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Impact of Russian Non-Tariff Measures on European Union Agricultural Exports

Ye Mingque[1] & Alena Slisava[1]

[1] School of Economics, Shanghai University, Shanghai, China

Correspondence: Alena Slisava, School of Economics, Shanghai University, Shanghai, China. Tel: 1-021-6613-3421. E-mail: aries29march@bk.ru

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Abstract

Nowadays non-tariff measures become more and more widely used. Russia is one of world largest importers of agri-products. In order to protect domestic production different non-tariff measures (NTMs) are used, which create difficulties for the exporters because NTMs are strict, changeable and difficult to deal with. This article analyses Russian non-tariff measures and their influence on the European Union exports of agri-products by using gravity model. The results show that Russian trade resistance is weaker for EU agricultural products exporters than for the USA exporters but stronger than for Chinese agricultural products exporters. The results do not prove that Russia's NTMs have bigger impact on the EU exports than on the other countries' exports such as India, Kyrgyz Republic, and the Ukraine. The NTM of such countries as China and Mexico also have much greater influence on the EU exports of agri-products than Russian NTMs.

Keywords: agricultural products, export, non-tariff measures, Russia

1. Introduction

Import plays an important role in the social and economic development of a country. It provides population with all the necessary products that are not produced in the country or even they are produced but the production is not big enough. Russia becomes more and more dependent on the imported goods which can be attributed to two reasons. The problem of many countries is the growing population while the production of agri-products doesn't increase. Russian agricultural complex is included in the fifth world's biggest producers and exporters of agricultural products but it can't satisfy the growing demand for agri-products from the population. After the reformation period the production of agricultural products reduced. Instead of technological modernization of agriculture Russia began to produce oil and gas in exchange of agricultural products. As a result Russia became seriously dependent on the import of agricultural products and this dependency grows quickly (Antamoshkina, 2013; Belharoev, 2014).

The imports of agri-products to Russia in 2013 reached about 42 millions of dollars, if we compare the imports of agri-products with the imports of other goods to Russia, the imports of agri-products take 34%. For Russia the biggest food market is meat market, it is followed by cereal market, then milk market and fruit market. The volume of the imported meat during the last few years reached 30-40%. The influence of import on country's market has two effects. On one hand, it helps to solve important social-economic problems and, on the other hand, it substitutes the producers of the country. Many kinds of goods produced in Russia are not competitive with foreign goods according to the price and quality. One of the largest exporters of agri-products to Russia is the EU (Taradina, 2015).

Table 1 shows the import value in 1000 dollars of agricultural products from EU to Russia during the years of 2005-2013. It proves that the import value for meat, vegetables and fruit was increasing with the period of time. While it was changing for cereals and the import increased greatly from 2012 to 2013.

Table 1. Import value in 1000 dollars of agricultural products from EU to Russia (2005-2013)

products	2005	2006	2007	2008	2009	2010	2011	2012	2013
vegetables	245	310	340	545	460	727	954	82	934
	026.307	834.122	822.572	865.961	315.129	723.148	921.323	7746.236	980.019
cereals	55	73	94	82	23	79	205	155	206
	126.22	689.93	676.896	398.561	154.157	131.775	149.605	629.017	641.965
fruit	347	482	685	704	780	1 160	1 533	1 695	1 515
	525.091	601.81	505.893	167.952	382.242	058.689	401.864	394.32	194.285
meat	660	973	1 230	1 779	1 495	1 919	2 195	2 029	2 124
	210.613	232.76	222.276	614.514	870.678	581.745	943.83	868.539	671.954

Source: World Bank, www.wits.worldbank.org.

Nowadays non-tariff measures are widely used in countries' import policy. The role of non-tariff measures becomes more important in international agri-products trade. The trade-weighted NTM coverage of agriculture, forestry and fishery products amounts to 24% for the EU (Anderson & Wincoop, 2004). The traditional usage of tariffs became less important because agricultural products are regulated by the WTO agreement. There is a growth of the number of regional trade agreements which presuppose tariff-free trade between countries that's why non-tariff measures have more power in the restriction and limitation of trade flows. Compared to tariff, non-tariff measures become more and more popular due to their invisibility (Beghin, 2001; Bora, Kuwahara, & Laird, 2002).

Exporters have to deal with the increasing number of non-tariff barriers on agricultural products. The World Trade Organization (WTO) implements the Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) agreements. SPS and TBT measures are supposed to provide food safety and animal health but they are often transparent and unnecessary being used just to create obstacles to agri-products trade. The international meat market is strongly affected by quality standards, technical and sanitary requirements. For example, Brazil is one of the major exporters of meat. Often the requirements for food safety in Brazil's export to other countries are used not to protect human health but just to inhibit trade and increase the costs of production (Galvão de Miranda & Sant'Ana de Camargo Barros, 2009; Johnson, 2014).

TBT and SPS measures have a negative impact on trade in food and agriculture because of the costs created by conformity procedures. Developing countries are influenced more because they don't have technical infrastructure to cope with standards and regulations (Fliess, Gonzales, Kim, & Schonfeld, 2010; World Trade Report, 2012).

Russian non-tariff measures on dairy products are strict, difficult to deal with and unnecessary from a food safety perspective, exporters have to cope with difficulties because of unclear and often changing rules. Conformity assessment procedures are time-consuming and non-transparent creating risk for exporters' of being refused to enter the country. Russian new Technical Regulation for milk and milk products were adopted in 2008. It includes requirements for packaging and labeling of dairy products, disinfection procedures, requirements on safety on dairy products, certification schemes and sanitary but these requirements differ from international standards (Pokrivcak, Berkum, Drgova, Mraz, & Ciaian, 2013; Drgova & Mráz, 2013).

The biggest number of non-tariff measures that European Union faces are in the agricultural sector, especially during the exports of fruits, vegetables, meat and meat products, live animals and animal products, fish and fish products. The most difficult non-tariff measures to deal with are technical regulations, certification and measures for quality control (Walkenhorst, 2004).

The aim of the article is to analyze the Russian market of imported agricultural products, to analyze non-tariff measures that Russia applies to the agricultural products imported from the European Union and the impact of these non-tariff measures on EU exports.

2. Russian Non-Tariff Measures

Firstly, the government sets up temporary restrictions and bans to the export of products so as to prevent or decrease the critical shortage of products that are important for the domestic market of the country.

Secondly, the government can set up the restrictions for the import of agri-products imported to the Russian Federation if it's necessary to:

To reduce the production or selling of the same good of Russian origins;

To reduce the production or selling of the products of Russian origin which can be replaced by the imported products if Russia doesn't have enough production of the same product;

To take away from the market temporary surplus of the same product of Russian origin by providing the surplus of this product to some groups of Russian consumers for free or according to the prices lower than the market price;

To limit the production of animal origin products whose production depends on the product imported to Russia if the production of the same product in Russia is not big (Troshkina, 2010).

Among the non-tariff measures that Russia applies are quotas which are quantitative restrictions set by the government of the Russian Federation aiming at defending domestic market in case if the number of imported goods is too big or if it's too competitive with the same goods produced in Russia. Quotas are given to countries according to competitions and auctions selling export and import quotas.

In Table 2 we can see the distribution of tariff quotas yearly:

Table 2. Customs quotas for meat products

thousands of tons	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pork	-	-	-	476.1	484.8	493.5	502.2	472.1	472.1	425.1	430
EU	-	-	-	240.5	244.9	249.3	253.4	225	225	202.5	205
USA	-	-	-	54.8	49.0	49.8	50.7	57.5	57.5	51.6	50.1
Chicken	744	1050	1090	1130.8	1171.2	1211.6	1252	780	600	550	550
EU	139.9	205	205	220.6	228.6	236.4	244.4	144.3	111	101.75	100.2
USA	553.5	771.9	811.9	841.3	871.4	901.4	931.5	600	446.4	409.2	408.1
Beef (frozen)	-	-	-	435	440	445	450	530	530	530	530
EU	-	-	-	343.7	347.6	351.6	355.5	60	60	60	60
USA	-	-	-	17.9	18.1	18.3	18.5	21.7	21.7	21.7	60
Beef (fresh and chilled)	-	-	-	27.8	28.3	28.9	29.5	30	30	30	40
EU	-	-	-	27.3	27.8	28.4	29	29	29	29	29

Source: Customs laws of the Russian Federation.

We can see that the quotas for pork and chicken were growing till 2010, but they began to go down from 2010. While the tariff quotas for beef continued to grow year by year.

The other kind of administrative and customs formalities is the certification of imported products. Imported products should comply with the technical, sanitary, veterinary and ecological standards and requirements. Certification is a document which proves that the products comply with these regulations.

The products should comply with certain standards and regulations:

- pharmacological (Federal Law from June 23, 1998 № 86 "About medicines")
- sanitary (Federal Law from March 30, 1999 № 52 "About sanitary-epidemiological welfare of the population")
- veterinary (Law of the Russian federation from May 14, 1993 № 4979-1 "About veterinary")
- ecological (Federal Law from January 10, 2002 № 7 "About the defense of environment")
- phytosanitary (Federal Law from July 15, 2000 № 99 "About plant quarantine")

In Table 3 we compare Russian and EU technical regulations for contaminants in foodstuffs.

Table 3. Maximum levels for certain contaminants in foodstuffs

	Russian Federation				European Union			
Metals	Meat	Fruit	Vegetables	Cereals	Meat	Fruit	Vegetables	Cereals
Lead	0.5	0.4	0.5	0.5	0.1	0.1	0.1	0.2
Arsenic	0.1	0.2	0.2	0.2	not specified	not specified	not specified	not specified
Cadmium	0.05	0.03	0.03	0.1	0.05	0.05	0.05	0.1
Mercury	0.03	0.02	0.02	0.03	not specified	not specified	not specified	not specified

Source: Customs Laws of the Customs Union, 9 December 2011. Commission Regulation (EC) No1881/2006 from December 19, 2006 setting maximum levels for certain contaminants in foodstuffs.

Table 3 shows that Russian regulations for metals in foodstuffs are stricter than those applied by the EU.

Russian non-tariff measures include licensing. Licensing is a complex of administrative measures which establishes the order of giving licenses and/or permissions. Licensing is used in the following cases:

1. the introduction of quantitative export and import restrictions of certain products;

2. giving a unique right for the import and export of certain products;

3. the fulfilment of international obligations

The rules of licensing are defined by the agreement "About the rules of licensing in the field of foreign trade".

3. Model and Variables

Gravity model is used to estimate how non-tariff measures influence European Union agricultural products exports to Russia. Ferrantino (2006) proposes three methods to analyze the effects of non-tariff measures on trade: price gap methods, price-based econometric approaches and the gravity method. We apply the gravity approach proposed by Winchester (2009) to analyze the impact of Russian non-tariff measures on EU agricultural exports to Russia and to compare Russian non-tariff measures with the non-tariff measures of other countries. Country dummies are used to compare international trade flows with domestic trade flows and to determine the influence of international borders on trade.

In the gravity equation, bilateral trade as a dependent variable is explained by variables that determine the supply conditions of the exporting country, variables that describe demand conditions of importing countries and by other factors that promote or inhibit bilateral trade. Demand and supply conditions are often proxied by the country's gross domestic product (GDP). Other factors affecting bilateral trade include distance, sharing of a common border, history, language or membership of a free trade area/customs union. Import tariffs inhibit trade while export subsidies promote exports.

The gravity equation of international trade usually takes the following stylized form:

$$lnXitj = \beta 0 + \beta 1\ ln(Dij) + \beta 2\ ln(Yit) + \beta 3\ ln(Yjt) + \beta 4\ ln(POPit) + \beta 5\ ln(POPjt) + yW + uijt \quad (1)$$

where X*itj* is the bilateral trade of agricultural products between countries *i* and *j* in period *t*:

HS 02 – meat and edible meat offal;

HS 06 – edible vegetables and certain roots and tubers;

HS 08 – edible fruit and nuts; peel of citrus fruit or melon;

HS 10 – cereals;

D*ij* is the bilateral distance between the two countries' capitals, Y*it* is the GDP of the exporter (country *i*) in time t, Y*jt* is the GDP of the importer (country *j*) in time *t*, POP*it* is the population of the exporter in time *t*, POP*jt* is the population of the importer in time *t*, and yW is a vector of variables capturing any resistance to trade or binary variables to control for participation in any trade agreement. Normally bilateral tariffs or export subsidies, a common border, common language or history are included as well as participation in a regional trade agreement. u*ijt* is a normally distributed error component capturing any random influence.

Coefficients of countries' GDP (β2 and β3) are supposed to be positive because high income of exporting/importing country is connected with high exports/imports. Coefficient β1 is supposed to be negative as the larger the distance the smaller the trade. Coefficients β4 (exporter' population) and β5 (importer's population) are expected to be negative when holding GDP constant because a larger country tends to be less open to international trade than smaller countries.

4. Empirical Estimation Issues and Results

To estimate the effects of non-tariff measures we follow the approach of Winchester (2009). We add country dummy variables that capture impediments caused by borders to the stylized gravity Equation. The dummy variable bEU, RUS equals one if Xij denotes EU exports to Russia but otherwise equals zero, dummy variable bEU, US equals one if Xij denotes EU exports to the US but otherwise equals zero and so on.

The dependent variable of the regression is EXPORT. The data on the exports of agricultural products for the 12 world major agricultural products trading countries (Argentina, Australia, Canada, China, European Union, India, Kazakhstan, Kyrgyz Republic, Russia, Ukraine, Uruguay and United States) are collected. Trade data are collected from the World Integrated Trade Solution (WITS) database for the years of 2003-2013. As explanatory variables our gravity model includes the natural logarithm of GDP in current prices of both importing and exporting countries to proxy the agricultural market demand and supply patterns. Data used in this research is

taken from the World Bank database of development indicators.

All monetary values in our model are expressed in 2008 US dollars. The geographical distance is calculated as the great circle distance between the capital cities of the two countries. Further qualitative data are all sourced from the CEPII world database. If countries share a common language (or common border) the value of the language (or border) dummy variable is equal to 1; if they do not have a common language (or border) the value of the respective dummy variable equals to 0. Our gravity equation also includes additional attributes of exporters and importers and a number of factors affecting bilateral trade. These factors are captured by variables such as physical distance between exporting and importing countries, common language, common border, membership of a preferential trade agreement and import tariffs.

Our gravity model also includes dummy variables for pairs of trading countries to control for country-pair specific fixed effects affecting bilateral trade. These dummy variables therefore capture effects of non-tariff measures too.

The method of Santos Silva and Tenreyro (2006) is used to estimate the gravity model in a multiplicative form using a Poisson pseudo-maximum-likelihood (PPML) estimator. Results of the estimation of the gravity equation using the PPML estimator can be seen in Table 4. Three models are estimated to check for the robustness of the results. Model 3 does not include bilateral dummies which capture the trade resistance between different country pairs. Models 1 and 2 include bilateral trade resistance dummies. Model 2 does not include GDP per capita of exporting and importing countries to avoid the potential problem of multicollinearity.

Table 4. Regression results (dependent variable: ln(EXPORT))

	Model 1	Model 2	Model 3
ln (GDPi)	0.194	0.104**	0.0614***
ln (GDPj)	0.407**	0.294***	0.0827***
ln (Distance)	-0.780***	-0.497**	-0.0969***
language	0.814*	0.452*	-0.0118
border	-1.498*	0.985***	0.147***
preferential trade agreement	1.147***	0.974**	0.0171
ln (tariff)	-0.0568***	-0.0567***	-0.0872***
ln (GDPperCAPi)	-0.15		0.0336***
ln (GDPperCAPj)	-0.12		-0.0348***
russia_eu	1.052**	1.185***	
russia_usa	0.279	0.562**	
russia_australia	0.969*	0.848**	
russia_brazil	0.598*	0.803**	
russia_canada	0.465	0.580***	
russia_china	1.457*	1.529***	
russia_india	-0.346	0.343*	
russia_argentina	1.122**	1.141***	
russia_mexico	0.35	0.509*	
russia_chile	1.224*	1.129***	
russia_ecuador	1.107	1.085***	
russia_south Africa	0.624	0.765***	
russia_vietnam	0.405	0.736***	
russia_ukraine	0.233	0.408	
russia_kazakhstan	1.213***	0.956***	
russia_kyrgyz republic	-0.144		
australia_eu	1.868***	1.316***	
brazil_eu	0.998***	0.940***	
canada_eu	0.974**	0.753***	
argentina_eu	1.487***	1.192***	
mexico_eu	-0.125	-0.106	
chile_eu	0.655	0.396	
ecuador_eu	1.762***	1.403***	
south africa _eu	0.318	0.295	

vietnam _eu	0.758**	1.037***
china_eu	-0.307	0.275
india_eu	0.309	0.621***
ukraine_eu	0.295	0.594
kazakhstan _eu	0.640**	0.858***
kyrgyz republic_eu	0.993***	1.129**

We can see that the coefficients on exporters' and importers' GDP have the expected signs; they are positive and statistically significant which means that countries with higher GDP usually import more agricultural products. Countries with higher GDP also produce more agricultural products due to higher capital per person, including human capital, and due to having access to better technology. The greater the distance between the countries the more it inhibits trade that why the variable of physical distance has a negative sign and is statistically significant in our models. The language, border and preferential trade dummies mostly have the expected positive signs and are statistically significant. In Model 3 the variable of language has a negative sign but it's not statistically significant. A common language, common border and participation in free trade areas make the trade better between countries. Tariffs are statistically significant and have negative signs, the higher tariffs the more they inhibit trade. Additional control variables GDP per capita of exporting countries were added to allow for non-linearity in transport costs.

Country-pair dummies reflect specific difficulties posed to trade between the respective countries relative to the base country pair. In our case the base case is trade between the EU and the USA. All country-pair specific dummies measure difference in trade resistance (restrictiveness) experienced by the exporting country in the importing country relative to the trade resistance experienced by the EU on the US market.

Russian trade resistance is weaker for EU agricultural products exporters than for the USA exporters but stronger than for Chinese agricultural products exporters. In Model 2 the RUS_EU country specific dummy is 1.185, the RUS_US country-specific dummy is 0.562 while that for China and Russia reaches 1.529. These results show that Russian barriers to trade are smallest for China and are followed by the EU and the USA. In other words, other factors like NTMs inhibit EU exports to Russia less than US exports to Russia. China, on the other hand, exports more to Russia than the EU does, given all the control variables. Similar results are confirmed by Model 1, Russia_EU 1.052, Russia_USA 0.279, Russia_China 1.457 where control variables GDP per capita are included.

If we take into account how Russian NTM influence the exports of other countries then we can see that in Model 1 the influence is the weakest for China where the country-specific dummy is 1.457 but it is not statistically significant, and it is the strongest for India where the country-specific dummy is -0.346 and it is not statistically significant. Model 2 has similar results: Russia_China 1.529, Russia-India 0.343.

So we can conclude that Russian NTMs don't have great influence on EU exports. But if we compare Russian NTMs' influence on other countries' exports so we can see that the strongest influence on such countries as India (Russia_India-0.346), Kyrgyz Republic (Russia_Kyrgyz -0.144), the Ukraine (RussiaU_kraine -0.233).

The results reveal that Russia's NTM restrict EU exports less than NTMs of other countries do, given all the control variables. We can compare how the NTM of other countries influence EU exports. For example, in Model 1, 2 China and Mexico have the strongest influence (China_EU -0.307 (0.275) and Mexico_EU -0.125 (-0.106), while Australia and Ecuador have the weakest influence (Australia_EU 1.868 (1.316), Ecuador_EU 1.762 (1.403).

The results of the gravity model show that Russian NTMs influence EU exports but the impact varies across countries. Nevertheless, the results do not confirm that Russia's NTMs are significantly more restrictive to the EU than to other countries such as India, Kyrgyz Republic and the Ukraine. We can see that the NTM of such countries as China and Mexico also have much greater influence on EU exports.

5. Conclusion

Import plays an important role in the social and economic development of the country. Russia is really dependent on the imports of agricultural products from other countries because the production of the country can't satisfy the growing needs of the population even though Russia itself is one of the biggest producers of agricultural products. For Russia the biggest food market is meat market, it is followed by cereal market, then milk market and fruit market. European Union is one of the main importers of agri-products to Russia.

Non-tariff measures are widely used by different countries due to their invisibility. Russia wants to defend its own production that's why it applies non-tariff measures on the import of agricultural products. We use gravity model to analyze the impact of non-tariff measures on European Union exports.

The gravity model shows that Russian NTMs are weaker for EU agricultural product exporters than for the USA exporters but stronger than for Chinese agricultural products exporters. If we compare Russian NTMs' influence on other countries' exports than we can see that the strongest influence is on such countries as India, Kyrgyz Republic, the Ukraine. We can see that the NTM of such countries as China and Mexico also have much greater influence on EU exports. So we can make a conclusion that Russian non-tariff measures are strict but we can't say that they are stricter than the non-tariff measures of other countries.

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Appendix

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	USA	-	-	-	54.8	49.0	49.8	50.7	57.5	57.5	51.6	50.1
Chicken		744	1050	1090	1130.8	1171.2	1211.6	1252	780	600	550	550
	EU	139.9	205	205	220.6	228.6	236.4	244.4	144.3	111	101.75	100.2
	USA	553.5	771.9	811.9	841.3	871.4	901.4	931.5	600	446.4	409.2	408.1
Beef (frozen)		-	-	-	435	440	445	450	530	530	530	530
	EU	-	-	-	343.7	347.6	351.6	355.5	60	60	60	60
	USA	-	-	-	17.9	18.1	18.3	18.5	21.7	21.7	21.7	60
Beef (fresh and chilled)		-	-	-	27.8	28.3	28.9	29.5	30	30	30	40
	EU	-	-	-	27.3	27.8	28.4	29	29	29	29	29

Table 3. Maximum levels for certain contaminants in foodstuffs

	Russian Federation				European Union			
Metals	Meat	Fruit	Vegetables	Cereals	Meat	Fruit	Vegetables	Cereals
Lead	0.5	0.4	0.5	0.5	0.1	0.1	0.1	0.2
Arsenic	0.1	0.2	0.2	0.2	not specified	not specified	not specified	not specified
Cadmium	0.05	0.03	0.03	0.1	0.05	0.05	0.05	0.1
Mercury	0.03	0.02	0.02	0.03	not specified	not specified	not specified	not specified

Table 4. Regression results (dependent variable: ln(EXPORT))

	Model 1	Model 2	Model 3
ln (GDPi)	0.194	0.104**	0.0614***
ln (GDPj)	0.407**	0.294***	0.0827***
ln (Distance)	-0.780***	-0.497**	-0.0969***
language	0.814*	0.452*	-0.0118
border	-1.498*	0.985***	0.147***
preferential trade agremeent	1.147***	0.974**	0.0171
ln (tariff)	-0.0568***	-0.0567***	-0.0872***
ln (GDPperCAPi)	-0.15		0.0336***
ln (GDPperCAPj)	-0.12		-0.0348***

russia_eu	1.052**	1.185***
russia_usa	0.279	0.562**
russia_australia	0.969*	0.848**
russia_brazil	0.598*	0.803**
russia_canada	0.465	0.580***
russia_china	1.457*	1.529***
russia_india	-0.346	0.343*
russia_argentina	1.122**	1.141***
russia_mexico	0.35	0.509*
russia_chile	1.224*	1.129***
russia_ecuador	1.107	1.085***
russia_south Africa	0.624	0.765***
russia_vietnam	0.405	0.736***
russia_ukraine	0.233	0.408
russia_kazakhstan	1.213***	0.956***
russia_kyrgyz republic	-0.144	
australia_eu	1.868***	1.316***
brazil_eu	0.998***	0.940***
canada_eu	0.974**	0.753***
argentina_eu	1.487***	1.192***
mexico_eu	-0.125	-0.106
chile_eu	0.655	0.396
ecuador_eu	1.762***	1.403***
south africa _eu	0.318	0.295
vietnam _eu	0.758**	1.037***
china_eu	-0.307	0.275
india_eu	0.309	0.621***
ukraine_eu	0.295	0.594
kazakhstan _eu	0.640**	0.858***
kyrgyz republic_eu	0.993***	1.129**

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