External & Intraregional Interactions of the Russian Far East: Comparative Assessment

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Abstract. This paper argues that East Asia is becoming an increasingly important trade partner for Russia due to the need of the latter to diversity its external economic relations. The Russian Far East (RFE) shares a long border with the countries of North-East Asia, and its economic development is largely determined by the scale of cross-border economic activity. We use regional and international data to evaluate the trade relations of RFE with domestic and foreign markets over a ten-year period. The results indicate that RFE regions trade more intensively with the domestic economy than with adjacent countries. Over the entire sample period, RFE regions faced lower border hurdles in their trade with the rest of Russia than with the three Northeast Asian countries. In other words, trade between RFE and Russia was subject to a tariff equivalent of 44% relative to the trade within RFE. By contrast, the cost of trade with Northeast Asia was 57% higher than intraregional RFE trade. These tariff equivalents were not constant over time. In the years 2004–2010, border effects were higher with NEA again recording barriers that raised costs by 67%. In the period after 2010, barriers have decreased. In the case of NEA, the decline was 20 percentage points, while for Russia it was half that amount. We found that for RFE barriers have been on the decline but apparently the border costs in trade with NEA have been falling more drastically than with Russia.

1 Introduction

For a long time Russia has been implementing a general liberalization of foreign trade regulations. The traditional trading partners of Russia are the member states of the European Union. However, due to recent developments, it became necessary to diversify its economic ties in favor of other countries and trade blocs. Russia has initiated the integration process with a number of former Soviet countries [1] and is interested in the liberalization of trade with Asia-Pacific countries [2]. The generally observed positive dynamics of the development of bilateral economic relations with the countries of the Asia-Pacific region have created the basis for further cooperation and settlement various issues.

Over the past decade, the Russian government has begun to pay increased attention to its Far Eastern regions. Indeed, the economy of the Far East has the potential for development on the basis of existing rich natural resources and proximity to the dynamically growing countries of the Asia-Pacific region. The prospect of developing the Far Eastern region is viewed by the government as creating opportunities and conditions for using its potential. In connection with the need to diversify foreign trade partners, the markets of East Asian countries are becoming increasingly important for Russia. The Far East has a long border with the countries of North-East Asia (NEA), and its economic development is largely determined by the scale of foreign economic activity [3]. This is logical, since the Far East has the potential [4] to implement and expand foreign economic cooperation through its favorable geographical location, the expansion of trade with NEA countries, the availability of the main transport, and transit infrastructure.

In addition to proximity to the NEA countries markets, the expansion of trade interactions with the domestic (Russian) market provide also opportunities for sustained economic development for the Far

East regions. The Far East is part of the economic and institutional space of Russia. For this reason, the development of the Far East, as well as of other Russian regions, is determined by the impact of a number of processes generated by the functioning of the national economy. Russia's economic development is heavily dependent on commodity exports, the prices of which are volatile.

The positive relationship between trade and the size of the economy is estimated using gravity models [5]. In recent years, a large number of empirical studies have been published to assess the various barriers in the Russian economy [6; 7; 8], for certain regions, and the national market as a whole. Evaluations of the interaction of the Far Eastern economy with the national market are outdated [9; 10; 11]. Estimates for the extent of recent trade integration of the Far East with national and foreign markets are not available. For the Russian Far East (RFE), there remains an unexplored dynamics of trade barriers arising from the interaction of the regional market with the external environment in the period of fluctuations in the conjuncture of export and import prices, the growth of investments from the federal budget for the construction of various infrastructure facilities, including transport infrastructure. Therefore, the purpose of the study is to obtain a quantitative assessment of economic barriers for RFE with domestic and foreign markets. It can be assumed, as in the case of trade between the border regions of Canada and the USA [12], that the regions of the Far East trade more intensively with the domestic market than with foreign markets.

For the quantitative evaluation we use a gravity model that allows assessing the impact of barriers on trade in the Far East. The research algorithm includes the following stages: obtaining quantitative estimates of trade integration between the Far East and domestic / foreign markets; a comparative analysis of the resulting estimates of trade barriers in the form of a tariff equivalent.

2 Methodology

The theoretical foundation of the gravity model of trade was first set by Anderson [13] and later augmented by Head K. & Ries J. [14], Anderson & van Wincoop [15]. They provide the theoretical basis for the gravity framework used in this paper. Anderson & van Wincoop use a two-country trade model assuming that each country is specialized in the production of a single good and that consumer preferences are identical, homothetic, and approximated by a constant elasticity of substitution (CES) utility function. Under certain assumptions (e.g., market clearance, symmetrical trade costs), the model yields the following expression for the exports of country i to country j:

$$x_{ij} = \frac{y_i y_j}{y^W} \left(\frac{t_{ij}}{P_i P_j} \right)^{1-\sigma} \tag{1}$$

where y denotes the country's nominal income, y^W is the world income, t denotes the bilateral trade costs, P is the price index, and σ is the elasticity of substitution. Eq. (1) indicates that bilateral trade is determined by the size of each economy, trade costs, and price levels. The price levels, labelled as multilateral trade resistance terms by Anderson & van Wincoop, are more broadly interpreted as the average trade barriers that each country faces with all their trading partners.

After linearizing Eq. (1) and decomposing trade costs, the gravity equation takes the form of:

$$\ln x_{ij} = \ln(y_i y_j) - \ln y^W + (1-\sigma) \ln b(1-\delta_{ij}) + (1-\sigma)\rho \ln d_{ij} + (1-\sigma)\tau_{ij} - \\ -(1-\sigma)\ln P_i - (1-\sigma)\ln P_j \tag{2}$$

where b is defined as the border effect, δ_{ij} is a dummy variable that takes the value of one for intra-national trade, and zero otherwise, d is bilateral distance, and τ_{ij} includes all remaining trade costs besides border effects and distance. Some studies interpret P_i and P_j literally as aggregate price levels and use the corresponding statistical indicators in their estimation [16].

The regression model derived from Eq. (2) and used in the empirical investigation is given by:

$$\ln\left(\frac{x_{ijt}}{y_{it} y_{jt}} \right) = \beta_0 + \alpha_i \lambda_i + \alpha_j \lambda_j + \eta_t + \beta_1 \ln d_{ij} + \beta_2 CONT_{ij} + \beta_3 (RFE \times RU) + \beta_4 (RFE \times NEA) + \\ + \beta_5 (RU \times NEA) + \beta_6 (NEA \times NEA) + \varepsilon_{ijt} \tag{3}$$

where following Feenstra's approach [17], λ_i and λ_j denote the exporter and importer fixed effects. Bilateral trade adjusted for the size of the economies eliminates the need for converting nominal trade flows into real values, which can be problematic [18]. In addition, it resolves the issue of the endogeneity of aggregate income and helps to deal with heteroscedasticity [19]. The dependent variable is the log of size-adjusted trade, while the control variables are the log of distance and contiguity (*CONT*). The main variables of interest are the two border effects that define RFE's trade flows with Russia and Northeast Asia. Each of these is specified as a dummy variable that takes the value of 1 for trade between a RFE region and one of these countries, and zero otherwise. Eq. (3) takes into account factors that vary across countries but not across time via exporter and importer fixed effects. Similarly, factors that vary across time but not across countries are controlled for by including time-fixed effects (η_t).

The quantitative estimates of trade integration between the Far East and domestic (RU) / foreign (NEA) markets are shown in Table. 1.

Table 1. Border effects of RFE regions, 2004-2016.

Heading level	2004-2016	2004-2010	2011-2016
RFE×RU	-1.466***	-1.571***	-1.277***
	(0.301)	(0.403)	(0.436)
RFE×NEA	-1.822***	-2.051***	-1.525***
	(0.286)	(0.385)	(0.468)
ln(Distance)	-0.831***	-0.639***	-1.076***
	(0.150)	(0.202)	(0.179)
Contiguity	0.576***	0.757***	0.374
	(0.172)	(0.231)	(0.208)
Constant	-24.121***	-25.581***	-23.261***
	(1.366)	(1.846)	(1.673)
Obs.	1737	934	803
R^2	0.59	0.57	0.60

Note: Robust standard errors are in parentheses. The coefficients of the dummy variables for trade not involving RFE are not reported. * $p<.10$; ** $p<.05$; *** $p<.01$.

A comparative analysis of the resulting estimates of trade barriers expressed as tariff equivalents are displayed in Figure1.
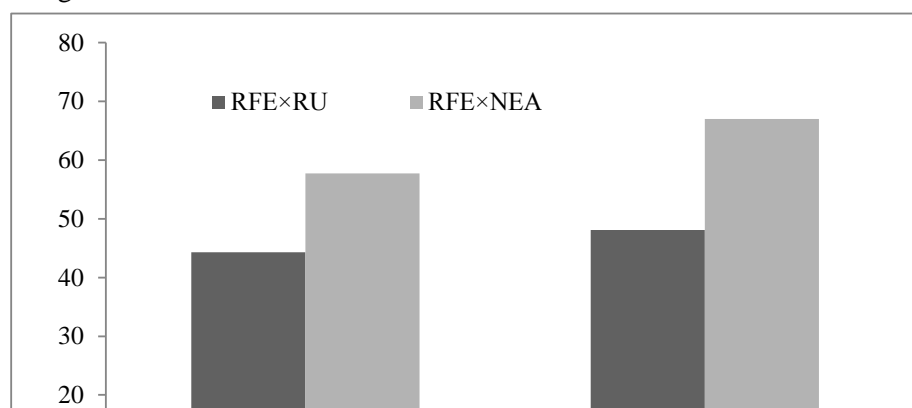
Fig.1. The tariff equivalent of the border effects (in %)

Note: The tariff equivalent is shown in assuming an elasticity of substitution $\sigma = 5$.

To gain deeper insights we calculate the bilateral border effects between RFE regions and their trading partners at the beginning and at the end of the sample period. The benchmark for the calculation of these tariff equivalents are the intranational (or intraregional) trade of the trading partners. The findings largely concur with our estimation in Table 1. Hurdles to trade are larger for NEA countries than for Russia.

However, there is a lot of variation across regions. For instance Amur oblast records high border effects that are increasing over the sample period. By contrast, Primorsky krai has relatively low and decreasing tariff equivalents. In addition, in 2016 it experiences border effects with China and Republic of Korea (RoK) that are lower than those with Russia. Sakhalin oblast is a leader in attraction of foreign direct investment (and not fictitious, like in some regions of Russia [20]) and in the generation of export all over the Far East. This region is also characterized by fewer barriers with Japan and RoK, because the Sakhalin oblast's economy has a closely ties with the markets of these countries.

3 Results

We use trade among Far Eastern regions as the benchmark for evaluating the border costs of RFE trade with Russia and Northeast Asia.

The results show that over the entire sample period RFE regions faced lower border hurdles in their trade with the rest of Russia than with the three Northeast Asian countries. In other words, trade between RFE and Russia experienced a tariff equivalent of 44% relative to the trade within RFE. By contrast, the cost of trade with Northeast Asia was 57% higher than intraregional RFE trade. These tariff equivalents were not constant over time. In the years 2004–2010, border effects were higher with NEA again recording barriers that raised costs by 67%. In the period after 2010, border effects have decreased. In the case of NEA, the decline was 20 percentage points, while for Russia it was half that amount.

The conclusion is that barriers have been on the decline but apparently the border costs in trade with NEA have been falling more drastically than with Russia. Nevertheless, Russia still seems to enjoy lower trade costs with RFE than NEA.

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