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To cite this article: Alexander Knobel, Andrey Lipin, Andrey Malokostov, David G. Tarr & Natalia Turdyeva (2019) Deep integration in the Eurasian Economic Union: what are the benefits of successful implementation or wider liberalization?, *Eurasian Geography and Economics*, 60:2, 177-210, DOI: [10.1080/15387216.2019.1627232](https://doi.org/10.1080/15387216.2019.1627232)

To link to this article: <https://doi.org/10.1080/15387216.2019.1627232>



Published online: 18 Jul 2019.



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Deep integration in the Eurasian Economic Union: what are the benefits of successful implementation or wider liberalization?

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ABSTRACT

What are the potential gains to the members of the Eurasian Economic Union (EEAU) of successful deep integration 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 estimate that if the EEAU were to effectively implement its objectives for trade cost reduction, it would lead to welfare gains as a percent of consumption of 0.8% for Russia, 1.7% for Kazakhstan, 3.1% for Armenia and 4.8% for Belarus. If these deep integration measures were partially extended to third countries, the welfare gains would increase to 3.6% for Russia, 4.5% for Armenia, 6.3% for Kazakhstan and 7.2% for Belarus. We estimate that the right to legally work in the Russian Federation for Armenians is approximately of equal value to Armenia as the combined aspects of the reduction of trade costs, including spillovers. We identify the external region and reforms that are most important for each member country regarding reforms and spillovers; this may inform lobbying positions of the member governments. Our innovative model, that includes imperfect competition and foreign direct investment, produces important differences compared with a perfect competition model.

ARTICLE HISTORY

Received 22 February 2019

Accepted 31 May 2019

KEYWORDS

Eurasian Economic Union; deep integration; foreign direct investment; services liberalization; migration benefits; endogenous productivity effects

Introduction

There is considerable evidence that non-tariff trade costs are a greater obstacle to trade than tariffs for most countries. Hummels and Schaur (2013) and Hummels et al. (2007) 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. The estimates of Kee, Nicita, and Olarreaga (2009) show that ad valorem equivalents of non-tariff barriers are also typically larger than tariffs. Jafari and Tarr (2015) have comparable results for “behind the border” barriers

against foreign direct investment (FDI) in services. Specifically regarding FDI, 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.¹

Regarding preferential trade agreements (PTAs), Limão (2016, pp. 307, 312) notes that in gravity models, “tariffs alone can only explain a fraction of the PTA trade impactThis justifies the widespread use of dummies in the gravity approachbut it also begs the question of what those channels are.” He calls for further research on the deep integration aspects of PTAs. Two econometric papers that employ data on the deep integration content of PTAs rather than dummy variables are Mattoo, Mulabdic, and Ruta (2017) and Arvis et al. (2016). Mattoo, Mulabdic, and Ruta (2017) find that the deep provisions of PTAs induce more trade creation than tariffs and that the deepening of PTAs does not appear to come at the expense of reduced trade with third countries. Arvis et al. (2016, 469) estimate that two countries that are both members of a preferential trade agreement experience trade costs that are about 16 percent lower than countries that are not members.

Despite the evidence that tariffs miss the majority of the impacts of PTAs, some of the best-known modern general equilibrium simulation analyses of regional trade agreements have focused on tariffs and have produced rather small estimated welfare gains from preferential trade agreements (PTAs). In a model with heterogeneous firms, Caliendo et al. (2017, 3) focus on tariffs and conclude that “PTAs contributed virtually nothing to total world trade and welfare.” Caliendo and Parro (2015) also find very small estimated gains from NAFTA.² Limão (2016, pp.316, 319) concludes that he believes that the small estimates of the gains from PTAs from these simulation studies are explained by the fact that they only consider the tariff impacts of the PTAs.³

In this paper, we assess the importance of deep integration on the welfare effects of countries by focusing on an important PTA—the Eurasian Economic Union (EAEU). Like the single market in the European Union, the EAEU is focused on deep integration. We evaluate the potential impacts of three broader trade costs channels through which the EAEU would like to reduce trade costs: 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. We show that our deep integration features lead to substantial estimated gains.

For this task we employ an innovative numerical multi-region, 28-sector general equilibrium model of trade and FDI that contains seven monopolistically competitive services sectors with FDI, ten monopolistically competitive goods sectors and 11 perfectly competitive goods and services sectors. Our regions are Armenia, Belarus, Kazakhstan, the Russian Federation, the



European Union, China, the United States and the Rest of the World. As discussed in Section 3.3, the model captures the key stylized facts of the knowledge capital model of FDI elaborated by Markusen (2002). Crucially, through the Dixit-Stiglitz productivity externality from additional varieties of business services, our model incorporates the evidence cited above regarding the endogenous productivity effects of FDI in services. We show that our innovative modeling features, especially imperfect competition with FDI,⁴ lead to considerably larger estimated welfare gains than perfect competition models. We also provide an estimate of the free movement of labor, where we employ the well-known neoclassical model of labor migration.

Markusen, Rutherford, and Tarr (2005) developed the first numerical small open economy model of trade and FDI in an imperfectly competitive framework consistent with the knowledge capital model, including an entry and exit decision by the foreign and host country firms based on zero profit constraint for the firm types. The need to assess the impact of FDI liberalization in services as part of a WTO accession negotiation led to the application of that model to real datasets in all four of our focus countries. The model was first applied to the Russian Federation by Jensen, Rutherford, and Tarr (2006, 2007), Rutherford and Tarr (2008; 2010) and Böhringer et al. (2015). It was also applied in Kazakhstan by Jensen and Tarr (2008) and subsequently Armenia by Jensen and Tarr (2012); and to Belarus by Balistreri, Olekseyuk, and Tarr (2017).⁵ As small open economy models, none of these papers could endogenously evaluate the terms-of-trade effects that are very important in regional agreements, as emphasized by Wonnacott and Wonnacott (1981) and shown by Harrison, Rutherford, and Tarr (2002).

The closest paper in the literature to ours is Balistreri, Tarr, and Yonezawa (2015). They consider the same deep integration features we evaluate in a multi-region model applied to East and Southern Africa. They found significant gains to the member countries from deep integration, but tariffs had only a negligible impact. Balistreri, Tarr, and Yonezawa (2015), however, did not incorporate monopolistic competition and endogenous productivity effects from FDI, which we find makes a substantial difference.^{6,7}

Our model builds on survey and estimation work that one of us (Tarr) has led in our four focus countries on: (i) the barriers to foreign providers of services in seven important business services sectors (and the conversion of these barriers to ad valorem equivalents); and (ii) the foreign ownership shares in these seven sectors by foreign region of our model. Similarly, for non-tariff barriers in goods, one of us (Lipin) co-authored both survey and structural gravity estimates of the ad valorem equivalents in the three original members of the EAEU (Vinokurov et al. 2015a, 2015b).

We show that if the EAEU effectively implements its objectives for trade cost reduction, it would lead to significant welfare gains as a percent of consumption of 0.8% for Russia, 1.7% for Kazakhstan, 3.1% for Armenia and 4.8% for

Belarus. 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 to 3.6% for Russia, 4.5% for Armenia, 6.3% for Kazakhstan and 7.2% for Belarus. The importance of spillovers is especially true for FDI liberalization, since FDI among the EAEU members in business services is not substantial. The significantly larger gains from wider liberalization or spillovers reflects the fact that the EAEU countries collectively have only 2.2 percent of world GDP in 2017, and the fact that for our EAEU countries, their shares of trade within the EAEU is considerably less than their shares of trade outside of the EAEU. 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.

Remittance income from work in the Russian Federation is very important to Armenia. We use the neoclassical model of labor migration to estimate that the legal right of Armenian citizens to work anywhere in the Russian Federation is approximately of equal value for Armenia to the combined aspects of the reduction of trade costs, including FDI liberalization.

We note that since tariff free trade among the members existed prior to the formation of the EAEU, all of these estimated gains are from deep integration. Although all of these reforms to reduce trade costs are beneficial, we identify which reform and spillovers toward which region, provide the greatest gains to each of our four focus countries. This may facilitate lobbying among the EAEU members in the exchange of “concessions” common to trade negotiations.

In Section 2, we provide a summary of the EAEU reform program. 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.

EAEU achievements and setbacks

On 1 January 2010, Russia, Belarus and Kazakhstan launched the Eurasian Customs Union. 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 phytosanitary 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 among the members by ensuring the “four freedoms:” freedom of goods, services, capital and labor.

Several international analysts see the EAEU as an effort by President Putin to cement his legacy by restoring Russia’s influence among the states of the former Soviet Union and creating a geopolitical Eurasian Union that would make Russia the leader of a bloc of countries that competes with the European Union for influence in Europe and maybe on the world stage.⁹ We do not address the geopolitical issues in this paper, but focus on providing quantitative estimates of the potential benefits of deep integration.

Progress toward achieving the single market has been mixed.¹⁰ 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 tariff commitments of Armenia, Kazakhstan and the Kyrgyz Republic to the World Trade Organization.¹¹ 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 Republic¹² show that customs posts between the member countries have not been completely eliminated.¹³ 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 (Vinokurov et al. 2015a, 2015b). Conflicting national technical regulations on products make trade costly, but negotiations, that have focused primarily on harmonization, rather than mutual recognition, are very contentious, and progress is slow. A move toward mutual recognition of standards and technical regulations would significantly expedite the reduction of non-tariff barriers.¹⁴ 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 the Russian Federation have not supported the Russian Federation in its measures it has invoked against Ukraine, and have refused to adopt the counter sanctions the Russian Federation 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 complaints from the authorities in Belarus about the imposition by Russia of standards as a non-tariff barrier on Belarusian exports to Russia and, in response, Belarusian delays of Russian trucks at the Belarus-Russia border. This issue was resolved by imposing more stringent country of origin labeling requirements and harsher penalties for non-compliance.

Regarding more speculative or 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.¹⁵

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 or controversial EAEU objectives. Rather, we focus on measures to reduce trade costs and to an estimate of the benefits of labor market integration for Armenia.

Discussion of the main features of the model

We build a 28-sector multi-region model of world trade and FDI. Armenia, Belarus, Kazakhstan and the Russian Federation are the member countries of the EAEU that are included in the model and are our focus countries in the results.¹⁶ Our model also includes, China, the European Union, the United States and an aggregate Rest of the World. There are three types of sectors in the model listed in Table 1:¹⁷ (1) eleven perfectly competitive goods and services sectors; (2) ten imperfectly competitive goods sectors; and (3) seven business services sectors in which there is foreign direct investment.

A mathematical description of the trade model without FDI, under both the Armington and Krugman structures may be found in Balistreri and Tarr (2018). The mathematical structure of the FDI model may be found in Balistreri, Olekseyuk, and Tarr (2016, appendix G). Here we provide a verbal description.¹⁸ In Figure 1, we show the production structure of a representative sector,

Regardless of sector, all firms minimize the cost of production. Primary factors are skilled labor, unskilled labor, capital (including land) and natural resources. Primary inputs are imported by multinational service providers, reflecting

**Table 1.** List of sectors and Ad Valorem equivalents of benchmark distortions in Russia (%).

	Barriers Against Service Providers								Cross Border All Regions	
	Discriminatory Barriers Against Foreign Direct Investment									
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW		
Business Services¹										
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)										
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW	NTMs non-members	
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										
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW		
Barriers to Efficient Trade Facilitation on Imports										
	Armenia	Belarus	Kazakhstan	Russia	USA	EU	China	ROW		

¹The following four services sectors are taken as perfectly competitive: Public Administration; Electricity, Gas and Water Distribution; Trade; and Construction. .

²Tariff within the EAEU are taken to be zero.

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; Minor (2013) for trade facilitation (time in tradetime-in-trade costs).

specialized management expertise or technology of the firm. There is some sector specific capital for each imperfectly competitive firm (and for firms in services sectors with FDI) for each region of the model. In the sectors where there is sector specific capital, there are decreasing returns to scale in the use of the mobile factors and supply curves in these sectors slope up.

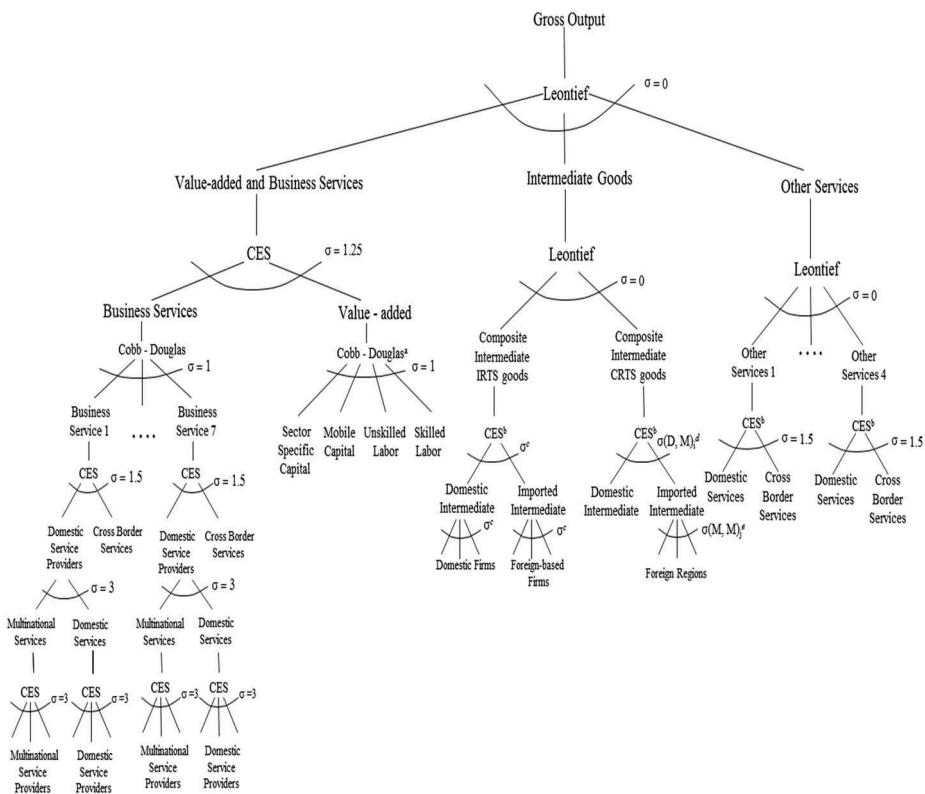


Figure 1. Production of output for a representative sector.

^aPrimary 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.^bGiven 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 ^eSee 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.

Perfectly competitive goods and services sectors

In these sectors, production is characterized by constant returns to scale and competition is perfectly competitive. Costs differ across regions and sectors, but, in any sector and region, price equals marginal costs. We employ the “Armington (1969)” structure, with goods and services differentiated by the country of origin. Exports are also differentiated by the country of destination.

Imperfectly competitive goods sectors

In imperfectly competitive goods and services sectors, there is a one-to-one correspondence between goods and firms, with demand differentiated at the firm level. We assume that manufactured goods may be



produced domestically or imported from firms in any region in the model. Demand in all countries is characterized by the constant elasticity of substitution demand function. Firms set prices using the Chamberlinian large group monopolistic competition assumption.

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. Following the literature (e.g. Helpman and Krugman 1985), we assume that the ratio of fixed to marginal costs is constant. This production structure together with our pricing assumption imply that output per firm remains constant, i.e. there are no economies of scale gains or losses. Regarding intermediate demand, the effective (Dixit-Stiglitz) cost function for users of goods produced subject to increasing returns to scale declines in the total number of supplying firms. That is, firms using these inputs obtain an endogenous productivity impact from additional varieties of imperfectly competitive goods.

Imperfectly competitive service sectors in which foreign direct investment occurs

In the business 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 is provided by service providers with a domestic presence, both multinational and local.¹⁹ Our model allows for both types of provision of foreign services in these sectors. Multinational service firms produce a host region specific variety, which is differentiated from domestic services; but we incorporate the proximity burden by assuming a nested demand structure where services provided in the host market by FDI are a better substitute for host country services than cross-border services.

The cost, production, demand and competition structure for firms in this group of industries follows the same structure as the imperfectly competitive goods firms; but we allow these foreign affiliates of multinational service firms to establish a local presence to compete with local firms directly. These foreign affiliates of multinational service firms produce a host region specific variety or otherwise do not produce at all. Their variety is differentiated from domestic and other FDI varieties in the host region.

The theory and empirical work on FDI by Markusen and others (see, for example, Markusen 2002) have developed the knowledge capital model of FDI. They argue that 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. While multinational firms use primarily local primary factors of production and other local factors, we incorporate

intra-firm trade in primary factors and intermediates that allows the transfer of key knowledge inputs within the firm. A model that allows intra-firm trade in primary factors and intermediates is necessary to be consistent with the data that shows that a substantial portion of imports and exports are from affiliated firms, see Bernard et al. (2010).

We extend Balistreri, Tarr, and Yonezawa (2015) to monopolistic competition with FDI which 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.²⁰ 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.

Data

In Table 1, we display the ad valorem equivalents (AVEs) of all barriers for the Russian Federation. For Armenia, Belarus and Kazakhstan, the AVEs are available in Knobel et al. (2018, tables 15–17).

Ad Valorem Equivalents (AVEs) of barriers in services

Barriers against FDI

We relied on the estimates in the papers of Irina Kolesnikova for Belarus, Grigol Modebadze and Karine Eroyants for Armenia, Georgi Idrisov for the Russian Federation²¹ and Jafari and Tarr (2015) for other regions of the model. To obtain a good picture of the regulatory regimes in their country, Kolesnikova, Modebadze and Eroyants 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, Gootiiz, and Mattoo 2014).

For Armenia, Belarus and Russia, our authors used the information they obtained in their research, interviews and the data of the questionnaires to produce two Services Trade Restrictiveness Indices (STRIs) in each industry: a non-discriminatory index and a discriminatory index. Based on these STRIs, they estimated AVEs. In this study, we focus exclusively on the discriminatory barriers.

Our authors scored their STRIs based on the methodology available in the scoring matrices of a series of studies supported by the Australian Productivity Commission.²² Thus, we generate new STRIs based on data collected by our authors; but we rely on the Australian scoring methodology.

Regarding the AVEs, the Australian 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 average impact of the STRIs on the price of services.²³ We calculate our AVEs by taking our STRIs and assuming that the impact of the STRIs on the price of services our regions and sectors is consistent with the impact of the STRIs on price from the regressions on these Australian studies.

We focus on insurance, banking, fixed line and mobile telecommunications services, air transportation, water transportation, and rail, road 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 (for 11 sectors in 103 countries) into the regulatory scoring matrices of the Australian authors, 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 Eroyants 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.

In our model, and in our tables, we convert the AVEs with the unrestricted world price in the denominator to an AVE with the domestic price of the foreign services with restrictions in the denominator,²⁴ i.e. our AVE is 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

We use the estimates of Francois, Hoekman, and Woerz ([2007](#)) for AVEs of barriers to cross-border trade in services. 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 follows²⁵: (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. In Section 6, we report results of our sensitivity analysis for the impact of varying these estimates by plus or minus twenty percent.

Estimates of the Ad Valorem Equivalents of the costs of time in exporting and importing

We apply the time cost of trade based on the path-breaking estimates of Hummels and Schaur ([2013](#)) and Hummels et al. ([2007](#)). These studies

demonstrated that the time costs of trade vary dramatically by product – for example, these costs are high for fresh fruits and vegetables, but low for oil and gas. Further, the time costs of trade vary dramatically by country. Typically, remote land-locked countries have higher time costs of trade; this especially applies to Kazakhstan in our data, and to a lesser extent Armenia. 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 aggregate the estimates of Peter Minor to the sectors and regions of our model. Consequently, 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. A detailed explanation of the methodology may be found in appendix C of Balistreri, Tarr, and Yonezawa (2014).

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

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 Belarus, Kazakhstan and the Russian Federation to determine the most important NTMs, and their incidence. Vinokurov et al. (2015b) then estimated two gravity models.²⁶ 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 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.²⁷ 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.

For countries outside the EAEU and for Armenia, our estimates of the AVEs of NTMs are based on the estimates of Kee, Nicita, and Olarreaga (2009).²⁸ Kee et al., develop multiple “Overall Trade Restrictive Indices.” 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.²⁹ 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: 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.

Share of the output of the sector produced by multinational service providers

In our focus countries, for all seven of the sectors of our model with foreign direct investment, we need data on the share of the value of output of the sector sold by multinationals. For these data we rely on the research of Kolesnikova for Belarus, Eroyants for Armenia, Idrisov for the Russian Federation and Jensen and Tarr (2008) for Kazakhstan.³⁰ They obtained data from interviews with National Statistical Committees and Ministries, commercial sources such as Bankscope and Axco, professional and industry associations and industry experts. In the case of air transport services, we made several updates and adjustments, which are explained in Knobel et al. (2018).

Social accounting matrices

The core data of the model comes from the GTAP 9 dataset.³¹ This includes the import and export data, input-output coefficients, value added and its components and final demand. An advantage of the GTAP dataset is that it is a balanced dataset that satisfies all the general equilibrium accounting identities. The GTAP 9 dataset, which was released in May 2015, contains 57 sectors and 140 regions. We report the trade flow and value added data for our EAEU countries in Knobel et al. (2018, Table 3–14).

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.

Scenario definition ("EAEU central")

In columns 1–6, we report results from our monopolistic competition–Krugman style model on the impacts on Armenia, Belarus, Kazakhstan and

the Russian Federation from the reduction in trade costs. We execute a “central” comprehensive scenario and five additional scenarios to assess the impacts of the specific reforms to lower trade costs. In our central scenario, 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. In column 7 we show the results of our central scenario with a perfect competition – Armington style model. In columns 2–6, we report results of the specific reforms. The specifics and rationale are as follows.

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, time costs of trade are, in part, 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. Countries have barriers that impact the time cost of their exports as well as their imports, so we simulate these separately, and together as part of the central scenario. A portion of these reforms to reduce the time costs of trade will likely spillover to third countries. For example, if customs posts within the EAEU are actually eliminated, then a Polish truck passing through Belarus and Russia, destined for Kazakhstan would not have to stop at customs control in Russia or Kazakhstan, once it cleared customs control in Belarus. This is an example of the argument of Baldwin (2014), see below, that it is difficult to exclude all the benefits of deep integration from third countries.

Non-Tariff Barriers: we assume a modest 20 percent cut in the ad valorem equivalent of the non-tariff measures for EAEU members. 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 subtler 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 member states. 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.

Welfare effects of deep preferential integration by the Eurasian Economic Union

Aggregate effects from our central scenario

Our results for the percentage change in welfare, aggregate trade and factor earnings in Armenia, Belarus, Kazakhstan and the Russian Federation are presented in [Table 3](#). For impacts on the percentage change in output of each sector by country see Knobel et al. ([2018](#)). The top section of the table shows which reform is evaluated in each of the scenarios. In column 1, 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. All results are estimated **annual gains** that are repeated every year. We find that all four EAEU countries would gain from successful

Table 2. 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; Kolenskova ([2014b](#)) for Belarus (with additional communication in air transport); Eroyants ([2011](#)) for Armenia; Jensen and Tarr ([2008](#)) for Kazakhstan.

Table 3. Summary of results: deep integration in the Eurasian Economic Union (EAEU).

Scenario definition	Monopolistic Competition-Krugman Model						Armington EAEU Central Perfect Competition Model
	EAEU: Central (Trade Facilitation plus services and NTB liberalization)	EAEU: only NTB or goods or 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	Yes
Non-Tariff Barriers for goods: 20% reduction of costs within EAEU countries	Yes	No	Yes	No	No	No	Yes
Cross-Border Barriers for services: 20% reduction of NTB costs with EAEU countries	Yes	No	No	Yes	No	No	Yes
Time in Trade Costs for Imports: 20% reduction within EAEU countries	Yes	No	No	No	Yes	No	Yes
Time in Trade Costs for Exports: 5% reduction with non-EAEU countries	Yes	No	No	Yes	No	Yes	Yes
Time in Trade Costs for Exports: 20% reduction within EAEU countries	Yes	No	No	No	Yes	Yes	Yes
Time in Trade Costs for Exports: 5% reduction with non-EAEU countries	Yes	No	No	No	Yes	Yes	Yes
Aggregate welfare	1	2	3	4	5	6	7
Welfare (EV as % of consumption)							
Armenia	3.10	1.72	0.43	0.05	0.42	0.28	1.84
Belarus	4.77	0.78	1.52	0.02	0.99	1.10	3.64
Kazakhstan	1.74	0.13	0.07	0.02	0.47	0.85	1.47
Russia	0.82	0.03	0.21	0.00	0.31	0.26	0.66
Aggregate trade							
Aggregate exports							
Armenia	9.53	1.10	2.17	0.28	2.25	2.22	8.53
Belarus	6.68	-0.25	0.99	0.06	2.53	2.78	6.62
Kazakhstan	2.97	-0.05	0.17	0.03	1.13	1.21	2.84
Russia	1.96	0.02	-0.12	0.01	0.95	0.96	1.81
Factor earnings							
Armenia							
Capital	1.52	0.50	0.48	0.05	0.05	0.41	1.09
Unskilled labor	1.63	0.62	0.42	0.05	0.08	0.43	1.14
Skilled labor	1.74	0.68	0.48	0.06	0.13	0.36	1.20
Resource	1.59	0.54	0.33	0.02	0.17	0.48	1.14
Belarus							
Capital	5.23	0.78	1.92	0.01	0.63	1.54	4.00
Unskilled labor	3.64	0.22	1.06	-0.01	0.88	1.24	3.34
Skilled labor	3.53	0.28	1.10	-0.01	0.90	1.23	3.39
Resource	-3.28	0.31	-3.15	0.03	-0.30	-0.26	-3.78
Kazakhstan							
Capital	1.81	0.17	0.03	0.01	0.07	1.25	1.48
Unskilled labor	1.09	0.03	0.03	0.01	0.01	0.88	0.92
Skilled labor	0.89	0.03	0.06	0.01	0.12	0.57	0.78
Resource	-0.90	-0.03	0.11	0.00	0.02	-0.84	-0.67
Russia							
Capital	0.58	0.01	0.07	0.00	-0.10	0.58	0.42
Unskilled labor	0.46	0.00	0.08	0.00	-0.18	0.55	0.33
Skilled labor	0.49	0.00	0.08	0.00	-0.09	0.49	0.38
Resource	-0.04	0.01	-0.10	0.00	0.11	-0.06	-0.07

Source: Authors' estimates

deep integration, with gains of 3.10% for Armenia; 4.77% for Belarus; 1.74% for Kazakhstan; and 0.82% for Russia. This would be accompanied by aggregate trade increases of 9.5% for Armenia; 6.7% for Belarus; 3.0% for Kazakhstan; and 2.0% for Russia.

In all scenarios shown in Table 3, we assume that all three types of trade barriers consume capital and labor in the home country. Then the reduction of the barrier, leads to freeing up of capital and labor devoted to overcoming the barriers with respect to the trade or FDI with the relevant region. These are "rectangles" of gains of "rents." In Knobel et al. (2018, table, 22) we report the value of these rectangles for all scenarios in Table 3. The reduction of the trade and FDI barriers also results in a decrease in the cost of imports and FDI provided services relative to domestic production and an increase in the returns to exporting relative to domestic sales. As a result, there are also "triangles" of efficiency gains from improved resource allocation.³² EAEU members also experience a terms-of-trade gain on their exports within the EAEU that contributes to their welfare. The rent recapture, resource allocation and terms-of-trade effects are also present in perfect competition and are the source of the welfare gains in the perfect competition model. In addition to the above, in our Krugman model, there



is an endogenous productivity effect from the Dixit-Stiglitz externality to the extent there is a net increase in expenditure weighted varieties. Through the results in columns 2–6, we investigate the relative importance of each of the reforms.

Preferential reduction of time-in-trade costs by the EAEU

In columns 5 and 6, we evaluate the benefits on each of our EAEU countries of its own policies to reduce time-in-trade costs on its imports and its exports, respectively. 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).

Reduction of non-tariff barriers within the EAEU

The results are in column 3. Reflecting their substantial share of trade within the EAEU, Belarus is the country that gains the most, as a percent of its consumption, from the reduction of non-tariff barriers within EAEU. Hicksian equivalent variation increases by 1.52 percent of consumption in the case of Belarus, but only by 0.07 percent in Kazakhstan.

Preferential reduction of barriers against EAEU service providers

The results for FDI services are in column 2 and cross-border services in column 4. With estimated gains of 1.72 percent of consumption, Armenia is the EAEU country that has the largest estimated gains from preferential liberalization of services barriers against FDI. This reflects the data in [Table 2](#) that shows that the Russian Federation has substantial shares of most of Armenia's business services sectors. This reform leads to relatively small gains of 0.13 and 0.03 percent of consumption in the cases of Kazakhstan and the Russian Federation, respectively. The lower gains for Kazakhstan and the Russian Federation reflect the lower ownership shares of their business services sectors by other EAEU members. On the other hand, the Russian Federation is very important in the provision of business services in Armenia in all sectors except professional services.

The economic intuition for the Dixit-Stiglitz externality is as follows. For EAEU multinational firms, the reduction of the barriers to foreign direct investment lowers their costs of production in partner countries. This induces entry by additional EAEU firms until their profits are driven to zero. There will be exit by host country firms as well as exit of non-EAEU firms. To the extent that is a net addition to expenditure weighted varieties of services,³³ there is a welfare gain from the productivity effect of the Dixit-Stiglitz variety externality.

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.

Sensitivity results

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

Sensitivity to a Constant Returns to Scale (CRTS) model

In column 7 of [Table 3](#) and column 6 of [Table 4](#), 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 evidence of 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; and the monopolistic competition model is even more important when we incorporate spillovers or wider liberalization.

Spillover or wider liberalization

Conceptual issues on wider liberalization and spillovers

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. That is, “spillovers” of regional preferences will convey to third countries. For example, 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. 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.³⁴

Aggregate spillover or wider liberalization results

In this section we estimate the impacts of spillovers or wider liberalization for the entire world or separately limited to only the European Union, the USA or China. We summarize the welfare results of all these scenarios in [Table 4](#). More detailed results for each of the scenarios are in Knobel et al. ([2018](#), tables 28–31).



Table 4. Spillovers (or wider liberalization) results for welfare impacts compared—**Aggregate Welfare Impacts and Their Components** (results are Equivalent Variation as a percent of benchmark consumption).

	1	2	3	4	5	6	7
	Monopolistic Competition-Krugman Model					Perfect Competition Armington Model	
	Plus Spillovers* with respect to:					EAEU Central	Spillovers* World
	EAEU Central	World	EU	US	China		
1. Aggregate Welfare Impacts							
Armenia	3.10	4.52	3.65	3.21	3.19	1.84	3.49
Belarus	4.77	7.22	5.70	4.85	4.86	3.64	6.15
Kazakhstan	1.74	6.26	2.32	4.49	2.27	1.47	4.25
Russia	0.82	3.58	2.23	0.96	1.11	0.66	2.89
2. FDI Liberalization Only Welfare Impacts							
Armenia	1.72	2.02	1.86	1.75	1.72	0.55	0.93
Belarus	0.78	0.94	0.86	0.80	0.79	0.23	0.42
Kazakhstan	0.13	3.01	0.28	2.75	0.13	0.10	1.35
Russia	0.03	1.23	0.64	0.06	0.08	0.01	0.69
3. Trade Facilitation Only Welfare Impacts							
Armenia	0.69	0.94	0.78	0.70	0.72	0.71	0.95
Belarus	2.09	3.02	2.55	2.11	2.13	1.91	2.70
Kazakhstan	1.32	2.25	1.53	1.37	1.61	1.10	1.92
Russia	0.56	1.08	0.76	0.59	0.65	0.44	0.84
4. Non-Tariff Barriers Reduction Only Welfare Impacts							
Armenia	0.43	0.96	0.58	0.46	0.47	0.37	0.91
Belarus	1.52	2.71	1.83	1.54	1.56	1.17	2.26
Kazakhstan	0.07	0.55	0.20	0.10	0.27	0.07	0.54
Russia	0.21	0.86	0.59	0.26	0.33	0.19	0.89

*In EAEU central, EAEU members receive a 50% cut in the AVEs of FDI and cross-border services barriers; and a 20% cut in the AVEs of NTMs and trade facilitation barriers. Third countries receive 5% cut in the AVEs of trade facilitation barriers. With Spillovers, the region receiving the spillover gets a 25% cut in the AVEs of FDI and cross-border services barriers; and a 10% cut in the AVEs of NTMs and trade facilitation barriers.

Source: Authors' estimates.

In our scenarios with spillovers, in addition to the reductions in our central scenario, 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 obtaining the spillover. 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 the designated spillovers, and five percent with respect to all other regions (since the latter was assumed in the central scenario).

We see in Table 4, that if spillovers extend to the entire world, the welfare gains increase very substantially for all four countries to 3.6% for Russia, 4.5% for Armenia, 6.3% for Kazakhstan and 7.2% for Belarus. The largest absolute increase in the aggregate welfare gains is for Kazakhstan, where welfare increases by 4.5 percent of consumption. For both the Russian Federation and Kazakhstan, there are much larger gains from FDI liberalization due to FDI from third countries. And the additional gains are much larger in the

monopolistic competition model. 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.

We estimate 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 lobbying interests among the EAEU countries regarding wider liberalization or willingness to encourage spillovers of the internal reforms.

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.

Sensitivity of the results to parameter values

In our 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. For this exercise, we use two scenarios: (i) our aggregate EAEU central scenario; and (ii) spillovers to the entire world from the combined reforms.

The results for the Russian Federation are reported in [Table 5](#). See Knobel et al. ([2018](#), tables 33–36) for the results for all EAEU countries in our model. The parameters that have the most significant impact on the results are: the Dixit-Stiglitz elasticities in services sectors, $\sigma(q_i, q_j)$; the elasticity of substitution between value-added and business services, $\sigma(va, bs)$; 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 page one. 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 small impact on the welfare results.³⁵

Table 5. 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			EAU Deep Integration			
Parameter	Parameter Value			EAU Central		Plus Spillovers or Liberalization with World
	Lower	Central	Upper	Lower	Central	
$\sigma(q_i, q_j)$ – services sectors	2	3	4	1.00	0.82	0.78
$\sigma(q_i, q_j)$ – goods sectors	0.5*central	see below	1.5*central	0.89	0.82	0.87
$\sigma(va, bs)$	0.625	1.25	1.875	0.77	0.82	0.89
$\sigma(D, M)$ for section i	0.5*central	see below	1.5*central	0.72	0.82	0.91
$\sigma(M, M)$ for sector i	0.5*central	2*(D, M) _i	1.5*central	0.79	0.82	0.87
$\sigma(L, K)$	0.5	1	1.5	0.83	0.82	0.82
$\sigma(A_1, \dots, A_n)$	0	0	0.25	0.82	0.82	0.83
ARMENIA, BELARUS, KAZAKHSTAN	1.5	3	4.5	0.76	0.82	0.88
EGYPT, GROW, GUSA, CHINA, RUSSIA	0.5*central	see below*	1.5*central			
$\sigma(q_i, q_j)$ – IRTS goods	Parameter Value			$\sigma(D, M)$ –CRTS sectors		
	Lower	Central	Upper	Lower	Central	Upper
1. food products	2.6	5.1	7.7			
2. wood products	3.4	6.8	10.2	agriculture		
3. paper products and publishing	3.0	5.9	8.9	forestry	1.3	2.5
4. petroleum and coal products	2.1	4.2	6.3	fishing	0.6	1.3
5. chemical, rubber and plastic prods.	3.3	6.6	9.9	minerals	3.2	6.5
6. mineral products	2.9	5.8	8.7	minerals nec	0.5	0.9
7. metal products, nec	3.7	7.4	11.1	textiles and apparel	1.9	3.7
8. transport equipment	3.2	6.4	9.6	leather products	2.0	4.1
9. electrical equip. & machinery	4.2	8.3	12.5	electricity, gas and water	1.4	2.8
10. manufactures nec	3.8	7.5	11.3	construction	1.0	1.9
				trade	0.8	1.5
				public admin & other services	0.8	1.5

*Values: c = €; s = ₽; ₽ = 10; c = ₽; ₽ = €; ₽ = 5 in services, 10 in IRTS goods sectors 5, 7, 10 in other IRTS goods

⁷ – 4 in agriculture, 4 in IRTS goods, 4 in services; 8; 10 in other IRTS goods, 10 in IRTS services.

$\varepsilon_{CHINA} = 4$ in services, 4 in IRTS goods 4-6 and 8; 10 in other IRTS goods

Source: Authors' estimates.

Source: Authors' estimates.

Source: Authors' estimates.

Value to Armenians

Value to Armenia of the right to work in the Russian federation

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.³⁶

We employ the neoclassical model of labor migration to obtain an estimate of the value of the free movement of labor. This is a calculation outside of our numerical general equilibrium model. Due to the small disparity between wages in the Russian Federation 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 the Russian Federation 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 the Russian Federation and Armenia and a quality of life cost in many cases. These considerations indicate that the illegal work status of Armenians in the Russian Federation 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, one could assume that, prior to 2015, these various expenses and rent extraction left Armenian migrants in the Russian Federation with no net benefits over working in Armenia; this is equivalent in our estimate to assuming no Armenians worked in the Russian Federation prior to 2015. The existence of Armenian workers in the Russian Federation 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.³⁷ 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 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 the Russian Federation 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 approximately the difference between the wages earned by Armenians working in the Russian Federation and the value of their marginal product had they worked in Armenia.³⁸ Since the Russian Federation is extremely large relative to Armenia, we draw the curves that suggest only a trivial impact on the wage rate in the Russian Federation from Armenian migration. To the extent that there is an impact on the wage rate in the Russian Federation (that does not impact Russian unemployment), there would be a triangle of gains to the Russian Federation from Armenian migrants in Russia.

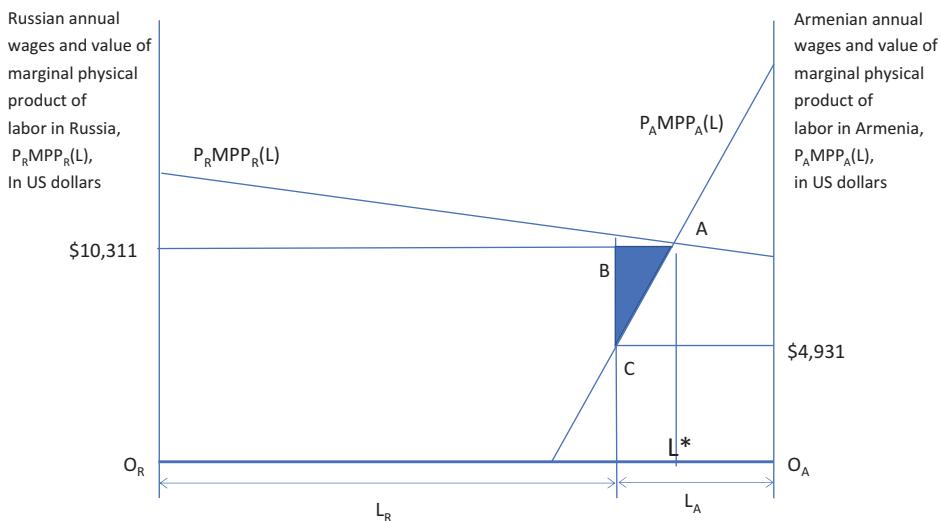


Figure 2. Value to Armenia of free migration of labor to the Russian Federation.

In 2014, the year prior to Armenian accession to the EAEU, the average annual salary in Armenia was US\$4,931,³⁹ while the average annual salary in the Russian Federation was US\$10,311.⁴⁰ 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 the Russian Federation in 2015. The wage disparity induces Armenian migration to the Russian Federation (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 the Russian Federation in 2017.⁴¹ 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.⁴² 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.⁴³ Despite the caveats above regarding a possible upward bias to value of the right of Armenians to work in the Russian Federation 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.⁴⁴

Conclusions

We show that if the EAEU effectively implements its deep integration objectives, it would lead to significant welfare gains as a percent of consumption of

0.8% for Russia, 1.7% for Kazakhstan, 3.1% for Armenia and 4.8% for Belarus. 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 to 3.6% for Russia, 4.5% for Armenia, 6.3% for Kazakhstan and 7.2% for Belarus. Wider liberalization or spillovers for FDI are especially valuable. Our results for spillovers emphasize the importance of "open" regionalism.⁴⁵ We showed that this Krugman imperfectly competitive model produces significantly larger estimated gains compared with a perfect competition model, especially when spillovers are incorporated.

For Armenia, the right of its workers to legally work in Russia is likely the most important source of gains, but liberalization of FDI barriers is also very valuable to Armenia. The reduction of time-in-trade costs produces the largest share of the gains to Belarus, Kazakhstan and the Russian Federation, but the reduction in non-tariff barriers is also very valuable to Belarus.

If there is wider liberalization or spillovers to all third countries, we estimate that the reform most valuable to Kazakhstan and the Russian Federation is FDI liberalization, while Belarus gains the most from wider trade facilitation and the reduction of non-tariff barriers on third countries. The most important region for spillovers to Armenia, Belarus and the Russian Federation is the European Union. For Kazakhstan, however, China is most important for its trade, but the United States is most important with respect to FDI for Kazakhstan.

Trade negotiation typically involves an exchange of "concessions." All the reforms in our EAEU central scenario to reduce trade costs within the EAEU are beneficial to all the EAEU countries. But, for Armenia (after the right to migrate), we estimate that the most important reform is the reduction of barriers against FDI in services. For Belarus, the reduction of non-tariff barriers is 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 lobbying interests among the EAEU countries regarding effective implementation of the reforms.

Notes

1. Several studies that use firm level data support the finding that FDI and the wide availability of business services result in total factor productivity gains to the manufacturing sector and the economy broadly. These include Arnold, Javorcik, and Mattoo (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, Rahardja, and Varela (2013) for Indonesia. See Francois and Hoekman (2010) survey more than a dozen additional empirical studies that support this finding. See Markusen (2002) for the theory.

2. Caliendo and Parro (2015) find that NAFTA increased the welfare of Mexico by 1.31 percent, the U.S. by 0.08 percent and the welfare of Canada declined by 0.06 percent.
3. See Knobel et al. (2018) for a review of the literature on numerical evaluation of preferential trade agreements that go beyond tariffs.
4. Recently, Arkolakis et al. (2018) produced a numerical model of heterogeneous firms with FDI. They did not, however, consider preferential trade analysis.
5. See Balistreri, Rutherford, and Tarr (2009) and Jensen, Rutherford, and Tarr (2010) for applications to Kenya and Tanzania, respectively. Without including FDI, Tochitskaya and de Souza (2009) and Brenton, Turdyeva, and Whalley (1997) evaluated the impact of tariff changes in a Russia-EU free trade agreement, including impacts on neighboring countries.
6. Latorre and Yonezawa (2018) recently achieved the same extension of Balistreri, Tarr, and Yonezawa (2015) regarding FDI, but do not consider time-in-trade costs in their deep integration analysis.
7. 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. Our approach also differs 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 Schaur (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.
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 (2013) have shown that after full implementation of its WTO commitments in 2020, the applied average MFN average tariff of the Russian Federation will be 7.9 percent on a simple average basis and 5.8 percent on a weighted average basis. Legally, the Russian Federation has only the tariff schedule of the Eurasian Economic Union as its tariff schedule.
9. Notably, these analysts include Hartwell (2016), Popescu (2014), Dragneva and Wolczuk (2013), Aslund (2013), Dreyer and Popescu (2014) and Sadri (2014).
10. For more details on progress and problems see Tarr (2016), Libman (2018) and Vinokurov (2017) and Tarr and Volchkova (2010, 2013). For an early overview of the implications of WTO accession for Russia, see Tarr (2007).
11. 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.
12. On 18 October 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, 18 October 2017. Available at: <https://uk.reuters.com/article/kyrgyzstan-kazakhstan/kyrgyzstan-complains-of-kazakhstan-restricting-border-trade-idUKL8N1MT5XP>.

13. The members hope to establish a common electrical power market, modeled after the successful approach of the Scandinavian countries.
14. The reason is that harmonization imposes a common obligatory technical regulation on all producers. Since there are investment costs for producers to adjust to a new regulation, each member state of the EAEU lobbies for adoption of its own regulation, and it is difficult to obtain a consensus when adjustment costs are high. Experience has shown that widespread harmonization has not been achieved in any preferential trade area except for the European Union; and the European Union achieved harmonization only over decades. A more effective approach for the reduction of non-tariff barriers is mutual recognition, at least until an agreement on a harmonized regulation for a product is achieved. Since mutual recognition allows the free circulation of goods within the customs area which meet the standards of *any* member state, adjustment costs are minimized. Mutual recognition has the added benefit of reducing non-tariff barriers for producers outside the preferential trade area since they may comply with the regulation of any member state. See Tarr (2016) for an elaboration.
15. See Vinokurov (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.
16. Due to data limitations, we could not include the fifth member country (The Kyrgyz Republic) in the model.
17. The mapping from the sectors in the GTAP 9.1 dataset to sectors of our model is shown in Knobel et al. (2018, Table 2).
18. The theory and applications of the small open economy version of the FDI model under monopolistic competition has been elaborated by Tarr (2013).
19. 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). In the case of U.S. firms, in 2005, two-thirds of services exports were from FDI and about one-third from cross-border sales. See Markusen (2009, Table 1).
20. Balistreri, Jensen, and Tarr (2015) showed that it is possible to have immiserizing preferential FDI liberalization from the loss of varieties from excluded countries.
21. These papers, which were supervised by Tarr, are available at: <https://drive.google.com/drive/folders/0B0V-t-Bs4-hXZEh2XzFIZ1NPTWc>.
22. Almost all of the Australian studies are available in Findlay and Warren (2000).
23. In telecommunications, 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.
24. 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) $(D-W)/D = AVE*W/D = AVE/[AVE+1] = ad\ valorem$ equivalent of the restricted domestic price as the base, or denominator.

25. The mapping is based the sub-categories in the IMF data explained in United Nations, Department of Economic and Social Affairs (2011, annex, 1).
26. 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). Novy (2013) has developed an interesting and useful indirect method for estimating the Overall Trade Restrictiveness Index of tariffs and non-tariff measures in traded goods over time. It is indirect since it does not employ any measures of actual barriers as explanatory variables. Novy acknowledges his measure is not direct and that direct measures have the advantage of being more precise on the particular trade cost components they measure; but he notes that the direct approach requires data that are difficult to obtain. In our case, we have the Vinokurov et al. (2015a) survey of non-tariff measures, to which we have contributed, and desire to take advantage of the availability of that information in the estimation. Thus, we prefer the direct approach.
27. Further, the impact of trade of other measures, such as price controls, are ambiguous at the theoretical level. Tarr (1994) 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.
28. The dataset is available at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0/contentMDK:22574446~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>. We note that Kee et al., employ a direct measure of the non-tariff measures.
29. 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.
30. The papers by Kolesnikova, Eroyants and Idrisov are available at: <https://drive.google.com/drive/folders/0B0V-t-Bs4-hXaUdjQVdsdTdqWUk>.
31. Available at: <https://www.gtap.agecon.purdue.edu/databases/default.asp>.
32. Since the reduction of the trade barrier is preferential, EAEU agents may shift purchases toward firms in the EAEU who are more costly than non-EAEU suppliers. If we allowed domestic agents to capture the rents from the barriers, then the resource reallocation impacts would be ambiguous.
33. As Feenstra (1994) has shown, the gains from additional varieties will be weighted by their consumption shares. See Balistreri and Tarr (2018) for the discussion of a multi-sector Feenstra ratio; and see Balistreri, Jensen, and Tarr (2015) for a model that shows that it is possible to have immiserizing effects from *preferential* liberalization of FDI barriers.
34. 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.
35. 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. We also executed *sensitivity* scenarios on the benchmark values of the ad valorem equivalents (AVEs) of the barriers on cross-border services. We find that the results are only insignificantly impacted by these changes in the AVEs. Our central results are reported in [Table 3](#), column 4. In the first (second) of these two sensitivity scenarios, we increase (decrease) the central values of the AVEs of all of the barriers on cross-border services in our four focus countries to 120% (80%) of their central values. For all four countries, with higher (lower) benchmark AVEs of the barriers on cross-border services, the estimates are within plus (minus) 0.01 percent of the central values in [Table 3](#). The small impact of the changes in these AVEs, is explained by two considerations: (i) the shares of the services sectors in our focus countries that are captured by EAEU partner suppliers of cross-border services is quite small; and (ii) our model incorporates the proximity burden stylized fact, which makes cross-border services a poor substitute for locally provided services.
 36. See Vinokurov (2017) for further details.
 37. See de Melo and Tarr (1992, 118–119) for further explanation.
 38. In general, it is the value of the integral between the equilibrium wage in the Russian Federation 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.
 39. 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.
 40. 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.
 41. <https://mbd.rph/Deljatelnost/statistics/migracionnaya/item/12162171/>.
 42. <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=map>.
 43. This result is consistent with the estimates and view of Rodrik (2011) on the importance to developing countries of the right of its workers to migrate.
 44. An Armenian who is considering migration, would consider other destinations as well as the Russian Federation. These results suggest that some Armenians, who might

otherwise have emigrated to non-EAEU countries, would decide to migrate within the EAEU.

45. Hartwell (2013) has stressed the importance of open regionalism for the EAEU, in part as a vehicle for encouraging liberalization in countries that may not otherwise liberalize.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Eurasian Economic Commission [H-07/101].

References

- Arkolakis, C., N. Ramondo, A. Rodriguez-Clare, and S. Yeaple. 2018. "Innovation and Production in the Global Economy." *American Economic Review* 108 (8): 2128–2173. doi:[10.1257/aer.20141743](https://doi.org/10.1257/aer.20141743).
- Armington, P. S. 1969. "A Theory of Demand for Products Distinguished by Place of Production." *International Monetary Fund Staff Papers* 16 (1): 159–178. doi:[10.2307/3866403](https://doi.org/10.2307/3866403).
- Arnold, J. M., B. S. Javorcik, and A. Mattoo. 2011. "Does Services Liberalization Benefit Manufacturing Firms: Evidence from the Czech Republic." *Journal of International Economics* 85 (1): 136–146. doi:[10.1016/j.jinteco.2011.05.002](https://doi.org/10.1016/j.jinteco.2011.05.002).
- Arnold, J. M., B. S. Javorcik, M. Lipscomb, and A. Mattoo. 2016. "Services Reform and Manufacturing Performance: Evidence from India." *Economic Journal* 126 (590): 1–39. doi:[10.1111/eco.12206](https://doi.org/10.1111/eco.12206).
- Arvis, J.-F., Y. Duval, B. Shepherd, C. Utoktham, and A. Raj. 2016. "Trade Costs in the Developing World: 1996–2010." *World Trade Review* 15 (3): 451–474. doi:[10.1017/S147474561500052X](https://doi.org/10.1017/S147474561500052X).
- Aslund, A. 2013. "Push for Customs Union Turns Friends to Foes." *The Moscow Times*, September 10.
- Baldwin, R. 2014. "Multilateralizing 21st Century Regionalism." OECD Global Forum on Trade Paper. <https://www.oecd.org/tad/events/OECD-gft-2014-multilateralising-21st-century-regionalism-baldwin-paper.pdf>
- Balistreri, E. J., and D. G. Tarr. 2018. "Comparison of Welfare Gains in the Armington, Krugman and Melitz Models: Insights from a Structural Gravity Model," December 19. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3311155
- Balistreri, E. J., D. G. Tarr, and H. Yonezawa. 2014. "Reducing Trade Costs in East Africa: Deep Integration and Multilateral Action." World Bank Policy and Research Working Paper No. 7049. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2503724
- Balistreri, E. J., D. G. Tarr, and H. Yonezawa. 2015. "Deep Integration in Eastern and Southern Africa: What are the Stakes?" *Journal of African Economies* 24 (5): 677–706. doi:[10.1093/jae/evj012](https://doi.org/10.1093/jae/evj012).
- Balistreri, E. J., J. Jensen, and D. 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* 9 (2015–42): 1–134. doi:10.5018/economics-ejournal.ja.2015-42.
- Balistreri, E. J., T. F. Rutherford, and D. G. Tarr. 2009. "Modeling Services Liberalization: The Case of Kenya." *Economic Modeling* 26 (3, May): 668–679. doi:10.1016/j.econmod.2009.01.010.
- Balistreri, E. J., Z. Olekseyuk, and D. G. Tarr. 2016. "Privatization and the Unusual Case of Belarusian Accession to the WTO." https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2834330
- Balistreri, E. J., Z. Olekseyuk, and D. G. Tarr. 2017. "Privatization and the Unusual Case of Belarusian Accession to the WTO." *The World Economy* 40: 2564–2591. doi:10.1111/twec.12520.
- Bernard, A. B., J. Bradford Jensen, S. J. Redding, and P. K. Schott. 2010. "Intrafirm Trade and Product Contractibility." *American Economic Review* 100 (2): 444–448. doi:10.1257/aer.100.2.444.
- Böhringer, C., T. F. Rutherford, D. G. Tarr, and N. Turdyeva. 2015. "Market Structure and the Environmental Implications of Trade Liberalization: Russia's Accession to the World Trade Organization." *Review of International Economics* 23 (5): 897–923. doi:10.1111/roie.12197.
- Borchert, I., B. Gootiiz, and A. Mattoo. 2014. "Policy Barriers to International Trade in Services: Evidence from a New Database." *World Bank Economic Review* 28 (1): 162–188. doi:10.1093/wber/lht017.
- Brenton, P., N. Turdyeva, and J. Whalley. 1997. "Potential Trade Effects of an FTA between the EU and Russia." *Review of World Economics* 133 (2): 205–225. doi:10.1007/BF02707460.
- Brown, D., and R. Stern. 2001. "Measurement and Modeling of the Economic Effects of Trade and Investment Barriers in Services." *Review of International Economics* 9 (2): 262–286. doi:10.1111/1467-9396.00278.
- Cadot, O., and J. Gourdon. 2014. "Assessing the Price-Raising Effect of Non-Tariff Measures in Africa." *Journal of African Economies* 23 (4): 425–463. doi:10.1093/jae/jeu007.
- Caliendo, L., and F. Parro. 2015 January. "Estimates of the Trade and Welfare Effects of NAFTA." *Review of Economic Studies* 82 (1): 1–44. doi:10.1093/restud/rdu035.
- 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>
- de Melo, J., and D. G. Tarr. 1992. *A General Equilibrium Analysis of US Foreign Trade Policy*. Cambridge, MA.: MIT Press.
- Dragneva, R., and K. Wolczuk, Eds. 2013. *Eurasian Economic Integration: Law, Policy and Politics*. Cheltenham, U.K.: Edward Elgar Publishing.
- Dreyer, I., and N. Popescu. 2014. "The Eurasian Customs Union: The Economics and the Politics." Brief No. 11 (March 21). Paris, FR: European Union Institute for Security Studies. http://www.iss.europa.eu/uploads/media/Brief_11_Eurasian_Union.pdf
- Duggan, V., S. Rahardja, and G. Varela. 2013. "Service Sector Reform and Manufacturing Productivity: Evidence from Indonesia." Policy Research Working Paper 6349. Washington, DC: World Bank.
- Eroyants, K. 2011. "Market Shares by Region in Key Services Sectors in Armenia." Available at: <https://drive.google.com/drive/folders/0B0V-t-Bs4-hXWW1aS2RrMnY2ems>
- Feenstra, R. C. 1994. "New Product Varieties and the Measurement of International Prices." *American Economic Review* 84: 157–177.
- Fernandes, A. M., and C. Paunov. 2012. "Foreign Direct Investment in Services and Manufacturing Productivity: Evidence for Chile." *Journal of Development Economics* 97 (2): 305–321. doi:10.1016/j.jdeveco.2011.02.004.

- Findlay, C., and T. Warren, eds. 2000. *Impediments to Trade in Services: Measurement and Policy Implications*. London: Routledge.
- Fink, C., and M. Jansen. 2009. "Services Provisions in Regional Trading Agreements: Stumbling or Building Blocks for Multilateral Liberalization?" Paper presented at the WTO-CEPR conference. https://www.wto.org/english/tratop_e/region_e/con_sep07_e/fink_jansen_e.pdf
- Fink, C., and M. Molinuevo. 2007. "Liberalization of Trade in Services: East Asian Free Trade Agreements in Services, Roaring Tigers or Timid Pandas." World Bank. http://siteresources.worldbank.org/INTEAPSUMEASPR/Resources/2576847-1163691185244/East_Asian_FTAs_in_Services.pdf
- Francois, J., and B. Hoekman. 2010. "Services Trade and Policy." *Journal of Economic Literature* 48 (September): 642–692. doi:[10.1257/jel.48.3.642](https://doi.org/10.1257/jel.48.3.642).
- Francois, J., B. Hoekman, and J. Woerz. 2007. "Does Gravity Apply to Intangibles? Measuring Openness in Services," Paper presented at the European Trade Study Group annual meeting, Athens. <http://www.etsg.org/ETSG2007/papers/woerz.pdf>
- Harrison, G. H., T. F. Rutherford, and D. G. Tarr. 2002. "Trade Policy Options for Chile: The Importance of Market Access." *World Bank Economic Review* 16 (1): 49–79. doi:[10.1093/wber/16.1.49](https://doi.org/10.1093/wber/16.1.49).
- Hartwell, C. A. 2013. "A Eurasian (Or A Soviet) Union? Consequences of Further Economic Integration in the Commonwealth of Independent States." *Business Horizons* 56 (4): 411–420. doi:[10.1016/j.bushor.2013.03.003](https://doi.org/10.1016/j.bushor.2013.03.003).
- Hartwell, C. A. 2016. "Improving Competitiveness in the Member States of the Eurasian Economic Union: A Blueprint for the Next Decade." *Post-Communist Economies* 28 (1): 49–71. doi:[10.1080/14631377.2015.1124554](https://doi.org/10.1080/14631377.2015.1124554).
- Helpman, E., and P. Krugman. 1985. *Market Structure and Foreign Trade*. Cambridge MA: MIT Press.
- Hummels, D. L., and G. Schaur. 2013. "Time as a Trade Barrier." *American Economic Review* 103: 1–27. doi:[10.1257/aer.103.1.1](https://doi.org/10.1257/aer.103.1.1).
- Hummels, D. L., P. Minor, M. Reisman, and E. Endean. 2007. *Calculating Tariff Equivalents for Time-In-Trade*. Arlington, VA: Nathan Associates Inc. for the United States Agency for International Development (USAID). https://krannert.purdue.edu/faculty/hummelsd/research/tariff_equivalents.pdf
- Idrissov, G. 2010a. "Ad valorem equivalence to FDI restrictiveness in Russia," Available at: <https://drive.google.com/drive/folders/0B0V-t-Bs4-hXZEH2XzF1Z1NPTWc>
- Idrissov, 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, Y., and D. 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* 40 (3): 544–573. March. doi:[10.1111/twec.12329](https://doi.org/10.1111/twec.12329).
- Jensen, J., and D. 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* 46 (5, September-October): 5–26. doi:[10.2753/EEE0012-8775460501](https://doi.org/10.2753/EEE0012-8775460501).
- Jensen, J., and D. 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* 6: 2012–1. doi:[10.5018/economics-ejournal.ja.2012-1](https://doi.org/10.5018/economics-ejournal.ja.2012-1).
- Jensen, J., T. F. Rutherford, and D. G. Tarr. 2006. "Telecommunications Reform within Russia's Accession to the WTO." *Eastern European Economics* 44 (1, January-February): 25–58. doi:[10.2753/EEE0012-8755440102](https://doi.org/10.2753/EEE0012-8755440102).

- Jensen, J., T. F. Rutherford, and D. 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* 11 (3, August): 482–506. doi:[10.1111/rode.2007.11.issue-3](https://doi.org/10.1111/rode.2007.11.issue-3).
- Jensen, J., T. F. Rutherford, and D. G. Tarr. 2010. "Modeling Services Liberalization: The Case of Tanzania." *Journal of Economic Integration* 25 (4, December): 644–675. doi:[10.11130/jei.2010.25.4.644](https://doi.org/10.11130/jei.2010.25.4.644).
- Kee, H. L., A. Nicita, and M. Olarreaga. 2009. "Estimating Trade Restrictiveness Indices." *Economic Journal* 119: 172–199. doi:[10.1111/j.1468-0297.2008.02209.x](https://doi.org/10.1111/j.1468-0297.2008.02209.x).
- Knobel, A., A. Lipin, A. Malokostov, D. G. Tarr, and N. Turdyeva. 2018. "Deep Integration in the Eurasian Economic Union: What are the Benefits of Successful Implementation and Wider Liberalization?" https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3284764
- Kolesnikova, Irina. 2014a. "Trade Restrictiveness Indices and Ad Valorem Equivalents in Belarusian Service Sectors." Available at: <https://drive.google.com/file/d/0B0V-t-Bs4-hXUWFuXzk2V2dibUk/view?usp=sharing>.
- Kolesnikova, I. 2014b. Foreign vs. Domestic Ownership Share in Belarusian Services Sectors. Available at: <https://drive.google.com/file/d/0B0V-t-Bs4-hXaUQ4TzZMbnhMTGs/view?usp=sharing>
- Krugman, P. 1980. "Scale Economies, Product Differentiation, and the Pattern of Trade." *American Economic Review* 70: 950–959.
- Latorre, M. C., and H. Yonezawa. 2018. "Stopped TTIP? Its Potential on the World and the Role of Neglected FDI." *Economic Modeling* 71 (April): 99–120. doi:[10.1016/j.econmod.2017.12.006](https://doi.org/10.1016/j.econmod.2017.12.006).
- Libman, A. 2018. "Eurasian Economic Union: Between Perception and Reality." *New Eastern Europe*, January 9. <http://neweasterneurope.eu/2018/01/09/8767/>
- Limão, N. 2016. "Preferential Trade Agreements." In *Handbook of Commercial Policy*, edited by K. Bagwell and R. W. Staiger, 269–367. Amsterdam: North-Holland.
- Markusen, J. R. 2002. *Multinational Firms and the Theory of International Trade*. Cambridge: MIT Press.
- Markusen, J. R., Bridget Strand. 2009. "Adapting the Knowledge Capital Model of Multinational Enterprise to Trade and Investment in Business Services." *The World Economy* 32 (1): 6–29. doi:[10.1111/j.1467-9701.2009.01155.x](https://doi.org/10.1111/j.1467-9701.2009.01155.x).
- Markusen, J. R., T. F. Rutherford, and D. G. Tarr. 2005. "Trade and Direct Investment in Producer Services and the Domestic Market for Expertise." *Canadian Journal of Economics* 38 (3): 758–777. doi:[10.1111/j.0008-4085.2005.00301.x](https://doi.org/10.1111/j.0008-4085.2005.00301.x).
- Mattoo, A., A. Mulabdic, and M. Ruta. 2017. "Trade Creation and Trade Diversion in Deep Agreements." Policy Research Working Paper Series 8206. World Bank: Washington, D.C. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3044150
- Minor, P. 2013. "Time as A Barrier to Trade: A GTAP Database of Ad Valorem Trade Time Costs." ImpactEcon, Second Edition. October. <http://mygtap.org/resources/>
- Mazhikeyev, Arman and T. Huw Edwards. (2015). "Consequences of Asymmetric Deeper "Eurasian" Economic Integration," UCD Working Paper No. 8365. Available at: <https://www.etsg.org/ETSG2015/Papers/042.pdf>
- Modebadze, G. (2010). "Ad Valorem Equivalence to FDI Restrictiveness in Armenia," Available at: [http://www.ssrn.com/abstract=1912366](https://www.ssrn.com/abstract=1912366)
- Novy, D. 2013. "Gravity Redux: Measuring International Trade Costs with Panel Data." *Economic Inquiry* 51 (1): 101–121. doi:[10.1111/ecin.2013.51.issue-1](https://doi.org/10.1111/ecin.2013.51.issue-1).
- Popescu, N. 2014. "Eurasian Union: The Real, the Imaginary and the Likely." Chaillot Paper, no. 132. Paris, FR: European Union Institute for Security Studies. http://www.iss.europa.eu/uploads/media/CP_132.pdf

- Rodrik, D. 2011. *The Globalization Paradox*. New York: W. W. Norton.
- Rutherford, T. F., and D. Tarr. 2008. "Poverty Effects of Russian WTO Accession: Modeling 'Real' Households with Endogenous Productivity Effects." *Journal of International Economics* 75 (1): 131–150. doi:10.1016/j.jinteco.2007.09.004.
- Rutherford, T. F., and D. 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* 18 (1, February): 30–46. doi:10.1111/j.1467-9396.2009.00879.x.
- Sadri, H. A. 2014. "Eurasian Economic Union (Eeu): A Good Idea or a Russian Takeover?" *Rivista Di Studi Politici Internazionali* 81 (4): 553–561.
- Shepotylo, O., and D. G. Tarr. 2013. "Impact of WTO Accession on the Bound and Applied Tariff Rates of Russia." *Eastern European Economics* 51 (5, September-October): 5–45. doi:10.2753/EEE0012-8775510501.
- Shepotylo, O., and V. Vakhitov. 2015. "Impact of Services Liberalization on Productivity of Manufacturing Firms." *Economics of Transition* 23 (1, January): 1–44. doi:10.1111/ecot.12061.
- Tarr, D. 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* 8 (3, September): 415–443. doi:10.1093/wber/8.3.415.
- Tarr, D. G. 1999. "Design of Tariff Policy for Russia." In *Russia's Trade Policy: Reform for WTO Accession*, edited by H. Broadman, 7–30. Washington D.C.: World Bank.
- Tarr, D. G. 2002. "On the Design of Tariff Policy: Arguments for and against Uniform Tariffs." In *Development, Trade and the WTO: A Handbook*, edited by B. Hoekman, A. Mattoo, and P. English, 526–534. Washington: World Bank.
- Tarr, D. G. 2007. "Russian Accession to the WTO: An Assessment." *Eurasian Geography and Economics* 48 (3): 306–319. May-June, 2007. doi:10.2747/1538-7216.48.3.306.
- Tarr, D. G., and N. Volchkova. 2010. "Foreign Economic Policy at a Crossroads." In *Russia after the Global Economic Crisis*, edited by A. Aslund, S. Guriev, and A. Kutchins, 200–222. Washington DC: Peterson Institute for International Economics and Center for Strategic and International Studies.
- Tarr, D. G. 2013. "Putting Services and Foreign Direct Investment with Endogenous Productivity Effects in Computable General Equilibrium Models." In *Handbook of Computable General Equilibrium Modeling*, edited by P. B. Dixon and D. W. Jorgenson, 303–377. Amsterdam: North Holland: Elsevier B.V.
- Tarr, D. G., and N. Volchkova. 2013. "Russian Foreign Trade and Direct Investment, Patterns and Policy Issues." In *Handbook of the Russian Economy*, edited by M. V. Alexeev and S. Weber, 593–616. Oxford: Oxford University Press.
- Tarr, D. 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* 54 (1): 1–22. doi:10.1080/00128775.2015.1105672.
- Tochitskaya, I., and L. V. de Souza. 2009. "Trade Relations between and Enlarged EU and the Russian Federation, and Its Effects in Belarus." *Economic Change and Restructuring* 42 (1–2, May): 1–24. doi:10.1007/s10644-008-9064-2.
- United Nations, Department of Economic and Social Affairs. 2011. "Manual on Statistics of International Trade in Services, 2010, Statistics Division." New York: United Nations. http://unstats.un.org/unsd/publication/SeriesM/seriesM_86Rev1e.pdf
- Vakulchuk, R., and A. Knobel. 2018. "Impact of Non-Tariff Barriers on Trade within the Eurasian Economic Union." *Post-Communist Economies* 30 (4): 459–481. doi:10.1080/14631377.2018.1442054.
- Vinokurov, E. 2017. "Eurasian Economic Union: Current State and Preliminary Results." *Russian Journal of Economics* 3: 54–70. doi:10.1016/j.ruje.2017.02.004.

- 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.
- 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.
- Wonnacott, P., and R. Wonnacott. 1981. "Is Unilateral Tariff Reduction Preferable to a Customs Union? the Curious Case of the Missing Foreign Tariffs." *American Economic Review* 71 (4): 704–714.