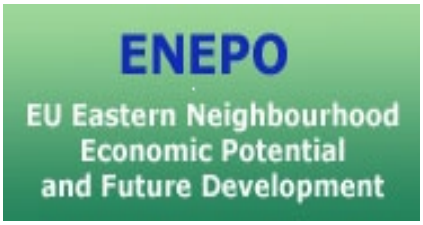


028736

ENEPO

EU Eastern Neighbourhood: Economic Potential and Future Development

Instrument: Specific Targeted Research Project

Thematic Priority: Priority 7 – Citizens and Governance in a Knowledge-based Society

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: Azerbaijan

Due date of deliverable: 01/12/2007
Actual submission date: 15/06/2008

Start date of project: 01/05/2006 Duration: 36 months

IfW - Kiel

Revision [version 1]

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

Azerbaijan

Study prepared by Joseph Francois[1] and Miriam Manchin[2]
as part of the project ENEPO- EU Eastern Neighbourhood: Economic Potential and Future Development funded by the Sixth Framework Programme of the European Union

February 2008

[1] Johannes Kepler University (Linz), and CEPR
[2] SSEES, UCL and Kiel Institute for the World Economy

Table of contents

1 Introduction

After the disintegration of the Soviet Union the EU has become the main trade partner of Azerbaijan. On the other hand, for the EU, Azerbaijan is a very marginal trade partner and trade with Azerbaijan represents a very limited share of total EU trade. The EU exports mainly machinery and transport equipment to the Azerbaijan. Azerbaijan mainly exports fuels representing around 93% of its total exports to the EU.

The framework for the EU bilateral trade relations with Azerbaijan is governed by the Partnership and Cooperation Agreement (PCA), which entered into force in 1999. The agreement implies Most Favoured Nation (MFN) treatment with respect to tariffs and quantitative restrictions are prohibited in bilateral trade. The PCA also foresees gradual regulatory approximation in the most important trade related areas (industrial standards, sanitary and phytosanitary issues, intellectual property rights, customs, public procurement etc). Furthermore, Azerbaijan is a beneficiary of the EU Generalised System of Preferences.

The EU adopted a European Neighbourhood Policy (ENP) Action Plan with Azerbaijan in 2006. The Action Plan covers various issues and has a specific point on future enhancement of bilateral trade relations between the EU and Azerbaijan which includes a possible establishment of a Free Trade Agreement (FTA).

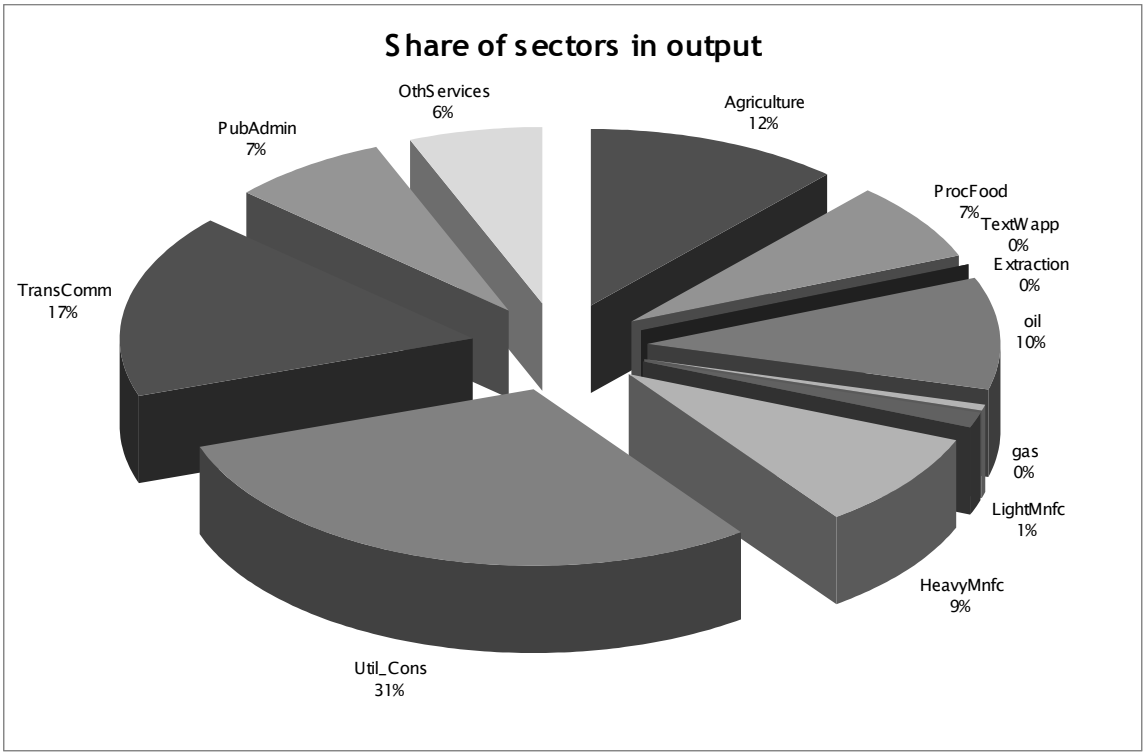
The rest of the study is organized as follows: Chapter 2 offers a general background to the production and trade of Azerbaijan. Chapter 3 describes methodology, data and the different scenarios. Since the methodology used in this study is the same as the one which was employed looking at the CIS region 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 Azerbaijan

The importance of different sectors in Azerbaijan's output is depicted in Figure 2-1. Services represent about 61% of output in Azerbaijan which is around the average of CIS countries. Among manufacturing sectors, heavy manufacturing sectors take up the most important part of total output representing about 9% of total output. The share of oil in total output is the highest among industrial goods representing about 10% of total output. Azerbaijan has a rather important agricultural and processed food sector, output in these sectors together take up more than 19% of total output. These sectors are somewhat more important in the economy than in many other CIS countries.

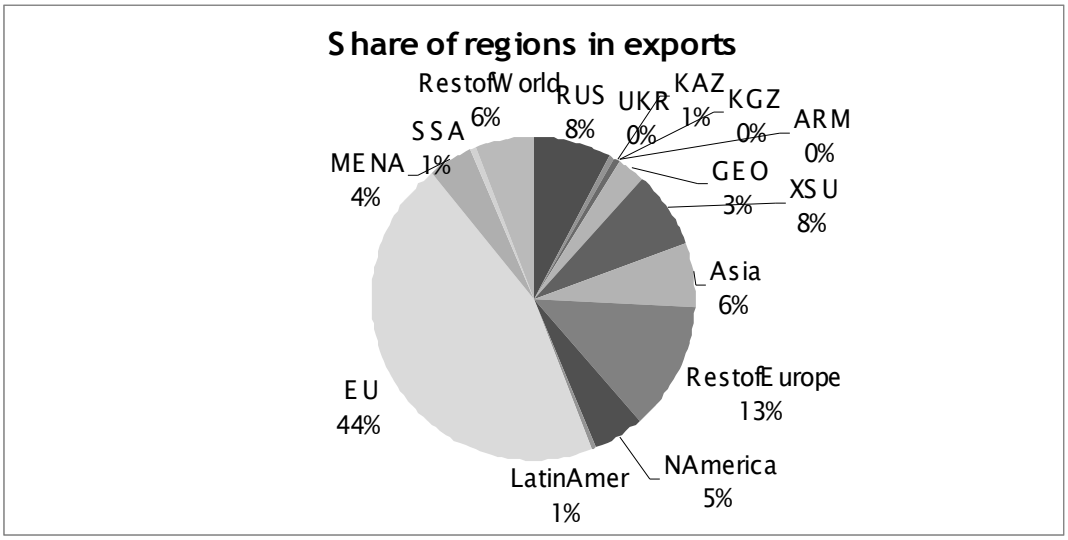
Figure 2-1 Share of sectors in output



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

Figure 2-2 depicts the importance of different regions and countries in Azerbaijan's exports. The EU is the most important export destination for Azerbaijan. About 44% of all Azerbaijan's exports go to the EU. The second biggest export destination is within the CIS region. About 20% of Azerbaijan exports go to other CIS countries from which 8% go to Russia. Moreover, 13% of total exports go to other countries in Europe outside the EU and the CIS.

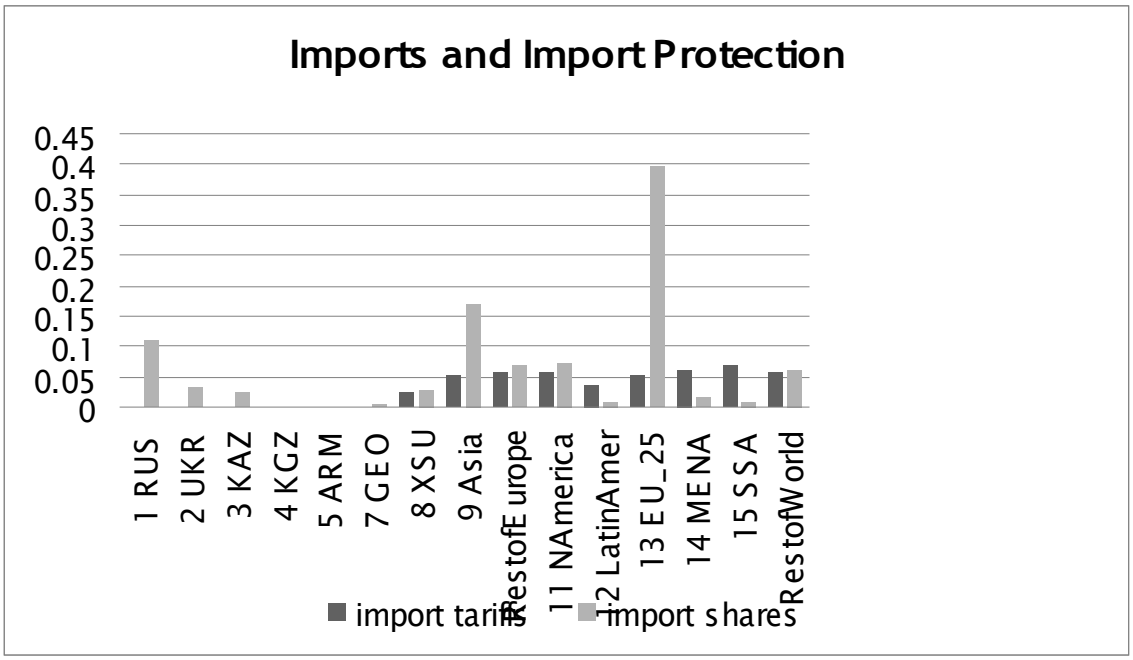
Figure 2-2 Share of regions in exports



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

Figure 2-3 depicts Azerbaijan's imports coming from different destinations and the corresponding import tariffs. For Azerbaijan, the EU is the most important import partner with imports coming from the EU representing about 40% of total Azerbaijan's 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 where a bit more than 10% of total imports originate. About 16% of Azerbaijan's import is coming from Asian countries outside the CIS region.

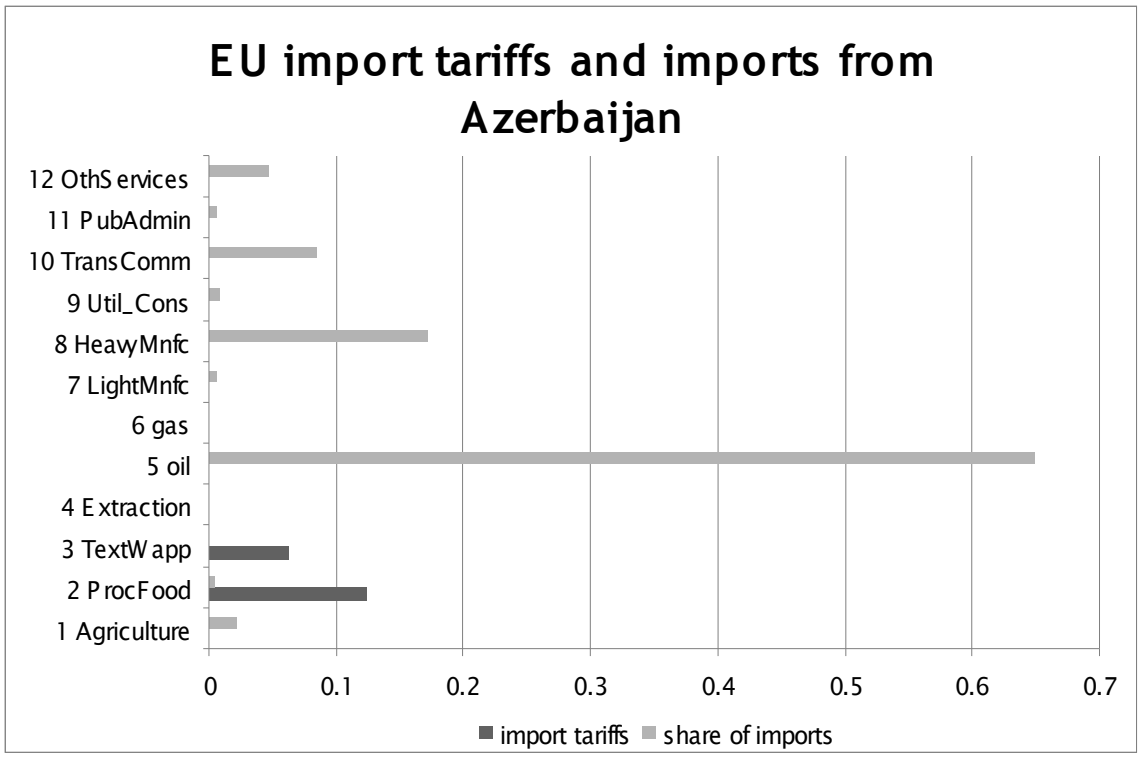
Figure 2-3 Imports and import protection



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

Figure 2-4 shows EU import tariffs and import in different sectors originating from Azerbaijan. The import tariffs are only important in the processed food sector and in textiles and clothing. The share of imports in these sectors is very limited. The sectors with the highest share of imports are heavy manufacturing and oil. The share of imports in oil is 65% of total imports while in heavy manufacturing it is around 18%.

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 positive income effect for Azerbaijan only under the full FTA scenario which is shown in Table 4.3. The first two scenarios would result in a small decrease in real incomes, amounting to 0.41% decrease under the first and to a 0.45% decrease under the second scenario which is smaller than the effect on real incomes in the CIS on average. The third, full FTA scenario would have a positive real income effect with a 0.58% real income increase which is a bit smaller than CIS real income effects.

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
Azerbaijan	-0.41	-0.45	0.58

Source: Model simulations.

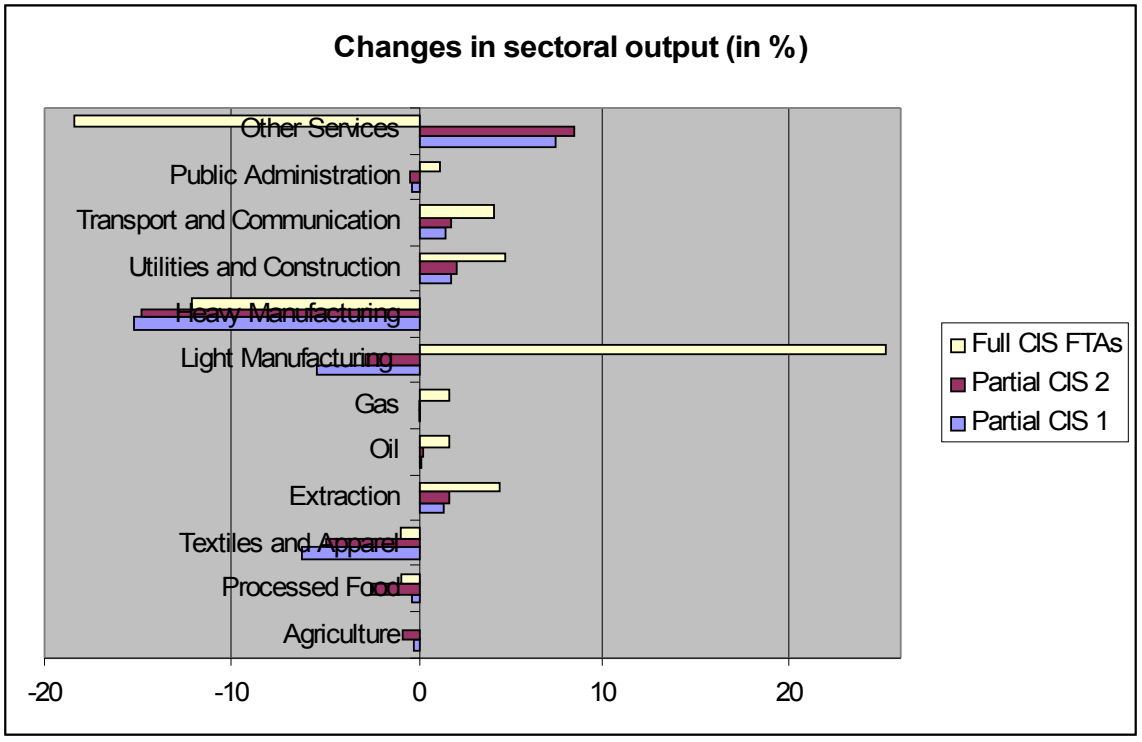
4.2 Changes in sectoral output in Azerbaijan

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

The most pronounced decrease would take place in the heavy manufacturing sectors and in other services under the third full FTA scenario. The heavy manufacturing sector would experience a decrease in output which would be around 12-15% depending on the scenarios. The change in other services production would be positive in case of the first two FTA scenarios however, the third scenario would result in an 18% decrease in output in these sectors. Apart from heavy manufacturing and other services, textiles and apparel and light manufacturing would also have a reduction in output. Under the third full FTA scenario however there would be an important increase in the output of light manufacturing sectors amounting to 25%.

Figure 4-5 Changes in sectoral output



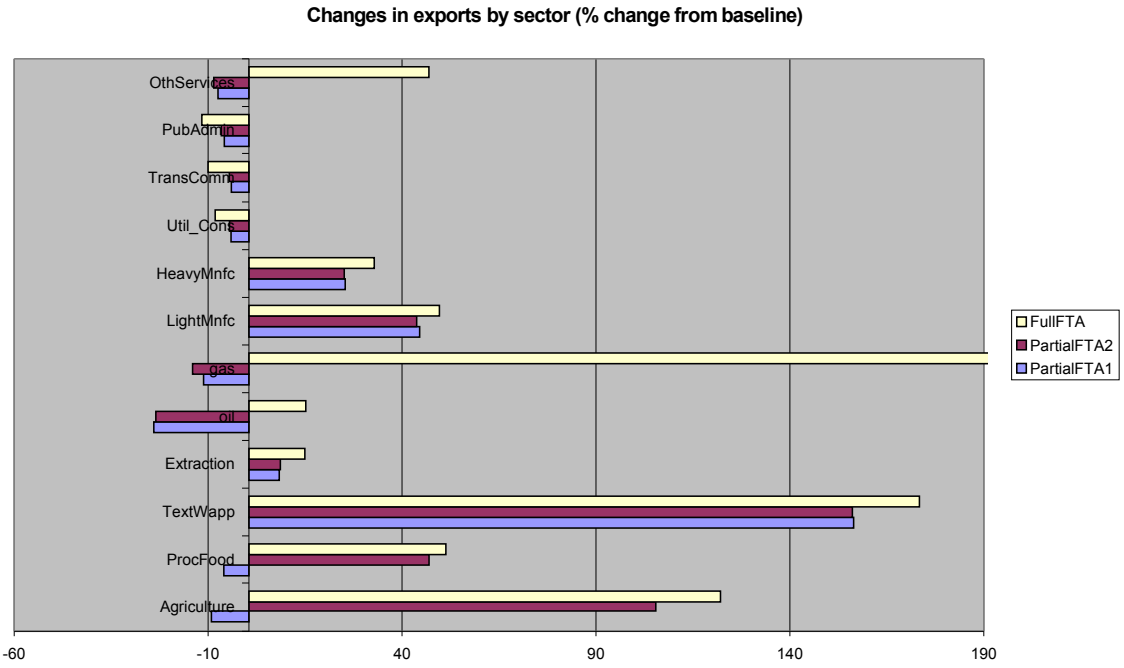
Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

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 Azerbaijan 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 Azerbaijan. An important increase would occur in exports of textiles and apparel under all scenarios, the biggest increase occurring under the third scenario. The increase in exports would be between 156-173% depending on the scenarios. Light manufacturing exports would also increase about 44-49% 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 Azerbaijan. 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 Azerbaijan in terms of level is minimal.

Figure 4-6 Changes in EU exports to Azerbaijan 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	-9.13	105.44	122.1	0.43%
Processed Food	-5.94	46.95	51.28	2.60%
Textiles and Apparel	156.42	156.11	173.41	1.13%
Extraction	8.33	8.61	14.94	0.02%
Oil	-23.99	-23.5	15.19	0.00%
Gas	-11.17	-13.99	259.98	0.00%
Light Manufacturing	44.54	43.77	49.63	10.89%
Heavy Manufacturing	25.35	25.09	32.84	38.53%
Utilities and Construction	-4.08	-4.49	-8.19	26.00%
Transport and Communication	-4.01	-4.53	-9.98	6.30%
Public Administration	-5.81	-6.58	-11.63	0.45%
Other Services	-7.46	-8.53	46.91	13.64%

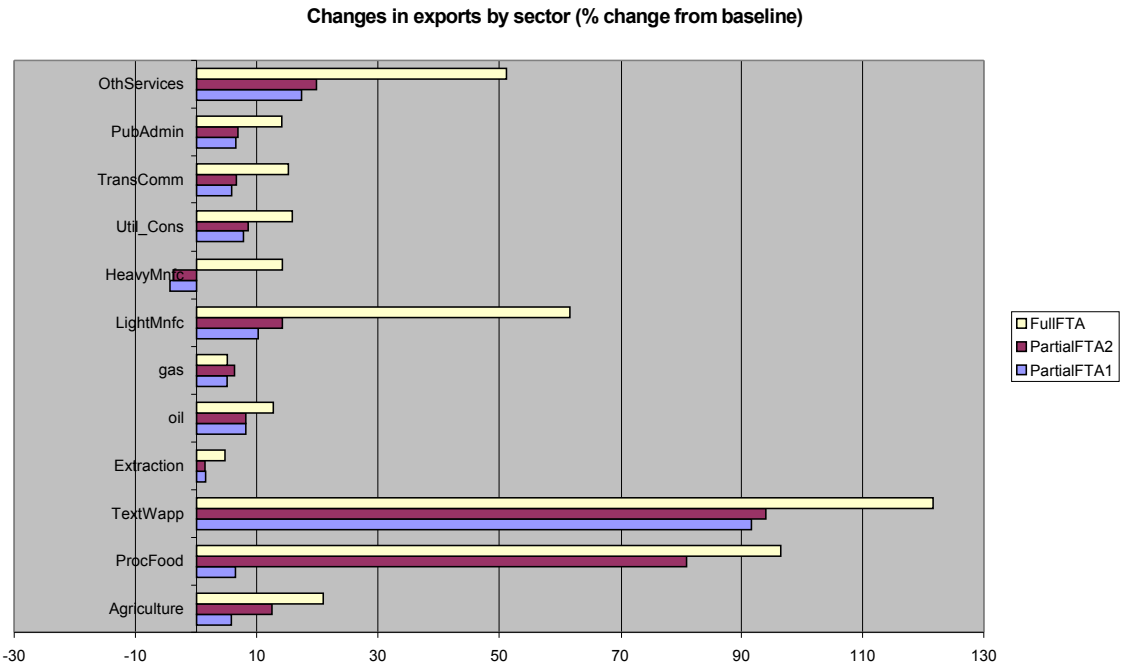
Source: Model simulations. Note: All results are reported as percentage change compared to baseline.

Figure 4-3 shows percentage changes in exports of Azerbaijan 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 reductions in exports of heavy manufacturing under the first two FTA scenarios, in all other cases there would be increases in exports from Azerbaijan towards 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 92% and would be 122% in case of full liberalisation. Exports in light manufacturing would increase by 10-14% under the two first scenarios and by 62% 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 Azerbaijan's 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 with exports to the EU increasing by 91-122% 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. Again, this sector represents 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 Azerbaijan

	Partial CIS 1	Partial CIS 2	Full CIS FTAs	share in total exports
Agriculture	5.84	12.34	21	2.18%
Processed Food	6.5	80.94	96.51	0.39%
Textiles and Apparel	91.65	94.03	121.64	0.12%
Extraction	1.59	1.49	4.43	0.04%
Oil	8.21	8.21	12.36	66.08%
Gas	5.14	6.35	5.15	0.00%
Light Manufacturing	10.27	14.1	61.7	0.62%
Heavy Manufacturing	-4.29	-3.76	14.11	16.14%
Utilities and Construction	7.83	8.62	15.88	0.83%
Transport and Communication	5.88	6.67	15.24	8.22%
Public Administration	6.2	6.92	14.15	0.62%
Other Services	17.41	19.89	51.24	4.76%

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. Azerbaijan would have an increase of 2.32% in its GDP under the full FTA scenario which is shown in Table 4.6. This increase is higher than the average increase in CIS.

Azerbaijan would experience an increase in wages for unskilled workers and a very limited increase for skilled workers. The wages for unskilled workers would increase by 2.1% which is higher than an increase which would take place in

other CIS countries. On the other hand, wages for skilled workers would almost remain unchanged, unlike in other CIS countries.

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

	EU	CIS	Azerbaijan
Change in GDP	0.18	1.19	2.32
Unskilled worker wage	0.26	1.56	2.1
Skilled worker wage	0.24	1.47	0.05

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 in magnitude and represent smaller increases than the full FTA scenario. The first scenario would result in a small, 0.54% increase in the GDP while the second scenario would have a slightly higher positive effect.

Both skilled and unskilled workers in Azerbaijan would experience an increase in their wages unlike under the full FTA scenario in which case only wages for unskilled workers changed. The changes in wages in Azerbaijan would be significantly higher than those experienced by workers on average in the CIS or in the EU. The increase in wages in Azerbaijan would be higher for skilled workers and lower for unskilled workers under the first two FTA scenarios unlike in the third scenario where only the wages of unskilled workers would change significantly.

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

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	CIS	Azerbaijan	EU	CIS	Azerbaijan
Change in GDP	0.12	-0.13	0.54	0.10	-0.35	0.61
Unskilled worker wage	0.18	0.22	1.2	0.18	0.16	1.1
Skilled worker wage	0.16	0.32	1.72	0.15	0.36	2.06

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 not being limited to only agriculture and manufacturing products but also services trade and 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 0.7% in the case of Azerbaijan.

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

	EU	CIS	Azerbaijan
Terms of trade effects	0.11	-0.83	-0.7

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. Azerbaijan again, similarly to the full FTA case would experience a terms of trade deterioration however it would be slightly lower under the first two FTAs than under full FTA liberalization. The decrease in terms of trade would be slightly smaller in magnitude under the first and second scenarios than what would take place in yjr CIS countries.

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

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	CIS	Azerbaijan	EU	CIS	Azerbaijan
Terms of trade effects	0.09	-0.63	-0.47	0.10	-0.76	-0.55

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 Azerbaijan. 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 Azerbaijan. On the other hand, the share of EU's trade with Azerbaijan in its total trade is marginal. 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 Azerbaijan. The impact of an FTA would be more pronounced for Azerbaijan 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 Azerbaijan would be higher in magnitude. While Azerbaijan would experience a negative income effect under the first two FTA scenarios which only incorporate elimination of tariffs in goods the effect for the EU would be small but positive. Real income effects for Azerbaijan would be positive only if a full FTA incorporating liberalisation in services and reduction in technical barriers to trade would be implemented.

The change in GDP in Azerbaijan would be positive under all the three FTAs however would be rather small under the first two scenarios. The full FTA would provide significantly higher benefits for Azerbaijan.