

The Cost of Borders: Evidence from the Eurasian Customs Union

Arevik Gnutzmann-Mkrtchyan^a, Hinnerk Gnutzmann^a

^a*Institute for Macroeconomics, Leibniz University Hannover, Germany*

Abstract

How strongly can trade facilitation benefit trade? We study the most comprehensive trade facilitation measure possible – complete elimination of customs points – within the Eurasian Customs Union (EACU). The EACU abolished internal customs controls between its members in two stages, which makes it possible to identify the effect of border elimination. We find that most of the trade impact is driven by the non-tariff costs rather than changes in MFN tariffs. Removal of the internal customs controls increased the intra-CU by 65% and hurt trade with the MFN partners to a similar extent. While the trade gain for the members is largely driven by the final goods trade and at the expense of the MFN partners, the intermediates trade is affected much less. This finding suggests that international fragmentation of production limits the scope for trade diversion from regional trade agreements.

Keywords: customs union, non-tariff trade costs, border effects, Russia, Belarus, Kazakhstan
JEL: F14, F15, F55

1. Introduction

Following the reduction in tariffs throughout the world, policymakers are increasingly turning their attention to non-tariff barriers to trade. Reducing these barriers – which include product standards, slow customs processing and excessive paperwork – is a part of the *trade facilitation agenda*. Administrative burdens on international trade are still substantial in many parts of the world. However, it is still an open question which are policies are most effective in reducing non-tariff trade barriers, and to what extent these policies are ultimately successful in raising trade. This paper studies the trade effect of one particularly ambitious trade facilitation policy: the complete elimination of customs borders within a customs union to address this issue.

URL: mkrtchyan@mak.uni-hannover.de (Arevik Gnutzmann-Mkrtchyan),
gnutzmann@mak.uni-hannover.de (Hinnerk Gnutzmann)

We consider the experience of three middle income countries – Russia, Belarus and Kazakhstan – which established the “Eurasian Customs Union” in January 2010. The initial trade agreement involved both the introduction of a common external tariff (CET) and the elimination of internal customs controls within the CU territory. Prior to forming the CU, the member countries were already in free trade agreements (FTAs) which almost entirely eliminated internal tariffs, but non-tariff barriers remained high (UNECE, 2012, 2013; Vinokurov, 2013). For example, Russia and Kazakhstan continue to score poorly on the World Bank’s *Trading Across Borders* index, which measures the time lost and cost incurred due to trade policies. In this setting, trade facilitation measures should be particularly effective in raising trade. Furthermore, because internal tariffs were already eliminated ahead of the trade facilitation measure, an important potential confounding factor is excluded. Our results show that – even after controlling for changes in *external* tariffs due to the CU – the elimination of customs posts was highly effective in raising trade. For the average product, trade increased by more than 50% due to the border removal. Gains were especially large where trade value was previously very low; but also for intensively traded products, trade growth of 20% was caused by the elimination of internal customs controls.

This paper adds to the literature on trade facilitation. On the one hand, Freund and Pierola (2012) find that border crossing times and variations in time strongly affect trade; similarly, findings from Martincus et al. (2013) suggest that customs delays have a significant negative impact on exports. Wilson (2007) demonstrates, in a gravity setting, the substantial effects of administrative procedures on trade volumes. Among the few studies of the effectiveness of policy reform is Fernandes et al. (2015), which show that reduction in time to trade increased trade values in Albania.

In terms of methods, the study uses highly disaggregated bilateral trade within the CU and with main trade partners of the CU members from 2007 to 2012 to disentangle the tariff and non-tariff impact. Clausing (2001) demonstrates that using product-level data allows to capture trade effects that are blurred in the pooled data while Anderson and Yotov (2010b) and Anderson and Yotov (2010a) show the estimation bias of aggregation.

Theory suggests that trade facilitation in a customs union can drive internal trade growth (Gnutzmann and Gnutzmann-Mkrtchyan, 2017). When countries that are initially in a free trade agreement “upgrade” their trade agreement to a customs union, internal tariffs – i.e. between the CU members – do not change. However, the member states face incentives to agree on an external tariff that is higher than the previous FTA tariffs; thus, internal trade

increases in part due to trade diversion, as third countries may face a higher MFN tariff wall. However, trade facilitating measures such as the closure of internal customs points may reduce trade costs, creating a separate boost for internal trade. From the perspective of third countries, effects need to be distinguished by trade regime. On the one hand, those countries that trade under MFN with the CU are likely to see their position weakened in the CU market, as higher tariffs and lower internal trade costs crowd out their exports. However, countries that have an FTA in place with the CU member countries, may see gains. Since those countries continue to maintain tariff-free access to the CU market, they may crowd out some exports from MFN partners. At the same time, the reduced internal trade costs again promote CU members to trade more among each other, potentially reducing trade volumes. Thus, while the effect of CU formation and internal trade facilitation is likely to be adverse for MFN partners, it is ambiguous for FTA partners.

To identify these effects, we rely on variation between goods. Importantly, while average tariffs certainly rose after CU formation, some goods were not affected. In particular, for many intermediate goods, each of the CU member imposed a zero MFN tariff both and after CU formation. Thus, changes in internal trade for these products cannot be attributed to external tariff effects. To disentangle the trade diversion and trade facilitation effects, we estimate our model separately for products where external tariffs did not change after CU introduction. These results suggest that the majority of the internal trade effect in the customs union was driven by trade facilitation rather than trade diversion. Regarding third countries, our estimates show that FTA partners on average experienced mild positive trade effects with the CU; however, this does not hold when the sample is restricted to products where external tariffs do not change. In line with theory, FTA partners benefit from crowding out of third countries (for products where MFN tariffs rose), but themselves see their market position eroded for products with unchanged tariffs. For MFN partners, their exports to the CU members decline in all specifications – as expected, the effect is largest when including lines where tariffs increased. For products whose tariffs did not change after CU, losses are between 13–33%. This shows that trade facilitation may have adverse effects on third countries, in line with theory.

Countries with poorer customs procedures benefit more from trade facilitation. We find that the trade-promoting effect was largest for Kazakhstan, where trade facilitation is estimated to have more than doubled trade with CU members. For Belarus, the effect is much more modest at 15%, with Russia taking a middle spot. Interestingly, these results mirror exactly the ranking of the EACU member countries in the *Trading Across Borders* index, where

Belarus scores well, Russia poorly and Kazakhstan the lowest the EACU countries.

This paper proceeds by reviewing the literature in section 2. Section 3 then describes the dataset and provides descriptive statistics; the empirical strategy is developed in the following section. Results are presented in section 5; section 6 concludes.

2. Literature

Theory: PTAs, in particular FTAs but also CUs have been studied comprehensively in the regionalism literature (e.g. Freund and Ornelas (2010) provide a survey). The general theme of this literature is that a Customs Union allows member countries to internalise cross-border externalities, e.g. relating to profits arising from trade or terms of trade effects, that are ignored by policy-makers under MFN or FTA tariff setting. As a result, tariffs in a Customs Union tend to be higher than in a free trade area; and through higher tariffs, imports from the rest of the world are diverted towards the partner country. When decision-makers are biased towards the interests of producers, this effect is particularly strong. Hence, CUs are often seen negatively by multilateralists; however, in related theoretical work (see Chapter 1), we show that even in the presence of political bias, CUs can be welfare-enhancing for members. In practice, it is important to understand to what extent Customs Unions have tariff effects, and whether they lead to trade diversion empirically.

Trade effects of PTAs have been extensively studied, particularly for the case of NAFTA (Trefler, 2001; Clausing, 2001). Of particular interest is the work of Romalis (2007), who identifies trade effects of NAFTA using differences in differences vis-a-vis Europe as an identification strategy. In his estimation, NAFTA had a substantial effect on trade volumes, particularly in protected sectors, but only moderate price and welfare effects. Clausing (2001) assesses the impact of Canada-US FTA tariff changes on disaggregated bilateral trade flows in a panel setting. The paper provides trade theory motivation for the estimation strategy employed which is very similar to our basic approach. The goal of the present section is to decompose the changes in trade patterns that occurred under CU into those that can be attributed to tariff changes and those due to non-tariff factors. The regression analysis decomposes the trade changes into tariff and non-tariff factors. The structure of the panel has three cross-sectional dimensions - importer, exporter and product and one time dimension - year.

Empirical estimations of border effects as the difference between intra-national and across the border trade start with the gravity estimation of Canada and U.S. trade by McCallum (1995).

Anderson and Van Wincoop (2001) pointed to the overestimation of the border effects by McCallum (1995) due to omitted variable bias - country-specific price index. Further, Feenstra (2002) suggests the use of importer-exporter fixed effects over the computational method of Anderson and Van Wincoop (2001) of controlling for price index as fixed effects provide consistent estimates, control for other possible country-specific omitted variables and are simple to apply. Olper and Raimondi (2008) follow Feenstra (2002) in their gravity estimation of border effects follow and for OECD countries. Requena and Llano (2010) and Emlinger et al. (2008) use sectoral data and include the country- and industry-fixed effects. Similar to this paper Chen and Novy (2011) apply a gravity model of bilateral trade for disaggregate panel data.

These studies rely on the theoretical model behind the gravity equation as in Anderson and Van Wincoop (2004).

Analysis of the CU of Russia, Belarus and Kazakhstan: Isakova and Plekhanov (2012) investigate the impact of the Customs Union on the structure of imports in Kazakhstan. They note that Kazakh–Russian trade fell before the Customs Union became effective, creating the possible problem that increases in bilateral trade could be due to a natural recovery – which would have happened even in the absence of a CU being formed – rather than causal. Using ITC Trade Map time series data from 2006–2010 disaggregated at the 10–digit level and statutory tariffs the authors then estimate a panel of the form

$$\Delta IM_{j,t} = \alpha \Delta d_{j,t} + \beta IM_{j,t-1} + \lambda Z_{j,t} + \epsilon_{j,t} \quad (1)$$

with IM being the (log) import flows, d the change in the tariff, and Z a vector of controls, which include lagged import changes (to account for possible natural recovery effects). Their parameter of interest is α - captures change in trade due to change in tariffs, and the model is separately estimated by trading partner. In addition, there are fixed effects at the product group (i.e. 2 digit) level. Estimated for the Customs Union partners, their model yields a positive and significant estimate of α . A 1% increase in tariffs would promote intra-CU by 0.8%. For other trading partners – they consider China, European Union, CIS and Rest of the World, the estimate is of α is negative, but small and not significant at the 5% level. They conclude that the Customs Union had a small impact on trade promotion and some evidence of trade diversion.

Using similar strategy, Isakova et al. (2013) extends the previous work to include Russia and Belarus. The study explains the change in the trade between 2009 and 2010 through tariff

changes. They find some trade creation for Russia with the rest of the world due to tariff falls in that country. They find positive impact of tariff increases on imports from Russia. The authors note that the magnitude is however small and they anticipate that the larger benefits could come from reduced internal trade costs. Tarr (2012) argues that previous attempts for deep regional integration projects of Russia were failing as they involved transfers from potential members to Russia, and in this respect the current Customs Union aims to reduce internal trade costs in which case other members will also benefit. The author also suggests that Russia's WTO accession will be a step in the direction of reducing non-tariff barriers to trade.

Krotov (2011) presents a detailed discussion of the Customs Union's administration system, customs legislation and clearance. He finds that the Customs Union is functional and, although the rules are yet to be fully formed, the necessary institutions and legislation for Customs Union's work are at place.

Dragneva and Wolczuk (2012) discuss the impact of the Customs Union on the EU's relationship with eastern neighbours, in particular, Ukraine. The paper also mentions that EU has become associated with modernization and rules-based governance, promoting Russia to adopt similar approach for its regional policy, specifically, by highlighting the economic gains and rules-based functioning of the Customs Union for potential members.

3. Data and Descriptive Statistics

3.1. Trade Flows

Bilateral trade flows were obtained from at the 6-digit level according to HS2002 classification come from UN COMTRADE cover the period from 2006 to 2014.

The data is inaccurate for some bilateral intra-CU trade flows in 2010. Whenever possible, the mirror data for the whole sample was used for consistency. However in the case of exports of Russia to Kazakhstan in 2010 the mirror data did not resolve the problem, and this trade flow is controlled for by a dummy in the regressions.

In the years prior to formation of the Customs Union, internal trade between the three countries amounted to \$44bn., about 16% of total imports by the three countries. The bilateral flows are highly uneven: in 2009, Russian exports to Belarus and Kazakhstan respectively accounted for 46% and 24% respectively of the total. Belarussian exports to Russia made up another 18%, and Kazakh exports to the same destination 10%. Belarussian-Kazakh trade, at just over 1% of the total, was almost insignificant.

TABLE 1

Intra-CU bilateral trade exports (excluding mineral fuels)

Importer	Exporter	2008, USD bln	2011, USD bln	Growth, %
RU	BY	10.5	14.3	36
RU	KZ	4.48	5.74	28
KZ	RU	9.02	11.9	31
KZ	BY	0.360	0.668	85
BY	RU	9.65	8.24	-14
BY	KZ	0.172	0.102	-40
Total		34.2	41.0	20

Source: authors' calculations

The table 2 summarises the changes in intra-CU export flows for a pre-crisis year 2008 before the creation of the CU and for 2011, by which year intra-CU borders were removed.

By 2011 some changes were already apparent as Table 1 shows. Internal trade grew by about 20% from pre-crisis level of 2008 to \$41bn (excluding mineral fuels), faster than the 10% growth in total non-fuel imports of the three countries. Thus, the intra-CU trade share rose from 10% to 12.4%. Exports from both Belarus and Kazakhstan to the Russian market increased significantly, by 36% and 28%, respectively, compared to 2008. Exports from Russia to Kazakhstan grew by 31%, while from Belarus to Kazakhstan – by 85%, making these bilateral trade flows the fastest growing. However Belarus' imports from Kazakhstan and Russia went down 40% and 14%, respectively.

Table 2 presents the share of bilateral intra-CU trade in the total non-fuel imports and confirms the observations from the Table 1. The share of imports from the CU partners significantly increases for Kazakhstan and Russia while decreasing for Belarus.

The 6-digit tariff data comes from UNCTAD and is obtained from the World Bank's TRAINS platform for the period of 2006-2014. Table 3 summarises the tariff averages of the members and the number of product lines where no tariff was levied for the pre-CU year 2009 and post-harmonization year 2010¹. The tariff means are calculated as simple averages of the tariff lines

¹tariff averages before 2009 are similar to the 2009 levels, while tariffs after 2010 are similar to the 2010 levels. Important changes in the MFN tariffs happened took place in 2010

TABLE 2

Intra-CU bilateral trade exports (excluding mineral fuels)

Importer	Exporter	Share in total imports, %	
		2008	2011
RU	BY	4.07	4.92
RU	KZ	1.73	1.98
KZ	BY	1.12	2.03
KZ	RU	28.01	36.27
BY	KZ	0.69	0.42
BY	RU	39.07	33.56

Source: authors' calculations

of the HS6 disaggregation level.

Already before the formation of the Eurasian Customs Union, internal tariffs between the members were largely eliminated. Our data set records just 8 lines where Russia imposed tariffs on its partners - involving sugar, alcohol and tobacco - in the immediate pre-CU years. For Kazakhstan, there are 36 positive lines covering similar products and additionally some rice varieties. Our data set has no record of positive internal tariffs imposed by Belarus. From 2010 onwards, internal tariffs had been fully eliminated.

Even prior to the Customs Union, Russia and Belarus had similar tariff regimes - with average rates around 12%. By 2009, close to 80% of MFN tariff lines by the two countries already agreed. In contrast, Kazakhstan pursued a relatively liberal policy, imposing on average just a 6.5% tariff in 2009 (reflecting a period of liberalisation after 2007 that is apparent in the sample).

In 2010, the overwhelming majority of MFN tariffs - 4360 lines or 86% - were harmonised into the Common External Tariff, with many exceptions found in textiles. The CET meant a large tariff increase for Kazakhstan - to 10.29%, or nearly a 60% increase. But Russian tariffs fell to 10.7%, nearly a 20% cut, and Belarussian tariffs by 10%. Table 3 provides more detailed data on the evolution of MFN tariffs in the EACU region.

The members of the Customs Union prior to its creation had 40% of the tariff lines (HS 6 lines) harmonised, and in November 2009 they agreed on the Common External Tariff (CET). The CET was harmonising around 86% of the tariff lines. As Table 3 shows, Russia and Belarus had similar tariff averages prior to the EACU while Kazakhstan had noticeably lower tariff

TABLE 3
Trends in MFN Tariffs

Year	N of rows	N of rows with zero tariff			Mean MFN tariff		
		Russia	Belarus	Kazakhstan	Russia	Belarus	Kazakhstan
2009	5052	445	373	1164	12.18	11.81	6.49
2010	5052	554	554	712	10.67	10.60	10.30

Source: Authors' calculations

average. The creation of the Customs Union and tariff harmonisation led to 1,5% and 1,2% decrease in mean MFN tariff for Russia and Belarus, respectively and 3,8% increase in mean MFN tariff for Kazakhstan. The MFN tariff is applied among important trade partners, in particular, to the EU and US.

The differences in the trade policy of Russia and Belarus on one side and Kazakhstan on the other side prior to the creation of the Customs Union is seen also through the number of tariff lines where no tariff is levied. In Kazakhstan 1164 product lines were subject to free trade prior to the EACU, almost three times more than in the partner countries, and Kazakhstan got a transition period to reduce that number over the course of several years.

Data on the bilateral trade preference regimes and trade agreements comes from Baier et al. (2014). The database provide bilateral trade agreements until 2012. In order to include years 2013 and 2014, we interpolated the agreements in the last two years as in 2012. This assumption is not very demanding as trade agreements are rarely downgraded, and creation of new ones is a slow process. We ran regressions with restricted sample to only until 2012 and only until 2013 for robustness, the findings were in line with those found for the whole sample.

Classification of HS 6-digit goods into primary, intermediate and final comes from Sturgeon and Memedovic (2010). The authors develop a more precise division of goods into upstream and downstream products than provided by BEC classification.

4. Empirical Strategy

The paper follows the basic structural model of gravity equation developed by Anderson and Van Wincoop (2003) adapted for disaggregated panel data. Adopting the panel approach with varying trade costs across goods requires adjustment of the structural model and estimation

specification. Already Anderson and Van Wincoop (2004) discuss the advantages of using the disaggregate data to account for varying trade costs and elasticities across goods as this study does. Baldwin and Taglioni (2006) argue that the gravity equation with time-invariant controls developed for cross-sectional data cannot be used for panel data. To account for changing multilateral trade resistance, the authors recommend to use pair fixed effects and country-time fixed effects. Olivero and Yotov (2012) develop a dynamic version of the structural gravity model that leads to the estimation equation for panel dataset. The basic model adapted for the industry level panel data analysis is following:

$$x_{ijt}^k = \frac{y_{it}^k x_{jt}^k}{y^{kt}} \left(\frac{T_{ijt}^k}{\Pi_{it}^k P_{jt}^k} \right)^{1-\sigma_k}. \quad (2)$$

where x_{ijt}^k denotes import of country j from country i of good k in t , y_{it}^k - total production of good k by firms from country i in t , x_{jt}^k - total expenditure for good k in country j in t . Further, T_{ijt}^k stands for bilateral trade costs in t , Π_{it}^k are outward trade barriers of country i and P_{jt}^k are inward trade barriers of country j in t . The latter two terms comprise the multilateral resistance and lead to higher bilateral trade.

The bilateral trade costs T_{ijt}^k consist of tariff and non-tariff costs. In our setting, T_{ijt}^k is captured by the bilateral trade agreements that eliminate internal import tariffs but can also impact the non-tariff costs. The removal of internal customs controls within the EACU will also be captured by the bilateral trade costs.

Take a logarithm to obtain the linear form:

$$\ln x_{ijt}^k = (1 - \sigma_k) \ln T_{ijt}^k + \ln y_{it}^k (\Pi_{it}^k)^{1-\sigma_k} + \ln x_{jt}^k (P_{jt}^k)^{1-\sigma_k} - \ln y_{jt}^k. \quad (3)$$

The bilateral trade costs are measured by the trade agreements and, the variable of interest, removal of customs controls:

$$(1 - \sigma_k) \ln T_{ijt}^k = \beta_1 GSP_{ijt} + \beta_2 PSA_{ijt} + \beta_3 RTA_{ijt} + \beta_4 AfterCustoms_{it} \times Type_j, \quad (4)$$

where GSP is a dummy that equals to 1 when there is a non-reciprocal trade preference regime present, PSA is a similar dummy for reciprocal partial scope agreement, and RTA is a dummy for full trade agreements, such as an FTA, CU or common market. $AfterCustoms$

is the variable of interest that equals to one after the removal of customs controls within the EACU and exporter $Type_j$ is a dummy equal to one when the exporter belongs to a certain group. The set of exporters for which $Type$ equals to one will vary across estimations. In particular, we will distinguish the exporters that are EACU members, FTA partners of the EACU members and third countries.

The terms $y_{it}^k(\Pi_{it}^k)^{1-\sigma_k}$ and $x_{jt}^k(P_{jt}^k)^{1-\sigma_k}$ are estimated with the exporter- and-importer-time-product fixed effects, thus leading to the structural model based gravity equation. Further, we include country-pair-product fixed effects to account for the endogeneity of trade policy and time-invariant information about bilateral trade costs ((Baier and Bergstrand, 2007; Agnosteva et al., 2014; Egger and Nigai, 2015).

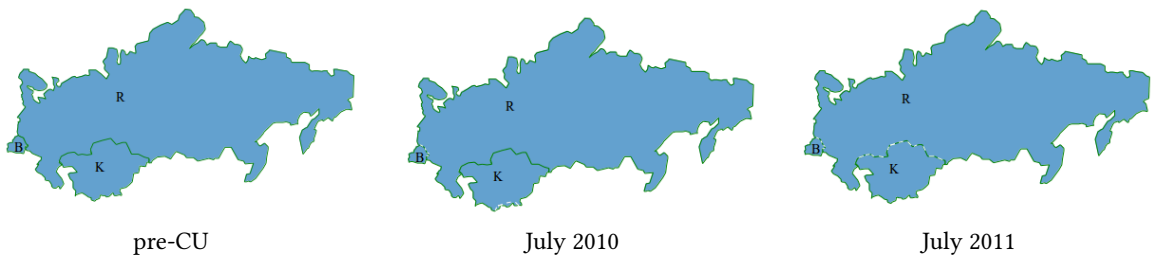
$$\ln x_{ij}^k = \beta_1 GSP_{ijt} + \beta_2 PSA_{ijt} + \beta_3 RTA_{ijt} + \beta_4 AfterCustoms_{it} \times Type_j \quad (5)$$

$$+ \alpha_{it}^k + \gamma_{jt}^k + \theta_{ij}^k + \epsilon_{ijt}^k.$$

4.1. Removal of Customs Controls

Creation of the Eurasian Customs Union had an impact of both tariffs and non-tariff costs. The most important non-tariff change was the removal of customs controls between members that took place in two stages. Figure 1 visualises the order in which the internal customs checks in the CU were removed. As the time-line of the CU indicates, the borders were removed in two stages: first, in 2010 between Russia and Belarus and only in 2011 between Russia and Kazakhstan.

FIGURE 1
Stages of Customs Controls Removal in the CU



Source: Authors

There are several implications from the removal of customs controls. First, there are fewer

administrative obstacles to trade within the CU. All import and export within the CU can happen without any customs check crossing leading to savings in customs waiting times, document checks, possible bribes and etc. Second, similar effect extends to the non-CU partners. Indeed, once the goods go through the customs clearance at the borders of the CU, they can be easier transported to all the CU members.

Further, the lack of internal customs controls creates a base for the common economic market, in particular from the investment perspective. In the common economic market the firms can invest in either of the CU members and sell the products in all the CU countries. At the same time foreign investment is often associated with imports of equipment and materials from rest of the world. There are already examples of investment and production decisions oriented to the common market, e.g. China's investment in Belarus with the focus on potential exports to Russia (Anishenko (2014)).

Finally, the international fragmentation of production of recent decades has been well established. This means that, mainly apart from agricultural products, any trade creation in the intra-CU trade will necessarily imply increase in demand in imports from non-members. As an example, among the automotive companies with local plants in Russia, Renault-Nissan is the leader with 70% sourcing locally, while others are much lower: Volkswagen and Hyundai with 50% and Ford, General Motors and Toyota around 10-30% (Frost and Davies (2014)).

The removal of internal customs controls impacts both internal trade and trade with externals. Firms from the CU do not have to cross customs controls when selling within the EACU members. Firms from non-members countries have to pass through a customs control but once in the EACU they, too, can enjoy trade facilitation. Thus we are interested to measure the trade facilitation effect of the removal of customs controls on different types of exporters.

Creation of EACU brought a new common external tariff of the members, thus we should distinguish the changes caused by the new MFN tariffs from the removal of customs controls. Due to changes in the MFN tariffs, we could expect the customs controls removal to impact the trade partners that pay MFN tariff differently than those that enjoy free trade due to multiplier effects.

$$AfterCustoms_{it} = \begin{cases} 1 & \text{if } i = (\text{Belarus, Russia}), t \geq 2010 \\ 1 & \text{if } i = (\text{Belarus, Kazakhstan, Russia}), t \geq 2011 . \\ 0 & \text{otherwise} \end{cases}$$

The analysis is based on interacting the removal of customs controls in the EACU with certain groups of exporters. Additionally, we interact the removal of the customs controls with upstream and downstream goods to examine how goods in different stages of production process are affected by the trade policy.

Further, MFN tariff changes brought by the EACU will impact both the countries that pay the MFN rates and those that enjoy free trade. Indeed, higher tariff imposed by an EACU member, puts the partners enjoying duty-free trade in a better position. In the case of the customs union of Russia, Belarus and Kazakhstan, this argument is very quite important. Although the internal tariffs were zero already before the CU, the MFN tariffs saw significant changes due to harmonization. Increase in MFN tariff should be positively associated with the intra-CU trade and trade with the FTA partners. We will focus on the lines with zero MFN tariffs and lines with constant equal tariffs throughout the sample period to isolate the non-tariff effects.

5. Results

This section presents the impact of the removal of customs controls within the EACU. First, we look at the impact on the intra-CU trade. That is, the exporters are EACU members $Type = \mathbb{1}_{j \in (Belarus, Kazakhstan, Russia)}$. Moreover, as controls between Kazakhstan and Russia were removed only in 2011, we decided to include it as a “no-border” exporter from 2011 only.

Table 4 shows that the increase in the intra-EACU trade ranges between 20% and 80%. The effect is about 20 – 30% once we focus on the goods that have a yearly bilateral import value of at least *USD*100,000 in columns (2) and (7). EACU brought MFN tariff changes, which can lead to an increase in trade among EACU members, benefiting from duty-free trade. Columns (5) and (6) isolate the non-tariff impact by restricting the sample to the goods for which the MFN tariffs were zero or didn’t change throughout sample for all members. The overall effect in the baseline more (1) is almost fully driven by the removal of the customs controls as the estimated coefficient in the baseline model is comparable to those in columns (5) and (6). This is also confirmed by the similarity of the coefficients estimated in models (2) and (7). Model (8) further interacts the customs controls removal effects with the EACU importers. As expected from the descriptive statistics in 1 and 2, customs controls removal had the smallest impact on Belarus. This could be connected with the pre-existing trade facilitation measures that existed between Russia and Belarus.

TABLE 4
Removal of Customs Controls: Effect on Internal Trade

Dependent	Log Import Value							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample								
Product Sample	Baseline	Baseline	All Products	Baseline	Baseline	Baseline	Baseline	Baseline
Trade Restriction		More >100K					More >100K	
MFN Restriction					Only MFN Zero	Only Tariffs unchanged	Only Tariffs unchanged	Only Tariffs unchanged
Customs Removal Effect								
<i>AfterCustoms_{it}</i> ×	0.73***	0.29***	0.72***	0.79***	0.51***	0.59***	0.19***	
EACU exporters	(44.85)	(17.85)	(44.75)	(49.1)	(8.64)	(17.84)	(5.46)	
<i>Importer Interaction Terms</i>								
Belarus								0.15*** (3.73)
Kazakhstan								1.05*** (20.65)
Russia								0.58*** (7.93)
Controls								
GSP	0.10*** (17.85)	0.046*** (7.52)	0.10*** (17.83)	0.10*** (18.34)	0.080*** (3.79)	0.081*** (6.53)	0.039** (3.09)	0.084*** (6.73)
PSA	-0.051*** (-13.86)	-0.003 (-0.63)	-0.051*** (-13.85)	-0.051*** (-13.76)	-0.040** (-3.25)	-0.053*** (-6.95)	-0.0056 (-0.63)	-0.053*** (-6.88)
RTA	0.048*** (14.3)	0.053*** (15.19)	0.048*** (14.33)	0.048*** (14.36)	0.033** (2.94)	0.051*** (7.43)	0.046*** (6.84)	0.050*** (7.31)
Underreporting	-0.80*** (-26.87)	-0.68*** (-28.40)	-0.80*** (-26.96)		-0.93*** (-9.19)	-0.81*** (-13.72)	-0.75*** (-14.42)	-0.61*** (-10.20)
N	54612518	15297770	54831920	54612518	4114739	13091799	3814659	13091799

All regressions include importer-product-year, exporter-product-year and importer-exporter-product fixed effects. t statistics in parentheses

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Baseline products exclude fuels (HS Group 27).

Source: Authors

Table 5 assesses the effect of the removal of internal EACU customs controls on imports from the FTA partners of the EACU members. These countries are Armenia, Kyrgyzstan, Moldova, Tajikistan and Ukraine, the latter being the most important FTA partner within the sample period². The estimated non-tariff impact of the EACU is not consistent across the estimated models. The FTA are expected partners to gain from MFN tariff. The effect is moderately positive in models (1) to (4), however in models (5) to (8) where only goods with constant MFN tariffs are included, the effect turns negative. Column (8) helps to dissect the overall effect by considering each EACU importer separately. The FTA partners increased their exports to Kazakhstan by about 30% due to the removal of customs controls in the EACU while decreasing exports to Belarus and Russia.

The asymmetric impact of the removal of customs controls on EACU members and FTA partners is a familiar case of trade agreement's impact on non-members, although here it is about non-tariff effect only. The EACU members could enjoy trade without burdensome customs checks while FTA partners that still have to cross customs checks when exporting to the EACU.

Table 6 considers the imports of the EACU members from MFN partners. The removal of the internal customs controls in the EACU had a consistently negative effect on the MFN exporters. The effect is stronger for goods with small trade values, and more modest for goods that have a yearly import value of *USD*100,000. Further, the isolated non-tariff effect (models with constant tariffs (5)-(8)), estimated at around 13%–33% fall in exports, is less negative than the baseline model. This suggests that changes in MFN tariffs had an indirect trade-depressing effect, as the direct impact of MFN tariffs is controlled through importer-product-year fixed effects. Such indirect impact of tariffs is well known in trade agreements theory since seminal work of Krishna (1998) but, to our knowledge, has not been empirically assessed. Finally, as model (8), the largest effect is found in exports to Kazakhstan. Note that Kazakhstan had the largest increase in MFN tariffs, and the finding would be expected in overall sample but model (8) includes products with identical MFN tariffs with no change in the sample period for all EACU members. This suggests that the reduction in non-tariff costs among the EACU members is the driving force.

²Russia formally suspended its FTA with Ukraine in December 2015. However trade could have been seriously affected already in 2014, thus reported findings can be seen as lower bound. However regressions without 2014 didn't lead to significantly different results

TABLE 5
Removal of Customs Controls: Effect on FTA partners

Dependent	Log Import Value							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample								
Product Sample	Baseline	Baseline	All Products	Baseline	Baseline	Baseline	Baseline	Baseline
Trade Restriction		More >100K					More >100K	
MFN Restriction					Only MFN Zero	Only Tariffs unchanged	Only Tariffs unchanged	Only Tariffs unchanged
Customs Removal Effect								
<i>AfterCustoms_{it}</i> ×	0.044*	0.00056	0.046*	0.037+	-0.25***	-0.094*	0.016	
FTA exporters	(2.14)	(0.03)	(2.21)	(1.82)	(-4.07)	(-2.29)	(0.34)	
<i>Importer Interaction Terms</i>								
Belarus								-0.18** (-3.05)
Kazakhstan								0.27** (3.24)
Russia								-0.24*** (-4.25)
GSP	0.087*** (15.31)	0.040*** (6.58)	0.087*** (15.31)	0.089*** (15.69)	0.066** (3.14)	0.068*** (5.44)	0.036** (2.85)	0.067*** (5.43)
PSA	-0.053*** (-14.24)	-0.0038 (-0.81)	-0.053*** (-14.23)	-0.052*** (-14.14)	-0.041*** (-3.33)	-0.054*** (-7.11)	-0.0060 (-0.67)	-0.054*** (-7.09)
RTA	0.048*** (14.33)	0.052*** (15.03)	0.048*** (14.36)	0.048*** (14.45)	0.033** (2.98)	0.050*** (7.42)	0.046*** (6.80)	0.051*** (7.45)
Underreporting	-1.21*** (-40.94)	-0.86*** (-38.98)	-1.21*** (-41.03)		-1.21*** (-12.11)	-1.15*** (-20.11)	-0.88*** (-18.33)	-1.16*** (-20.21)
N	54612518	15297770	54831920	54612518	4114739	13091799	3814659	13091799

All regressions include importer-product-year, exporter-product-year and importer-exporter-product fixed effects.

t statistics in parentheses

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Baseline products exclude fuels (HS Group 27).

Source: Authors

TABLE 6
Removal of Customs Controls: Effect on MFN partners

Dependent	Log Import Value							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample								
Product Sample	Baseline	Baseline	All Products	Baseline	Baseline	Baseline	Baseline	Baseline
Trade Restriction		More >100K					More >100K	
MFN Restriction					Only MFN Zero	Only Tariffs unchanged	Only Tariffs unchanged	Only Tariffs unchanged
Customs Removal Effect								
<i>AfterCustoms_{it}</i> ×	-0.46***	-0.19***	-0.46***	-0.51***	-0.18***	-0.33***	-0.13***	
External exporters	(-34.75)	(-13.77)	(-34.77)	(-38.38)	(-4.01)	(-12.29)	(-4.21)	
<i>Importer Interaction Terms</i>								
Belarus								-0.043 (-1.19)
Kazakhstan								-0.86*** (-18.77)
Russia								-0.087+ (-1.90)
GSP	0.10*** (18.03)	0.046*** (7.55)	0.10*** (18.02)	0.11*** (18.64)	0.076*** (3.60)	0.080*** (6.44)	0.039** (3.09)	0.082*** (6.56)
PSA	-0.051*** (-13.85)	-0.0030 (-0.64)	-0.051*** (-13.84)	-0.051*** (-13.73)	-0.041** (-3.27)	-0.053*** (-6.98)	-0.0056 (-0.63)	-0.053*** (-6.89)
RTA	0.048*** (14.32)	0.053*** (15.16)	0.048*** (14.35)	0.048*** (14.40)	0.033** (2.95)	0.050*** (7.40)	0.046*** (6.83)	0.050*** (7.30)
Underreporting	-0.96*** (-32.29)	-0.75*** (-32.45)	-0.96*** (-32.37)		-1.12*** (-11.17)	-0.97*** (-16.60)	-0.80*** (-15.92)	-0.73*** (-12.30)
N	54612518	15297770	54831920	54612518	4114739	13091799	3814659	13091799

All regressions include importer-product-year, exporter-product-year and importer-exporter-product fixed effects.

t statistics in parentheses

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Baseline products exclude fuels (HS Group 27).

Source: Authors

5.1. Results for Upstream and Downstream Goods

International fragmentation of production can create a limit to trade diverting effects of regional integration as demand for output of an agreement partner increases the demand for inputs, including imported inputs. Traditional assessment of trade creation and trade diversion effects of trade agreements assumes vertically integrated production. However many products require imported inputs in the production process. This raises a question how a regional trade agreement affects products in different stages of production process. As an example, trade facilitation in the customs union might allow Belarusian exporters to expand their exports to Kazakhstan as the expense of producers outside of the customs union. But the increase in demand for Belarusian goods will lead to an increase in inputs demand, including imported inputs. Thus trade facilitation, by increasing the overall demand, can increase demand for inputs from non-members of the agreement. In particular, if the input demand increase is sufficiently strong, it would reduce or eliminate trade diversion effects of trade agreements. We examine whether such asymmetric effect on inputs is present in the aftermath of the removal of internal customs controls in the EACU.

Table 7 presents the results for different groups of exporters that were separately estimated. First, we see that both EACU members and FTA partners gained from the EACU in final goods exporters. However final goods could have largest MFN tariff increases which benefit exporters that enjoy duty-free trade. Columns (5) and (6) look at goods with zero MFN tariffs and constant identical MFN tariffs of EACU members in order to separate the non-tariff impact from MFN tariff changes. The finding is robust for internal trade: the gains are large and concentrated in final goods trade. The EACU members boost their internal trade thanks to the trade facilitating effect of trade without customs controls. However the positive effect on the FTA partners disappears suggesting that tariff preferences are important for their exports. Instead, removal of internal customs controls of EACU, while benefiting internal trade, does not have a trade-promoting effect on FTA partners.

Consistent with our hypothesis, inputs trade of MFN partners suffered least from the regional integration. Although the exports of MFN partners decreased because of removal of internal customs controls for all goods, the estimated coefficient for final goods is about double in magnitude than for primary and intermediate goods. Note that the negative effect seems to be driven by non-tariff trade costs as we can see from columns (5) and (6).

TABLE 7
Removal of Customs Controls: Effects on Upstream and Downstream Products

Dependent	Log Import Value					
	(1)	(2)	(3)	(4)	(5)	(6)
Sample						
Product Sample	Baseline	Baseline	All Products	Baseline	Baseline	Baseline
Trade Restriction		More >100K				
MFN Restriction					Only MFN Zero	Only Tariffs unchanged
Removal of Customs Controls: Effect on Internal Trade^a						
Primary	0.24* (2.38)	0.094 (0.88)	0.24* (2.38)	0.33** (3.23)	1.26* (2.32)	0.68*** (3.43)
Intermediate	0.48*** (10.96)	0.18*** (3.69)	0.48*** (10.96)	0.56*** (12.68)	0.073 (0.22)	0.57*** (5.93)
Final	1.09*** (25.49)	0.45*** (9.82)	1.09*** (25.49)	1.16*** (26.66)	1.21*** (5.91)	0.99*** (5.96)
Removal of Customs Controls: Effect on FTA Partners^a						
Primary	0.20 (1.55)	0.31+ (1.87)	0.20 (1.55)	0.19 (1.43)	-0.22 (-0.61)	0.70** (3.13)
Intermediate	0.029 (0.37)	0.044 (0.46)	0.029 (0.37)	0.023 (0.29)	0.33 (0.81)	-0.045 (-0.23)
Final	0.33*** (6.87)	0.17** (2.97)	0.33*** (6.87)	0.32*** (6.77)	0.12 (0.63)	0.10 (0.65)
Removal of Customs Controls: Effect on MFN Partners^a						
Primary	-0.23** (-2.74)	-0.17+ (-1.72)	-0.23** (-2.74)	-0.30*** (-3.52)	-0.66+ (-1.83)	-0.73*** (-4.77)
Intermediate	-0.34*** (-8.45)	-0.15** (-3.24)	-0.34*** (-8.45)	-0.40*** (-9.98)	-0.12 (-0.43)	-0.42*** (-4.77)
Final	-0.77*** (-23.49)	-0.37*** (-9.83)	-0.77*** (-23.49)	-0.82*** (-24.49)	-0.78*** (-5.15)	-0.65*** (-5.21)
N	18591785	4713945	18591785	18591785	830578	3435981

a. Other controls are not reported.

All regressions include importer-product-year, exporter-product-year and importer-exporter-product fixed effects. t statistics in parentheses

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Baseline products exclude fuels (HS Group 27).

Source: Authors

6. Conclusion

This paper showed that much of the trade increase in the Eurasian Customs Union can be attributed to the removal in internal borders. We benefited from the natural experiment of CU establishment, which allowed a direct measurement of the effect of border removal. The trade promoting effect of border removal applies most strongly to internal trade – where producers already benefited from zero tariffs for almost all goods before the formation of the CU – but were held back by high trade costs. Furthermore, external trade partners also benefited from the border removal, as reduced trade costs through easier transit had benign effects on their trade volume.

Generally, our results demonstrate strong trade effects due to CU formation. While a small part of this was driven by increases in external tariffs, the lion's share is accounted for by reduced internal trade costs. Countries that scored worse on the *Trading Across Borders* index experienced higher gains from removal of customs points. In this regard, the CU member countries appear to have benefited from trade facilitation.

For third countries, an ambiguous picture emerges. On the one hand, MFN partner lost ground in the CU market: most strongly for those products where tariffs rose. But reduced internal trade costs also crowded out some exports for products where tariffs did not change. For FTA partners, the latter effect also applies and contributed to trade falls. However, FTA partners saw their trade values rise in those goods where MFN tariffs were increased.

References

- Agnosteva, D. E., Anderson, J. E., and Yotov, Y. V. (2014). Intra-national trade costs: Measurement and aggregation. Technical report, National Bureau of Economic Research.
- Anderson, J. E. and Van Wincoop, E. (2001). Gravity with gravitas: a solution to the border puzzle. Technical report, National bureau of economic research.
- Anderson, J. E. and Van Wincoop, E. (2003). Gravity with Gravitas: A Solution to the Border Puzzle.
- Anderson, J. E. and Van Wincoop, E. (2004). Trade costs. *Journal of Economic literature*, 42(3):691–751.

- Anderson, J. E. and Yotov, Y. V. (2010a). The changing incidence of geography. *American Economic Review*, 100(5):2157–86.
- Anderson, J. E. and Yotov, Y. V. (2010b). Specialization: pro-and anti-globalizing, 1990-2002. Technical report, National Bureau of Economic Research.
- Anishenko, N. (2014). Why China Is Investing Big Time In Belarus. *Worldcrunch*.
- Baier, S. and Bergstrand, J. (2007). Do free trade agreements actually increase members' international trade? *Journal of International Economics*, 71(1):72–95.
- Baier, S. L., Bergstrand, J. H., and Feng, M. (2014). Economic integration agreements and the margins of international trade. *Journal of International Economics*, 93(2):339–350.
- Baldwin, R. and Taglioni, D. (2006). Gravity for dummies and dummies for gravity equations. Technical report, National Bureau of Economic Research.
- Chen, N. and Novy, D. (2011). Gravity, trade integration, and heterogeneity across industries. *Journal of International Economics*, 85(2):206–221.
- Clausing, K. A. (2001). Trade creation and trade diversion in the canada–united states free trade agreement. *Canadian Journal of Economics/Revue canadienne d'économique*, 34(3):677–696.
- Dragneva, R. and Wolczuk, K. (2012). Russia, the eurasian customs union and the eu: Cooperation, stagnation or rivalry? *Chatham House Briefing Paper REP BP*, 1.
- Egger, P. H. and Nigai, S. (2015). Structural gravity with dummies only: Constrained anova-type estimation of gravity models. *Journal of International Economics*, 97(1):86–99.
- Emlinger, C., Jacquet, F., and Lozza, E. C. (2008). Tariffs and other trade costs: assessing obstacles to mediterranean countries' access to eu-15 fruit and vegetable markets. *European Review of Agricultural Economics*, 35(4):409–438.
- Feenstra, R. C. (2002). Border effects and the gravity equation: consistent methods for estimation. *Scottish Journal of Political Economy*, 49(5):491–506.
- Fernandes, A. M., Hillberry, R. H., and Mendoza Alcantara, A. (2015). Trade effects of customs reform: evidence from albania.

- Freund, C. and Ornelas, E. (2010). Regional trade agreements. *Annual Review of Economics*, 2(1):139–166.
- Freund, C. and Pierola, M. D. (2012). Export superstars.
- Frost, L. and Davies, M. (2014). Renault-nissan’s russian resilience has limits. *Reuters*.
- Gnutzmann, H. and Gnutzmann-Mkrtchyan, A. (2017). The silent success of customs unions. Technical report, SSRN: Available online https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2490929.
- Isakova, A., Koczan, Z., and Plekhanov, A. (2013). How much do tariffs matter? evidence from the customs union of belarus, kazakhstan and russia. Technical report.
- Isakova, A. and Plekhanov, A. (2012). Customs union and kazakhstans imports. *EBRD Working Paper, forthcoming*.
- Krishna, P. (1998). Regionalism and multilateralism: A political economy approach. *Quarterly Journal of Economics*, 113(1):227–250.
- Krotov, I. (2011). Customs union between the republic of belarus, the republic of kazakhstan and the russian federation within the framework of the eur asian economic community. *World Customs Journal*, 5(2):133.
- Martincus, C. V., Carballo, J., and Graziano, A. (2013). Customs as doorkeepers: What are their effects on international trade? Technical report, working paper, www.usitc.gov/research_and_analysis/documents/Customs_as-Doorkeepers-What_Are_Their_Effects_on_International_Trade.pdf.
- McCallum, J. (1995). National borders matter: Canada-us regional trade patterns. *The American Economic Review*, pages 615–623.
- Olivero, M. P. and Yotov, Y. V. (2012). Dynamic gravity: endogenous country size and asset accumulation. *Canadian Journal of Economics/Revue canadienne d’économique*, 45(1):64–92.
- Olper, A. and Raimondi, V. (2008). Agricultural market integration in the oecd: A gravity-border effect approach. *Food Policy*, 33(2):165–175.

- Requena, F. and Llano, C. (2010). The border effects in spain: an industry-level analysis. *Empirica*, 37(4):455–476.
- Romalis, J. (2007). Nafta's and cusfta's impact on international trade. *The Review of Economics and Statistics*, 89(3):416–435.
- Sturgeon, T. J. and Memedovic, O. (2010). Mapping global value chains: Intermediate goods trade and structural change in the world economy.
- Tarr, D. (2012). The eurasian customs union among russia, belarus and kazakhstan: Can it succeed where its predecessor failed? *Belarus and Kazakhstan: Can It Succeed Where Its Predecessor Failed*.
- Trefler, D. (2001). The long and short of the canada-us free trade agreement. Technical report, National Bureau of Economic Research.
- UNECE (2012). Regulatory and procedural barriers to trade in belarus. Technical report, United Nations Economic Commission for Europe.
- UNECE (2013). Overcoming trade barriers in the republic of kazakhstan. Technical report, United Nations Economic Commission for Europe.
- Vinokurov, E. (2013). Emerging eurasian continental integration: Trade, investment and infrastructure.
- Wilson, N. (2007). Examining the trade effect of certain customs and administrative procedures.