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Non-tariff barriers and trade integration in the EAEU

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Abstract

We investigate impacts of deep economic integration between Armenia, Belarus, Kazakhstan and Russia constituting the Eurasian Economic Union (EAEU). The absence of tariff barriers in bilateral trade opens opportunities for harmonization of NTBs. Policy measures aimed on NTBs reduction are in line with the integration agenda of the EAEU. We used a global CGE model with monopolistic competition (Balistreri et al. 2014).We find that effects of the deep integration are positive for all countries of the EAEU. Armenia's accession to the EAEU will have a positive effect if coupled with decrease of non-tariff barriers. The effect of deep integration in the EAEU will be even greater with presence of a spillover effect reducing NTBs for EAEU's major trading partners. Reduction of NTBs in trade with the EU and the USA is marginally better for the countries of the EAEU than comparable reduction of NTBs with China.

Key Words: regional trade integration; EAEU; increasing returns to scale model and trade; NTBs.

JEL classification: C68; F12; F14; F15; F55; O52; O53.

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1 Introduction

Since the early stages of creation of the Customs Union (CU) between Belarus, Kazakhstan, and Russia back in 2010, the economic benefits of the CU were questionable. The main reason for this in Kazakhstan was the increase in its import tariffs in order to implement the common external tariff of the CU, which initially was Russia's external tariff (Tarr 2012). Kazakhstan almost doubled its average tariff from 5.3% to 9.5% (World Bank 2012) in the first year of its CU accession. Belarus did not increase its average tariff, but the structure of its tariffs shifted toward protection of Russian industry.

In 2015 the CU was transformed into the EAEU and Armenia and Kyrgyz Republic joined the EAEU. These two countries are WTO members, Kyrgyzstan entered the WTO in 1998 and Armenia in 2001. In 2014, the simple average MFN applied tariff rate in Armenia was 3.7% and it was 4.6% for the Kyrgyz Republic. Due to differences between Armenia's and Kyrgyzstan's WTO commitments and the EAEU tariff schedule, the new members of the EAEU are not implementing the full EAEU tariff schedule. That is, they have numerous exemptions, but have started a WTO commitments modification procedure.

Despite adverse impacts from the higher import prices from implementing the common external tariff of the EAEU in Armenia and the Kyrgyz Republic, there are potentially offsetting gains. Given the importance of remittances to the Kyrgyz Republic, the benefits coming from the right of workers to freely move and legally work inside EAEU likely dominate the tariff issues. Armenia also benefits from the free movement of labor, receives Russian gas free of export duties and wants to preserve the military guarantee granted by Russia through the six country Collective Security Treaty Organization. In the case of Belarus, it receives Russian oil and natural gas free of export-duties, which, when oil prices were high, tended to dominate their calculus. Kazakhstan hopes for more FDI as a platform for selling to the EAEU market; but President Nazarbaev has expressed concerns that the EAEU is not providing net benefits to his country.

To date, the members have judged participation to be in their interest, but with the plunge in the price of oil and gas, the calculus could swing against participation in the EAEU. That's why it is so important to achieve progress with deep integration in the EAEU. One of the most important areas of deep integration for the EAEU is the substantial reduction of non-tariff barriers in goods trade, both between the EAEU members and against third countries. Estimates by the Eurasian Development Bank (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich & Lipin 2015) reveal that NTBs account for 15% of the value of intra-union trade flows of goods.

In this paper, we estimate substantial gains to all the EAEU members from a reduction of NTBs. We employ a global computable general equilibrium model with monopolistic competition in the Helpman-Krugman style based on paper by Balistreri, Tarr and Yonezawa (Balistreri et al. 2014). Estimates of the ad-valorem equivalents of NTBs were based on a recent work commissioned by Eurasian Development Bank (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich & Lipin 2015) for the EAEU member countries and Kee, Nicita and Olarreaga (Kee et al. 2008) for non-members.

We find that effects of the deep integration are positive for all countries of the EAEU. Armenia's accession to the EAEU will have a strong positive effect only if coupled with the decrease of non-tariff barriers. Armenian accession is associated with an increase in external tariffs, which causes a negative economic impact and decrease in output.

The effect of deep integration in the EAEU will be even greater if a spillover effect reducing NTBs for EAEU's major trading partners is present. We simulate a 50% decrease in "technical" NTBs inside the EAEU and a 20% spillover effect of reduction NTBs toward either the EU and USA or China. Reduction of NTBs in trade with the EU and the USA dominates the comparable reduction of NTBs with China for all countries of the EAEU in terms of the welfare gain. Armenia's welfare gain with the spillover effect towards the EU is 1,1% of real consumption compared to 1.02% with spillover effect towards China. Growth in welfare in Belarus will be 2.7% with the EU spillover versus 2.5% with the spillover effect towards China. Kazakhstan's gain in real consumption is also greater in the first (EU+USA) case: 0.86% vs 0.66% (with spillover towards China). Russia's gain in real consumption in the case of the spillover effect with the EU is 2.01% vs 0.63% in case of China.

Our findings suggest an answer to the recent concern about stability of EAEU. Our results suggest that eliminating NTB hampering mutual trade and decreasing NTBs in either European or Chinese direction could provide mutual economic benefits thereby providing incentive for the members to stay in the Union and honor their commitments.

The rest of the paper is organized in the following way: section 2 describes stage of economic integration in the EAEU, section 3 overviews the model in use. We present the results in section 4 with section 5 devoted to sensitivity analysis, conclude in section 6. All relevant tables are presented in the appendix.

2 Overview of the model

This paper builds on the algebraic structure of Ballistreri, Tarr and Yonezawa (Balistreri et al. 2014). This is a multi-region static computable general equilibrium model. We provide a non-technical summary of the model below.

The model used in this study differs drastically from a number of studies of trade integration effects in the region by incorporating monopolistic competition, increasing returns and foreign direct investment into a global framework. Regional agreements provide terms of trade gains to the members within the region, and to capture those impacts endogenously, a multi-region model is required.

There are 8 regions in the model: we distinguish four countries of the EAEU (Armenia, Belarus, Kazakhstan and Russia) and four regions of the world (EU, USA, China and the rest of the world).

There are 24 sectors of three types in each region: (1) perfectly competitive sectors; (2) imperfectly competitive sectors producing goods and services, and (3) imperfectly competitive service sectors with foreign direct investment (FDI). The cost structure of a representative firm, its production and behavior varies between the categories.

The following 11 sectors are monopolistically competitive in the model: (1) Food products; (2) Wood products; (3) Paper and publishing; (4) Chemical, rubber and plastic; (5) Mineral products nec; (6) Metals; (7) Transport equipment; (8) Electronic equipment and Machinery; (9) Transport & communication; (10) Financial services and insurance; (11) Business services (not elsewhere classified, nec).

The last two service sectors (Financial services and insurance; and Business services nec) could receive FDI.

Goods and services in each economy are produced with skilled and unskilled labor, capital (including land) and natural resources. The imperfectly competitive sectors of goods and services, as well as sectors with FDI, use mobile, sector-specific and special (primary) factor of production that is imported by international service providers, reflecting the specific administrative and technological expertise of the multinational firm. Each imperfectly competitive firm (as well as the company in service sector with FDI) has a certain amount of specific capital.

2.1 Perfectly competitive sectors

In perfectly competitive sectors production is described by constant returns to scale. We assume free entry, which brings price to marginal cost and profits to zero with cost minimizing producer's behavior.

In these sectors goods are differentiated by the country of origin, i.e. Armington assumption is adopted (Armington 1969). All firms can sell on the domestic market or export to all regions in the world. Firms can allocate output between domestic and export markets according to constant elasticity of transformation production function. They optimize output decision based on relative prices and transformation possibilities.

2.2 Industries with increasing returns to scale

Costs structure and firms behavior in increasing returns to scale sectors follow Helpman and Krugman model (Helpman & Krugman 1985). Each firm produces a product differentiated from its competitors. We assume that manufactured goods can be produced domestically or imported from any region. In all countries, the demand for these products is characterized by nested constant elasticity of substitution functions. Since the marginal utility of goods tends to infinity as the quantity goes to zero, if a good is produced in any country, a part of this product is consumed in all regions of the model. Firms have fixed costs and set prices so that marginal cost equals marginal revenue. There is free entry, so economic profit is zero. We imply Chamberlinian large group monopolistic competition assumption, which results in constant markups over marginal cost for both foreign firms and domestic firms in our Dixit-Stiglitz framework. Following (Balistreri et al. 2014), it is assumed that the ratio of fixed to marginal costs is constant with respect to the non-output variables and parameters in the model in all firms producing under increasing returns to scale (in both goods and services). This assumption assures that output per firm for all firm types remains constant. The effective cost function for users of goods produced subject to increasing returns to scale declines in the total number of firms in the industry. The number of varieties is determined by global demand, since all countries consume some of any variety that is produced. Thus, a country can affect the number of varieties produced if it affects global demand.

List of monopolistically competitive industries in the model includes:

- Manufacture of food products;
- Textiles and textile products;
- Manufacture of leather products;
- Woodworking;
- Pulp and paper industry;
- Chemical production, manufacture of rubber and plastic products;
- Manufacture of other non-metallic mineral products;
- Metallurgy;
- Manufacture of vehicles and equipment;
- Manufacture of machinery and electrical equipment;
- Other manufacturing, nec;
- Transport and communications;
- Financial activities;
- Business services;
- Public administration, Education, Health and Other Services.

2.3 Industries with increasing returns to scale and foreign direct investments

Financial services and insurance, and other business services could receive foreign direct investments. In these services sectors some services are provided by foreign service providers on a cross border basis analogous to goods supply from abroad. But a large share of business services is provided by service providers with a domestic presence, both multinational and local.[2] The model allows for both types of provision of foreign services in these sectors.

The cost, production, demand and competition structure for firms in this group of industries follows the same structure as the imperfectly competitive goods firms with two differences.[3] The first difference is that multinational service firms could establish a local presence to compete with local firms directly. Multinational service firms produce a home region specific variety, which is differentiated from domestic and other home region varieties. The second difference if that we assume perfect competition between multinationals from a specific home region, which it is analogous to the Armington structure, except that production also takes place in the host country.

2.4 Policy variables

There are several types of policy variables in the model, which are used to simulate EAEU integration: ad valorem equivalents of non-tariff measures of trade restrictions that are introduced into the model as the margin on the relevant trade flows, and the ad valorem equivalents of barriers to foreign investment in the field of business services. According to the Agreement on the EAEU, integration processes within the Eurasian Economic Union are designed to reduce the non-tariff barriers on trade in goods and reduce the barriers to trade in services.

3 Data

3.1 Tariffs

Weighted average tariff rates for the member countries of the Customs Union (Belarus, Kazakhstan, Russia) were calculated on the basis of a Common Customs Tariff and are weighted by volume of Russian imports from countries outside of the Customs Union, in the 10-digit HS breakdown.

[2] One estimate puts the world-wide cross-border share of trade in services at 41% and the share of trade in services provided by multinational affiliates at 38%. Travel expenditures 20% and compensation to employees working abroad 1% make up the difference. See Brown and Stern (2001, table 1).
[3] See (Balistreri & Tarr 2011) for greater detail.

The weighted average tariff in Armenia in 2013 (before the introduction of EAEU's Common Customs Tariff) for imports was calculated based on World Integrated Trade Solution (TRAINS) database. We assumed all EAEU countries applied the common external tariff schedule without exemptions, including Armenia after accession.

The weighted average tariffs for other regions of the model (China, EU, USA, and the rest of the world) were taken from the GTAP 9.0 database; these latter tariffs are not changed in any of the scenarios.

3.2 Ad valorem equivalents of NTBs

Non-tariff barriers in the services sector are distinguished between: discriminatory and non-discriminatory. Discriminatory barriers are associated with restrictions, which are imposed solely on foreign firms, providing services in the domestic market or the entry restrictions for foreign firms. Non-discriminatory barriers, on the contrary, includes restrictions which affect domestic and foreign firms alike. Therefore, considering the impact of reduction in non-tariff barriers in the services sector of the EAEU member states it is important to note that integration implies only reduction of discriminatory barriers in the services sector. Discriminatory restrictions may be significantly less than non-discriminatory, or absent altogether in some service areas. In most scenarios we do not assume any convergence in discriminatory barriers for services between Member States, thus non-discriminatory barriers to services in the EAEU countries may be different.

3.2.1 Ad valorem equivalents of barriers against foreign providers of services

The ad valorem equivalents of the barriers against foreign investors in services in our model are listed in table 1. For Armenia, we use (Modebadze 2010) as the source of data on ad valorem equivalent of NTBs.. For Belarus, the source of data for ad valorem equivalents services is (Kolesnikova 2014). In Russia, (Idrisov 2010) estimated the ad valorem equivalents of the barriers For Kazakhstan and other countries in the model, we employed data from (Jafari & Tarr 2014).

Table 1. Ad valorem equivalents for service sectors' NTBs used in the model

Services	Armenia	Belarus	Kazakhstan	Russia	China	USA	EU	ROW
Trade and restaurants	1	0.0	1	4	6	2	1	2
Transport and communications	54.0[1]	18.67[2]	19.7	64.49[3]	18.9	5.5	9.3	28.1
Finance	5.64[1]	16.61[2]	14	12.39[3]	22	2	2	10
Business services	23	29.64[2]	27	40.5	52.5	40	27	35.25
Public administration, etc	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Sources: Authors' estimates based on (Jafari & Tarr 2014) (if not stated otherwise);
[1] - (Modebadze 2010); [2] - (Kolesnikova 2014); [3] - (Idrisov 2010)

3.2.2 NTBs in goods

We use WITS and (Kee et al. 2008) for NTBs in goods. In case of absent data, as it is for Armenia, average for the EAEU was used (Table 2).

Table 2. NTBs in trade in goods

Sector	Armenia	Belarus	Kazakhstan	Russia	EU	China	USA	ROW
Agriculture	20.6%	1.3%	38.5%	22.1%	44.4%	1.2%	21.7%	22.8%
Forestry	3.5%	3.5%	3.5%	3.5%	7.3%	5.5%	6.4%	3.5%
Fishery	10.1%	0.3%	27.9%	2.0%	11.7%	12.6%	18.7%	12.6%
Extraction oil, gas, coal	24.0%	24.0%	18.5%	29.4%	1.0%	12.6%	6.4%	7.3%
Mining nec	1.3%	0.2%	0.1%	3.7%	0.0%	1.9%	1.8%	1.8%
Food products	39.5%	30.6%	45.3%	42.5%	52.6%	19.3%	25.3%	35.4%
Textiles	10.3%	7.7%	20.9%	2.3%	32.2%	9.2%	33.0%	6.0%
Leather	20.2%	27.7%	30.2%	32.8%	22.0%	1.1%	2.7%	6.3%
Wood	67.7%	67.7%	67.7%	67.7%	0.1%	0.3%	6.4%	7.7%
Paper	8.8%	8.8%	8.8%	8.8%	0.0%	30.0%	5.3%	5.3%
Refined petrolium	10.0%	10.0%	11.8%	8.1%	0.3%	22.4%	0.0%	4.0%
Chemicals	10.0%	3.2%	13.2%	13.5%	0.9%	4.9%	4.1%	9.7%
Mineral products nec	2.6%	0.4%	0.7%	6.7%	0.1%	0.0%	0.5%	5.3%
Metals	3.4%	0.1%	0.0%	10.2%	0.1%	24.4%	0.1%	4.1%
Transport equipment	17.6%	9.0%	28.7%	15.1%	0.5%	2.3%	6.6%	6.9%
Electronics	25.4%	25.4%	12.7%	38.2%	0.2%	3.4%	6.0%	10.1%

Other manufacturing	5.4%	9.1%	2.5%	4.7%	0.6%	0.1%	3.0%	3.2%

Source: Authors' calculations based on WITS and (Kee et al. 2008)

NTBs in trade in goods between the three CU countries (Belarus, Kazakhstan and Russia) were borrowed from (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich, Lipin, et al. 2015), where survey of enterprises was conducted to obtain their assessment of non-tariff barriers and subsequently a gravity model was estimated. (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich, Lipin, et al. 2015) present non-tariff barriers to trade between the three CU countries as the sum of two components: NTB-T and NTB-P. The NTB-T parameter characterizes “technical” trade restrictions, which could be reduced or even eliminated. This group of measures includes, for example, sanitary and phytosanitary measures, technical barriers, licensing, quotas, bans and other quantitative measures impacting trade (Table 3).

Table 3. Ad valorem equivalent for "technical" NTBs (NTB-T) in goods trade in the EAEU

Imported	Belarus	Belarus	Kazakhstan	Kazakhstan	Russia	Russia
Exporter	**Kazakhstan**	**Russia**	**Belarus**	**Russia**	**Belarus**	**Kazakhstan**
Agriculture	8.3%	2.2%	10.5%	3.4%	2.5%	3%
Forestry	8.3%	2.2%	10.5%	3.4%	2.5%	3%
Fishery	8.3%	2.2%	10.5%	3.4%	2.5%	3%
Extraction oil, gas, coal	--	--	--	--	--	--
Mining nec	--	--	--	--	--	--
Food products	3.2%	2.4%	10.7%	4.2%	3.3%	2.3%
Textiles	3%	0.8%	14.8%	1.6%	2.9%	1.3%
Leather	7.6%	3%	19.4%	9.7%	4.5%	4.5%
Wood	7.6%	1%	0%	4.1%	1.3%	3.4%
Paper	6.5%	1.6%	0%	1.9%	2.9%	2%
Refined petroliem	--	--	--	--	--	--
Chemicals	3.65%	1.6%	20.5%	3.7%	4%	3.1%
Mineral products nec	4%	1%	16.7%	1.9%	2.6%	2.5%
Metals	5.7%	1.6%	5.8%	1.9%	1.6%	2%
Transport equipment	3.5%	1%	7%	1.9%	1.4%	2.5%
Electronics	3.8%	1.7%	12.5%	2.5%	2.6%	2.2%
Other manufacturing[4]	4.9%	1.8%	10.7%	3.9%	2.8%	2.6%

Source: (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich & Lipin 2015)

The second component of the non-tariff barriers (NTB-P) characterizes all other measures that affect competition on the market in question. Examples are price controls, special importers, restrictions on government procurement, subsidies. In fact, these measures represent a cost to importers which are not related to direct production activities. This type of non-tariff berries to trade is best summarized by term "sand in the wheels". Values of NTB-P are presented in the table below (Table 4).

[4] Average values of equivalent trade costs of NTB-T were applied to "Other manufacturing" category.

Table 4. Ad valorem equivalent for "non-technical" NTBs (NTB-P) in goods trade in the EAEU

Imported	Belarus	Belarus	Kazakhstan	Kazakhstan	Russia	Russia
Exporter	**Kazakhstan**	**Russia**	**Belarus**	**Russia**	**Belarus**	**Kazakhstan**
Agriculture	18%	5.4%	28.6%	9%	8.9%	8.8%
Forestry	18%	5.4%	28.6%	9%	8.9%	8.8%
Fishery	18%	5.4%	28.6%	9%	8.9%	8.8%
Extraction oil, gas, coal	--	--	--	--	--	--
Mining nec	--	--	--	--	--	--
Food products	7%	5.7%	29%	10.9%	11.5%	6.9%
Textiles	6.6%	1.9%	40.3%	4.2%	10%	4%
Leather	16.4%	7.3%	52.6%	25.3%	15.9%	13.4%
Wood	16.6%	2.4%	0%	10.6%	4.6%	10.2%
Paper	14.2%	3.9%	0%	4.9%	10.1%	5.9%
Refined petrolium	--	--	--	--	--	--
Chemicals	7.95%	3.9%	55.6%	9.75%	14%	9.1%
Mineral products nec	8.6%	2.5%	45.3%	5%	9.1%	7.4%
Metals	12.4%	4%	15.8%	5%	5.5%	6%
Transport equipment	7.7%	2.5%	19.1%	5%	4.8%	7.5%
Electronics	8.2%	4.1%	33.9%	6.5%	9.2%	6.4%
Other manufacturing[5]	11.2%	4.5%	29.1%	10.1%	9.7%	7.8%

Source: (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich & Lipin 2015)

Our primary source of information on intra-EAEU NTBs is (Vinokurov, Demidenko, Pelipas, Tochitskaya, Shymanovich & Lipin 2015) which was supplemented from data from all other sources, mentioned above.

3.2.3 Reduction of NTBs from EAEU's "high priority list"

The Eurasian Economic Commission (EEC) is a plurilateral regulatory entity governing the EAEU that is modeled after the European Commission. Its objective is to reduce NTBs based on a so called "high priority" action list of barriers to be eliminated. [6] The EEC focuses on the reduction of these barriers since they were explicitly mentioned in the Treaty of the Eurasian Economic Union.

We estimated the impact of a potential decrease in "technical" (NTB-T) and "non-technical" (NTB-P) ad valorem equivalents of barriers inside the EAEU due to Eurasian

[5] Average values of equivalent trade costs of NTB-P were applied to "Other manufacturing" category

[6] We base our assessments on the "List of barriers that will be addressed in the instruments developed in accordance with the Treaty of the Union", which could be found in the second section of "List of impeding the functioning of the internal market of the Eurasian Economic Union, barriers to mutual access, as well as exemptions and limitations on the movement of goods, services, capital and labor" (http://www.rgtr.ru/discussion/20150923/spisok_barerov/).

Commission's possible actions on the basis of the Treaty (Table 5). On average, the "high priority" action list covers 10% of the list of NTBs assembled by the EEC on the basis of differences in EAEU countries' legislation.

Table 5. Potential decrease in NTBs inside EAEU due to Treaty of the EAEU, percentage change in ad valorem equivalents

Industry	NTB type	RUS BLR	RUS KAZ	BLR RUS	BLR KAZ	KAZ RUS	KAZ BEL
Agriculture	NTB-T	51.16%	51.16%	51.16%	51.16%	51.16%	51.16%
	NTB-P	11.03%	11.09%	11.22%	11.22%	11.29%	11.29%
Forestry	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Fishery	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Extraction of oil, gas and coal	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	11.03%	11.09%	11.22%	11.22%	11.29%	11.29%
Mining nec	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Food industry	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Textiles and clothing	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Leather production	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Wood products	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Pulp and paper industry	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Oil refinery	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Chemical industry	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	12.25%	12.32%	12.62%	12.62%	11.29%	11.29%
Mineral products nec	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Metallurgy	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Transport equipment	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	11.03%	11.09%	11.22%	11.22%	11.29%	11.29%
Other machinery	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	12.25%	11.09%	11.22%	11.22%	11.29%	11.29%
Other	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%

Industry	NTB type	RUS BLR	RUS KAZ	BLR RUS	BLR KAZ	KAZ RUS	KAZ BEL
manufacturing	NTB-P	9.80%	9.86%	9.82%	9.82%	9.88%	9.88%
Electricity production, water and gas distribution	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	11.03%	11.09%	11.22%	11.22%	11.29%	11.29%
Transport and communication	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	15.93%	16.02%	15.43%	15.43%	15.53%	15.53%
Public administration, etc	NTB-T	8.53%	8.53%	8.53%	8.53%	8.53%	8.53%
	NTB-P	11.03%	11.09%	11.22%	11.22%	11.29%	11.29%

Source: Authors' estimates

4 Results

4.1 Armenia's accession to the EAEU

We simulate Armenia's accession to the EAEU by eliminating all import tariffs between members of the Union (Belarus, Kazakhstan and Russia) and Armenia as well as setting Armenia's import tariffs equal to EAEU common customs tariff. Benchmark scenario for Armenia's accession is a customs union between Belarus, Kazakhstan and Russia.

Table 6. Macroeconomic impact of Armenian accession to the EAEU, %

	Armenia	Belarus	Kazakhstan	Russia
Aggregate Exports, USD bln	1.95	24.47	80.07	434.00
Change in Aggregate Exports, %	-1.68	0.00	0.00	0.00
Aggregate Imports, USD bln	3.90	32.01	47.49	355.65
Change in Aggregate Imports, %	-1.02	0.00	0.00	0.00
Real Consumption, USD bln	8.38	37.08	90.24	943.54
Change in Real Consumption, %	0.16	0.00	0.00	0.00
Real GDP, USD bln	10.15	59.68	188.19	1907.14
Change in Real GDP, %	0.13	0.00	0.00	0.00

Source: Authors' calculations

In our opinion, increase in Armenian real GDP after EAEU accession is driven by "optimal tariff" effect of the global trade model. Growth in GDP and real consumption is combined with falling output in the majority of economic activities.

When 'optimal tariff' effect dominates, a country with small initial tariffs benefits from increasing customs duties up to 'optimal' level.

To test this hypotheses, the accession scenario was revised with increased elasticity of substitution between different sources of imports. GTAP's interimport substitution elasticity among all product categories does not exceed 13.5: the maximum value - in the category of

Energy Minerals; in other product categories the value of this elasticity lies in the range from 1.8 for the product category "Minerals nec" to 8.34 for the category Electronic equipment and Machinery.

We set interimport substitution elasticities in all categories to 30 and run the accession scenario. Results presented in the Table 7 prove that "optimal tariff effect" is significant.

Table 7. Testing for optimal tariff effect: Armenian accession with high elasticities of substitution between different import sources, %

	Armenia	Belarus	Kazakhstan	Russia
Aggregate Exports, USD bln	1.94	25.10	80.15	435.13
Change in Aggregate Exports, %	-2.82	0.00	0.00	0.00
Aggregate Imports, USD bln	3.89	32.81	47.58	356.53
Change in Aggregate Imports, %	-1.87	0.00	0.00	0.00
Real Consumption, USD bln	8.37	37.16	90.31	944.10
Change in Real Consumption, %	0.09	0.00	0.00	0.00
Real GDP, USD bln	10.13	59.78	188.26	1908.10
Change in Real GDP, %	-0.002	0.00	0.00	0.00

Source: Authors' calculations

As with the case of standard GTAP values of elasticities, Armenia's accession to the EAEU affects only it's own economy, with no effect on other countries of the EAEU. But with higher interimport elasticities Armenia gains less than before: the total exports fell more (- 2.82% instead of -1.68%), total imports also fell more by 1.87% instead of 1.02%, real GDP remained virtually unchanged (down to 0.002%) as opposed to the growth of 0.13%, and real consumer spending, which can be regarded as welfare measure, rose by 0.09% instead of 0.16%. For the other three countries, there is no change.

This numerical experiment can be viewed as a proof of our "optimal tariff" hypothesis: growth in Armenia's welfare due to the "optimal tariff" effect.

4.2 NTBs reduction scenarios

4.2.1 Gradual decrease in all NTBs inside the EAEU

Reduction of the non-tariff barriers in trade is a difficult and time-consuming process. It takes not only changes in legislation, but a persistent political will to obtain significant results. We designed 24 scenarios with gradual decrease in "technical" (NTB-T) and "non-technical" (NTB-P) barriers to trade in order to estimate magnitude of possible gains for each economy in the EAEU from reduction of NTBs. Armenia's accession to the EAEU was used as a benchmark for evaluating changes in real GDP for each EAEU country (see Figure 1 - Figure 4).

Given the simulation results, it is evident that Armenia and Belarus gain much more than Kazakhstan or Russia. Armenia's potential gain in the range of 0.44% of GDP, with

25% NTB decrease to 11.63% of GDP, with total abolition of all non-tariff barriers to trade. It should be noted that the total reduction of non-tariff barriers is a purely hypothetical scenario, as most of the non-tariff barriers in NTB-P category is the so-called "natural" barriers: “price control measures; and financial measures that affect competition such as designating special importers, restricting marketing and public procurement, subsidies, etc.” (Vinokurov et al, 2015)

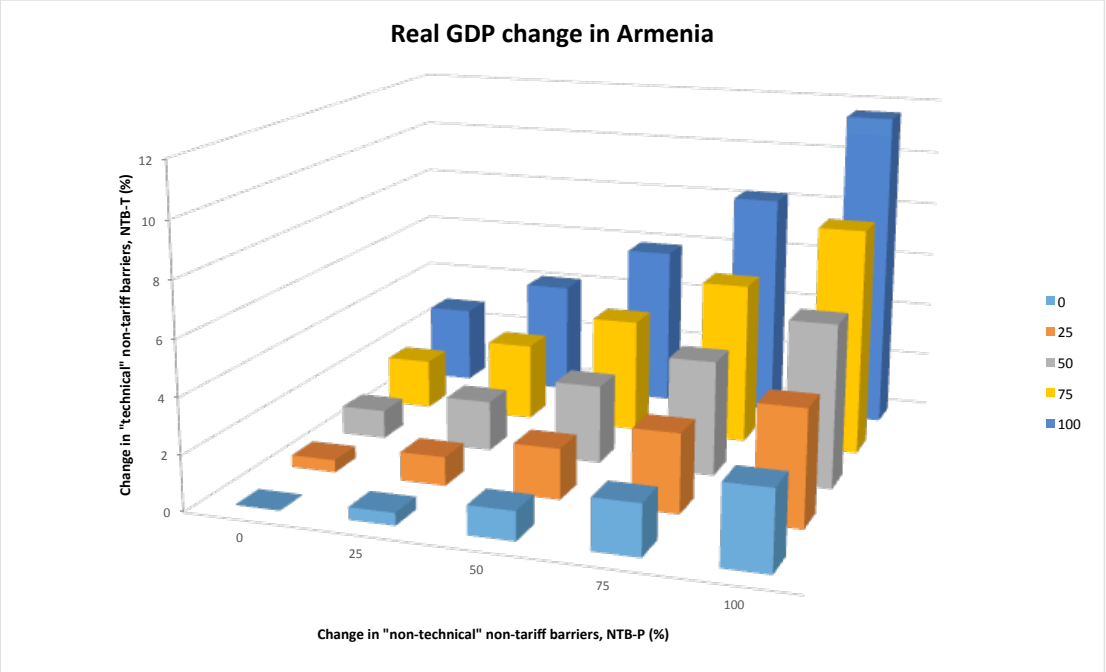

Figure 1. Real GDP change in Armenia with gradual decrease off all NTBs, % change to benchmark values

Belarus gains a lot from potential deeper integration in the EAEU: a GDP increase from 0.98%, with NTBs decrease by 25%, to 17.01%, with the abolition of all non-tariff barriers to trade.

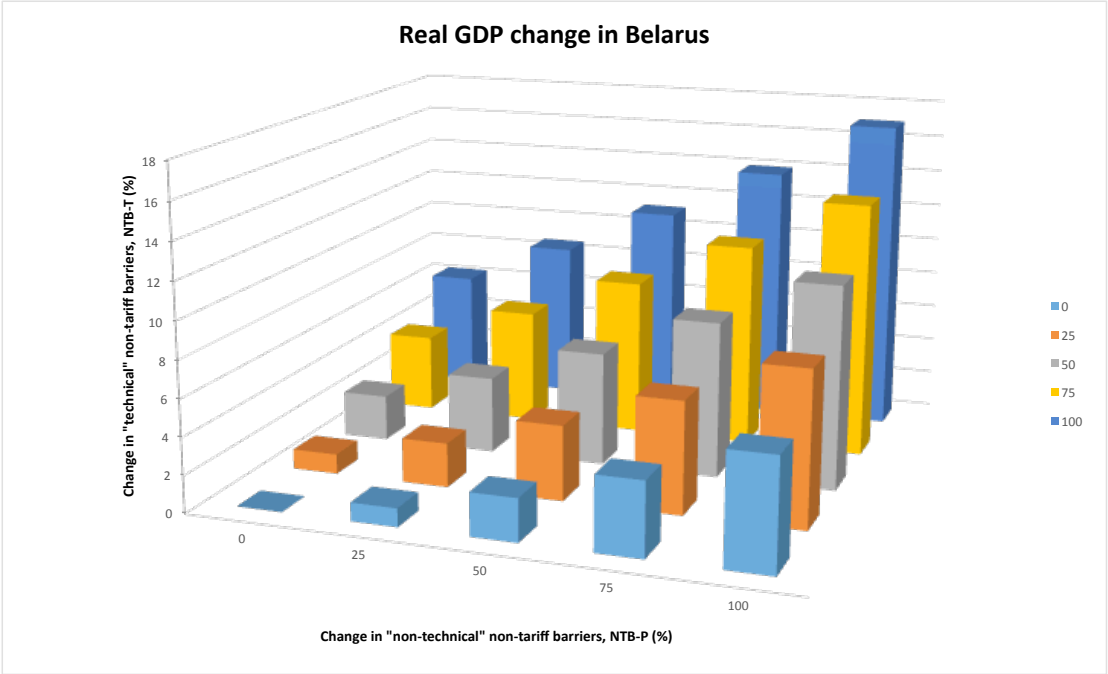

Figure 2. Real GDP change in Belarus with gradual decrease off all NTBs, % change to benchmark values

Potential effect on Kazakhstan is much more modest: maximum foreseen GDP growth equals 0.71% with complete removal of all non-tariff barriers to trade between all four EAEU countries in our model.

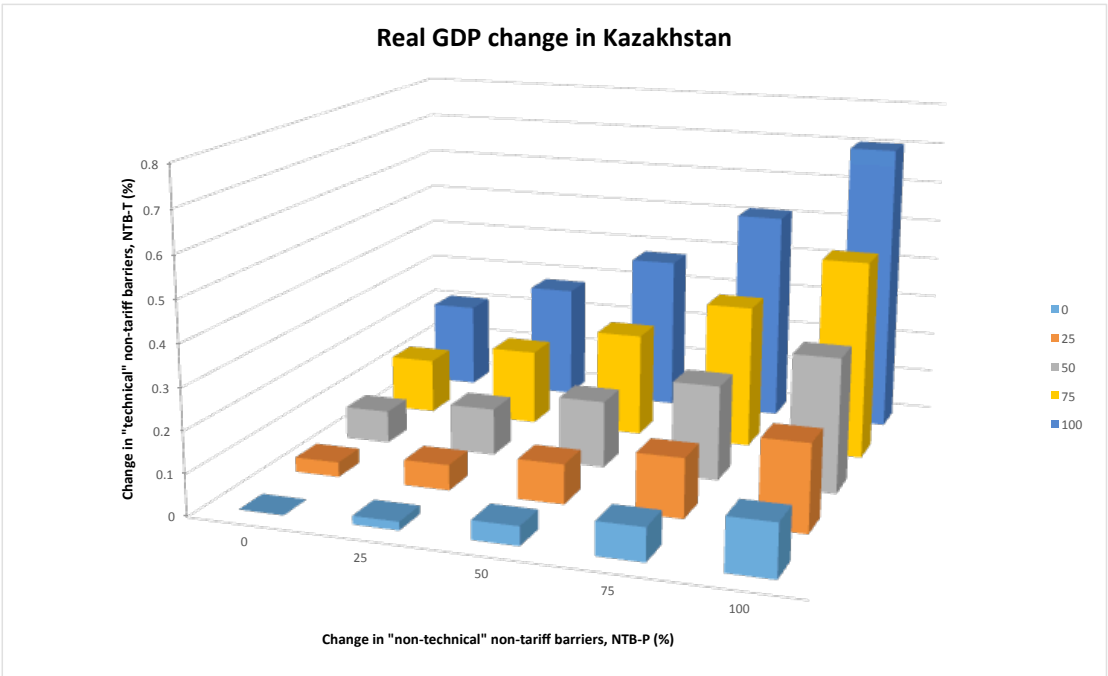

Figure 3. Real GDP change in Kazakhstan with gradual decrease off all NTBs, % change to benchmark values

A similar picture can be observed for Russia: potential gain from deeper integration is the lowest in the EAEU. Russia gains from 0.11% of GDP, with a 25% decrease in all NTBs to 0.95% of GDP with abolition of all non-tariff barriers to trade inside EAEU.

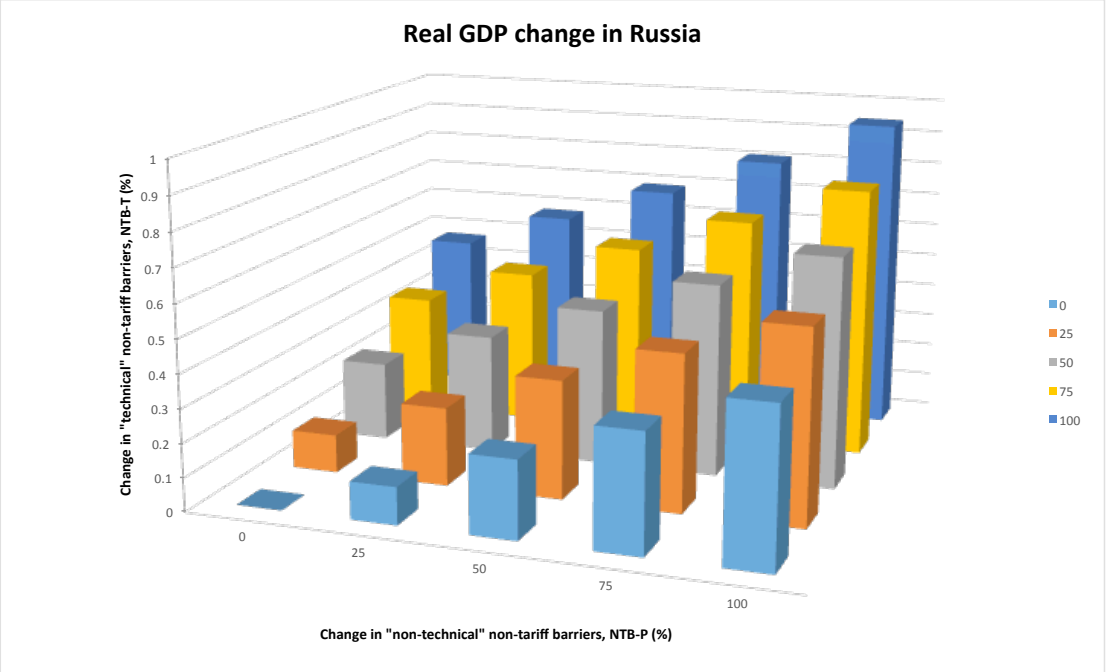

Figure 4. Real GDP change in Russia with gradual decrease off all NTBs, % change to benchmark values

4.2.2 "High priority" list of NTBs

The Eurasian Economic Commission plans to act according to the EAEU Treaty, which means 34 NTBs from "high priority" list will be reduced in the next 5 years. We estimated potential gains from reduction of the "high priority" NTB list, reducing ad valorem equivalents of NTBs by values presented in Table 5. Changes in macroeconomic indicators are presented in Table 8.

Table 8. Reducing NTBs from high priority list: macroeconomic effects, %

	Armenia	Belarus	Kazakhstan	Russia
Change in Aggregate Exports, %	0.00	1.72	0.15	-0.15
Change in Aggregate Imports, %	0.01	-4.28	0.09	0.18
Change in Real Consumption, %	0.00	0.87	0.05	0.18
Change in Real GDP, %	0.00	0.77	0.02	0.08

Source: Authors' calculations

The biggest gain is observed in Belarus, where GDP grows by 0.77%, accompanied by 1.72% increase in exports, a 4.28% decrease in imports, and real consumer spending growth of 0.87%.

Russia's GDP grows by 0.08%, exports decreased by 0.15%, and imports growing by 0.18%, with real consumer spending increased by 0.18%. Kazakhstan's GDP increased by 0.02%, exports growing at 0.15%, and imports growing by 0.09%, with real consumer spending increased by 0.05%. Finally, Armenia's GDP varies by less than 0.01%, exports varies by less than 0.1%, and imports increased by 0.01%, real consumer spending change is less than 0.01%.

In other words, measures foreseen by the EEC as integration agenda among EAEU members could bring only a very modest gains to all economies in question.

4.2.3 With spillover effect towards EU and USA

This scenario assumes that the "technical" part (NT-T) non-tariff barriers for goods is reduced by 50% in trade between the EAEU countries and at the same time, non-tariff barriers to trade with the EU countries and the US are down by 20%. The rest of the NTBs on goods (NTB-P) and non-tariff barriers for services were assumed unchanged.

Deep integration in the EAEU, which aims to develop common technical standards for all Member States, should lead to a decrease in "technical" non-tariff barriers to trade (NTB-T). However, the integration process of the harmonization of technical regulations may be directed towards the existing international standards. In this scenario, we assume that the common technical regulations in the EAEU will be "close" to the technical regulations adopted by the EU and the US. It is assumed that such "convergence" in EAEU technical regulations on the one hand and the EU and US on the other hand, will reduce the "technical" non-tariff barriers in bilateral trade between the countries of the EAEU, the EU and the US by 20%. In this case, the macro-economic indicators change as follows (see Table 9).

Table 9. Reducing NTBs with spillover effect towards EU and USA: macroeconomic effects, %

	Armenia	Belarus	Kazakhstan	Russia
Change in Aggregate Exports, %	7.66	6.11	0.94	1.09
Change in Aggregate Imports, %	0.85	-7.07	1.70	3.87
Change in Real Consumption, %	1.10	2.72	0.86	2.01
Change in Real GDP, %	1.13	2.43	0.31	0.95

Source: Authors' calculations

The greatest positive effect is observed in Belarus, where GDP growth is 2.43%. The export of Belarus grows by 6.11%, imports decreased by 7.07%, and real consumer spending growing at 2.72%. For Armenia, the GDP growing at 1.13%, exports increased by 7.66%, and imports growing by 0.85%, and real consumer spending increased by 1.1%. For Russia's GDP increased by 0.95%, exports growing at 1.09%, and imports growing at 3.87%, and real consumer spending increased at 2.01%. Finally, Kazakhstan's GDP increased by 0.31%,

exports increased by 0.94%, and imports increased by 1.7%, and real consumer spending rising by 0.86%.

4.2.4 With spillover effect towards China

This scenario assumes that the "technical" part (NTB-T) of non-tariff barriers to trade in goods between the EAEU countries is decreased by 50%, while non-tariff barriers to trade with China is reduced by 20%. The rest of the barriers (NTB-P) to trade in goods and non-tariff barriers to trade in services were assumed unchanged.

In this scenario, we assume that the common technical regulations in the EAEU will be "close" to the technical regulations adopted in China. It is assumed that such "convergence" of the EAEU technical regulations on the one hand and China on the other hand, will reduce the "technical" non-tariff barriers in bilateral trade between the countries of the EAEU and China by 20%. In this case, the macro-economic indicators change is as follows (Table 10).

Table 10. Reducing NTBs with spillover effect towards China: macroeconomic effects, %

	Armenia	Belarus	Kazakhstan	Russia
Change in Aggregate Exports, %	5.64	4.94	0.96	0.28
Change in Aggregate Imports, %	-0.87	-10.35	1.28	1.17
Change in Real Consumption, %	1.02	2.50	0.66	0.63
Change in Real GDP, %	1.04	2.22	0.28	0.27

Source: Authors' calculations

The biggest positive effect is observed in Belarus, where GDP growth is 2.22%. At the same time Belarus' export grows by 4.94%, imports decreased by 10.35%, and real consumer spending growing by 2.5%. For Armenia, the GDP growing at 1.04%, exports increased by 5.64%, imports falls to 0.87%, and real consumer spending increased by 1.02%. For Kazakhstan's GDP increased by 0.28%, exports growing at 0.96%, and imports growing at 1.28%, and real consumer spending increased by 0.66%. Finally, Russia's GDP increased by 0.27%, exports increased by 0.28%, and imports increased by 1.17%, and real consumer spending rising by 0.63%.

4.3 Comparing simulation results

Comparing simulations results the definite conclusion is that all EAEU countries could benefit from deep integration, but the distribution of benefits will be uneven. Relatively small countries such as Armenia and Belarus benefit more from integration than Kazakhstan and Russia. This is reflected in the growth of real GDP (Table 11) and the growth of the real consumption (Table 12).

The biggest beneficiary of reduction of 34 “high priority” NTBs is Belarus. In terms of the direction of changes in the technical regulations - all EAEU countries gain from the

"spillover effect" of the convergence of technical regulation with the EU and the United States. Among EAEU countries Russia receives biggest benefit from this convergence, the magnitude of Russia's gain is compatible to total elimination of NTBs inside the EAEU.

Table 11. Real GDP change for different scenarios, %

	Armenia	Belarus	Kazakhstan	Russia
Armenian Accession to the EAEU	0.13	0.00	0.00	0.00
Reduction of NTBs from *high priority list*	0.00	0.77	0.02	0.08
Spillover Effect: Reduction of «technical» NTBs between EAEU countries by 50% and reduction of NTBs for trade in goods with EU and USA by 20%	1.13	2.43	0.31	0.95
Spillover Effect: Reduction of «technical» NTBs between EAEU countries by 50% and reduction of NTBs for trade in goods with China by 20%	1.04	2.22	0.28	0.27

Source: Authors' calculations

Table 12. Real consumption change for different scenarios, %

	Armenia	Belarus	Kazakhstan	Russia
Armenian Accession to the EAEU	0.16	0.00	0.00	0.00
Reduction of NTBs from high priority list	0.00	0.87	0.05	0.18
Spillover Effect: Reduction of «technical» NTBs between EAEU countries by 50% and reduction of NTBs for trade in goods with EU and USA by 20%	1.10	2.72	0.86	2.01
Spillover Effect: Reduction of «technical» NTBs between EAEU countries by 50% and reduction of NTBs for trade in goods with China by 20%	1.02	2.50	0.66	0.63

Source: Authors' calculations

5 Conclusions

In this paper we analyzed impact of integration processes in the Member States of the EAEU. We used CGE model to assess the medium and long term effects of integration in the framework of the EAEU Treaty. The modeling framework of Ballistreri, Tarr and Yonezawa (Balistreri et al., 2014) was used as the basis for the modeling experiments. An important characteristic of the presented model is a complex structure of the industry association, which considers the industry with monopolistic competition, in the setting of the global general equilibrium model.

Implementation of agreements on deep integration in the EAEU could lead to reduction of non-tariff barriers in goods and services trade between the Member States of the EAEU, as well as in relation to third countries. The model explicitly allows to assess the impact of facilitating market access and reduction in trade costs that may occur as a result of integration processes in the EAEU.

Comparing simulations results the definite conclusion is that all EAEU countries could benefit from deep integration, but the distribution of benefits will be uneven. Relatively small countries such as Armenia and Belarus benefit more from integration than Kazakhstan and Russia. This is reflected in the growth of real GDP (Table 11) and the growth of the real consumption (Table 12).

The biggest beneficiary of reduction of 34 “high priority” NTBs is Belarus. In terms of the direction of changes in the technical regulations - all EAEU countries gain from the “spillover effect” of the convergence of technical regulation with the EU and the United States. Among EAEU countries Russia receives biggest benefit from this convergence, the magnitude of Russia’s gain is compatible to total elimination of NTBs inside the EAEU.

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