Estimating the Economic Effects of Reducing Non-Tariff Barriers in the EEU

Evgeny Vinokurov and Mikhail Demidenko and Igor Pelipas and Irina Tochitskaya and Gleb Shymanovich and Andrey Lipin and Veronika Movchan

EDB Centre for Integration Studies

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Eurasian Development Bank
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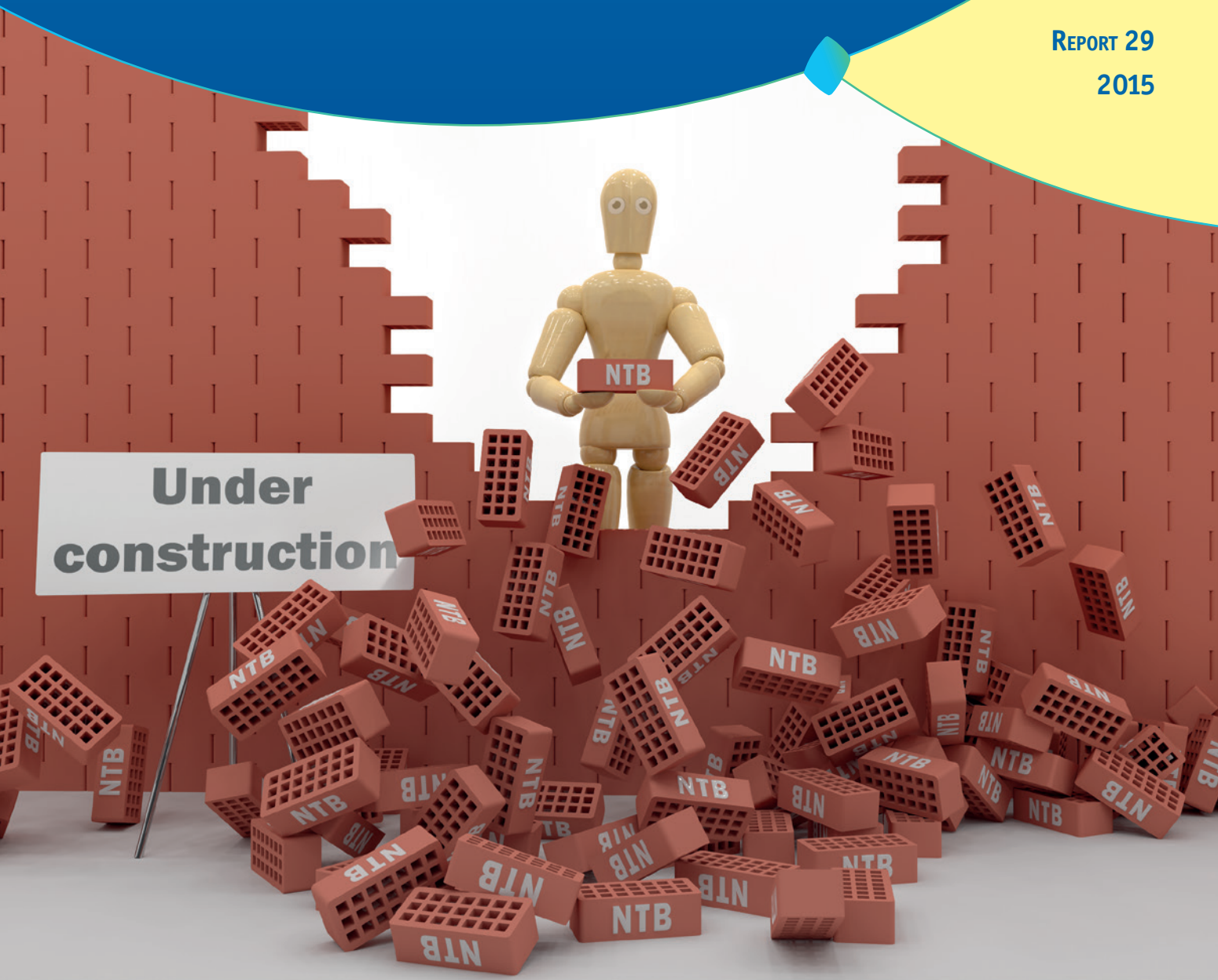

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This report presents the results of a quantitative estimation of the impact of non-tariff barriers (NTBs) in the Eurasian Economic Union (EEU). Based on these data and using computable general equilibrium models, the economy-wide and sector-specific effects of the reducing NTBs were calculated for Belarus, Russia and Kazakhstan.

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ACRONYMS AND ABBREVIATIONS

CGE — Computable General Equilibrium
CIS — Commonwealth of Independent States
CIS EDB — Centre for Integration Studies EDB
COMTRADE — UN Database of Merchandise Trade Statistics
CU — Customs Union
DCFTA — Deep and Comprehensive Free Trade Agreement
EDB — Eurasian Development Bank
EEU — Eurasian Economic Union
EU — European Union
EEC — Eurasian Economic Commission
FDI — Foreign Direct Investment
FEACN — Foreign Economic Activity Commodity Nomenclature
GDP — Gross Domestic Product
HS — Harmonized System
ITC — International Trade Centre
LSM — Least Squares Method
NTBs — Non-Tariff Barriers or Non-Tariff Measures
SES — Single Economic Space
TFP — Total factor productivity
UNCTAD — United Nations Conference on Trade and Development
WTO — World Trade Organization

Analytical summary

In the past ten years, non-tariff barriers (NTBs), also more commonly known as non-tariff measures, have played an increasing role in limiting the movement of goods and services. This is the result of a reduction of import tariffs in the multilateral trading system, and the growing number of regional trade agreements involving tariff-free trade between countries. NTBs negate the positive effects of easier market access that result from liberalising trade by removing tariff barriers. Not only can they negatively impact trade flows within the existing export basket, they also hinder the entry of new products and the emergence of new trading partners.

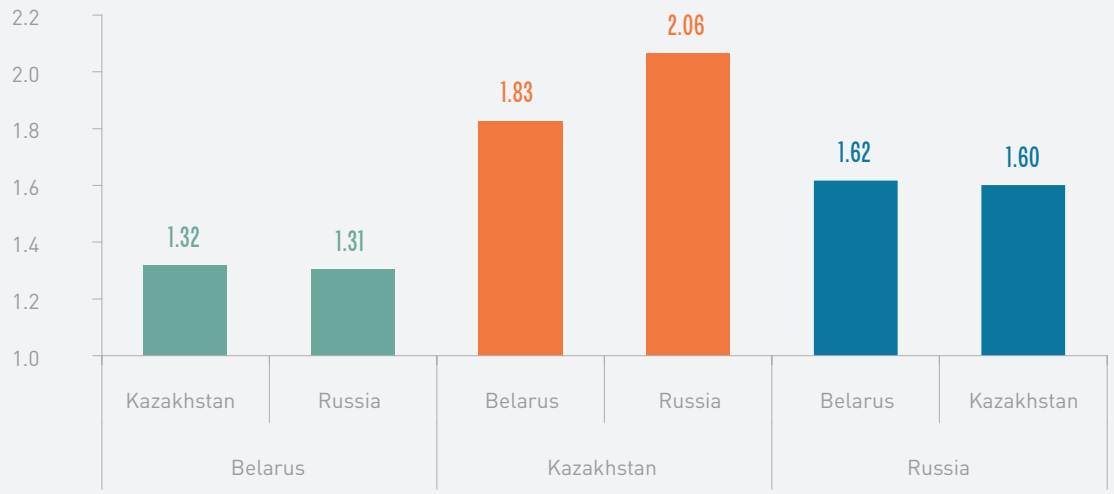
After the establishment of the Customs Union (CU) and the Single Economic Space (SES), Belarus, Kazakhstan and Russia[1] have repeatedly expressed the need to identify NTBs to the expansion of trade between partner countries and the effective development of Eurasian integration. The countries have already taken several steps in this direction, particularly in the field of technical regulations. Belarus, Kazakhstan and Russia have signed an agreement on common principles and rules of technical regulation. It provides for: a coherent policy; the creation of a list of products for which mandatory requirements are being established under the CU; and the development of CU technical regulations for products added to the list. The CU technical regulations that establish common technical requirements for products took effect in 2012. CU and SES countries are also harmonising national legislation pertaining to standardization, accreditation, measurement and state control of technical regulation. All of this will reduce technical barriers and simplify supplying goods and services to the single market.

In order to develop and deepen the integration between the countries, on May 29, 2014 Belarus, Kazakhstan and Russia signed the Treaty on the Establishment of the Eurasian Economic Union (EEU). The EEU stipulates that, within the domestic market, Member States do not apply non-tariff measures except in cases provided for by the Treaty. Restrictions may be applied to protect life and health, public morality, law and order, the environment, animals and plants, cultural values; to comply with international obligations; and to ensure national defence and security. However, such measures must not constitute a means of unjustifiable discrimination or disguised restriction on trade. The EEU countries have established general principles, rules, and procedures of technical regulation, and general principles for the application of sanitary, veterinary and phytosanitary quarantine measures.

This research, which is based on econometric analysis, examines the effect that NTBs existing between CU and SES countries have on their exports to each other, in order to determine the extent of the NTBs' restrictive impact on mutual trade and to quantify the potential economic benefits associated with the elimination or reduction of NTBs **The analysis also calculated NTB-related equivalent trade costs (similar to an**

[1] This study covers three countries: Russia, Kazakhstan and Belarus. Work on the project began before the decision was made regarding Armenia's accession to the EEU Treaty. Armenia was therefore not included in the study.

Average NTB indices, points



Source: The authors' calculations.

ad valorem equivalent) for the main industries. The resulting estimates were used as source information in order to subsequently model the effects of lifting NTBs within the CU and SES based on a computable general equilibrium model.

Calculations based on the econometric model

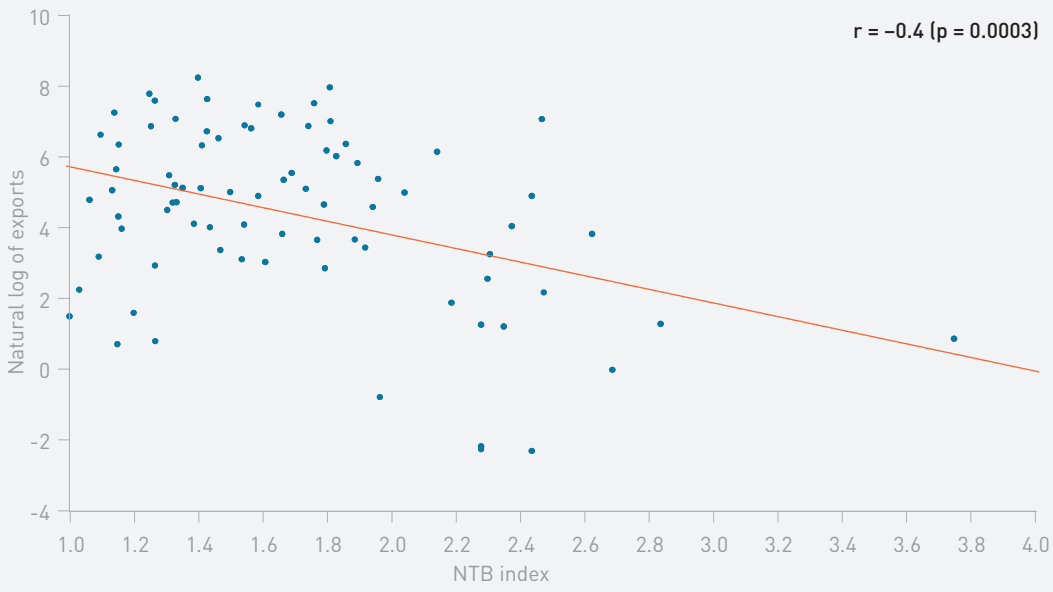
Econometric estimation of NTBs is based on the fact that gravity models include the results of surveys of exporting enterprises. One of gravity model's explanatory variables is the NTB index. It characterizes NTBs' restrictive impact on mutual trade and is derived from surveys of exporting enterprises from each of the six pairs of countries. The index was calculated for fourteen activities and sixteen NTBs (UNCTAD classification) using scores on a five-point scale. This allowed us to obtain average scores characterizing the magnitude of the NTBs' restrictive influence for each activity and in general.

Calculations demonstrate that the magnitude of the NTBs' restrictive impact on trade with CU and SES countries is higher for Russian and Kazakh exporters than for Belarusian exporters. Among the countries of the SES, the average NTB index was the highest for Kazakh exporting enterprises: 1.83 points in Belarus and 2.06 points in Russia. For Russian exporters, it stands at 1.62 for Belarus and 1.60 for Kazakhstan; and for Belarusian exporters, it is 1.32 for Kazakhstan and 1.31 for Russia. It is important to note that there is a statistically significant negative relationship between the NTB index and a country pair's volume of exports (the higher the NTB index, the smaller the volume of exports).

The resulting gravity model was used to calculate the equivalent trade costs due to the impact of NTBs on each of the fourteen activities under the CU and SES. **On average, the highest costs were observed in Kazakhstan's trade with Belarus (40%)[2]. NTB costs**

[2] The estimates of NTBs impact on Kazakhstan's trade with Belarus obtained using a survey of Kazakh exporting enterprises should be treated with some degree of caution, because the percentage of Kazakh companies exporting to Belarus is relatively small, and the corresponding estimates are less statistically reliable than estimates for the other country pairs.

Correlation between exports and NTB index



Source: The authors' calculations.

were also high in Russia's trade with Belarus (12.4%). For Belarus, the impact of NTBs was highest in its trade with Kazakhstan (16.3%).

By type of activity, the NTBs' most significant impact on the value of exports was observed in chemical production and the production of rubber and plastic products, regardless of the direction of trade. NTBs greatly affected exports to Belarus of textiles and garments, food products, footwear and leather goods. For Kazakhstan, NTBs significantly influence on the export to Belarus of machine-building products. For Belarus, the equivalent trade costs were highest when exporting agricultural products, leather products, leather footwear, and wood and metallurgy products to Kazakhstan. For Belarussian exports to Russia, the equivalent trade costs were relatively low for most of the activities considered, except for pharmaceutical products, footwear, leather goods, and food products.

In our research, NTBs were considered as a whole and also divided into two groups. This was done because eliminating all NTBs is difficult in practice, even impossible in several cases, because, for example, they are important for quality control and health protection. Accordingly, for each of the country pairs and each of the fourteen activities, NTBs' equivalent trade costs were calculated, depending on the nature of their impact on trade and how they might be unified (or eliminated).

The first group (NTB-T) includes NTBs that are natural, protective, and could gradually be significantly unified between CU and SES countries. This group includes sanitary and phytosanitary measures, technical barriers to trade and non-automatic licensing, quotas, bans and quantitative control measures other than sanitary and phytosanitary measures and technical barriers. **The second group (NTB-P) includes all other NTBs: price control measures; and financial measures that affect competition such as designating special importers, restricting marketing and public procurement, subsidies,**

Equivalent trade costs resulting from NTBs, %

Activity	Belarus		Kazakhstan		Russia	
	Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
On average, NTB-T	4.9	1.8	10.7	3.9	2.8	2.6
On average, NTB-P	11.2	4.5	29.1	10.1	9.7	7.8

Source: The authors' calculations.

Calculations based on a computable general equilibrium model.

etc. These are non-productive costs and often metaphorically described as "sand in the wheels." Theoretically, these costs should be eliminated completely. However, in practice this far more difficult to than reducing the first group of barriers. **Our calculations show that the equivalent trade cost of the effect of NTB-T are lower on average than that of NTB-P for each of the CU and SES countries.**

Equivalent trade costs, obtained through econometric analysis and resulting from the influence of both NTB-T and NTB-P across fourteen activities for Belarus', Kazakhstan's and Russia's exports to each other were used to quantify the consequences of reducing those barriers. To this end, we used a computable general equilibrium model implemented using GAMS/MPSGE software.

Considering the fact that changing tariff regulations is rather difficult, the study incorporated a realistic scenario with a 5% reduction of both NTB-T and NTB-P from the baseline (i. e. a total of 10%) trading costs derived from surveys. This scenario is similar to one used as a baseline in one of the recent studies designed to quantify the effects of the possible signing of a transatlantic trade and investment agreement (to create a free trade zone) between the US and the EU (CEPR, 2013).

It is important to note that (as is customary when performing calculations based on computable general equilibrium models) the results presented in this work isolate the economic impact of reducing NTBs within the CU and SES from other events that actually simultaneously affect the economic development of countries. Accordingly, the simulation results should not be viewed as a prediction, but only as an estimate of the strength and direction of the change in the situation *ceteris paribus*.

According to the simulation results, **Belarus would benefit most significantly from lower NTBs among CU and SES countries**: in the medium term, real GDP would grow by 2.8%, and welfare — by a total of 7.3% in the aggregate scenario, which entails a reduction in both groups of NTBs. **Kazakhstan's gain would be slightly smaller**: welfare will grow in the medium term by 1.3% cumulatively, while real GDP growth will be 0.7%. **In relative terms, Russia will gain the least:** in the medium term welfare will grow by 0.5% cumulatively, and real GDP — by 0.2%. **The gain is relatively smaller due to the economy's large size and the lesser importance of the markets of Belarus and Kazakhstan in comparison with the rest of the world.**

When NTB-T and NTB-P are reduced proportionally, the gain is more significant if the non-productive barriers of NTB-T are eliminated. For example, a 5% decrease in NTB-T gives Belarus an overall 2.7% increase in welfare and a 0.9% increase in GDP in the medium term, while an identical 5% decrease in NTB-P ("sand in the wheels") leads to an increase in welfare in Belarus by 4.2% and GDP — by 1.6%. The situation is sim-

Effect of reducing NTBs on GDP and welfare among SES countries, %

	Scenario 1: aggregate	Scenario 2: NTB-T reduced	Scenario 3: NTB-P reduced
Impact on welfare:			
Russia	0.5	0.2	0.3
Belarus	7.3	2.7	4.2
Kazakhstan	1.3	0.8	0.5
Impact on GDP:			
Russia	0.2	0.1	0.1
Belarus	2.8	0.9	1.6
Kazakhstan	0.7	0.5	0.3

Source: The authors' calculations.

ilar in Russia, though less pronounced. This emphasizes the importance of reducing non-productive costs in the form of NTBs.

A greater reduction in NTBs will lead to higher welfare growth rates. The welfare growth rate is greatest for Belarus and least for Russia. For all three SES countries, the increase in the welfare growth rate gradually slows as the magnitude of NTB reductions increases.

The relative impact of reducing NTBs will be distributed unevenly among countries and sectors because of each sector's baseline level of NTBs and the level of its involvement in foreign economic relations, primarily within the CU and SES.

The distribution of the impact of reducing NTBs across activities supports the conclusion that Belarus benefits the most from trade liberalization by reducing NTBs within the CU and SES. Our calculations show that **reducing NTBs will have the largest positive impact on Belarusian mechanical engineering, specifically production of machinery, equipment, chemicals, rubber and plastic products, and metallurgy**.

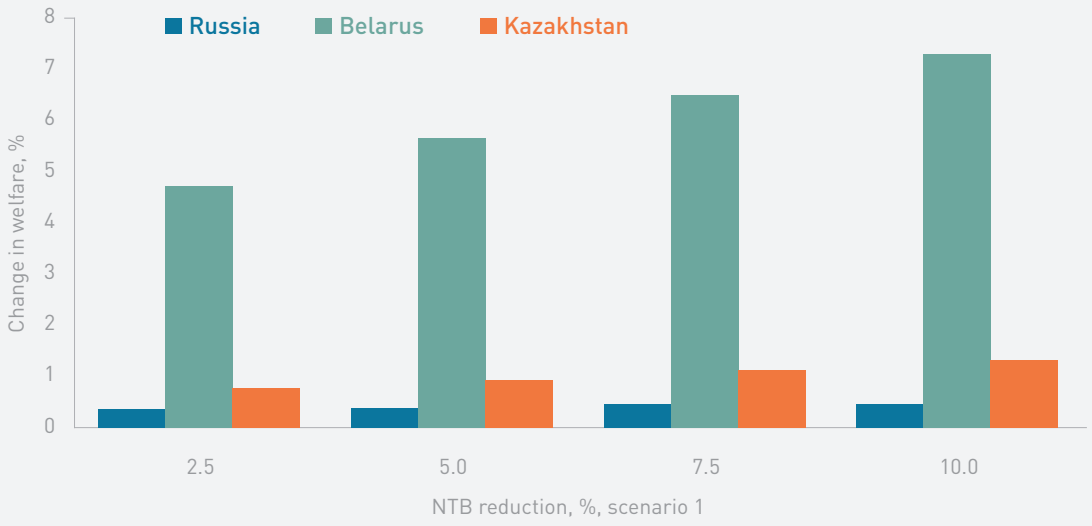
In Kazakhstan, key sectors that will benefit most from the reduction of NTBs to trade among SES countries will be machine-building and vehicle production.

Russia's gain in comparison with other SES countries is negligible. It is **concentrated in industries such as food processing, leather and wood products, footwear, agriculture**.

The effects of reducing NTB-T and NTB-P vary in different sectors in CU and SES countries. In Kazakhstan, a decrease in NTB-P leads to a more significant change in output than a reduction of NTB-T. However, it is important for Belarus to reduce both NTBs related to technical regulations, and sanitary and phytosanitary measures (NTB-T), and the "sand in the wheels" (NTB-P).

The effects of reducing NTBs are influenced by NTBs' initial levels as well as their degree of dependence on foreign economic activity and its focus on the market of CU and SES countries as compared to the markets of other countries.

ReducingNTBs in the production of machinery and equipment yielded a greater benefit than similar changes in other sectors. NTBs play an essential role in pulp and paper production, food processing, leather and wood production, footwear production, and rubber and plastic production.



We must again emphasize that these output growth estimates cannot be regarded as a forecast. This potential change assumes that factors of production are completely mobile, which is impossible in reality. Therefore, the sector's high growth in production should be viewed more as a signal about the relative importance of NTBs in this particular sector.

Importantly, based on the results of simulating a reduction of NTBs at the level of economy-wide and sector-specific effects, we may conclude that NTBs' restrictive effect on trade and production in SES and CU countries is significant. This is evident in the fact that **even a relatively small reduction in NTBs (a total of 10%) significantly and positively impacts welfare and production in the sectors represented in the model.**

Introduction

This report represents the second stage of a study of NTBs to trade between the CU and SES. The study, conducted as part of a project by the Eurasian Economic Commission (EEC) and the Eurasian Development Bank (EDB), is aimed at determining the economic effects that would result from member states reduction of NTBs in mutual trade.

The study's results were discussed in August and December 2014 in Minsk by representatives of the ministries of the Republic of Belarus and the Eurasian Development Bank, and in November 2014 in Vienna by representatives of the Eurasian Economic Commission, Eurasian Development Bank, and European Commission, and experts from the European Union and Eurasian Economic Union.

The survey of enterprises in the industrial and financial sector conducted in CU and SES countries as well as in-depth interviews with companies engaged in motor transportation demonstrate that NTBs have a significant impact on the value of exported goods and services. Therefore, a quantitative assessment of the potential economic benefits associated with reducing NTBs is of great interest.

Trade costs associated with NTBs are difficult to quantify, and the results of such an assessment may vary depending on the method and data used. Accordingly, in the second stage of the study the information received in the survey of enterprises was used to quantify the NTBs' impact on mutual trade and to estimate how reduction of them would affect the economy as a whole and specific sectors for the countries involved. To this end, the gravity model includes an index calculated based on the surveys that reflects the degree of the NTBs' impact on trade in CU and SES countries. The data obtained from the gravity model data were, in turn, used in the general equilibrium model's calculations.

The presentation of the study is organized as follows. The first section deals with international experience in assessing the economic effects of reducing NTBs, and highlights the main stages of the study. The second section analyses the impact of NTBs on trade among SES countries using econometric analyses and quantifies equivalent trade costs resulting from NTBs. The third section a computable general equilibrium model is used to calculate the economy-wide and sector-specific effects of reducing NTBs for each of the CU and SES countries. The final section presents the key findings.

1. Analysis of international experience in assessing the economic effects of reducing NTBs. The main stages of the study

In most studies on the effects of regional trade agreements, the effects of trade policy changes are considered mainly through the prism of import tariffs (elimination, establishment of a single tariff, and so on). However, in recent years, especially after multilateral trade liberalization under the WTO, NTBs have become one of the most serious obstacles to the movement of goods and services. Despite the fact that this topic is the subject of economic research, there are a limited number of studies that, in their analysis of the RTA, consider both NTBs' impact on the economies of integrated countries and the consequences of reduction or elimination them. This is because NTBs are a difficult and complex phenomenon that requires a diversified approach to define, classify, inventory, quantitatively assess, and use NTBs in empirical calculations.

It should be noted that for a long time there was no single definition of NTBs. According to one of the first definitions (Baldwin, 1970), NTBs are any measures (public or private) that cause internationally traded goods and services, as well as the resources needed for their production, to be allocated in such a way that it reduces potential world real income. The OECD's glossary considers all trade barriers unrelated to tariffs[3] to be NTBs. Today, the most widely used definition is that of UNCTAD, which says that NTBs are trade policy measures that are unrelated to customs tariffs and influence either the volume of trade flows in international trade or prices of goods, or both (UNCTAD, 2010)[4]. The UNCTAD definition does not include services.

Gathering information on NTBs in use and inventorying them is difficult and not always feasible. Even if it can be done, NTBs, unlike tariffs, are not directly measurable. This requires the usage of specific methods to quantify them.

Accordingly, the quantitative assessment of NTBs and the definition of their economic effects are important controversial issues. Specifically, this problem is considered in Deardorff, Stern (1997), Maskus, Wilson (2001), Bora, et al. (2002), Kee, Nicita, Olarreaga (2009), and Ferrantino (2006), where authors have developed a number of techniques to measure NTBs and assess their impact. The most commonly applied techniques are as follows: frequency of use (frequency-type measures); price comparison (price gap), e.g. the price or tariff equivalents of NTBs; econometric methods that analyse the impact on volume or price (price-based econometric methods, quantity-based econometric methods); and simulation methods.

However, despite the fairly wide range of the methods mentioned above, a number of NTBs are still difficult to quantify. Consequently, in practice there is no international

[3] For more information, see http://stats.oecd.org/glossary/detail.asp?ID=1837.

[4] Eurasian Economic Commission uses non-tariff regulatory measures that are broader than NTBs, including exemptions, restrictions and NTBs.

NTB database that could have been used to analyse, calculate and compare NTBs between countries. Until recently, UNCTAD's TRAINS (Trade Analysis and Information System) database only provided information on a wide range of countries for 2001. In recent years international organizations have been undertaking collaborative efforts to collect new NTB data based on the UNCTAD classification: the FEACN code for the NTBs being applied, and the barrier's classification type and the date it was introduced. Currently, the TRAINS database contains data for only 35 countries for 2012. Kazakhstan is the only CU/SES country represented in the database.

Difficulties in measuring NTBs in turn create problems in assessing their economic and sector-specific effects. As Hummels (2001) has rightly noted, "various NTBs and structural barriers are less obvious and perhaps more interesting, but they are also more difficult to measure directly. Accordingly, researchers rely mainly on indirect methods by using models of bilateral trade flows and correlating flows with values that approximate the variables used as barriers to trade." The most commonly used approximating NTB indicators are dummy variables, coverage ratios based on frequency, ad valorem equivalents and calculated variables (including various indices). However, using them to calculate any given approximating variable can significantly affect estimates of NTBs' impact on the economy and trade. For example, dummy variables are a fairly crude approximation of NTBs in contrast, for example, to calculated variables, and in particular to indices. However, indices are usually difficult to link to trade policy or other policies, thus making it difficult to assess their impact on trade and the economy.

A more sophisticated approach was used by Kee, Nicita, Olarreaga (2009), who proposed using econometric analysis to quantitatively assess non-tariff barriers through ad valorem equivalents (AVEs), which makes it possible to obtain information about these barriers' restrictive impact on trade. This method requires a large number of additional calculations, and the results are very sensitive to the way the elasticities of demand for imports are determined. Quantitative assessment of NTBs through ad valorem equivalents has also been proposed by Zaki (2010). The approach is based on treating the time required to perform foreign trade operations as non-tariff barriers. Calculations were conducted in several stages. The first stage used the Doing Business database to determine the estimated/predicted time required to conduct export and import operations. The values obtained were included in the gravity model to determine administrative barriers' effect on mutual trade. Then an approach by Kee, Nicita, Olarreaga (2009) was used to determine ad valorem equivalents of the time required to conduct export and import operations.

Most research examining quantitative assessment of NTBs only considers them for trading goods, and NTBs for services are studied far less. This is primarily due to the fact that, for services, these barriers are not currently defined and a generally accepted classification does not exist. Secondly, for services, unlike for goods, it is very difficult to calculate NTBs' price or tariff effect, i.e. quantitatively assess them, due to the ways they are supplied. There are four ways in which they are supplied: cross-border trade, consumption abroad, commercial presence, and movement of persons into the territory of another state.

One of the few works in this area is Walsh (2006), in which a gravity model is used to study NTBs for four types of services: government, shipping, travel and other business services. The only one of the four modes of supply considered was cross-border trade. The study is interesting because NTBs were identified for certain types of services, while most studies quantify NTBs for the sector as a whole. For example, in Francois et al. (2003) a gravity model was used to calculate the expected level of trade in services, which was then compared with the actual level taken from the GTAP database. Then ad valorem equivalents of barriers to trade in services were calculated using an import demand function with constant elasticity. Import demand was a function of the importing country's GDP and population. The tariff equivalents of barriers to trade in services obtained in this research have been widely used in various studies.

It is believed that NTBs impact trade either through increased costs of doing business, or by restricting access to the market. So the important question is what kind of quantitative methods should be used to assess these effects? Currently, the most common methods of assessing the impact of NTBs are econometric and computable general equilibrium models. In particular, gravity models are widely used to determine NTBs' impact on trade and investment. However, NTBs' general economic and sector-specific effects can only be assessed using computable general equilibrium models. These techniques are complementary, and the results obtained from gravity models are often used in computable general equilibrium models.

As a result of all of these problems associated with defining, classifying, and assessing NTBs, until recently NTBs were not adequately considered when analysing the effects of creating regional trade agreements. However, in the past decade the issue has attracted more and more attention. For example, in Hertel, Walmsley, Itakura (2001), by using a GTAP model to evaluate the effects of a free trade zone between Japan and Singapore, the researchers investigated the effect of reducing NTBs, specifically the reduction of costs associated with customs clearance. The results showed that implementing measures to facilitate trade could yield an annual increase in welfare of $9 billion. In Fox, Francois, Londono-Kent (2003), a GTAP model was used to examine the economic consequences of the cost and time of crossing the border between the US and Mexico. The calculations indicate that reducing NTBs will increase bilateral trade and increase welfare in both Mexico and the United States.

In practice, NTBs are so difficult to abolish that experts are separately developing a methodology to unify NTBs, as a more realistic alternative to eliminating them (Cadot, Malouche, Saez, 2013). The World Bank plays a leading role in this work.

Among recent studies on the effects of NTBs, we should highlight those dedicated to NTBs' impact on trade and investment between the EU and the US as part of a common transatlantic market (Ecorys, 2009), and between the EU and Japan (Copenhagen Economics, 2010). In general, the methodological foundations of both works are similar.

The research presented in Ecorys (2009) is based on the results of a unique survey of US and EU businesses (5500 respondents from 23 different sectors, covering more than 60% of the turnover of those sectors). Gravity models and computable general equilibrium models were applied to evaluate the effects of NTBs. In addition, interviews and

discussions were conducted with representatives of more than 100 business associations and industry federations, as well as numerous regulatory and legal experts. The authors note that the difficulty of studying NTBs' effect on trade requires the use of different analytical methods and information sources. Therefore, an integrated approach was used, making it possible to consider the problem of NTBs from different perspectives.

An NTB index was calculated based on a survey of enterprises and then used to assess the impact of NTBs on trade and investment between the US and the EU within gravity models. The NTB index's coefficient is assumed to be negative, as higher regulatory measures (a higher NTB index) hinder trade and investment. This effect is estimated among other factors that contribute to (or hinder) trade and investment (in particular, the countries' GDP and the distance between them). The authors built gravity models using different approaches, depending on the sector of the economy (trade in goods, services and investment). Analysis using a gravity models makes it possible to determine how the costs of trade and investment can be reduced in each sector by unifying NTBs among the studied countries (integrated associations).

Computable general equilibrium models were used to assess how reduction of NTBs would affect the economy of the EU, US, and other countries, in terms of "costs vs. benefits" in the short and long run. Different model scenarios were used to evaluate the effect that reduction of NTBs would have on GDP, changes in welfare, wages in high- and low-paying areas, and trade flows.

NTBs' influence on trade and investment between the EU and Japan (Copenhagen Economics, 2010) is assessed on the basis of surveys. A survey of 120 European companies exporting to Japan and working in seven of its key sectors was conducted. The objective of the survey was to measure the importance of an inventory of NTBs for doing business, and to assess their impact on the companies' costs. Seven key sectors covered the main EU exports to Japan (car manufacturing, pharmaceuticals, medical equipment, food products, transportation equipment, telecommunications and financial services). In addition, Ecorys conducted in 2009 a global survey of enterprises of EU countries to assess the costs of trading with the EU (40 countries and a 100-point scale characterizing the restrictions faced by countries that export to the EU).

Then, as in the previous study, the surveys were used to quantify the NTBs and were included in the gravity model as separate variables. Computable general equilibrium models were used to assess the impact of NTBs on macroeconomic performance and welfare.

The studies mentioned above have a good theoretical foundations and a clear methodology for empirical analysis. We therefore believe that this approach should be used as the basis for an analysis of the effects of NTBs between the EEU and the EU.

A recent work devoted to assessing NTBs is CEPR (2013), which analyses the effects of a possible signing of a transatlantic trade and investment agreement (free trade zone) between the US and the EU. This study is based on a GTAP computable general equilibrium model. It evaluates the effect that eliminating tariffs and reducing NTBs between the EU and the US would have on GDP, output in sectors of the economy, mutual trade, wages and movement of labour. The model was used to calculate two scenarios. The first scenario involves a 10% reduction in costs associated with NTBs and almost the entire

elimination of tariffs. In the second scenario, NTB costs were reduced by 25% and tariffs were lifted. In defining scenarios with relative liberalization of NTBs, the authors assumed that these barriers cannot be eliminated completely and, in accordance with the Ecorys (2009) survey, only 50% of NTBs can be reduced by various measures and procedures. Therefore, the second scenario assumed that these barriers were eliminated by half (i.e. the total reduction of NTBs will be 25%). The NTBs' impact was estimated in the model either through cost increases or through an additional charge/premium to the cost of goods (in the case of the non-commodity barriers that limit market access and are rent-seeking). The effect of these two types of NTBs was split in proportion 60% to 40%.

According to the analysis of all of the scenarios, reducing NTBs has a greater effect on GDP and exports that does reduce tariffs. At the level of economic sectors, a reduction in NTBs on goods and services also affects the volume of production significantly. For example, reduction in tariffs will negatively affect the production of vehicles in the EU, while reducing NTBs will lead to growth in the sector.

The paper also evaluated the effect of NTBs to the labour market and the inflow of FDI. The results show a significant positive effect for both the US and EU. In general, one of the study's key findings is that reducing NTBs is very important for the transatlantic free trade zone.

It should be noted that applied research on the effect of reducing NTBs within the SES is extremely limited. In 2013–2014, the Eurasian Economic Commission (EEC) surveyed the effect of integration, including non-tariff measures, on trade and production in the CU and SES. It was specifically concluded that the use of a substantial amount of regulatory NTBs indicates a potential for growth of mutual trade of CU and SES countries, provided that at least some of the NTBs are reduced.

One of the important findings of the study conducted by EEC, was that the value of ad valorem equivalents of regulatory NTBs in the CU and SES for imports from the rest of the world was significantly lower (10–15%) than those from CU and SES countries. Thus, we can say that regulatory non-tariff measures have a greater impact on trade within the CU and SES, than on trade between the CU and SES countries and the rest of the world. Another conclusion is that the effect of reducing NTBs almost always manifests itself in two ways. First, reduction of NTBs results in increased imports from all trading partners (due to the domestic market's lower level of non-tariff protection). This is a positive effect, because production grows in the partner countries. Secondly, imports from trading partners reduce domestic production. This is a negative effect. However, when reducing regulatory NTBs in all states, the overall effect for each of them is difficult to predict. The cumulative effect is determined by the ratio of positive effects (from the elimination of trading partners' regulatory NTBs) to negative effects (from the elimination of domestic regulatory NTBs).

The EEC also calculated the effect of simultaneously reducing asymmetric non-tariff regulation (a partial effect, since it only affects this group of measures). A simultaneous reduction will result in a decline in imports from the three countries. According to preliminary estimates, for Belarus imports will decline –2.2%, for Kazakhstan — –1.3%, and for Russia — –1.5%. However, imports from the CU and SES will increase. Increased

trade will amount to 2.8% for Belarus, 2.6% for Kazakhstan, and 9.6% for Russia. Increased mutual trade means additional growth for domestic production, which in Belarus will be 0.2% and in Kazakhstan — about 0.1%. For Russia, growth will be positive, but about 0%, due to the size of its economy.

Based on the analysis of international experience in assessing NTBs and the effects of its reducing, the impact of eliminating NTBs within the SES was investigated in three stages.

In the first stage: interviews and focus groups were organised with businesses and companies of Belarus, Kazakhstan and Russia that export goods and services to the markets of the CU and SES. To identify respondents' opinions about the NTBs they face when exporting within the SES, more than 530 industrial enterprises were interviewed. The survey results yielded quantitative estimates of NTBs as a percentage of the value of exported goods. This made it possible to estimate the companies' costs associated with each NTB.

In the second stage: the results of surveys of exporting enterprises were used to determine NTB indices, which were in turn included in the gravity model's main explanatory variable. The gravity model made it possible to quantify the equivalent trade cost arising from NTBs.

In the third stage: a computable general equilibrium model was used to assess the impact of reducing NTBs for each of the SES countries as a whole and for individual activities. The calculations used NTB estimates derived from surveys of enterprises exporting services, and equivalent trade costs obtained from a gravity model. A computable general equilibrium model allowed us to consider various scenarios of reducing NTBs.

Our development of the study's stages, approaches, and methodology used research on assessing of the impact of NTBs on trade and investment between the EU and the US as part of a single transatlantic market (Ecorys, 2009), and the EU and Japan (Copenhagen Economics, 2010). These studies were chosen, because they have a good theoretical foundations and a clear methodology for empirical analysis.

2. Assessment of the impact of NTBs to trade between SES countries: results of the econometric analysis

As noted in the 2012 World Trade Report, which was dedicated to NTBs, governments of various countries employ NTBs to improve national wealth and for political and economic reasons (WTO, 2012). However, regardless of the reasons for using them, NTBs generally will have an impact on trade. In some cases, they promote trade, but in most cases they restrict it. Since the same NTBs can be used both for purposes of "public interest" and protectionism, drawing a line between "legitimate" and protectionist motives[5] is difficult. NTBs are expected to result in increased trade costs for trading partners.

Identifying NTBs, expressing them quantitatively, assessing the change in trade costs are important areas of research and practical problems within the SES. However, they are significantly complicated by the fact that NTBs' quantitative effect on trade is not directly observable. Econometric methods, in particular gravity models, are widely employed to determine this effect.

2.1. Use of gravity models to estimate NTBs: overview

The basis of the gravity model is Newton's law of universal gravitation: trade between two countries depends on the size of their economies and the distance between the two countries. As is often noted in economic literature, the gravity model is one of the most stable empirical relations in economic analysis (Head, Mayer, 2014). While the original gravity model represented only a stable empirical relationship describing trade flows, without any theoretical justification, later it was supported by a theoretical foundation (Anderson, Wincoop, 2003).

There are two reasons for the popularity of gravity models. First, from an econometric viewpoint these models are highly accuracy in explaining mutual trade flows between countries. Second, they are a very simple tool for assessing the impact of various factors on the dynamics of international trade, in addition to standard variables for the basic gravity model. The standard gravity model variables' high explanatory power suggests that the statistical significance of the additional variables included in the model (e.g. variables characterizing the effects of integration agreements) shows their real significance for the country's foreign trade and its economy as a whole. To study various economic policies, gravity models include additional variables that characterize the influence of the presence or absence of tariffs, as well as variables reflecting different political and institutional characteristics of countries that may affect international trade. A detailed review of the results of the empirical use of gravity models is presented in Kepaptsoglou, Karlaftis, Tsamboulas (2010).

[5] In this paper we use the term "non-tariff barriers (NTBs)" and do not distinguish between the terms "non-tariff barriers" and "non-tariff measures," which are used as synonyms in the context of the study.

Gravity models can be evaluated using spatial and panel data. Most modern studies that use gravity models employ panel data. Panel data makes it possible to account for the temporal relationship between variables and individual effects between trading partners.

As for the econometric methodology, the method of least squares (LSM) in its pure form has recently been applied extremely rarely to assess gravity models. Models used commonly have constant and random effects, which make it possible to account for the temporal and spatial relationship between two countries. The choice of a model is determined by the study's objective, the properties of the analysed data, and theoretical considerations underlying the model. A random effects model can also be used, if such approach is adequate for the data available and the task is to evaluate effects that are constant over time. However, most studies employ a gravity empirical model with fixed effects. For more information on methods for assessing gravity models, please refer to G mez-Herrera (2013).

NTBs are not directly observable variables and in economic literature there is no consensus about their assessment. However, a gravity model of trade is the traditional tool for assessing the impact of NTBs on mutual trade. These models can determine NTBs' impact on trade flows and convert this effect into ad valorem tariff equivalents (Kee et al., 2009)

NTBs are most often approximated by dummy variables, which are a very rough approximation of NTBs, in contrast to calculated variables, in particular indexes (Carr re, De Mello, 2011).

Among recent studies on the effects of NTBs, we should mention work on NTBs' impact on trade and investment between the EU and the US as part of a single transatlantic market (Ecorys, 2009), and the EU and Japan (Copenhagen Economics, 2010). These studies have a similar methodological basis and are most similar to the approach used in this study.

The research presented in Ecorys (2009a, 2009b) is based on the results of a unique survey of US and EU businesses (5500 respondents from 23 different sectors that cover more than 60% of the turnover of those sectors). Gravity models and a computable general equilibrium model were used to evaluate the effects of NTBs. In addition, interviews and discussions were conducted with representatives of more than 100 business associations and industry federations, as well as numerous regulatory and legal experts. The authors note that the difficulty of studying the effect of NTBs on trade requires the use of different analytical methods and information sources. Therefore, an integrated approach was used, making it possible to consider the problem of NTBs from different perspectives.

An NTB index was calculated from a survey of enterprises, which then was used to assess the NTBs' impact on trade and investment between the US and the EU within gravity models. The NTB index's coefficient is assumed to be negative, as higher regulatory measures (a higher NTB index) hinder trade and investment. The effect of NTBs is determined along with other factors that contribute to (or hinder) trade and investment. The study's authors construct the gravity models differently, depending on the sector of the economy (trade in goods, services and investment). Analysis based on the gravity model makes it possible to determine how costs of trade and investment can be reduced in each sector by unifying the NTBs between the studied countries.

NTBs' influence on trade and investment between the EU and Japan (Copenhagen Economics, 2010) was assessed based on two surveys. The first is a survey of 120 European companies exporting to Japan and working in seven of its key sectors. The objective of this survey was to measure the importance of a list of NTBs for doing business and assess their impact on the companies' costs. Seven key sectors covered the main EU exports to Japan (car manufacturing, pharmaceuticals, medical equipment, food products, transportation equipment, telecommunications and financial services). The second survey is a global business survey to assess the costs of trade with the EU, conducted in 2009 by Ecorys on behalf of EU countries (40 countries, including OECD countries, as well as India and China; a 100-point scale characterizing the limitations faced by countries exporting to the EU). Survey data were used to quantitatively measure the NTBs and were included in the gravity model as separate variables. Computable general equilibrium models were then used to assess the impact of NTBs on macroeconomic performance and wealth.

The above studies have a good theoretical foundation and a clear methodology for empirical analysis. That is why they were used as the basis for developing a methodology and assessing NTBs in the SES countries, accounting for the constraints imposed by the available data. The practical aspects of gravity models used to assess the impact of NTBs are discussed in detail in Shepherd (2013), UNCTAD/WTO (2012), and WTO (2012), which were also taken into account in this paper.

2.2. Methodology

The main objective of the econometric analysis of the impact of NTBs in the SES was to obtain the equivalent trade costs associated with certain NTBs, which were then used in computable general equilibrium models to determine the effects of reducing various NTBs. The task was complicated by the fact that only SES countries (Belarus, Kazakhstan and Russia) were analysed and there are no tariff restrictions on trade between CU countries. This prevents the use of a traditional gravity model to the assess NTBs impact on mutual trade.

First, we are only interested in the effect of the reducing NTBs within the SES. This means that we only need to consider trade flows between the three SES countries. Accounting for trade flows with the rest of the world does not, in theory, help solve the problem. Thus, the information base for econometric analysis is extremely limited compared to a conventional gravity model, which accounts for interactions with all trading partners. In this case, there are only six country pairs, namely: Belarus — Kazakhstan, Belarus — Russia, Kazakhstan — Belarus, Kazakhstan — Russia, Russia — Belarus, and Russia- Kazakhstan.

Second, in our case it is difficult to use any dummy variables to assess the impact of NTBs, as is often done when analysing NTBs' effects in gravity models, because many NTBs are almost always in effect in the SES. This means that using econometric modelling to account for the dynamic aspect is highly problematic.

Third, in the first stage of the study, interviews were conducted with exporting SES enterprises, which made it possible to obtain unique data on NTBs and assess their impact

on the value of exported goods. In addition, the exporting enterprises estimated the degree of various NTBs' restrictive impact on a five-point scale that allowed us to construct NTB indices for the six country pairs by type of activity (in total, fourteen aggregated activities were identified). The purpose of these interviews was to obtain basic information on NTBs in the SES in order to then use it in quantitative analysis. Therefore, the methodology for econometric estimation of NTBs is based on the fact that the exporting enterprises' survey results will be included directly in the relevant econometric models.

The foregoing leads to the following strategy for econometric estimation of NTBs' impact on mutual trade within the SES:

- Based on the survey of exporting enterprises, NTB indices are calculated for fourteen sectors of economy[6] for each of the six country pairs. These indexes directly characterize the NTBs' restrictive impact on mutual trade and are used as a separate variable in the econometric model;
- An econometric model is estimated, which characterizes the NTBs' impact on exports for each of the country pairs within the SES, accounting for the impact of the traditional gravity model parameters. The model is based on data for six countries and fourteen pairs of sectors for the same period of time. Thus, we have original panel data that lack a time dimension. The panel's lack of a dynamic aspect is due to the fact that we have only one survey conducted in the summer of 2014. Consequently, the other variables in the model must correspond with the NTB index. Therefore, the model's dependent variable and the independent variables are taken for one year in order to correspond to the data from the surveys of exporting enterprises. Because the applied econometric model is essentially a gravity model, but is used for very limited number of country pairs (this imposes certain restrictions on the econometric methodology for the assessment model), in this paper we call it a *quasi-gravity model*[7]. If the gravity model produces results that are consistent with theoretical expectations, and adequately assesses exports by sectors between pairs of SES countries, then it is subsequently used to assess NTBs' impact on the amount of exports;
- Then estimates of the NTBs' impact on the amount of exports is converted into equivalent trade costs (similar to an ad valorem equivalent) using import demand elasticities, taken from open sources, since calculating tariffs' influence in the gravity model in this case is not possible because import tariffs do not exist in mutual trade between SES countries;
- These estimates are input for the subsequent simulation of the effects of reducing NTBs within the SES. These estimates are used along with direct estimates of the NTBs' impact on the value of exported goods received from exporting companies in the corresponding surveys. The consistency between estimates from the model and the surveys is evidence that the results are satisfactory.

6 Statistical classification of economic activities (NACE).

7 The standard gravity model is usually based on data for a large number of countries. In addition, data are often used for a number of years. In this case, the traditional data panel usually includes two dimensions: trade direction and time (activities may form a third dimension). Our model has no time dimension, and the number of trade directions is limited to the number of CU countries. However, our model is constructed using the same principles as a conventional gravity model. To emphasize the specific features of the data used in the study (the panel includes two dimensions: trade direction and activities), we call our model a quasi-gravity model. For convenience, we will subsequently call it a "gravity model".

Next we will consider methodological foundations for quantifying NTBs using econometric modelling. In its most general form, the gravity model, which accounts for NTBs' impact on mutual trade within the SES, can be represented as follows:[8]

$$\ln X_{ij}^{k} = \sum_{n=1}^{p} \beta_n Z_{ij}^{k} + \beta_{p+1} NTB_{j}^{k} + \varepsilon_{ij}^{k}, \quad (1)$$

where X_{ij}^{k} is exports from country i to country j for sector k; Z_{ij}^{k}' is the vector of gravity model variables; NTB_{j}^{k} is the NTB index in country j for sector k; ln denotes the natural logarithm; β_n is the coefficients of the gravity model's variables; β_{p+1} is the coefficient of the non-tariff barriers index; ε_{ij}^{k} are the regression residuals.

If we assume that the model is correctly specified and the coefficients of the gravity model's variables (Z_{ij}^{k}) are statistically significant and have the theoretically expected signs, then the model can serve as an appropriate tool for assessing the NTBs' impact on exports i from country j. Given the NTBs' restrictive impact on trade flows between the two countries, the NTB index's coefficient β_{p+1} should be negative.

Substituting the variables' actual values into equation (1), we obtain the estimated value of exports from country i to country j:

$$\ln \hat{X}_{ij}^{k} = \sum_{n=1}^{p} \beta_n Z_{ij}^{k} + \beta_{p+1} NTB_{j}^{k}. \quad (2)$$

Because $\beta_{p+1} < 0$ in a correctly specified model that reflects the NTBs' negative impact, the calculated value of exports from country i to country j excluding the impact of NTBs

$$\ln \hat{X}_{ij}^{k(-\text{ntb})} = \sum_{n=1}^{p} \beta_n Z_{ij}^{k} \quad (3)$$

will always be higher than calculated values that account for NTBs, i.e. when there are no NTBs $\ln \hat{X}_{ij}^{k(-\text{ntb})} > \ln \hat{X}_{ij}^{k}$. In this case

$$\Delta \ln \hat{X}_{ij}^{k} = \ln \hat{X}_{ij}^{k} - \ln \hat{X}_{ij}^{k(-\text{ntb})} = \beta_{p+1} NTB_{j}^{k}. \quad (4)$$

Thus, in each specific case, the NTBs' impact on exports from country i will be determined by the value of the coefficient β_{p+1} and the value of the NTB index for each sector in the importing country j. Note that $\beta_{p+1} NTB_{j}^{k} < 0$.

Next, we calculate the ratio of estimated loss of exports due to the existence of NTBs to the calculated values of exports excluding the effect of NTBs: $\Delta \ln \hat{X}_{ij}^{k} / \ln \hat{X}_{ij}^{k(-\text{ntb})} \times 100$. The resulting value, expressed as a percentage, is used to calculate the equivalent trade costs due to the existence of the NTBs:

$$TCE_{i}^{k} = \frac{\Delta \ln \hat{X}_{ij}^{k} / \ln \hat{X}_{ij}^{k(-\text{ntb})} \times 100}{E_{j}^{k}}, \quad (5)$$

[8] To some extent, this approach is similar to the approach in UNCTAD/WTO (2012) and WTO (2012).

where TCE_i^k is equivalent trade costs in country i by sector k because of NTBs; E_j^k is import demand elasticity for tariffs in country j for sector k.

It should be noted that since the numerator and denominator in (5) are negative, the value of the equivalent trade costs is a positive number that characterizes the conditional percentage reduction (increase) of exports due to the existence (reducing) of NTBs. When calculating equivalent trade costs, the import demand elasticities in this paper are not calculated and are taken from open sources. This will be discussed in more detail in the section describing the data used.

2.3. Data used

2.3.1. Data for econometric estimation: description and sources

Exports in US dollars were used as explanatory variables in the gravity model. Exports were chosen, because in the first stage of the study the impact of NTBs was analysed using a special survey of exporters. Accordingly, an analysis of export flows allows NTB values obtained from gravity models to be correctly compared to the results of surveys of exporting enterprises[9].

The volume of exports was calculated for the activities used in the survey of exporting enterprises and for which the NTBs' impact on exports was determined. Source data were taken from the UN COMTRADE database at HS six-digit level. They were aggregated to the level of economic activity (sector) type using codes that map between Classification of Products by Activity 2008 (*Classification of Products by Activity CPA* 2008) and Combined Nomenclature 2010 (*CN* 2010)[10], which is used to classify imports and exports to the EU[11]. These classifications correspond to OKVED and FEACN (HS). The resulting structure and volume of exports for 2012 are presented in Table 2.1. The table also shows the economic activity (sector) identifiers used in this paper in building the panel data and graphs and in performing regression analysis.

The most diversified export structure is that of Belarus, and of Russia when exporting to Kazakhstan. Export from Russia to Belarus, as well as trade between Russia and Kazakhstan, includes a substantial proportion of shipments pertaining to other activities not included in the analysis. The export of gas, oil, petroleum products and other energy products are excluded from the analysis due to the presence of seizures of these goods in the integration agreements of Belarus, Kazakhstan and Russia. For some activities, exports are quite small; and wood, pulp and pharmaceuticals were not exported from Kazakhstan to Belarus, in theory.

[9] Gravity models can use imports and exports (as well as their sum) as the dependent variable. Imports are reasonable as an explanatory variable when the quality of foreign trade data is doubtful. Import statistics may be more accurate, since import records are tied to collecting customs duties. Given the fact that import duties are not charged in the CU and SES, the quality of export and import statistics should not vary. Moreover, data from Russia mirror statistics from Belarus and Kazakhstan, i. e. in practice when describing trade between Belarus and Russia and between Kazakhstan and Russia, and for modelling, we used data from both exports and imports.

[10] The CN is comprised of the Harmonized System (HS) nomenclature.

[11] This correspondence table is published on the European Commission's website at: http://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_REL_DLD&StrNomRelCode=CN%202010%20-%20CPA%202008&StrLanguageCode=EN&StrOrder=1&CboSourceNomElt=&CboTargetNomElt=&IntCurrentPage=1.

Table 2.1. Breakdown of exports of goods by groups of SES countries, %

Activity	Identifier	Belarus		Kazakhstan		Russia	
		Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	01AGR	0.3	1.4	13.9	2.1	0.2	0.4
Manufacture of food products, beverages and tobacco	02FOO	20.4	23.0	0.5	1.4	2.7	8.8
Textile and clothing manufacture	03LGH	2.1	5.5	0.1	0.4	0.7	0.9
Manufacture of leather, leather products and footwear	04SKN	0.2	0.5	0.1	0.8	0.3	0.3
Manufacture of wood and wood products	05WOO	3.5	1.0	–	0.0	0.5	1.7
Pulp and paper production, publishing activities	06PAP	0.6	1.0	–	0.1	1.0	1.9
Chemical production	07CHM	2.9	4.5	9.5	1.9	5.3	7.3
Manufacturing of pharmaceutical products	08FAR	2.3	0.7	–	0.1	0.3	0.7
Manufacture of rubber and plastic products	09RUB	10.9	5.8	3.8	0.6	1.5	3.2
Manufacture of other non-metallic mineral products	10ONM	1.1	3.4	0.1	0.3	0.8	3.7
Metallurgical production, manufacture of fabricated metal products	11MET	2.5	7.2	49.5	41.7	9.0	13.6
Manufacture of machinery and equipment	12MSH	19.8	11.1	3.6	3.1	1.9	6.3
Manufacture of electrical and optical equipment	13ELE	6.4	8.5	2.6	6.7	3.1	6.4
Manufacture of transport equipment	14TRN	14.6	14.6	7.1	0.4	3.8	11.6
Other activities in the manufacturing sector		12.4	11.9	9.2	40.3	68.9	33.4
Total		100	100	100	100	100	100

Note: 0.0 means an extremely small volume of exports, and dashes means there were no exports.

Source: The authors' calculations based on data from Comtrade.

The models include GDP data as an explanatory variable characterizing the overall size of the importing country's market. These figures were taken from the IMF database attached to the "World Economic Outlook" report[12]. The simulation employs nominal values of these parameters, estimated in US dollars. The variables describing the export potential of the exporting country are production of goods at basic prices[13]and revealed comparative advantage. Using production volume instead of the traditional GDP of the exporting country makes it possible for the model to account for the export potential of each indus-

[12] For more information, see: http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx.

[13] The production volume in current prices somewhat distorts the assessment of export potential, because it accounts for net taxes that do not directly reflect the production volumes but depend on the characteristics of taxation/subsidization of individual industries in individual countries.

Table 2.2. Structure of production (%) and the index of revealed comparative advantage (RCA)

Activity	Belarus		Kazakhstan		Russia	
	Production	RCA	Production	RCA	Production	RCA
Agriculture, forestry and fishing	14.2	0.6	11.2	1.6	8.9	1.2
Manufacture of food products, beverages and tobacco	15.8	3.6	5.4	0.5	9.8	0.7
Textile and clothing manufacture	2.5	1.3	0.3	0.0	0.6	0.1
Manufacture of leather, leather products and footwear	0.6	0.5	0.0	0.1	0.1	0.2
Manufacture of wood and wood products	1.1	3.0	0.1	0.1	1.0	3.2
Pulp and paper production, publishing activities	1.3	0.8	0.4	0.0	1.8	1.1
Chemical production	10.1	4.9	1.0	0.2	3.9	1.5
Manufacturing of pharmaceutical products	–	0.2	0.1	0.0	0.5	0.1
Manufacture of rubber and plastic products	3.2	2.5	0.6	0.1	1.5	0.3
Manufacture of other non-metallic mineral products	3.8	2.9	1.7	0.2	2.7	0.6
Metallurgical production, manufacture of fabricated metal products	5.7	1.2	13.0	4.2	10.1	2.3
Manufacture of machinery and equipment	8.0	1.5	0.5	0.1	3.0	0.2
Manufacture of electrical and optical equipment	3.1	0.4	0.5	0.1	3.0	0.1
Manufacture of transport equipment	3.8	1.4	0.9	0.1	6.4	0.3
Other activities in the industrial sector (excluding construction)	26.8	–	64.3	–	46.6	–
Total	100	–	100	–	100	–

Note: Data for the production of pharmaceutical products of Belarus are not available.

Source: Statistics Committees of Belarus, Kazakhstan, and Russia; calculations based on data from Comtrade.

try, rather than the economy as a whole. Production volumes in industry and agriculture of Belarus, Kazakhstan and Russia were taken from the system of national accounts[14]. They have been converted into US dollars at the average annual values of the official exchange rate used in the IMF's "World Economic Outlook" report. The structure of production from agriculture and industry is presented in Table 2.2. On average, it corresponds to the export structure, but for certain economic activity types there can be significant differences due to the orientation to the domestic market, the trade-limiting characteristics of goods, and low competitiveness. The latter's influence can be estimated using Balassa's index of comparative advantage. It was calculated using the following formula:

$$RCA_i = \frac{X_i \Big/ \sum_i X_i}{X_i^w \Big/ \sum_i X_i^w},$$

where RCA_i is the index of the country's comparative advantage for economic activity (sector) i; X_i is the country's exports by economic activity i; X_i^w is world exports by economic activity i. The resulting values of the index of comparative advantage are shown in Table 2.2.

[14] http://belstat.gov.by/bgd/public_compilation/index_133/, http://stat.gov.kz/getImg?id=ESTAT081915, http://www.gks.ru/free_doc/doc_2014/nac_sh.rar.

Table 2.3. Data used in the econometric analysis

Identifier	Variable	Source of information
X_{ij}^{k}	Exports from country i to country j foreconomic activity (sector) k USD, million	UN COMTRADE data at the HS 6-digit commodity classification code
IP_{i}^{k}	The volume of production in the country i for economic activity k USD, million	System of National Accounts of SES countries, the IMF's World Economic Outlook report
GDP_{j}	GDP of a country j, million $	IMF database
$Dist_{ij}$	The distance between country i and country j, km	Distance Calculator
$Border_{ij}$	A dummy variable representing the presence (or absence) of a common border between country i and country j; can be 1 (common border) or 0 (no common border)	–
$IMPOUT_{j}^{k}$	Openness to imports for economic activity k in country j, a coefficient	System of National Accounts of SES countries, the IMF's World Economic Outlook report
RCA_{i}^{k}	Revealed comparative advantage of country i for economic activity k, a coefficient	Data from the Statistics Committees of Belarus, Kazakhstan, and Russia and from Comtrade
NTB_{j}^{k}	NTB index in country j for economic activity k, a coefficient	Calculated by the authors based on surveys of exporting enterprises of SES countries

Source: Compiled by the authors.

Because the gravity model uses data from only SES countries (three countries, six country pairs), the influence of the "outside world" was taken into account by means of a variable characterizing the openness to imports for each economic activity (the ratio of imports for an economic activity to the production volume for that economic activity).

The model employed the geographical distance between the capitals of the SES countries as a traditional factor that limits trade. A dummy variable representing the presence (absence) of a common border between pairs of countries was used as a factor that facilitates mutual trade.

Finally, the gravity model's main explanatory indicator was the NTB index obtained from the results of April — May 2014 surveys of exporters. The specifics of calculating this indicator will be reported in the next section.

It should be emphasized that in our econometric analysis we used data for 2012 due to a number of circumstances. First, the scarcity of data played a role. For example, at the time of the study, in Belarus and Kazakhstan data had not yet been published on production at basic prices by type of activity in the detailed report for 2013. In addition, the calculation of the comparative advantage index for 2013 would also be incorrect, because at the time of the analysis not all countries had submitted foreign trade statistics to Comtrade. Analysis of earlier periods is also not feasible, since the transition to OKVED took place

only recently. As a result, detailed data for this classification are only available in Belarus for 2009 and in Kazakhstan for 2010.

Second, the index estimating the NTBs' effect, which was obtained from a survey of exporting enterprises of SES countries, plays a key role in econometric modelling. The survey was conducted in the spring of 2014. Its results reflect the situation in 2013, but can be applied, in our opinion, to the analysis of foreign trade, including for the previous two or three years. Its application to earlier years is undesirable, because in the past few years the integration agreements between Belarus, Kazakhstan and Russia have been significantly changed in ways that must have affected the perception of NTBs to trade within the CU and SES. The choice of 2012 is explained by the fact that in this year the economic crisis did not have a very dramatic impact on trade in Russia. Accordingly, the possible slowing of trade flows (of capital goods, in particular) was largely due to the influence of NTBs rather than a slowdown of economic growth in Russia.

A summary of the description of the data is given in Table 2.3.

2.3.2. Estimation of the NTB index based on surveys of exporting enterprises

The NTB index was calculated based on data from surveys of exporting enterprises of Belarus, Kazakhstan and Russia. In particular, respondents were asked to use a 5-point scale (1 — does not have a restrictive effect, 5 — has a very restrictive effect) to rate sixteen NTBs (UNCTAD classification) in terms of their restrictive effect on exports to the SES countries. Thus, the survey made it possible to directly receive an average score for the degree of the restrictive effect resulting from any given NTB.

However, for the subsequent econometric modelling we needed corresponding estimates for economic activity types. To this end, each respondent's answers about the impact of certain NTBs were averaged over all sixteen types of NTBs[15] and then grouped by the fourteen types of economic activities (sectors). The resulting estimates are presented in Table 2.4. In the analysis of trade between Kazakhstan and Belarus, countries' average values have been used for a number of industries, as these industries were not represented in the survey of exporting enterprises.

Figure 2.1 shows the average NTB indices for each country pair. This allows us to represent the degree of the NTBs' average restrictive impact in each of the SES country pairs. As we can see, the most average NTB indices are observed in Belarus' trade with Kazakhstan and Russia (1.32 and 1.31 points, respectively). Russian exporters consider trading to be more restrictive than do Belarusian partners. Average NTB indices here are 1.62 points and 1.6 points in Belarus and Kazakhstan respectively. The average NTB indices of Kazakh export enterprises are the highest among the SES countries, amounting to 1.83 points for Belarus and 2.06 for Russia.

It should be noted that these NTB indices generally do not contradict the NTB estimates obtained in the survey of exporting enterprises. In particular, the NTB index is

[15] We used the arithmetic mean of all barriers, the effect of which was estimated by the respondent. Barriers were not weighted by importance, because an analysis of results of the survey of exporting companies showed that doing so has almost no effect on the final result. In addition, by not weighting the barriers, we were able to account for observations in which respondents could assess the impact of only some of the barriers.

Table 2.4. NTB indices

Activity	Belarus		Kazakhstan		Russia	
	Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	1.27	1.31	2.30	2.04	1.77	1.54
Manufacture of food products, beverages and tobacco	1.35	1.40	1.97	1.94	1.86	1.66
Textile and clothing manufacture	1.79	1.57	2.28*	2.31	1.50	1.59
Manufacture of leather, leather products and footwear	1.15	1.15	2.28*	2.38	1.44	1.66
Manufacture of wood and wood products	1.47	1.41	–	2.69	1.32	1.69
Pulp and paper production, publishing activities	1.20	1.13	–	1.00	1.67	1.15
Chemical production	1.09	1.10	2.48	2.44	2.47	1.81
Manufacturing of pharmaceutical products	1.27	1.33	–	2.84	1.39	1.79
Manufacture of rubber and plastic products	1.30	1.25	2.28*	1.89	1.90	1.80
Manufacture of other non-metallic mineral products	1.03	1.15	2.44	1.54	1.33	1.41
Metallurgical production, manufacture of fabricated metal products	1.61	1.33	2.63	1.81	1.27	1.43
Manufacture of machinery and equipment	1.73	1.76	2.35	1.96	1.83	1.74
Manufacture of electrical and optical equipment	1.16	1.14	3.75	2.14	1.46	1.55
Manufacture of transport equipment	1.06	1.25	2.19	1.92	1.43	1.59

Note: * denotes the average value for the entire trade direction.

Source: The authors' calculations based on surveys of exporting enterprises of Belarus, Kazakhstan and Russia.

significantly correlated with the NTB-level data obtained through the closed-ended question *"How much would costs (of production and sales) per export unit be reduced by lifting certain NTBs in the destination country?"* Moreover, the Pearson correlation co-

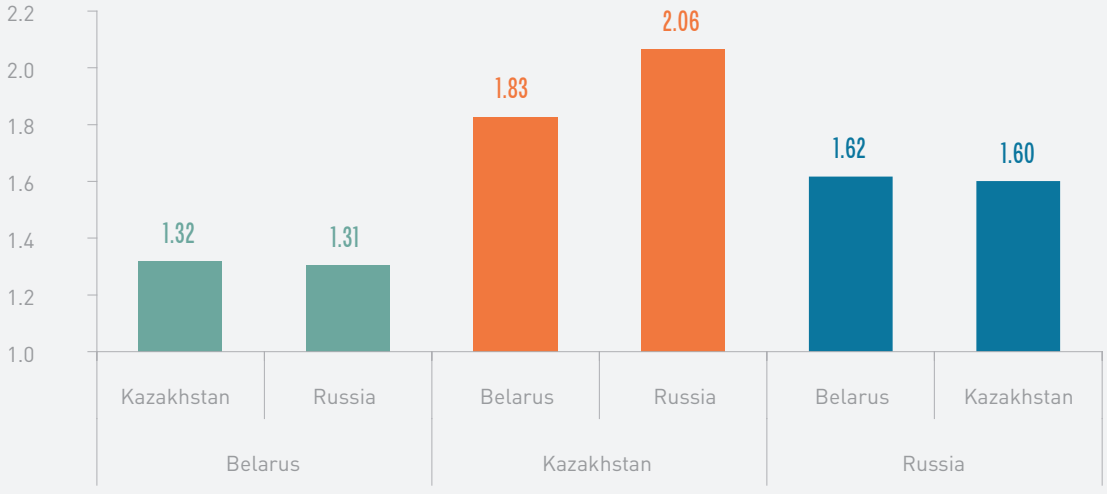


Figure 2.1. Average NTB indices, points

Source: The authors' calculations.

efficient is 0.85 (p = 0.000), and non-parametric measures of correlation (Spearman's rank correlation coefficient and Kendall's coefficient) are 0.91 (r = 0.000) and 0.74 (r = 0.000), respectively. Conversely, the NTB index's connection with data obtained from the open-ended question *"Do the NTBs in the destination country impact the value of exported goods by your company? If yes, then estimate the impact as a percentage of the value of your exports"* was significantly lower. In this case, Pearson's correlation coefficient is equal to 0.41 (r = 0.000), and Spearman's correlation coefficient and Kendall's coefficient are 0.58 (r = 0.000) and 0.45 (r = 0.000). Thus, we can conclude that the survey question on which the NTB index is calculated corresponds to the greatest extent with the closed-ended question assessing the level of NTBs. Therefore, a closed-ended question about the level of NTBs more adequately reflects exporting enterprises' perception of the impact of non-tariff trade regulation.

2.3.3. Descriptive analysis of the data used

A number of the above indicators were represented as (natural) logarithms (export, production volume by type of activity, distance between the two countries, and openness to import activities) in subsequent econometric analysis. Indicators such as the index of revealed comparative advantage and NTB index were not expressed logarithmically. This clearly also applies to the dummy variable representing the presence (absence) of a common border between the two countries. In subsequent econometric analysis, coefficients of variables expressed as (natural) logarithms are elasticities, and coefficients of variables not expressed logarithmically are semi-elasticities. A special case is the coefficient of the dummy variable, which takes the values of 1 or 0. In this case, the export variable's effect is defined as the antilogarithm of the coefficient of the dummy variable minus one.

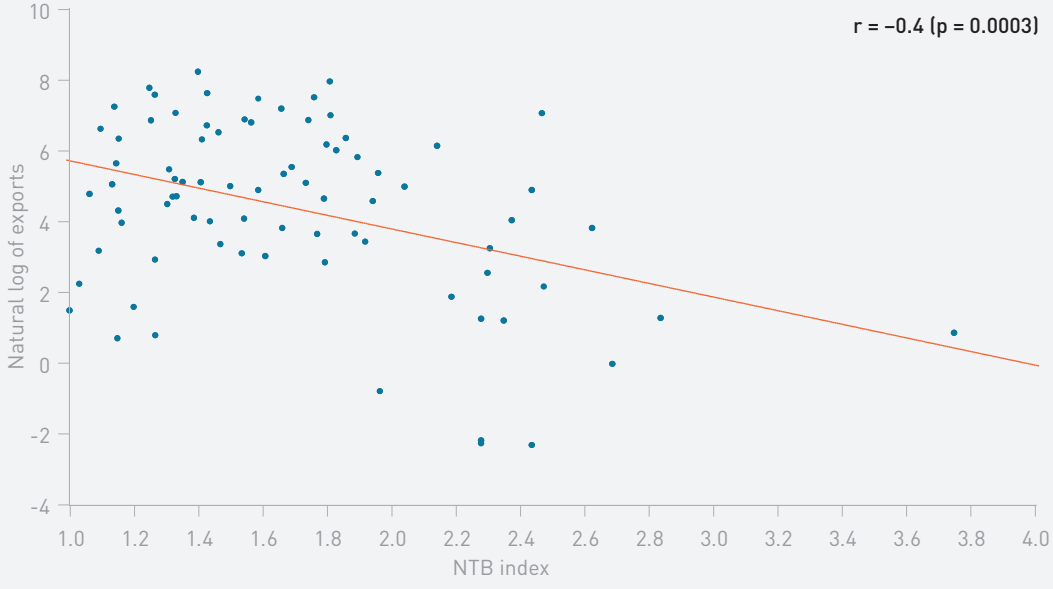


Figure 2.2. Correlation between exports and NTB index.

Source: The authors' calculations

Table 2.5. Descriptive statistics of the data used

	$\ln X_{ij}^k$	$\ln IP_i^k$	$\ln GDP_j$	$\ln IMPOUT_j^k$	$\ln Dist_{ij}$	$Border_{ij}$	RCA_i^k	NTB_j^k
Average	4.374	8.531	12.655	–0.651	7.528	0.691	1.080	1.699
Median	4.765	8.502	12.224	–0.601	7.922	1.000	0.479	1.588
Maximum	8.221	11.931	14.511	2.418	8.158	1.000	4.931	3.750
Minimum	–2.336	3.510	11.061	–2.485	6.572	0.000	0.019	1.000
Standard deviation	2.466	1.960	1.437	1.357	0.706	0.465	1.264	0.506
Number of observations	81	84	84	84	84	84	84	81

Source: The authors' calculations

Table 2.6. Correlation matrix for the variables used

	$\ln X_{ij}^k$	$\ln IP_i^k$	$\ln GDP_j$	$\ln IMPOUT_j^k$	$\ln Dist_{ij}$	$Border_{ij}$	RCA_i^k	NTB_j^k
$\ln X_{ij}^k$	**1.000**	*0.0000*	*0.0154*	*0.5992*	*0.0000*	*0.0000*	*0.0049*	*0.0003*
$\ln IP_i^k$	0.587	**1.000**	*0.0005*	*0.0302*	*0.0161*	*0.0070*	*0.0159*	*0.0200*
$\ln GDP_j$	0.269	–0.379	**1.000**	*0.9544*	*0.2499*	*0.0000*	*0.4118*	*0.1606*
$\ln IMPOUT_j^k$	0.059	–0.241	–0.006	**1.000**	*0.0415*	*0.4217*	*0.0366*	*0.4410*
$\ln Dist_{ij}$	–0.530	–0.267	–0.129	0.227	**1.000**	*0.0000*	*0.3612*	*0.0019*
$Border_{ij}$	0.650	0.297	0.441	–0.090	-0.600	**1.000**	*0.3551*	*0.1624*
RCA_i^k	0.309	0.267	0.092	–0.233	-0.103	–0.104	**1.000**	*0.0064*
NTB_j^k	–0.395	–0.258	–0.157	–0.087	0.340	–0.157	–0.300	**1.000**

Note: Below the diagonal, the table presents correlation coefficients for variable pairs; above the diagonal, it presents the corresponding p-values for each pair correlation coefficient (in italics).

Source: The authors' calculations.

Tables 2.5 and 2.6 present descriptive statistics used in econometric analysis of the data and the pair correlation coefficients between variables. The presented generalized statistics give an overview of the data used and their variations. It should be noted that the panel is unbalanced, because in three instances export data and, consequently, NTB data are not available. Null values represent about 3% of the whole sample and do not significantly impact the regression models' subsequent calculations[16].

As shown in Table 2.6, in all cases except for the variable $\ln IMPOUT_j^k$ there is a statistically significant correlation between the export variable and other variables. The signs of the correlation coefficients correspond to theoretical expectations. We should especially note that negative and statistically significant correlation between exports and NTB index is our main interest in this study. This correlation is represented graphically in Figure 2.2.

This preliminary analysis indicates that NTB indices based on surveys of SES countries' exporting enterprises generally reflect the NTBs' negative impact on mutual trade and can be used in econometric modelling as a key explanatory variable.

[16] There are no data on exports from Kazakhstan to Belarus on the following three activities: production of wood and of products of wood, pulp and paper production and publishing, and production of pharmaceutical products.

Table 2.7. Regression results (the dependent variable is $\ln X_{ij}^k$)

Variable	Coefficient	Standard error	*t*-statistic	*p*-value
constant	–0.1336	3.0097	–0.0444	0.9647
$\ln IP_i^k$	0.4567**	0.1436	3.1806	0.0023
$\ln GDP_j$	0.3814**	0.1346	2.8329	0.0063
$\ln IMPOUT_j^k$	0.4982**	0.1327	3.7545	0.0004
RCA_i^k	0.4802**	0.1076	4.4636	0.0000
NTB_j^k	–0.5545*	0.2169	–2.5565	0.0131
The effects of the specification: Fixed effects by type of economic activity				
The test for absence of fixed effects by type of economic activity: $F = 3.68$ ($p = 0.0003$)				
Number of observations (unbalanced panel): 81				
$R^2 = 0.92$ (weighted statistics)				
$R^2 = 0.86$ (unweighted statistics)				

Note: The model also includes a measure of the distance between pairs of countries, which in this case is a kind of dummy variable and a dummy variable representing the presence (absence) of a common border between the two countries. Together with a constant, these variables allow us to account for the fixed effects associated with the trade direction for each country pair. These variables are statistically significant at a level of 0.01. * and ** indicate deviation of the null hypothesis at a significance level of 5% and 1%, respectively.

Source: The authors' calculations.

2.4. Econometric estimation of NTBs' impact on mutual trade

The NTBs' impact on exports was estimated using the following econometric model:

$$\ln X_{ij}^k = \alpha_0 + \alpha_k + \beta_1 \ln IP_i^k + \beta_2 \ln GDP_j + \beta_3 \ln Dist_{ij} + \beta_4 Border_{ij} + \beta_5 \ln IMPOUT_j^n + \beta_6 RCA_i^k + \beta_7 NTB_j^k + \varepsilon_{ij}^k, \quad (6)$$

where X_{ij}^k is exports from country i to country j of economic activity (sector) k; IP_i^k is the volume of production in country i for economic activity k; GDP_j is the GDP of country j; $Dist_{ij}$ is the distance between country i and country j; $Border_{ij}$ is a dummy variable representing the presence (or absence) of a common border between country i and country j; $IMPOUT_j^k$ is openness to imports for economic activity k in country j; RCA_i^k is the revealed comparative advantage of country i for economic activity k; NTB_j^k is the NTB index in country j for economic activity k; ln indicates the natural logarithm; α_0 is a constant; α_k is fixed effects related to economic activities; β_n is regression coefficients; and ε_{ij}^k is regression residuals.

The model was estimated using the feasible generalized least squares method, which makes it possible to account for heteroscedasticity (for more details on selecting estimation methods, see Reed, Ye, 2011). Moreover, we weighted by activity type and used heteroscedasticity-consistent standard errors. Based on theoretical considerations and descriptive analysis of the data, the regression coefficients' signs should be as follows: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, $\beta_5 > 0$, $\beta_6 > 0$, $\beta_7 > 0$. We used the *LR*-test to check the significance of dummy variables representing the fixed effects associated with activity types.

The results are shown in Table 2.7. As can be seen, the gravity model is well specified; all its coefficients are statistically significant and have the signs expected by theoretical considerations. A rather high coefficient of determination indicates that the independ-

Table 2.8. Import demand elasticities, %

Activity	Belarus		Kazakhstan		Russia	
	simple	weighted	simple	weighted	simple	weighted
Agriculture, forestry and fishing	–1.4	–1.5	–10.0	–1.4	–5.4	–1.6
Manufacture of food products, beverages and tobacco	–2.4	–1.0	–2.2	–1.5	–6.7	–1.2
Textile and clothing manufacture	–1.5	–1.3	–2.6	–3.0	–8.8	–4.6
Manufacture of leather, leather products and footwear	–1.5	–1.0	–1.7	–1.0	–4.8	–1.1
Manufacture of wood and wood products	–2.2	–2.3	–2.0	–1.1	–10.9	–4.4
Pulp and paper production, publishing activities	–1.2	–1.3	–2.1	–1.4	–7.0	–2.3
Chemical production	–1.5	–1.0	–1.9	–1.3	–5.7	–2.2
Manufacturing of pharmaceutical products	–1.0	–1.0	–1.5	–2.2	–3.2	–1.0
Manufacture of rubber and plastic products	–1.0	–1.0	–1.3	–1.1	–1.7	–1.2
Manufacture of other non-metallic mineral products	–1.4	–1.2	–2.8	–1.5	–4.9	–2.9
Metallurgical production, manufacture of fabricated metal products	–1.5	–1.2	–2.1	–1.3	–6.0	–1.8
Manufacture of machinery and equipment	–1.3	–1.2	–1.6	–1.4	–2.6	–2.0
Manufacture of electrical and optical equipment	–1.3	–1.2	–1.6	–1.1	–3.5	–1.4
Manufacture of transport equipment	–2.0	–1.7	–2.2	–1.1	–4.7	–2.6

Note: We used 2012 imports as a weight for the six-digit FEACN code. We note that the price elasticities of imports for trade within the CU were calculated by the Eurasian Economic Commission (unpublished data). Since these elasticities are calculated for the whole CU rather than individual country pairs, they cannot be directly compared with the data presented in the table.

Source: The authors' calculations based on data from Kee, Nicita, Olarreaga (2009) and Comtrade.

ent variables explain a significant proportion of the variation in exports. Fixed effects on activities and trade directions are statistically significant. Thus, the resulting regression allows us to account for NTBs' impact on exports amid the influence of the traditional gravity model's other variables.

2.5. Quantitative estimation of trade costs due to NTBs

The regression analysis results shown in Table 2.7 were used based on expressions (1–4) to simulate calculation of the potential value of exports with and without NTBs. Then expression (5) was used to determine the equivalent trade costs resulting from NTBs.

We must note the following. Import demand elasticities for tariffs, which are needed to estimate the tariff equivalent, can theoretically be calculated as part of the analysed gravity model or taken from other conventional sources. In analysing trade within regional integration agreements, such as the CU and SES, the impact of tariffs cannot be estimated, because there are none. So in this case we have used the elasticities presented in Kee, Nicita, Olarreaga (2009) and listed on the World Bank's website[17]. In order to

[17] For more information, see: http://go.worldbank.org/FG1KHXSP30.

Table 2.9. Equivalent trade costs resulting from NTBs%

Activity	Belarus		Kazakhstan		Russia	
	Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	26.3	7.6	39.2	12.4	11.5	11.8
Manufacture of food products, beverages and tobacco	10.2	8.1	39.7	15.0	14.8	9.2
Textile and clothing manufacture	9.7	2.8	55.1	5.7	12.9	5.3
Manufacture of leather, leather products and footwear	24.0	10.3	72.0	35.0	20.4	17.9
Manufacture of wood and wood products	24.2	3.4	0.0	14.6	5.9	13.7
Pulp and paper production, publishing activities	20.7	5.5	0.0	6.8	13.0	7.9
Chemical production	8.5	3.4	76.1	11.3	20.1	10.7
Manufacturing of pharmaceutical products	14.6	13.9	0.0	38.4	14.7	8.2
Manufacture of rubber and plastic products	14.7	7.6	57.3	15.6	15.9	13.7
Manufacture of other non-metallic mineral products	12.5	3.6	62.0	6.8	11.7	9.9
Metallurgical production, manufacture of fabricated metal products	18.1	5.6	21.6	6.8	7.1	8.0
Manufacture of machinery and equipment	12.0	5.8	46.4	9.0	11.8	8.5
Manufacture of electrical and optical equipment	11.7	5.8	62.7	13.6	9.0	9.5
Manufacture of transport equipment	11.2	3.5	26.1	6.9	6.1	10.1
On average	16.3	6.3	39.8	14.0	12.4	10.4

Source: The authors' calculations.

perform the calculations, they were aggregated at the level of economic activities in two ways: through a simple average and through an average weighted by import volume. The elasticity calculated using the weighted average is the baseline. Using a simple average is justified, because weights in the form of import volumes may cause distortions since imports of certain items may be very low due to trade restrictions. In this case, a simple average may be more informative. The resulting elasticities are presented in Table 2.8. We have used weighted-average elasticities in formula (5).

Thus, by calculating the equivalent trade costs presented in Section 2.2 and the gravity model's estimates presented in Table 2.7, we get equivalent trade costs that account for the impact of the NTBs being considered. The results obtained are illustrated in Figures 2.3 and 2.4, broken down by SES country pairs and economic activities for all of the NTBs. The source data for the calculated equivalent trade costs are presented in Table 2.9.

It is interesting to analyse the correlation between the equivalent trade costs derived from the gravity model and the NTB estimates resulting from surveys of enterprises. Our analysis shows that a statistically significant correlation exists between the equivalent trade costs shown in Table 2.9 and the estimates of the NTB levels obtained from the

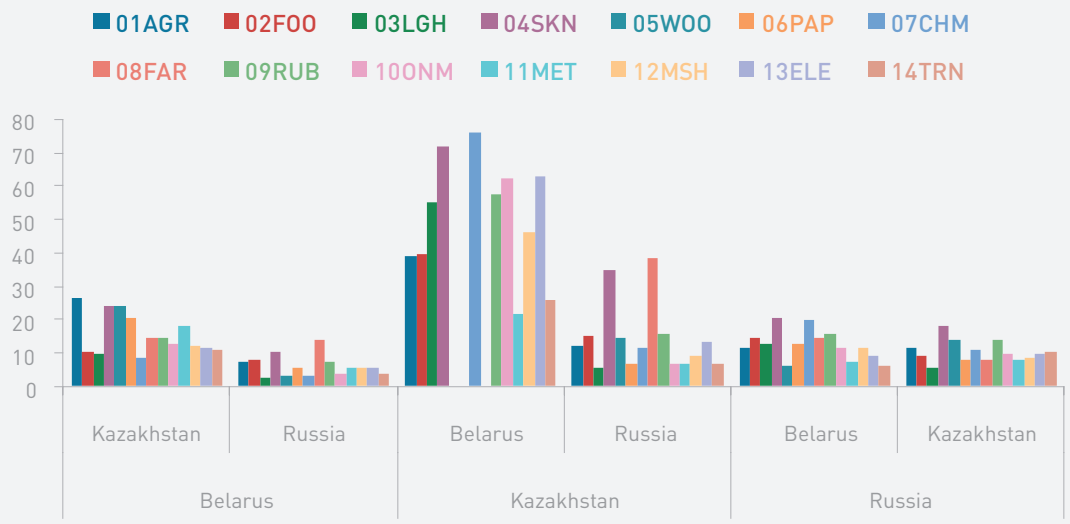


Figure 2.3. Distribution of equivalent trade costs due to NTBs' impact for SES country pairs, %

Note: The activities' identifiers are presented in Table 2.1.

Source: The authors' calculations.

closed-ended question. Pearson's correlation coefficient in this case is 0.5 (p = 0.000). This correlation is represented graphically in Figure 2.5.

With the open-ended question, this connection is very weak and not statistically significant. This suggests that the results of the closed-ended question are to the greatest extent consistent with the estimates from econometric analysis. This was taken into account in subsequent calculations. It is important to note that the presence of a statistically significant relationship between these NTBs indicates that the estimates obtained from surveys and the gravity model are consistent and may be used in subsequent modelling with computable general equilibrium models.

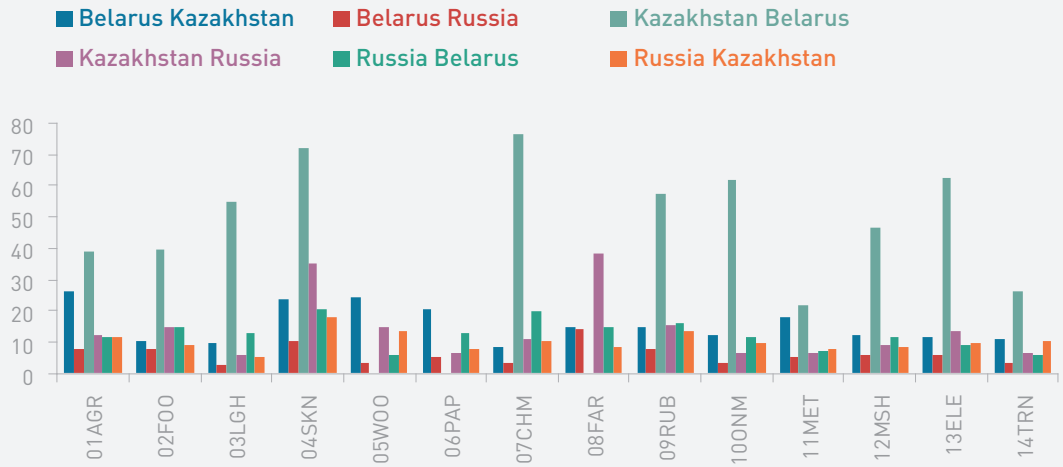


Figure 2.4. Distribution of equivalent trade costs due to NTBs' impact for economic activity, %

Note: The activities' identifiers are presented in Table 2.1.

Source: The authors' calculations.

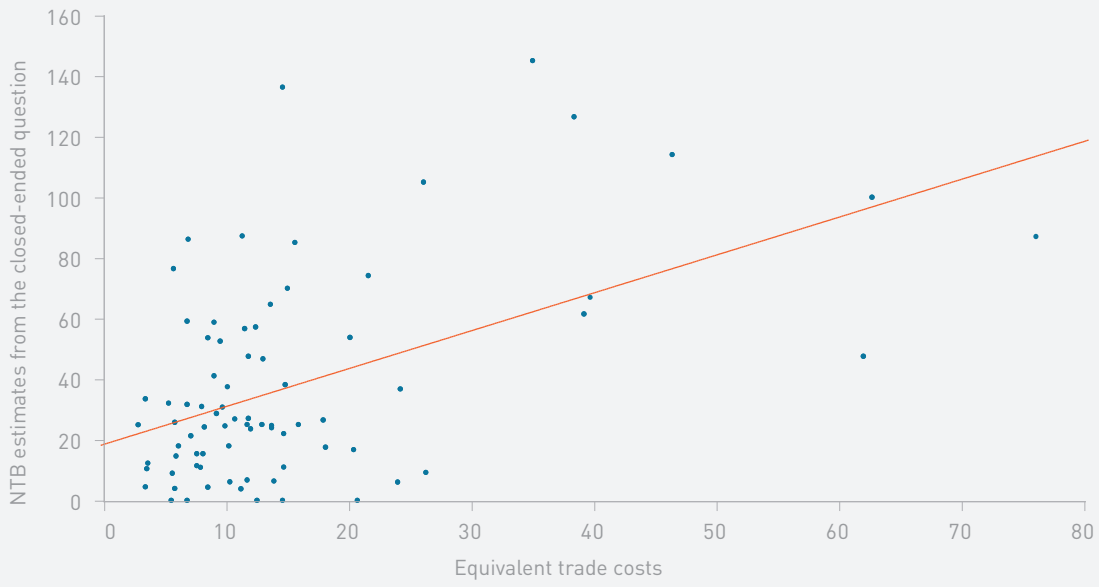


Figure 2.5. Correlation between the equivalent trade costs and estimates of NTBs' NTBs obtained from the survey of exporting enterprises

Source: The authors' calculations.

In addition to NTBs' overall impact on the increase in the value of exports, the influence of individual groups of non-tariff barriers was determined, namely:

- (1) the impact of sanitary and phytosanitary measures, (2) technical barriers, (3) pre-shipment inspection and other formalities, (4) non-automatic licensing, quo-

Table 2.10. Classification of NTBs as technical barriers and barriers associated with economic policy

Sanitary and Phytosanitary Measures	NTB-T
Technical Barriers in Trade	
Pre-shipment inspection and other formalities	
Non-automatic licensing, quotas, bans and quantitative control measures other than sanitary and phytosanitary measures and technical barriers	
Conditional trade protective measures	NTB-P
Price control measures, including additional taxes and fees in the destination country	
Financial measures, regulation of conditions of payment for imports in the destination country or the conditions for obtaining and using credit to finance imports	
Measures affecting competition	
Investment measures related to trade	
Restriction of sales	
Restriction on after-sales service	
Subsidies, including export subsidies	
Restrictions on public procurement	
Protection of intellectual property rights	
Rule of the country of origin	
Measures relating to exports	

Source: Classification by the authors.

Table 2.11. Equivalent trade costs due to the impact of NTB-T, %

Activity	Belarus		Kazakhstan		Russia	
	Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	8.3	2.2	10.5	3.4	2.5	3.0
Manufacture of food products, beverages and tobacco	3.2	2.4	10.7	4.2	3.3	2.3
Textile and clothing manufacture	3.0	0.8	14.8	1.6	2.9	1.3
Manufacture of leather, leather products and footwear	7.6	3.0	19.4	9.7	4.5	4.5
Manufacture of wood and wood products	7.6	1.0	0.0	4.1	1.3	3.4
Pulp and paper production, publishing activities	6.5	1.6	0.0	1.9	2.9	2.0
Chemical production	2.7	1.0	20.5	3.1	4.5	2.7
Manufacturing of pharmaceutical products	4.6	4.1	0.0	10.6	3.3	2.1
Manufacture of rubber and plastic products	4.6	2.2	15.4	4.3	3.5	3.5
Manufacture of other non-metallic mineral products	4.0	1.0	16.7	1.9	2.6	2.5
Metallurgical production, manufacture of fabricated metal products	5.7	1.6	5.8	1.9	1.6	2.0
Manufacture of machinery and equipment	3.8	1.7	12.5	2.5	2.6	2.2
Manufacture of electrical and optical equipment	3.7	1.7	16.9	3.8	2.0	2.4
Manufacture of transport equipment	3.5	1.0	7.0	1.9	1.4	2.5
On average	4.9	1.8	10.7	3.9	2.8	2.6

Source: The authors' calculations.

tas, prohibitions and quantitative control measures other than sanitary and phytosanitary measures and technical barriers (NTB-T);

- The impact of all other NTBs besides those above (NTB-P) (see Table 2.10).

To estimate equivalent trade costs associated with the groups of NTBs above, we used data from Table 2.9 that had been adjusted by the weights of the corresponding groups of NTBs relative to their total impact. These relative weights were estimated using data from the closed-ended question from the surveys of exporting companies regarding the level of NTBs' restrictive impact on exports. The corresponding weights for NTB-T for the country pairs are as follows: Belarus — Kazakhstan — 0.315, Belarus — Russia — 0.292, Kazakhstan — Belarus — 0.269, Kazakhstan — Russia — 0.277, Russia — Belarus — 0.222, Russia — Kazakhstan — 0.252. Accordingly, for the NTB-P calculation, we used weights equal to one minus the weight value of the NTB-T corresponding to the trade direction. The results obtained for NTB-T and NTB-P are shown in Tables 2.11 and 2.12.

The main objective of estimating equivalent trade costs using econometric methods was to quantify the initial impact of NTBs for subsequent modelling within a computable general equilibrium model. The results in these tables are therefore used in the next section to assess the economic effects of reducing or eliminating certain types of NTBs.

Table 2.12. Equivalent trade costs due to the impact of NTB-P, %

Activity	Belarus		Kazakhstan		Russia	
	Kazakhstan	Russia	Belarus	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	18.0	5.4	28.6	9.0	8.9	8.8
Manufacture of food products, beverages and tobacco	7.0	5.7	29.0	10.9	11.5	6.9
Textile and clothing manufacture	6.6	1.9	40.3	4.2	10.0	4.0
Manufacture of leather, leather products and footwear	16.4	7.3	52.6	25.3	15.9	13.4
Manufacture of wood and wood products	16.6	2.4	0.0	10.6	4.6	10.2
Pulp and paper production, publishing activities	14.2	3.9	0.0	4.9	10.1	5.9
Chemical production	5.8	2.4	55.6	8.2	15.6	8.0
Manufacturing of pharmaceutical products	10.0	9.9	0.0	27.8	11.4	6.2
Manufacture of rubber and plastic products	10.1	5.4	41.9	11.3	12.4	10.2
Manufacture of other non-metallic mineral products	8.6	2.5	45.3	5.0	9.1	7.4
Metallurgical production, manufacture of fabricated metal products	12.4	4.0	15.8	5.0	5.5	6.0
Manufacture of machinery and equipment	8.2	4.1	33.9	6.5	9.2	6.4
Manufacture of electrical and optical equipment	8.0	4.1	45.8	9.9	7.0	7.1
Manufacture of transport equipment	7.7	2.5	19.1	5.0	4.8	7.5
On average	11.2	4.5	29.1	10.1	9.7	7.8

Source: The authors' calculations.

3. Quantitative estimation of reducing NTBs using a computable general equilibrium model

3.1. A brief description of the model

In this study, the impact of reducing NTBs to trade in SES countries is estimated based on a static computable general equilibrium model for the three countries. Models of this type are one of the traditional tools used to assess the impact of trade liberalization on the economy of one or more countries, as well as on some sectors of the economy.

Production is modelled based on constant elasticity of substitution (CES) functions. Each sector produces one product using goods and services provided by other sectors, and factors of production, labour and capital (see Figure 3.1).

One of the model's key assumptions is that the factors of production, i. e. labour and capital, are completely mobile within a country (factors of production do not move between countries). Accordingly, though time is not explicitly specified in the model, the horizon for rebalancing the economy after the introduction of a "shock" is about five to seven years, suggesting medium-term effects.

Each of the countries' total production can be exported to other countries or sold on the domestic market. In accordance with Armington's assumption (Armington, 1969), producers view selling in domestic markets and exports as imperfect substitutes[18]. The im-

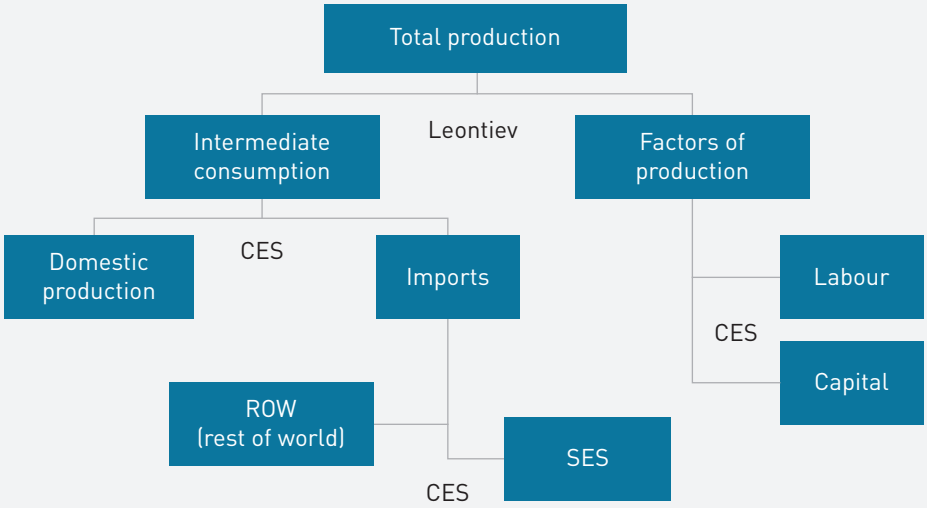


Figure 3.1. Structure of production

Source: Sunesen, et al. (2010).

[18] In 1969, Paul Armington published an article in which he conjectured that consumers differentiate goods of the same type traded on international markets depending on the country of origin. This assumption is widely used in applied general equilibrium models to simulate intra-industry trade.

ports from all trading partners along with domestic production form the supply of goods and services available for domestic consumption.

On the consumption side, the model distinguishes between government, private sector and intermediate consumption, and household final consumption. Consumers view imported and domestically produced goods as imperfect substitutes. Exports and imports differ by trading partner and are modelled with a constant elasticity of transformation and substitution. The model is implemented using GAMS/MPSGE software.

3.2. Data used for the analysis: description of the basic social accounting matrix

The applied general equilibrium model is calibrated based on a social accounting matrix (SAM) that lets us represent the main relationships between economic agents within a country, as well as relations with the outside world. A social accounting matrix is "a square matrix in which each account is represented as a column and row. Thus, an account's income is recorded in a row, and the account's expenses are recorded in a column.

A key principle of double-entry accounting, which is inherent in the matrix, requires that for each account in the SAM the total income (sum of the row) is equal to the total costs (sum of the column). Thus, the SAM includes data relating to production, consumption, and sources of income for different economic agents, including the state.

A SAM is built based on "input-output" tables in basic prices and consumer prices, national accounts, as well as information on the structure of foreign trade and other statistical information.

In this study we have employed official "input-output" tables published by the National Statistics Committee of the Republic of Belarus and the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan. For Russia, we have employed "input-output" tables calculated as part of the "World Input-Output Database" project[19].

For the purposes of this study, it was necessary to prepare SAMs for Belarus, Russia and Kazakhstan, that contained the same number of sectors and would allow us to make the most of the information on quantification of non-tariff barriers that has been collected in this project.

The social accounting matrices used in this study contain 26 sectors:

1. Agriculture, forestry and fishing
2. Mining industry
3. Manufacture of food products, beverages and tobacco
4. Textile and clothing manufacture
5. Manufacture of leather, leather products and footwear
6. Manufacture of wood and wood products
7. Pulp and paper industry, Publishing
8. Manufacture of coke, refined petroleum and nuclear materials

[19] http://www.wiod.org/new_site/home.htm.

Table 3.1. Basic SAM for Russia, mln USD

		Activity	Goods	Factors	Households (Representational household)	Government	Savings-Investment	Exports	
		a	b	c	d	e	f	h	Total
Activity	a		3262680						3262680
Goods	b	1568470			884629	325141	385344	485518	3649103
Factors	c	1507184							1507184
Households	d			1507184					1507184
Government	e	187026			138115	1213			326355
Savings-Investment	f				385344				385344
Imports	h		386423		99096				485518
Total		3262680	3649103	1507184	1507184	326355	385344	485518	

Source: "Input-output" tables for Russia, authors' calculations.

9. Manufacture of chemicals and chemical products
10. Manufacture of basic pharmaceutical products
11. Manufacture of rubber and plastic products
12. Manufacture of other non-metallic mineral products
13. Metallurgical production, manufacture of fabricated metal products
14. Manufacture of machinery and equipment
15. Manufacture of electrical and optical equipment
16. Manufacture of transport equipment
17. Other industry sectors
18. Electricity, gas, steam, air conditioning; water supply; sewerage; control over the collection and distribution of waste
19. Construction
20. Trade; repair of vehicles, household goods and personal items
21. Hotel and restaurant services
22. Transport and communication
23. Financial activity
24. Transactions with real estate, renting and services provision to customers
25. Public administration
26. Other services

This list of sectors is most similar to the list contained in the "input-output" table of the Republic of Belarus (30 sectors in the original data). Available "input-output" tables for Russia contain 45 and 70 sectors, while the "input-output" table for Kazakhstan contains 60 sectors. Accordingly, creating a SAM for the study mainly meant consolidating sectors.

Table 3.2. Basic SAM for Kazakhstan, mln USD

		Activity	Goods	Factors	Households (Representational household)	Government	Savings-Investment	Exports	
		a	b	c	d	e	f	h	Total
Activity	a		298753						298753
Goods	b	125680			75935	20022	39843	87770	349251
Factors	c	166429							166429
Households	d			166429					166429
Government	e	6644			13379	43			20065
Savings-Investment	f				39843				39843
Imports	h		50498		37272				87770
Total		298753	349251	166429	166429	20065	39843	87770	

Source: "Input-output" tables for Kazakhstan, authors' calculations.

The only instance where a sector was broken up was production of basic pharmaceutical products in Belarus. Because this sector was not explicitly represented in the base "input-output" tables, its structure was estimated based on the structure of Russian pharmaceutical production (pharmaceutical production as a percentage of the chemical industry's production) and data for the chemical industry of Belarus.

Aggregated versions of the SAMs are presented in Tables 3.1–3.3. The base year for all matrices is 2011. The US dollar was chosen as the single currency for all matrices.

Proper calibration of the model requires equilibrium (adjusted by transportation, trade and other costs) of export and mirror import flows between each pair of trading partners. Analysis of the mirror statistics for trade between SES countries shows that this condition is not always satisfied. Moreover, complete trade statistics are not published broken down by goods (services) and the partner country for each of the three countries in question. For example, Russia does not publish information about trade with Belarus and Kazakhstan in UN Comtrade (the United Nations' database of trade in goods) information on trade with Belarus and Kazakhstan at the level of the six-digit harmonized commodity classifier. At the same time, among the three countries, Russia's information about trade in services is the most complete.

The model uses the following approach to calculate export and import flows between countries:

For trade in goods

- The geographic distribution of exports and imports was estimated for each of the sectors under consideration and the three partners (Kazakhstan/Belarus, Russia and the other countries of the world (ROW)). Correspondence tables mapping between HS2007 and ISIC Rev. 3 were used to compare the trade data with the SAM data;
- Belarusian exports to Kazakhstan and Russia, which were calculated based on the total export value taken from the SAM and on the geographic structure of Belarusian exports, determined the volume of Kazakhstan's and Russia's imports from Belarus;

Table 3.3. Basic SAM for Belarus, mln USD

		Activity	Goods	Factors	Households (Representational household)	Government	Savings-Investment	Exports	
		a	b	c	d	e	f	h	Total
Activity	a		145153						145153
Goods	b	84658			31049	8930	23366	49726	197729
Factors	c	57810							57810
Households	d			57810					57810
Government	e	2685			6245	22			8952
Savings-Investment	f				23366				23366
Imports	h		52576		-2850				49726
Total		145153	197729	57810	57810	8952	23366	49726	

Source: "Input-output" tables for Belarus, authors' calculations.

- Kazakh exports to Belarus and Russia determined the volume of Belarus' and Russia's imports from Kazakhstan;
- Belarusian and Kazakh imports from Russia became the basis for estimating Russia's exports to these countries;
- Russian imports from other countries are calculated as the difference between the total value of imports in a sector less the imports from Belarus and Kazakhstan. Belarus' and Kazakhstan's imports from other countries were also calculated as the difference between total imports and already known imports from members states of the CU and SES;
- The resulting export- and import estimates were adjusted in cases where the estimate of trade with other countries (exports or imports) was negative.

For trade in services

- For Russia, we calculated the geographic structure of trade in services with Belarus, Kazakhstan and other countries of the world for the main types of services (transport, financial services, etc.);
- For Kazakhstan and Belarus, we calculated each SES partner's share of total trade in in services, regardless of the sector;
- We used cost values for Russia's exports and imports of services to calculate exports and imports of services by sector for Belarus and Kazakhstan. Mutual trade in services between Belarus and Kazakhstan by sectors was calculated using average values of each partner's share of total exports and imports of services;
- Trade in services with other countries was estimated as a residual. In cases where the estimate of trade with other countries (exports and imports) was negative, it was corrected: negative values were replaced by the number one, and the estimate of trade within the SES was reduced so that the sum across partners equalled the total value of exports or imports in the "input-output" table.

3.3. Simulation results

3.3.1. Scenarios

In this paper we have focused on analysis of NTBs' restrictive features. In other words, our model analyses NTBs' costs; it does not consider possible positive impacts on demand from the use of technical NTBs related to protecting the life and health of humans, animals and plants.

NTBs' impact has been analysed using applied general equilibrium models in many papers, including Harrison, Rutherford & Tarr (1993, 1997), de Melo & Tarr (1990), Lawrence & Eichengreen (1992), Minot & Goletti (1998), Bora et al. (2002), Ghosh & Rao (2005), Chemingui & Dessus (2008), Philippidis & Sanjuan (2007), Andriamananjara et al. (2004), Gaitan & Lucke (2007), Fugazza & Maur (2008) and Sunesen et al. (2010).

Based on the approach used in these studies, in our research NTBs are built into the model in two ways:

- As an analogue to a tax on imports. This method of incorporating NBTs into the model is most relevant for the analysis of NTBs that generate income primarily for the state;
- As losses resulting from compliance with non-tariff regulation (the so-called "sand in the wheels"), e.g. costs due to administrative procedures and the loss of time. In this case, a single manufacturer's costs do not result in income for the State or another manufacturer. In the model, a change in this kind of NTB is modelled as a change in the exogenous price coefficient.

Because changing tariff regulations is an extremely difficult process, the study includes a realistic scenario with a total reduction of NTBs by 10% from baseline trade costs obtained from surveys of exporting enterprises (see Section 2.5). This paper considers two basic ways to reduce NTBs. First, NTBs viewed as a tax on imports (NTB-T) are reduced by 5% from the baseline for each country pair. Second, NTBs treated as a loss in the model (hereinafter NTB-P) are also reduced by 5% from the baseline for each country pair.

The paper considers how reducing NTBs to trade between SES countries would impact the economies of these countries, in the following scenarios:

- Scenario 1: Aggregation. This scenario includes a reduction in NTB-T and NTB-P for each of SES countries in trade with the other two SES countries.
- Scenario 2: Reduction of NTB-T. This scenario includes a reduction of NTBs (the first group of NTBs) viewed as a tax on the imports of each of the SES countries in trade with the other two CU and SES countries.
- Scenario 3: Reduction of NTB-P. This scenario includes a reduction of NTBs viewed as unproductive losses (the second group of NTBs) for each of the SES countries in trade with the other two SES countries.
- Scenario 4.1–4.11: Sector-specific. This group of scenarios considers the effect of

reducing NTB-T and NTB-P for each SES country in trade with two other SES countries for certain types of activities (sectors):

- Scenario 4.1: Agriculture, forestry and fishing
- Scenario 4.2: Manufacture of food products, beverages and tobacco
- Scenario 4.3: Textile and clothing manufacture
- Scenario 4.4: Manufacture of leather, leather products and footwear
- Scenario 4.5: Manufacture of wood and wood products, Pulp and paper industry, Publishing
- Scenario 4.6: Manufacture of chemicals and chemical products
- Scenario 4.7: Manufacture of rubber and plastic products
- Scenario 4.8: Manufacture of other non-metallic mineral products
- Scenario 4.9: Metallurgical production, manufacture of fabricated metal products
- Scenario 4.10: Manufacture of machinery and equipment
- Scenario 4.11: Manufacture of transport equipment

Before presenting the results of the simulation, we must make two important points that are required in order to properly understand and interpret the results:

First, the results are presented as a cumulative percentage change compared to the base year. The model does not provide information to estimate the trajectory of the corrective transition from the initial state to the establishment of a new equilibrium.

Secondly, given the purpose of our study, the results presented in this work isolate the economic impact of reducing NTBs within the CU and SES from other events that in reality simultaneously affect countries' economic development. Accordingly, the simulation results should not be viewed as a prediction, but only as an estimate of the strength and direction of the change in the situation *ceteris paribus*.

3.3.2. Impact on GDP and welfare

Our simulation of a reduction of NTBs to trade between the SES countries using a computable general equilibrium model confirms that trade liberalization leads to positive changes in real GDP and welfare.

In the model, there are several channels through which the effect of reducing the NTBs is distributed. Reducing losses resulting from compliance with non-tariff regulation leads to exporters receiving an increased price. This stimulates exports and domestic production, and thus creates incentives for the price of production factor to rise and for these factors to be reallocated among the sectors.

Reducing losses resulting from NTBs makes imports cheaper, which stimulates domestic consumption and thus increases wealth. Cheaper imports also promote domestic production, which depends on imported parts. Moreover, the growing volume of imports increases competition in the domestic market. This leads to a reduction in domestic consumer prices and an increase in real incomes and purchasing power.

Reducing NTBs that act as taxes is similar to decreasing NTBs resulting in losses, except

Table 3.4. Effect of a reduction of NTBs on the GDP and welfare of SES countries, cumulative%

	Scenario 1: Aggregate	Scenario 2: Reduction of NTB-T	Scenario 3: Reduction of NTB-P
Impact on welfare:			
Russia	0.5	0.2	0.3
Belarus	7.3	2.7	4.2
Kazakhstan	1.3	0.8	0.5
Impact on GDP:			
Russia	0.2	0.1	0.1
Belarus	2.8	0.9	1.6
Kazakhstan	0.7	0.5	0.3

Source: The authors' calculations.

for one important point. Non-tariff barriers in NTB-T generate income, which falls when these NTBs are reduced. Consequently, the welfare gains associated with liberalization are not as high as when losses associated with NTBs are reduced.

As shown in Table 3.4, Belarus' gain from a 10% reduction of NTBs will be the most significant among the SES countries: in the medium term, real GDP will grow by 2.8% and welfare — by a total of 7.3% as a result of the aggregated scenario, which involves a reduction in both groups of NTBs (Scenario 1).

According to our calculations, Kazakhstan will also benefit from trade liberalization. Welfare will grow in the medium term by a total of 1.3% and real GDP — by 0.7%

Relatively speaking, Russian will benefit less than Belarus and Kazakhstan. In the medium term, welfare in Russia will grow by a total of 0.5%, and real GDP — by 0.2%.

Given proportional reductions of NTBs represented as a tax and NTBs represented as losses, the gain is more significant in the second case (Scenarios 2 and 3 in Table 3.4). Thus, in Belarus a 5% reduction of NTBs represented as a tax leads to real GDP growth of 0.9% and welfare growth — by a total of 2.7% over the medium term, while a symmetric 5% decrease in losses resulting from NTBs leads to an increase in real GDP by 1.6% and welfare gains of 4.2%. This effect emphasizes the importance of reducing inefficiencies in the form of NTBs.

A larger reduction in NTBs will lead to higher welfare growth rates (see Figure 3.2). The welfare growth rate is greatest in Belarus and least in Russia. For all three SES countries, the rate at which welfare increases slows the more NTBs are reduced.

Our results are comparable with other studies of NTB changes. For example, Gaitan, Lucke (2007) uses Syria as an example to show that reducing NTBs modelled as analogues to taxes on trade yields a 0.48% increase in welfare, which is quite close to the estimates of NTB change in Scenario 2. Fugazza, Maur (2008) have shown that reducing NTBs modelled as a loss (the so-called "sand in the wheels") leads to an increase in welfare of 0.6–6.1% for different countries. This is similar to the figures we obtained in Scenario 3.

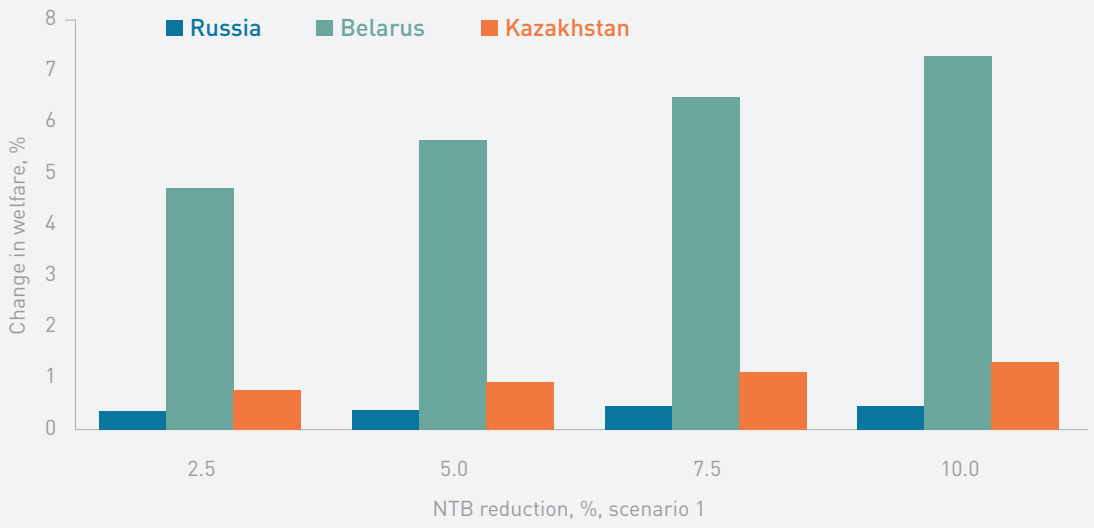


Figure 3.2. Effect of reduction of NTBs on the welfare of the SES countries, cumulative %

Source: The authors' calculations.

2.3.4. Impact on production and export

As shown in Table 3.5, the relative effect of reducing NTBs will be unevenly distributed among countries and across sectors. The magnitude of the changes depends on the NTBs' baseline level in the sector and the level of its involvement in foreign economic relations, especially within the CU and SES.

An important factor for the countries is the relative size of the economy, because a reduction of NTBs in Belarus and Kazakhstan is not of equal importance for Russian

Table 3.5. Effect of reducing NTBs on production in individual sectors (Scenario 1), cumulative %

	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	0.24	3.39	0.33
Manufacture of food products, beverages and tobacco	0.70	1.14	4.31
Textile and clothing manufacture	0.03	–2.49	4.09
Manufacture of leather, leather products and footwear	0.50	–29.90	–47.82
Manufacture of wood and wood products	–0.39	–3.83	2.05
Pulp and paper industry. Publishing		18.25	–1.75
Chemical production	–0.32	59.18	5.66
Manufacture of rubber and plastic products	–0.01	55.92	2.26
Manufacture of other non-metallic mineral products	0.01	1.17	1.06
Metallurgical production, manufacture of fabricated metal products	–0.27	27.05	6.33
Manufacture of machinery and equipment	–0.10	188.47	86.65
Manufacture of electrical and optical equipment	–0.23	28.15	31.03
Manufacture of transport equipment	0.13	–6.00	5.41
Other industry sectors	0.05	–8.33	0.56

Source: The authors' calculations.

Table 3.6. Effect of reducing NTB-T on production in individual sectors (Scenario 2), cumulative %

	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	0.12	1.09	–0.12
Manufacture of food products, beverages and tobacco	0.33	–1.31	2.52
Textile and clothing manufacture	–0.18	8.22	2.03
Manufacture of leather, leather products and footwear	–0.20	–29.72	–1.05
Manufacture of wood and wood products	–0.32	7.43	1.57
Pulp and paper industry. Publishing	–0.16	14.22	–1.41
Chemical production	–0.78	34.00	1.27
Manufacture of rubber and plastic products	–0.11	40.72	0.95
Manufacture of other non-metallic mineral products	–0.08	2.71	0.79
Metallurgical production, manufacture of fabricated metal products	–0.48	26.16	2.80
Manufacture of machinery and equipment	–0.29	185.56	14.99
Manufacture of electrical and optical equipment	–0.19	53.23	23.97
Manufacture of transport equipment	–0.01	–13.55	3.04
Other industry sectors	0.02	–4.79	0.53

Source: The authors' calculations.

manufacturers as is a reduction of NTBs in Russia for Belarusian and Kazakh producers.

The distribution of the impact of reducing NTBs across activities supports the conclusion that liberalizing trade by reducing NTBs within the CU and SES is most advantageous for Belarus. The model shows that reducing NTBs will have the most positive impact on Belarusian mechanical engineering: the production of machinery and equipment; the chemical industry; rubber and plastic products; and metallurgy.

In Kazakhstan, the key sectors that will benefit most from a reduction of NTBs to trade between SES countries are machine-building and production of vehicles.

Russia's gain, as compared with that of other SES countries, is insignificant and is concentrated in such sectors as food processing, leather, leather goods and footwear manufacturing, and agriculture.

Reductions in NTB-T and NTB-P have different effects on different types of activities in SES countries (see Tables 3.6 and 3.7). For Kazakhstan, reducing losses associated with the use of NTBs leads to a more significant change in output than reducing tax-like NTBs. However, it is important for Belarus to reduce both NTBs that act as taxes (NTB-T) and losses (NTB-P).

It is important to emphasize that this model considers the impact of an economic shock (in this case, the reduction of NTBs) in a situation *ceteris paribus*. For example, the model does not provide for changes in inventories of factors of production. Therefore, given the assumption that factors of production are fully mobile, a significant increase in one sector leads to a redistribution of labour and capital across sectors in favour of that sector and an outflow from other industries. This, in turn, leads not only to an increase in the

	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	0.12	6.25	0.51
Manufacture of food products, beverages and tobacco	0.41	2.64	1.9
Textile and clothing manufacture	–0.08	–0.19	2.16
Manufacture of leather, leather products and footwear	0.37	–15.95	–49.08
Manufacture of wood and wood products	–0.37	–2.86	0.52
Pulp and paper industry. Publishing	–0.01	10.74	–0.45
Chemical production	–0.26	44.19	4.58
Manufacture of rubber and plastic products	–0.13	101.22	1.3
Manufacture of other non-metallic mineral products	–0.01	0.73	0.33
Metallurgical production, manufacture of fabricated metal products	–0.37	14.95	3.63
Manufacture of machinery and equipment	–0.22	103.52	58.9
Manufacture of electrical and optical equipment	–0.35	8.72	6.03
Manufacture of transport equipment	–0.14	–10.93	2.48
Other industry sectors	–0.02	–5.75	0.02

Table 3.7. Effect of reducing NTB-P on production in individual sectors (Scenario 3), cumulative %

Source: The authors' calculations.

sector, which has become relatively more competitive, but also to reduced production in other less attractive sectors.

In reality, factors of production are not perfectly mobile, and stocks of factors of production may change (e.g. the labour supply may increase due to migration, increased economic activity, etc.). Accordingly, growth in some sectors does not necessarily lead to a drastic reduction in production in others as shown in the model.

Liberalization of trade within the SES, through a reduction of NTBs, will have a positive impact on exports. The highest growth will be in Belarus' exports (see Table 3.8), with Kazakhstan taking second place. Just as with general production, opening the markets of Kazakhstan and Belarus further by reducing NTBs will not significantly alter Russia's exports.

The most impressive growth will take place in exports of machinery and equipment, manufacture of rubber and plastic products, and the manufacture of chemical products.

An analysis of a reduction of NTBs to trade among an integration association's member states shows that the impact of proportional changes in trade restrictions depends on the initial level of trade with each other, how much the restrictions are reduced, and the size of the member states' economies.

Liberalizing NTBs within the SES will lead a significant increase in exports, mainly to Russia (see Table 3.9). This is primarily due to high degree to which Belarusian and Kazakh producers' exports are focused on the Russian market, as well as the Russian market's large capacity, which is much greater that of the markets of Belarus and Kazakhstan. Thus, Belarusian exports to Russia will actually grow by a third if NTBs are reduced by 10%, while Kazakh exports to the Russian market are expected to grow 27.6%

Table 3.8. Effect of reducing NTBs on exports in sectors (Scenario 1), cumulative %

	Russia	Belarus	Kazakhstan
Agriculture, forestry and fishing	–0.09	0.20	0.79
Manufacture of food products, beverages and tobacco	6.54	1.76	5.47
Textile and clothing manufacture	4.05	–4.89	8.06
Manufacture of leather, leather products and footwear	4.51	–31.28	–39.34
Manufacture of wood and wood products	–1.02	–5.45	4.55
Pulp and paper industry. Publishing	–0.15	26.34	–0.53
Chemical production	–0.29	47.12	7.72
Manufacture of rubber and plastic products	1.22	67.46	13.25
Manufacture of other non-metallic mineral products	5.27	2.26	2.67
Metallurgical production, manufacture of fabricated metal products	–0.39	29.43	7.16
Manufacture of machinery and equipment	0.41	202.25	100.22
Manufacture of electrical and optical equipment	–0.75	29.70	32.83
Manufacture of transport equipment	1.48	–5.35	8.38
Other industry sectors	–0.61	–10.61	1.37

Source: The authors' calculations.

Table 3.9. Effect of reducing NTBs on mutual exports of SES countries and on exports to other countries (Scenario 1), cumulative %

	Russia	Belarus	Kazakhstan	Other countries
Russia		–0.9	0.7	–1.5
Belarus	33.6		15.3	0.5
Kazakhstan	27.6	6.6		–0.6

Source: The authors' calculations.

cumulatively. However, Russia, whose export flows are focused primarily on the markets of other countries outside the integration association, will actually receive minor non-trade gains from the liberalization of non-tariff regulation within the SES.

3.3.5. Reduction of sector-specific non-tariff barriers

In this section we examine the effect of reducing NTBs in certain types of economic activities (sectors). As in Scenario 1, which addresses reducing NTBs for all activities at the same time, reducing NTBs in certain sectors has a positive impact on welfare (see Table 3.10).

The biggest gain for welfare is expected from a reduction of NBTs in the chemical industry and in the manufacture of machinery and equipment, which are traditional areas for Belarusian exports. Reducing NTBs in the food industry and metallurgy will also significantly impact welfare for Belarus.

Kazakh weal will benefit the most from a reduction of NTBs in the metallurgical industry and the food industry. For Russia, most important in terms of welfare would be a reduction of NTBs in the manufacture of machinery and equipment, in the food industry, and in metallurgy.

Table 3.10. Effect of reducing NTBs in sectors on the welfare within the SES (Scenario 4), cumulative %

Scenario	Sector	Russia	Belarus	Kazakhstan
4.1	Agriculture, forestry and fishing	0.01	0.04	0.07
4.2	Manufacture of food products, beverages and tobacco	0.08	0.79	0.41
4.3	Textile and clothing manufacture	0.01	0.10	0.02
4.4	Manufacture of leather, leather products and footwear	0.01	0.05	0.00
4.5	Manufacture of wood and wood products. Pulp and paper industry. Publishing	0.01	0.08	0.08
4.6	Chemical production	0.03	1.89	0.03
4.7	Manufacture of rubber and plastic products	0.03	0.05	0.02
4.8	Manufacture of other non-metallic mineral products	0.00	0.14	0.07
4.9	Metallurgical production, manufacture of fabricated metal products	0.07	0.84	0.52
4.10	Manufacture of machinery and equipment	0.09	1.26	0.03
4.11	Manufacture of transport equipment	0.02	0.46	0.03

Source: The authors' calculations.

The level of the sectors' response to a 10% reduction of NTBs was determined by the difference in the NTBs' initial level, the level of dependence on foreign economic activity, and the degree of orientation toward the CU and SES market or the markets of other countries of the world.

Reducing NTBs in the production of machinery and equipment (Scenario 4.10) has the most significant effect on this sector's production in the SES countries as compared with similar changes in other sectors. For example, decreasing the first group of NTBs by 5% leads to a significant increase in the output of machinery and equipment in Belarus and Kazakhstan (see Table 3.11). Since Russia is Belarus' and Kazakhstan's main export market for machinery and equipment, a decrease can be expected in Russian domestic production of machinery and equipment.

We must again emphasize that these estimates of output growth cannot be regarded as a forecast. They represent a potential change in a situation where the factors of production are assumed to be completely mobile, which is impossible in reality. Therefore, high production growth in the sector should be seen more as a signal about the relative importance of NTBs in this particular sector.

NTBs play an essential role in pulp and paper production, food processing, leather and wood production, manufacture of footwear, and rubber and plastic production.

It is important to note that reducing sector-specific NTBs in the chemical industry stimulates production in Russia and Kazakhstan, leading to decreased production in Belarus (Scenario 4.6), whereas in Scenario 1, in which NTBs are simultaneously reduced for all activities, chemical production in Belarus increases. This is due to a change in relative prices in the different scenarios. A similar situation is observed in metallurgy and transport engineering. Reducing NTBs will lead to an increase in ex-

Table 3.11. Effect of reducing NTBs in sectors on production in these sectors (Scenario 4), cumulative %

Scenario	Sector	Russia	Belarus	Kazakhstan
4.1	Agriculture, forestry and fishing	0.1	0.6	0.5
4.2	Manufacture of food products, beverages and tobacco	0.6	11.1	3.7
4.3	Textile and clothing manufacture	0.3	7.2	3.8
4.4	Manufacture of leather, leather products and footwear	1.0	18.0	–47.9
4.5	Manufacture of wood and wood products.	0.0	5.5	1.6
	Pulp and paper industry. Publishing	0.2	47.6	–4.1
4.6	Chemical production	0.7	–11.4	8.3
4.7	Manufacture of rubber and plastic products	0.2	16.2	1.0
4.8	Manufacture of other non-metallic mineral products	0.1	1.3	1.1
4.9	Metallurgical production, manufacture of fabricated metal products	0.5	–14.2	6.5
4.10	Manufacture of machinery and equipment	–0.1	191.3	46.2
4.11	Manufacture of transport equipment	0.4	–19.7	1.6

Source: The authors' calculations.

ports from other SES countries, which in turn reduces the demand for domestic production.

NTBs have the smallest impact on sector development in agriculture and the production of other non-metallic mineral products. A 10% sector-specific reduction of NTBs in these two types of activity leads to an increase in production by 0.1–1.3% cumulatively for different countries.

Conclusions

Calculations made based on the gravity model show that, with respect to economic activity type (sector), NTBs' most significant impact on the value of exports in CU and SES countries is observed in the chemical industry, rubber and plastic industry, textile and sewing industry, food production, and the production of leather goods and shoes for export to Belarus, for both Kazakhstan and Russia. For Kazakhstan, NTBs' have a very significant impact on exports to Belarus in the machine-building products group. Belarusian NTBs for this type of activity also affected the value of Russian exports.

For Belarus, equivalent trade costs were highest when exporting agricultural products, leather products and leather footwear, wood and metallurgy products to Kazakhstan. When exporting Belarusian goods to Russia, the equivalent trade costs resulting from NTBs were relatively low for most activities under consideration, except pharmaceutical products, footwear, leather goods, and food products.

To further analyse and model the effects of reducing NTBs, they were divided into two groups. This was done because NTBs are a difficult and complex phenomenon. Eliminating them is difficult or even impossible in practice, because in some cases they are needed, for example, to control product quality and protect public health. The first group includes NTBs that are natural and protective and may gradually be largely unified between CU and SES countries. This group includes: sanitary and phytosanitary measures; technical barriers to trade and non-automatic licensing; quotas; and bans and quantitative control measures other than sanitary and phytosanitary measures and technical barriers. The second group includes all other NTBs. Accordingly, for each country trading with partners in the CU and SES, and for each economic activity (sector), the equivalent trade costs due to NTBs were calculated depending on the nature of their impact on trade and the way in which they might be unified (or lifted).

The equivalent trade costs, obtained through econometric analysis and resulting from the influence of each of the two groups of NTBs across fourteen economic activities (sectors) for Belarus', Kazakhstan's and Russia's exports to CU and SES countries, were used to quantify the impact of reducing the NTBs. To this end, we used a computable general equilibrium model, implemented using GAMS/MPSGE software, for the three countries.

In this paper we have analysed the effect that a 5% reduction of NTBs from SES countries' baseline trade costs, obtained from surveys, would have on the economy of CU and SES member states. NTBs were modelled in two ways: as an analogue of a tax on imports (the first group of NTBs) and as losses associated with compliance with the requirements of non-tariff regulation (the so-called "sand in the wheels").

The results are presented as a cumulative percentage change relative to the base year. The model does not provide information to estimate the trajectory of the corrective transition from the initial state to the establishment of a new equilibrium.

It is also important to understand that the results presented in this report isolate the

economic impact of trade liberalization within the SES (reducing NTBs) from the other events that in reality simultaneously affect the economic development of countries. Accordingly, simulation results should not be viewed as a prediction, but only as an estimate of the strength and direction of the change in the situation *ceteris paribus*.

Analysis of a reduction of NTBs between SES countries shows that Belarus benefits the most from liberalization. Belarus' total gain from a 10% reduction of NTBs in the medium term is 7.3% growth in wealth. In terms of sectors, reducing NTBs will most benefit Belarusian mechanical engineering, namely the production of machinery and equipment, the chemical industry, and production of rubber and plastics and metals.

Kazakhstan, though to a lesser extent, will also benefit from trade liberalization. In the medium term, welfare will increase by 1.3% cumulatively. The greatest benefit from the reduction of NTBs will be for the Kazakh machine-building sector and production of vehicles.

Russia's gains are much smaller. Russia's welfare will increase by 0.5% as a result of reducing NTBs to trade within SES, but this gain will be constrained by the relatively low focus of its trade flows on the markets of Belarus and Kazakhstan. Russia's gains are concentrated in industries such as food processing, leather and wood products, manufacture of footwear, and agriculture.

Given proportional reductions of NTBs represented as taxes (the first type of barriers) and NTBs represented as losses associated with compliance with the requirements of non-tariff regulation ("sand in the wheels"), the latter yields a more significant gain. This result emphasizes the importance of reducing costs associated with so-called unproductive NTBs.

The results of simulating a reduction of NTBs at the level of economy-wide and sector-specific effects allow us to make an important conclusion regarding the significance of NTBs' restrictive impact on trade and production in CU and SES countries. This is evident in the fact that even a relatively small reduction in NTBs (by 10%) has a significant positive impact on welfare and production in the sectors represented in the model.

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APPENDIX: DECREASE (INCREASE) IN EXPORTS RESULTING FROM REDUCING NTBS BY COUNTRY AND TYPE OF ACTIVITY, %

		Russia	Belarus	Kazakhstan	Other countries
Agriculture, forestry and fishing	Russia		2.09	2.48	–0.20
	Belarus	1.06		6.56	–0.94
	Kazakhstan	3.60	10.05		0.47
Manufacture of food products, beverages and tobacco	Russia		7.62	6.70	4.47
	Belarus	2.06		2.83	–0.11
	Kazakhstan	9.18	15.37		5.21
Textile and clothing manufacture	Russia		5.17	3.74	2.49
	Belarus	–4.76		–2.84	–5.45
	Kazakhstan	8.61	21.51		7.06
Manufacture of leather, leather products and footwear	Russia		7.20	3.35	2.93
	Belarus	–31.19		–32.58	–33.05
	Kazakhstan	–39.04			–44.34
Manufacture of wood and wood products	Russia		0.11	–0.76	–1.07
	Belarus	–4.90		–5.09	–5.74
	Kazakhstan	7.65			3.82
Pulp and paper industry. Publishing	Russia		2.21	1.40	–0.39
	Belarus	26.91		32.52	25.08
	Kazakhstan	1.09	–0.61		–0.61
Chemical production	Russia		3.45	–0.32	–0.56
	Belarus	48.34		47.39	47.04
	Kazakhstan	10.05	26.91		7.01
Manufacture of rubber and plastic products	Russia		3.89	0.98	0.67
	Belarus	69.44		66.80	66.10
	Kazakhstan	14.36	25.70		9.95
Manufacture of other non-metallic mineral products	Russia		5.71	5.61	3.23
	Belarus	2.49		5.17	1.52
	Kazakhstan	3.96	17.66		2.20
Metallurgical production, manufacture of fabricated metal products	Russia		0.55	1.24	–0.58
	Belarus	30.65		35.38	28.73
	Kazakhstan	8.68	11.34		6.85
Manufacture of machinery and equipment	Russia		2.42	0.24	0.05
	Belarus	205.74		202.18	201.15
	Kazakhstan	103.12	121.17		98.63

		Russia	Belarus	Kazakhstan	Other countries
Manufacture of electrical and optical equipment	Russia		–0.75	–0.75	–0.75
	Belarus	29.70		29.70	29.70
	Kazakhstan	32.83	32.83		32.83
Manufacture of transport equipment	Russia		2.20	1.18	0.95
	Belarus	–5.16		–5.74	–6.04
	Kazakhstan	9.88	14.87		8.02
Other industry sectors	Russia		–0.61	–0.61	–0.61
	Belarus	–10.61		–10.61	–10.61
	Kazakhstan	1.37	1.37		1.37

Source: The authors' calculations.

Comprehensive assessment of the macroeconomic effect of different forms of intensive economic cooperation by Ukraine with the member states of the Customs Union and the Single Economic Space within the framework of the Eurasian Economic Community (EEC)

The main goal of the project is to assess a macroeconomic effect of the creation of the Customs Union and Single Economic Space of Russia, Belarus and Kazakhstan, and to determine prospects of the development of integration links between Ukraine and the CU. The project was conducted by the team of five research institutions. The results presented in the Report have been widely recognized and become standard.

Available in Russian and English.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/ukraine/

Studies of Regional Integration in the CIS and in Central Asia: A Literature Survey

This report, published under auspices of the EDB Centre for Integration Studies, summarizes both international studies in the area of regional integration within the former Soviet Union and Russian language materials on this issue, reviewing the research papers and publications in the area of economics, political studies, international relations and international political economy, law and area studies.

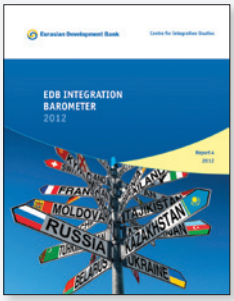
Available in Russian and English.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/CIS_CentralAsia/

Assessment of the economic, institutional and legal impact of labour migration agreements within the framework of the Single Economic Space

The project included analysis of two labour agreements that came into force on January 1, 2012 within the SES of Russia, Belarus and Kazakhstan. It analyzes their economic and social inpact on labour migration processes, labour market and productivity, strengthening of the regional economic relations.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/labour_migration/



EDB integration barometer 2012

The EDB Centre for Integration Studies in cooperation with the Eurasian Monitor International Research Agency examined the approaches of population to regional integration.

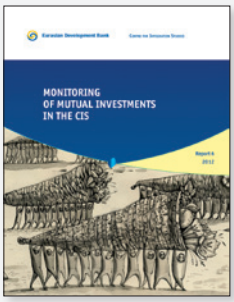
Available in Russian and English

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/integration_barometer/

Threats to public finances of the CIS in the light of the current global instability (in Russian)

The Report deals with the assessment of the risks for the government finances of the CIS countries in the light of current world instability. The report was conducted at the request of the Finance Ministry of the Republic of Kazakhstan, and presented at the permanent council of the CIS Finance Ministers.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/risks/



Monitoring of Mutual Investments in the Member States of the CIS

The monitoring of mutual CIS investments provides analytical support for work conducted by state and supranational agencies on developing a suitable strategy for deepening integration processes throughout the post-Soviet space. The Centre in partnership with IMEMO (RAS) has created and is regularly updating the most comprehensive database up to date.

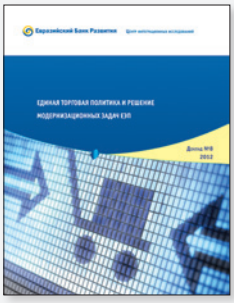
Available in Russian and English

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/invest_monitoring/

Customs Union and cross-border cooperation between Kazakhstan and Russia

Research on the economic effects of the development of industrial relations under the influence of the Customs Union in the border regions of Russia and Kazakhstan.

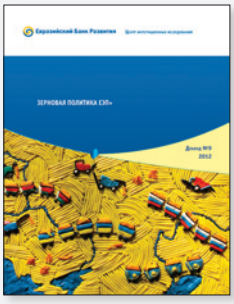
http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/kaz_rus_e/



Unified trade policy and addressing the modernization challenges of the SES

The Report presents an analysis of the key economic risks arising under the agreement by SES participants of a foreign trade policy, formulates proposals on the main thrusts of SES Common Trade Policy, and names measures for its reconciled implementation.

http://eabr.org/e/research/centreCIS/projectsandreportsCIS/trade_policy/



SES+ Grain policy

Growth in grain production is propelling Kazakhstan, Ukraine and Russia to the leadership ranks of the global grain market. The Report systematically analyzes trends in development of the grain sector and actual policies and regulations in SES countries, Ukraine and other participants of the regional grain market.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/grain_policy/

Technological Coordination and Improving Competitiveness within the SES

The report presents a number of proposals aimed at improving SES competitiveness within the international division of labour.

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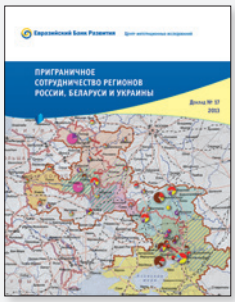
EDB CENTRE FOR INTEGRATION STUDIES PUBLICATIONS

The Customs Union and Neighbouring Countries: Models and Instruments for Mutually Beneficial Partnership

The report proposes a broad spectrum of approaches to the fostering of deep and pragmatic integrational interaction between the CU/SES and countries throughout the Eurasian continent.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/cu_and_neighbors/



Cross-Border Cooperation between Russia, Belarus and Ukraine

Cooperation between 27 cross-border regions of Belarus, Russia and Ukraine has significant potential; however the existing frontiers and barriers are a significant factor that fragments the region's economic space.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project16/

Labour Migration and Human Capital of Kyrgyzstan: Impact of the Customs Union

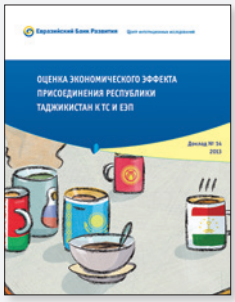
The report focuses on the effects of Kyrgyzstan's possible accession to the Customs Union (CU) and Single Economic Space (SES) on the flows of labour resources, the volume of cash remittances, labour market conditions and professional education and training in this country.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/labor_migration_kyrgyzstan_cu/

Customs Union and Ukraine: Economic and technological cooperation in sectors and industries

The authors of the report study the issue of industrial and inter-industry links between the SES economies and Ukraine and come to a conclusion that cooperation between enterprises has been maintained in practically all segments of the processing industries, while in certain sectors of mechanical engineering this cooperation has no alternatives.

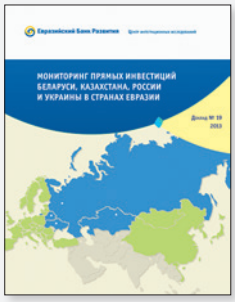
http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project18/



Tajikistan's Accession to the Customs Union and Single Economic Space

Tajikistan's accession to the CU and the SES will have a positive economic impact on the country's economy. The Report includes a detailed economic analysis of the issue using various economic models and research methods.

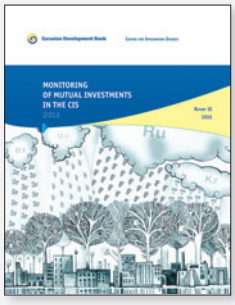
http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/Tajikistan_CU_SES/



Monitoring of direct investments of Belarus, Kazakhstan, Russia and Ukraine in Eurasia

The Eurasia FDI Monitoring project supplements another research by the EDB Centre for Integration Studies —Monitoring of Mutual Foreign Investment in the CIS Countries (CIS Mutual Investment Monitoring).

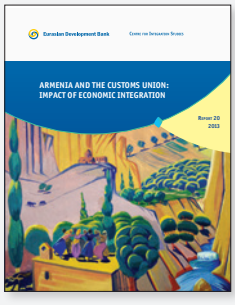
http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project19/



Monitoring of Mutual Investments in the CIS

The report contains new results of the joint research project of the Centre for Integration Studies of EDB and the Institute of World Economy and International Relations of the Russian Academy of Sciences. It is aimed at the maintenance and development of the monitoring database of mutual direct investment in the CIS countries and Georgia. A general characteristic of mutual investments in the CIS at the end of 2012 is provided.

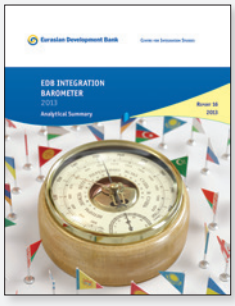
http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/



Armenia and the Customs Union: Impact of Accession

This report provides the assessment of the macroeconomic impact of Armenia joining the Customs Union.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project20/



EDB Integration Barometer – 2013

The EDB Centre for Integration Studies in cooperation with the Eurasian Monitor International Research Agency examined the approaches of population to regional integration.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/integration_barometer/

System of Indicators of Eurasian Integration

The System of Indicators of Eurasian Integration (SIEI) is designed to become the monitoring and assessment tool for integration processes within the post-Soviet territory.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/siei/index.php?id_16=37610

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Quantifying Economic Integration: of the European Union and the Eurasian Economic Union: Methodological Approaches

The objective of the project is to discuss and analyse economic integration in Eurasia, both on the continental scale "from Lisbon to Shanghai," and in the EU-EEU dimension "from Lisbon to Vladivostok."

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project21/

Pension Mobility within the Eurasian Economic Union and the CIS

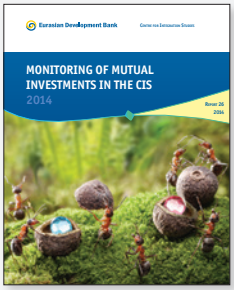
In the report the experts evaluate the prospects of implementing effective mechanisms in the region to tackle pension problems of migrant workers.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project24/

EDB Integration Barometer — 2014

The results of the third research into preferences of the CIS region population with respect to various aspects of Eurasian integration suggest that the "integration core" of the Eurasian Economic Union (EEU) continues to form and crystallise.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/integration_barometer/index.php?id_16=42460



Monitoring of mutual CIS investments 2014

This is the fifth report on the results of the long-term research project devoted to monitoring of mutual direct investments in the CIS countries and Georgia. The current report provides detailed information on the scope and structure of mutual investments of CIS countries up to the end of 2013. The report provides information on the most important trends in the first half of 2014, including the situation in Ukraine and its impact on the Russian direct investments in the country. It also presents an analysis of the prospects for mutual direct investments of the Eurasian Economic Union countries.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/invest_monitoring/index.php?id_16=42737

Regional Integration Database

This is an applied research project, which represents the creation of a specialized regularly updated database of the most significant regional integration organisations (RIOs) and economic/trade agreements of the world.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project26/

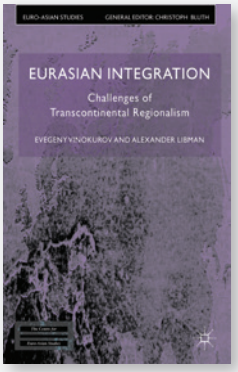
Monitoring of direct investments of Russia, Belarus, Kazakhstan and Ukraine in Eurasia — 2014

The second report presents new results of the permanent annual project dedicated to monitoring of direct investments of Belarus, Kazakhstan, Russia and Ukraine in Eurasia. On the basis of the statistics collected during monitoring, detailed information is provided on the dynamics, actual geographical location and sectoral structure of the investments.

http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/project24/

An Assessment of the Impact of Non-Tariff Barriers in the EEU: the Results of the Survey of Exporters

A large-scale poll of 530 enterprises in Belarus, Kazakhstan and Russia suggests that non-tariff barriers account 15% to 30% of the value of exports. Belarusian exporters estimate non-tariff barriers in their trade with Russia and Kazakhstan at 15% of the value of their exports, Kazakh exporters at 16% for exports to Russia and 29% for exports to Belarus, and Russian exporters at about 25% for exports to each of the two other countries.

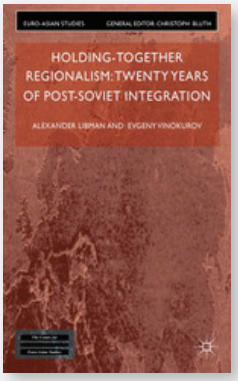


Eurasian Integration.
Challenges of Transcontinental Regionalism
Evgeny Vinokurov, Alexander Libman
Basingtoke: Palgrave Macmillan

"Vinokurov and Libman have pulled together a tremendous range of information and insight about Eurasian economic integration. Their eminently readable book tackles an important and timely topic, which lies at the heart of global economic and political transformation in the 21st century."

Johannes Linn, Brookings Institute

http://eabr.org/e/research/centreCIS/monographsCIS/



Holding-Together Regionalism: Twenty Years of Post-Soviet Integration (Euro-Asian Studies)

An in-depth analysis of one of the most important and complex issues of the post-Soviet era, namely the (re-)integration of this highly interconnected region. The book considers the evolution of «holding-together» groups since the collapse of the Soviet Union in 1991, looking at intergovernmental interaction and informal economic and social ties.

http://eabr.org/e/research/centreCIS/monographsCIS/