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# **Possible Economic Outcomes of a Trade Agreement with the European Union**

by

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## **ABSTRACT**

This paper investigates the possible economic effects of Russia-EU free trade agreement, implying a mutual zero import tariffs in the trade of the Customs Union and the EU. Analysis of the effects is made using CGE Globe v1 model. We estimate the impact of an FTA on the economies, both at the level of the entire economy and at the industry level. The sensitivity analysis is made. It is shown that, in both relative and absolute terms, Russia potentially more benefits from the agreement than the EU. The cumulative gain of the CU is strictly positive, but the benefits and costs are unevenly distributed among its members, with negative effect for Belarus.

*Keywords:* Customs Union, European Union, Free Trade Agreement, CGE.

JEL Codes: C68, F15, F17.

## Introduction

Russian authorities have put forth the idea of building a harmonious community of economies that would spread across the continent from Lisbon to Vladivostok<sup>1</sup>, with a perspective towards establishing a Eurasian free trade zone - or even some other, more advanced forms of economic integration.

Theoretically speaking, the main drivers behind a free trade agreement are the potential benefits that may arise for the negotiating parties as a result of cost-effective use of available resources in conditions of lighter trade constraints (Egger, Larch, 2008; Pahre, 2008; Gruber, 2000; Manger, 2009; Manger, 2009; Baldwin, Jaimovich, 2010; Fugazza, Robert-Nicoud, 2010). In the current situation, trade agreements address a very broad range of issues - from complete or nearly complete abolition of customs tariffs on the commodities traded between the parties to a given agreement to any aspects of the freedom of movement of labor force, capital and services. Thus, for example, the study by Horn, Mavroidis, Sapir (2010) offers an analysis of the top issues around which the negotiations concerning specific trade agreement are centered, and demonstrates that the responsibilities of parties assumed with regard to services, investment, protection of intellectual property rights, technical barriers to trade and competition policies are very significant components of contemporary trade agreements.

As the majority of countries in the world are members of the WTO, nearly every preferential trade agreement must be compatible – at least to a certain extent - with the rules of trade between nations established by that global organization. In this connection, two groups of issues usually dealt with by trade agreements can be pointed out. The first group is represented by 'WTO plus' (WTO+) - that is, the provisions covered by the WTO's current mandate and already incorporated in one or other form, as the commitments agreed to at the multilateral level, into the WTO's agreements: trade in industrial and agricultural products; trade in services; customs administration; export duties, sanitary and phytosanitary (SPS) measures; public enterprises; technical measures applied to trade; compensatory and anti-dumping measures; government dotations and purchases; trade related investment measures (TRIMs); and trade related aspects of intellectual property rights (TRIPs). The second group are 'WTO extra' (WTO-X) - the commitments dealing with issues going beyond the current WTO mandate altogether, from anti-corruption measures and cultural exchange to human rights and struggle against terrorism.

If we are to look towards the perspective of a possible trade agreement with the European Union, it should be noted that the EU applies a variety of formats in the interaction with its neighbor countries, based on a varying degree of mutual integration (see Baeva, Knobel, 2013). In this connection, Russia may indeed expect the EU to be ready to show some flexibility within the framework of a trade agreement. The main issues covered by a trade agreement will be WTO+, mutual investment promotion, certain sectoral agreements (as exemplified by the cooperation between the EU and Switzerland<sup>2</sup>).

There is one very important aspect that cannot be overlooked when discussing the prospects of integration with the EU. After the launch of the Customs Union, the function of

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<sup>1</sup> <http://worldcrisis.ru/crisis/807431>.

<sup>2</sup> The key feature of the Swiss model is that the agreements build on sectoral relations, as Switzerland has a special interest in, say, financial services and the banking sector (Baeva, Knobel, 2013).

handling the trade policies of the Russian Federation, Belarus and Kazakhstan has been delegated to the supranational level represented by the Eurasian Economic Commission - just as the European Commission performs the functions of a supranational institution in the European Union, signing on its behalf all its foreign trade agreements. In this connection, it would be more appropriate to discuss the terms and consequences of a trade agreement between the CU and the EU - since no separately concluded agreement between the RF and the EC, no matter how important the specific aspects of foreign trade addressed by it might be, would be possible to implement both from the point of view of its content (because a customs union, by its structure, implies a single foreign trade policy for all its member countries) and from the point of view of law. Evidently, at present it would have been difficult to achieve an agreement between the CU and the EU due to certain political considerations, which we do not wish to discuss here. In this study, we have attempted to provide an answer to the question as to the specifically economic consequences that may arise from a trade agreement between these two blocs.

A potential agreement must cover a variety of issues - from the tariffs to be applied to traded commodities and the possibility of lowering the barriers relating to WTO+, to the issues relating to separate sectoral agreements. In this context, we suggest a discussion of the economic consequences of the creation of a free trade zone - meaning mutual duty-free trade in commodities between the CU and the EU. First, this will be the first phase of a more or less serious economic integration, and so it appears natural to begin with the consequences of that undertaking. Secondly, the introduction of zero rates of specific, ad valorem and combined customs duties in the mutual trade in commodities in an imagined experiment that can be actually measured on the basis of quantitative parameters. Besides, in spite of the paramount importance of this issue, few studies have so far offered any actual estimates of the consequences of such agreements for Russia (see Romashkin, 2005; Alexeev et al., 2006)<sup>3</sup>.

One of the most widely applied and popular instruments for estimating the consequences of trade agreements is the Computable General Equilibrium model (CGE), which is based on a number of structural equations reflecting the general equilibrium in all markets - thus making it possible to analyze the effects produced on a national economy by various changes in the foreign trade situation (see Clausing, 2001; Trefler, 2004; Romalis, 2007; Chang, Winters, 2002; Egger, 2004; Magee, 2008; Carrere, 2006; Baier, Bergstrand, 2004; Harris, 2006). The choice of an equation is based on assumptions as to production technologies and production factors, agents' preferences, government economic policy, competition level, etc. The currently most widespread model implies perfect competition and capital accumulation (Hertel, 1997; Cheong, Wang, 1999; Brown, Deardorff, Stern, 2001; McDaniel, Fox, 2001; Choi, Schott, 2001, 2004; Ghosh, Rao, 2005; Francois, McQueen, 2005; Sirkwardana, Yang, 2007; Georges, 2008).

The advantages of CGE over econometric models consist in the possibilities to estimate the consequences of government economic policy and to analyze the movement of macro variables like GDP, exports, imports. Besides, CGE models offer the possibility to estimate the potential changes in different economic indices on a sectoral level. Thus, the consequences of government policy changes - including the creation of a free trade zone - can be analyzed in terms of 'winning' and 'losing' sectors, with the resulting deeper understanding as to which sectors actually need separate agreements with the relevant partner in

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<sup>3</sup> For a discussion on the issues of the Russian Federation's integration in the common European economic space, see Mau, Novikov, 2002; Mau et al., 2004).

trade (Teixeira, Raszap-Skorbiansky, 2010; Németh, Szabó, Ciscar, 2011; Perali, Pieroni, Standardi, 2012; Lakatos, Walmsley, 2012).

In this study, we have applied Globe v1, a global CGE model suggested by McDonald, Thierfelder, Robinson in 2007.<sup>4</sup> For its detailed description, with the list of data that must be fed into it, see McDonald, 2003; McDonald, Sonmez, 2004; McDonald, Thierfelder, 2004; McDonald, Thierfelder, Robinson, 2007. The model builds on the assumption of perfect competition and constant returns depending on the scale and scope of production. It implies that imported commodities are differentiated by their national origin, and that countries are endowed with elements of monopoly power exercised by means of imposing their own tariff rates. As a result, declining tariffs may produce significant effects on the conditions of trade due to disruption of monopoly power. Differentiation of commodities, produced by one and the same industry, by their country of origin (including domestic products) is modeled by plotting a function exhibiting constant elasticity of substitution (CES). In this form of composite consumer commodity aggregation, neither domestically produced nor imported goods can be fully substitute or complimentary: in any system at equilibrium, the consumption of both types of commodities will be strictly positive. This property of CES function makes it possible to model unequal prices for domestically produced and imported commodities which correspond to the real situation, where practically every country consumes both domestically produced and imported commodities.

One of the main drawbacks of CGE models is their dependence of obtained results on the choice of a specific method for data calibration (Pak, Yongduk, 2006). Thus, an analysis of the sustainability of results yielded by the model against the changes of the model's parameters becomes necessary.

Our paper is structured as follows. In the first section, the trade between the RF and the EU is described, and on the basis of analysis of its structure and constraints some hypotheses are derived as to the potential consequences of the abolition of tariffs. The second section presents the results of modeling a free trade zone (FTZ) between the RF and the EU. In the third section, the obtained results are tested for sustainability. And finally, some general conclusions based on the content of our study are offered.

## **1. Trade between the Russian Federation and the European Union**

The European Union is Russia's biggest partner in trade. As shown by customs statistics, over the last 12 years the volume Russia's imports from the EU increased more than fivefold - from \$ 28.1bn in 2001 to \$ 142bn in 2012.<sup>5</sup> During the period 2001 - 2008, imports were growing at a rate of approximately 27% per annum. In 2009 they dropped by 40%. In 2010–2011, imports were once more on the rise and nearly reached their pre-crisis level; in 2012, the volume of imports declined to \$ 142bn. Russia's exports to the EU displayed a similar trend: growth at a nearly unchanging rate (24% per annum) in the 2001–2008 interval, followed by an impressive 30% drop in 2009. The period 2010–2011 saw a renewal of exports growth at its pre-crisis rate, which in 2011 hit its historic high of \$

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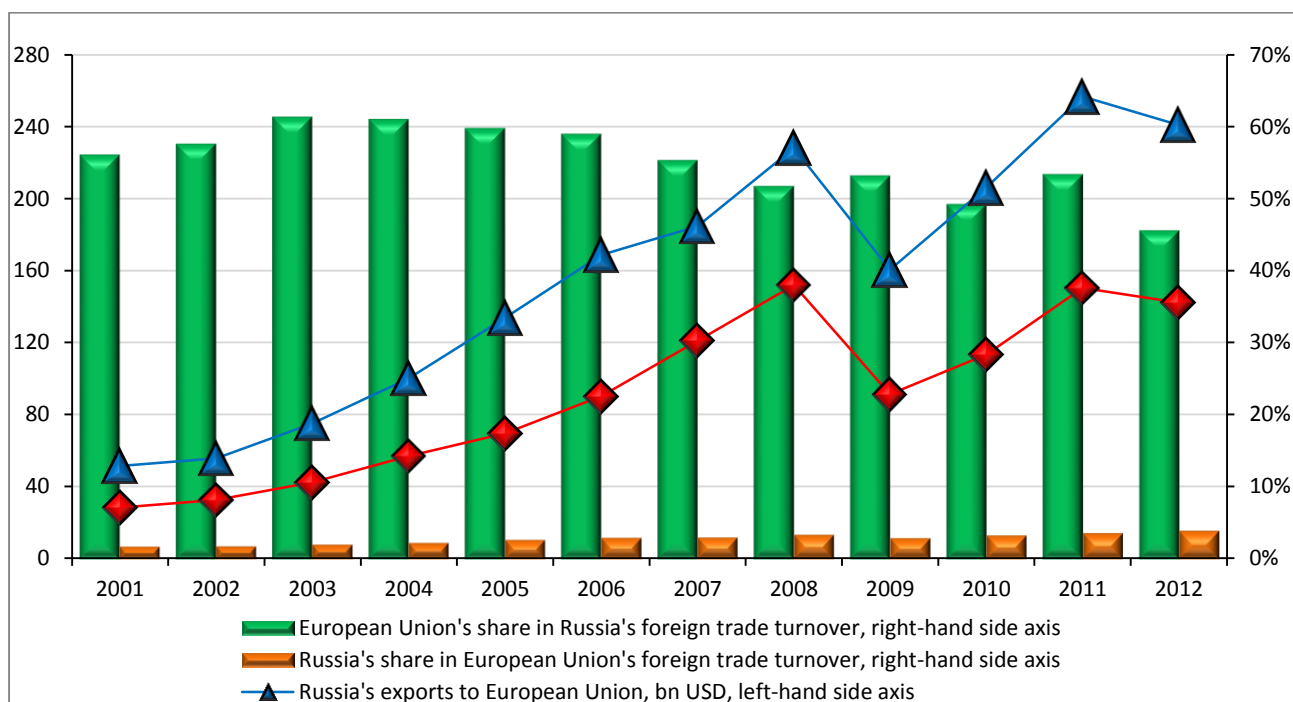
<sup>4</sup> We have not studied the effects of abolition of export duties on mineral products because CGE model, which implies imperfect substitution between all commodities and the possibility of an output surge, is not really suitable in this case. For an analysis of possible consequences of lifted export duties, see Idrisov, Sinelnikov-Murylev, 2012).

<sup>5</sup> It should be noted that the only bilateral document designed to regulate the trade relations between the RF and the EU is the *Partnership and Co-operation Agreement (PCA)*, signed in June 1994 and in force since 1 December. It was designed to last for a period of 10 years, with subsequent prolongation if neither party declares its desire to terminate the agreement. After Russia's accession to the WTO, PCA effectively makes little sense, as in accordance with WTO rules all its member countries shall accord MFN (most favored nation) status to each other (see Fakhrutdinov, 2009).

257bn. In 2012, exports declined by 6% to \$ 241bn. Another noteworthy fact is that the balance of payments in Russia's trade with the European Union remained significantly high throughout the entire period of observation (see Fig.1).

FIG. 1

### The Dynamics of Russia's Trade with the European Union



Source: UN, UN comtrade <http://comtrade.un.org/>

Russia's share in the EU's foreign trade turnover is modest, but it was constantly on the rise - from 1.6% in 2001 to 3.8% in 2012. On the contrary, the share of EU commodities in RF foreign trade turnover is very large, but it shrank from 55–60% in the early 2000s to 46% in 2012.

If we are to look at the commodity structure of Russia's export to the European Union in 2012 from the point of view of two-digit commodity groups as shown in Table 1, it becomes evident that RF exports to the EU are nearly entirely represented by raw materials, and only a small fraction of RF exports is taken up by low-processed products.

TABLE 1

#### The Commodity Structure of Exports from the RF to the EU, and Average Weighted Tariffs on RF Exports in 2012

Commodity group CC FEA (Commodity Classification for Foreign Economic Activity) Code (Har- monized Tar- iff Schedule)	Label	Exports, bn USD	Commodity group's share in total exports	Average weighted EU import tariffs on im- ports from CU
27	Petroleum, gas and other minerals	182	83%	0.4%
72	Iron and steel	5.03	2.31%	0.3%
71	Pearls, natural/cultured	4.82	2.21%	0.6%
28	Inorganic chemical products	3.35	1.54%	4.7%

74	Copper and articles thereof	2.03	0.93%	6.4%
76	Aluminum and articles thereof	2.01	0.92%	0.7%
29	Organic chemical products	1.92	0.88%	3.3%
75	Nickel and articles thereof	1.80	0.83%	2.3%
40	Rubber and articles thereof	1.73	0.79%	2.8%
44	Timber and articles thereof	1.68	0.77%	4.5%
31	Fertilizers	1.56	0.72%	4.7%
				Effective tariff
				0.56%

Source: UN, UN comtrade <http://comtrade.un.org/>

The commodity structure of imports from the EU to the RF is much more varied (see Table 2), and is largely represented by hi-tech items.

TABLE 2

**The Commodity Structure of Imports into the RF from the EU, and Average Weighted Tariffs on Imports from the EU in 2012**

Commodity group				
CC FEA (Commodity Classification for Foreign Economic Activity) (Harmonized Tariff Schedule)	Label	Imports, bn USD	Commodity group's share in total imports	Average weighted CU import tariffs on imports from EU
84	<i>Nuclear reactors, boilers</i>	28.99	20.86%	2.6%
87	Vehicles other than railway rolling-stock	23.20	16.69%	7.4%
85	Electrical machinery and equipment	13.53	9.73%	7.0%
30	Pharmaceutical products	9.44	6.79%	9.4%
90	Optical, photographic, cinematographic equipment	5.94	4.27%	4.8%
39	Plastics and articles thereof	5.20	3.74%	10.9%
48	Paper and paperboard	2.98	2.15%	12.3%
33	Essential oils and resinoids	2.70	1.95%	13.1%
73	Articles of iron and steels	2.56	1.84%	13.7%
62	Articles of apparel and clothing accessories	1.50	1.08%	18.9%
				Effective tariff
				7.5%

Source: UN, UN comtrade <http://comtrade.un.org/>

Before we proceed to the results of our model-based calculations and analysis of the economic effects of a FTZ, we should like to present a number of postulates<sup>6</sup> that were to be tested on the basis of our model.

1. The costs and benefits of a newly created FTZ are spread unevenly across the CU members. This postulate is based on the simple fact that the structures of national economies and mutual trade patterns between the three member countries of the CU are different (see, for example, Siriwardana, 2007; Pereira, Teixeira, Raszap-Skorbiansky, 2010; Perali, Pieroni, Standardi, 2012).

<sup>6</sup> We intentionally avoid the term 'hypothesis', as the approach based on general equilibrium models, strictly speaking, does not imply any testing of hypotheses on the basis of statistical data: in contrast to econometric models, a CGE model is based on a postulate that a certain structure is correct, and this provides a basis for estimating the effects produced by changes in some or other parameters within a given system.



2. In an event of a FTZ set up with the developed countries, Belarus will be the biggest loser. This postulate follows from the fact that the biggest importer of Belarusian commodities is Russia, and so, if Russia enters a free trade agreement, Russian consumers will replace part of Belarusian commodities by products imported from the other partners in the FTZ. According to the FTZ theory, Russian consumers will switch over from more expensive Belarusian commodities to their cheaper European analogues, which illustrates the effect on trade resulting from signing a FTZ agreement (Viner, 1950; Meade, 1955; Lipsey, 1970).

3. The effect of the establishment of a FTZ on the economies of CU members will be stronger depending on the volume of trade of a CU member with its given trade partner. For example, the higher the volume of Russia's import of a certain commodity from a partner country, the higher the scale of substitution of its domestically produced analogue, as well as the effect on the output of that commodity. When applied to the EU, this postulate means that the effect on CU economies will be substantial, as the EU takes up a lion's share in the CU's trade turnover (Nijkampb, Wang, Kremers, 2005; Németh, Szabó, Ciscar, 2011).

4. In the event of a FTZ set up with the developed countries, the positive effect on domestic household consumption will be stronger than the corresponding effect on the trade partner's household consumption. The negative effect on domestic production will be stronger than the negative effect on the trade partner's domestic production. This follows from the fact that the CU's import duties on products from the developed countries are higher than the corresponding import duties imposed by those countries on products from the CU. Consequently, when the high CU import duties are lifted, imported commodities will become cheaper, thus boosting the welfare level of domestic consumers. Simultaneously, as the consumers are switching over from domestically produced commodities to imported ones, the demand for domestic products will plummet. On the other hand, as the import duties imposed by the corresponding trade partner are low, their lifting will result only in a slight decline in the prices for Russian commodities in the partner's domestic market, and so the demand for them will increase on a modest scale. The growth of foreign consumers' demand for Russian commodities will not compensate for the loss of demand on the part of domestic consumers. On the contrary, for the trade partner the growth of Russia's domestic demand for the relevant imported commodities will be higher than the loss of demand on the part of foreign consumers, and so the positive effect on production will be greater than the corresponding effect on Russia's production. Consequently, it would be logically to expect, in the event of a FTZ set up with the EU, that the positive effect on domestic household consumption will be stronger than the corresponding effect on the trade partner's household consumption, while the negative effect on Russian production will be stronger than the negative effect on production in the EU (Lipsey, 1970; Wonnacott, Wonnacott, 1981).

5. If, at the moment of creating a FTZ, the structure of RF imports from (or exports to) a given trade partner is strongly dominated by a certain industry, the effect of FTZ on that industry's output will be strongly negative (or positive), while the effects on the other industries will be small. So, in those industries whose share in the structure of RF imports from (or exports to) the EU very noticeably prevails over the corresponding shares of other industries, the effect of FTZ on output will be strongly negative (or positive) (Lipsey, 1970; Wonnacott, Wonnacott, 1981).

## 2. Modeled Effects of a FTZ Set Up between the RF and the EU

This section analyzes the consequence of creating a FTZ between the RF and the EU on the basis of, a global CGE Globe v1model (for a detailed description, see McDonald, Thierfelder, Robinson, 2007. The model builds on a scenario where all the parties have lifted all the previously existing import duties in the trade between the CU and the EU.

In Table 3, the modeled effects of the FTZ's creation on GDP are presented, in the form of the resulting change in GDP level as a percentage of its initial value. The results reflect only the effect of the newly created FTZ and are cleared of the change in GDP that can be expected to occur without a trade agreement – that is, these values can be treated as a net effect of FTZ on GDP. In the following Tables below, the changes produced by the trade agreement in the levels of GDP, output, import, export, capital, and employment rate are likewise presented as a percentage change of the initial level of each given parameter.

TABLE 3

**FTZ Effects on GDP**

Country or region	Short-term perspective	Long-term perspective
RF	0.8	2.0
Belarus	-0.6	0.0
Kazakhstan	0.6	1.2
EC	0.1	0.2

Source: authors' calculations.

This model assesses the obtained results in two time modes: the short- and long-term perspectives. The short-term perspective in the model's framework means that the aggregate supply of production factors (capital and labor) in each country is fixed at its initial level and does not fluctuate. At the same time, the demand for production factors in a given country may fluctuate by sector. It is assumed that production factors are homogenous for all sectors of a national economy, and that in each country the aggregate demand for each production factor is equal to the aggregate supply of that factor. The long-term perspective in this model differs from the short-term situation only in that labor supply in each country is always fixed, whereas capital supply is not fixed – it may change and adjust to a new equilibrium.

From Table 3 it follows that, as a result of lifted import duties, RF GDP in the short-term perspective will increase by 0.8%, that of Kazakhstan — by 0.6%, and that of the EU — by 0.1%. Given the current GDP volume, RF wealth will increase by approximately \$ 15bn, that of Kazakhstan — by approximately \$ 1bn<sup>7</sup>, that of the EU — by approximately \$ 15bn. The resulting effect of lifted duties on Belarus's GDP will be, on the contrary, negative: in the short-term perspective, the GDP of that country will decline by 0.6%, or by approximately \$ 400m relative to its current volume.

In the long-term perspective, which is also geared to the index of capital accumulation, the GDPs of the RF, Kazakhstan and the EU will demonstrate higher growth than in the short term (by 2.0%, 1.2% and 0.2% respectively). The effect on public wealth, measured as a change in nominal GDP, for the RF will amount to \$ 40bn, for Kazakhstan — to \$ 2bn, for the EU — to \$ 30bn. In the long-term perspective, the GDP of Belarus will adjust to the changed satiation and return to the same level as prior to the creation of the FTZ.

<sup>7</sup> For all the countries, GDP levels for 2012 in current prices were applied. For RF, this index amounts to \$ 2.01 trillion, for Belarus — \$ 63.2bn, for Kazakhstan — \$ 200.4bn, and for the EU — \$ 16.6 trillion.

TABLE 4

## FTZ Effects on Exports

Country or region	FTZ effects on aggregate exports		FTZ effects on CU exports to EU		FTZ effects on CU exports to countries other than EU	
	SR	LR	SR	SR	LR	SR
RF	1.8	3.1	2.2	3.6	2.0	3.1
Belarus	2.4	3.1	3.6	4.3	3.0	3.4
Kazakhstan	0.7	1.4	1.2	1.8	1.0	1.7
EU	0.1	0.2				

Source: authors' calculations. SR, LR — short-term perspective, long-term perspective.

Table 4 demonstrates the results of modeled export changes for the parties to the FTZ. In the short-term perspective, RF exports are going to rise by 1.8%, the same index for Belarus — by 2.4%, Kazakhstan's exports — by 0.7%, and EU exports — by 0.1%. In the long term, RF exports will display somewhat more substantial growth — by 3.1%. Belarus's exports in the long-term perspective will increase by 3.1%, Kazakhstan's exports — by 1.4%, and EU exports — by 0.2%. The volume of exports from the CU countries is being pushed up by the rising growth rates of their exports both to the EU and the countries outside of the EU. The Table also displays the resulting movement indices of CU exports to the EU and the countries outside of the EU respectively, making it obvious that both these indices are going to increase after the corresponding import duties are lifted. RF exports to the EU will rise by 2.2% in the short-term perspective, and by 3.6% in the long-term perspective.

TABLE 5

## FTZ Effects on Imports

Country or region	FTZ effects on aggregate imports		FTZ effects on CU import from EU		FTZ effects on CU import from countries other than EU	
	SR	LR	SR	LR	SR	LR
RF	1.5	2.3	5.5	6.3	-3.0	-2.3
Belarus	0.7	1.5	4.3	4.7	-3.7	-3.4
Kazakhstan	0.6	1.2	4.4	4.6	-1.5	-1.3
EU	0.2	0.3				

Source: authors' calculations. SR, LR — short-term perspective, long-term perspective.

Table 5 shows the results of changes in the volume of imports for the parties to the FTZ. RF imports in the short-term perspective will increase by 1.5%, Belarus's imports — by 0.7%, Kazakhstan's imports — by 0.6%, and EU imports — by 0.2%. In contrast to exports, growth of imports in all the three member countries of the CU is boosted only by the rising imports from the EU. As seen from Table 5, the volume of imports to the CU from the EU will be on the rise, while the same index from all the other countries displays a reverse (downward) trend: as a result of lifted import duties, the commodities formerly imported from other countries will be replaced by their analogues from the EU. In the long-term perspective, RF imports will increase by 2.8%, Belarus's imports — by 1.2%, Kazakhstan's imports — by 1.3%, and EU imports — by 0.3%.

If import duties are lifted in the trade between the CU and the EU (the effective RF tariff on imports from the EU being currently at the level of 7.5%, see Table 2), RF imports from the EU will rise by 5.5% (see Table 5). It appears interesting to draw an analogy between the abolition of import duties and strengthening of the exchange rate. Will RF imports from the EU actually increase by 5.5%, if the ruble's exchange rate rises by 7.5% against the euro? There exist a number of differences between the abolition of import duties

and the ruble strengthening, which may produce significant variations in the ways that these two scenarios may influence the economy, and in particular the volume of imports. First, if the import duties on commodities from the EU are lifted, their prices will begin to decline against the prices of other commodities circulating across the economy; in the case of the ruble's strengthening, the prices for imports from the EU will certainly decline against those for domestically produced commodities, whilst not necessarily doing so with regard to the prices for imports from other countries. Secondly, the exchange rate variable is very volatile, and so economic agents by no means will not immediately alter their behavior in response to a strengthening ruble (importers choose to wait before increasing their demand for foreign commodities), in expectation of an opposite trend in the ruble's movement becoming visible after a certain interval of time. As, on the contrary, import duties are usually lifted for a relatively long period of time, economic agents instantly alter their behavior by way of adjusting to the new conditions in the market. Thirdly, the ruble's strengthening and mutual abolition of import duties produce different effects on the behavior of exports. A stronger ruble makes it less profitable to export domestically produced commodities, thus negatively influencing the rate of production and household incomes, the latter being a relevant production factor. This, in its turn, has a negative effect on aggregate demand, including the demand for imports. The asymmetric effects of the national currency's exchange rate and import duties are quite compatible with the results of studies by Idrisov (2010a, 2010b) and Knobel (2010, 2011). The elasticity of demand for imports, as demonstrated by the real effective rate, turns out to be higher than the elasticity of demand for commodities at their 'original' (foreign) price: if the estimated elasticity indices, at the real effective rate, fit into the 2.5 to 3.5 interval for different industries, the corresponding values for the elasticity of demand for commodities at their 'original' (foreign) price will fall between  $-1.2$  and  $-0.5$ .

In the study by Idrisov (2010a, 2010b), the elasticity of demand for imports is estimated relative to the exchange rate and the 'original' price of imported products, broken up by industry. Mean elasticity for all industries, as shown by the author's estimations, amounts to approximately 2.6, which means that the ruble's strengthening by 7.5% per annum will push up the demand for imports by  $2.6 \cdot 7.5 \approx 19\%$  (it should be noted that this value represents only the net effect of the ruble's strengthening: this phenomenon *per se* may cause, for example, a decline of production in the EU, thus resulting in a less visible trade growth). Mean elasticity of the demand for imports relative to prices for imports in this study (Idrisov, 2010a, 2010b) is approximately  $-0.9$ , thus meaning that a decline of import duties by 7.5% will boost the demand for imports by  $0.9 \cdot 7.5 \approx 7\%$ , which is compatible with the results shown in Table 5. In the study by Knobel (2011), the elasticity of demand for imports is estimated to be at the level of  $-0.96$  for the commodity group 'Live animals; animal products', which includes meat products; at this elasticity index, if the import duty on meat products is brought down to zero, the volume of imports may increase by  $0.96 \cdot 20 \approx 20\%$ . This is generally compatible with the results of our present study, where we have plotted the growth curves of imports from the EU, by industry, that may follow from the abolition of import duties.

The results of our study of the behavior of imports in response to lifted import duties can also be compared with the estimations obtained by some foreign authors who have also studied the elasticity of demand for imports. Thus, for example, Marquez (2000) estimated the mean elasticity of US imports relative to prices to be at the level of  $-1.18$ . From this it follows that if the import duty (set at the rate of 7.5%) is lifted, the demand for imports will increase by  $1.18 \cdot 7.5\% \approx 9\%$ . Masih (2000) estimates Japan's elasticity of demand for imports to be at the level of  $-1.89$ , which corresponds to growth of imports by  $1.89 \cdot 7.5\% \approx$

14% of the import duty is lifted. These results are also generally compatible with our results.

Table 6 presents the potential movement of imports by sector in response to the creation of a FTZ. The volume of RF imports will increase in practically every sector – already in the short-term perspective. At the same time, growth in each sector will be pushed up only by the increased volume of imports from the EU, because RF imports from countries outside of the EU will be on the decline.

RF imports will demonstrate most impressive growth in the following sectors (both in the short-term and long-term perspectives): *meat* (2.3% and 2.9%), *timber articles and paper* (5.5% и 6.4%), *processed mineral products* (4.0% and 4.5%), and *motor vehicles and parts thereof* (3.3% and 4.2%). Such a high growth rate in these sectors is linked to the current high rates of import duties. Thus, for example, in the meat sector where the volume of imports from the EU increases by 22%, the average weighted import tariff is currently set at the level of 21%.

TABLE 6

### FTZ Effects on RF Imports, by Sector

	Average weighted tariff on imports from EU	Aggregate imports		Imports from EU		Imports from countries other than EU	
		SR	LR	SR	LR	SR	LR
Agriculture, forestry and fishery	8.1%	0.9	1.6	7.7	8.4	-2.1	-1.4
Minerals	3.3%	-0.3	0.3	1.8	1.8	-1.4	-1.4
Meat	21%	2.3	2.9	21.5	22.4	-2.4	-1.9
Dairy products	8.5%	2.5	3.1	10.3	11.0	-2.8	-2.2
Other foodstuffs	11.8%	2.9	3.5	6.7	7.2	-2.5	-2.1
Textiles	13%	1.0	1.9	11.3	12.4	-3.3	-2.4
Apparel and clothing items	18.9%	2.4	3.2	14.5	15.4	-3.5	-2.8
Timber articles, paper	12.3%	5.5	6.4	9.5	10.3	-5.0	-4.3
Processed mineral products	12.5%	4.0	4.5	11.5	11.9	-3.1	-2.8
Chemical, resin, plastic articles	9.5%	2.8	3.6	6.0	6.8	-4.3	-3.6
Metals	13.7%	2.5	3.2	10.6	11.3	-3.2	-2.6
Motor vehicles and parts thereof	7.4%	3.3	4.2	16.2	17.2	-5.5	-4.6
Electrical equipment and machinery	7%	0.2	1.1	1.4	2.3	-1.9	-1.0
Other processing industries	12.4%	3.4	4.3	10.6	11.5	-2.9	-2.1

Source: authors' calculations. SR, LR — short-term perspective, long-term perspective.

In Table 7, the by-sector movement of the volume of exports is presented. Our model demonstrates that trade liberalization will boost RF exports in every sector of the national economy, and this will already happen in the short-term perspective (the exceptions being *motor vehicles and parts thereof* and *textiles*). A slight decline of the volume of exports in these two sectors (by -0.6% and -0.4% respectively) can be explained by the declining output of domestically produced commodities there. The most impressive growth rate will be displayed by RF exports in the meat production sector (3.8%), which can be explained by the abolition of the currently high import duty levied by the EU on Russian meat products.

TABLE 7

### FTZ Effects on RF Exports, Output and Consumption, by Sector

	Exports		Output		Consumption	
	SR	LR	SR	LR	SR	LR
Agriculture, forestry and fishery	1.6	2.5	-0.2	1.1	-0.3	1.0
Minerals	1.9	3.3	1.2	2.6	0.6	2.0
Meat	3.8	5.1	-0.5	0.9	-0.3	1.0
Dairy products	1.5	2.6	-0.3	1.0	0.2	1.4
Other foodstuffs	1.2	2.3	-0.5	0.9	-0.1	1.2

Textiles	-0.6	0.0	-0.8	0.3	0.3	1.3
Apparel and clothing items	2.1	2.8	-1.0	0.2	1.2	2.1
Timber articles, paper	0.5	1.5	-1.3	0.0	0.5	1.8
Processed mineral products	1.9	3.3	0.6	2.1	0.4	1.8
Chemical, resin, plastic articles	2.6	3.8	0.5	2.0	0.8	2.0
Metals	2.6	3.7	0.9	2.3	0.4	1.8
Motor vehicles and parts thereof	-0.4	0.5	-2.2	-0.9	0.9	2.0
Electrical equipment and machinery	0.9	1.9	0.0	1.5	0.1	1.3
Other processing industries	1.6	2.2	-0.1	1.1	0.3	1.6

Source: authors' calculations. SR, LR — short-term perspective, long-term perspective.

As far as output is concerned, it can be expected to plummet, in the short-term perspective, in the following two sectors of RF national economy: motor vehicles and parts thereof (2.2%) and timber articles & paper (1.3%) (see Table 7). Such a decline in production volume can be explained by a significant growth of imports, which will result in domestically produced commodities being replaced by those imported from the EU. If Russia lifts her high import duties, it will become more profitable to supply EU products for RF consumers, as they will become cheaper than domestically produced ones. As our model determines the consumer choice between imported and domestically produced commodities on the basis of a function with a constantly non-zero substitution elasticity, any decline of price for an imported commodity will push up its consumption rate at the expense of the declining consumption rate of its domestically produced analogue, thus triggering the process of consumer switchover from domestically produced commodities to imported ones. A decline in the demand for domestically produced commodities is followed by production decline.

Generally speaking, output changes in one or other sector can be explained by two differently vectored effects. On the one hand, the abolition of EU import duties makes commodity exports from the RF to the EU more profitable, thus boosting their supply by increasing production. On the other hand, the abolition of import duties in the CU will reorient consumption from domestically produced commodities to imports, which will result in output decline.

The prevalence of either of these two effects in a given sector will depend on the actual structure of mutual trade between the CU and the EU: the sector's share in imports from the EU; the sector's share in exports to the EU; the ratio of CU import duties to EU import duties in that particular sector (prior to the creation of the FTZ). With regard to the two sectors under consideration (*motor vehicles and parts thereof*; *timber articles & paper*) it can be safely stated that the first effect will prevail over the second one. Firstly, both the share of these two sectors in imports from the EU (16% and 2% respectively) and the rates of import duties levied by the CU in these sectors (7.4% and 12.3% respectively) are significant. Secondly, their shares in CU exports to the EU (0.04% and 0.2% respectively) and the rates of import duties levied by the EU (6.1% and 0.0% respectively) are, on the contrary, rather low. Consequently, the effect of lifted CU import duties on RF production (negative effect) will be much stronger than that of lifted EU import duties (positive effect). So, these two sectors will display production decline not only in the short term, but also in the long-term perspective. In the *motor vehicles and parts thereof* sector, long-term production decline will amount to 0.9%, and the production of *timber articles & paper* will, in the long-term perspective, return to the same level as that prior to the creation of the FTZ.

As for the other sectors, many of them will experience a short-term output decline: it can be also argued than in the short-term perspective the second effect will be prevalent. In other words, output in each of these sectors will shrink due to the switchover of consumers from domestically produced commodities to imports as a result of lowered prices for imported commodities. This decline in domestic consumer demand will not be compensated

by increasing demand on the part of EU consumers – that is, growth of RF exports. For example, in the *apparel & clothing items* sector (where output will shrink by 1%) this will be caused by the fact that the share of this type of commodity in RF imports from the EU (1.08%) is much larger than the corresponding share of *apparel and clothing items* in the structure of RF exports to the EU (<0.01%), while the rate RF import duties on imported *apparel and clothing items* is nearly 19%. Nevertheless, output in this sector in the long-term perspective will be on the rise – after a period of capital accumulation (as it will be in all the other sectors but two).

In our model, the long-term perspective differs from the short-term perspective in that capital supply in this country over the long-term period is not a fixed parameter, while the cost of capital is fixed; in the short-term period, the opposite is true. Due to this specific feature of our model, short-term production decline in a given sector giving way to long-term production growth can be explained as follows. After import duties are lifted, some sectors of the RF economy will experience output growth in response to the increased demand for Russian products displayed by foreign consumers as a result of lower prices (for them) for this item of Russia’s exports. Domestic consumers, for their part, may also demonstrate higher demand for domestic products, as the abolition of import duties will stimulate their consumption not only of those types of commodities the prices for which have become lower (price effect), but of other types of commodities as well (income effect). In response to the increasing demand, producers will increase their output, thus displaying a higher demand for production factors. As in the short-term perspective the supply of production factors is fixed (including capital supply), the increased demand is compensated by growth of prices. In those sectors where the demand for domestically produced commodities does not increase or increases only slightly, companies are forced to bring down their demand for production factors as a result of their increasing prices. The upshot is that in these sectors, output in the short-term perspective will decline. Over the long-term period, on the contrary, the cost of capital is fixed, and so capital supply can be adjusted depending on the level of demand. In contrast to the short-term period, the long-term perspective is not characterized by an increasing cost of capital (although wages are on the rise, similarly to the situation in the short-term perspective). Therefore the producers operating in those sectors where consumer demand does not display a marked growth rate can borrow capital at a fixed cost, and so they increase their production volume, by doing so also pushing up the demand for capital. Table 8 shows the by-sector movement of capital and the employment rate as a result of trade liberalization both in the short- and long-term perspectives. From the Table’s content it follows that in those same sectors where the volume of borrowed capital declines in the short-term perspective, it begins to grow in the long-term period. At the same time, the employment rate displays approximately similar changes both in the short-term and long-term periods. Thus, long-term output growth in some sectors occurs specifically due to fixed marginal capital costs.

TABLE 8

**FTZ Effects on RF Employment Rate and Capital, by Sector**

	Employment		Capital	
	SR	LR	SR	LR
Agriculture, forestry and fishery	-0.3	-0.1	-0.5	2.3
Minerals	1.3	0.5	1.0	2.9
Meat	-0.5	-0.7	-0.8	1.5
Dairy products	-0.5	-0.5	-0.7	1.8
Other foodstuffs	-0.6	-0.6	-0.9	1.7

Textiles	-1.4	-0.6	-1.4	2.7
Apparel and clothing items	-1.4	-1.1	-1.7	1.2
Timber articles, paper	-1.6	-1.4	-1.8	0.9
Processed mineral products	0.5	0.4	0.2	2.7
Chemical, resin, plastic articles	0.2	0.5	-0.1	2.8
Metals	0.7	0.6	0.4	3.0
Motor vehicles and parts thereof	-3.0	-2.4	-3.2	-0.1
Electrical equipment and machinery	-0.3	0.6	-0.5	2.9
Other processing industries	-0.4	0.3	-0.7	2.6

Source: authors' calculations. SR, LR — short-term perspective, long-term perspective.

Some sectors within Russia's national economy demonstrate increasing production volume even in the short-term perspective. Thus, for example, the *minerals* production volume in the framework of our model will increase by 1.2% in the short-term perspective and by 2.6% in the long-term perspective; the production of *processed mineral products* — by 0.6% and 2.1%, and the production of metals — by 0.9% and 2.3 respectively. The output growth in these three sectors can be explained by the fact that the lifted import duties on RF commodities supplied to the EU countries boost Russia's proceeds from exports to the RF EU. Producers begin to increase their exports volumes both by reorienting their products from the domestic market to exports and by raising their production volume. This effect on the production rate, on the one hand, is small because EU import duties in these sectors have been low in the first place, and so their abolition cannot result in a significantly increased demand for Russian exports on the part of the EU. It can be seen from Table 1 that the rate of EU import duty on RF *minerals* is only 0.4%, that on *processed mineral products* — 4.7%, and the average rate of import duties on metals is approximately 4%. On the other hand, this effect is significant because these sectors take up a substantial share in the structure of RF exports to the EU (see Table 1). Besides, due to the declining demand in some sectors of the RF economy as a result of consumer switchover from domestically produced commodities to imports, excessive production factors are released from these sectors. As the production factors in our model are homogenous, they flow to those sectors where consumer demand have not declined. From Table 8 it follows that the employment rate and capital display growth in the short-term perspective in these three sectors.

### 3. Analysis of Sustainability of the Results Yielded by Our Model

Estimations based on CGE models are often criticized because the input data applied in CES functions need to be properly calibrated, while the modeled results may strongly depend on the actual values of applied parameters. We are going to look at the CES function applied in the model to determine the aggregate consumer commodity consisting of domestically produced and imported commodities. For sector  $c$  and country  $r$ , this function will appear as follows:

$$QQ_{c,r} = \alpha_{c,r} \cdot (\delta_{c,r} \cdot QM_{c,r}^{\rho_{c,r}} + (1 - \delta_{c,r}) \cdot QD_{c,r}^{\rho_{c,r}})^{1/\rho_{c,r}},$$

where  $QD$  — domestically produced commodity;  $QM$  — composite imported commodity;  $QQ$  — composite consumer commodity;  $\alpha$ ,  $\delta$ ,  $\rho$  — aggregation parameters depending on sector  $c$  and country  $r$ . The optimal consumer choice term is as follows:

$$QM_{c,r} = QD_{c,r} \cdot \left( \frac{PD_{c,r}}{PM_{c,r}} \cdot \frac{\delta_{c,r}}{1 - \delta_{c,r}} \right)^{\frac{1}{1 - \rho_{c,r}}},$$

where  $PD$  is the price of domestically produced commodity, and  $PM$  is the price of composite imported commodity. On the basis of these two equations, which are true for every equilibrium within the model at fixed values of variables  $QD$ ,  $PD$ ,  $QM$ ,  $PM$ ,  $QQ$  (the values



of these variables are derived from real data when the model is initialized) and a given value of parameter  $\rho$  (which is calibrated), the values of parameters  $\alpha$  and  $\delta$  can be found. So, for the model to be fully initialized, it is sufficient to calibrate only one parameter ( $\rho$ ).

It should be expected that the results yielded by this model will differ depending on the specific value of parameter  $\rho$  fed into the model. In the previous section, we presented the results yielded by the model's base scenario, where  $\rho=0.5$  (it must be noted that this parameter is strictly less than 1, according to its economic content). Table 9 shows the results yielded by the model for Russia's GDP fluctuations at different  $\rho$  values (assuming that  $\rho$  value is the same for all sectors and countries). In the base modeled scenario ( $\rho=0.5$ ), RF GDP in response to the creation of a FTZ will increase by 2.04%. If the model is fed a different value ( $\rho=0.6$ ), the resulting RF GDP growth will amount to 2.01%. This change in RF GDP is by 1.4%<sup>8</sup> less than that in the base scenario, which is reflected in the third row of Table 9 in the column under  $\rho=0.6$ .

TABLE 9

**Sensitivity of the Modeled Results of RF GDP's Movement to  $\rho$  Value**

$\rho$	-5	-2	-1	-0.5	0.05	<b>0.5</b>	0.6	0.8	0.9
Changes in RF GDP	2.38	2.30	2.25	2.20	2.13	<b>2.04</b>	2.01	1.93	1.88
Change by comparison with base scenario	16.7%	12.8%	10.1%	8.0%	4.6%	<b>0.0%</b>	-1.4%	-5.2%	-8.0%

Source: authors' calculations.

From the data presented in Table 9 it can be concluded that the modeled results (describing changes in the value of RF GDP) are not strongly sensitive to changes of parameter  $\rho$ . At the extreme drop of its value from 0.5 to -5, the modeled results increase only by 17%. Similarly, when the parameter demonstrates an extreme rise to 0.9, the results decline by only 8%. It should be noted in this connection that these extreme values of the model's parameters are not realistic. Most likely, the value of parameter  $\rho$  will fluctuate within a narrower interval. When parameter  $\rho$  varies in the interval from 0.05 to 0.8, the modeled results will differ from the base scenario only by 5%.

## Conclusion

This study has attempted to estimate the economic consequences of a trade agreement potentially concluded between the CU and the EU, which implies mutual duty-free trade in commodities. From the results yielded by our model it follows that its aggregate effect on Russia's GDP will amount to 0.8% in the short-term perspective (aggregation for a period of 2–3 years, at the current GDP volume this value will be approximately \$ 15bn), and to 2.0% in the long-term perspective (aggregation for a period of 4–6 years and approximately \$ 40bn respectively). The short-term and long-term effects on Kazakhstan's GDP will amount to 0.6% (\$ ~1bn) and 1.2% (\$ ~2bn) respectively. In contrast to the national economies of Russia and Kazakhstan, the effect on the Belarusian economy, according to our modeled results, will not be positive. Belarus's GDP volume will drop by 0.6% (approximately \$ 400m) in the short-term perspective, and then over the long-term period it will adjust to the new situation and return to its previous level, before the creation of the FTZ. EU GDP EC will increase by 0.1% (\$ ~15bn) in the short-term perspective, and by 0.2% — in the long-term perspective (\$ ~30bn). Thus, Russia's gains from such a free trade zone will be potentially greater than those of the EU – both in relative and absolute terms.

<sup>8</sup>  $-1.4\% = (2.01 - 2.04)/2.04 * 100\%$ .

As far as the effects of import duties abolition on the various sectors of Russia's economy are concerned, the following observations are to hand. In the long-term perspective output will decline in only two sectors: *motor vehicles and parts thereof* and *timber articles & paper*. A similar picture will also be observed in Kazakhstan. Output decline in Belarus, in addition to the two aforesaid sectors, will also occur in agriculture, in the sectors producing foodstuffs, and in the processing industries. Output volume in the EU will be observed only in the mineral production sector, where this effect will persist both in the short- and long-term perspective. This phenomenon can be explained by the fact that after the FTZ is created, the inflow of imported minerals into the EU from the CU will increase and will be used as a substitute for domestic mineral production. However, such a conclusion does not appear to be very realistic, as the minerals output value is, in fact, a fixed parameter.

In response to the abolition of import duties, the Russian Federation and Kazakhstan will display, already in the short-term perspective, household consumption growth with regard to the products of every sector. This upward trend in the level of household consumption will be significantly increasing in the long-term perspective. This growth can be explained by the presence of two effects: price effect and income effect. In those sectors where domestically produced commodities are being replaced by imported ones, prices will decline. In these sectors, the consumption level will be pushed up by both these effects. In the other sectors, where imported commodities are not used as substitutes for their domestically produced analogues, consumption growth will occur only due to the income effect. In these sectors, the rising demand will be pushing upwards the prices of commodities, and consequently the price effect will be opposite to the income effect. However, the income effect will still be the prevalent one.

Thus, the creation of such a FTZ will have a positive effect on household consumption both in Russia and in Kazakhstan. In the EU, household consumption will also be on the rise in every sector, but its growth rate, as a percentage of its initial value, will be much lower than in Russia. Belarus will display a decline in the household consumption of products of those sectors that will be experiencing output decline.

Our modeled estimates of the consequences of the abolition of import duties between the CU and the EU have confirmed most of the assumptions cited earlier in the first section. First, we have fully confirmed the first assumption that the benefits and costs of a FTZ will be spread unevenly among the member countries of the Customs Union, as well as the related second assumption that Belarus will be the greatest loser after the creation of a FTZ with developed countries<sup>9</sup>. From our results it also follows that the levels of GDP, output in certain sectors, and household consumption as a result of creating a FTZ with the EU will decline in Belarus, whereas in the Russian Federation and Kazakhstan these parameters will be on the rise. At the same time, the aggregate gains of the Customs Union's members will be strictly positive. Secondly, from the modeled results it follows that the effect of a FTZ on Russia's national economy will be much stronger than the corresponding effect on the EU economy. Thirdly, after the creation of a FTZ with developed countries, the positive effect on Russia's household consumption will also be greater than the corresponding effect on her

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<sup>9</sup> It should be noted that even if a FTZ is modeled without taking into consideration the five most highly protected sectors, accounting together for 25% of the volume of imports between the CU and the EU (the meat industry, the dairy industry, the food industry, the production of apparel and clothing items, and the production of motor vehicles and parts thereof), the short-term effect for Belarus will be negative: her GDP will drop by 0.3% (in absolute terms – by approximately \$ 0.2bn). At the same time, RF GDP will increase by 0.4% (\$ ~ 7bn), Kazakhstan's GDP — by 0.3% (\$ ~ 0.5bn), and EU GDP — by 0.03% (\$ ~ 5bn). In the long-term period, RF GDP will increase by 1% (\$ ~20bn), Kazakhstan's GDP — by 0.7% (\$ ~1bn), and EU GDP — by 0.08% (\$ ~ 13bn). As for Belarus's GDP, in the long-term perspective it will simply return to its initial level.

partner's household consumption, and the negative effect on Russia's domestic production will likewise be stronger than the corresponding negative effect on her partner's domestic production. The results yielded by our model have also demonstrated that the effect Russia's domestic production, which will decline in several sectors in the short-term perspective, will also remain negative in the long-term perspective in two sectors. The corresponding effect on domestic production in the EU will be positive in every sector but one both in the short-term and long-term perspective. As far as the consumption level is concerned, the resulting effect will be positive both for Russia and the EU; however, in the case of Russia this effect will be stronger than in the EU because trade liberalization in the economic relations between the Russian Federation and the European Union, from the point of view of aggregate public wealth, will be more a more attractive prospect for the former than for the latter.

So, for Russia and Kazakhstan alike, the first phase of integration with the EU (involving the creation of a free trade zone with duty-free trade in commodities) appears to be beneficial from the point of view of economics – which is more than can be expected for Belarus, a country which, alongside the Russian Federation and the Republic of Kazakhstan, is a fully fledged member of the Customs Union. A similar situation occurred during the discussion of the prospects creating a free trade zone with New Zealand in 2012, when Russia during her chairmanship in the Asia-Pacific Economic Cooperation (APEC) was promoting a proactive integration agenda, and this project was regarded as the first step towards integration in the Asia-Pacific region – a step which supposedly offered minimum economic consequences due to the geographic remoteness of that partner and the low commodity turnover volume, and so represented the simplest way for Russia to signal her preparedness to enter trade agreements in that region. However, Belarus objected to such an agreement because it was contrary to the interests of her dairy industry.<sup>10</sup>

So, in spite of the evident potential benefits for some of the Customs Union's members in general, it will be very difficult to take the first serious step on the way towards integration with the EU due to absence of any mechanisms for internal redistribution of the resulting benefits; or, such a step will involve so many reservations that its outcome will be only nominally called a free trade zone.

It should be added that in this study we modeled the situation as it may emerge after the introduction of mutual zero tariffs in the trade in commodities between the prospective partners, and did not look at such aspects of bilateral trade relations as non-tariff constraints, trade in services, or cross-border movement of production factors. A model of bilateral trade liberalization implying complete or partial removal of the existing constraints in these fields may become a target for future studies.

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<sup>10</sup> Earlier, the President of the Republic of Belarus said as follows: *'If we had sold everything to Russia, she would have incurred no economic losses. Why does Russia buy butter twice as dearer from New Zealand? Why doesn't she buy our fresh butter? There is no solution to this issue'* See <http://news.tut.by/politics/134086.html>

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