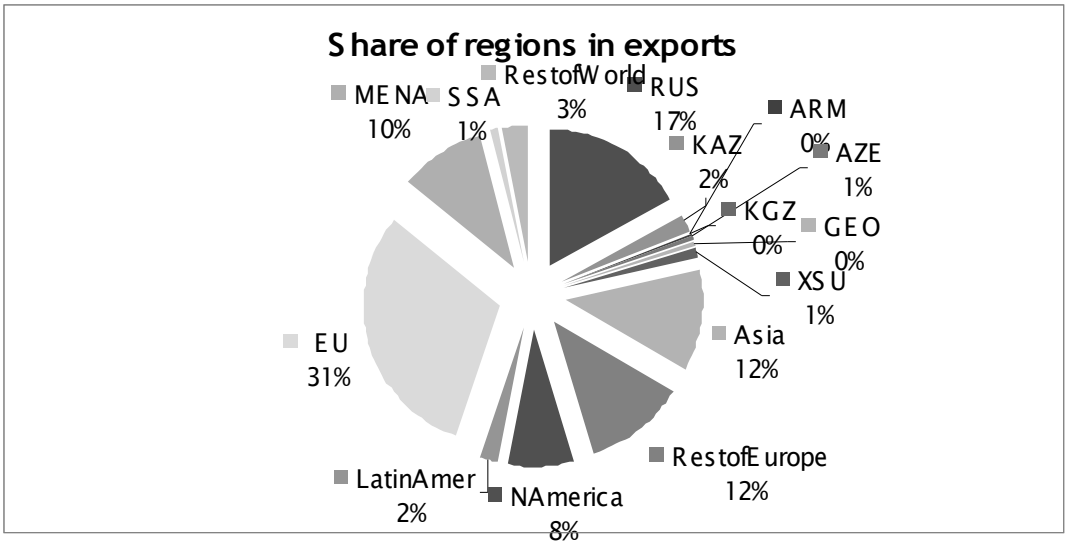


Source: own calculations, data come from GTAP database version 7

Figure 2-2 depicts the importance of different regions and countries in Ukraine's exports. The EU is the most important export destination for Ukraine; 31% of all Ukrainian exports go to the EU. The second biggest export destination is within

the CIS region. About 17% of Ukrainian exports go to Russia. Other CIS countries represent only a very limited share of export destinations. Ukraine, similarly to Russia exports about 12% of total exports to other European countries outside the EU and the CIS and 12% to Asian countries.

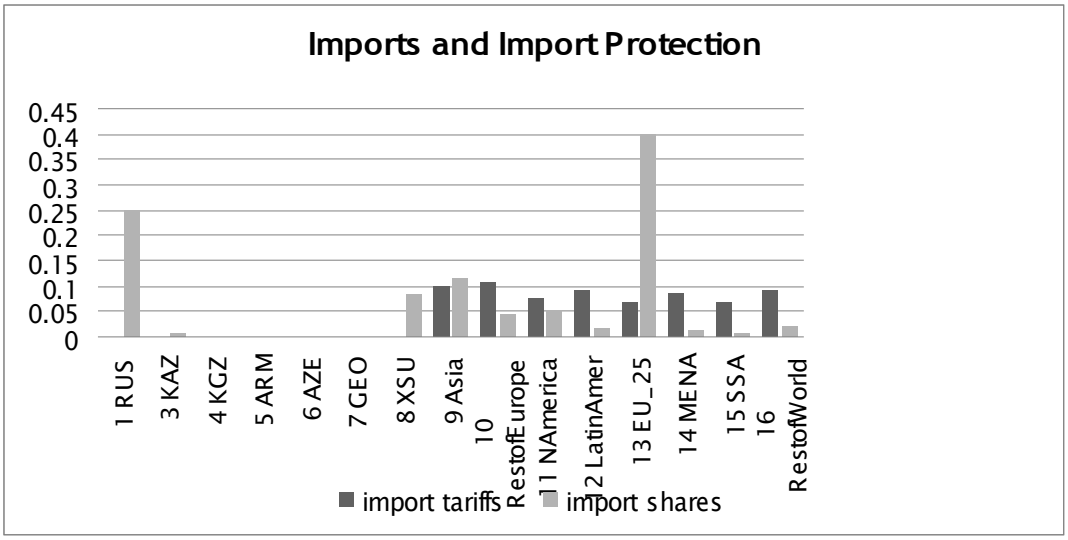
Figure 2-2 Share of regions in exports



Source: own calculations, data come from GTAP database version 7

Figure 2-3 depicts Ukrainian imports coming from different destinations and the corresponding import tariffs. Similarly to exports, the EU is the most important import partner with imports coming from the EU representing about 40% of total Ukrainian imports. There are no import tariffs for other countries in the CIS region, nevertheless the share of imports coming from these countries is rather small with the exception of Russia from which 25% of imports originate.

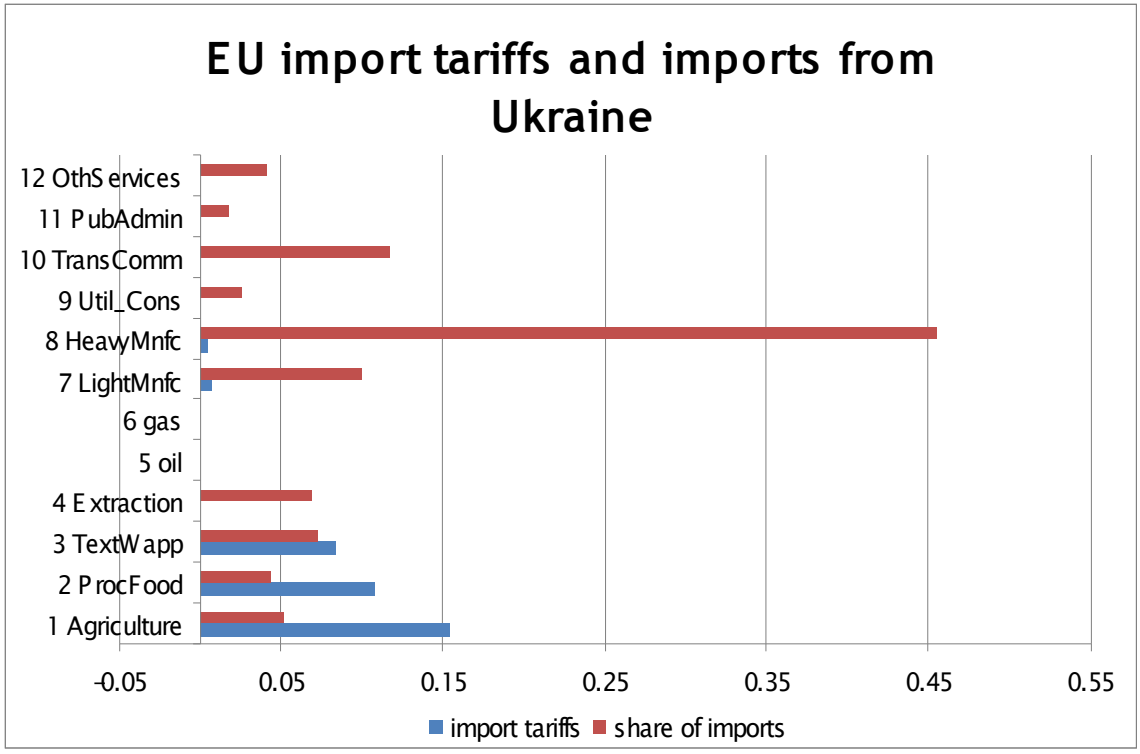
Figure 2-3 Imports and import protection



Source: own calculations, data come from GTAP database version 7

Figure 2-4 shows EU import tariffs and imports in different sectors originating from Ukraine. 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 is relatively small being around 4-7 percent of each sector in total imports. The sector with the highest share of imports is heavy manufacturing which represents almost half of total imports. Imports of light manufacturing products are also important representing about ten percent of total imports.

Figure 2-4 EU imports and import tariffs



Source: own calculations, data come from GTAP database version 7

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 Ukraine under all the different scenarios which is shown in . 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 2.12% real income decrease. These negative effects are mainly due to the important negative terms of trade effects taking place in Ukraine. Compared to the real income effects of Ukraine, the average effects in the CIS countries would be less negative and would results in an improvement under the third scenario. On the other hand a small positive net income effect would occur in the EU under all three scenarios. 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
Ukraine	-0.65	-2.12	-0.4

Source: Model simulations.

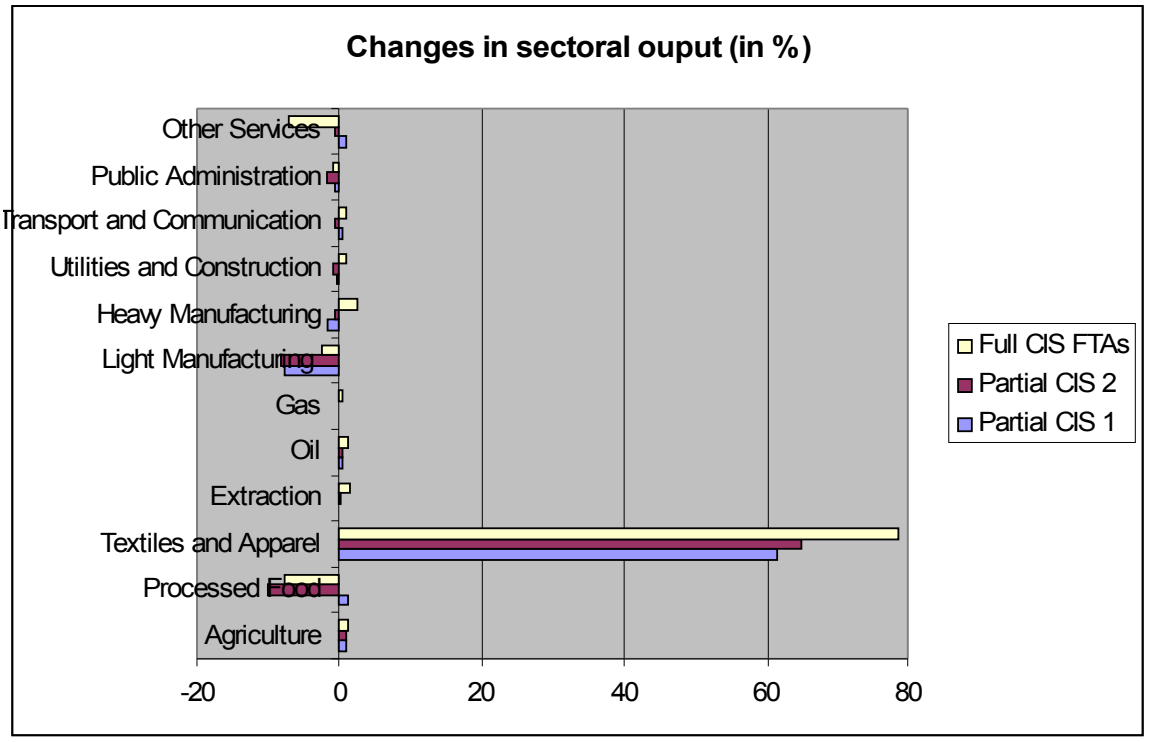
4.2 Changes in sectoral output in Ukraine

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 Ukraine. Figure 4-1 depicts changes in the output of different sectors in Ukraine after the three different FTA would take place.

The most pronounced decrease in output would take place in the light manufacturing and processed food sectors. The light manufacturing sector would experience a decrease in output which would be around 8% under the first two scenarios and would be much lower, around 2.5% under the full FTA scenario. The processed food sector would have a small increase in the production under the first FTA scenario and a decrease in output of around 10% under the second scenario and 8% under the full FTA scenario. There are several other sectors where smaller reduction in output would occur under the different scenarios.

The only sector where important increase would occur in output is the textiles and apparel sector. An increase in output would take place in this sector under all three scenarios with the increase being the highest under the full FTA scenario which would imply an almost 80% change in output. Figure 2-1 showed the importance of each sector in Ukraine's output. Textiles and apparel represented only 1% of total outputs in 2004 therefore although there would be an important increase in the output in this sector, increase in terms of level would be rather small.

Figure 4-5 Changes in sectoral output



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

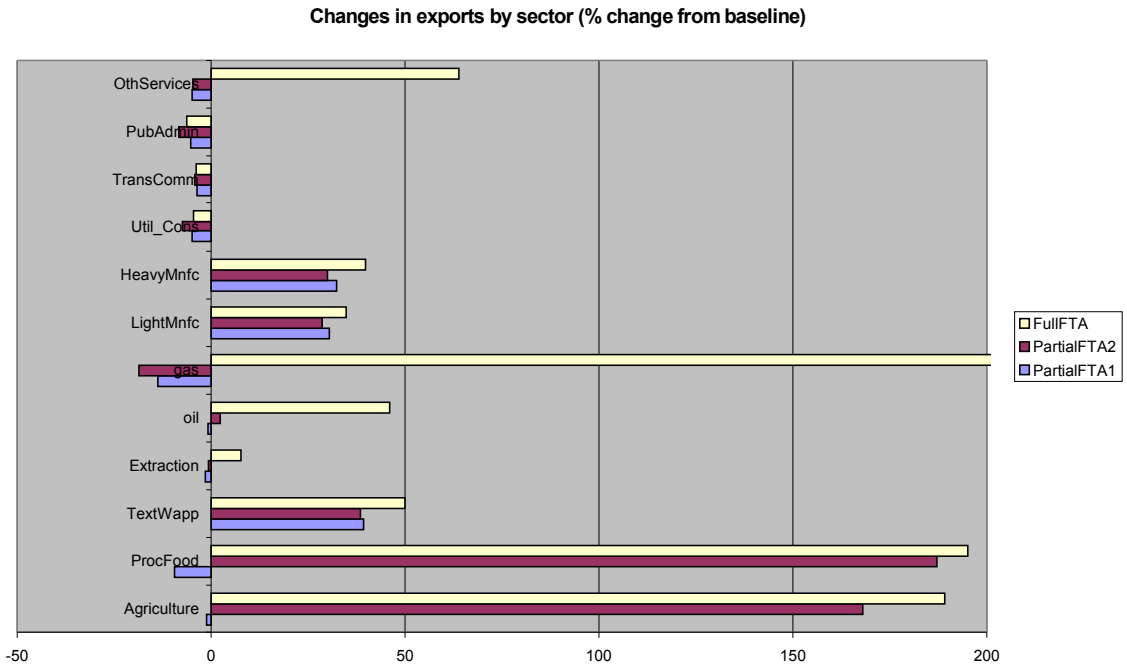
4.3 Effects on bilateral trade flows

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 Ukraine 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 63% increase in EU exports in other services sectors towards Ukraine. 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 increase by 50% towards Ukraine. The most important increase would occur in agricultural and processed food exports under the second and the third FTA scenarios which both include liberalisation of tariffs

in agricultural products. The increase in these sectors would be around 160-190% depending on the scenarios. Furthermore, light and heavy manufacturing exports would also increase about 28-39% depending on the scenarios. 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 Ukraine in terms of level is minimal.

Figure 4-6 Changes in EU exports by sector.



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	-1.17	168.03	189.14	2.60%
Processed Food	-9.42	187.14	195.1	3.91%
Textiles and Apparel	39.3	38.52	49.95	6.47%
Extraction	-1.48	-0.68	7.71	0.59%
Oil	-0.8	2.34	46.02	0.00%

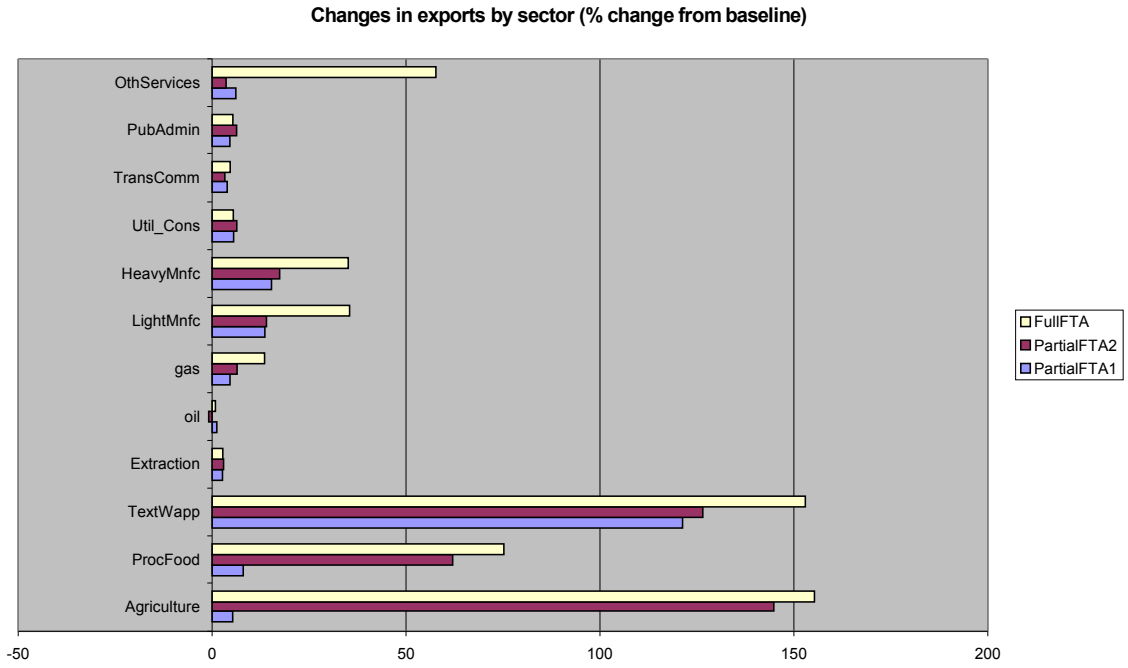
Gas	-13.73	-18.61	244.19	0.00%
Light Manufacturing	30.47	28.62	34.8	23.05%
Heavy Manufacturing	32.33	29.99	39.81	46.52%
Utilities and Construction	-4.9	-7.4	-4.53	1.27%
Transport and Communication	-3.64	-4.21	-3.83	5.68%
Public Administration	-5.25	-8.35	-6.28	1.42%
Other Services	-4.9	-4.69	63.87	8.49%

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

Figure 4-3 shows percentage changes in exports of Ukraine 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.

The most pronounced increase would occur in the textiles and apparel sectors. Under the first and second scenarios, the increase would be around 121-126% and would be 153% in case of full liberalisation. Exports in heavy and light manufacturing would increase by 15-18% under the two first scenarios and by 35% 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 Ukrainian exports to the EU by sector.



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 and in agricultural products with exports to the EU increasing by 150% under the most ambitious scenario, these sector are not the most important export sectors towards the EU.

Table 5 Percentage changes in sectoral exports of Ukraine

	Partial CIS 1	Partial CIS 2	Full CIS FTAs	share in total exports
Agriculture	5.32	144.8	155.32	5.07%
Processed Food	8.03	62.02	75.22	4.40%
Textiles and Apparel	121.31	126.52	152.94	7.50%
Extraction	2.66	2.42	2.77	6.01%
Oil	1.21	-0.91	0.84	0.02%
Gas	4.63	6.43	13.52	0.02%
Light Manufacturing	13.59	14.02	35.37	10.14%
Heavy Manufacturing	15.31	17.41	35.09	46.60%
Utilities and Construction	5.56	6.35	5.45	2.49%

Transport and Communication	3.88	3.27	4.66	11.59%
Public Administration	4.58	6.3	5.33	1.79%
Other Services	6.11	3.59	57.68	4.37%

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 4.5 below. Ukraine would have an increase of 0.68% in its GDP under the full FTA scenario which is shown in Table 4.6. This increase is about half of the average increase in CIS but higher than the effects in the EU. Ukraine would experience an increase in wages for both the skilled and unskilled workers. These increases would be higher than those reported for the average of CIS and the EU. The increase in Ukrainian wages would be around 3% for unskilled workers and about 1.8% for skilled workers.

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

	EU	CIS	Ukraine
Change in GDP	0.18	1.195	0.68
Unskilled worker wage	0.26	1.56	2.94
Skilled worker wage	0.24	1.47	1.78

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 GDP for Ukraine. While the full FTA and the first scenario would result in an increase in GDP, the second scenario would imply a reduction of 1.5% of GDP for Ukraine.

Both skilled and unskilled workers in Ukraine would experience an increase in their wages which would be higher than those experienced by workers on average in the CIS or in the EU. The increase in wages in Ukraine would be higher for unskilled worker and somewhat lower for skilled workers.

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

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	CIS	Ukraine	EU	CIS	Ukraine
Change in GDP	0.12	-0.13	0.04	0.10	-0.35	-1.46
Unskilled worker wage	0.18	0.22	0.94	0.18	0.16	0.97
Skilled worker wage	0.16	0.32	0.64	0.15	0.36	0.36

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 a 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 1.49% in the case of Ukraine.

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

	EU	CIS	Ukraine
Terms of trade effects	0.11	-0.83	-1.49

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. Ukraine 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 and second scenario while being higher under the full FTA scenario. On the other hand the terms of trade gains for the EU would be significantly much smaller than for Ukraine 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	Ukraine	EU	CIS	Ukraine
Terms of trade effects	0.09	-0.63	-0.89	0.10	-0.76	-0.94

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 Ukraine. 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 importance of the EU as a trading partner is very significant for Ukraine. On the other hand, the trade with Ukraine represents a rather small share in the EU's total 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 Ukraine. The impact of an FTA would be more pronounced for Ukraine 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 Ukraine would be higher in magnitude. While Ukraine would experience a negative income effect under all different FTA scenarios the effect for the EU would be small but positive. These negative effects are mainly due to the important negative terms of trade effects taking place in Ukraine.

The change in GDP in the two regions reflects similar developments. A reduction in GDP would take place in Ukraine under the second FTA scenario which is limited to elimination of tariffs on trade in goods. The first FTA scenario which is limited to elimination of tariffs in industrial goods would have a very small but positive effect. On the other hand a bit higher, positive effect would occur under the third scenario.