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

Kyrgyzstan

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1 Introduction

Kyrgyzstan is a small country with only 5 million people and with a surface area of 198,500 square kilometres. The economy is predominantly agricultural; its exports include agricultural products and mineral extractions mainly.

Given the size of the country and some other factors, the EU-Kyrgyzstan trade relations are rather limited. The EU has bilateral trade relations with Kyrgyzstan in the form of Partnership and Cooperation Agreements (PCAs). The PCAs imply most-favoured nation (MFN) status with respect to tariffs. The agreement also contains provisions on the elimination of quantitative restrictions and regulation of other trade-related matters, including competition and state aids. The PCAs have been in force since 1999.

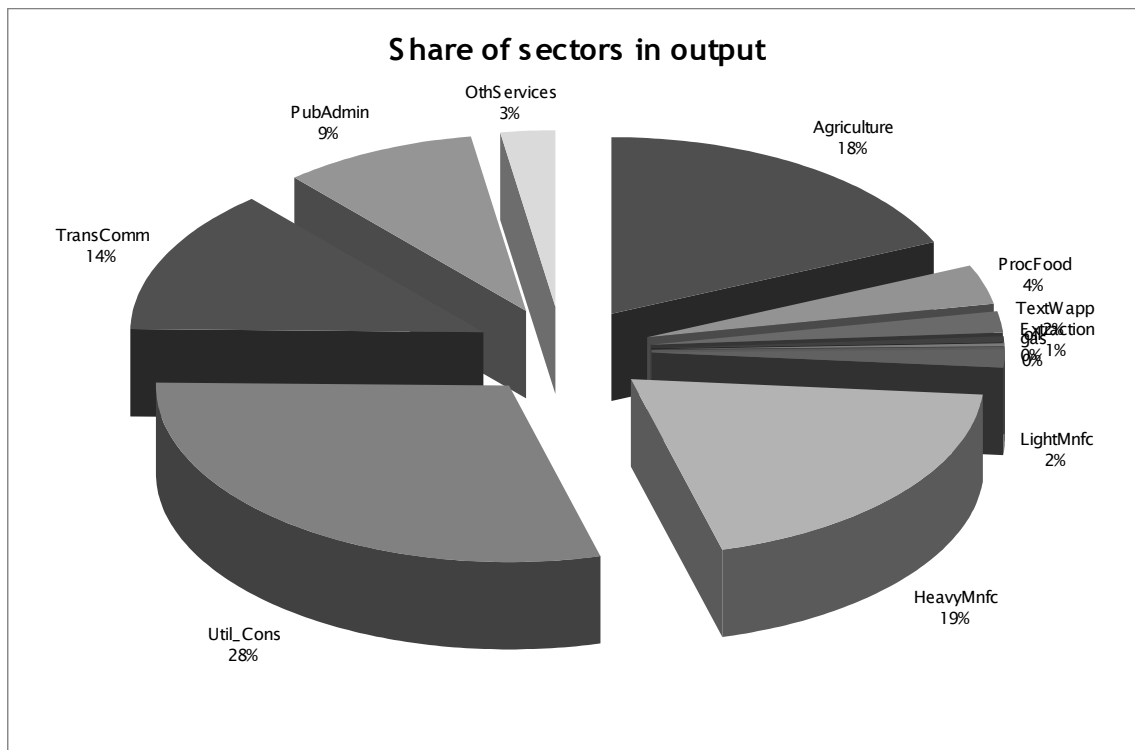
In 2002 the European Commission adopted a Strategy Paper (SP) for Central Asia which provides the strategic framework within which the Commission's assistance is provided for the period of 2002-2006. Furthermore, Kyrgyzstan is under the Generalised System of Preferences from the EU's.

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

The importance of different sectors in Kyrgyzstan's output is depicted in Figure 2-1. Services represent a bit less important share of output in Kyrgyzstan than in some other CIS countries. The share of services output is about half of the total output in the economy. Among manufacturing sectors, heavy manufacturing sectors take up the most important part of total output, representing about 19%. On the other hand output in light manufacturing sectors is rather small and it is around 2% of total output. Agricultural output is relatively high, about 18% of total output is agricultural output which is much higher than in some other CIS countries, such as Ukraine, Kazakhstan or Russia where the output in the agricultural sector represents 8-9% of total output. Processed food contributes to 4% of total output.

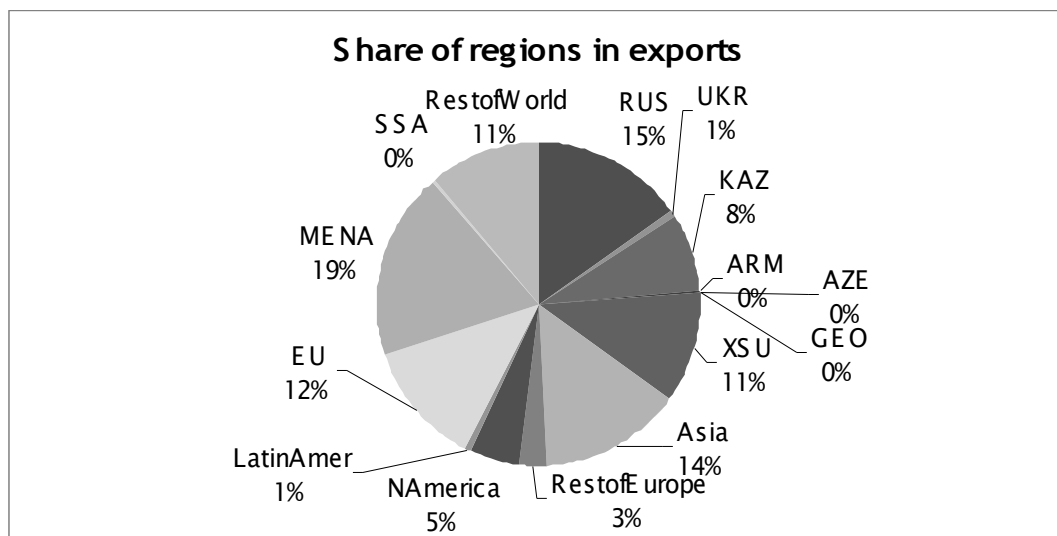
Figure 2-1 Share of sectors in output



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

Figure 2-2 depicts the importance of different regions and countries in Kyrgyzstan's exports. Unlike for Russia, Ukraine and some other CIS countries, for Kyrgyzstan the EU is not the most important export destination, only 12% of total exports go to the EU. Most of Kyrgyzstan's exports go to other countries within the CIS countries. Russia is Kyrgyzstan's most important trading partner followed by other countries in the CIS. About 19% of all Kyrgyzstan's exports go to countries in the MENA region. Moreover, an important part of exports, about 14% go to countries in Asia outside the CIS countries.

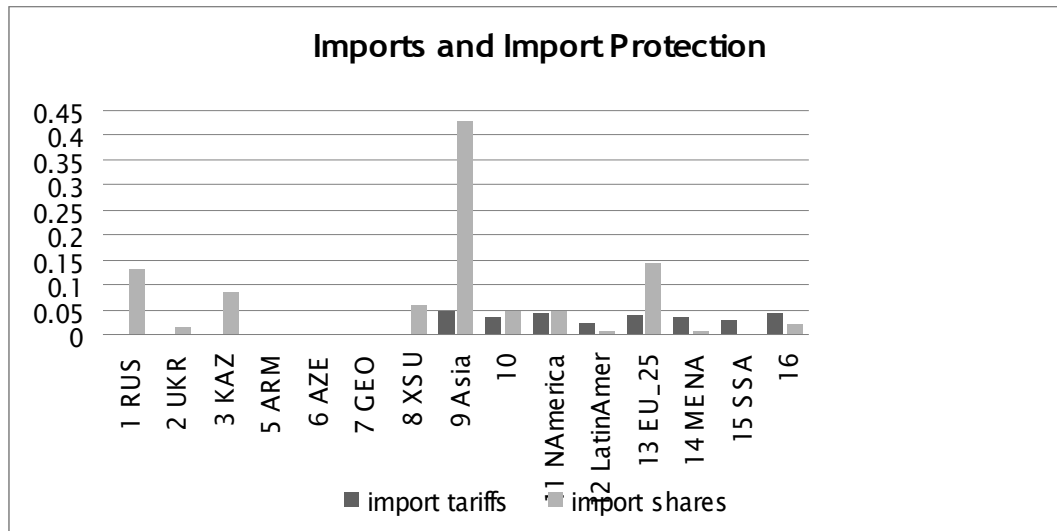
Figure 2-2 Share of regions in exports



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

Figure 2-3 depicts Kyrgyzstan imports coming from different destinations and the corresponding import tariffs. Similarly to exports, unlike some other bigger countries in the CIS region Kyrgyzstan's imports from the EU are relatively small representing a bit less than 15% of total Kyrgyzstan'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 about 12% of imports are coming and Kazakhstan which supplies about 8% of total imports. The most important import source comes from countries outside the EU and CIS, mostly from Asian countries. Imports from Asian countries outside the CIS represent more than 40% of total imports.

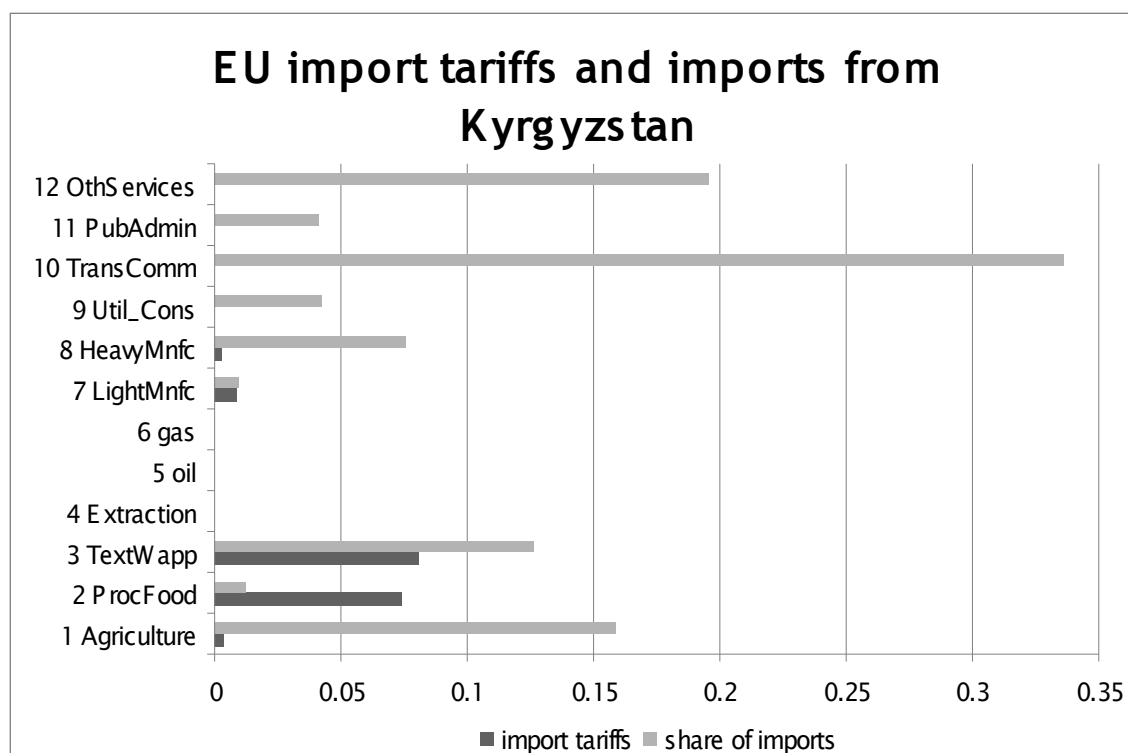
Figure 2-3 Imports and import protection



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

Figure 2-4 shows EU import tariffs and import in different sectors originating from Kyrgyzstan. The highest import tariffs are in the processed food sector and in textiles and clothing. The share of imports in processed food sectors is rather small; imports in these sectors are around 1% while in textiles and apparel it is much higher amounting to about 13% of total imports. The sector with the highest share of imports apart from imports in services is the agricultural sector which represents a bit more than 15% of total imports from Kyrgyzstan.

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 with 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	Kyrgyzstan
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

Nr	Description	Assumptions			
		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 Kyrgyzstan under all the different scenarios which are shown in Table 4.3. The smallest effect would occur under the first FTA scenario which would result in a 0.42% real income increase which is much higher than the effects in the EU or in the CIS on average. The second FTA scenario which would involve liberalization in agriculture and processed food sectors as well would have a slightly higher real income effect than the first scenario. The third, full FTA scenario would have the highest positive real income effect with a 1.04% real income increase which is much higher than the effects on EU's or CIS's 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
Kyrgyzstan	0.42	0.49	1.04

Source: Model simulations.

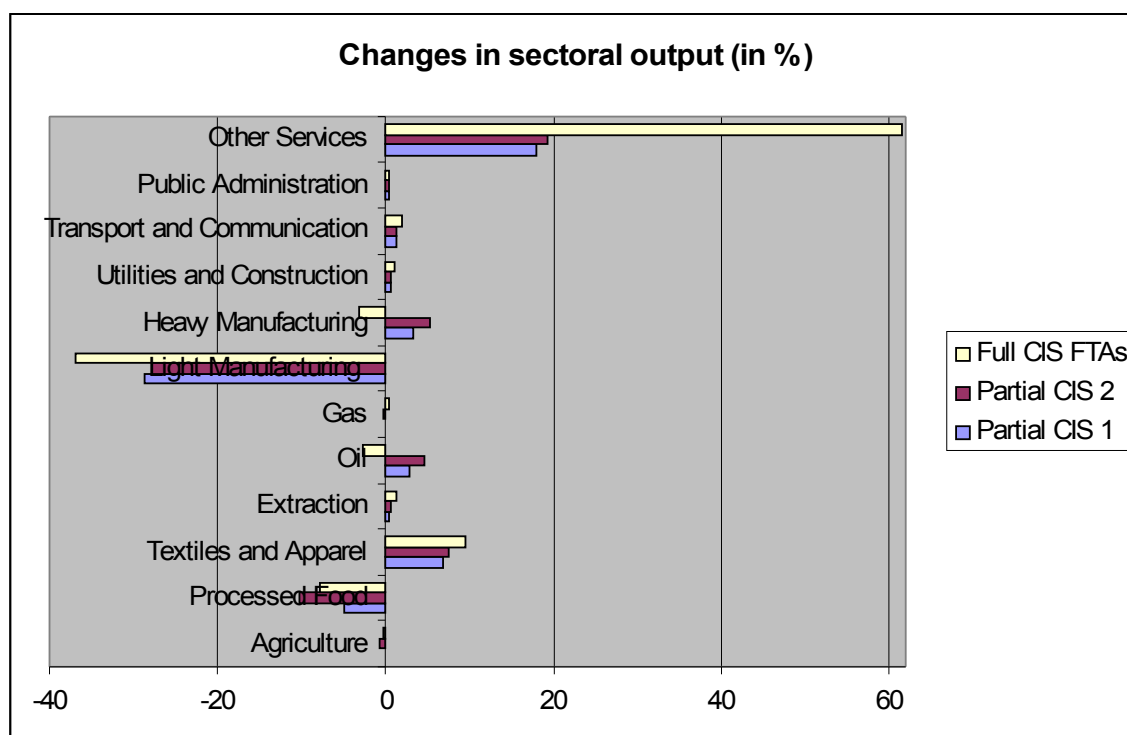
4.2 Changes in sectoral output in Kyrgyzstan

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

The most pronounced decrease would take place in the light manufacturing sectors. The light manufacturing sector would experience a decrease in output which would be a bit less than 30% in case of the first two scenarios and would be somewhat higher, around 37% under the full FTA scenario. Apart from light manufacturing sectors, processed food products would also experience a drop in their output which would be the highest under the second FTA with a magnitude of 10% and somewhat lower under the two other FTA scenarios.

Most other sectors would have a small increase in the production under the different scenarios. Sectors belonging to other services would experience an important increase in their output representing a 20% increase under the first two scenarios and a 60% increase under the third type of FTA scenario which would incorporate liberalization in services. Apart from services, textiles and apparel, oil and heavy manufacturing sectors would experience an increase in output.

Figure 4-5 Changes in sectoral output



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

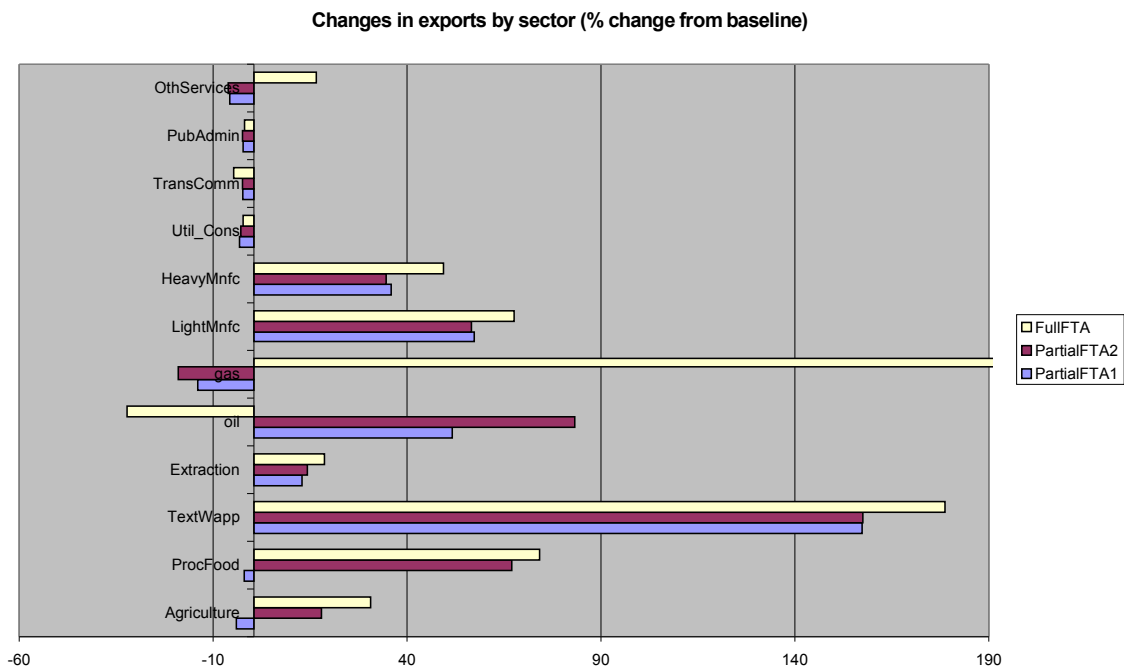
4.3 Effects on bilateral trade flows

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 Kyrgyzstan 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 a 16% increase in EU exports in other services sectors towards Kyrgyzstan. 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 157-179% depending in the scenario. Light manufacturing exports would also increase about 56-67% 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 Kyrgyzstan. There would be an increase in oil and 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 in terms of level is minimal.

Figure 4-6 Changes in EU exports to Kyrgyzstan 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	-4.02	17.95	30.59	0.85%
Processed Food	-2	67.01	74.17	5.84%
Textiles and Apparel	157.33	157.55	178.71	1.76%
Extraction	12.9	14.31	18.69	0.02%
Oil	51.67	83.22	-32.18	0.00%

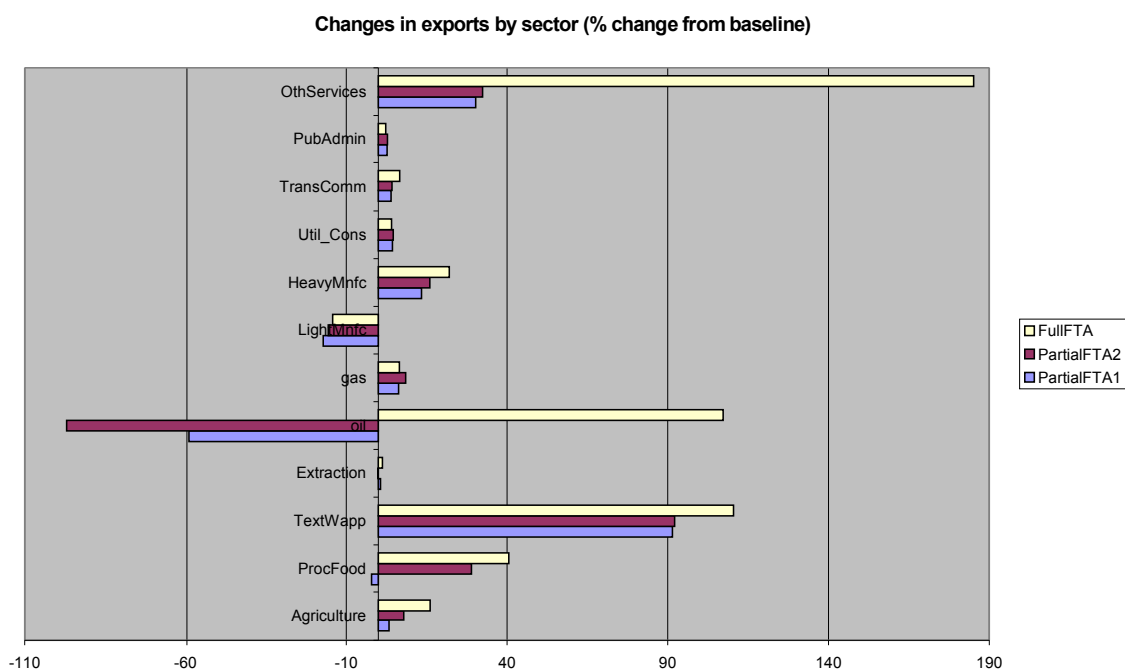
Gas	-13.96	-18.98	250.53	0.00%
Light Manufacturing	57.34	56.61	67.62	27.20%
Heavy Manufacturing	35.92	34.61	49.4	28.20%
Utilities and Construction	-3.21	-3.43	-2.26	0.88%
Transport and Communication	-2.36	-2.42	-4.71	10.26%
Public Administration	-2.26	-2.41	-1.9	1.42%
Other Services	-5.72	-6.11	16.61	23.60%

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

Figure 4-3 shows percentage changes in exports of Kyrgyzstan 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 an important reduction amounting to 59% under the first scenario and 97% under the second scenario in exports of oil, under the third, full FTA scenario an increase of more than 100% would take place. Apart from decrease in exports of oil, light manufacturing exports would also decline under all the three scenarios by 15-17%. In all other sectors there would be increases in exports from Kyrgyzstan toward the EU. The most pronounced increase would occur in other services and in the textiles and apparel sectors. Under the first and second scenarios, the increase would be around 90% for textiles and clothing, and around 30% for other services. The increase in exports would be much higher under the third scenario in services amounting to 185%. Exports in heavy manufacturing would increase by 13-16% under the two first scenarios and by 22% in case of full liberalisation. Increase in exports of processed food and agricultural products would take place under almost all three scenarios, the effect being small in case of no liberalisation in agriculture and becoming higher once liberalisation in the agriculture and food sectors would also take place.

Figure 4-7 Changes in Kyrgyz 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 decrease would occur in exports of oil with exports to the EU decreasing by almost 100% under the second scenario, this sector only represents a very small share of exports in total exports.

Table 5 Percentage changes in sectoral exports of Kyrgyzstan

	Partial CIS 1	Partial CIS 2	Full CIS FTAs	share in total exports
Agriculture	3.28	7.91	16.09	14.94%
Processed Food	-2.12	28.92	40.54	1.17%
Textiles and Apparel	90.98	92.14	110.45	13.61%
Extraction	0.67	-0.11	1.25	0.03%
Oil	-58.92	-96.97	107.22	0.00%
Gas	6.3	8.5	6.54	0.00%
Light Manufacturing	-17.16	-15.58	-14.23	0.86%
Heavy Manufacturing	13.42	16.02	22.04	6.99%
Utilities and	4.35	4.64	3.84	4.34%

Construction				
Transport and Communication	3.92	4.21	6.63	34.09%
Public Administration	2.7	2.83	2.25	4.17%
Other Services	30.26	32.43	184.69	19.79%

4.4 Other Macroeconomic Results

In this section other macroeconomic results, such as changes in wages and GDP are discussed. These results are summarized in Table 4.6 and Table 4.6 4.5 below. Kyrgyzstan would have an increase of 1.87% in its GDP under the full FTA scenario which is shown in Table 4.6. This increase is somewhat higher than the average increase in the CIS.

Kyrgyzstan 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 for the wages of skilled workers where 3.6% increase would occur. The increase in Kyrgyzstan wages for unskilled workers would be around 1.58%.

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

	EU	CIS	Kyrgyzstan
Change in GDP	0.18	1.195	1.87
Unskilled worker wage	0.26	1.56	1.58
Skilled worker wage	0.24	1.47	3.6

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 1% increase in the GDP while the second scenario would have a slightly higher positive effect.

Both skilled and unskilled workers in Kyrgyzstan would experience an increase in their wages similarly to the full FTA scenario although the effects would be much lower. The changes in wages in Kyrgyzstan would be higher than those experienced by workers on average in the CIS or in the EU. The increase in

wages in Kyrgyzstan would be higher for skilled workers and lower for unskilled workers under the first two FTA scenarios.

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

	Partial 1 trade agreement			Partial 2 trade agreement		
	EU	CIS	Kyrgyzstan	EU	CIS	Kyrgyzstan
Change in GDP	0.12	-0.13	1.02	0.10	-0.35	1.21
Unskilled worker wage	0.18	0.22	0.94	0.18	0.16	0.94
Skilled worker wage	0.16	0.32	1.49	0.15	0.36	1.77

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 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 1.05% in the case of Kyrgyzstan.

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

	EU	CIS	Kyrgyzstan
Terms of trade effects	0.11	-0.83	-1.05

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. Kyrgyzstan again, similarly to the full FTA case would experience a terms of trade deterioration however it would be lower under the first two FTAs than under full FTA liberalization. The decrease in terms of trade would be similar in magnitude under the first and second to the CIS average terms of trade changes. On the other hand the terms of trade gains for the EU would be significantly much smaller than for Kyrgyzstan 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	Kyrgyzstan	EU	CIS	Kyrgyzstan
Terms of trade effects	0.09	-0.63	-0.62	0.10	-0.76	-0.78

5 Conclusions

In this study we explore the economic effects of potential measures to liberalize trade between the European Union and Kyrgyzstan. 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.

Only a rather limited income effect would occur in the EU as a consequence of the FTAs while the income effect in Kyrgyzstan would be higher in magnitude. While Kyrgyzstan would experience positive income effects under all different FTA scenarios, the effects under the first two scenarios would be rather small. Nevertheless, under the full FTA scenario a considerable positive real income effect would take place in Kyrgyzstan.

The change in GDP under all different scenarios would be positive for Kyrgyzstan while being the highest under the third FTA scenario which incorporates not only elimination of tariffs on goods but also liberalisation of trade in services and reductions in technical barriers to trade.