Deep Integration in the Eurasian Economic Union: What are the Benefits of Successful Implementation or Wider Liberalization?

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Abstract

We assess deep integration in the Eurasian Economic Union (EAEU) through the reduction of time in trade costs, the reduction of non-tariff barriers in goods and the liberalization of barriers against foreign suppliers of services. We develop an innovative multi-region model of trade and FDI for preferential trade analysis where we incorporate Dixit-Stiglitz endogenous productivity effects from trade and FDI liberalization. This model produces important differences compared with a perfect competition model. We build on numerous surveys and econometric estimates of the trade and FDI barriers in our focus countries that we helped develop.

We show that if the EAEU effectively implements its objectives for trade cost reduction, it would lead to significant welfare gains of between 0.8 to 4.8 percent of consumption, depending on the country. If these deep integration measures are extended to third countries, either by a wider liberalization effort or by spillovers, then the estimated welfare gains increase between 2.5 and 4.5 times for Belarus, Kazakhstan and the Russian Federation. Using the neoclassical model of labor migration, we estimate that the right to legally work in the Russian Federation is approximately of equal value to Armenia as the combined aspects of the reduction of trade costs, including FDI liberalization. Our estimates show that all the spillovers are beneficial to all the EAEU countries. Among the various reforms under consideration, we identify which reform is most important for each EAEU member country; and we identify whether the European Union, China or the United States is the most important external region for each member country if the reforms are extended to third countries.

Keywords: Eurasian Economic Union; deep integration; foreign direct investment; services liberalization; preferential trade agreements; endogenous productivity effects.

JEL categories: F12; F14; F15; F17; F55; O52; O53; C63; C68.

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1. Introduction

1.1 Innovative Modeling of Deep Integration in Preferential Trade Agreements

There is considerable evidence that non-tariff trade costs are a greater obstacle to trade than tariffs for most countries.[1] Regarding preferential trade agreements (PTAs) specifically, Limão (2016, pp. 307, 312) notes that in gravity models, tariffs alone can only explain a fraction of the trade impact; he calls for further research on the deep integration aspects of PTAs. Further, economic theory and a substantial and growing empirical literature based on firm level data shows that barriers to foreign direct investment of business services result in total factor productivity losses to the manufacturing sector and the economy of the host country more broadly.[2] In part motivated by these concerns, most modern trade agreements include "deep integration" aspects that go well beyond preferential tariff reduction, including efforts to reduce non-tariff barriers, facilitate trade and provide better market access to foreign providers of services. This partly motivates the conclusion of Schiff and Winters (2003) that the real gains from regional trade initiatives come from deep integration.

We assess the importance of deep integration in this paper by focusing on an important PTA, the Eurasian Economic Union (EAEU). The Eurasian Economic Union seeks to create a single market among the members by ensuring the "four freedoms:" freedom of goods, services, capital and labor. We discuss the mixed success of the EAEU below.

In this paper, we evaluate the potential impacts of three broader trade costs channels through which PTAs may reduce trade costs or increase productivity: time in trade costs (on both imports and exports); non-tariff barriers on goods; and barriers to foreign services providers both through foreign direct investment (FDI) and cross-border services. For this task we employ an innovative numerical multi-region, multi-sector general equilibrium model. The model captures the key stylized facts regarding FDI elaborated by Markusen (2002) and others (see section 1.4.2 for more details), including the "proximity burden" in services. Our FDI firms interact under monopolistic competition with endogenous productivity effects in the use of their outputs through the Dixit-Stiglitz mechanism from additional varieties of business services.

We contribute to the literature, since along with LaTorre and Yonezawa (2018), our papers are the first applied multi-region model to evaluate these multiple trade costs, especially regarding FDI, in a framework that reflects the evidence of endogenous productivity effects of goods and services.[3] We show that these innovative features, especially with FDI, lead to considerably larger estimated welfare gains than the standard perfect competition applied general equilibrium model based on the "Armington"

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[1] The estimates of Hummels *et al.*, (2007) and Minor (2013) show the trade facilitation costs alone (what they call the "time in trade" costs) are greater than tariffs as an obstacle to trade for most countries. Among several econometric studies on the subject, Arvis *et al.* (2016) estimate that trade costs are lower in the developed countries than the rest of the world. In addition to exogenous factors such as transport charges and geography, they identify several policy factors that impact trade costs including transport connectivity, trade facilitation and behind the border regulatory measures such as barriers to entry. They also find that regional trade agreements tend to reduce trade costs. The World Economic Forum (2012) found that the cost of trading is a more important obstacle to trade development than trade policies.

[2] See Markusen (1989; 1995; 2002) for the theory. Francois and Hoekman (2010) survey more than a dozen empirical studies that support this finding. In addition, in recent years, several studies that use firm level data support the finding that FDI and the wide availability of business services results in total factor productivity gains to the manufacturing sector and the economy broadly. These include Arnold *et al.* (2011) for the Czech Republic, Fernandes and Paunov (2012) for Chile, Arnold *et al.* (2016) for India, Shepotylo and Vakhitov (2015) for Ukraine and Duggan *et al.* (2013) for Indonesia.

[3] Recently, Arkolakis et al. (2018) produced a heterogeneous firms numerical model of FDI. They did not, however, consider preferential trade analysis. LaTorre and Yonezawa (2018) recently applied a similar model to the TTIP.

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assumption. We are the first to provide estimates of these trade costs impacts for the EAEU countries with and without spillovers to third countries. We also contribute to the literature by providing an estimate of the free movement of labor, where we employ the well-known neoclassical model of labor migration.

1.2 Key Results

Our results for our central (basic) scenario of EAEU integration shows significant gains ranging from 0.8 percent of consumption for the Russian Federation to 4.8 percent of consumption for Armenia. If the measures to reduce trade costs and liberalize barriers against FDI in services are extended to third countries, either by a wider liberalization effort or by unavoidable extension of benefits (called "spillovers"), then the estimated gains increase to between 3.6 and 7.2 percent of consumption, depending on the country. The importance of spillovers is especially true for FDI liberalization. The significantly larger gains from wider liberalization or spillovers reflects the fact that the five EAEU countries collectively have only 2.2 percent of world GDP in 2017. The estimated gains are significantly smaller with our perfect competition model, which shows the importance of incorporating the endogenous productivity gains from trade and FDI liberalization in services.

Since remittance income is very important to Armenia, we use the neoclassical model of labor migration to estimate the legal right of Armenian citizens to work anywhere in the EAEU, in particular, in the Russian Federation. Our data shows that wages in Russia were more than twice Armenian wages prior to Armenian accession to the EAEU. We find that the right to legally work in the Russian Federation is very substantial, approximately of equal value for Armenia to the combined aspects of the reduction of trade costs, including FDI liberalization.[4]

Although all of these trade costs reduction reforms are beneficial, we identify which reform provides the greatest gains to each of our four focus countries. And we estimate which of our external regions (China, European Union, The United States or Rest of the World) provides the most gains to each of our member countries if wider liberalization or spillovers is extended to that region, This may facilitate negotiations among the EAEU members in the exchange of "concessions" common to trade negotiations.

1.3 Literature Review

1.3.1 Estimates of Goods Market Preferential Liberalization: Beyond Tariffs

The creation of the single market in the European Union led to innovative analysis that required the use of multi-region models with imperfect competition to capture the competition aspects of the single market (Harrison, Rutherford and Tarr, 1996; Smith and Venables, 1988).[5] These studies considered trade facilitation benefits and linked the competitive aspects of the single market to the standards and product regulation issues. Tariff changes were ignored since there already was free trade within the European Union prior to the single market reforms. That is, the single market reforms of the EU were exclusively about deep integration.

Preferential arrangements of the European Union with its Mediterranean and Eastern neighbors led to several assessments of deep aspects of these agreements in Armington models, including Harrison, Rutherford and Tarr (1997b) for Turkey and Rutherford, Rutstrom and Tarr (1997; 2000) for Morocco and Tunisia. Maliszewska *et al.* (2009) employed a multi-region model with imperfect competition to examine bilateral deep integration between the EU and five countries in the former Soviet Union: Russia, Armenia, Azerbaijan, Georgia and Ukraine. They estimated substantial welfare gains to the partner countries of the EU from deep integration, but acknowledge their estimates are upward biased since they are based on a

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[4] This result is consistent with the estimates and views of Rodrik (2011) on the importance to poor countries of the right of its workers to migrate.

[5] Baldwin, Forslid and Haarland (2000) assessed the investment impacts of the single market.

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comparative steady state model that did not account for the forgone consumption necessary to expand the capital stock.

Balistreri, Tarr and Yonezawa (2015) developed a multi-region, multi-sector model of world trade to examine deep integration in East and Southern Africa, while Balistreri *et al.* (2018) extended the analysis to a poverty and income distribution application. These studies found significant gains to the member countries from deep integration, but tariffs had only a negligible impact. What has been missing from the literature is a multi-region, multi-sector model of world trade that incorporates imperfect competition and, importantly, endogenous productivity effects in business services. We build on the software of Balistreri, Tarr and Yonezawa (2015), but unlike their study, we incorporate monopolistic competition and, importantly, endogenous productivity effects in business services. Latorre and Yonezawa (2018) recently achieved the same extension of Balistreri, Tarr and Yonezawa (2015). We show in the sensitivity section of the paper that our innovation makes a significant difference. .

1.4. Structure of the Paper

In section 2, we summarize the main achievements and challenges for the future of the EAEU. We provide an overview of our model and a discussion of our data in section 3 and 4, respectively. Our central results and sensitivity are in sections 5 and 6, respectively. We discuss our model and estimates of the impact of free migration of Armenians to the Russian Federation in section 7. We conclude in section 8.

1.3.2 Estimates of Foreign Direct Investment Liberalization in Services

The theory and empirical work on FDI (Markusen, 1989, 1995, 2002; Francois and Hoekman, 2010; Dunning, 1985) argues that firms that engage in FDI are intensive in the use of knowledge capital and have created firm specific assets (like blueprints, patents, special formulae or reputation and managerial expertise) that their foreign affiliates may use at low cost; but arms-length transactions in these assets are very difficult or impossible. The decision to locate a production facility abroad is based on multiple considerations: (i) in services, which is our focus, the "proximity burden" implies that, compared with cross-border services, local provision of services through FDI can more effectively compete with host country services; (ii) high transport costs or tariffs may make sales from abroad too costly; and (iii) low production costs in the host country may make FDI advantageous. The numerous econometric studies, including the recent studies based on firm-level data, that we cited above identify a fourth stylized fact in services: additional providers of services provide productivity gains to local firms.

Petri (1997), using a perfectly competitive Armington style model, was the first to capture many of these key features in a CGE framework. Reforms in his model impact the global reallocation of capital. But there is no zero-profit constraint for the firms and no endogenous productivity impacts from the actions of imperfectly competitive firms. Building on Petri, Dee *et al.* (2003) and Brown and Stern (2001) employ multi-country, three-sector models with homogeneous imperfectly competitive firms. Despite including firms in their model, liberalization remains based on a global reallocation of capital. The welfare results for the countries in the model of Dee *et al.*, depend heavily on rents gained or lost. In the Brown and Stern model, countries generally gain or lose from the liberalization depending on whether they are capital importing or exporting, respectively. However, there is no entry or exit of firms in national markets. So, profits or losses may occur on activities in individual markets without an entry or exit response from the firm or its competitors in that national market; and there is no Dixit-Stiglitz productivity externality from additional providers of services.

Markusen, Rutherford and Tarr (2005) developed the first numerical model of FDI in an imperfectly competitive framework that incorporated the above stylized facts with an entry and exit decision by the foreign and host country firms based on zero profit constraint for the firm types. They show that the endogenous productivity effects from the Dixit-Stiglitz externality in their model results in important differences from the implications of a Heckscher-Ohlin model. Their model was applied to datasets and policy issues of real economies in small open economy models in all four of our focus countries, initially

applied to the Russian Federation by Jensen, Rutherford and Tarr (2006; 2007; 2010), Rutherford and Tarr (2008; 2010) and Bohringer, Rutherford, Tarr and Turdyeva (2015). It has also been applied to the other three focus countries of this study: in Kazakhstan by Jensen and Tarr (2008); in Armenia by Jensen and Tarr (2012); and in Belarus by Balistreri, Olekseyuk and Tarr (2017). The model was applied to Kenya by Balistreri, Rutherford and Tarr (2009) and to Tanzania by Jensen, Rutherford and Tarr (2010). Konan and Maskus (2006) assessed FDI liberalization in Tunisian services with a small open economy, perfectly competitive model in which regulatory barriers imposed a wedge between lowest possible costs and prices due to both high-cost producers and cartel pricing (the latter of which was not endogenously modeled).

Except for Jensen and Tarr (2012), these models could not assess regional preferences in services.

Balistreri, Jensen and Tarr (2015) and Jensen and Tarr (2012) incorporated most of the FDI features of our model in small open economy models and analyzed preferential liberalization of services in Kenya and Armenia, respectively. Balistreri, Jensen and Tarr (2015) have shown that there is an analogy to trade diversion in goods whereby preferential commitments to foreign investors in services could be immiserizing. Jensen and Tarr (2012) extended the analysis to include the impact of improved trade facilitation and the reduction of non-tariff barriers in Armenia. Since the Balistreri, Jensen and Tarr (2015) and Jensen and Tarr (2012) models were small open economy models, they were unable to endogenously incorporate terms-of-trade effects that are important in regional trade agreements. Our multi-region trade model incorporates these impacts.

Independent of this work, Arkolakis et al. (2018) have published an interesting model of heterogeneous firms that includes FDI and cross-border services, with a choice by the firm of how to supply a market. They have not, however, applied that model to regional trade issues.

1.3.3 Estimates of Trade Policy Options in Armenia, Belarus, Kazakhstan and the Russian Federation.

Motivated by the efforts of the Belarus, Kazakhstan and the Russian Federation to accede to the World Trade Organization (WTO), there have been several published studies using numerical general equilibrium models that have evaluated the impact of WTO accession. These include Balistreri, Olekseyuk and Tarr (2017) for Belarus; and Jensen and Tarr (2008) for Kazakhstan. Several aspects of Russian WTO accession have been assessed including aggregate welfare, sector and telecommunications impacts in Jensen, Rutherford and Tarr (2006; 2007), poverty and regional impacts Rutherford and Tarr (2008; 2010) and environmental impacts and policies in Bohringer, Rutherford, Tarr and Turdyeva (2015).

Regarding preferential trade agreements, in an unpublished paper, Mazhikeyev and Edwards (2015) developed a useful eleven-region, ten-sector model that includes all five EAEU members to evaluate various trade policy issues related to the EAEU. Their paper contains a very useful summary of much of the empirical work done on the EAEU; and it contains estimates for the impacts on the Kyrgyz Republic, which is missing in our work. Unlike our model, however, their model includes neither FDI in services, nor does it include Dixit-Stiglitz endogenous productivity gains from additional providers of goods or services, since the number of firms is fixed.[6] There have been several published studies that have assessed the impact of preferential trade agreements with the European Union (EU). Tochitskaya and de Souza (2009) as well as Brenton, Turdyeva and Whalley (1997) evaluated the impact of tariff changes in a Russia-EU free trade agreement, including impacts on neighboring countries. As mentioned above,

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[6] Our approach also differs from Mazhikeyev and Edwards (2015) in that we have generated direct data measures that we incorporate into our estimates of the ad valorem equivalents (AVEs) of barriers to FDI in services and NTBs in goods. Further, given the evidence from Hummels and Schauer (2013) that time-in-trade (transport) costs vary considerably by product and country, we use publicly available estimates of the product and country time-in-trade costs to estimate bilateral time-in-trade costs by product and country, not just by country.

although their models were limited relative to the model of this paper, two earlier papers have considered deep integration in the region with the EU: Jensen and Tarr (2012) for Armenia, and Maliszewska et al. (2009) for the Russian Federation, Armenia, Azerbaijan, Georgia and Ukraine.[7]

2. EAEU Achievements and Setbacks

On January 1, 2010, Russia, Belarus and Kazakhstan launched the Eurasian Customs Union (ECU). Prior to the formation of the Eurasian Customs Union, the member countries already had tariff free access to the markets of each other through a network of bilateral and plurilateral free trade agreements, including the Commonwealth of Independent States. The Customs Union, however, implemented a common external tariff.[8] In addition, the members agreed to have the Customs Union determine the rules regarding sanitary and phyto-sanitary measures (SPS) and norms on goods; and the Customs Union attempted to reduce time in trade costs by eliminating internal customs posts. In February 2012, the Eurasian Economic Commission began functioning. It is intended to act as the regulatory authority for the Customs Union in a manner similar to the European Commission of the European Union. The Eurasian Economic Union (EAEU) was started in January 2015, at which time Armenia became the fourth member. The Kyrgyz Republic joined as the fifth member in May 2015. The Eurasian Economic Union goes beyond the Customs Union as it seeks the creation of a single market.[9] Progress toward achieving the single market has been mixed.

Regarding successes in moving toward a single market, goods continue to trade tariff free within the EAEU. The common external tariff is being implemented, subject to exceptions where the common external tariff conflicts with the obligations of Armenia, Kazakhstan and the Kyrgyz Republic to the World Trade Organization.[10] There has been some progress in trade facilitation with the formal elimination of customs posts between the member countries; but problems at the border between Belarus and the Russian Federation as well as at the border between Kazakhstan and the Kyrgyz Republic[11] show that

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[7] In work led by Jesper Jensen, David Tarr and Oleksandr Shepotylo, The World Bank (2012) published an evaluation of the impact of the Eurasian Customs Union on Kazakhstan that included an effort at estimating potential trade facilitation and non-tariff barrier reduction. As mentioned above, Maliszewska et al. (2009) evaluated the impact of a deep free trade agreement between the EU and five CIS countries, bilaterally. In an unpublished paper focusing on tariff changes, Alekseev, Turdyeva, Sokolov and Yudaeva (2004) assessed the trade and welfare impacts of preferential trade policy options and WTO accession of the Russian Federation.

[8] With few exceptions, the initial common external tariff schedule was the Russian tariff schedule, and the common external tariff is being adjusted to accommodate the phasing in of the commitments of the Russian Federation under its agreement to accede to the World Trade Organization. Shepotylo and Tarr (2012) have shown that after full implementation of its WTO commitments in 2020, the applied average MFN average tariff of Russia will be 7.9 percent on a simple average basis and 5.8 percent on a weighted average basis. Legally, Russia has only the tariff schedule of the Eurasian Economic Union as its tariff schedule.

[9] For early progress and problems see the analysis of Tarr (2016). For foreign policy objectives see Libman (2018), Popescu (2014), Dreyer and Popescu, (2014) and Aslund (2013).

[10] For the Armenia, Kazakhstan and the Kyrgyz Republic, who had prior commitments to the WTO members as part of their accession negotiations, implementation of the common external tariffs has presented difficulties for some tariff lines. Pending completion of successful negotiation with the WTO members, this has led to the EAEU allowing exceptions to the implementation of the common external tariff for tariff lines where the common external tariff would violate a WTO commitment.

[11] On August 12, 2015, in a ceremony attended by many of the top officials of Kazakhstan, the Kyrgyz Republic and the EAEU, the Presidents of the two countries gave an order by teleconference to open the borders. Nonetheless, on October 18, 2017, the Kyrgyz Republic notified the World Trade Organization that Kazakhstan had been targeting Kyrgyz trucks for tougher treatment at the two main border crossings between the two countries, and that Kazakhstan was also targeting Kyrgyz trucks entering Kazakhstan from the Russian Federation. See "Kyrgyzstan Complains of Kazakhstan restricting border trade," Reuters, October 18, 2017. Available at: https://uk.reuters.com/article/kyrgyzstan-kazakhstan/kyrgyzstan-complains-of-kazakhstan-restricting-border-trade-idUKL8N1MT5XP

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customs posts between the member countries have not been completely eliminated.[12] Probably the most successful achievement is the integration of the labor markets. EAEU member state employers are free to hire member state migrant workers, where the latter do not need a work permit. If member state migrant workers are officially employed, their children may attend public schools and their family members obtain mandatory medical insurance coverage.

Regarding problems, a serious remaining problem is the non-tariff barriers on goods within the EAEU. A survey of 528 industrial enterprises combined with econometric estimates revealed that non-tariff barriers account for between 15 and 30 percent of the value of exports in trade among Belarus, Kazakhstan and the Russian Federation (Vinokorov *et al.*, 2015a; 2015b). Conflicting national technical regulations on products make trade costly, but negotiations, that focus on harmonization rather than mutual recognition, are very contentious, and progress is slow. A common market for pharmaceuticals and medicines was to be established by 2016, but regulatory complexities led to its postponement until 2020, and in some cases until 2025. Further, there have been conflicts between Russia's foreign policy and its trade relations with the other EAEU countries. The EAEU countries other than Russia refuse to adopt the sanctions that Russia has imposed on Ukraine or the counter sanctions Russia has imposed on western countries. In particular, the re-export of European goods subject to counter sanctions by the Russian Federation by Belarusian manufacturers has led to delays at the Belarus-Russia border and complaints from the authorities in Belarus. This issue was resolved by imposing more stringent country of origin labeling requirements and harsher penalties for non-compliance.

Regarding more speculative and controversial goals of the EAEU, the single market for oil, gas and petroleum products has been postponed until 2025 due to the importance of this sector in the budgets of the member governments. Negotiations are only beginning on the creation of an EAEU financial market regulator responsible for enforcing common financial market regulations and supervision. Creation of an EAEU central bank and coordination of fiscal and monetary policy remains an even more speculative goal.[13]

Given the problems that have arisen and the difficult issues that have not been seriously addressed, in this paper we do not consider the more speculative and controversial EAEU objectives. Rather, we focus on measures to reduce trade costs and to a preliminary estimate of the benefits of labor market integration.

3. Overview of the Model

This paper builds on the multi-region trade model initially developed to analyze East and Southern Africa regional integration issues, and applied in Balistreri, Tarr and Yonezawa (2015) and Balistreri *et al.*, (2017). Importantly, we incorporate monopolistic competition into our model of foreign direct investment in business services. Our model builds on the comparative static version of Balistreri, Tarr and Yonezawa (2015). The Balistreri, Tarr and Yonezawa model is an extension to integrated multiple regions of the small open economy models developed for analysis of Russian and Kazakhstani WTO accession, but also applied to analyze regional and broader policy issues in Armenia (Jensen and Tarr, 2012), in Kenya (Balistreri, Jensen and Tarr, 2015) and Belarus (Balistreri, Olekseyuk and Tarr, 2017).

Although the model of Balistreri, Tarr and Yonezawa (2015) allowed foreign direct investment in business services, it did not allow for monopolistic competition and the Dixit-Stiglitz endogenous productivity effect, and thus was equivalent in results to perfect competition. Importantly, our extension

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[12] The members hope to establish a common electrical power market, modeled after the successful approach of the Scandinavian countries.

[13] See Vinokorov (2017) and Libman (2018) for further details on achievements and failures, and for differing views on the prospects for further on progress in the single market program.

allows us to incorporate the Dixit-Stiglitz endogenous productivity externality and thereby reflect the substantial body of econometric evidence that shows that access to additional business services increases productivity in the economy. This means that when foreign investors in services locate a new firm in a host country, the host country receives the Dixit-Stiglitz externality from any net additional variety. This was a key feature of the small open economy models mentioned in the previous paragraph, but the Dixit-Stiglitz externality was not present in the multi-region model extensions. This means that in services our model breaks the all varieties are consumed in all countries feature of Krugman (1980); so small countries can impact their Dixit-Stiglitz productivity-variety externality by liberalizing their own market.

Here we provide a non-technical summary of the model structure. A key distinguishing feature of this model (and the small open economy models mentioned in the previous paragraph), is that it allows for different market structures, depending on the sector. In sectors like agriculture and textiles and apparel, we assume perfect competition modeled with the Armington structure. We allow for monopolistic competition with a Dixit-Stiglitz structure in goods sectors such as chemicals and petroleum products. In business services, such as banking, insurance and various transport services, we also allow for monopolistic competition with a Dixit-Stiglitz structure and foreign direct investment. In all sectors, firms minimize the costs of production, subject to their production possibilities. Since there are very small differences between perfect competition and monopolistic competition when the elasticity of substitution between varieties in high, we define sectors as monopolistically competitive based on econometric estimates of the elasticity of substitution for varieties from Broda, Greenfield and Weinstein (2006) and Broda and Weinstein (2006). In some cases, such as petroleum refining, we also use estimates of economies of scale based on estimates in Pratten (1975). A list of sectors and their classification is available in table 1.

To analyze a regional trade agreement on its members, such as the Eurasian Economic Union, we adopt a multi-region model, since we want to endogenously account for the "market access" effects on exports of the reduction in trade costs through deep integration or the preferential reduction of import tariffs by the partner countries. Regional trade agreements that facilitate trade, lower non-tariff barriers or allow access to service providers have market access effects. Our framework allows us to explicitly evaluate the importance to the regions in our model of improved market access or reduced trade costs, as well as losses members may suffer as partner countries may be high cost suppliers compared to countries outside the region.

Armenia, Belarus, Kazakhstan and the Russian Federation are the four member countries of the EAEU that are included in the model, and are our focus countries in the results.[14] Our model also includes, China, the European Union, the United States and an aggregated Rest of the World. In table 1, we list the 24 sectors of the model, by type of sector: business services with foreign direct investment; constant returns to scale (perfectly competitive) goods and services sectors; and monopolistically competitive, Dixit-Stiglitz goods sectors. The mapping from the sectors of the GTAP dataset to the sectors of our model is in table 2.

Primary factors are skilled labor, unskilled labor, mobile capital and sector specific capital (both including land). [15] There is mobile capital in all sectors. There is sector-specific capital for firms in imperfectly competitive goods sectors and services sectors. For multinational service providers, they import primary inputs, reflecting specialized management expertise or technology of the firm. Given that there is sector specific capital in imperfectly competitive sectors, there are decreasing returns to scale in

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[14] Due to data limitations, we could not include the fifth member country (The Kyrgyz Republic) in the model.

[15] Given the nature of the shocks we consider (which are economy-wide), we do not believe the aggregation of capital and land has a significant impact on the results.

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the use of the mobile factors and supply curves in these sectors slope up. We also include the primary factor "natural resources" in forestry, fishing and both minerals sectors.

3.1 Perfectly competitive goods and services sectors.

In these sectors, we employ the "Armington" structure, with goods and services differentiated by the country of origin. Exports are also differentiated by the country of destination.

3.2 Imperfectly competitive goods sectors.

For goods produced under imperfect competition, the cost, production and competition structure for firms in this group of industries follows Helpman and Krugman (1985). Goods are differentiated at the firm level. We assume that manufactured goods may be produced domestically or imported from firms in any region in the model. Firms set prices using the Chamberlinian large group monopolistic competition assumption within a Dixit-Stiglitz framework, which results in constant markups over marginal cost for both foreign firms and domestic firms. Demand in all countries for these goods is characterized by the constant elasticity of substitution demand function. As the marginal utility of a good goes to infinity as the quantity goes to zero, if a variety of the good is produced anywhere, some of it will be consumed in all regions of the model. As in Harrison, Rutherford and Tarr (1996, 1997a), we assume that there is a nested demand structure, with firm level product differentiation under a national nest. Pure firm level product differentiation is a special case of this structure where the elasticities of substitution at both levels are identical.

Following Krugman (1980), we assume that imperfectly competitive firms have a fixed cost of production and that marginal costs are constant with respect to output. Then, suppressing subscripts for firms, sectors and regions, total costs are:

$$TC(q; p) = q*MC(p) + FC(p) \qquad (1)$$

where TC is total costs, MC is marginal costs, FC is fixed costs, q is output of the firm and p is a vector of factor prices. Following the literature (e.g., Helpman and Krugman, 1985), we assume that the input proportions of fixed and marginal costs are identical, from which it follows that the ratio of fixed to marginal costs is constant. That is, for all firms producing under increasing returns to scale (in both goods and services), we have:

$$FC(p)/MC(p) = k \quad \text{where k is a constant} \qquad (2)$$

Equations (1) and (2), in the Chamberlinian framework, imply that output per firm remains constant, i.e., the model does not produce rationalization gains or losses. The number of varieties affects the productivity of the use of imperfectly competitive goods based on the standard Dixit-Stiglitz formulation. The effective cost function for users of goods produced subject to increasing returns to scale declines in the total number of supplying firms. But, since all countries consume some of any variety that is produced, the number of varieties is determined by global demand and one country can affect the number of varieties only insofar as it affects global demand. As mentioned above, in our imperfectly competitive business services sectors, we break the model property that all varieties are consumed in all countries.

3.3 Imperfectly competitive service sectors in which foreign direct investment occurs

In these services sectors, we observe that some services are provided by foreign service providers on a cross border basis analogous to goods supply from abroad. But a large share of business services

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are provided by service providers with a domestic presence, both multinational and local.[16] Our model allows for both types of provision of foreign services in these sectors.

The cost, production, demand and competition structure for firms in this group of industries follows the same structure as the imperfectly competitive goods firms with an important difference. The difference is that we allow multinational service firms to establish a local presence to compete with local firms directly. Multinational service firms produce a home region specific variety, which is differentiated from domestic and other home region varieties.

For domestic firms, costs are defined by the costs of local primary factors and intermediate inputs. When multinationals service providers decide to establish a local presence, they will import some of their technology or management expertise. That is, foreign direct investment generally entails importing specialized foreign inputs. Thus, the cost structure of multinationals differs from national-only service provider. Multinationals incur costs related to both imported primary inputs and local primary factors, in addition to intermediate factor inputs. Foreign provision of services differs from foreign provision of goods, since the service providers use local primary inputs.

For multinational firms, the barriers to foreign direct investment raise their costs of production. The reduction of the barriers lowers these costs, freeing the capital and labor that was used to overcome the barriers for use elsewhere in the economy. In our central scenario, the reduction in the constraints on foreign direct investment: (i) allows the domestic economy to capture rent rectangles; (ii) induces foreign entry until profits are driven to zero, so there are also triangles of efficiency gains; and (iii) additional varieties of services produce a productivity effect through the Dixit-Stiglitz variety externality. The first two impacts will occur in a perfectly competitive model, but the third effect requires our modeling innovation of the first paper to incorporate Dixit-Stiglitz style monopolistic competition with foreign direct investment in business services. We also execute the model without this latter feature and show its significant impact.

4. Data

4.1 Ad Valorem Equivalents (AVEs) of Barriers in Services

Barriers Against FDI. Estimates of the ad valorem equivalents (AVEs) of the barriers to FDI in services are important to the results. Consequently, to obtain a good picture of the regulatory regimes, we relied on the work of Irina Kolesnikova (2014a) for Belarus, Grigol Modebadze (2010) for Armenia, Georgi Idrisov (2010a) for the Russian Federation[17] and Jafari and Tarr (2015) for other regions of the model. Kolesnikova, Modebadze and Idrisov all conducted extensive interviews of the government regulatory agencies, industry associations and local experts in the relevant sectors in their respective countries, utilized official government reports, academic studies and the World Bank 160 page survey of the regulatory regimes in the key business services sectors (documented in Borchert *et al.*, 2014).

As a first step in the process, the methodology involved converting the answers and data of the questionnaires and interviews into two Services Trade Restrictiveness Indices (STRIs) indices in each industry: a non-discriminatory index and a discriminatory index. Some restrictions only apply to foreign firms, such as maximum foreign equity shares in firms in a sector or licensing restrictions that apply to foreigners only. These kinds of restrictions are the basis of the discriminatory STRIs. Other restrictions apply to domestic as well as foreign firms regardless of their national origin. Examples include: blocking entry of all firms to a sector (e.g., reserving the sector for state firms); prohibitions on banks from selling

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

[17] The work of Kolesnikova, Modebadze and Idrisov was supervised by Tarr.

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insurance; limitations on the size of retail businesses, their market share in a region or their hours of operation. Our underlying studies also develop non-discriminatory STRIs and AVEs, but we focus exclusively on the discriminatory barriers in this study.

Our methodology builds on a series of studies supported by the Australian Productivity Commission to develop services trade restrictiveness indices (STRIs) and produce ad valorem equivalents of the regulatory barriers. STRI studies include McGuire, Schuele and Smith (2000), McGuire and Schuele (2000), Kalirajan (2000) and Nguyen-Hong (2000). We first score the regulatory barriers indices consistent with the STRI methodology employed by these Australian authors.

We then convert the STRIs into ad valorem equivalents by relying on the econometric estimates of that team of Australian authors. In particular, we use the estimates of Warren (2000) in telecommunications (for both fixed line and mobile), Kalirajan *et al.*, (2000) in financial services (for both banking and insurance), Kang (2000) in transportation services (for all four transportation sectors) and Nguyen-Hong (2000) in professional services (for both accounting and auditing, and legal services). Except for Warren, in all studies the authors regressed a measure of the price or costs of services against their STRIs and other control variables in a cross-country regression at a point in time to determine the impact of the regulatory barriers on the price of services.[18] Through the estimated coefficient for the STRI in their regressions, the authors estimated the ad valorem equivalents of the regulatory barriers in the countries of their sample. We calculate the AVEs by assuming that the impact of the STRIs in the regressions on these studies applies to our countries.

We focus on insurance, banking, fixed line and mobile telecommunications services, air transportation, road transportation, and rail, water and other transportation services, and professional services. We base our estimates of professional services on legal, accounting and auditing services, and label this sector in table 1 as business services nec.

For the remaining five regions in our model, we used the estimates of Jafari and Tarr (2015). Jafari and Tarr (2015) defined mappings from the underlying data of the World Bank STRIs into the regulatory scoring matrices of the Australian authors mentioned above in this subsection, and thereby scored STRIs according to the Australian methodology. Given these STRIs, they then estimated AVEs of the regulatory barriers for 11 sectors in 103 countries in a manner analogous to Kolesnikova, Modebadze and Idrisov. For the Rest of the World and the European Union region it was necessary to aggregate the country estimates of Jafari and Tarr. Results for our services sectors AVEs are in the appendix tables.

In our model, and in the appendix tables, we convert the AVEs with the unrestricted world price in the denominator (as the latter was typically estimated by these authors) to an AVE with the domestic price of the foreign services with restrictions in the denominator,[19] i.e., the AVE is as a percent of the domestic restricted price of the foreign service. The conversion implies that our AVEs have a maximum of 100 percent.

Barriers Against Cross-Border Services. Several authors have used gravity models to estimate AVEs of barriers to cross-border trade in services. The most comprehensive of these efforts is

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[18]Warren estimated quantity impacts and then, using elasticity estimates and a measure of the quantity of telephone subscribers in each country, was able to obtain price impacts and ad valorem equivalents.

[19] In the case of transportation services, Jafari and Tarr (2015) and Kolesnikova (2014a) use the domestic price of the foreign service as the base. Otherwise, the authors cited use the unrestricted price as the base or denominator.

Conversion between the two measures is straightforward. In particular, define AVE = (D-W)/W = ad valorem equivalent with the unrestricted world price as the base, or denominator; let D=domestic price of the foreign service before reform, and W = unrestricted world price. We have: (1) AVE = (D/W) - 1, where we take the AVE (as a ratio) from Kolesnikova (2014a). Rearranging, we have: (2) W/D = 1/[AVE+1]. Multiplying (1) by W/D and using (2), we have (3) (D-W)/D = AVE*W/D = AVE /[AVE+1].

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by Francois, Hoekman and Woerz (2007). Using data from the International Monetary Fund, they estimated the AVEs of barriers in four categories of cross-border services for 178 countries. We use their estimates for our four EAEU countries in their table A2 and map their four services categories into our eight services sectors as follows[20]: (i) transportation: our three transportation services sectors; (ii) producer services: communication, insurance and other financial services; (iii) other business services: professional services; and (iv) other non-traded services: trade and various mechanical repairs. The results for the AVEs are in tables 15-18.

4.2 Estimates of the Ad Valorem Equivalents of the Costs of Time in Exporting and Importing.

An important objective of the EAEU is to facilitate trade among the member nations so that the time it takes to ship goods among the members is reduced or minimized. In order to estimate the impact of improved trade facilitation, in this paper we apply a relatively new dataset of the time cost of trade based on the path-breaking work of Hummels and Schaur (2013) and Hummels *et al.*, (2007). Using the estimates of Hummels and his co-authors, Peter Minor (2013) provided estimates for the regions and products in the GTAP database on a bilateral basis. We use estimates from Peter Minor, which we aggregate to the sectors and regions of our model, yielding estimates of the ad valorem equivalents of the time costs of importing and exporting for Armenia, Belarus, Kazakhstan and the Russian Federation. Our estimates of the time costs of importing and exporting are by product and country on a bilateral trade basis for the regions and sectors of our model. The results are in tables 15-18. Although a central finding of the above studies is that the AVE of time in trade varies across products, most prior estimates of the impact of trade facilitation have used a single AVE across all products. By basing our estimates on the work of Hummels and Minor, we improve on the sector accuracy of the benefits of trade facilitation, and show that the results are dependent on these sector estimates. A detailed explanation of the methodology may be found in appendix C of Balistreri, Tarr and Yonezawa (2014).

We assume a twenty percent reduction in the ad valorem equivalents of the time in trade costs for EAEU members in our central scenario. Since some aspects of the reduction in time in trade costs for EAEU members (such as aspects of improved customs procedures) will convey to third countries, we assume a spillover of benefits to third countries. In our central scenario, we assume a five percent cut in the ad valorem equivalents of the time in trade barriers to non-members of the EAEU. We increase this spillover in the sensitivity section.

4.3 Estimates of the Ad Valorem Equivalents (AVEs) for Non-Tariff Measures (NTMs) for the Regions of our Model

NTMs are a problem within the EAEU and one of the primary objectives of the EAEU is to reduce non-tariff measures within the EAEU. Under the auspices of The Eurasian Development Bank, Vinokurov *et al.* (2015a) conducted a survey of 528 enterprises within the Belarus, Kazakhstan and the Russian Federation to determine the most important NTMs, and their incidence. To determine the AVEs of these barriers on a bilateral basis among the three countries of their survey, Vinokurov *et al.*, (2015b) then estimated two gravity models.[21] For the gravity model, the barriers are combined into two types: (i) NTM-T, which are classic old style non-tariff barriers such as quotas and non-automatic licenses, as well as sanitary and phyto-sanitary (SPS) measures and technical barriers to trade (TBTs); and (ii) NTM-P which are all other measures that impact trade such as government procurement restrictions, price controls

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[20] The mapping is based the sub-categories in the IMF data explained in United Nations (2011, annex 1).
[21] For an alternate gravity model estimate of the trade impacts of the NTMs (but not the AVEs),which is also based on the survey of Vinokurov *et al.* (2015a), see Vakulchuk and Knobel (2018).

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and subsidies. The EAEU appears to be focusing primarily on reducing SPS and TBT measures as barriers to trade, which is consistent with the results of Cadot and Gourdon (2014). Cadot and Gourdon have found that in the post-WTO world, the primary NTMs impacting trade are SPS and TBTs. Further, the impact of trade of other measures, such as price controls, are ambiguous at the theoretical level.[22] Consequently, conservatively, we employ the estimates of Vinokurov *et al.*, (2015b) for NTM-T for the AVEs of NTMs, but ignore their estimates for NTM-P. Our estimates are reported in tables 15-18.

For countries outside the EAEU and for Armenia, our estimates of the AVEs of NTMs are based on the estimates of Kee *et al.*, (2009). Building on Kee *et al.*, (2008), Kee *et al.*, (2009) estimate the AVEs of NTMs for 105 countries at the 6 digit level. These estimates, as well as aggregated estimates for manufacturing and agriculture for the 105 countries, are available on the World Bank website.[23]

The measure we use from Kee *et al.* is the uniform tariff equivalent that generates the same level of import value for the country in a given year, based on applied tariffs, which take into account bilateral trade preferences.[24] At the six digit level, the estimates of Kee *et al.* are sometimes subject to a substantial margin of error that may lead to misleading results in a CGE model policy analysis. Consequently, we have chosen to use the aggregated estimates of Kee *et al.* at the sector level, i.e., for each country, we have two AVEs for each country: one AVE of the NTMs in manufacturing and one AVE of the NTMs in agriculture. We then further aggregate these values for 93 countries to the regions of our model. Where the non-tariff measure has a regulatory function, we assume that the estimate of Kee *et al.* is the discriminatory component of the regulation.

Although the benchmark equilibrium incorporates tariff free trade between partners in the EAEU, non-tariff barriers remain a very significant problem (see Vinokurov *et al.*, 2015a). Consequently, we assume the ad valorem equivalents of the non-tariff barriers apply to all countries.

4.4 Share of the Output of the Sector produced by Multinational Service providers.

The impact of liberalization of barriers to foreign direct investment in business services sectors will depend on the share of the output of the sector sold by multinationals. We need ownership shares for each of the regions of our model for all eight of the sectors of our model with foreign direct investment. The data for the four EAEU countries the most important for our central scenario, since liberalization of barriers is reciprocal among these four countries. For these data we rely primarily on Kolesnikova (2014b) for Belarus, Eroyants (2011) for Armenia, Idrisov (2010b) for Russia and Jensen and Tarr (2008) for Kazakhstan. Data were obtained from interviews with National Statistical Committees and Ministries, commercial sources such as Bankscope and Axco, professional and industry associations. Details may be found in the respective studies.

In the case of air transport services, we made several updates and adjustments. In Belarus, updated information from the Ministry of Transport of Belarus revealed that the domestic share is 74.9% and Russia's share is 7%. We estimated the remaining shares based on carriers that serve the Minsk

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[22] Tarr (1993) has shown that Polish price controls on autos and color televisions in the late 1980s acted as an implicit unintended subsidy toward imports. That is, the price controls biased trade toward more imports, not less imports, since the excess demand for domestic goods led to an increased demand for the imported good that was not price controlled.

[23] The dataset is available at:
http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:22574446~pagePK:642 14825~piPK:64214943~theSitePK:469382,00.html.

[24] Specifically, we take the difference between the Overall Trade Restrictiveness Index (OTRI) and for the Tariff-only OTRI (OTRI_T), which gives us the AVE of the NTMs.

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airport.[25] In the case of Russia, we use Idrisov's estimate for Russia's share and, estimate shares for the remaining regions based on the carriers that serve the Sheremetrevo and Domodedovo airports. All regions in our model serve Russia with the exception of the United States and Armenia. For Armenia, the Armenian carrier has gone out of business since the time of the Eroyants (2011) paper, so we set the domestic share at zero. Remaining shares were based on carriers that serve Zvarnots airport. We found positive shares for all regions in our model except Kazakhstan and China. (The new small carrier "Armenian Airways" is owned by nationals of the United States with ethnic ties to the Caucasus.) For Kazakhstan, we retain the Kazakhstani share from Jensen and Tarr (2008). Based on service to the two major international airports in Kazakhstan, the shares of the United States and Armenia are zero, but are positive for all other regions.

4.5 Social Accounting Matrices

The core data of the model (such as input-output coefficients, value added and its components, and final demand) comes from the GTAP 9 dataset, described on the GTAP website: https://www.gtap.agecon.purdue.edu/databases/default.asp. The GTAP 9 dataset, which was released in May 2015, contains 57 sectors and 140 regions. We define our aggregation of the dataset in table 2.

4.6 Trade Data by Regional Partner and Sector

To obtain data on imports and exports from the different regions of our model, we used trade data from the GTAP 9.0 data set. Although trade data are available from WITS access to the COMTRADE database, our data must constitute a balanced data set that satisfies all accounting identities. For example, exports of any product from a region of our model must equal the imports of the rest of the world for this product from that region. And for each region and product, exports plus domestic consumption must equal imports plus domestic production. Unlike the COMTRADE data, the GTAP dataset satisfies all accounting identities.

5. Results: Deep Integration in the EAEU

We assume that the EAEU members act collectively on all actions in our scenarios. In our benchmark equilibrium we assume that tariff free trade prevails, so we do not simulate cuts in tariffs within the EAEU. We assume that the barriers that lead to high trade costs apply to all countries and regions. In tables 15-18, we show the benchmark ad valorem rates of distortion for all barriers we apply.

5.1 Scenario Definition ("EAEU Central")

We execute several scenarios in our multi-region trade model to assess the impacts of the reduction in trade costs by Armenia, Belarus, Kazakhstan and the Russian Federation as members of the Eurasian Economic Union. We include a reduction of the ad valorem equivalents of three types of trade costs: time costs of trade (trade facilitation); non-tariff barriers; and barriers against foreign suppliers of services, both services provided through FDI and cross-border. The specifics and rationale are as follows (see also table 20).

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[25] For lists of carriers that serve the following principal airports in our four focus countries see:
https://en.wikipedia.org/wiki/Minsk_National_Airport;
https://en.wikipedia.org/wiki/Sheremetyevo_International_Airport;
https://en.wikipedia.org/wiki/Moscow_Domodedovo_Airport;
https://en.wikipedia.org/wiki/Zvartnots_International_Airport; https://en.wikipedia.org/wiki/Almaty_International_Airport
https://en.wikipedia.org/wiki/Astana_International_Airport.

Trade Facilitation: we assume a 20 percent cut in the ad valorem equivalents of the time cost of trade within the EAEU and a five percent cut in these costs for trade with countries outside of the EAEU. We take modest cuts in these barriers for multiple reasons. One reason is that the most efficient countries in the world have positive time costs of trade. Second, part of the costs are due to infrastructure deficiencies which can't be addressed through policy alone. There are, however, collaborative projects and plans among members of the EAEU, notably including the elimination of customs posts within the EAEU (similar to what was implemented by the single market reforms of the European Union), designed to cut the time costs of trade. Since there is likely a spillover benefit of these measures within the EAEU that will cut the time costs of trade outside of the EAEU, we assume cuts in external trade costs as well.

Non-Tariff Barriers: we assume a modest 20 percent cut in the ad valorem equivalent of the non-tariff measures. Under the auspices of the Eurasian Economic Union, the member countries are attempting to reduce non-tariff barriers, especially standards and technical regulations that impede the flow of goods between the member countries. Non-tariff measures, however, have become much more subtle in the post-Uruguay Round world. Most measures have a legitimate regulatory function and distinguishing the legitimate regulations from protective or inefficient regulations is complicated. Consequently, we take a more modest 20 percent reduction in the ad valorem equivalent of these barriers. We assume these are barriers that apply to imports.

Barriers on foreign providers of services: The Eurasian Economic Union has called for the free movement of services within the five member states, along with the free movement of goods, capital and labor. Unlike with time-in-trade and non-tariff barriers, where removal of some barriers require investment, most services barriers are policy barriers that can be removed by a change in regulations.[26] Consequently, we allow for a larger cut in these barriers. We take a fifty percent cut in these barriers among the member countries. We assess both the impact of cuts to barriers against services provided by foreign direct investment and services provided cross-border.

5.2 Welfare Effects of Deep Preferential Integration by the Eurasian Economic Union

5.2.1 Aggregate Effects from our Central Scenario. Our aggregate results for Armenia, Belarus, Kazakhstan and the Russian Federation are presented in table 21. Under the column labeled "EAEU Central," we report our findings for the impacts of combined cuts in trade facilitation, non-tariff barriers and services barriers. The welfare gains are presented as Hicksian equivalent variation as a percent of consumption, and in parentheses, Hicksian equivalent variation as a percent of GDP.[27] All

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[26] For example, possible restrictions on foreign service providers across all sectors include conditions that require a minimum equity ownership share by host country nationals or a joint venture arrangement to be permitted to supply services. There may be restrictions on the ability of the multinational company to have its executives or specialists work in the host country. In transport services, there may be domestic monopoly restrictions on who may operate ports or airports or railroads. For example, in maritime services, "cabotage" or only host country ships may carry cargo is often observed. In banking and insurance there are typically licenses required to operate the company and the licensing may be discriminatory against foreign companies. Further certain types of services (like banks can't sell insurance) may be prohibited or conditions of operation may be limited. Reinsurance services may be monopolized or constrained. In telecommunications the regulatory framework for interconnection may be restrictive or open.

[27] Equivalent variation is a measure of the real income difference between equilibrium A and equilibrium B. If the representative consumer has a higher level of utility in equilibrium A, equivalent variation is the amount of income that would make the representative consumer indifferent between: (i) equilibrium B plus the income; and (ii) equilibrium A. We estimate this amount in monetary units at prices in the initial equilibrium in our four focus countries. To provide scale to this monetary amount relevant to the size of the economy, since it is primarily a consumer-based measure, throughout this paper, we report equivalent variation as a percent of aggregate consumption in each of the four economies. In table 21, however, we also report equivalent variation as a percent of GDP.

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results are estimated **annual gains** that are repeated every year. Thus, if x is the Hicksian equivalent variation as a percent of consumption for one year, the present value of the gains into the infinite future are the equal to x*[(1+ d)/d], where d is the discount rate for future gains. For example, with d = 7 percent, the present value of the gains would equal 15 times the values presented in table 21.

We find that all four EAEU countries would gain from successful deep integration, with gains ranging from a low of 0.82 percent of consumption in the case of the Russian Federation to a high of 4.77 percent of consumption in the case of Belarus. To examine the source of these gains and the relative importance to the reforms to the member countries, we execute five additional scenarios in which we allow only one of the reforms or its components to be implemented in each case.

5.2.2 Preferential Reduction of Time in Trade Costs by the EAEU. We evaluate the benefits on each of our EAEU countries of its own policies to reduce time in trade costs on its imports (labeled "only import trade facilitation" in table 21) as well as its policies to reduce time in trade costs on its exports (labeled "only export trade facilitation" in table 21). The sum of these two impacts is the benefit to the country of the trade facilitation measures of the EAEU. At 2.09, 1.32 and 0.56 percent of consumption for Belarus, Kazakhstan and the Russian Federation, respectively, the reduction in time in trade costs provides the largest welfare gains for these three countries (as a share of their total gains). In the case of Armenia, the reduction of FDI barriers in services is a larger share of the overall gains. In all scenarios shown in table 21, we assume that all three types of trade barriers consume capital and labor in the home country. For example, reduction of the time in trade costs by 20 percent within the EAEU and by 5 percent for countries outside the EAEU, leads to freeing up of 20 percent of the capital and labor devoted to overcoming the time costs of trade within the EAEU on both imports and exports and five percent of the capital and labor devoted to overcoming the time costs of trade of the EAEU countries on both imports and exports on trade outside of the EAEU. To help interpret the results, we have calculated the value of the rents recaptured by all of the policies simulated. These are displayed in table 22. In the case of improved trade facilitation in the EAEU, rents recaptured as a percent of domestic consumption range from 0.84 percent in Belarus to 0.24 percent in the Russian Federation. These are "rectangles" of gains. The reduction of the costs of trade results in an increase in the returns to exporting relative to domestic sales and a decrease in the cost of imports relative to domestic production. As a result, there are also "triangles" of efficiency gains from increased trade. Aggregate trade increases in all four EAEU countries, ranging from 5.3 percent in Belarus from the combined reduction of time in trade costs on exports and imports to 1.9 percent for Russia.

5.2.3 Reduction of Non-Tariff Barriers within the EAEU. Belarus is also the country that gains the most from the reduction of non-tariff barriers within EAEU. Hicksian equivalent variation increases by 1.52 percent in the case of Belarus, but only by 0.07 percent of consumption in Kazakhstan. Since the reduction on NTMs is preferential only, non-EAEU countries do not receive a reduction in the NTMs, Since we assume that the NTMs require the expenditure of capital and labor, these "rents" (shown in table 22) are captured and contribute to welfare. Going back to Viner (1950), it is ambiguous whether resource reallocation impacts contribute to or detract from welfare. In some cases, the preferential reduction in NTMs may lead to a shift of purchases toward less efficient EAEU suppliers away from more efficient suppliers from the rest of the world. In other cases, there will be more trade with EAEU suppliers who are the most efficient suppliers. Finally, EAEU members experience a terms-of-trade gain on their exports that contributes to their welfare. Our model assesses the rent recapture, resource allocation and terms-of-trade impacts (as well as any endogenous productivity effects).

5.2.4 Preferential Reduction of Barriers against EAEU Service Providers. The EAEU country that has the largest estimated gains from fifty percent preferential liberalization of services barriers against FDI is Armenia: its estimated gains are 1.72 percent of consumption. This is the largest source of gains for Armenia, but this reform leads to relatively small gains of 0.13 and 0.03 percent of consumption

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in the cases of Kazakhstan and Russia, respectively. The lower gains for Kazakhstan and Russia reflect the lower ownership shares of their business services sectors by other EAEU members (see table 20). On the other hand, the Russian Federation is very important in the provision of business services in Armenia in all sectors except professional services. There is a Dixit-Stiglitz externality from additional services providers that results in the reduction of the quality adjusted cost of business services from additional business services providers. There are rectangles of recaptured rents from reducing the barriers on EAEU foreign suppliers of services in other EAEU markets. We say potential, since if there are no sales of services from partner countries initially, there are no rents to be recaptured.

Liberalization of barriers against cross-border service providers within the EAEU results in only very small gains to the member countries. This reflects the small volume of cross-border trade in services among the member countries.

5.3 Different Negotiating Interests Among the Member Countries.

Trade negotiation typically involves an exchange of "concessions." All the reforms to reduce trade costs within the EAEU are beneficial to all the EAEU countries. But we estimate that the most important reform from the perspective of Armenia is the reduction of barriers against FDI in services. For Belarus, the reduction of non-tariff barriers in the most important. Whereas for Kazakhstan and the Russian Federation, trade facilitation is the most important reform. Given the different estimated welfare gains from the EAEU internal reforms, the results may help define the different negotiating interests among the EAEU countries regarding effective implementation of the reforms.

6. Sensitivity Results

We assess the sensitivity of the results in three dimensions. First, in section 6.1 we consider sensitivity of the results to spillovers (or wider liberalization) of the reforms to the regions outside of the EAEU. In section 6.2, we then examine the impact on the results of a perfect competition model. Finally, in section 6.3, we examine the sensitivity of the results to the specification of the parameters of the model.

6.1 Spillover or Wider Liberalization

6.1.1 Conceptual Issues on Wider Liberalization and Spillovers. The above estimates indicate that there are gains from deep integration within the EAEU. However, the combined current dollar GDP of the five EAEU members in 2017 was 1.81 trillion US dollars. This was only 2.2 percent of the world GDP in 2017 of 80.7 trillion US dollars.[28] Thus, the EAEU is not a large market in comparison to the world market. Economic theory indicates that there should be substantially greater gains from integrating into the world trading environment. This suggests a benefit to the EAEU members of extending their efforts at the reduction of trade costs to the wider world market.

Further, Baldwin (2014) has argued that compared to regional preferences regarding tariffs, the deep integration aspects of 21st century regional agreements are relatively difficult to limit to partners to the agreement; and, global value chain considerations lead to a "multilateralization" of some of the deep integration aspects of 21st century regional agreements. We argued above that measures that reduce the time in trade costs for EAEU members would inevitably convey at least a partial benefit to non-members. For that reason, in our central scenario, we allowed non-EAEU regions to realize a five percent reduction

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[28] In 2017, World Bank data indicates that the GDP of the EAEU members was (in billions of US dollars): Armenia, 11.5; Belarus, 54.4; Kazakhstan, 159.4; Kyrgyz Republic, 7.6; and the Russian Federation, 1,578. See https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=map.

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in their time in trade costs on exports to and imports from the EAEU, while EAEU members obtained a 20 percent reduction. Regarding preferential liberalization of barriers against foreign investors in services, Fink and Jansen (2009) and Fink and Molinuevo (2007) argue that it is an unsettled question of how feasible it is to exclude third countries from preferential liberalization in services and that, in practice, some spillovers have occurred.[29]

6.1.2 Aggregate Spillover Results. In this section we evaluate the impact of a reduction in the trade and FDI barriers against third countries by the EAEU as part of its EAEU deep integration efforts. This could be interpreted as wider spillovers in the preferential deep integration of the EAEU. Alternately, we could interpret these results as the impacts of a decision by the EAEU to liberalize more widely either by additional PTAs or with respect to the entire world. We will often refer to these scenarios as wider spillovers, even though it could be a purposeful liberalization decision. In order to assess the relative importance of the major markets, we consider the impacts of spillovers or liberalization for the whole world or separately limited to only the European Union, the USA or China. We summarize the welfare results of all these scenarios in table 27 and provide more detailed results for each of the scenarios in table 28-31.

In our central scenario, we assumed a 50 percent reduction in the ad valorem equivalents of the barriers against EAEU partner region providers of services. In our spillovers scenarios, we allow a 25 percent reduction in the ad valorem equivalents of the barriers against service providers in the region outside of EAEU that is receiving the spillover or liberalization. That is, we take a 25 percent reduction in the AVEs of the barriers in services with respect to the EU, China, USA or whole world outside of the EAEU. Similarly, regarding non-tariff measures, we allow a ten percent reduction in the ad valorem equivalents to non-EAEU regions, while EAEU regions experience a 20 percent reduction. In the case of time in trade costs, we take 20 percent with respect to the EAEU, ten percent with respect to the region receiving designated spillovers, and five percent with respect to all other regions (since the latter was assumed in the central scenario). In addition to the results of these scenarios, the specifics of the cuts in the AVEs are defined in tables 28-31.

We see in table 27, that if spillovers extend to the whole world, the welfare gains increase very substantially for all four countries. For Belarus, Kazakhstan and the Russian Federation the gains are between 2.5 and 4.5 times larger than the EAEU central scenario, where spillovers or wider liberalization are much more limited. The largest absolute increase in the aggregate welfare gains is for Kazakhstan, where welfare increases by 4.5 percent of consumption to 6.26 percent of consumption. Armenia has a more substantial share of its trade and inward FDI within the EAEU than the other three countries, so it gains the least from the wider spillovers. But even for Armenia, the aggregate gains increase by 1.42 percent of consumption. These results reflect the observation above that the collective GDP of the EAEU is only 2.2 percent of world GDP, so that the gains are likely to be substantially larger with wider reduction of trade costs.

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[29] If the preferential agreement grants equivalent rights to third country firms located in the partner region, the preferential arrangement becomes somewhat multilateral. The rules of origin would impact how multilateral the preferential liberalization becomes. What rules of origin apply in practice is an unsettled question both in the literature and in practice. Fink and Jansen (2009) note that typically, FTAs require that enterprises eligible for the agreement's preference are incorporated under the laws of one of the partner countries. Further, to qualify for preferences, the enterprise must have "substantial business activities" within the region. This indicates that preferences do not extend to enterprises located in third countries if they are not incorporated with substantial business interests in the region. As an example of these principles, Fink and Molinuevo (2007) note that in East Asia non-parties can benefit from the preferences provided in the FTA, as long as they establish a juridical person in one of the FTA member countries and are commercially active in that country. But again, the preferences for non-parties are enterprise specific and do not extend to enterprises without a commercial preference with substantial business interest.

6.1.3 Relative Importance to the EAEU Countries of the Spillovers by Region and Reform.

To assess the source of these additional gains, we examine the components of the aggregate reform by three major regions. Regarding the importance of regions, for Armenia, Belarus and the Russian Federation, the European Union is the region that is most important with respect to spillovers, reflecting the larger trade shares and FDI ties with the European Union. For Kazakhstan, however, China is most important for its trade, so it gains the most from trade facilitation and the reduction of non-tariff barriers when spillovers extend to China. The United States is most important with respect to FDI for Kazakhstan, so Kazakhstan gains the most from the liberalization of FDI barriers against services suppliers from the United States.

We estimate, however, that, for Belarus, it is the spillover regarding trade facilitation and the reduction of non-tariff barriers on third countries that contributes the most to its additional welfare gains. For the Russian Federation and Kazakhstan, the reduction of FDI barriers against third country services suppliers is the source of the largest increase in welfare. For Armenia, it is the spillovers from the reduction of non-tariff barriers that contributes the most to its increase in welfare from spillovers. Given the different estimated welfare gains from spillovers, the results may help define the different negotiating interests among the EAEU countries regarding wider liberalization or willingness to encourage spillovers of the internal reforms.

Again, trade negotiation typically involves an exchange of "concessions." Our estimates show that all the spillovers are beneficial to all the EAEU countries. These results on the relative importance of the type of spillover and the region may help to inform negotiating positions of the member countries.

6.2 Sensitivity to a Constant Returns to Scale (CRTS) Model

In table 32, we show the results of the EAEU Central scenario with all sectors and FDI occurring with constant returns to scale. The estimated gains fall for all four countries, but the fall is the largest for Armenia and Belarus (by 1.27 and 1.13 percent of consumption, respectively). For both Armenia and Belarus, the most important reason is the smaller estimated gains from FDI liberalization. The CRTS model fails to incorporate the econometric results we cited regarding the endogenous productivity effects from FDI liberalization of services. This shows that our innovative model with FDI and Dixit-Stiglitz endogenous productivity impacts is important to explaining our results.

6.3 Sensitivity of the Results to Parameter Values

In piecemeal sensitivity analysis we assess the impact of eight sets of parameters on the welfare results of our four focus countries. We vary one set of parameters, while holding all other parameters of the model constant at their central values. In this manner, we are able to determine which parameters have an important impact on the results. We assess the impacts of the parameters on the results of our aggregate EAEU central scenario and the scenario where there are spillovers to the whole world from the combined reforms of the EAEU central scenario.

The results are reported in tables 33-36. We see that of the eight sets of parameters, the three sets of parameters that impact business services most strongly are the parameters that have the most significant impact on the results: the Dixit-Stiglitz elasticities in services sectors, $\sigma(q_i, q_j)$; the elasticity of substitution between value-added and business services, σ(va, bs); and the matrix of elasticities of firm supply in imperfectly competitive goods and services sectors. This highlights the importance of the econometric results on the productivity impact of business services that we cited on the first page of this paper. Clearly our model incorporates these productivity impacts, but these results quantify a margin of error in the results. Depending on the scenario and the country, the Dixit-Stiglitz elasticities in goods sectors $\sigma(q_i, q_j)$ can have more than a modest impact on the welfare results. The other elasticities have only a very modest impact on the welfare results.

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The results follow from the Le Chatelier principle, i.e., typically larger elasticities lead to larger welfare gains, as the economy can adapt more readily. The exception to this pattern is the Dixit-Stiglitz elasticities in the goods and services sectors. In the case of these parameters, there are offsetting impacts. Lower values of the Dixit-Stiglitz elasticities imply that varieties are less close to each other, so additional varieties are worth more and changes that induce more varieties will lead to greater welfare gains. On the other hand, the economy has less capacity to adapt and use the new varieties. Thus, theory is ambiguous regarding the impact of these parameters. As the Dixit-Stiglitz elasticities approach one from above, the variety impact dominates the ability to adapt impact. Since the central values are larger in goods than in services, we see more ambiguous results in goods.

7. The Value to Armenia of the Legal Right to Work Russia

One aspect of the EAEU agreement that is working well is the free movement of labor. EAEU member state employers are free to hire member state migrant workers without the need of a work permit. If member state migrant workers are officially employed, their children may attend public schools and their family members obtain mandatory medical insurance coverage. A significant remaining problem is portability of national pensions, which is being negotiated.[30]

How much is the value of the free movement of labor worth compared to the benefits we estimate from the reduction of trade costs on goods and services? We employ the neoclassical model of labor migration to obtain an estimate. This is a calculation outside of our numerical general equilibrium model.

Clearly the value of free migration will vary significantly among the countries. Due to the small disparity between wages in Russia and Kazakhstan, the neoclassical model of the gains from migration suggests only very small gains from migration between these two countries. Of our four focus countries, remittance income is the most important for Armenia. Consequently, we focus on an estimate of the value to Armenia of free migration of labor within the EAEU, which is primarily the value to Armenia of its workers having the legal right to live and work in the Russian Federation.

Although there were Armenians working in Russia prior to their status becoming legal in 2015, their illegal status limited the kinds of jobs they could obtain (and the range of Armenian workers who would seek employment in Russia), limited their ability to negotiate with employers, and obligated them, in some situations, to make payments in order to work or to avoid detection. Further, their families did not qualify for social benefits such as education or health insurance, so they often did not bring their families, thereby incurring a cost of living in both Russia and Armenia and a quality of life cost in many cases. These considerations indicate that the illegal work status of Armenians in Russia means that the value of Armenian remittances was considerably less than what could be obtained with a legal status. As an upper bound estimate on the value of the EAEU commitment to allow free migration, we assume that, prior to 2015, these various expenses and rent extraction left Armenian migrants in Russia with no net benefits over working in Armenia; this is equivalent in our estimate to assuming no Armenians worked in Russia prior to 2015. The existence of Armenian workers in Russia prior to its accession to the EAEU, however, does not impose an upward bias with respect to the value to Armenia of the migration of its workers to Russia—it is the value of the legal right for EAEU citizens that may be upward biased.

In figure 2, we display the migration model and the key data.[31] We measure Russian labor and the value of the marginal product of Russian labor from the left-hand side and Armenian labor and the value of the marginal product of Armenian labor from the right-hand side. L_A is the quantity of Armenian labor available, assumed to be fixed and initially fully employed exclusively in Armenia; and L_R is the quantity of

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[30] See Vinokorov (2017) for further details.
[31] See de Melo and Tarr (1992, 118-119) for further explanation.

Russian labor available (also assumed to be fixed), all of which works in Russia. $L_A + L_R$ = the total labor available to both economies, independent of the migration status. An Armenian migrant working in Russia receives the Russian wage rate, while Armenian output falls by the value of her marginal product. With free migration and no friction costs, Armenian labor migrates to Russia. The migration raises the marginal product of labor in Armenia until, in equilibrium, the wage rate in Armenia rises to the wage rate in Russia. We measure the value to Armenia of the migration by the triangle ABC, which is the approximately the difference between the wages earned by Armenians working in Russia and the value of their marginal product had they worked in Armenia.[32] Since Russia is extremely large relative to Armenia, we draw the curves that suggest only a trivial impact on the wage rate in Russia from Armenian migration. To the extent that there is an impact on the wage rate in Russia (that does not impact Russian unemployment), there would be a triangle of gains to Russia from Armenian migrants in Russia.

In 2014, the year prior to Armenian accession to the EAEU, the average annual salary in Armenia was US$4,931,[33] while the average annual salary in Russia was US$10,311.[34] We take these values as the value of the marginal product of labor in Armenia and Russia, respectively, prior to free migration of Armenians to Russia in 2015. The wage disparity induces Armenian migration to Russia (or an increase in their salary to the value of their marginal product), but given Russia's relative size, we assume no impact on the Russian wage. According to the Russian Ministry of Internal Affairs, there were 232,247 Armenian citizens working in Russia in 2017.[35] The value of the triangle ABC is US$624.7 million (= 0.5*232,247*US$5,380).

Based on World Bank data cited above, the GDP of Armenia in 2017 was US$11.537 billion.[36] Thus, the model estimate of the value to Armenia of the free movement of labor as a percent of Armenian GDP is 5.41 percent = (.06247/11.537)*100. This exceeds the value to Armenia of the combined reductions in trade costs, even with spillovers. Despite the caveats above regarding a possible upward bias to value of the right of Armenians to work in Russia under EAEU rules, these estimates suggest that, in the case of Armenia, at a minimum, the value of the free movement of labor is a very important benefit of the EAEU; it may also be the most important economic aspect of its membership in the EAEU.

8. Key Policy Results and Conclusions

We assessed the impact of measures to reduce trade costs in the Eurasian Economic Union through the reduction of time in trade costs, the reduction of non-tariff barriers in goods and the liberalization of barriers against foreign suppliers of services. We have developed an innovative model of trade and FDI to assess deep integration. We showed that this model produces important differences in the results compared with a perfect competition model.

In our central scenario we evaluated the impacts of successful EAEU integration regarding the reduction of trade costs among the EAEU members (with very limited spillovers or liberalization toward third countries). We estimated significant gains in our central scenario for the EAEU members, with

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[32] In general, it is the value of the integral between the equilibrium wage in Russia and the marginal product of labor in Armenia over the range (L_A - 232, 247) to L_A. Assuming a linear marginal product of labor in Armenia, our calculation is precise.

[33] We took the average of the twelve months of data from the National Statistical Service of the Republic of Armenia at: http://www.armstat.am/file/article/sv_12_14r_142.pdf

[34] We took the average of the twelve months of data for Russian wages from Rosstat at: http://www.gks.ru/free_doc/doc_2017/trud_2017.pdf. The Rosstat wage data are in rubles, so the monthly data were converted to US dollars based on exchange rates published by the Bank of Russia at: http://www.cbr.ru/statistics/credit_statistics/ex_rate_ind/03-ex_rate_14.xlsx

[35] https://мвд.рф/Deljatelnost/statistics/migracionnaya/item/12162171/

[36] https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=map

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Armenia and Belarus experiencing the largest gains at 3.1 and 4.8 percent of consumption, respectively. This shows that efforts by the EAEU member countries to implement their core objectives in creating the single market would be beneficial.

We also evaluated a scenario where the measures to reduce trade costs and liberalize barriers against FDI in services are extended to third countries, either by a wider liberalization effort or by spillovers. We estimated that the gains increase between 2.5 and 4.5 times for Belarus, Kazakhstan and the Russian Federation. This shows that, compared with a narrow implementation of the trade cost reduction measures within the EAEU member countries, the EAEU member countries would benefit with substantially larger gains if they were to succeed in extending the trade costs reduction measures to third countries.

In the case of Armenia, we estimated the right of its workers to legally work in Russia, including social benefits for the workers and their families such as access to public education and medical insurance. We find that this feature of EAEU integration is likely the most important source of gains for Armenia—it is likely worth as much to Armenia as the combined aspects of all the trade costs reduction measures.

Regarding spillovers from regions, for Armenia, Belarus and the Russian Federation, the European Union is the region that is most important. For Kazakhstan, however, China is most important for its trade, but the United States is most important with respect to FDI for Kazakhstan. Regarding spillovers from the type of reform, we estimate that, for Belarus, trade facilitation and the reduction of non-tariff barriers on third countries are the most important reforms for its additional welfare gains. For the Russian Federation and Kazakhstan, the reduction of FDI barriers against third country services suppliers is the source of the largest increase in welfare. For Armenia, it is the spillovers from the reduction of non-tariff barriers that contributes the most to its increase in welfare from spillovers.

Trade negotiation typically involves an exchange of "concessions." Our estimates show that all of these trade costs reduction reforms and all of the spillovers are beneficial to all the EAEU countries, but, as we summarized in the previous paragraph, the various reforms and the spillovers impact the EAEU member countries differently. Thus, our results identify the importance to each of the EAEU members of the various reforms and suggest where their economic interests lie regarding where they should focus their efforts to achieve reform. Given the different estimated welfare gains from the trade cost reductions within the EAEU and from the spillovers, the results may help define the different negotiating interests among the EAEU countries regarding the speed of internal EAEU trade costs reduction and from wider liberalization or willingness to encourage spillovers of the internal reforms.

References

Alekseev, Alexander, Denis Sokolov, Natalia Tourdyeva and Ksenia Yudaeva (2004), "Estimating the Effects of EU Enlargement, WTO Accession and the Formation of FTA with the EU or CIS on the Russian Economy." Available at: https://www.gtap.agecon.purdue.edu/resources/download/1887.pdf

Arkolakis, Costas, Natalia Ramondo, Andres Rodriguez-Clare and Stephen Yeaple (2018), "Innovation and Production in the Global Economy" *American Economic Review*, Vol. 108 (8), 2128–2173.

Armington, P.S. (1969), "A Theory of Demand for Products Distinguished by Place of Production," *International Monetary Fund Staff Papers*, Vol.16 (1), 159–178.

Arnold, Jens M., Beata S. Javorcik and Aaditya Mattoo (2011), "Does Services Liberalization Benefit Manufacturing Firms: Evidence from the Czech Republic," *Journal of International Economics*, 85 (1), 136-146.

Arnold, Jens M., Beata S. Javorcik, Mary Lipscomb and Aaditya Mattoo (2016), "Services Reform and Manufacturing Performance: Evidence from India," *Economic Journal,* Vol. 126, Issue 590, 1-39.

Arvis, Jean-Francois, Yann Duval, Ben Shepherd, Chorthip Utoktham and Anasuya Raj (2016), "Trade Costs in the Developing World: 1996-2010," *World Trade Review*, Vol. 15 (3), 451-474.

Aslund, Anders (2013), "Push for Customs Union Turns Friends to Foes," *The Moscow Times*, September 10. Available at: http://www.themoscowtimes.com/opinion/article/push-for-customs-union-turns-friends-to-foes/485789.html

Baldwin, Richard (2014), "Multilateralizing 21st Century Regionalism," OECD Global Forum on Trade Paper. Available at:https://www.oecd.org/tad/events/OECD-gft-2014-multilateralising-21st-century-regionalism-baldwin-paper.pdf

Baldwin, Richard E., Forslid, Rikard and Haaland, Jan (1999), "Investment Creation and Investment Diversion: Simulation Analysis of the Single Market Programme," in R. Baldwin and J. Francois (eds.), *Dynamic Issues in Applied Commercial Policy Analysis*, Cambridge: Cambridge University Press.

Balistreri, Edward J., Jesper Jensen and David G. Tarr (2015), "What Determines Whether Preferential Liberalization of Barriers against Foreign Investors in Services are Beneficial or Immizerising: Application to the case of Kenya," *Economics: The Open-Access, Open-Assessment E-Journal, Vol.* 9 (2015-42): 1—134. http://dx.doi.org/10.5018/economics-ejournal.ja.2015-42

Balistreri, Edward J., Maryla Maliszewska, Israel Osorio-Rodarte, David G. Tarr and Hidemichi Yonezawa (2017), "Poverty, Welfare and Income Distribution Implications from Reducing Trade Costs Through Deep Integration in Eastern and Southern Africa" *Journal of African Economies.* First published online September 12, 2017, DOI:10.1093/jae/ejx024

Balistreri, Edward J., Zoryana Olekseyuk and David G. Tarr (2017), "Privatization and the Unusual Case of Belarusian Accession to the WTO," *The World Economy,* Vol. 40, 2564-2591. DOI: 10.1111/twec.12520.

Balistreri, Edward J., Thomas F. Rutherford and David G. Tarr (2009), "Modeling Services Liberalization: The Case of Kenya," *Economic Modeling*, Vol. 26 (3), May, 668-679.

Balistreri, Edward J., David G. Tarr and Hidemichi Yonezawa (2015), "Deep Integration in Eastern and Southern Africa: What are the Stakes?" *Journal of African Economies,* Vol. 24 (5), 677-706. First published online July 28, 2015, doi:10.1093/jae/ejv012

Böhringer, Christoph, Thomas F. Rutherford, David G. Tarr and Natalia Turdyeva (2015), "Market Structure and
    the Environmental Implications of Trade Liberalization: Russia's Accession to the World Trade
    Organization," *Review of International Economics,* Vol. 23 (5), 897-923. DOI: 10.1111/roie.12197

Borchert, Ingo, Batshur Gootiiz and Aaditya Mattoo (2014), "Policy Barriers to International Trade in Services:
    Evidence from a New Database," *World Bank Economic Review*, Vol. 28 (1), 162-188.

Brenton, Paul, Natalia Turdyeva and John Whalley (1997), "Potential Trade Effects of an FTA between the EU
    and Russia," *Review of World Economics*, Vol. 133 (2), 205-225.

Broda, Christian and David E. Weinstein (2006), "Globalization and the Gains from Variety," *Quarterly Journal of
    Economics*, Vol. 121 (2), 541-585.

Broda, Christian, Joshua Greenfield and David E. Weinstein (2006), "From Groundnuts to Globalization: A
    Structural Estimate of Trade and Growth," National Bureau of Economic Research Working Paper 12512.
    Available at: http://www.nber.org/papers/w12512

Brown, Drusilla and Robert Stern (2001), "Measurement and Modeling of the Economic Effects of Trade and
    Investment Barriers in Services," *Review of International Economics*, 9(2): 262-286.

Cadot, Olivier and Julien Gourdon (2014), "Assessing the price-raising effect of non-tariff measures in Africa,"
    Journal of African Economies, Vol. 23 (4), 425-463.

Caliendo, Lorenzo and Fernando Parro (2015), "Estimates of the Trade and Welfare Effects of NAFTA," *Review
    of Economic Studies*, Vol. 82 (1), January 1-44.

Caliendo, L, R.C. Feenstra, J. Romalis and A. M. Taylor (2017), "Tariff Reductions, Entry and Welfare: Theory
    and Evidence for the Last Two Decades," NBER Working Paper, No. 2178.
    http://faculty.som.yale.edu/lorenzocaliendo/TREW.pdf

Dee, Philippa, Kevin Hanslow and Tien Phamduc (2003), "Measuring the Costs of Barriers to Trade in Services,"
    in *Trade in Services in the Asia-Pacific Region*, Takatoshi Ito and Anne Krueger (eds.), Chicago: University
    of Chicago Press.

Dreyer, Iana and Nicu Popescu (2014), "The Eurasian Customs Union: The economics and the politics," Brief No.
    11, March 21, European Union Institute for Security Studies, March. Available at:
    http://www.iss.europa.eu/publications/detail/article/the-eurasian-customs-union-the-economics-and-the-
    politics/

Duggan, Victor, Sjamsu Rahardja, and Gonzalo Varela (2013), "Service Sector Reform and Manufacturing
    Productivity: Evidence from Indonesia," Policy Research Working Paper 6349, World Bank, Washington,
    DC.

Dunning, J.H. (1985), *Multinational Enterprises, Economic Structure and International Competitiveness*, New
    York: John Wiley and Sons.

Ethier, Wilfred (1982), "National and International Returns to Scale in the Modem Theory of International Trade,"
    American Economic Review, Vol. 72 (2), 389-405.

Eroyants, Karine (2011), "Market Shares by Region in Key Services Sectors in Armenia," Appendix B in Jensen,
    Jesper and David G. Tarr, "Deep Trade Policy Options for Armenia: The Importance of Services, Trade
    Facilitation and Standards Liberalization," World Bank Policy and Research Working Paper number 5662.

Fernandes, Ana M. and Caroline Paunov (2012), "Foreign Direct Investment in Services and Manufacturing Productivity: Evidence for Chile," *Journal of Development Economics,* Vol. 97 (2), 305-321.

Findlay, Christopher and Tony Warren, eds. (2000), *Impediments to Trade in Services: Measurement and Policy Implications*, London; Routledge.

Fink, Carsten and Martin Molinuevo (2007), "Liberalization of Trade in Services: East Asian Free Trade Agreements in Services, Roaring Tigers or Timid Pandas," The World Bank. Available at: http://siteresources.worldbank.org/INTEAPSUMEASPR/Resources/2576847-1163691185244/East_Asian_FTAs_in_Services.pdf

Fink, Carsten and Marion Jansen (2009), "Services Provisions in Regional Trading Agreements: stumbling or building blocks for multilateral liberalization?" Paper presented at the WTO-CEPR conference. Available at: https://www.wto.org/english/tratop_e/region_e/con_sep07_e/fink_jansen_e.pdf

Francois, Joseph and Bernard Hoekman (2010), "Services Trade and Policy," *Journal of Economic Literature,* Vol. 48 (September), 642-692.

Francois, Joseph, Bernard Hoekman and Julia Woerz (2007), "Does Gravity Apply to Intangibles? Measuring Openness in Services," Paper presented at the European Trade Study Group annual meeting, Athens. Available at: http://www.etsg.org/ETSG2007/papers/woerz.pdf

Fukui, Tani and Csilla Lakatos (2012), "A Global Database of Foreign Affiliate Sales," GTAP Research Memorandum No. 24, July.

Guimbard, Houssein, Sébastien Jean and Mondher Mimouni *(2011),* "MAcMap-HS6 2007, an exhaustive and consistent measure of applied protection in 2007," Chapter 10.D in *Global Trade, Assistance, and Production: The GTAP 8 Data Base,* Narayanan, G., Angel Aguiar Badri and Robert McDougall (eds.), Center for Global Trade Analysis: Purdue University. Available at: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=3761

Harrison, Glenn H., Thomas F. Rutherford and David G. Tarr (2002), "Trade Policy Options for Chile: The Importance of Market Access," *World Bank Economic Review*, Vol. 16, Number 1.XXXpages

Harrison, Glenn W., Thomas F. Rutherford and David G. Tarr (1997a), "Quantifying the Uruguay Round," *Economic Journal*, Vol. 107, No. 444, September, 1405-1430.

Harrison, Glenn H., Thomas F. Rutherford and David G. Tarr (1997b), "Economic Implications for Turkey of a Customs Union with the European Union," *European Economic Review*, Vol. 41 (3-5), 861-870.

Harrison, Glenn H., Thomas F. Rutherford and David G. Tarr. (1996), "Increased Competition and Completion of the Market in the European Community: Static and Steady-State Effects," *Journal of Economic Integration*, 11 (3), September, 332-365.

Harrison, Glenn W., Thomas F. Rutherford and David G. Tarr (1995), "Quantifying the Outcome of the Uruguay Round," *Finance and Development*, December.

Helpman, Elhanen and Paul Krugman (1985), *Market Structure and Foreign Trade,* Cambridge MA: MIT Press.

Hummels, David L., Peter Minor, Matthew Reisman and Erin Endean (2007), "Calculating Tariff Equivalents for Time in Trade," Arlington, VA: Nathan Associates Inc. for the United States Agency for International Development (USAID). XXXlink

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Hummels, David L. and G. Schaur (2013), "Time as a Trade Barrier," *American Economic Review*, Vol. 103, 1-27.

Idrisov, G, (2010a). "Ad valorem equivalence to FDI restrictiveness in Russia," Available at: https://drive.google.com/drive/folders/0B0V-t-Bs4-hXZEh2XzFlZ1NPTWc

Idrisov G. (2010b), "Documentation of the Calculation of the Ownership Shares for Russia." Available at: https://drive.google.com/file/d/0B0V-t-Bs4-hXaUQ4TzZMbnhMTGs/view?usp=sharing

Jafari, Yaghoob and David G. Tarr (2015), "Estimates of Ad Valorem Equivalents of Barriers Against Foreign Suppliers of Services in Eleven Services Sectors and 103 Countries," *The World Economy,* Vol. 40 (3), 544-573, March. DOI: 10.1111/twec.12329.

Jensen, Jesper, Thomas F. Rutherford and David G. Tarr (2010), "Modeling Services Liberalization: The Case of Tanzania," *Journal of Economic Integration*, Vol. 25 (4), December, 644-675. http://dx.doi.org/10.11130/jei.2010.25.4.644

Jensen, Jesper, Thomas F. Rutherford and David G. Tarr (2007), "The Impact of Liberalizing Barriers to Foreign Direct Investment in Services: The Case of Russian Accession to the World Trade Organization," *Review of Development Economics,* Vol. 11 (3), August, 482-506.

Jensen, Jesper, Thomas F. Rutherford and David G. Tarr (2006),"Telecommunications Reform within Russia's Accession to the WTO," *Eastern European Economics,* Vol. 44 (1), January-February, 25-58.

Jensen, Jesper and David G. Tarr (2012), "Deep Trade Policy Options for Armenia: The Importance of Trade Facilitation, Services and Standards Liberalization," *Economics: The Open Access-Open Assessment E-Journal*, Vol. 6, 2012-1. http://dx.doi.org/10.5018/economics-ejournal.ja.2012-1.

Jensen, Jesper and David G. Tarr (2008), "Impact of local content restrictions and barriers against foreign direct investment in services: the case of Kazakhstan accession to the WTO," *Eastern European Economics*, Vol. 46 (5), September-October, 5-26.

Kalirajan, Kaleeswaran, Greg McGuire, Duc Nguyen-Hong and Michael Schuele (2000), "The Price Impact of Restrictions on Banking Services," in Findlay, Christopher and Tony Warren (eds.), *Impediments to Trade in Services: Measurement and Policy Implications*, London Routledge, 215-230.

Kang, Joog-Soon (2000), "Price Impact of Restrictiveness on Maritime Transportation Services," in Findlay, Christopher and Tony Warren (eds.), *Impediments to Trade in Services: Measurement and Policy Implications*, London: Routledge, 189-200.

Kee, Hiau Looi, Alessandro Nicita and Marcelo Olarreaga (2009), "Estimating trade restrictiveness indices," *Economic Journal*, Vol. 119, 172-199.

Kee, Hiau Looi, Alessandro Nicita and Marcelo Olarreaga (2008), "Import Demand Elasticities and Trade Distortions," *Review of Economics and Statistics*, Vol. 90, 666-682.

Kolesnikova, Irina (2014a), "Trade Restrictiveness Indices and Ad Valorem Equivalents in Belarusian Service Sectors," Background Paper prepared for this report, July 28. Available at: https://drive.google.com/file/d/0B0V-t-Bs4-hXUWFuXzk2V2dibUk/view?usp=sharing.

Kolesnikova, Irina (2014b), "Foreign vs. Domestic Ownership Share in Belarusian Services Sectors," Background Paper prepared for this report, July 9. Available at: https://drive.google.com/file/d/0B0V-t-Bs4-hXaUQ4TzZMbnhMTGs/view?usp=sharing

Konan, Denise Eby and Keith E. Maskus (2006), "Quantifying the impact of services liberalization in a developing country," *Journal of Development Economics*, Vol. 81 (1), 142-162.

Krugman, P. (1980), "Scale Economies, Product Differentiation, and the Pattern of Trade," *American Economic Review,* Vol. 70, 950-959.

Latorre, Maria C. and Hidemichi Yonezawa (2018), "Stopped TTIP? Its Potential on the World and the Role of Neglected FDI," *Economic Modeling*, Vol. 71, April, 99-120.

Libman, Alexander (2018), "Eurasian Economic Union: Between Perception and Reality," *New Eastern Europe*, January 9. Available at: http://neweasterneurope.eu/2018/01/09/8767/

Limão, N. (2016), "Preferential Trade Agreements," in *Handbook of Commercial Policy*, K. Bagwell and R.W. Staiger (eds.), Amsterdam: North-Holland.

Maliszewska, Maryla, Iryna Orlova and Svitlana Taran (2009), "Deep Integration with the EU and its Likely Impact on Selected ENP Countries and Russia," Case Network Report No. 88/2009. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1518342

Markusen, James R. (2009), "Adapting the Knowledge Capital Model of Multinational Enterprise to Trade and Investment in Business Services," *The World Economy*, Vol. 32 (1), 6-29.

Markusen, James R. (2002), *Multinational Firms and the Theory of International Trade*, Cambridge: MIT Press.

Markusen, James R. (1995), "Incorporating the Multinational Enterprise into the Theory of International Trade," *Journal of Economic Perspectives,* Vol. 9, 169-189.

Markusen, James R. (1989), "Trade in Producer Services and in Other Specialized Intermediate Inputs," *American Economic Review*, Vol. 79, 85-95.

Markusen, James R., Thomas F. Rutherford and David G. Tarr (2005), "Trade and Direct Investment in Producer Services and the Domestic Market for Expertise," *Canadian Journal of Economics*, Vol 38 (3), 758-777.

Mazhikeyev, Arman and Huw Edwards (2015), "Consequences of Asymmetric Deeper Eurasian Economic Integration," January 30. Available at: http://www.etsg.org/ETSG2015/Papers/042.pdf

McGuire, Greg and Michael Schuele (2000), "Restrictiveness of International Trade in Banking Services," in Findlay, Christopher and Tony Warren (eds.), *Impediments to Trade in Services: Measurement and Policy Implications*, London Routledge, 201-214.

McGuire, Greg, Michael Schuele, and Tina Smith (2000), "Restrictiveness of International Trade in Maritime Services", in Findlay, Christopher and Tony Warren (eds.), *Impediments to Trade in Services: Measurement and Policy Implications*, London Routledge, 172-188.

Melo, Jaime de and David G. Tarr (1992), *A General Equilibrium Analysis of US Foreign Trade Policy,* Cambridge, MA.: MIT Press.

Minor, Peter (2013), "Time as a Barrier to Trade: A GTAP Database of ad valorem Trade Time Costs," ImpactEcon, Second Edition, October. Available at: http://mygtap.org/resources/.

Modebadze, G. (2010), "Ad Valorem Equivalence to FDI Restrictiveness in Armenia," Available at: http://www.ssrn.com/abstract=1912366

Deep Integration in the Eurasian Economic Union: What are the Benefits of Successful Implementation or Wider Liberalization?

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Nguyen- Hong, Duc (2000), "Restriction on trade in professional services," Productivity Commission Staff Research Paper, AusInfo, Canberra, August. Available at: http://www.pc.gov.au/__data/assets/pdf_file/0016/8080/rotips.pdf

Petri, Peter (1997), "Foreign Direct Investment in a Computable General Equilibrium Framework," https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1549616.

Popescu, Nicu (2014), "Eurasian Union: the real, the imaginary and the likely," Chaillot Paper – No. 132, European Union Institute for Security Studies, September 9. Available at: http://www.iss.europa.eu/uploads/media/CP_132.pdf.

Pratten, C. F. (1975), *Economies of Scale in Manufacturing Industry*, Cambridge: Cambridge University Press

Rodrik, Dani (2011), *The Globalization Paradox*, New York: W. W. Norton.

Rutherford, Thomas F., Elisabet E. Rutstrom and David G. Tarr (2000) "A Free Trade Agreement Between the European Agreement and a Representative Arab Mediterranean Country: A Quantitative Assessment," in Bernard Hoekman and Jamel Zarrouk (eds.), *Catching Up with the Competition: Trade Opportunities and Challenges for Arab Countries,* Ann Arbor: University of Michigan Press.

Rutherford, Thomas F., Elizabet E. Rutstrom and David G. Tarr (1997), "Morocco's Free Trade Agreement with the EU: A Quantitative Assessment," *Economic Modelling*, Vol. 14, No. 9, 237-269, April.

Rutherford, Thomas F. and David G. Tarr (2010), "Regional Impacts of Liberalization of Barriers against Foreign Direct Investment in Services," the case of Russia's accession to the WTO," *Review of International Economics*, Vol. 18(1), February, 30-46.

Rutherford, Thomas F. and David Tarr (2008), "Poverty Effects of Russian WTO accession: modeling "real" households with endogenous productivity effects," *Journal of International Economics*, Vol. 75 (1), 131-150.

Rutherford, Thomas F. and David G. Tarr (2003), "Regional Trading Arrangements for Chile: Do the Results Differ with a Dynamic Model?" *Economie Intenationale*, No. 94-95, 2003, 261-282. Available at: http://www.cairn.info/revue-economie-internationale-2003-2-page-261.html.

Rutherford, Thomas F. and David G. Tarr (2002), "Trade Liberalization, product variety and growth in a small open economy: a quantitative assessment," *Journal of International Economics*, Vol. 56 (2), March, 247-272.

Schiff, Maurice and L. Alan Winters (2003), *Regional Integration and Development*, Oxford: Oxford University Press and the World Bank.

Shepotylo, Oleksandr and David G. Tarr (2013), "Impact of WTO Accession on the Bound and Applied Tariff Rates of Russia," *Eastern European Economics*, Vol. 51 (5), September-October, 5-45.

Shepotylo, O. and V. Vakhitov (2015), "Impact of Services Liberalization on Productivity of Manufacturing Firms" *Economics of Transition*, Vol. 23 (1), January, 1-44.

Smith, Alasdair, and Venables, Anthony J. (1988), "Completing the Internal Market in the European Community: Some Industry Simulations," *European Economic Review*, Vol. 32, 1501-1525.

Tarr, David G. (2016), "The Eurasian Economic Union among Russia, Belarus, Kazakhstan, Armenia and the Kyrgyz Republic: Can it succeed where its predecessor failed?" *Eastern European Economics,* Vol. 54 (1), 1-22. DOI: 10.1080/00128775.2015.1105672

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Tarr, David G. (2014), *Applied Trade Policy Modeling in 16 Countries: Insights and Impacts from World Bank CGE Based Projects*, Singapore: World Scientific Publishers.

Tarr, David G. (2013), "Putting Services and Foreign Direct Investment with Endogenous Productivity Effects in Computable General Equilibrium Models," in *Handbook of Computable General Equilibrium Modeling*, Peter B. Dixon and Dale W. Jorgenson (eds.), Amsterdam: North Holland, Elsevier B.V., pp. 303–377.

Tarr, David G. (2010), The Crucial Role for Competition in the Russian Gas Market: Implications for Russia and Europe," *IAEE Energy Forum*, Fourth Quarter, 31-35.

Tarr, David G. (2007), "Russian Accession to the WTO: An Assessment," *Eurasian Geography and Economics*, Vol. 48, (3), May-June, 2007, 306-319.

Tarr, David G. (2002), "On the Design of Tariff Policy: Arguments for and Against Uniform Tariffs," in B. Hoekman, A. Mattoo and P. English (eds.), *Development, Trade and the WTO: A Handbook*, Washington: World Bank,

Tarr, David G. (1999), "Design of Tariff Policy for Russia" in Harry Broadman (ed.), *Russia's Trade Policy: Reform for WTO Accession*, Washington D.C.: The World Bank, pp. 7-30.

Tarr, David G. (1994), "The Welfare Costs of Price Controls for Cars and Color Televisions in Poland: Contrasting Estimates of Rent-Seeking from Recent Experience," *The World Bank Economic Review*, Vol. 8 (3), September, 415-443.

Tarr, David G. and Peter Thomson (2004), "The Merits of Dual Pricing of Russian Natural Gas," *The World Economy*, Vol. 27, Issue 8. August, 1173-1194.

Tarr, David G. and Natalya Volchkova (2013), "Russian foreign trade and direct investment, patterns and policy issues," in *Handbook of the Russian Economy*, Michael V. Alexeev and Shlomo Weber (eds.), Oxford: Oxford University Press, 593-616.

Tarr, David G. and Natalya Volchkova (2010), "Foreign Economic Policy at a Crossroads," in *Russia After the Global Economic Crisis,* Anders Aslund, Sergei Guriev and Andrew Kutchins (eds.), Washington DC: Peterson Institute for International Economics and Center for Strategic and International Studies, 200-222.

Tochitskaya, Irina and Lucio Vinhas de Souza (2009), "Trade Relations between and Enlarged EU and the Russian Federation, and its effects in Belarus," *Economic Change and Restructuring*, Vol. 42 (1-2), May, 1-24.

Vakulchuk, Roman and Alexander Knobel (2018), "Impact of Non-Tariff Barriers on Trade within the Eurasian Economic Union," *Post-Communist Economies*, Vol. 30 (4), 459–481.

Viner, Jacob (1950), "The Economics of Customs Unions," in *The Customs Union Issue*, P. Oslington (ed.), Oxford: Oxford University Press, 41-81.

Vinokurov, Evgeny (2017), "Eurasian Economic Union: Current State and Preliminary Results," *Russian Journal of Economics*, Vol. 3, 54-70.

Vinokurov, E., M. Demidenko, I. Pelipas, I. Tochitskaya, G. Shymanovich and A. Lipin (2015a), *Assessing the Impact of Non-Tariff Barriers in the EaEU: Results of Enterprise Surveys*, Saint Petersburg: Eurasian Development Bank.

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Vinokurov, E., M. Demidenko, I. Pelipas, I. Tochitskaya, G. Shymanovich, A. Lipin and V. Movchan (2015b), Estimating the Economic Effects of Reducing Non-Tariff Barriers in the EaEU, Saint Petersburg: Eurasian Development Bank.

World Bank (2012), *Assessment of Costs and Benefits of the Customs Union for Kazakhstan*, Washington. Available at: https://openknowledge.worldbank.org/handle/10986/2722

World Economic Forum (2012), *The Global Enabling Trade Report, 2012: Reducing Supply Chain Barriers*, edited by Robert Lawrence, Margareta Drzeniek Hanouz and Sean Doherty. Available at www.weforum.org.

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Figure 1: Production of Output for a Representative Sector
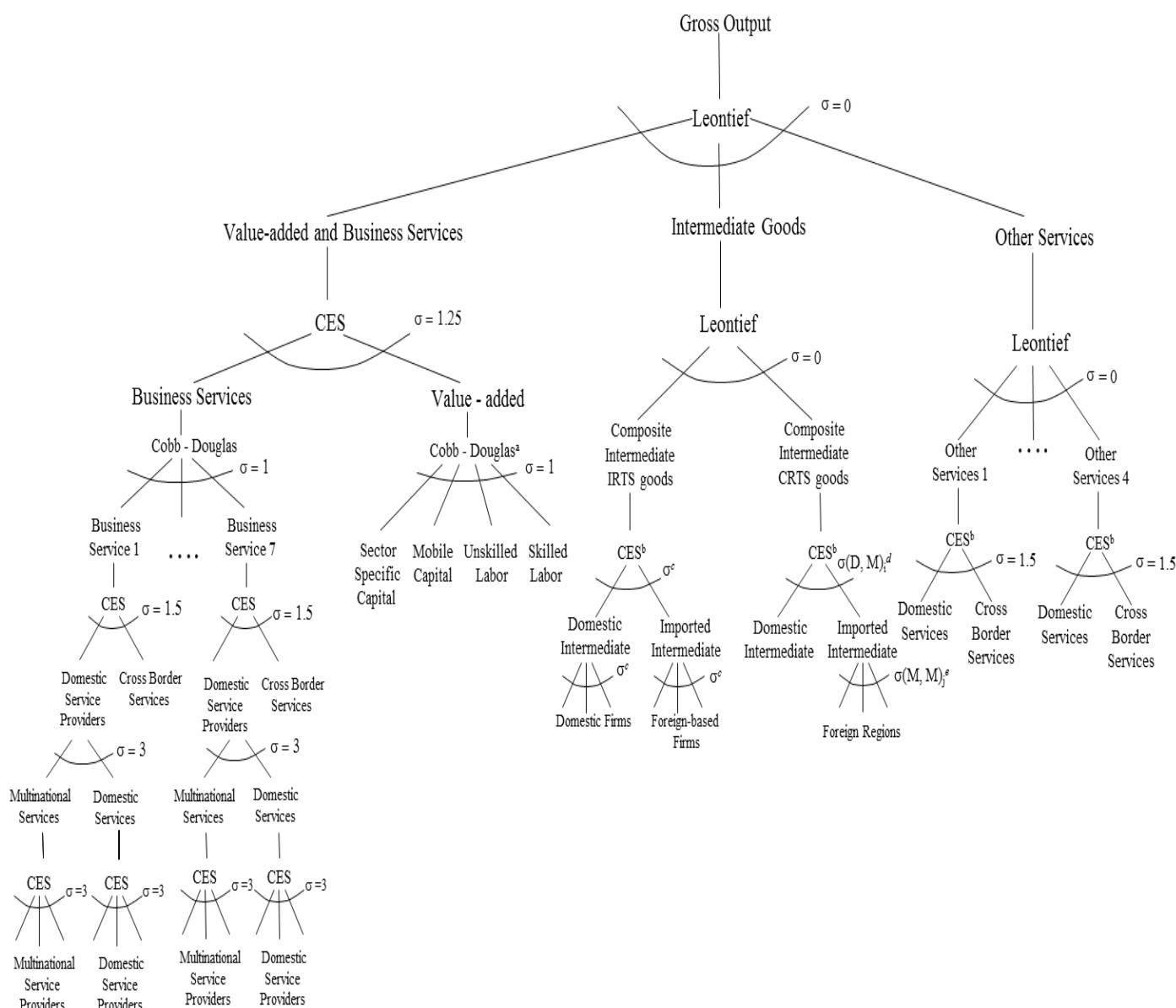
Footnotes:

[a]Primary inputs also include: imported primary inputs for multinational service providers, reflecting specialized management expertise or technology of the firm; and "natural resources" in forestry, fishing and both minerals sectors.

[b]Given any intermediate good i, for all sectors j that use that intermediate i, we assume they use imported and domestic intermediates in the same proportion. This is due to lack of data on the foreign versus domestic use at the sector level. See de Melo and Tarr (1992, pp. 219-220) for further details.

[c, d, e]See table 5 for the values of the Dixit-Stiglitz elasticities, the Armington domestic versus foreign and the Armington foreign versus foreign elasticities for goods by sectors.

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Figure 2: Value to Armenia of Free Migration of Labor to the Russian Federation
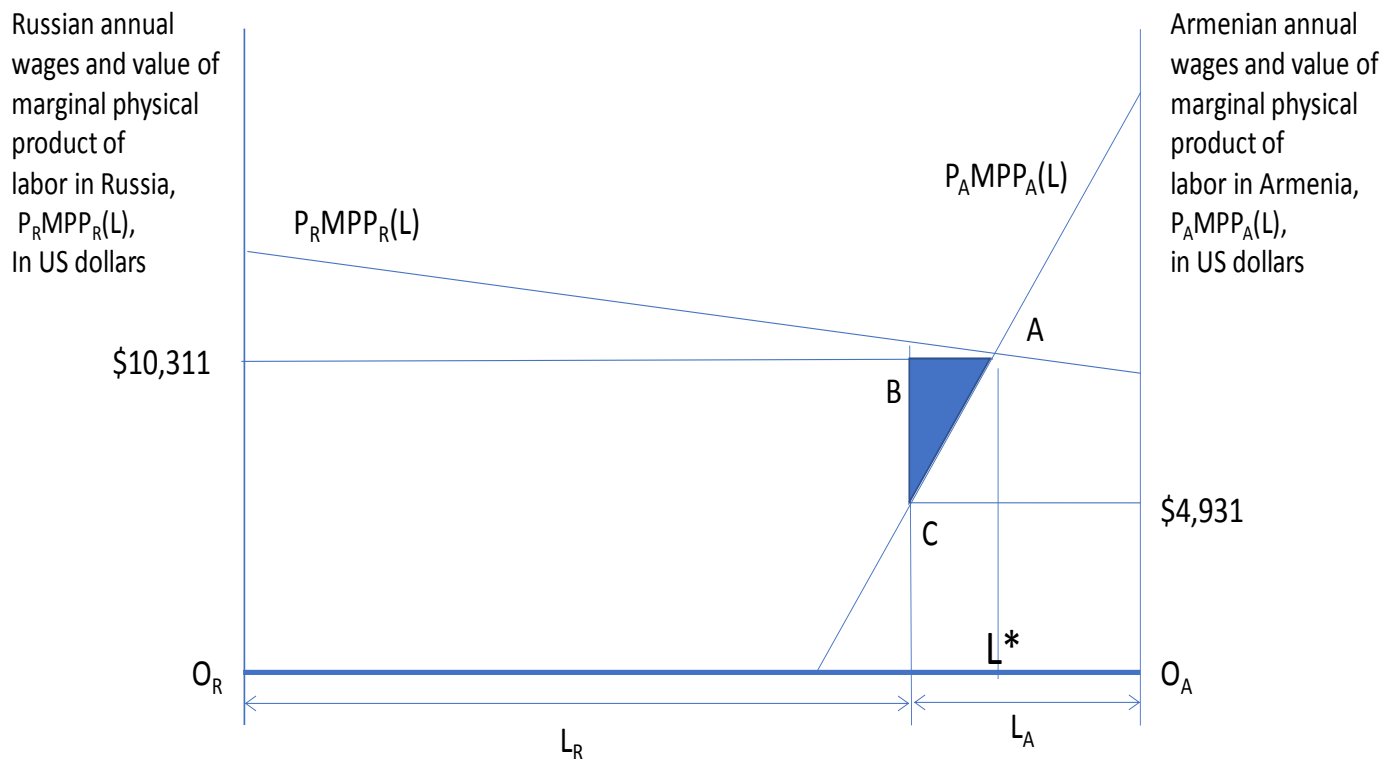
Notes: 1. L_A - L* =232,247 = Armenian migrant workers in Russia (in 2017)
2. Triangle ABC = value to Armenia in US dollars of free migration of labor to Russia

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Tables: the dataset, distortions and modeling results

Table 1. List of Sectors, Regions and Factors in the Eurasion Economic Union Model (EAEU model)

Business Services	**Dixit-Stigliz Goods**
Transport nec	Food
Water transport	Wood products
Air transport	Paper products and publishing
Communication	Petroleum and coal products
Financial services nec	Chemical rubber plastic prods
Insurance	Mineral products nec
Business services nec	Metals
	Transport equipment
CRTS	Electronic equipment and machinery
Agriculture	Manufactures nec
Forestry	
Fishing	**Regions**
Minerals	Armenia
Minerals nec	Belarus
Textiles and apparel	Kazakhstan
Leather products	Russia
Electiricity, gas and water distribution	USA
Construction	European Union (EU)
Trade	China
Public administration, recreation and other services	Rest of the World (ROW)
Factors of Production	
Skilled labor	
Unskilled labor	
Capital	
Natural Resources	

Source: Authors' definitions.

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Table 2. Mapping between sectors in the EAEU model and GTAP9 commodity groups

#	Sector's code	Description	GTAP sectors included
1	agr	Agriculture	Paddy rice (pdr), Wheat (wht), Cereal grains nec (g Vegetables fruit nuts (v_f), Oil seeds (osd), Sugar ca sugar beet (c_b), Plant-based fibers (pfb), Crops nec Cattle sheep goats horses (ctl), Animal products n Raw milk (rmk), Wool silk-worm cocoons (wol);
2	frs	Forestry	Forestry (frs);
3	fsh	Fishing	Fishing (fsh);
4	min	Minerals	Coal (coa), Oil (oil), Gas (gas);
5	omn	Minerals nec	Minerals nec (omn);
6	foo	Food	Meat: cattle sheep goats horse (cmt), Meat products n (omt), Vegetable oils and fats (vol), Dairy products Processed rice (pcr), Sugar (sgr), Food products nec Beverages and tobacco products (b_t);
7	tew	Textiles and apparel	Textiles (tex), Wearing apparel (wap);
8	lea	Leather products	Leather products (lea);
9	lum	Wood products	Wood products (lum);
10	ppp	Paper products and publishing	Paper products publishing (ppp);
11	p_c	Petroleum and coal products	Petroleum coal products (p_c);
12	crp	Chemical rubber plastic prods	Chemical rubber plastic prods (crp);
13	nmm	Mineral products nec	Mineral products nec (nmm);
14	met	Metals	Ferrous metals (i_s), Metals nec (nfm), Metal produ (fmp);
15	tre	Transport equipment	Motor vehicles and parts (mvh), Transport equipmen (otn);
16	mac	Electronic equipment and machinery	Electronic equipment (ele), Machinery and equipmer (ome);
17	omf	Manufactures nec	Manufactures nec (omf);
18	zkh	Electiricity, gas and water distribution	Electricity (ely), Gas manufacture distribution (gdt), (wtr);
19	cns	Construction	Construction (cns);
20	trd	Trade	Trade (trd);
21	otp	Transport nec	Transport nec (otp);
22	wtp	Sea transport	Sea transport (wtp);
23	atp	Air transport	Air transport (atp);
24	cmn	Communication	Communication (cmn);
25	ofi	Financial services nec	Financial services nec (ofi);
26	isr	Insurance	Insurance (isr);
27	obs	Business services nec	Business services nec (obs);
28	ose	Public administration, recreation and other services	Recreation and other services (ros), PubAdmin Defer Health Educat (osg), Dwellings (dwe).

Source: Authors' mapping, GTAP 9.0 database.

Table 3. Sectoral value-added in Armenia (%, unless otherwise indicated), GTAP 9.0 database, baseyear 2011

	Labor				GDP	
	Skilled labor	Unskilled labor	Capital	Natural Resources	billion USD	% of total
Business Services						
Transport nec	35,1	41,4	23,5	0,0	0,1	1,7
Water transport	32,7	38,6	28,8	0,0	0,0	0,1
Air transport	33,6	39,7	26,7	0,0	0,0	0,3
Communication	24,0	28,3	47,8	0,0	0,1	1,7
Financial services nec	38,9	38,5	22,5	0,0	0,1	0,8
Insurance	40,9	40,5	18,6	0,0	0,0	0,5
Business services nec	30,8	12,3	56,9	0,0	0,0	0,4
Dixit-Stigliz Goods						
Food	14,6	45,8	39,6	0,0	1,1	14,7
Wood products	11,2	35,2	53,5	0,0	0,0	0,3
Paper products and publishing	7,9	24,8	67,3	0,0	0,0	0,6
Petroleum and coal products	0,0	0,0	0,0	0,0	0,0	0,0
Chemical rubber plastic prods	11,7	36,5	51,8	0,0	0,0	0,3
Mineral products nec	13,6	42,8	43,6	0,0	0,0	0,1
Metals	14,3	44,9	40,8	0,0	0,2	3,0
Transport equipment	14,7	46,0	39,4	0,0	0,0	0,0
Electronic equipment and machinery	13,1	41,1	45,8	0,0	0,0	0,2
Manufactures nec	9,4	29,4	61,2	0,0	0,0	0,6
CRTS						
Agriculture	0,4	55,0	44,6	0,0	1,0	13,1
Forestry	0,4	49,6	40,1	9,9	0,1	1,7
Fishing	0,2	30,6	19,6	49,6	0,0	0,5
Minerals	0,0	0,0	0,0	0,0	0,0	0,0
Minerals nec	21,1	14,1	50,7	14,2	0,1	1,9
Textiles and apparel	15,5	48,7	35,7	0,0	0,0	0,2
Leather products	14,4	45,3	40,3	0,0	0,0	0,0
Electiricity, gas and water distribution	14,5	19,8	65,7	0,0	0,5	6,4
Construction	6,1	20,1	73,8	0,0	2,1	27,4
Trade	7,2	21,4	71,4	0,0	0,8	10,6
Public administration, recreation and other services	36,2	21,9	41,9	0,0	1,0	13,1

Source: GTAP 9.0 database.

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Table 4. Sectoral value-added in Belarus (%, unless otherwise indicated), GTAP 9.0 database, baseyear 2011

	Labor		Capital	Natural Resources	GDP	
	Skilled labor	Unskilled labor			billion USD	% of total
Business Services						
Transport nec	25,5	30,5	44,1	0,0	2,6	6,9
Water transport	22,3	26,7	51,0	0,0	0,4	1,1
Air transport	23,5	28,2	48,3	0,0	0,2	0,6
Communication	22,9	27,4	49,8	0,0	0,7	1,9
Financial services nec	37,0	5,0	58,0	0,0	1,2	3,1
Insurance	42,2	5,7	52,1	0,0	0,2	0,5
Business services nec	77,1	17,8	5,0	0,0	0,7	1,9
Dixit-Stigliz Goods						
Food	14,6	24,2	61,2	0,0	1,5	4,0
Wood products	29,2	48,5	22,3	0,0	0,3	0,7
Paper products and publishing	24,8	41,2	33,9	0,0	0,2	0,5
Petroleum and coal products	10,6	17,5	71,9	0,0	0,6	1,5
Chemical rubber plastic prods	15,8	26,3	57,8	0,0	1,3	3,3
Mineral products nec	0,0	35,4	64,6	0,0	0,0	0,0
Metals	16,2	26,9	57,0	0,0	0,4	1,1
Transport equipment	30,3	50,3	19,4	0,0	1,9	5,0
Electronic equipment and machinery	20,5	34,1	45,4	0,0	3,0	7,8
Manufactures nec	17,1	28,4	54,5	0,0	0,1	0,3
CRTS						
Agriculture	3,0	50,1	46,9	0,0	2,9	7,7
Forestry	2,7	45,6	41,8	9,9	0,4	1,0
Fishing	3,5	11,0	21,5	64,1	0,2	0,5
Minerals	2,7	4,3	42,4	50,5	0,5	1,4
Minerals nec	8,3	13,1	51,7	27,0	0,4	1,0
Textiles and apparel	25,2	41,9	32,9	0,0	0,5	1,3
Leather products	23,9	39,7	36,4	0,0	0,1	0,2
Electiricity, gas and water distribution	22,0	29,3	48,7	0,0	3,1	8,2
Construction	17,5	34,8	47,7	0,0	5,9	15,3
Trade	8,0	26,1	66,0	0,0	2,5	6,6
Public administration, recreation and other services	67,8	13,8	18,4	0,0	6,4	16,7

Source: GTAP 9.0 database.

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Table 5. Sectoral value-added in Kazakhstan (%, unless otherwise indicated), GTAP 9.0 database, baseyear 2011

	Labor				GDP	
	Skilled labor	Unskilled labor	Capital	Natural Resources	billion USD	% of total
Business Services						
Transport nec	25,7	56,9	17,4	0,0	21,4	14,1
Water transport	24,4	53,9	21,7	0,0	1,2	0,8
Air transport	25,1	55,5	19,4	0,0	1,4	0,9
Communication	19,8	43,8	36,5	0,0	6,0	3,9
Financial services nec	36,5	5,4	58,1	0,0	4,4	2,9
Insurance	68,6	10,2	21,2	0,0	0,4	0,3
Business services nec	60,8	10,2	29,0	0,0	12,0	7,9
Dixit-Stigliz Goods						
Food	2,3	36,9	60,8	0,0	6,5	4,3
Wood products	3,1	50,3	46,5	0,0	0,3	0,2
Paper products and publishing	3,4	54,2	42,4	0,0	1,4	0,9
Petroleum and coal products	1,8	29,1	69,1	0,0	0,5	0,4
Chemical rubber plastic prods	3,1	48,8	48,2	0,0	2,3	1,5
Mineral products nec	4,0	63,7	32,3	0,0	1,2	0,8
Metals	3,1	49,9	47,0	0,0	7,1	4,7
Transport equipment	5,1	81,7	13,2	0,0	1,0	0,7
Electronic equipment and machinery	4,0	63,9	32,1	0,0	3,1	2,1
Manufactures nec	4,6	74,2	21,2	0,0	0,2	0,2
CRTS						
Agriculture	0,1	56,4	43,5	0,0	5,2	3,4
Forestry	0,1	42,8	44,9	12,3	0,2	0,2
Fishing	1,4	17,5	38,4	42,7	0,6	0,4
Minerals	1,4	13,6	36,0	49,0	30,9	20,3
Minerals nec	4,8	45,8	31,0	18,3	3,9	2,6
Textiles and apparel	3,3	53,0	43,7	0,0	0,7	0,5
Leather products	1,4	22,4	76,2	0,0	0,1	0,1
Electiricity, gas and water distribution	26,6	33,7	39,7	0,0	3,8	2,5
Construction	1,0	53,7	45,3	0,0	10,4	6,9
Trade	0,7	28,7	70,6	0,0	5,6	3,7
Public administration, recreation and other services	57,5	17,4	25,1	0,0	19,7	13,0

Source: GTAP 9.0 database.

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Table 6. Sectoral value-added in Russia (%, unless otherwise indicated), GTAP 9.0 database, baseyear 2011

	Labor		Capital	Natural	GDP	
	Skilled labor	Unskilled labor		Resources	billion USD	% of total
Business Services						
Transport nec	23,7	36,2	40,1	0,0	44,3	3,2
Water transport	21,0	32,1	46,9	0,0	5,3	0,4
Air transport	22,2	34,0	43,8	0,0	8,5	0,6
Communication	25,4	38,9	35,7	0,0	11,1	0,8
Financial services nec	69,5	7,2	23,3	0,0	24,6	1,8
Insurance	46,8	4,9	48,3	0,0	4,7	0,3
Business services nec	38,3	7,4	54,4	0,0	75,1	5,5
Dixit-Stigliz Goods						
Food	11,1	22,4	66,4	0,0	46,5	3,4
Wood products	24,6	49,5	25,9	0,0	3,5	0,3
Paper products and publishing	9,4	18,8	71,8	0,0	5,9	0,4
Petroleum and coal products	5,4	10,8	83,9	0,0	13,6	1,0
Chemical rubber plastic prods	16,5	33,3	50,2	0,0	7,8	0,6
Mineral products nec	20,2	40,6	39,2	0,0	10,8	0,8
Metals	12,4	25,0	62,5	0,0	39,3	2,9
Transport equipment	20,5	41,3	38,2	0,0	7,1	0,5
Electronic equipment and machinery	23,7	47,7	28,7	0,0	35,3	2,6
Manufactures nec	24,2	48,8	27,0	0,0	13,1	1,0
CRTS						
Agriculture	3,0	50,3	46,7	0,0	42,0	3,1
Forestry	2,5	41,8	40,2	15,6	6,2	0,5
Fishing	5,2	16,0	30,2	48,7	2,3	0,2
Minerals	4,4	5,1	51,4	39,1	248,8	18,1
Minerals nec	13,7	15,8	54,9	15,5	10,4	0,8
Textiles and apparel	18,4	37,0	44,6	0,0	5,2	0,4
Leather products	27,7	55,8	16,5	0,0	1,5	0,1
Electiricity, gas and water distribution	23,7	35,9	40,4	0,0	43,8	3,2
Construction	13,9	26,9	59,3	0,0	126,6	9,2
Trade	1,3	10,0	88,6	0,0	314,0	22,9
Public administration, recreation and other services	67,9	11,9	20,2	0,0	215,4	15,7

Source: GTAP 9.0 database.

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Table 7. Trade flows in Armenia, GTAP 9.0 database, baseyear 2011

	Imports			Exports		
	billion USD	% of total	% of supply	billion USD	% of total	% of output
Business Services						
Transport nec	0,1	3,0	27,0	0,1	4,9	17,7
Water transport	0,0	0,2	27,6	0,0	0,3	20,5
Air transport	0,1	3,0	74,8	0,1	3,2	63,3
Communication	0,0	0,6	8,2	0,1	3,1	23,3
Financial services nec	0,0	0,5	14,5	0,0	0,6	9,3
Insurance	0,0	1,1	38,5	0,0	1,5	32,3
Business services nec	0,1	1,5	45,0	0,1	3,3	53,8
Dixit-Stigliz Goods						
Food	0,5	12,3	13,6	0,2	11,8	7,0
Wood products	0,1	1,6	49,9	0,0	0,1	5,0
Paper products and publishing	0,1	1,5	35,8	0,0	0,3	4,9
Petroleum and coal products	0,3	7,2	90,9	0,0	0,0	0,0
Chemical rubber plastic prods	0,4	9,2	70,9	0,0	2,0	25,3
Mineral products nec	0,1	1,8	62,4	0,0	1,3	54,4
Metals	0,3	7,5	49,8	0,5	25,1	63,6
Transport equipment	0,2	4,6	83,5	0,0	1,2	54,7
Electronic equipment and machinery	0,5	13,1	86,6	0,1	4,5	67,0
Manufactures nec	0,1	1,9	63,3	0,1	4,8	70,6
CRTS						
Agriculture	0,2	5,3	7,9	0,1	2,8	2,2
Forestry	0,0	0,0	0,4	0,0	0,3	2,1
Fishing	0,0	0,0	0,4	0,0	0,8	16,8
Minerals	0,5	12,4	75,3	0,0	0,0	0,0
Minerals nec	0,1	2,4	38,7	0,2	10,2	58,1
Textiles and apparel	0,1	2,4	55,6	0,0	2,6	43,3
Leather products	0,0	0,7	70,9	0,0	0,2	36,7
Electiricity, gas and water distribution	0,0	0,4	1,6	0,1	6,2	11,7
Construction	0,0	0,2	0,3	0,0	2,0	1,2
Trade	0,1	1,5	3,6	0,1	3,6	4,2
Public administration, recreation and other services	0,1	3,8	6,8	0,1	3,4	3,2

Source: GTAP 9.0 database.

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Table 8. Trade flows in Belarus, GTAP 9.0 database, baseyear 2011

	Imports			Exports		
	billion USD	% of total	% of supply	billion USD	% of total	% of output
Business Services						
Transport nec	0,4	1,2	6,5	0,3	1,4	4,5
Water transport	0,1	0,2	8,9	0,0	0,0	1,0
Air transport	0,1	0,4	19,9	0,2	0,8	27,6
Communication	0,1	0,3	4,8	0,2	0,7	9,3
Financial services nec	0,1	0,4	4,3	0,0	0,1	1,1
Insurance	0,0	0,1	5,1	0,0	0,1	4,1
Business services nec	0,3	1,1	23,2	0,4	1,7	27,6
Dixit-Stigliz Goods						
Food	1,3	4,2	12,7	1,0	4,2	10,4
Wood products	0,2	0,6	20,0	0,5	2,2	42,4
Paper products and publishing	0,3	1,1	27,9	0,1	0,3	7,7
Petroleum and coal products	1,3	4,1	15,1	10,2	42,7	58,9
Chemical rubber plastic prods	2,8	9,0	61,6	4,7	19,6	77,5
Mineral products nec	0,3	1,0	50,5	0,3	1,1	55,2
Metals	1,8	5,6	57,2	1,3	5,5	55,1
Transport equipment	2,3	7,3	29,7	0,8	3,3	13,9
Electronic equipment and machinery	4,4	14,2	34,3	1,6	6,7	16,2
Manufactures nec	0,1	0,4	10,9	0,1	0,4	8,4
CRTS						
Agriculture	0,5	1,7	4,2	0,1	0,3	0,6
Forestry	0,0	0,0	0,4	0,1	0,6	24,8
Fishing	0,0	0,1	3,4	0,0	0,0	0,4
Minerals	12,2	39,1	59,6	0,1	0,6	9,9
Minerals nec	0,2	0,5	8,9	0,1	0,3	4,8
Textiles and apparel	0,6	1,9	30,8	0,9	3,8	42,3
Leather products	0,2	0,5	49,7	0,1	0,3	33,6
Electiricity, gas and water distribution	1,0	3,2	6,3	0,5	2,0	3,1
Construction	0,1	0,2	0,5	0,1	0,4	0,6
Trade	0,1	0,4	2,4	0,0	0,2	0,9
Public administration, recreation and other services	0,3	0,9	2,3	0,2	0,7	1,4

Source: GTAP 9.0 database.

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Table 9. Trade flows in Kazakhstan, GTAP 9.0 database, baseyear 2011

	Imports			Exports		
	billion USD	% of total	% of supply	billion USD	% of total	% of output
Business Services						
Transport nec	0,5	1,2	1,1	0,5	0,6	1,0
Water transport	0,0	0,1	1,3	0,1	0,1	1,7
Air transport	0,5	1,1	9,4	0,4	0,5	9,0
Communication	0,2	0,4	1,0	0,2	0,2	1,1
Financial services nec	0,4	0,8	3,1	0,1	0,1	1,2
Insurance	0,3	0,6	28,1	0,1	0,1	8,1
Business services nec	4,1	9,6	12,2	0,5	0,6	1,8
Dixit-Stigliz Goods						
Food	1,5	3,4	5,6	1,0	1,2	3,9
Wood products	0,5	1,1	24,3	0,0	0,0	0,0
Paper products and publishing	0,5	1,3	13,8	0,0	0,0	1,1
Petroleum and coal products	1,1	2,6	12,0	4,2	5,4	34,5
Chemical rubber plastic prods	3,3	7,7	39,8	2,9	3,7	39,2
Mineral products nec	0,6	1,4	14,2	0,1	0,1	1,5
Metals	2,5	5,7	13,6	10,6	13,4	40,9
Transport equipment	4,0	9,2	53,1	0,0	0,1	1,5
Electronic equipment and machinery	8,1	18,7	49,3	0,2	0,2	2,0
Manufactures nec	0,5	1,1	34,6	0,1	0,2	14,0
CRTS						
Agriculture	0,9	2,2	6,3	1,0	1,3	6,9
Forestry	0,0	0,0	0,8	0,0	0,0	0,3
Fishing	0,0	0,0	0,2	0,0	0,0	0,0
Minerals	2,1	4,9	8,8	53,3	67,3	70,9
Minerals nec	0,1	0,3	1,6	2,5	3,2	22,6
Textiles and apparel	3,2	7,3	43,2	0,0	0,0	1,0
Leather products	1,4	3,2	67,6	0,0	0,0	9,1
Electiricity, gas and water distribution	0,2	0,6	2,0	0,3	0,4	2,3
Construction	5,7	13,3	12,5	0,0	0,1	0,1
Trade	0,3	0,6	2,0	0,2	0,2	1,2
Public administration, recreation and other services	0,8	1,8	1,9	0,9	1,1	2,1

Source: GTAP 9.0 database.

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Table 10. Trade flows in Russia, GTAP 9.0 database, baseyear 2011

	Imports			Exports		
	billion USD	% of total	% of supply	billion USD	% of total	% of output
Business Services						
Transport nec	8,5	2,5	4,9	6,6	1,6	4,2
Water transport	0,8	0,2	5,6	2,9	0,7	18,0
Air transport	4,6	1,3	15,5	5,2	1,3	18,2
Communication	1,9	0,6	5,1	1,6	0,4	5,2
Financial services nec	3,3	1,0	5,0	1,3	0,3	2,2
Insurance	1,2	0,4	10,5	0,8	0,2	9,1
Business services nec	16,3	4,8	8,7	13,7	3,3	9,7
Dixit-Stigliz Goods						
Food	24,7	7,3	11,5	7,9	1,9	4,1
Wood products	3,9	1,1	23,6	4,6	1,1	28,4
Paper products and publishing	5,3	1,6	19,7	3,1	0,7	13,0
Petroleum and coal products	5,8	1,7	3,4	67,6	16,3	29,3
Chemical rubber plastic prods	41,8	12,3	42,6	30,4	7,3	37,8
Mineral products nec	3,9	1,2	9,0	1,0	0,2	2,5
Metals	19,7	5,8	15,1	44,0	10,6	29,1
Transport equipment	49,5	14,6	47,1	5,2	1,3	10,3
Electronic equipment and machinery	82,5	24,3	41,4	6,6	1,6	5,6
Manufactures nec	4,4	1,3	13,4	1,9	0,5	6,5
CRTS						
Agriculture	11,9	3,5	13,0	6,9	1,7	8,4
Forestry	0,1	0,0	0,5	2,1	0,5	14,4
Fishing	0,8	0,2	12,2	0,2	0,1	4,1
Minerals	2,4	0,7	1,0	176,0	42,4	43,1
Minerals nec	1,3	0,4	8,0	9,7	2,3	40,0
Textiles and apparel	15,2	4,5	38,0	0,5	0,1	2,4
Leather products	5,6	1,6	49,9	0,3	0,1	5,3
Electiricity, gas and water distribution	1,7	0,5	0,9	6,7	1,6	3,2
Construction	8,8	2,6	3,1	4,0	1,0	1,4
Trade	4,1	1,2	0,9	2,4	0,6	0,5
Public administration, recreation and other services	9,8	2,9	2,3	2,3	0,6	0,6

Source: GTAP 9.0 database.

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Table 11. Trade Flows by Trading Partner in Armenia (%)

	Imports								Exports							
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	Armenia	Belarus	Kazakhstan	Russia	USA	EUR	China	ROW
Business Services																
Transport nec	0,0	0,1	0,2	0,0	7,8	43,6	4,4	43,8	0,0	0,1	0,2	2,8	11,8	45,4	3,6	36,2
Water transport	0,0	0,1	0,1	1,6	9,2	25,3	9,3	54,3	0,0	0,1	0,2	2,3	11,1	42,0	3,4	41,0
Air transport	0,0	0,1	0,2	1,6	9,9	51,5	1,3	35,6	0,0	0,0	0,2	1,5	16,3	42,4	2,1	37,6
Communication	0,0	0,2	0,2	0,0	0,0	65,2	3,2	31,3	0,0	0,1	0,1	1,9	11,5	58,1	1,9	26,4
Financial services nec	0,0	0,0	0,1	0,0	23,0	43,8	2,4	30,7	0,0	0,1	0,2	1,9	12,8	45,8	2,3	37,0
Insurance	0,0	0,0	0,0	0,0	20,2	49,7	1,4	28,7	0,0	0,0	0,2	0,9	33,5	28,1	6,3	31,0
Business services nec	0,0	0,1	0,1	1,3	6,1	49,7	1,2	41,4	0,0	0,0	0,3	1,3	13,1	49,9	2,0	33,4
Dixit-Stigliz Goods																
Food	0,0	0,9	0,0	24,0	6,9	23,5	2,3	42,4	0,0	2,1	1,0	57,2	5,2	9,8	5,4	19,4
Wood products	0,0	3,3	0,0	8,1	1,5	35,9	17,9	33,2	0,0	0,0	0,1	8,9	6,0	26,8	1,4	56,7
Paper products and publishing	0,0	0,2	0,0	8,8	1,9	50,1	2,5	36,5	0,0	0,1	0,1	5,2	6,7	25,4	2,0	60,5
Petroleum and coal products	0,0	0,1	0,1	6,9	2,6	5,3	0,5	84,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Chemical rubber plastic prods	0,0	2,8	0,0	15,7	8,3	34,2	4,2	35,0	0,0	0,7	0,2	6,5	0,8	6,9	0,6	84,3
Mineral products nec	0,0	0,2	0,0	6,1	0,7	36,4	25,2	31,5	0,0	0,0	0,3	18,0	1,4	5,4	0,2	74,7
Metals	0,0	0,2	0,7	21,3	1,7	24,9	4,8	46,5	0,0	0,0	0,0	0,2	18,0	63,2	0,3	18,3
Transport equipment	0,0	2,2	0,0	21,7	2,8	38,2	10,0	25,2	0,0	0,1	0,0	0,1	0,2	18,0	0,1	81,4
Electronic equipment and machinery	0,0	0,6	0,1	8,6	10,3	44,0	13,5	22,9	0,0	0,2	0,1	13,8	5,9	17,8	0,1	62,2
Manufactures nec	0,0	1,3	0,0	1,8	10,0	42,4	4,1	40,4	0,0	0,0	1,8	26,5	5,0	41,3	0,1	25,3
CRTS																
Agriculture	0,0	0,0	0,0	52,2	0,8	7,7	1,0	38,3	0,0	0,1	0,0	30,0	3,7	13,3	1,1	51,8
Forestry	0,0	0,1	0,0	22,8	3,1	12,9	0,4	60,6	0,0	0,1	0,1	2,5	11,4	44,1	3,6	38,2
Fishing	0,0	0,0	0,0	1,2	15,6	29,1	10,4	43,7	0,0	0,2	0,0	66,8	0,6	21,3	0,2	11,0
Minerals	0,0	0,0	0,0	7,3	0,0	0,0	0,0	92,7	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Minerals nec	0,0	0,0	0,0	44,3	3,8	29,1	0,0	22,8	0,0	0,2	0,0	2,8	0,2	64,3	16,8	15,7
Textiles and apparel	0,0	1,4	0,0	1,2	6,6	60,7	10,2	19,9	0,0	0,0	0,0	4,2	2,6	81,6	2,2	9,3
Leather products	0,0	1,6	0,0	2,3	1,8	48,8	25,9	19,6	0,0	0,0	0,2	32,4	1,1	55,7	0,3	10,3
Electiricity, gas and water distribution	0,0	0,2	0,1	0,6	2,5	12,4	1,2	83,1	0,0	0,8	0,4	1,0	6,9	43,2	2,9	44,9
Construction	0,0	0,1	0,1	2,8	4,9	47,9	5,3	38,9	0,0	0,1	1,9	4,5	8,6	43,5	3,8	37,6
Trade	0,0	0,0	0,1	1,4	13,1	47,8	2,9	34,7	0,0	0,1	0,1	2,6	12,0	45,3	3,8	36,2
Public administration, recreation and other services	0,0	0,0	0,2	0,5	28,9	39,5	3,5	27,5	0,0	0,1	0,1	2,2	17,3	40,9	2,7	36,6

Source: GTAP 9.0 database.

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Table 12. Trade Flows by Trading Partner in Belarus (%)

	Imports								Exports							
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	Armenia	Belarus	Kazakhstan	Russia	USA	EUR	China	ROW
Business Services																
Transport nec	0,0	0,0	0,3	2,2	11,7	40,2	4,3	41,3	0,1	0,0	0,3	0,0	17,0	44,1	2,5	36,0
Water transport	0,0	0,0	0,1	2,3	2,2	50,0	2,1	43,3	0,0	0,0	0,3	1,6	8,0	36,8	2,6	50,6
Air transport	0,0	0,0	0,1	1,6	10,3	46,4	1,5	40,1	0,0	0,0	0,2	1,7	10,7	46,7	1,3	39,4
Communication	0,1	0,0	0,1	0,0	13,3	47,8	2,2	36,5	0,0	0,0	0,2	1,8	11,2	58,0	1,7	27,1
Financial services nec	0,0	0,0	0,0	0,0	24,1	47,2	1,0	27,7	0,0	0,0	0,3	1,0	8,6	38,1	1,4	50,6
Insurance	0,0	0,0	0,0	0,0	18,7	41,0	2,2	38,1	0,0	0,0	0,3	0,8	19,9	29,1	4,1	45,8
Business services nec	0,0	0,0	0,1	1,1	10,0	50,0	1,7	37,1	0,0	0,0	0,4	1,6	9,5	50,3	1,8	36,3
Dixit-Stigliz Goods																
Food	0,4	0,0	0,1	7,4	1,8	46,0	2,3	42,1	0,4	0,0	12,2	37,7	1,4	18,7	0,1	29,4
Wood products	0,0	0,0	0,0	17,5	0,5	47,7	4,6	29,7	0,4	0,0	11,1	24,7	0,2	51,6	0,0	12,1
Paper products and publishing	0,0	0,0	0,1	10,7	0,7	60,5	2,6	25,4	0,2	0,0	4,9	16,3	1,5	28,8	0,2	48,0
Petroleum and coal products	0,0	0,0	18,2	7,6	3,5	52,2	2,7	15,9	0,0	0,0	0,0	1,4	4,1	51,2	0,0	43,2
Chemical rubber plastic prods	0,0	0,0	0,7	9,3	3,8	63,5	3,0	19,8	0,2	0,0	2,2	2,2	0,5	15,2	10,7	69,0
Mineral products nec	0,0	0,0	0,0	10,9	0,9	57,2	8,0	23,0	0,1	0,0	2,7	33,8	0,6	27,2	0,6	35,1
Metals	0,0	0,0	3,3	27,0	1,8	35,5	3,3	29,1	0,0	0,0	1,6	12,0	2,7	57,4	0,4	25,8
Transport equipment	0,0	0,0	0,0	3,7	7,1	76,5	1,8	11,0	0,5	0,0	11,1	25,8	0,1	7,6	0,8	54,1
Electronic equipment and machinery	0,0	0,0	0,1	5,3	4,7	65,9	12,3	11,7	0,2	0,0	9,8	21,3	0,8	19,8	4,3	43,7
Manufactures nec	0,0	0,0	0,0	3,5	2,0	56,7	27,0	10,8	1,0	0,0	2,9	59,2	0,5	19,3	1,7	15,4
CRTS																
Agriculture	0,0	0,0	0,7	5,1	0,9	51,7	0,4	41,2	0,0	0,0	4,7	3,6	2,3	72,2	0,7	16,6
Forestry	0,2	0,0	0,0	3,9	15,5	37,3	0,8	42,4	0,0	0,0	0,0	0,2	0,3	95,8	1,6	2,1
Fishing	0,1	0,0	0,0	0,6	0,0	6,9	4,6	87,8	0,0	0,0	0,1	59,4	3,9	22,9	1,2	12,6
Minerals	0,0	0,0	0,1	12,3	0,0	0,0	0,0	87,6	0,0	0,0	0,3	1,0	0,7	87,1	0,4	10,6
Minerals nec	0,2	0,0	0,4	6,7	1,4	18,6	0,9	71,9	0,0	0,0	0,4	0,1	0,4	84,3	0,1	14,7
Textiles and apparel	0,0	0,0	0,0	10,8	0,8	50,5	8,4	29,5	0,1	0,0	1,5	44,1	1,3	25,6	2,3	25,0
Leather products	0,0	0,0	0,0	15,4	0,3	19,4	42,5	22,4	0,5	0,0	2,6	54,1	0,3	27,4	1,0	14,0
Electiricity, gas and water distribution	0,1	0,0	0,1	0,3	0,7	11,1	0,6	87,1	0,0	0,0	0,4	0,3	2,7	54,1	1,1	41,4
Construction	0,0	0,0	0,0	3,6	6,0	47,1	5,6	37,6	0,0	0,0	4,9	7,6	2,6	40,1	3,7	41,1
Trade	0,0	0,0	0,1	1,3	12,7	46,1	2,8	36,9	0,0	0,0	0,2	1,5	7,1	42,8	5,9	42,5
Public administration, recreation and other services	0,0	0,0	0,1	0,5	26,9	39,9	3,7	29,0	0,0	0,0	0,2	2,1	15,9	39,6	2,8	39,4

Source: GTAP 9.0 database.

Table 13. Trade Flows by Trading Partner in Kazakhstan (%)

	Imports								Exports							
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	Armenia	Belarus	Kazakhstan	Russia	USA	EUR	China	ROW
Business Services																
Transport nec	0,0	0,2	0,0	2,3	0,0	44,4	4,7	48,5	0,0	0,2	0,0	2,9	10,8	43,3	3,0	39,8
Water transport	0,0	0,1	0,0	1,9	0,0	35,7	5,7	56,6	0,0	0,1	0,0	1,3	4,3	39,5	1,2	53,5
Air transport	0,0	0,1	0,0	1,8	4,5	50,5	2,1	41,0	0,0	0,0	0,0	1,8	9,2	47,4	1,2	40,4
Communication	0,0	0,2	0,0	1,5	0,0	56,6	2,3	39,4	0,0	0,1	0,0	1,8	10,9	53,4	2,0	31,8
Financial services nec	0,0	0,0	0,0	0,6	0,0	65,0	0,8	33,6	0,0	0,0	0,0	1,1	13,1	45,0	0,8	39,9
Insurance	0,0	0,0	0,0	0,5	19,0	49,0	1,3	30,1	0,0	0,0	0,0	0,6	28,9	23,5	5,3	41,7
Business services nec	0,0	0,0	0,0	1,5	11,0	53,4	2,0	32,0	0,0	0,1	0,0	1,7	6,2	45,2	1,2	45,6
Dixit-Stigliz Goods																
Food	0,1	8,5	0,0	8,6	8,8	20,5	4,7	48,7	0,0	0,1	0,0	0,4	0,7	11,1	0,7	87,0
Wood products	0,0	12,2	0,0	2,5	0,5	23,7	23,0	38,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Paper products and publishing	0,0	0,6	0,0	8,1	27,5	34,3	9,4	20,1	0,0	0,5	0,0	0,9	1,7	9,1	0,5	87,3
Petroleum and coal products	0,0	0,2	0,0	4,8	3,8	18,6	60,3	12,2	0,0	5,5	0,0	0,1	10,1	36,0	19,1	29,3
Chemical rubber plastic prods	0,0	3,1	0,0	5,7	6,6	42,4	17,5	24,6	0,0	0,6	0,0	5,3	8,1	23,6	45,3	17,0
Mineral products nec	0,0	1,2	0,0	5,4	1,3	14,9	47,4	29,8	0,0	0,2	0,0	5,0	0,8	9,4	0,3	84,4
Metals	0,0	0,8	0,0	11,4	4,3	24,0	31,7	27,7	0,0	0,5	0,0	3,5	4,6	21,0	24,4	46,0
Transport equipment	0,0	2,2	0,0	14,8	6,7	30,2	18,0	28,1	0,0	0,0	0,0	2,8	2,1	62,7	0,0	32,4
Electronic equipment and machinery	0,0	1,9	0,0	5,7	9,7	39,8	24,3	18,6	0,3	2,9	0,0	0,4	3,6	45,2	0,3	47,3
Manufactures nec	0,3	0,6	0,0	22,0	2,4	16,5	24,8	33,4	0,0	0,0	0,0	0,1	0,5	3,8	0,2	95,3
CRTS																
Agriculture	0,0	0,3	0,0	3,8	3,8	11,0	13,9	67,1	0,0	0,3	0,0	1,5	0,3	19,6	2,0	76,1
Forestry	0,2	0,4	0,0	3,4	4,9	18,1	2,1	70,9	0,0	0,0	0,0	0,9	4,1	15,5	1,3	78,2
Fishing	0,0	0,1	0,0	26,0	0,7	18,2	13,8	41,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Minerals	0,0	0,0	0,0	3,8	0,1	0,1	0,0	96,0	0,0	0,0	0,0	2,2	0,9	53,6	17,3	25,9
Minerals nec	0,1	0,2	0,0	69,3	2,0	4,4	1,4	22,6	0,0	0,0	0,0	12,9	6,5	1,0	61,0	18,5
Textiles and apparel	0,0	0,4	0,0	1,0	0,2	6,4	83,1	8,9	0,0	0,4	0,0	2,9	3,2	52,8	20,3	20,5
Leather products	0,0	0,1	0,0	0,3	0,1	5,8	91,4	2,2	0,0	0,0	0,0	0,9	1,4	66,3	14,2	17,2
Electiricity, gas and water distribution	0,2	0,7	0,0	0,7	1,9	21,7	1,5	73,2	0,0	0,3	0,0	4,3	3,5	42,2	0,9	48,8
Construction	0,0	0,1	0,0	3,9	6,4	48,2	5,8	35,5	0,0	0,1	0,0	2,9	7,8	35,8	2,8	50,7
Trade	0,0	0,0	0,0	1,4	11,6	44,5	3,0	39,4	0,0	0,1	0,0	2,2	10,4	40,3	3,4	43,5
Public administration, recreation and other services	0,0	0,0	0,0	0,5	31,5	35,9	2,8	29,3	0,0	0,0	0,0	1,7	28,8	28,6	2,0	38,8

Source: GTAP 9.0 database.

Table 14. Trade Flows by Trading Partner in Russia (%)

	Imports								Exports							
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	Armenia	Belarus	Kazakhstan	Russia	USA	EUR	China	ROW
Business Services																
Transport nec	0,0	0,0	0,2	0,0	3,0	45,2	6,9	44,8	0,0	0,1	0,2	0,0	12,6	53,2	3,5	30,3
Water transport	0,0	0,0	0,1	0,0	0,0	64,7	0,1	35,1	0,0	0,0	0,0	0,0	1,1	52,9	0,3	45,6
Air transport	0,0	0,1	0,2	0,0	3,7	57,6	0,7	37,8	0,0	0,0	0,2	0,0	8,9	57,8	2,8	30,3
Communication	0,1	0,2	0,1	0,0	0,0	68,2	4,2	27,2	0,0	0,0	0,1	0,0	10,6	60,9	1,4	26,9
Financial services nec	0,0	0,0	0,0	0,0	17,5	58,8	2,0	21,6	0,0	0,0	0,2	0,0	19,9	53,6	0,3	26,0
Insurance	0,0	0,0	0,0	0,0	10,2	62,6	4,1	23,0	0,0	0,0	0,2	0,0	23,9	35,4	4,7	35,9
Business services nec	0,0	0,0	0,0	0,0	13,2	69,7	0,0	17,0	0,0	0,0	0,5	0,0	14,3	54,6	1,0	29,6
Dixit-Stigliz Goods																
Food	0,5	1,5	0,0	0,0	5,0	43,7	4,6	44,5	1,4	1,2	1,6	0,0	5,2	16,4	15,9	58,2
Wood products	0,0	3,3	0,0	0,0	2,0	61,3	17,5	15,9	0,1	0,7	0,3	0,0	2,8	31,9	18,4	45,8
Paper products and publishing	0,0	0,2	0,0	0,0	1,9	72,4	6,2	19,3	0,2	1,2	1,4	0,0	0,4	21,1	28,0	47,7
Petroleum and coal products	0,0	2,4	0,0	0,0	4,1	27,1	14,9	51,5	0,0	0,1	0,1	0,0	16,9	60,0	5,3	17,5
Chemical rubber plastic prods	0,0	0,2	0,4	0,0	6,1	64,9	8,4	20,0	0,2	0,9	0,6	0,0	9,2	35,0	11,1	43,1
Mineral products nec	0,1	2,3	0,1	0,0	1,8	51,7	24,0	20,0	0,4	3,4	3,4	0,0	12,8	18,8	0,5	60,7
Metals	0,0	0,8	1,9	0,0	2,7	41,5	17,1	36,1	0,1	1,1	0,6	0,0	9,9	34,2	7,5	46,5
Transport equipment	0,0	0,4	0,0	0,0	3,6	47,3	5,3	43,4	0,7	1,6	11,2	0,0	4,7	19,1	2,1	60,6
Electronic equipment and machinery	0,0	0,4	0,0	0,0	6,6	54,5	19,9	18,6	0,7	3,6	6,9	0,0	4,2	19,6	3,5	61,5
Manufactures nec	0,5	1,3	0,0	0,0	2,2	41,3	40,5	14,2	0,1	0,2	5,6	0,0	22,9	35,8	0,4	35,0
CRTS																
Agriculture	0,1	0,0	0,1	0,0	4,0	29,6	5,6	60,5	1,5	0,4	0,5	0,0	0,3	10,2	0,3	86,7
Forestry	0,2	0,4	0,0	0,0	7,2	52,7	1,6	38,0	0,0	0,0	0,0	0,0	0,0	17,3	73,4	9,2
Fishing	1,3	0,3	0,0	0,0	0,5	5,5	2,1	90,4	0,0	0,1	0,3	0,0	0,1	0,3	0,7	98,5
Minerals	0,0	0,1	49,4	0,0	39,8	0,4	0,2	10,1	0,0	0,9	0,0	0,0	4,6	66,4	9,6	18,5
Minerals nec	0,4	0,0	25,4	0,0	1,7	15,1	3,6	53,7	0,4	0,1	1,0	0,0	0,7	39,4	33,8	24,5
Textiles and apparel	0,0	2,6	0,0	0,0	1,0	28,7	41,3	26,4	0,2	12,9	6,2	0,0	2,4	31,5	2,8	44,0
Leather products	0,0	0,7	0,0	0,0	0,2	25,7	60,8	12,6	0,2	10,3	1,9	0,0	1,5	67,1	0,4	18,6
Electiricity, gas and water distribution	0,1	0,1	0,7	0,0	6,3	20,7	1,1	71,0	0,0	0,0	0,0	0,0	2,7	54,5	1,0	41,7
Construction	0,0	0,1	0,0	0,0	9,6	54,1	7,9	28,3	0,0	0,1	5,6	0,0	1,8	50,4	5,8	36,3
Trade	0,0	0,0	0,1	0,0	4,9	58,8	5,4	30,7	0,0	0,1	0,2	0,0	10,7	52,9	3,2	32,9
Public administration, recreation and other services	0,0	0,0	0,2	0,0	14,6	52,7	6,6	25,8	0,0	0,1	0,1	0,0	19,8	44,0	2,0	33,9

Source: GTAP 9.0 database.

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Table 15. Benchmark Distortions in Armenia (%), Ad Valorem Equivalents

	Barriers Against Service Providers								Cross-Border
	Discriminatory Barriers agasint Foreign Direct Investment								all regions
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Business Services									
Transport nec	0.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	30.7
Water transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.7
Air transport	0.0	51.6	51.6	51.6	51.6	51.6	51.6	51.6	30.7
Communication	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	30.2
Financial services nec	0.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	30.2
Insurance	0.0	13.6	13.6	13.6	13.6	13.6	13.6	13.6	30.2
Business services nec	0.0	18.7	18.7	18.7	18.7	18.7	18.7	18.7	57.7

	Non-Tariff Measures (NTMs)				Tariffs on Non-Members[1]				NTMs non-members
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Goods									
Agriculture	0.0	17.1	17.1	17.1	1.6	1.6	1.6	1.6	0.0
Forestry	0.0	3.4	3.4	3.4	5.4	5.4	5.4	5.4	0.0
Fishing	0.0	9.2	9.2	9.2	6.9	6.9	6.9	6.9	0.0
Minerals	0.0	19.3	19.3	19.3	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	1.3	1.3	1.3	0.1	0.1	0.1	0.1	0.0
Food	0.0	28.3	28.3	28.3	11.2	11.2	11.2	11.2	0.0
Textiles and apparel	0.0	9.3	9.3	9.3	7.3	7.3	7.3	7.3	0.0
Leather products	0.0	16.8	16.8	16.8	9.0	9.0	9.0	9.0	0.0
Wood products	0.0	40.4	40.4	40.4	11.4	11.4	11.4	11.4	0.0
Paper products and publishing	0.0	8.1	8.1	8.1	5.6	5.6	5.6	5.6	0.0
Petroleum and coal products	0.0	9.1	9.1	9.1	0.3	0.3	0.3	0.3	0.0
Chemical rubber plastic prods	0.0	9.1	9.1	9.1	2.8	2.8	2.8	2.8	0.0
Mineral products nec	0.0	2.6	2.6	2.6	9.0	9.0	9.0	9.0	0.0
Metals	0.0	3.3	3.3	3.3	5.3	5.3	5.3	5.3	0.0
Transport equipment	0.0	15.0	15.0	15.0	8.0	8.0	8.0	8.0	0.0
Electronic equipment and machinery	0.0	20.3	20.3	20.3	2.7	2.7	2.7	2.7	0.0
Manufactures nec	0.0	5.2	5.2	5.2	3.4	3.4	3.4	3.4	0.0

	Barriers to Efficient Trade Facilitation on Exports							
Agriculture	0.0	29.2	17.6	30.1	17.5	17.5	17.7	10.1
Forestry	0.0	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Fishing	0.0	8.4	8.4	6.9	5.0	6.2	8.4	6.0
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Food	0.0	9.0	8.8	10.2	11.5	7.9	7.9	11.3
Textiles and apparel	0.0	11.1	11.9	10.6	9.5	8.7	10.5	9.7
Leather products	0.0	8.5	8.5	7.6	11.6	7.0	8.5	7.7
Wood products	0.0	7.3	5.7	6.7	5.5	6.4	7.3	6.4
Paper products and publishing	0.0	24.5	8.4	17.3	12.3	18.3	2.4	22.0
Petroleum and coal products	0.0	24.2	24.2	24.2	24.2	24.2	24.2	24.2
Chemical rubber plastic prods	0.0	12.5	19.2	20.0	19.7	25.3	30.8	14.7
Mineral products nec	0.0	11.2	20.5	20.6	20.9	18.1	22.7	20.9
Metals	0.0	11.0	13.5	13.7	9.6	22.6	31.2	20.2
Transport equipment	0.0	18.8	20.7	11.3	11.7	9.2	18.3	16.2
Electronic equipment and machinery	0.0	9.9	11.5	9.8	11.3	8.1	13.8	10.5
Manufactures nec	0.0	7.6	8.2	11.4	9.4	12.4	12.5	11.2

	Barriers to Efficient Trade Facilitation on Imports							
Agriculture	0.0	32.7	42.1	0.5	11.5	12.0	16.4	12.0
Forestry	0.0	23.1	40.9	17.0	5.1	10.5	19.4	13.8
Fishing	0.0	14.2	27.5	10.5	3.0	6.3	15.1	8.4
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	21.3	38.3	15.5	4.6	6.9	17.8	7.8
Food	0.0	12.2	38.9	22.4	8.1	13.4	29.5	17.5
Textiles and apparel	0.0	16.0	28.7	8.6	2.4	8.1	14.7	12.4
Leather products	0.0	12.1	20.1	9.6	2.2	7.2	10.7	10.5
Wood products	0.0	7.2	17.5	6.5	2.0	5.3	8.2	5.2
Paper products and publishing	0.0	41.5	62.0	25.0	6.0	18.4	32.1	24.5
Petroleum and coal products	0.0	0.0	0.0	0.0	9.7	16.6	32.4	17.8
Chemical rubber plastic prods	0.0	40.1	41.3	26.9	3.9	12.6	32.1	14.8
Mineral products nec	0.0	30.9	54.4	27.6	7.9	16.9	27.7	11.8
Metals	0.0	19.4	0.2	21.0	6.4	12.3	21.3	8.2
Transport equipment	0.0	20.2	61.5	35.4	9.8	12.7	30.2	20.3
Electronic equipment and machinery	0.0	9.3	19.2	8.3	3.2	6.9	14.8	7.3
Manufactures nec	0.0	23.8	38.1	22.8	4.6	10.2	20.2	13.1

[1]Tariffs within the EAEU are taken to be zero.

Source: Author's calculations based on: Modebadze (2010) for FDI barriers; Francois et al. (2007) for cross border services; Vinokurov et al. (2015a; 2015b) for NTBs in goods the EAEU; Kee et al. (2008; 2009) for NTBs in goods in other regions; GTAP 9.0 dataset for tariffs; Hummels and Schaur (2013) and Minor (2013) for trade facilitation (time in trade costs).

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Table 16. Benchmark Distortions in Belarus (%), Ad Valorem Equivalents

	Barriers Against Service Providers								Cross Border
	Discriminatory Barriers Against Foreign Direct Investment								all
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Business Services									
Transport nec	36.9	0.0	36.9	36.9	36.9	36.9	36.9	36.9	52.2
Water transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.2
Air transport	33.8	0.0	33.8	33.8	33.8	33.8	33.8	33.8	52.2
Communication	3.2	0.0	3.2	3.2	3.2	3.2	3.2	3.2	43.3
Financial services nec	13.8	0.0	13.8	13.8	13.8	13.8	13.8	13.8	43.3
Insurance	14.2	0.0	14.2	14.2	14.2	14.2	14.2	14.2	43.3
Business services nec	15.1	0.0	15.1	15.1	15.1	15.1	15.1	15.1	34.6

	Non-Tariff Measures (NTMs)				Tariffs on Non-Members[1]				NTMs non-
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	members
Goods									
Agriculture	1.3	0.0	7.7	2.2	6.0	6.0	6.0	6.0	1.3
Forestry	3.4	0.0	7.7	2.2	5.1	5.1	5.1	5.1	3.4
Fishing	0.3	0.0	7.7	2.2	5.6	5.6	5.6	5.6	0.3
Minerals	19.3	0.0	19.3	19.3	0.0	0.0	0.0	0.0	19.3
Minerals nec	0.2	0.0	0.2	0.2	1.4	1.4	1.4	1.4	0.2
Food	23.5	0.0	3.1	2.3	8.4	8.4	8.4	8.4	23.5
Textiles and apparel	7.2	0.0	2.9	0.8	5.1	5.1	5.1	5.1	7.2
Leather products	21.7	0.0	7.1	2.9	3.6	3.6	3.6	3.6	21.7
Wood products	40.4	0.0	7.1	1.0	9.1	9.1	9.1	9.1	40.4
Paper products and publishing	8.1	0.0	6.1	1.6	3.2	3.2	3.2	3.2	8.1
Petroleum and coal products	9.1	0.0	9.1	9.1	0.1	0.1	0.1	0.1	9.1
Chemical rubber plastic prods	3.1	0.0	3.5	1.6	3.4	3.4	3.4	3.4	3.1
Mineral products nec	0.4	0.0	3.8	1.0	6.3	6.3	6.3	6.3	0.4
Metals	0.1	0.0	5.4	1.6	2.8	2.8	2.8	2.8	0.1
Transport equipment	8.2	0.0	3.4	1.0	8.1	8.1	8.1	8.1	8.2
Electronic equipment and machinery	20.2	0.0	3.7	1.7	1.9	1.9	1.9	1.9	20.2
Manufactures nec	8.4	0.0	4.7	1.8	5.4	5.4	5.4	5.4	8.4
	Barriers to Efficient Trade Facilitation on Exports								
Agriculture	19.8	0.0	14.6	27.0	21.9	23.7	20.8	18.0	
Forestry	13.1	0.0	13.1	13.1	13.1	13.1	13.1	13.1	
Fishing	7.6	0.0	7.9	7.9	7.9	8.0	7.9	7.9	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	11.9	0.0	11.9	11.9	11.9	11.9	12.2	12.1	
Food	6.5	0.0	2.3	3.1	3.6	10.2	5.1	4.7	
Textiles and apparel	8.7	0.0	11.3	13.2	12.2	16.8	51.4	20.3	
Leather products	6.4	0.0	6.8	7.0	5.8	6.7	6.6	6.2	
Wood products	3.7	0.0	5.4	5.5	5.6	5.8	16.3	6.9	
Paper products and publishing	26.2	0.0	21.7	24.2	9.5	22.5	12.8	22.2	
Petroleum and coal products	0.0	0.0	23.0	23.0	23.0	23.0	23.0	23.0	
Chemical rubber plastic prods	25.0	0.0	21.8	21.1	18.4	22.3	15.3	18.4	
Mineral products nec	18.3	0.0	20.4	24.9	7.7	17.4	6.7	22.7	
Metals	10.7	0.0	13.6	14.7	24.0	22.5	21.3	21.6	
Transport equipment	11.2	0.0	17.0	18.5	15.5	13.1	19.9	19.1	
Electronic equipment and machinery	4.9	0.0	13.7	12.7	14.5	14.9	8.7	15.4	
Manufactures nec	13.5	0.0	11.2	9.7	13.2	11.6	10.3	14.2	
	Barriers to Efficient Trade Facilitation on Imports								
Agriculture	31.7	0.0	5.5	14.8	9.3	20.0	21.9	21.8	
Forestry	15.3	0.0	40.9	17.0	5.1	7.5	19.4	20.0	
Fishing	9.4	0.0	28.3	11.1	3.0	2.7	25.5	3.9	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	13.9	0.0	38.3	15.5	4.7	9.3	17.8	17.4	
Food	10.1	0.0	42.5	24.0	6.3	16.9	28.7	25.1	
Textiles and apparel	12.4	0.0	33.0	15.2	2.9	8.2	16.1	14.7	
Leather products	9.4	0.0	21.4	9.3	3.0	8.8	12.1	10.7	
Wood products	8.2	0.0	16.5	10.1	2.4	5.9	10.0	9.0	
Paper products and publishing	26.7	0.0	62.5	28.2	8.3	18.2	30.2	32.9	
Petroleum and coal products	26.4	0.0	57.9	28.9	9.7	17.1	32.4	30.9	
Chemical rubber plastic prods	13.9	0.0	48.0	25.9	6.8	13.6	25.6	24.8	
Mineral products nec	12.4	0.0	60.4	26.8	8.2	18.1	25.4	30.4	
Metals	12.2	0.0	55.5	25.6	4.2	11.8	22.8	32.2	
Transport equipment	20.7	0.0	43.5	16.2	6.8	12.7	26.1	19.8	
Electronic equipment and machinery	11.0	0.0	37.1	11.8	4.5	8.2	14.7	10.2	
Manufactures nec	8.5	0.0	40.1	24.1	5.5	11.9	19.7	14.9	

[1]Tariffs within the EAEU are taken to be zero.

Source: Author's calculations based on: Modebadze (2010) for FDI barriers; Francois et al. (2007) for cross border services; Vinokurov et al. (2015a; 2015b) for NTBs in goods the EAEU; Kee et al. (2008; 2009) for NTBs

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in goods in other regions; GTAP 9.0 dataset for tariffs; Hummels and Schaur (2013) and Minor (2013) for trade facilitation (time in trade costs).

Table 17. Benchmark Distortions in Kazakhstan (%), Ad Valorem Equivalents

	Barriers Against Service Providers								Cross Border
	Discriminatory Barriers Against Foreign Direct Investment								all regions
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Business Services									
Transport nec		53.0	0.0	53.0	53.0	53.0	53.0	53.0	41.1
Water transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.1
Air transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.1
Communication	3.8	3.8	0.0	3.8	3.8	3.8	3.8	3.8	23.2
Financial services nec	12.3	12.3	0.0	12.3	12.3	12.3	12.3	12.3	23.2
Insurance	19.4	19.4	0.0	19.4	19.4	19.4	19.4	19.4	23.2
Business services nec	21.2	21.2	0.0	21.2	21.2	21.2	21.2	21.2	0

	Non-Tariff Measures (NTMs)				Tariffs on Non-Members[1]				NTMs non-
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	members
Goods									
Agriculture	27.8	9.5	0.0	3.3	4.5	4.5	4.5	4.5	27.8
Forestry	3.4	9.5	0.0	3.3	1.4	1.4	1.4	1.4	3.4
Fishing	21.8	9.5	0.0	3.3	4.1	4.1	4.1	4.1	21.8
Minerals	15.6	15.6	0.0	15.6	0.0	0.0	0.0	0.0	15.6
Minerals nec	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.1
Food	31.2	9.7	0.0	4.0	6.7	6.7	6.7	6.7	31.2
Textiles and apparel	17.3	12.9	0.0	1.6	8.9	8.9	8.9	8.9	17.3
Leather products	23.2	16.2	0.0	8.8	8.6	8.6	8.6	8.6	23.2
Wood products	40.4	40.4	0.0	3.9	6.7	6.7	6.7	6.7	40.4
Paper products and publishing	8.1	8.1	0.0	1.9	2.6	2.6	2.6	2.6	8.1
Petroleum and coal products	10.5	10.5	0.0	10.5	0.2	0.2	0.2	0.2	10.5
Chemical rubber plastic prods	11.6	17.0	0.0	3.6	3.3	3.3	3.3	3.3	11.6
Mineral products nec	0.7	14.3	0.0	1.9	4.5	4.5	4.5	4.5	0.7
Metals	0.0	5.5	0.0	1.9	3.8	3.8	3.8	3.8	0.0
Transport equipment	22.3	6.5	0.0	1.9	6.6	6.6	6.6	6.6	22.3
Electronic equipment and machinery	11.3	11.1	0.0	2.4	2.0	2.0	2.0	2.0	11.3
Manufactures nec	2.4	9.7	0.0	3.8	6.3	6.3	6.3	6.3	2.4

	Barriers to Efficient Trade Facilitation on Exports								
Agriculture	46.1	6.2	0.0	12.3	45.9	7.0	29.8	5.0	
Forestry	44.8	44.8	0.0	44.8	44.8	44.8	44.8	44.8	
Fishing	30.9	31.7	0.0	22.2	31.7	31.7	31.7	24.6	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	42.2	42.2	0.0	42.2	42.2	42.2	42.2	42.2	
Food	42.0	46.0	0.0	50.5	37.7	53.2	44.9	54.0	
Textiles and apparel	32.0	36.6	0.0	36.4	33.6	32.0	37.1	37.1	
Leather products	22.8	24.2	0.0	27.8	26.2	24.4	24.5	25.8	
Wood products	19.9	18.8	0.0	20.0	24.7	22.7	21.8	25.0	
Paper products and publishing	65.7	66.2	0.0	60.7	40.1	56.4	55.3	64.0	
Petroleum and coal products	0.0	61.8	0.0	61.8	61.8	61.8	61.8	61.8	
Chemical rubber plastic prods	45.2	52.0	0.0	51.3	67.6	55.5	55.4	56.9	
Mineral products nec	58.3	64.1	0.0	60.4	63.4	61.1	58.0	58.4	
Metals	0.2	59.4	0.0	60.7	56.2	56.7	58.2	58.1	
Transport equipment	65.2	47.5	0.0	32.9	35.9	24.4	59.1	44.7	
Electronic equipment and machinery	21.8	40.9	0.0	34.2	30.9	34.1	35.0	35.6	
Manufactures nec	41.9	44.0	0.0	46.2	32.8	41.1	62.1	29.2	

	Barriers to Efficient Trade Facilitation on Imports								
Agriculture	19.4	25.5	0.0	29.2	4.6	11.4	40.7	68.2	
Forestry	15.3	23.1	0.0	17.0	5.1	9.6	19.4	19.1	
Fishing	9.3	14.7	0.0	11.1	3.0	5.5	16.5	7.3	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	13.9	21.3	0.0	15.5	4.6	8.0	17.8	38.2	
Food	9.8	4.5	0.0	16.5	7.2	9.9	29.3	22.4	
Textiles and apparel	13.2	20.4	0.0	13.4	3.1	8.2	16.0	18.5	
Leather products	9.4	12.8	0.0	8.9	2.5	6.6	10.8	11.6	
Wood products	6.3	10.2	0.0	8.5	2.0	4.8	9.4	7.9	
Paper products and publishing	9.3	35.7	0.0	28.2	8.9	18.7	29.1	30.6	
Petroleum and coal products	26.4	37.4	0.0	28.9	9.7	14.6	32.4	27.9	
Chemical rubber plastic prods	21.1	35.8	0.0	27.1	6.4	10.9	29.0	25.8	
Mineral products nec	22.5	33.9	0.0	27.1	7.8	15.5	31.6	48.5	
Metals	14.9	24.0	0.0	27.1	4.9	12.1	25.1	28.0	
Transport equipment	22.7	29.2	0.0	15.1	4.5	10.2	25.6	22.3	
Electronic equipment and machinery	12.8	24.1	0.0	13.0	5.0	6.3	14.0	9.9	
Manufactures nec	9.2	20.2	0.0	25.0	5.1	11.9	20.8	13.9	

[1]Tariffs within the EAEU are taken to be zero.

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Source: Author's calculations based on: Jafari and Tarr (2015) for FDI barriers; Francois et al. (2007) for cross border services; Vinokurov et al. (2015a; 2015b) for NTBs in goods the EAEU; Kee et al. (2008; 2009) for NTBs in goods in other regions; GTAP 9.0 dataset for tariffs; Hummels and Schaur (2013) and Minor (2013) for trade facilitation (time in trade costs).

Table 18. Benchmark Distortions in Russia (%), Ad Valorem Equivalents

	Barriers Against Service Providers								Cross Border All Regions
	Discriminatory Barriers Against Foreign Direct Investment								
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Business Services									
Transport nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.8
Water transport	38.7	38.7	38.7	0.0	38.7	38.7	38.7	38.7	42.8
Air transport	55.9	55.9	55.9	0.0	55.9	55.9	55.9	55.9	42.8
Communication	1.9	1.9	1.9	0.0	1.9	1.9	1.9	1.9	19.9
Financial services nec	11.0	11.0	11.0	0.0	11.0	11.0	11.0	11.0	19.9
Insurance	27.3	27.3	27.3	0.0	27.3	27.3	27.3	27.3	19.9
Business services nec	28.3	28.3	28.3	0.0	28.3	28.3	28.3	28.3	9.0
	Non-Tariff Measures (NTMs)				Tariffs on Non-Members[1]				NTMs non-members
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	
Goods									
Agriculture	18.1	2.4	2.9	0.0	4.7	4.7	4.7	4.7	18.1
Forestry	3.4	2.4	2.9	0.0	6.6	6.6	6.6	6.6	3.4
Fishing	2.0	2.4	2.9	0.0	5.6	5.6	5.6	5.6	2.0
Minerals	22.7	22.7	22.7	0.0	0.5	0.5	0.5	0.5	22.7
Minerals nec	3.6	3.6	3.6	0.0	1.6	1.6	1.6	1.6	3.6
Food	29.8	3.2	2.2	0.0	12.0	12.0	12.0	12.0	29.8
Textiles and apparel	2.3	2.8	1.3	0.0	8.3	8.3	8.3	8.3	2.3
Leather products	24.7	4.3	4.3	0.0	8.1	8.1	8.1	8.1	24.7
Wood products	40.4	1.3	3.3	0.0	12.3	12.3	12.3	12.3	40.4
Paper products and publishing	8.1	2.8	2.0	0.0	5.9	5.9	5.9	5.9	8.1
Petroleum and coal products	7.5	7.5	7.5	0.0	2.4	2.4	2.4	2.4	7.5
Chemical rubber plastic prods	11.9	3.8	3.0	0.0	5.0	5.0	5.0	5.0	11.9
Mineral products nec	6.3	2.5	2.4	0.0	8.5	8.5	8.5	8.5	6.3
Metals	9.3	1.6	2.0	0.0	5.9	5.9	5.9	5.9	9.3
Transport equipment	13.1	1.4	2.4	0.0	14.1	14.1	14.1	14.1	13.1
Electronic equipment and machinery	27.6	2.5	2.2	0.0	2.8	2.8	2.8	2.8	27.6
Manufactures nec	4.5	2.7	2.5	0.0	9.8	9.8	9.8	9.8	4.5
	Barriers to Efficient Trade Facilitation on Exports								
Agriculture	0.5	15.1	29.3	0.0	13.6	9.4	18.0	2.3	
Forestry	17.5	17.5	17.5	0.0	17.5	17.5	17.5	17.5	
Fishing	10.8	11.5	11.5	0.0	11.7	11.7	10.5	8.4	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	16.0	16.0	16.0	0.0	16.0	16.0	15.9	16.0	
Food	22.9	24.7	17.2	0.0	10.1	22.3	25.0	21.4	
Textiles and apparel	8.9	15.6	13.8	0.0	12.6	12.8	19.3	16.1	
Leather products	9.9	9.6	9.2	0.0	11.0	8.1	7.9	9.5	
Wood products	6.7	10.4	8.7	0.0	7.4	7.5	7.7	7.9	
Paper products and publishing	25.6	28.9	28.9	0.0	25.4	30.6	29.8	29.7	
Petroleum and coal products	0.0	29.6	29.6	0.0	29.6	29.6	29.6	29.6	
Chemical rubber plastic prods	27.5	26.6	27.7	0.0	22.7	24.1	24.1	24.1	
Mineral products nec	28.3	27.4	27.7	0.0	23.2	27.1	33.5	27.4	
Metals	21.7	26.2	27.7	0.0	26.2	26.6	25.4	27.4	
Transport equipment	36.1	16.7	15.5	0.0	14.4	16.7	11.5	20.1	
Electronic equipment and machinery	8.6	12.2	13.4	0.0	14.2	13.0	12.7	12.5	
Manufactures nec	23.4	24.7	25.6	0.0	15.9	15.9	13.8	16.8	
	Barriers to Efficient Trade Facilitation on Imports								
Agriculture	32.7	43.4	11.5	0.0	7.5	17.4	38.3	36.9	
Forestry	15.3	23.1	40.9	0.0	5.1	7.8	19.4	17.0	
Fishing	7.7	14.7	19.5	0.0	2.5	5.4	24.6	4.1	
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Minerals nec	13.9	21.3	38.3	0.0	4.6	8.0	17.8	18.7	
Food	11.4	5.8	46.9	0.0	5.8	10.3	26.9	14.0	
Textiles and apparel	11.7	23.4	32.7	0.0	3.6	8.9	14.8	17.9	
Leather products	8.5	13.0	24.7	0.0	2.5	6.7	9.6	8.9	
Wood products	7.5	10.4	17.5	0.0	2.0	4.9	9.1	6.0	
Paper products and publishing	19.1	39.0	56.8	0.0	8.8	16.5	28.0	30.9	
Petroleum and coal products	26.4	37.4	57.9	0.0	9.7	14.6	32.4	34.6	
Chemical rubber plastic prods	22.0	34.8	47.3	0.0	6.8	11.0	27.0	20.0	
Mineral products nec	22.6	39.8	56.5	0.0	8.0	15.9	28.8	26.8	
Metals	15.1	25.7	56.8	0.0	5.1	11.3	23.9	28.3	
Transport equipment	12.5	31.2	29.4	0.0	9.4	13.9	26.6	20.1	
Electronic equipment and machinery	10.9	22.5	30.7	0.0	4.3	6.9	15.4	9.9	
Manufactures nec	12.7	17.6	42.2	0.0	4.8	9.5	18.1	10.2	

[1]Tariffs within the EAEU are taken to be zero.

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Source: Author's calculations based on: Idrisov (2010a) for FDI barriers; Francois *et al.* (2007) for cross border services*;* Vinokurov *et al.* (2015a; 2015b) for NTBs in goods the EAEU; Kee *et al.* (2008; 2009) for NTBs in goods in other regions; GTAP 9.0 dataset for tariffs; Hummels and Schaur (2013) and Minor (2013) for trade facilitation (time in trade costs).

Table 19. Key Elasticities

	Armington elasticities			Supply elasticities							
	Domestic vs Foreign	Foreign vs Foreign	Dixit-Stiglitz	Armenia	Belarus	Kazakhstan	Russia	China	EU	USA	ROW
Business Services											
Transport nec			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Water transport			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Air transport			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Communication			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Financial services nec			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Insurance			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Business services nec			3.0	3.0	3.0	3.0	5.0	4.0	10.0	10.0	10.0
Dixit-Stigliz Goods											
Food			5.1	3.0	3.0	3.0	4.0	10.0	10.0	10.0	10.0
Wood products			6.8	3.0	3.0	3.0	4.0	10.0	10.0	10.0	10.0
Paper products and publishing			5.9	3.0	3.0	3.0	4.0	10.0	10.0	10.0	10.0
Petroleum and coal products			4.2	3.0	3.0	3.0	4.0	4.0	10.0	10.0	10.0
Chemical rubber plastic prods			6.6	3.0	3.0	3.0	10.0	4.0	10.0	10.0	10.0
Mineral products nec			5.8	3.0	3.0	3.0	10.0	4.0	10.0	10.0	10.0
Metals			7.4	3.0	3.0	3.0	10.0	10.0	10.0	10.0	10.0
Transport equipment			6.4	3.0	3.0	3.0	10.0	4.0	10.0	10.0	10.0
Electronic equipment and machinery			8.3	3.0	3.0	3.0	4.0	10.0	10.0	10.0	10.0
Manufactures nec			7.5	3.0	3.0	3.0	4.0	10.0	10.0	10.0	10.0
CRTS											
Agriculture	2.6	5.0									
Forestry	2.5	5.0									
Fishing	1.3	2.5									
Minerals	6.5	13.5									
Minerals nec	0.9	1.8									
Textiles and apparel	3.7	7.5									
Leather products	4.1	8.1									
Electiricity, gas and water distribution	2.8	5.6									
Construction	1.9	3.8									
Trade	1.5	3.8									
Public administration, recreation and other services	1.5	3.8									

Source: Demand elasticities--GTAP 9.0 database for goods, Broda and Weinstein (2006) for services; Balistreri, Olekseyuk and Tarr (2016, appendix E) for supply elasticities.

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Table 20: Ownership Percentages in Business Services in the EAEU Regions

	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW
Armenia								
Transport, nec	29.4	0.0	0.0	70.6	0.0	0.0	0.0	0.0
Water transport	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air transport	1.0	10.0	0.0	39.0	0.0	25.0	0.0	25.0
Communication	0.0	0.0	0.0	39.0	31.7	5.7	0.0	23.6
Financial services nec	26.0	0.0	0.0	36.2	10.1	15.6	0.0	12.2
Insurance	31.2	0.0	0.0	38.9	8.5	20.3	0.0	1.2
Business services nec	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus								
Transport, nec	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Water transport	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Air transport	0.0	74.9	0.0	7.0	0.0	11.1	2.0	5.0
Communication	0.0	77.4	0.0	7.2	0.0	13.0	0.0	2.4
Financial services nec	0.0	65.7	0.0	24.6	0.0	7.2	0.0	2.4
Insurance	0.0	86.4	0.0	8.6	0.0	5.0	0.0	0.0
Business services nec	0.0	94.6	0.0	1.3	0.0	2.7	0.0	1.4
Kazakhstan								
Transport, nec	0.0	0.0	86.2	0.0	13.8	0.0	0.0	0.0
Water transport	0.0	0.0	85.4	0.0	14.6	0.0	0.0	0.0
Air transport	0.0	3.3	75.8	7.0	0.0	3.3	2.3	8.3
Communication	0.0	0.0	46.8	0.0	53.2	0.0	0.0	0.0
Financial services nec	0.0	0.0	80.4	0.0	19.6	0.0	0.0	0.0
Insurance	0.0	0.0	94.0	0.0	6.0	0.0	0.0	0.0
Business services nec	0.0	0.0	95.4	0.0	4.6	0.0	0.0	0.0
Russian Federation								
Transport, nec	0.0	2.4	0.0	88.1	0.0	7.6	0.0	1.9
Water transport	0.0	0.0	0.0	5.0	3.7	37.1	11.6	42.7
Air transport	0.0	1.3	1.3	78.1	0.0	6.9	1.6	11.0
Communication	0.0	0.0	0.0	55.5	19.0	7.1	0.0	18.4
Financial services nec	0.0	0.0	0.0	81.0	0.0	17.2	0.0	1.9
Insurance	0.0	0.0	0.0	79.5	2.3	10.5	0.0	7.7
Business services nec	0.0	0.0	0.0	85.9	0.0	3.9	3.6	6.6

Source: Idrisov (2010b) for Russia; Kolesnikova (2014b) for Belarus, with additional communication for air transport; Eroyants (2011) for Armenia; Jensen and Tarr (2008) for Kazakhstan.

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Table 21. Summary of Results: Deep Integration in the Eurasian Economic Union (EAEU), (percentage change from the benchark equilibrium)

Scenario definition	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers (% reduction)	EAEU: only NTMs for goods on Imports from EAEU (% reduction)	EAEU: only Cross-border services barriers (% reduction)	EAEU: only Import Trade Facilitation	EAEU: only Export Trade Facilitation
Services Liberalization: 50% reduction of discriminatory barriers within EAEU*	Yes	Yes	No	No	No	No
Non-Tariff Barriers for goods: 20% reduction of costs within EAEU countries*	Yes	No	Yes	No	No	No
Cross-Border Barriers for services: 50% reduction of NTB costs with EAEU countries	Yes	No	No	Yes	No	No
Time in Trade Costs for Imports: 20% reduction within EAEU countries*	Yes	No	No	No	Yes	No
Time in Trade Costs for Imports: 5% reduction with non-EAEU countries*	Yes	No	No	No	Yes	No
Time in Trade Costs for Exports: 20% reduction within EAEU countries*	Yes	No	No	No	No	Yes
Time in Trade Costs for Exports: 5% reduction with non-EAEU countries*	Yes	No	No	No	No	Yes
Aggregate welfare: Equivalent Variation (EV)						
EV as % of consumption; (EV as % of GDP in parentheses)						
Armenia	3.10; (2.56)	1.72; (1.42)	0.43; (0.35)	0.05; (0.04)	0.42; (0.34)	0.28; (0.23)
Belarus	4.77; (2.96)	0.78; (0.49)	1.52; (0.94)	0.02; (0.01)	0.99; (0.61)	1.10; (0.68)
Kazakhstan	1.74; (0.83)	0.13; (0.06)	0.07; (0.03)	0.02; (0.01)	0.47; (0.22)	0.85; (0.41)
Russia	0.82; (0.41)	0.03; (0.01)	0.21; (0.10)	0.00; (0.00)	0.31; (0.15)	0.26; (0.13)
Aggregate trade						
Aggregate exports						
Armenia	9.53	1.10	2.17	0.28	2.25	2.22
Belarus	6.68	-0.25	0.99	0.06	2.53	2.78
Kazakhstan	2.97	-0.05	0.17	0.03	1.13	1.21
Russia	1.96	0.02	-0.12	0.01	0.95	0.96
Factor earnings						
Armenia						
Capital	1.52	0.50	0.48	0.05	0.05	0.41
Unskilled labor	1.63	0.62	0.42	0.05	0.08	0.43
Skilled labor	1.74	0.68	0.48	0.06	0.13	0.36
Resource	1.59	0.54	0.33	0.02	0.17	0.48
Belarus						
Capital	5.23	0.78	1.92	0.01	0.63	1.54
Unskilled labor	3.64	0.22	1.06	-0.01	0.88	1.24
Skilled labor	3.53	0.28	1.10	-0.01	0.90	1.23
Resource	-3.28	0.31	-3.15	0.03	-0.30	-0.26
Kazakhstan						
Capital	1.81	0.17	0.03	0.01	0.07	1.25
Unskilled labor	1.09	0.03	0.03	0.01	0.01	0.88
Skilled labor	0.89	0.03	0.06	0.01	0.12	0.57
Resource	-0.90	-0.03	0.11	0.00	0.02	-0.84
Russia						
Capital	0.58	0.01	0.07	0.00	-0.10	0.58
Unskilled labor	0.46	0.00	0.08	0.00	-0.18	0.55
Skilled labor	0.49	0.00	0.08	0.00	-0.09	0.49
Resource	-0.04	0.01	-0.10	0.00	0.11	-0.06

Source: Authors' estimates.

Table 22. Rents Available: Deep Integration in the Eurasian Economic Union (results are percentage of consumption at the benchmark)

Scenario definitions	Benchmark: Existing rent	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers	EAEU: only NTMs for goods on Imports from EAEU	EAEU: only Cross-border services barriers	EAEU: only Export Trade Facilitation	EAEU: only Import Trade Facilitation
Rent affected by the policy							
Foreign Direct Investment							
Armenia	1.14	0.47	0.00	0.47	0.00	0.00	0.00
Belarus	0.44	0.12	0.00	0.12	0.00	0.00	0.00
Kazakhstan	4.38	0.00	0.00	0.00	0.00	0.00	0.00
Russia	1.56	0.02	0.00	0.02	0.00	0.00	0.00
Trade Faciliatation							
Armenia	8.83	0.58	0.21	0.00	0.00	0.21	0.37
Belarus	14.63	0.84	0.28	0.00	0.00	0.28	0.56
Kazakhstan	10.33	0.46	0.11	0.00	0.00	0.11	0.35
Russia	8.43	0.24	0.02	0.00	0.00	0.02	0.23
Non-Tariff Barriers							
Armenia	5.99	0.22	0.00	0.00	0.21	0.00	0.00
Belarus	10.98	0.20	0.00	0.00	0.19	0.00	0.00
Kazakhstan	4.65	0.04	0.00	0.00	0.03	0.00	0.00
Russia	5.35	0.01	0.00	0.00	0.01	0.00	0.00
Cross-Border Services							
Armenia	1.34	0.01	0.00	0.01	0.00	0.00	0.00
Belarus	0.70	0.01	0.00	0.01	0.00	0.00	0.00
Kazakhstan	1.39	0.01	0.00	0.01	0.00	0.00	0.00
Russia	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Total							
Armenia	17.30	1.28	0.21	0.48	0.21	0.21	0.37
Belarus	26.75	1.17	0.28	0.12	0.19	0.28	0.56
Kazakhstan	20.75	0.51	0.11	0.01	0.03	0.11	0.35
Russia	16.21	0.27	0.02	0.02	0.01	0.02	0.23

Source: Authors' estimates.

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Table 23. Output Impacts from Liberalization for Armenia (results are percentage change from initial equilibrium)

Scenario definitions	Benchmark	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers	EAEU: only NTMs for goods on Imports from EAEU	EAEU: only Cross-border services barriers	EAEU: only Export Trade Facilitation	EAEU: only Import Trade Facilitation
Business Services							
Transport nec	0.0	5.9	3.9	0.6	0.5	0.1	0.5
Water transport	0.0	3.7	1.8	0.4	0.2	0.2	0.7
Air transport	0.0	21.0	17.3	0.5	1.1	0.1	1.7
Communication	0.0	2.1	1.0	0.2	0.2	0.0	0.5
Financial services nec	0.0	1.8	0.6	0.4	0.1	0.1	0.4
Insurance	0.0	6.8	5.9	0.2	0.2	-0.2	0.5
Business services nec	0.0	1.3	1.0	0.2	-0.3	-0.2	0.5
Dixit-Stigliz Goods							
Food	0.0	0.9	1.1	0.5	0.0	-0.2	-0.3
Wood products	0.0	-4.0	1.0	-3.2	0.0	-0.7	-0.7
Paper products and publishing	0.0	-3.0	1.3	-0.2	0.0	-1.2	-2.5
Petroleum and coal products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical rubber plastic prods	0.0	-3.3	1.4	1.0	0.0	-1.7	-3.4
Mineral products nec	0.0	6.7	2.2	1.5	0.0	2.4	1.0
Metals	0.0	2.8	0.9	-0.3	-0.1	1.8	0.3
Transport equipment	0.0	0.0	1.6	-0.3	0.0	-0.2	-1.0
Electronic equipment and machinery	0.0	6.8	1.3	2.2	0.0	1.6	1.5
Manufactures nec	0.0	6.4	1.0	0.8	-0.1	2.2	1.7
CRTS							
Agriculture	0.0	2.0	1.1	0.1	0.0	0.3	0.3
Forestry	0.0	2.1	1.2	0.4	0.0	0.2	0.2
Fishing	0.0	2.5	1.0	0.4	0.0	0.4	0.5
Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	1.1	0.7	0.0	0.0	0.1	0.1
Textiles and apparel	0.0	3.8	1.3	0.0	0.0	1.1	1.1
Leather products	0.0	10.3	1.4	3.9	-0.1	1.5	1.7
Electiricity, gas and water distribution	0.0	2.0	1.1	0.3	0.0	0.1	0.4
Construction	0.0	1.5	0.6	0.3	0.0	0.2	0.3
Trade	0.0	2.2	1.1	0.3	0.0	0.2	0.4
Public administration, recreation and other services	0.0	1.5	0.6	0.3	0.0	0.2	0.3

Source: Authors' estimates.

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Table 24. Output Impacts from Liberalization for Belarus (results are percentage change from initial equilibrium)

Scenario definitions	Benchmark	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers	EAEU: only NTMs for goods on Imports from EAEU	EAEU: only Cross-border services barriers	EAEU: only Export Trade Facilitation	EAEU: only Import Trade Facilitation
Business Services							
Transport nec	0.0	1.4	0.1	0.6	-0.1	0.3	0.4
Water transport	0.0	0.6	0.1	0.3	-0.1	0.0	0.2
Air transport	0.0	1.2	0.2	0.5	-0.1	0.1	0.4
Communication	0.0	3.3	0.4	1.1	0.1	0.7	0.7
Financial services nec	0.0	1.8	-0.9	0.9	0.0	0.7	0.8
Insurance	0.0	3.1	0.3	1.0	0.0	0.7	0.8
Business services nec	0.0	0.3	0.9	-0.2	0.0	-0.4	0.1
Dixit-Stigliz Goods							
Food	0.0	1.4	0.4	0.9	0.0	0.2	-0.1
Wood products	0.0	0.6	-0.1	1.2	0.0	-0.7	0.1
Paper products and publishing	0.0	-3.9	0.2	-0.1	0.0	-1.3	-2.3
Petroleum and coal products	0.0	1.5	0.0	1.5	0.0	0.9	-0.6
Chemical rubber plastic prods	0.0	2.2	-0.1	0.4	0.0	1.2	0.2
Mineral products nec	0.0	2.5	0.0	0.0	0.0	0.8	1.2
Metals	0.0	0.8	-0.1	-0.3	0.0	0.7	0.0
Transport equipment	0.0	-0.1	0.0	-0.6	0.0	0.1	0.2
Electronic equipment and machinery	0.0	-0.8	0.0	-0.6	0.0	-0.5	0.0
Manufactures nec	0.0	1.2	0.1	0.3	0.0	0.3	0.5
CRTS							
Agriculture	0.0	2.5	0.4	1.0	0.0	0.5	0.3
Forestry	0.0	0.5	0.1	0.4	0.0	0.0	0.0
Fishing	0.0	2.2	0.4	0.7	0.0	0.5	0.4
Minerals	0.0	-9.5	0.0	-6.2	0.1	-2.0	-1.2
Minerals nec	0.0	0.6	0.1	0.1	0.0	0.1	0.2
Textiles and apparel	0.0	5.9	0.1	-0.3	0.1	2.4	3.3
Leather products	0.0	2.6	0.1	0.1	0.1	0.2	1.9
Electiricity, gas and water distribution	0.0	1.7	0.2	0.5	0.0	0.4	0.4
Construction	0.0	1.1	0.1	0.4	0.0	0.2	0.2
Trade	0.0	2.3	0.3	0.6	0.0	0.6	0.6
Public administration, recreation and other services	0.0	2.5	0.2	0.8	0.0	0.6	0.6

Source: Authors' estimates.

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Table 25. Output Impacts from Liberalization for Kazakhstan (results are percentage change from initial equilibrium)

Scenario definitions	Benchmark	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers	EAEU: only NTMs for goods on Imports from EAEU	EAEU: only Cross-border services barriers	EAEU: only Export Trade Facilitation	EAEU: only Import Trade Facilitation
Business Services							
Transport nec	0.0	0.3	0.0	0.0	0.0	0.0	0.3
Water transport	0.0	0.2	0.0	0.0	0.0	-0.2	0.3
Air transport	0.0	0.3	0.0	0.0	0.1	-0.2	0.4
Communication	0.0	0.7	0.0	0.1	0.0	0.2	0.4
Financial services nec	0.0	0.2	0.0	0.1	0.0	-0.2	0.3
Insurance	0.0	0.0	0.0	0.0	0.0	-0.2	0.3
Business services nec	0.0	-0.3	0.0	0.1	0.0	-0.6	0.3
Dixit-Stigliz Goods							
Food	0.0	1.2	0.1	0.0	0.0	0.8	0.2
Wood products	0.0	-4.4	0.0	-2.1	0.0	-1.1	-0.7
Paper products and publishing	0.0	-2.1	0.0	0.0	0.0	-0.6	-1.2
Petroleum and coal products	0.0	5.1	0.0	0.0	0.0	3.9	0.6
Chemical rubber plastic prods	0.0	4.0	0.0	-0.2	0.0	3.6	-0.1
Mineral products nec	0.0	-2.7	0.0	-0.1	0.0	-0.6	-1.8
Metals	0.0	7.4	0.0	0.0	0.0	5.2	0.9
Transport equipment	0.0	-6.9	0.0	-0.2	0.0	-2.6	-2.9
Electronic equipment and machinery	0.0	-3.9	0.0	-0.2	0.0	-1.8	-1.4
Manufactures nec	0.0	-5.8	0.0	-0.2	0.0	-1.8	-2.5
CRTS							
Agriculture	0.0	0.7	0.1	0.0	0.0	0.4	0.1
Forestry	0.0	-0.5	0.1	-0.5	0.0	0.0	0.0
Fishing	0.0	0.6	0.1	0.0	0.0	0.2	0.3
Minerals	0.0	-1.6	0.0	0.1	0.0	-1.6	0.2
Minerals nec	0.0	3.5	0.0	0.0	0.0	2.5	0.5
Textiles and apparel	0.0	-0.4	0.1	0.0	0.0	0.0	-0.5
Leather products	0.0	1.3	0.1	0.0	0.0	0.6	0.5
Electiricity, gas and water distribution	0.0	1.8	0.0	0.0	0.0	1.1	0.4
Construction	0.0	0.2	0.0	0.0	0.0	-0.1	0.2
Trade	0.0	1.5	0.1	0.1	0.0	0.7	0.4
Public administration, recreation and other services	0.0	0.8	0.1	0.0	0.0	0.3	0.3

Source: Authors' estimates.

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Table 26. Output Impacts from Liberalization for Russia (results are percentage change from initial equilibrium)

Scenario definitions	Benchmark	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers	EAEU: only NTMs for goods on Imports from EAEU	EAEU: only Cross-border services barriers	EAEU: only Export Trade Facilitation	EAEU: only Import Trade Facilitation
Business Services							
Transport nec	0.0	0.5	0.0	0.1	0.0	0.1	0.2
Water transport	0.0	0.2	0.0	0.0	0.0	-0.1	0.3
Air transport	0.0	0.0	-0.2	0.0	0.0	-0.1	0.3
Communication	0.0	0.5	0.0	0.1	0.0	0.1	0.3
Financial services nec	0.0	0.3	0.0	0.0	0.0	0.1	0.2
Insurance	0.0	0.4	0.0	0.1	0.0	0.0	0.3
Business services nec	0.0	0.4	0.0	0.1	0.0	0.0	0.3
Dixit-Stigliz Goods							
Food	0.0	0.3	0.0	0.1	0.0	0.2	0.0
Wood products	0.0	0.1	0.0	0.0	0.0	-0.1	0.2
Paper products and publishing	0.0	0.0	0.0	0.0	0.0	0.6	-0.7
Petroleum and coal products	0.0	1.4	0.0	0.0	0.0	1.4	0.0
Chemical rubber plastic prods	0.0	0.7	0.0	-0.1	0.0	1.1	-0.4
Mineral products nec	0.0	-0.7	0.0	0.0	0.0	0.0	-0.6
Metals	0.0	0.6	0.0	-0.1	0.0	1.4	-0.4
Transport equipment	0.0	-1.0	0.0	0.0	0.0	-0.1	-1.0
Electronic equipment and machinery	0.0	-1.0	0.0	-0.1	0.0	-0.5	-0.5
Manufactures nec	0.0	-0.1	0.0	0.0	0.0	0.1	-0.3
CRTS							
Agriculture	0.0	-0.1	0.0	0.1	0.0	0.0	-0.2
Forestry	0.0	0.4	0.0	0.0	0.0	0.4	0.0
Fishing	0.0	0.2	0.0	0.0	0.0	0.0	0.1
Minerals	0.0	-0.2	0.0	-0.2	0.0	-0.3	0.3
Minerals nec	0.0	0.1	0.0	-0.1	0.0	0.3	-0.1
Textiles and apparel	0.0	-0.5	0.0	0.0	0.0	-0.1	-0.5
Leather products	0.0	-0.1	0.0	0.1	0.0	-0.2	-0.1
Electiricity, gas and water distribution	0.0	0.4	0.0	0.1	0.0	0.2	0.1
Construction	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Trade	0.0	0.5	0.0	0.1	0.0	0.2	0.2
Public administration, recreation and other services	0.0	0.3	0.0	0.1	0.0	0.1	0.2

Source: Authors' estimates.

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Table 27: Spillovers (or Wider Liberalization) Results for Welfare Impacts Compared –Aggregate Welfare Impacts and Their Components (results are percentage change from the benchmark equilibrium)

1. Aggregate Welfare Impacts

		EAEU	Plus Spillovers with respect to:			
		Central	World	EU	US	China
Armenia		3.10	4.52	3.65	3.21	3.19
Belarus		4.77	7.22	5.70	4.85	4.86
Kazakhstan		1.74	6.26	2.32	4.49	2.27
Russia		0.82	3.58	2.23	0.96	1.11

2. FDI Liberalization Only Welfare Impacts

		EAEU	Plus Spillovers with respect to:			
		Central	World	EU	US	China
Armenia		1.72	2.02	1.86	1.75	1.72
Belarus		0.78	0.94	0.86	0.80	0.79
Kazakhstan		0.13	3.01	0.28	2.75	0.13
Russia		0.03	1.23	0.64	0.06	0.08

3. Trade Faciliation Only Welfare Impacts

		EAEU	Plus Spillovers with respect to:			
		Central	World	EU	US	China
Armenia		0.69	0.94	0.78	0.70	0.72
Belarus		2.09	3.02	2.55	2.11	2.13
Kazakhstan		1.32	2.25	1.53	1.37	1.61
Russia		0.56	1.08	0.76	0.59	0.65

4. Non-Tariff Barriers Reduction Only Welfare Impacts

		EAEU	Plus Spillovers with respect to:			
		Central	World	EU	US	China
Armenia		0.43	0.96	0.58	0.46	0.47
Belarus		1.52	2.71	1.83	1.54	1.56
Kazakhstan		0.07	0.55	0.20	0.10	0.27
Russia		0.21	0.86	0.59	0.26	0.33

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Source: Authors' estimates.

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Table 28: Spillovers with the World Impact: Deep Integration in the Eurasian Economic Union Combined with Spillovers --(results are percentage change from the benchmark equilibrium)

Scenario definition	EAEU Central with Spillovers to the World	FDI Services Barriers Only	Import NTMs	Cross-border Services Barriers Only	Import Trade Facilitation Only	Export Trade Facilitation Only
EAEU FDI barriers (50% reduction for EAEU countries)	Yes	Yes	No	No	No	No
EAEU FDI barriers (25% reduction for WORLD)	Yes	Yes	No	No	No	No
Cross-border services barriers (50% reduction for EAEU countries)	Yes	No	No	Yes	No	No
Cross-border services barriers (25% reduction for WORLD)	Yes	No	No	Yes	No	No
Import Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	No	Yes
Import Trade Facilitation (10% reduction for WORLD)	Yes	No	No	No	No	Yes
Import Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	No	Yes
Export Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	Yes	No
Export Trade Facilitation (10% reduction for WORLD)	Yes	No	No	No	Yes	No
Export Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	Yes	No
NTMs on Imports from EAEU (20% reduction)	Yes	No	Yes	No	No	No
NTMs on Imports from WORLD (10% reduction)	Yes	No	Yes	No	No	No
Aggregate welfare						
Welfare (EV as % of consumption)						
Armenia	4.52	2.02	0.96	0.34	0.60	0.33
Belarus	7.22	0.94	2.71	0.20	1.31	1.71
Kazakhstan	6.26	3.01	0.55	0.17	0.73	1.52
Russia	3.58	1.23	0.86	0.27	0.59	0.49
Aggregate trade						
Aggregate exports						
Armenia	15.36	2.08	3.92	1.85	2.93	2.90
Belarus	12.06	0.37	2.57	1.22	3.21	4.07
Kazakhstan	9.34	3.11	1.17	0.47	1.75	1.98
Russia	7.86	1.16	2.02	0.70	1.75	1.80
Factor earnings						
Armenia						
Capital	1.23	0.43	0.29	-0.27	-0.01	0.74
Unskilled labor	1.02	0.45	0.14	-0.37	0.01	0.75
Skilled labor	0.77	0.30	0.44	-0.75	0.13	0.63
Resource	1.94	0.63	0.26	0.06	0.15	0.80
Belarus						
Capital	5.96	0.63	2.20	-0.27	0.47	2.67
Unskilled labor	3.13	0.04	0.90	-0.42	0.76	1.85
Skilled labor	2.73	-0.04	1.10	-0.67	0.85	1.83
Resource	-3.19	0.64	-4.43	0.85	-0.06	-0.30
Kazakhstan						
Capital	2.63	0.07	-0.12	0.00	-0.04	2.42
Unskilled labor	1.93	0.73	-0.15	-0.08	-0.11	1.63
Skilled labor	2.00	0.86	0.06	-0.11	0.13	1.05
Resource	1.55	2.49	0.22	0.28	0.13	-1.60
Russia						
Capital	0.82	0.18	-0.30	-0.06	-0.23	1.16
Unskilled labor	0.39	0.35	-0.63	-0.07	-0.40	1.07
Skilled labor	0.22	-0.05	-0.32	-0.21	-0.21	0.95
Resource	1.28	0.60	0.35	0.24	0.23	-0.13

Source: Authors' estimates

Table 29: Spillovers with the European Union: Deep Integration in the EAEU Combined with Spillovers with the EU--(results are percentage change from the benchmark equilibrium)

Scenario definition	EAEU Central with Spillovers to the EU	FDI Services Barriers Only	Import NTMs	Cross-border Services Barriers Only	Import Trade Facilitation Only	Export Trade Facilitation Only
EAEU FDI barriers (50% reduction for EAEU countries)	Yes	Yes	No	No	No	No
EAEU FDI barriers (25% reduction for EU)	Yes	Yes	No	No	No	No
Cross-border services barriers (50% reduction for EAEU countries)	Yes	No	No	Yes	No	No
Cross-border services barriers (25% reduction for EU)	Yes	No	No	Yes	No	No
Import Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	No	Yes
Import Trade Facilitation (10% reduction for EU)	Yes	No	No	No	No	Yes
Import Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	No	Yes
Export Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	Yes	No
Export Trade Facilitation (10% reduction for EU)	Yes	No	No	No	Yes	No
Export Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	Yes	No
NTMs on Imports from EAEU (20% reduction)	Yes	No	Yes	No	No	No
NTMs on Imports from EU (10% reduction)	Yes	No	Yes	No	No	No
Aggregate welfare						
Welfare (EV as % of consumption)						
Armenia	3.65	1.86	0.58	0.19	0.47	0.31
Belarus	5.70	0.86	1.83	0.11	1.19	1.36
Kazakhstan	2.32	0.28	0.20	0.08	0.51	1.02
Russia	2.23	0.64	0.59	0.15	0.41	0.35
Aggregate trade						
Aggregate exports						
Armenia	12.07	1.60	2.71	1.08	2.45	2.63
Belarus	9.54	0.09	1.89	0.60	2.92	3.34
Kazakhstan	4.25	0.43	0.38	0.25	1.22	1.40
Russia	4.77	0.67	0.91	0.39	1.23	1.29
Factor earnings						
Armenia						
Capital	1.37	0.47	0.36	-0.12	0.04	0.59
Unskilled labor	1.36	0.54	0.30	-0.17	0.07	0.60
Skilled labor	1.19	0.49	0.42	-0.36	0.12	0.51
Resource	1.82	0.59	0.30	0.04	0.17	0.67
Belarus						
Capital	4.97	0.73	1.51	-0.12	0.55	2.01
Unskilled labor	3.17	0.16	0.73	-0.19	0.83	1.47
Skilled labor	3.02	0.18	0.84	-0.32	0.89	1.45
Resource	-2.35	0.43	-2.86	0.41	-0.16	-0.22
Kazakhstan						
Capital	2.04	0.19	-0.02	0.01	0.05	1.55
Unskilled labor	1.07	0.02	-0.02	-0.04	-0.01	1.06
Skilled labor	0.71	-0.17	0.07	-0.07	0.12	0.69
Resource	-0.48	0.30	0.14	0.14	0.03	-1.00
Russia						
Capital	0.69	0.12	-0.10	-0.03	-0.14	0.81
Unskilled labor	0.38	0.18	-0.27	-0.04	-0.26	0.72
Skilled labor	0.30	-0.02	-0.10	-0.12	-0.13	0.65
Resource	0.73	0.34	0.12	0.15	0.15	-0.05

Source: Authors' estimates

Table 30: Spillovers with the USA: Deep Integration in the EAEU Combined with Spillovers with the USA--(results are percentage change from the benchmark equilibrium)

Scenario definition	EAEU Central with Spillovers to the USA	FDI Services Barriers Only	Import NTMs	Cross-border Services Barriers Only	Import Trade Facilitation Only	Export Trade Facilitation Only
EAEU FDI barriers (50% reduction for EAEU countries)	Yes	Yes	No	No	No	No
EAEU FDI barriers (25% reduction for USA)	Yes	Yes	No	No	No	No
Cross-border services barriers (50% reduction for EAEU countries)	Yes	No	No	Yes	No	No
Cross-border services barriers (25% reduction for USA)	Yes	No	No	Yes	No	No
Import Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	No	Yes
Import Trade Facilitation (10% reduction for USA)	Yes	No	No	No	No	Yes
Import Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	No	Yes
Export Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	Yes	No
Export Trade Facilitation (10% reduction for USA)	Yes	No	No	No	Yes	No
Export Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	Yes	No
NTMs on Imports from EAEU (20% reduction)	Yes	No	Yes	No	No	No
NTMs on Imports from USA (10% reduction)	Yes	No	Yes	No	No	No
Aggregate welfare						
Welfare (EV as % of consumption)						
Armenia	3.21	1.75	0.46	0.08	0.42	0.28
Belarus	4.85	0.80	1.54	0.05	0.99	1.11
Kazakhstan	4.49	2.75	0.10	0.05	0.48	0.90
Russia	0.96	0.06	0.26	0.02	0.31	0.28
Aggregate trade						
Aggregate exports						
Armenia	10.02	1.21	2.31	0.44	2.27	2.27
Belarus	7.02	-0.19	1.04	0.20	2.54	2.82
Kazakhstan	5.50	2.30	0.22	0.07	1.14	1.26
Russia	2.34	0.10	0.02	0.05	0.97	1.05
Factor earnings						
Armenia						
Capital	1.48	0.49	0.45	0.03	0.05	0.44
Unskilled labor	1.55	0.60	0.38	0.00	0.08	0.46
Skilled labor	1.59	0.63	0.46	-0.02	0.12	0.38
Resource	1.61	0.54	0.32	0.03	0.17	0.51
Belarus						
Capital	5.18	0.77	1.88	-0.02	0.62	1.57
Unskilled labor	3.54	0.21	1.03	-0.06	0.87	1.25
Skilled labor	3.39	0.25	1.08	-0.09	0.90	1.24
Resource	-3.11	0.32	-3.13	0.14	-0.29	-0.23
Kazakhstan						
Capital	1.73	0.04	0.01	0.01	0.07	1.33
Unskilled labor	1.83	0.76	0.01	0.02	0.00	0.93
Skilled labor	2.08	1.19	0.05	0.02	0.12	0.61
Resource	1.06	1.94	0.11	0.03	0.02	-0.87
Russia						
Capital	0.61	0.00	0.06	0.00	-0.10	0.65
Unskilled labor	0.47	0.01	0.04	0.00	-0.18	0.60
Skilled labor	0.46	-0.04	0.07	-0.02	-0.09	0.53
Resource	0.00	0.01	-0.09	0.02	0.11	-0.06

Source: Authors' estimates

Table 31: Spillovers with China: Deep Integration in the EAEU Combined with Spillovers with China--(results are percentage change from the benchmark equilibrium)

Scenario definition	EAEU Central with Spilloves to China	FDI Services Barriers Only	Import NTMs	Cross-border Services Barriers Only	Import Trade Facilitation Only	Export Trade Facilitation Only
EAEU FDI barriers (50% reduction for EAEU countries)	Yes	Yes	No	No	No	No
EAEU FDI barriers (25% reduction for China)	Yes	Yes	No	No	No	No
Cross-border services barriers (50% reduction for EAEU countries)	Yes	No	No	Yes	No	No
Cross-border services barriers (25% reduction for China)	Yes	No	No	Yes	No	No
Import Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	No	Yes
Import Trade Facilitation (10% reduction for China)	Yes	No	No	No	No	Yes
Import Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	No	Yes
Export Trade Facilitation (20% reduction for EAEU countries)	Yes	No	No	No	Yes	No
Export Trade Facilitation (10% reduction for China)	Yes	No	No	No	Yes	No
Export Trade Facilitation (5% reduction for other countries)	Yes	No	No	No	Yes	No
NTMs on Imports from EAEU (20% reduction)	Yes	No	Yes	No	No	No
NTMs on Imports from China (10% reduction)	Yes	No	Yes	No	No	No
Aggregate welfare						
Welfare (EV as % of consumption)						
Armenia	3.19	1.72	0.47	0.05	0.44	0.28
Belarus	4.86	0.79	1.56	0.03	1.02	1.12
Kazakhstan	2.27	0.13	0.27	0.02	0.60	1.02
Russia	1.11	0.08	0.33	0.01	0.37	0.28
Aggregate trade						
Aggregate exports						
Armenia	9.72	1.12	2.24	0.32	2.30	2.22
Belarus	6.91	-0.23	1.08	0.09	2.57	2.82
Kazakhstan	3.77	-0.02	0.41	0.04	1.38	1.43
Russia	2.65	0.10	0.18	0.04	1.13	1.04
Factor earnings						
Armenia						
Capital	1.50	0.50	0.47	0.04	0.05	0.42
Unskilled labor	1.61	0.62	0.41	0.03	0.09	0.44
Skilled labor	1.71	0.66	0.48	0.04	0.13	0.37
Resource	1.59	0.54	0.34	0.02	0.17	0.48
Belarus						
Capital	5.11	0.77	1.84	0.00	0.60	1.57
Unskilled labor	3.52	0.22	0.98	-0.02	0.84	1.27
Skilled labor	3.43	0.27	1.04	-0.03	0.88	1.26
Resource	-3.16	0.32	-3.10	0.06	-0.27	-0.26
Kazakhstan						
Capital	2.06	0.16	0.02	0.01	0.04	1.55
Unskilled labor	1.21	0.02	0.01	0.00	-0.02	1.08
Skilled labor	1.04	0.02	0.09	0.01	0.14	0.69
Resource	-1.01	-0.01	0.15	0.01	0.05	-1.07
Russia						
Capital	0.56	0.01	0.03	0.00	-0.12	0.63
Unskilled labor	0.33	0.01	-0.04	0.00	-0.23	0.60
Skilled labor	0.41	-0.02	0.02	-0.01	-0.12	0.53
Resource	0.11	0.04	-0.02	0.01	0.14	-0.07

Source: Authors' estimates

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Table 32: Sensitivity to Constant Returns to Scale of Results: Deep Integration in the Eurasian Economic Union (EAEU), (percentage change from the benchark equilibrium)

Scenario definition	EAEU Central: (Trade Facilitation plus services and NTB liberalization)	EAEU: only FDI barriers (% reduction)	EAEU: only NTMs for goods on Imports from EAEU (% reduction)	EAEU: only Cross-border services barriers (% reduction)	EAEU: only Import Trade Facilitation	EAEU: only Export Trade Facilitation
Services Liberalization: 50% reduction of discriminatory barriers within EAEU	Yes	Yes	No	No	No	No
Non-Tariff Barriers for goods: 20% reduction of costs within EAEU countries	Yes	No	Yes	No	No	No
Cross-Border Barriers for services: 50% reduction of NTB costs with EAEU countries	Yes	No	No	Yes	No	No
Time in Trade Costs for Imports: 20% reduction within EAEU countries	Yes	No	No	No	Yes	No
Time in Trade Costs for Imports: 5% reduction with non-EAEU countries	Yes	No	No	No	Yes	No
Time in Trade Costs for Exports: 20% reduction within EAEU countries	Yes	No	No	No	No	Yes
Time in Trade Costs for Exports: 5% reduction with non-EAEU countries	Yes	No	No	No	No	Yes
Aggregate welfare						
Welfare (EV as % of consumption)						
Armenia	1.84	0.55	0.37	0.03	0.43	0.28
Belarus	3.64	0.23	1.17	0.01	0.99	0.93
Kazakhstan	1.47	0.10	0.07	0.01	0.43	0.68
Russia	0.66	0.01	0.19	0.00	0.32	0.12
Aggregate trade						
Aggregate exports						
Armenia	8.53	0.66	2.11	0.19	2.10	2.16
Belarus	6.62	0.05	0.62	0.07	2.53	2.54
Kazakhstan	2.84	-0.02	0.15	0.03	1.05	1.17
Russia	1.81	0.02	-0.13	0.01	0.88	0.89
Factor earnings						
Armenia						
Capital	1.09	0.15	0.43	0.03	0.08	0.37
Unskilled labor	1.14	0.18	0.38	0.03	0.12	0.40
Skilled labor	1.20	0.21	0.44	0.04	0.14	0.33
Resource	1.14	0.16	0.32	0.01	0.18	0.42
Belarus						
Capital	4.00	0.27	1.49	0.00	0.66	1.29
Unskilled labor	3.34	0.04	0.94	-0.02	0.90	1.14
Skilled labor	3.39	0.04	0.97	-0.02	0.93	1.13
Resource	-3.78	0.10	-3.21	0.04	-0.30	-0.37
Kazakhstan						
Capital	1.48	0.12	0.04	0.01	0.04	1.04
Unskilled labor	0.92	0.02	0.04	0.00	0.01	0.71
Skilled labor	0.78	0.02	0.06	0.00	0.11	0.48
Resource	-0.67	-0.01	0.10	0.00	0.00	-0.63
Russia						
Capital	0.42	0.01	0.08	0.00	-0.04	0.37
Unskilled labor	0.33	0.00	0.09	0.00	-0.10	0.33
Skilled labor	0.38	0.00	0.09	0.00	-0.02	0.29
Resource	-0.07	0.00	-0.10	0.00	0.06	-0.04

Source: Authors' estimates

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Table 33: Piecemeal Sensitivity—Impact of Parameter Variation on the Welfare Impact on Armenia of EAEU Deep Integration with and without Spillovers with the Whole World

Results are Equivalent Variation as a % of Consumption				EAEU Deep Integration					
	Parameter Value			EAEU Central			Plus Spillovers or Liberalization with World		
Parameter	Lower	Central	Upper	Lower	Central	Upper	Lower	Central	Upper
$\sigma(q_i, q_j)$ – services sectors	2	3	4	4.34	3.10	2.76	5.96	4.52	4.17
$\sigma(q_i, q_j)$ – goods sectors	0.5*central	see below	1.5*central	3.22	3.10	3.17	4.75	4.52	4.57
$\sigma(va, bs)$	0.625	1.25	1.875	2.73	3.10	3.59	3.99	4.52	5.22
$\sigma(D, M)$ for section i	0.5*central	see below	1.5*central	3.11	3.10	3.09	4.53	4.52	4.50
$\sigma(M, M)$ for sector i	0.5*central	$2*\sigma(D, M)_i$	1.5*central	3.08	3.10	3.13	4.51	4.52	4.53
$\sigma(L, K)$	0.5	1	1.5	3.10	3.10	3.11	4.52	4.52	4.52
$\sigma(A_1,…A_n)$	0	0	0.25		3.10	3.11		4.52	4.53
$\varepsilon_{ARMENIA}, \varepsilon_{BELARUS}, \varepsilon_{KAZAKHSTAN}$	Lower (upper) values are 0.5 (1.5) central values of table 19			2.16	3.10	3.89	3.84	4.52	5.05
$\varepsilon_{EU}, \varepsilon_{ROW}, \varepsilon_{USA}, \varepsilon_{CHINA}, \varepsilon_{RUSSIA}$									

$\sigma(q_i, q_j)$ – IRTS goods	Parameter Value			$\sigma(D, M)$--CRTS sectors	Parameter Value		
food products	2.6	5.1	7.7		Lower	Central	Upper
wood products	3.4	6.8	10.2	agriculture	1.3	2.6	3.9
paper products and publishing	3.0	5.9	8.9	forestry	1.3	2.5	3.8
petroleum and coal products	2.1	4.2	6.3	fishing	0.6	1.3	1.9
chemical, rubber and plastic prods.	3.3	6.6	9.9	minerals	3.2	6.5	9.7
mineral products	2.9	5.8	8.7	minerals nec	0.5	0.9	1.4
metal products, nec	3.7	7.4	11.1	textiles and apparel	1.9	3.7	5.6
transport equipment	3.2	6.4	9.6	leather products	2.0	4.1	6.1
electrical equip. & machinery	4.2	8.3	12.5	electricity, gas and water	1.4	2.8	4.2
manufactures	3.8	7.5	11.3	construction	1.0	1.9	2.9
				trade	0.8	1.5	2.3
Key:				public admin & other services	0.8	1.5	2.3

$\sigma(q_i, q_j)$: Dixit-Stiglitz elasticity of substitution between firm varieties in imperfectly competitive sectors

$\sigma(va, bs)$: Elasticity of substitution between value-added and business services

$\sigma(D, M)$: Elasticity of substitution between domestic goods and imports in CRTS sectors

$\sigma(M, M)$: Elasticity of substitution between imports from different regions in CRTS sectors

$\sigma(L, K)$: Elasticity of substitution between primary factors of production in value added

$\sigma(A_1,…A_n)$: Elasticity of substitution in intermediate production between composite Armington aggregate goods

$\varepsilon_{ROW}, \varepsilon_{EU}, \varepsilon_{CHINA}, \varepsilon_{USA}$ $\varepsilon_{ARMENIA}, \varepsilon_{BELARUS}, \varepsilon_{KAZAKHSTAN}, \varepsilon_{RUSSIA}$: Vectors of elasticities of imperfectly competitive firms' supply in the Rest if the World, EU, China. USA, Armenia, Belarus, Kazakhstan and the Russian Federation with respect to the price of their outputs.

Source: Authors' estimates.

Table 34: Piecemeal Sensitivity—Impact of Parameter Variation on the Welfare Impact on Belarus of EAEU Deep Integration with and without Spillovers with the Whole World

Results are Equivalent Variation as a % of Consumption				EAEU Deep Integration					
	Parameter Value			EAEU Central			Plus Spillovers or Liberalization with World		
Parameter	Lower	Central	Upper	Lower	Central	Upper	Lower	Central	Upper
σ(qᵢ, qⱼ) – services sectors	2	3	4	5.68	4.77	4.56	8.57	7.22	6.92
σ(qᵢ, qⱼ) – goods sectors	0.5*central	see below	1.5*central	4.89	4.77	5.17	7.48	7.22	7.67
σ(va, bs)	0.625	1.25	1.875	4.45	4.77	5.18	6.70	7.22	7.89
σ(D, M) for section i	0.5*central	see below	1.5*central	4.74	4.77	4.80	7.19	7.22	7.26
σ(M, M) for sector i	0.5*central	2*σ(D, M)ᵢ	1.5*central	4.72	4.77	4.82	7.21	7.22	7.24
σ(L, K)	0.5	1	1.5	4.77	4.77	4.77	7.22	7.22	7.23
σ(A₁,…Aₙ)	0	0	0.25		4.77	4.81		7.22	7.25
εARMENIA, εBELARUS, εKAZAKHSTAN εEU, εROW, εUSA, εCHINA, εRUSSIA	Lower (upper) values are 0.5 (1.5) central values of table 19			4.10	4.77	5.59	6.58	7.22	8.08

σ(qᵢ, qⱼ) – IRTS goods	Parameter Value			σ(D, M)--CRTS sectors			Parameter Value		
food products	2.6	5.1	7.7				Lower	Central	Upper
wood products	3.4	6.8	10.2	agriculture			1.3	2.6	3.9
paper products and publishing	3.0	5.9	8.9	forestry			1.3	2.5	3.8
petroleum and coal products	2.1	4.2	6.3	fishing			0.6	1.3	1.9
chemical, rubber and plastic prods.	3.3	6.6	9.9	minerals			3.2	6.5	9.7
mineral products	2.9	5.8	8.7	minerals nec			0.5	0.9	1.4
metal products, nec	3.7	7.4	11.1	textiles and apparel			1.9	3.7	5.6
transport equipment	3.2	6.4	9.6	leather products			2.0	4.1	6.1
electrical equip. & machinery	4.2	8.3	12.5	electricity, gas and water			1.4	2.8	4.2
manufactures	3.8	7.5	11.3	construction			1.0	1.9	2.9
				trade			0.8	1.5	2.3
Key:				public admin & other services			0.8	1.5	2.3

σ(qᵢ, qⱼ): Dixit-Stiglitz elasticity of substitution between firm varieties in imperfectly competitive sectors

σ(va, bs): Elasticity of substitution between value-added and business services

σ(D, M): Elasticity of substitution between domestic goods and imports in CRTS sectors

σ(M, M): Elasticity of substitution between imports from different regions in CRTS sectors

σ(L, K): Elasticity of substitution between primary factors of production in value added

σ(A₁,…Aₙ): Elasticity of substitution in intermediate production between composite Armington aggregate goods

εROW, εEU, εCHINA, εUSA εARMENIA, εBELARUS, εKAZAKHSTAN, εRUSSIA: Vectors of elasticities of imperfectly competitive firms' supply in the Rest if the World, EU, China. USA, Armenia, Belarus, Kazakhstan and the Russian Federation with respect to the price of their outputs.

Source: Authors' estimates.

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Table 35: Piecemeal Sensitivity—Impact of Parameter Variation on the Welfare Impact on Kazakhstan of EAEU Deep Integration with and without Spillovers with the Whole World

Results are Equivalent Variation as a % of Consumption				EAEU Deep Integration					
	Parameter Value			EAEU Central			Plus Spillovers or Liberalization with World		
Parameter	Lower	Central	Upper	Lower	Central	Upper	Lower	Central	Upper
σ(qᵢ, qⱼ) – services sectors	2	3	4	1.54	1.74	1.77	12.74	6.26	5.30
σ(qᵢ, qⱼ) – goods sectors	0.5*central	see below	1.5*central	1.57	1.74	2.04	6.59	6.26	6.54
σ(va, bs)	0.625	1.25	1.875	1.70	1.74	1.80	4.86	6.26	8.32
σ(D, M) for section i	0.5*central	see below	1.5*central	1.73	1.74	1.75	6.21	6.26	6.31
σ(M, M) for sector i	0.5*central	2*σ(D, M)ᵢ	1.5*central	1.85	1.74	1.70	6.20	6.26	6.28
σ(L, K)	0.5	1	1.5	1.70	1.74	1.77	6.25	6.26	6.26
σ(A₁,…Aₙ)	0	0	0.25		1.74	1.74		6.26	6.27
ε_ARMENIA, ε_BELARUS, ε_KAZAKHSTAN ε_EU, ε_ROW, ε_USA, ε_CHINA, ε_RUSSIA	Lower (upper) values are 0.5 (1.5) central values of table 19			1.65	1.74	1.79	4.83	6.26	7.95

σ(qᵢ, qⱼ) – IRTS goods	Parameter Value			σ(D, M)--CRTS sectors			Parameter Value		
							Lower	Central	Upper
food products	2.6	5.1	7.7						
wood products	3.4	6.8	10.2	agriculture			1.3	2.6	3.9
paper products and publishing	3.0	5.9	8.9	forestry			1.3	2.5	3.8
petroleum and coal products	2.1	4.2	6.3	fishing			0.6	1.3	1.9
chemical, rubber and plastic prods.	3.3	6.6	9.9	minerals			3.2	6.5	9.7
mineral products	2.9	5.8	8.7	minerals nec			0.5	0.9	1.4
metal products, nec	3.7	7.4	11.1	textiles and apparel			1.9	3.7	5.6
transport equipment	3.2	6.4	9.6	leather products			2.0	4.1	6.1
electrical equip. & machinery	4.2	8.3	12.5	electricity, gas and water			1.4	2.8	4.2
manufactures	3.8	7.5	11.3	construction			1.0	1.9	2.9
				trade			0.8	1.5	2.3
Key:				public admin & other services			0.8	1.5	2.3

σ(qᵢ, qⱼ): Dixit-Stiglitz elasticity of substitution between firm varieties in imperfectly competitive sectors

σ(va, bs): Elasticity of substitution between value-added and business services

σ(D, M): Elasticity of substitution between domestic goods and imports in CRTS sectors

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σ(A₁,…Aₙ): Elasticity of substitution in intermediate production between composite Armington aggregate goods

ε_ROW, ε_EU, ε_CHINA, ε_USA ε_ARMENIA, ε_BELARUS, ε_KAZAKHSTAN, ε_RUSSIA: Vectors of elasticities of imperfectly competitive firms' supply in the Rest if the World, EU, China. USA, Armenia, Belarus, Kazakhstan and the Russian Federation with respect to the price of their outputs.

Source: Authors' estimates.

Table 36: Piecemeal Sensitivity—Impact of Parameter Variation on the Welfare Impact on the Russian Federation of EAEU Deep Integration with and without Spillovers with the Whole World

Results are Equivalent Variation as a % of Consumption				EAEU Deep Integration					
	Parameter Value			**EAEU Central**			**Plus Spillovers or Liberalization with World**		
Parameter	Lower	Central	Upper	Lower	Central	Upper	Lower	Central	Upper
$\sigma(q_i, q_j)$ – services sectors	2	3	4	1.00	0.82	0.78	5.79	3.58	3.29
$\sigma(q_i, q_j)$ – goods sectors	0.5*central	see below	1.5*central	0.89	0.82	0.87	3.83	3.58	3.73
$\sigma(va, bs)$	0.625	1.25	1.875	0.77	0.82	0.89	2.97	3.58	4.69
$\sigma(D, M)$ for section i	0.5*central	see below	1.5*central	0.72	0.82	0.91	3.45	3.58	3.71
$\sigma(M, M)$ for sector i	0.5*central	$2*\sigma(D,M)_i$	1.5*central	0.79	0.82	0.87	3.57	3.58	3.60
$\sigma(L, K)$	0.5	1	1.5	0.83	0.82	0.82	3.57	3.58	3.60
$\sigma(A_1, \dots A_n)$	0	0	0.25		0.82	0.83		3.58	3.61
$\varepsilon_{ARMENIA}, \varepsilon_{BELARUS}, \varepsilon_{KAZAKHSTAN}$	Lower (upper) values are 0.5 (1.5) central values of table 19			0.76	0.82	0.88	3.20	3.58	3.97
$\varepsilon_{EU}, \varepsilon_{ROW}, \varepsilon_{USA}, \varepsilon_{CHINA}, \varepsilon_{RUSSIA}$									
$\sigma(q_i, q_j)$ – IRTS goods	**Parameter Value**			**$\sigma(D, M)$--CRTS sectors**			**Parameter Value**		
food products	2.6	5.1	7.7				Lower	Central	Upper
wood products	3.4	6.8	10.2	agriculture			1.3	2.6	3.9
paper products and publishing	3.0	5.9	8.9	forestry			1.3	2.5	3.8
petroleum and coal products	2.1	4.2	6.3	fishing			0.6	1.3	1.9
chemical, rubber and plastic prods.	3.3	6.6	9.9	minerals			3.2	6.5	9.7
mineral products	2.9	5.8	8.7	minerals nec			0.5	0.9	1.4
metal products, nec	3.7	7.4	11.1	textiles and apparel			1.9	3.7	5.6
transport equipment	3.2	6.4	9.6	leather products			2.0	4.1	6.1
electrical equip. & machinery	4.2	8.3	12.5	electricity, gas and water			1.4	2.8	4.2
manufactures	3.8	7.5	11.3	construction			1.0	1.9	2.9
				trade			0.8	1.5	2.3
Key:				public admin & other services			0.8	1.5	2.3
$\sigma(q_i, q_j)$: Dixit-Stiglitz elasticity of substitution between firm varieties in imperfectly competitive sectors									
$\sigma(va, bs)$: Elasticity of substitution between value-added and business services									
$\sigma(D, M)$: Elasticity of substitution between domestic goods and imports in CRTS sectors									
$\sigma(M, M)$: Elasticity of substitution between imports from different regions in CRTS sectors									
$\sigma(L, K)$: Elasticity of substitution between primary factors of production in value added									
$\sigma(A_1, \dots A_n)$: Elasticity of substitution in intermediate production between composite Armington aggregate goods									
$\varepsilon_{ROW}, \varepsilon_{EU}, \varepsilon_{CHINA}, \varepsilon_{USA}, \varepsilon_{ARMENIA}, \varepsilon_{BELARUS}, \varepsilon_{KAZAKHSTAN}, \varepsilon_{RUSSIA}$: Vectors of elasticities of imperfectly competitive firms' supply in the Rest if the World, EU, China. USA, Armenia, Belarus, Kazakhstan and the Russian Federation with respect to the price of their outputs.									

Source: Authors' estimates.