Beyond Dutch Disease: When Deteriorating Rule of Law affects Russian Trade in High-Tech Goods and Services with Advanced Economies

Erik van der Marel*
London School of Economics

Iana Dreyer
Institut Montaigne

July 13, 2012

Abstract

How does Russia's deterioration of its rule of law in recent years affect its ability to move away from an export pattern dominated by natural resources? We ask this question using three datasets for Russia's bilateral trade relations for goods, services and investment at disaggregated level with its partner countries over the world. Our empirical analysis shows that the deterioration of the rule of law in Russia since 2004 has affected in the long run Russia's trade performance, and in particular in sophisticated manufactured goods and in services with advanced economies. It is precisely this type of trade in high-tech and high value-added ICT services Russia has a comparative advantage according to the literature and that Russia should nurture to diversify away from hydrocarbons export dependence. We also show that inward investments suffer significantly due to Russia's deteriorating rule of law. Moreover, our statistical analysis shows that Russia remains to a large extent an outlier within the multilateral trading system. It trades disproportionately more with partner countries that are or were previously not member of the WTO, many of which are in the former Soviet Union. Russia's trade is negatively affected by the accession of these countries to the WTO. Russia acceded to the WTO in July 2012 and needs now to implement its commitments to ensure its institutional environment starts improving.

JEL-Classification: F14; F13; F15

Keywords: Russia; gravity; trade and investment; WTO

* Corresponding author, Fellow at the London School of Economics (LSE) and Research Fellow at the Groupe d'Economie Mondiale (GEM). Iana Dreyer is an international trade policy expert and an analyst at the Institut Montaigne in Paris. Please send comments to e.l.van-der-marel@lse.ac.uk. The author wishes to thank...

1 Introduction

Despite its booming trade in the first decade of this century, the Russian economy appears to have lost significant trade benefits from the deterioration of its rule of law in the last decade. Russia's capacity to trade in high-value added manufactures and in sophisticated services, a key ingredient to a modern advanced economy, has been significantly affected by the consequences of the renationalisation drive in its economy that started with the Yukos affair. Indeed, in 2004, the country's largest oil company was nationalised, its assets stripped, and its owner sent to jail. This episode was the beginning of a significant deterioration of the investment climate in Russia and a rise in corruption levels. Analysts have warned that the quality of Russia's rule of law would create large costs to society and businesses and could isolate Russia as an economic partner in the world economy. (Frey, 2010; IHT, 2010). Has this really occurred?

This paper addresses empirically whether Russia's rule of law during and following the Khodorkovsky trial has indeed worsened its trade and investment relations with its partners. We use a gravity dataset from 1996-2009 for bilateral trade in goods, services and investment of Russia with all its partner countries. By doing so we divide Russia's partner countries in different categories according to their score of rule of law as measured by the World Bank's Worldwide Governance Indicators database. Then we examine whether Russia's trade relations with countries showing high levels of rule of law, most typically advanced OECD economies, have been significantly affected. By doing this, we expect a deterioration of Russian rule of law to have mainly an effect on trade and investment with those countries scoring high in terms of their rule of law. Furthermore, we also look into which sectors have been affected most. Our results show that a deterioration of rule of law causes lower trade in sectors that require good institutions, most notably sophisticated manufactures and services.

Our paper is related to three different strands of the literature on trade economics and political economy of trade. The first strand assesses which levels of reliable contract enforcement and of protection of property rights matters for export specialisation (Levchenko, 2007; Nunn, 2007). This literature uses measures of the rule of law to explore the institutional determinants of comparative advantage. It finds that countries with higher scores in rule of law are better placed to export in sectors that are sensitive to the institutional environment.[1]

A second strand of literature has investigates the relationship between governance and international trade. Rodrik, Subramanian and Trebbi (2004) state that institutional quality (rule of law) is positively associated with trade and GDP. Anderson and Marcouillir (2001) show that corruption and imperfect contract enforcement in importing countries reduce trade because of hidden transaction costs that is associated with them. Finally, using data from 1982 to 1995 with 55 countries Berkowitz, Moeinius and Pistor (2006) find that good institutions located in exporting countries enhance their international trade. This is particularly so for complex products "whose characteristics are difficult to fully specify in a contract".

The third strand of literature relates to the effects of economic diplomacy on trade. One part of this literature assesses the role of diplomatic institutions on trade such as Rose (2004). It investigates whether the creation of the WTO has truly led to enhanced trade for its member

[1] This is either through lowering input concentration within each sector (Levchenko, 2007), or because of the sector relationship-specificity (Nunn, 2007). Often these sectors are high-skilled intensive producing higher-skilled goods and services. This is either through lowering input concentration within each sector, or because of the sectors' relation-ship specificity. Often these sectors are producing high-skilled intense goods and services.

countries. Rose (2005), Gil-Pareja, Llorca-Vivero and Martinez Serrano (2008), and Nitch (2007) all find that other diplomatic institutions such permanent foreign mission, export promoting agencies and head of state visits have a positive effect on trade ranging between 6 to 50%. A study by Head and Ries (2009), however, finds contrary outcomes. They show that trading missions for Canada did not have the desired effect of increasing bilateral exports, imports and FDI investment. In this paper we use their methodology of estimating how in our case the rule of law since 2003, when it started to deteriorate in combination with the Khodorkovsky case, has affected Russia's bilateral trading and investment relationships. [2]

Our paper contributes to the existing literature in the following ways. First, by taking Russia as case study and empirically assessing its bilateral economic relationship with different types of partner countries we try to merge the literature on economic diplomacy with the literature that relates trade to a country's state of rule of law. The political economy literature suggests that the rule of law in Russia has negatively contributed to its trade and investment relations with the rest of the world. To our knowledge, we are the first paper to actually quantify this effect. Moreover, empirical trade studies using gravity with Russia are very scarce. This is especially surprising with respect to the economic diplomacy literature since Russia has been negotiating with various international organisations such as the World Trade Organization (WTO) to become member in the future. The second contribution of our paper is our measurement of the potential trade effects of Russia vis-à-vis member and non-members of these diplomatic institutions, mainly the WTO. We include next to other standard time-varying gravity controls two dummy variables that capture Russia's trade effects in the event that some of its important partner countries have become member of the WTO and OECD.

The paper is organized as follows. The next section discusses the state of Russia's rule of law linked to the Khodorkovsky case and its potential effects on trade and investment. This section will also discuss Russia's relationship with international organisations such as the WTO. Section 3 presents the empirical model of regression estimation. The model tries to quantify the above described effects of institutions and international diplomacy on Russia's bilateral economic relationships with its partners. Section 4 discusses the results obtained from the performed regressions on trade in goods, services and investment. In section 5 we will present some implications deriving from our results for Russia.

2 Russia's Political Economy and Issues Surrounding the Rule of Law

During most of the last decade, Russia's economy boomed. After the 1998 financial crisis, a series of macroeconomic reforms by the Yeltsin and Putin governments had restored confidence in the overall macroeconomic management of Russia. Growth picked up early in the 2000s and subsequently took off as world commodity prices soared. A domestic investment boom followed on the heels of the commodity boom. However, economic growth came to a halt in 2008, and Russia suffered a severe recession in 2009 of almost 8% of GDP. Since then growth rates have picked up to a respectable yet relatively sluggish 4%.

[2] They furthermore use a panel data set of bilateral Canadian trade with 181 countries from 1993 to 2003. Using different estimation techniques with country and different time-varying country fixed effects, their preferred measure of including additionally importer-exporter directional pair fixed effects shows that there are no mission effects.

In that period Russia's global trade figures matched Russia's macroeconomic performance. Between 2000 and 2010 Russian exports quadrupled in value, from 103 bn USD to 396.6 bn USD. Its imports almost increased eightfold, rising from 33.9 in 2000 bn USD to 229 bn USD in 2010[3]. During that time Russia became the European Union's (EU) third trading partner, and its fourth export destination. The EU is Russia's main commercial partner and its first source of foreign investment whilst exporting mainly high value-added manufactures to Russia; 44 % of its exports are in machinery and transport equipment.[4]

At the same time, Russia's government has not felt the need to enforce international commercial rules such as embodied in the Energy Charter Treaty (ECT), nor felt the pressure to accelerate its accession to international institutions such as the WTO. The Energy Charter Treaty, which came into force in 1997, foresees an opening of its member state's investment regime in the energy sector, and, very importantly, the protection of investors thanks to a strong international investor-to-state dispute settlement mechanism. Although Russia had never ratified the treaty it definitively withdrew from it in 2009. It did so when it realized that it might nonetheless had to face charges for unlawful expropriation when an international arbitration tribunal ruled in favour of foreign investors in the Yukos case.

In the first years of the presidency of Vladimir Putin Russia made significant efforts to join the WTO. Russia is the largest economy still outside this international organisation that sets basic international rules for the conduct of cross-border trade. Joining the WTO generally has beneficial effects on trade in that it makes of tariff policies and trade regulations more predictable. It imposes minimum rules of non-discrimination in the field of goods and services trade. It also regulates trade-related intellectual property rights, which are necessary to support innovation, among others. Moreover, the WTO's powerful dispute settlement mechanism helps ensure compliance with these trade rules. By joining the WTO an emerging market that wishes to attract investment signals that it is offering a predictable environment for business. Russia signed a bilateral accession protocol to the WTO with the EU in 2004, then with the United States in 2006. However, its economic policies since then have run against WTO standards: there has been less market freedom and greater trade protectionism. According to the Global Trade Alert (2011) 112 discriminatory measures have been taken by Russia since 2008. In the meantime, some of Russia's "natural" trading partners have joined the WTO, such as Ukraine and Kyrgyzstan.[5]

During that decade the rule of law has shown a volatile pattern as shown in Figure 1. In the early 2000s, the new president Vladimir Putin set himself the goal to gain control over the tycoons – more famously called the "oligarchs" – that had come to own major private conglomerates in the privatization era of the 1990s and to dominate the political scene. Gaddy and Ickes (2010) have labelled the system that emerged in the Putin era a "protection racket"[6]. Russia's economy has progressively been re-monopolised and put back into state hands. The private sector's share in GDP was reduced from 70% in 2004 to 65% in 2005, according to EBRD data. Direct government stakes in State Owned Enterprises (SOEs) or Joint Stock Companies (JSCs) increased in that period. Less than 50% state ownership was the norm in 2002 in more

[3] http://www.gks.ru/bgd/regl/b11_12/IssWWW.exe/stg/d02/26-03.htm

[4] See for further statistics on European Union trade and investments with Russia, European Commission (2006).

[5] Note that according to the Global Trade Alert (2011) database Russia has been the country most protectionism-prone, before Argentina (but after the EU27).

[6] The authors also note that in this system "the oligarchs agreed to abide by a few clear rules about their behaviour inside and outside Russia; in return, Putin guaranteed them not only protection against expropriation by the state but also, and even more important, protection against each other".

than 75% of JSCs. In 2008, 100% ownership was the rule for more than 50% of Russia's JSCs. (Sprenger, 2008)

This process was accompanied by a dramatic rise in levels of corruption. Kaufman *et al*. (2009) indicate that Russia's level of corruption has steadily increased over the years. Furthermore, many government members sit on Russia's state-controlled companies. This contributes to considerable conflicts of interest. These domestic problems are likely to have an impact on Russia's trade and investment relations with partner countries. Internally, Russian court system has been largely corroded. Commercial law in particular is often used selectively and manipulated to support moves to strip assets from rival or subsidiary companies by state-backed companies, or by powerful oligarchs themselves.

The solidity of the Russian state's finances at the start of the financial and economic crisis has allowed the political and economic system not to change in any significant way. Russia had accumulated the third largest foreign currency reserves. The government had established a reserve fund to catch the windfall of the last commodity boom. This was meant to bolster macroeconomic stability. Ironically, during the 2008 and 2009 financial and economic crisis, this government cash has served to save many big Russian conglomerates from bankruptcy, thus perpetuating the prevailing political and economic system. Nonetheless this deep recession of 2009 has increased awareness of Russia's economic vulnerabilities, of its excessive dependence on hydrocarbons exports, and the of the insufficient diversification of its economy. The share of hydrocarbons exports has increased significantly in the last decades, from around 54% to more than 68% of its exports.

The literature on Russia recognizes that the so-called "Dutch disease", i.e. the appreciation of the resource-exporting currency, cannot be the only cause for Russia's competitiveness problem. A deeper explanation for Russia's economic and political pattern has to do with its rule of law. Recently, a programme of "modernization" of Russia's economy was launched and timid initiatives to limit corruption and bribery have been undertaken. Russia launched a special zone for Research and Development in advanced technologies in Skolkovo so as to better exploit its comparative advantage in advanced technological goods and services (Crane and Usanov, 2010), such as Software Technology and even Services Outsourcing, but also Non-electrical Machinery and Computer and Machines and Nanotechnology. Foreign investors have responded positively to the invitation. However, doubts remain about the sustainability of the project because it is as yet not been accompanied by reforms to improve the investment climate.[7]

In this empirical study we analyse Russia's individual exports at 6-digit level in an attempt to assess whether the deterioration of its rule of law significantly affects its ability to move away from an export pattern dominated by natural resources. The statistical analysis below demonstrates that indeed the rule of law plays a major role in Russia's international competitiveness in sectors that its government wishes to promote. Russia has managed to clear the hurdles to WTO accession and on paper agreed to align its legislation with what is required. Now, Russia will need to ratify its accession and start implementing what it signed up to. We also assess whether Russia is likely to benefit from accession to an international organization such as the WTO and if so which sectors are most likely to benefit.

[7] In line with Kaufman *et al*. (2009), the Transparency International data shows that Russia's score and rank in the Corruptions Perceptions Index is still very low: 2.4 score and rank 143 in the last edition of the CPI, down from a score of 2.8 in 2004, and rank 90 back then. See www.transparency.org

3 Methodology and Data

3.1 Model specification using "gravity"

Our model specification takes a gravity form with separate control and treatment effects. The methodology of the treatment effects is inspired by Head and Ries (2010). In our approach it consists of applying separate "windows" of trade in different years succeeding the year of interest (2003) when Russia's rule of law deteriorated. These windows consist of dummy variables that correspond to an amount of years after 2003 and measure whether and for how long there has been an adverse trade effect due to the deterioration of Russia's rule of law.

More specifically, we regress trade and investment flows, X_{odt}, from origin country *o* to destination country *d* in year *t* on a set of control variables, D_{odt}, taken from the standard gravity literature, and on a vector of institutional treatment effects, T_{odt},. Our regression equation takes the following form:

$$X_{odt} = \theta D_{odt} + \theta T_{odt} + \delta_d + \gamma_t + \upsilon_{odt} \quad (1)$$

where X_{odt} is exports or outward investment from country *o*, Russia, to destination country *d* in year *t*. We also take into account imports and inward investment from partner country *d* to reporter country *o*, i.e. Russia, in year *t*.

As in much of the empirical trade literature the set of control variables include gravity variables that take stock of an economy's expenditure and production side, as well as the bilateral trade costs such as described in Anderson and van Wincoop (2003; 2004). These are all included in a vector called D_{odt}, which stands for the distance mark-up and measures "natural" trade costs.[8] Specifically this vector includes standard trade cost proxies such as the simple distance between countries, GDP per capita, being member of a similar preferential trading or integration scheme, or, according to our interest, being member of an international organisation as can be found in e.g. Frankel et al. (1995), Baier and Bergstrand (2007) and Rose (2004).

In the case of Russia the variables for a particular preferential trading scheme of which it is member is the Common Economic Zone (CEZ) signed with Belarus, Kazakhstan and Ukraine. Russia is also involved in other economic integration treaties such as the Eurasian Economic Community (EAEC) and the Commonwealth of Independent States (CIS) which will also be included in the regression. We also include two additional dummies that take the value of one if Russia's partner countries are or became a member of the WTO or OECD during our selected time period. In this regard we follow Lissovolik and Lissovolik (2004) who show that Russia's trade relations have suffered from these countries' WTO accession stating that Russia has an outsider status within the multilateral trading system. These dummy variables are time-varying since the time period in our dataset covers some of Russia's trading partners' accession to the WTO and OECD.[9]

---

[8] Other theoretical foundations, but each with different modelling assumptions, based on gravity are e.g. Eaton and Kortum (2002) and Chaney (2008).

[9] For our OECD dummy two of Russia's trading partners, Poland and South-Korea, have become member of the OECD in, respectively on November 22 and December 12. We allow setting our dummy for the year 1997 instead for the simple

Our treatment effects on Russia's institutions are covered by the vector T_{odt}. The best proxy for institutional quality in the empirical trade literature is Rule of Law. Figure 1 shows that Russia's rule of law has experienced a substantial deterioration in both 2003 and 2005, precisely at the height of the Khodorkovsky affair. To identify whether this event that started in 2003 had a temporary or permanent adverse effect on Russia's trade with partner countries we create a time-varying dyadic dummy variable that takes the value of one for several window years. These windows have different lengths: 1 year, 3 years, 5 years, and finally a permanent effect of 7 years. The 1 year window effect thus corresponds to Russia's trade effect with partner countries as a consequence of the worsening of its rule of law in 2003. Longer window effects include additional years subsequent to 2003 and, finally, the permanent window effect tries to capture whether the decline of Russia's institutional quality has had a lasting trade effect with its trading partners.

These treatment variables measuring window effects are constructed in a dyadic form which means that not all partner countries receive a value equal to one. Since a higher quality of domestic institutions is generally associated with higher trade values we expect that Russia's changing state of rule of law has a more important effect on partner countries that exhibit higher scores in the rule of law. Table 1 summarizes countries' state of Rule of Law from Kaufman *et al*. (2009). This variable ranges from -2.5 to +2.5 and its country classification is divided up into quartiles. For our treatment variables we select the countries in the 4th and 3rd quartile as they have a higher quality of institutions. Together these two categories of countries represent 60 to 68 per cent of Russia's total goods trade between 1996 and 2009.

In equation (1) the δ_d and γ_t signify partner country and year fixed effects respectively. The partner country fixed effects captures the unobserved effects of the dependence of Russia's exports on trade costs across all destination markets. Year fixed effects are also applied since we are dealing with a panel data set and should control for shifts in the intercept over time during our selected period. This may be important to Russia since yearly fluctuating oil prices have a direct significant effect on Russia's economy (Rautava, 2004). Note that we do not apply fixed effects on the origin country because of the one dimensional structure of country *o* in our data, i.e. Russia. This feature means that some of the non time-varying dyadic variables will be dropped from the regressions such as distance, sharing a common border, language, and colonial heritage. Other proxies for trade costs such as GDP per capita and the regional trade agreement dummies are retained in the regressions since they are all time-varying.[10] Finally, in equation (1) υ_{odt} is a standard error term affecting one-way trade every year and are therefore clustered by partner countries when estimating the equation.

Our regressions are preformed using the Poisson Pseudo-Maximum Likelihood technique (PPML) estimator, not OLS. This is an appealing alternative for dealing with zero trade flows in our data set: in OLS after taking the logs almost 36 % of our data would be lost. More importantly, the PPML estimator also deals with heteroskedasticity in the error term that normally could arise using OLS. The non-log-linearization of the dependant variable when using PPML should not lead to inconsistent estimated following practice introduced by Santos Silva

---

reason that it enables us to assess more realistically the trade effects for Russia. Setting our dummy variable for 1996 would not capture the full trade and investment effects arising from Russia's partner countries' accession.

[10] Note that we also tried to apply partner-year specific fixed effects following Baldwin and Taglioni (2006) to take stock of the fact that the outward multilateral resistance term depend on time-varying expenditures and production (GDP) as well as all trade costs that are time-varying. However, this created matrix inversion problems for our estimations since with 195 (partner countries) x 14 (years) a huge amount of fixed effects should be applied, which makes the regressions performance technically infeasible.

and Tenreyro (2005). It offers consistent estimates as long as the error term in equation (1) has an expectation of one conditional on the covariates. Although we have performed OLS estimates we only present our Poisson results. However, in most cases no substantial differences were observable.[11]

3.2 Data sources and variable description

The dependent variables are made up of several indicators. First we have bilateral trade data on goods taken from the UN Comtrade database at 6-digit level. In the estimations, the data is split into several sub-categories in order to correct for Russia's dependency on oil and gas exports. We select data from 1996 to 2009 since the literature suggests that trade data of Russia has only become reliable halfway the 1990s. Second, we also estimate equation (1) with services trade data of Russia using the Trade in Services Database from Francois et al. (2008). This represents the most complete data set currently available on bilateral trade in services. Here we select data again from 1996 to 2006 for similar reasons as stated above.

Finally, we include bilateral investment data using FDI inward and outward stock from the Eurostat database. This database also reports bilateral investments data for a number of non-European countries such as Russia, Japan and the US. The number of observations is limited but it is a well-known problem that obtaining bilateral investment data is very difficult. Since investments are an important element in Russia's economic relations with partner countries, we have tried to take this aspect into account although the analysis will be somewhat limited compared to trade. Data is available for 1998-2009.

As highlighted above, our model includes institutional data from Kaufman *et al*. (2009) in the form of the variable Rule of Law. This measure is part of the World Bank's Governance Indicators database which captures "perception of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the policy, and the courts, as well as the likelihood of crime and violence". As such, it is most appropriate measure currently existing in the trade literature to measure the quality of domestic institutions as done in Levchenko (2006) and Nunn (2006). This variable is comprised of several other representative sources. The way this variable has been used in our model for goods, as explained above and shown in Table 1, is done in similar way as for our data of services trade and investment. Other measures from the Governance Database, such as Voice and Accountability have also been used in our regressions as part of our robustness checks with largely similar outcomes. We present results only using our preferred indicator of rule of law.

Data on membership of the WTO and OECD for Russia's partner countries are retrieved from these institutions' website respectively. The reason for including this variable is that we would like to know more about the potential trade effects of Russia vis-à-vis member and non-members of these two international institutions. To date, only one paper by Lissovolik and Lissovolik (2004) has estimated this effect and found a negative coefficient on their WTO variable. This means that Russia actually trades, on average, relatively more with partner countries which are non-WTO members. We would like to re-estimate this effect by using our specification of the gravity equation and by applying the appropriate fixed effects. In similar manner we also include a variable that measures the trade effect on Russia when its trading

[11] The OLS results are available upon request by the authors.

partners have become member of the OECD during our data period. We also include a comparable dummy variable capturing the trade effect when a partner county has become member of the European Union (EU).

Last, the GDP terms for the partner countries are taken from the World Bank Development Indicators database. All gravity-related variables in our dataset have been taken from CEPII, but by applying the appropriate fixed effects, these will all be dropped from in our regressions. Summary statistics of our data are provided in Table 2.

4 Empirical Results

4.1 Goods Trade

Table 3 presents the estimated results for Russia's exports in goods. We have separated our dependent variable into several categories. Column 1 shows the standard gravity results by including all observations for all sectors together. Since Russia has been hit hard in 2009 as a consequence of the financial crisis we have one specification that excludes this year in column 2. We also would like to know the net effect on Russia's exports without any of its oil and gas sectors, which are therefore excluded in column3.[12] In column 4 we take Rauch's (1999) network classification of differentiated goods using the conservative approach. The logic behind this idea is that differentiated goods are more sensitive to trade costs because they rely more on good domestic institutions. That is, differentiated sectors are contract dependant and therefore need a strong rule of law. By separating out these sectors we are able to measure whether this category of sectors has truly a stronger effect for our 4th and 3rd quartile countries because they have higher levels of rule of law.

The same logic lies behind column 5. Here we have only selected the high-tech industries as defined by Crane and Usanov (2010) which is based on the OECD's SITC Rev. 3 classification of technological industries (Hatzichronoglou, 1997). Crane and Usanov define five high-tech sectors in which Russia has a comparative advantage, which are Aerospace, Nuclear Technologies (as part of Non-electrical Machinery), Armaments, Software (as part of Computer and Machines) and Nanotechnology.[13] We believe that these goods are also highly dependent on mechanisms of contract enforcement because of their complex nature. Separating out these sectors allows us to see whether they are sensitive to the changing state of domestic institutions in Russia. Since our trade data is classified according to SITC Rev. 2 we use a correspondence scheme from Eurostat to converge these 5 high-tech industries in our data set.[14]

The results in Table 3 of the basic gravity variables show that Russia exports significantly more goods to other CEZ countries when we take out all the oil and gas sectors in column 3. Russia's gas exports to CEZ in these sectors are actually lower than expected as shown by the negative coefficient in column 6. The positive and significant coefficients in this column for both

[12] In column 3 we therefore take out the sectors Petroleum, Petroleum products and related materials & Gas, Natural and manufactured gas with SITC Rev. 2 2-digit numbers 33 and 34.

[13] Nanotechnology is not defined as a separate sector in the SITC classifications. Based upon consultation with Arthur Usanov we have selected the sectors Scientific instruments, Electronics and Chemistry to represent this sector since nano-technology is mostly used in these industries.

[14] Our correspondence table for adapting these sectors from SITC Rev. 3 into SITC Rev. 2 can be found at the Eurostat website: http://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_REL

EAEC and CIS indicate that Russia exports its oil and gas proportionately more to these preferential areas. Interestingly, Russia exports in differentiated and high-tech goods are relatively more with its CEZ partner countries as shown by the statistically significant coefficients in column 4 and 5 respectively. Conversely, in column 4 the negative coefficient on CIS suggests that Russia's exports in differentiated goods to these partner countries significantly underperform.

The results on the WTO dummy variable are negative and significant for columns 1-4 whereas the result for the OECD coefficient is negative and significant for columns 3 and 4. It suggests that specifically for the WTO system Russia still appears to have an outsider status. In other words, Russia exports its goods significantly more to non-WTO members. This conclusion also holds true for our OECD variable so that Russia exports in mainly differentiated goods are with non-members of this institution.

The results on our specification of rule of law for both the 4th and 3rd quartile group countries are negative and significant for columns 2 and 4. For the 4th quartile group countries it appears that there are both temporary and permanent adverse effects on Russia's exports in especially differentiated goods as a consequence of the worsening state of its domestic institutions that started 2003. Also for the 3rd quartile group countries there are also negative trade effects, which are primarily temporary for Russia's differentiated goods sectors. These outcomes suggest that these sectors are indeed institutional sensitive and that a declining state of Russia's rule of law has significant detrimental effects on its exports to these partner countries which are mostly OECD economies.

None of the treatment variables are significant for Russia's exports in technological goods. This is surprising since we would expect that these sectors are also sensitive to a declining rule of law for the same reasons as for the differentiated goods sectors. A potential explanation is that Russia's exports in these high-tech goods are mainly concentrated to countries outside the two quartile groups, as confirmed by the significant CEZ dummy in column 5.

In Table 4 the results on goods show that Russia imports much more from CIS partner countries relative to other partners, i.e. all coefficients on this variable are positive and significant. The negative and significant coefficients for CEZ shown in column 3 and 4 means that Russia imports less than expected from these partner countries. The OECD dummy shows a positive and significant sign, i.e. Russia imports relatively more from OECD members, when taking all industries together as shown in columns 1-3. It's less so for differentiated goods and high-tech sectors, and when gas products are selected separately in columns 4-5.

Furthermore, columns 4 and 5 show that differentiated and high-tech goods imports suffer again from a permanent adverse effect due to the decline of Russia's rule of law. This is more so for the 4th quartile group of countries. The effect is weaker for imports from partner countries that have a lower quality of domestic institutions as shown for the 3rd quartile group countries. Moreover, this quartile group does not show any significant permanent effects. Together these results mean that countries that specialize in high-tech and differentiated goods are less likely to export to Russia due to its deteriorating domestic rule of law that most probably undermine contract enforcement.

4.2 Services Trade

The regressions on services trade are split up into total services trade and subsequently into various sub-sectors such as producer or market services as defined by Inklaar, Timmer and van Ark (2008) and transport services.[15] We also select a specific group of services that are offshorable. These services are classified separately in the Trade in Services Database according to their BOP Manuel 5 code. These are offshore software programming services for sectors such as Computer activities, Research and Development, Other business services, and Computer and Information services. We have mapped out the correspondence of these services between the BOP classification system and ISIC Rev. 3 sector codes to make sectors comparable in our data set.[16]

Table 5 presents the results for Russia's services exports. The results reveal that only in column 1 does Russia export more than expected to WTO members. This is not the case for other sectors specified in columns 2-6.

The negatively significant coefficient on our OECD variables for most other services sectors shows that Russia exports less than expected to partner countries that have become members of this institution, except for transport services. Table 5 shows furthermore that services trade is less sensitive in the short term to a declining quality of domestic institutions. Although for the 4th quartile countries some short term effects are positive and significant, it is in the longer term that Russia's exports to these partner countries show a decreasing trend. This conclusion also holds value for 3rd quartile group countries where all the coefficients on the permanent effect are negative and significant. The intuition behind this finding why a permanent negative effect takes place for services could be somewhat different that those for differentiated and high-tech goods. Services are to a large extent dependent on the level of trust a typical exporter receives from partner countries, as shown in van der Marel (2011). Hence, an environment in which the performance of domestic institutions weakens is associated with lower external demand.

The results in terms of services imports from Russia are presented in Table 6. Again, the OECD variable shows negative and significant coefficients for almost all services specifications, except for business and transport services. These latter services reveal nevertheless a negative and significant effect with partner countries that are members of the EU, as shown in column 4 and 5. The results of Russia's rule of law in the 4th and 3rd quartile country groups are mixed, depending on the group of countries and services definition: Business, Transport and Offshore services have a permanent positive effect for the 4th quartile country group whereas it shows a negative effect for the 3rd quartile countries.

4.3 Investment

Data on bilateral investment is notoriously scarce. This is in particular so for Russia. However, the Eurostat website publishes some bilateral investment data in which Russia is surprisingly well-represented. Using mirror techniques for inward and outward Foreign Direct Investment (FDI) we were able to retrieve data on Russia's investment position in various other countries. The generic nature of FDI data does not allow us to separate out specific sub-sectors.

---

15 Next to the common category of business services we also include other variations of services. According to Inklaar, Timmer and van Ark (2008) or more generally the EUKlems database market services include Distribution (including Transport and Storage), Finance and Business services (excluding Real Estate). Producer services also include Post and Telecommunications, Gas, Electricity and Water supply and Construction.

16 Also for services, our correspondence table for adapting these sectors from BOP Manuel 5 into SITC Rev. 3 can be found at http://unstats.un.org/unsd/cr/registry/regot.asp

However, the low number of partner countries for which we have Russian investment data requires us to split the quartile countries into only three groups. We only show the first two quartile groups since we think investment stocks to and from these countries represent a majority of Russia's total investment positions. Since these are countries with an advanced level of domestic institutions we expect adverse effects of a deteriorating rule of law to take place mainly among countries in this group.

Table 7 shows the results for inward investment stocks to Russia. Russia receives relatively less inward investment from partner countries that are member of the OECD compared to the rest of its partner countries. On the other hand, the positive and significant coefficient on the WTO variable reveals that WTO-member countries are investing in Russia relatively more compared to non-WTO members. More interestingly, although for both quartile group countries there seems to be a short-term positive effect of inward FDI to Russia, the coefficient on rule of law changes into a significantly negative one for the permanent variable in both column 1 and 2. The initial positive effect seems puzzling at first sight but may be due to the long-term nature of investment contracts.

The results in Table 8 show outward investment for Russia to its partner countries. Again a negative coefficient is observable for the OECD variable whilst the coefficient for the WTO remains positive but only marginally significant. Contrary to inward investment, Table 8 shows that Rusia's domestic institutions first negatively affected its outward investment first to 3rd quartile countries, but recovered in the long term.

5 Implications for Russia

This paper shows that the deterioration of the rule of law in Russia since 2004 has affected in the long run Russia's trade performance with the world's advanced economies in sophisticated manufactured goods and in services. Our results show that Russia exports less in particularly differentiated goods to these advanced economies. Russia also appears to import significantly less in high-tech and differentiated goods from these advanced countries. Imports in these sectors are known to be a crucial factor for development. Furthermore, we have shown that Russia trades significantly less to advanced partner countries for most advanced services, such as business and offshore services. The results in our paper also reveal that Russia receives less inward FDI from these countries.

It is precisely this type of trade in high-tech or differentiated goods, and in high value-added ICT services Russia has a comparative advantage. So far Russia has not been able to benefit from it. Yet increasing trade in these sectors would help meet Russia's goals of economic diversification. The results clearly show that there is more to the loss of competitiveness of Russia's exports than the "crowding out" effect on Russia's industrial sector through a higher exchange rate, i.e. Dutch disease.

Moreover, our statistical analysis shows that Russia remains to a large extent an outlier in the international trading system. Our results show it trades disproportionately more with partner countries that are or were previously not member of the WTO. With countries like Ukraine having joined the WTO, Russia is increasingly marginalised. Russia's accession to the WTO would bring large gains due to improved market access, resource allocation and access to modern technologies through especially services and investment (Jensen, *et al*., 2004; Tarr and

Volchkova, 2010). However, this paper demonstrates that Russia's trade position in precisely these sectors have declined due to a weakening of its rule of law.

Our analysis fits well with the general notion that one precondition for successful development in knowledge-intensive activities, investment and trade relies strongly on a clear and predictable legal and institutional environment. The latter ensures secure property rights, contract enforcement, independent courts, and safe intellectual property rights. The case for improving the rule of law in Russia is becoming even more compelling if the country wishes to improve its potential growth rate and its international competitiveness in knowledge-intensive and high-value added sectors. In July 2012, Russia ratified its accession to the WTO after having negotiated it for almost twenty years. This is a positive signal for the economic rule of law in Russia. But now Russia needs to implement its commitments to ensure a real improvement in Russia's institutional environment.

References

Anderson, J., and D. Marcouiller (2002) "Insecurity and the Pattern of Trade: An Empirical Investigation", *Review of Economics and Statistics*, 84 (2), 342–352.

Anderson, J. and E. van Wincoop (2003) "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Revies*, 93(1), 170-192.

Anderson, J. and E. van Wincoop (2004) "Trade Costs", *Journal of Economic Literature*, 42(3), 691-751.

Aslund, A. (2007), *Russia's Capitalist Revolution*, Peterson Institute for International Economics.

Baier, S.L. and J.H. Bergstrand (2007) "Do Free Trade Agreements Actually Increase Members' International Trade?", *Journal of International Economics*, 71(1), 72-95.

Baldwin, R. and D. Taglioni (2006) "Gravity for Dummies and Dummies for Gravity Equations", *NBER Working Paper*, No. 12516,

Berkowitz, D., J. Moeinius and K. Pistor (2006) "Trade, Law, and Product Complexity", *Review of Economics and Statistics*, 88 (2), 345–352.

Chaney, T. (2008) "Distorted gravity: The Intensive and Extensive Margins of International Trade", *American Economic Review*, 98(4), 1707-21.

Clifford G. and B. W. Ickes (2010), "Russia after the Financial Crisis", *Eurasian Geography and Economics*, 51(3), 281-311

Crane, K. and A. Usanov (2010) "Role of High-Technology Industries", in Anders Åslund, Sergei Guriev, and Andrew C. Kuchins (eds.) *Russia after the Global Economic Crisis*, Washington DC: Peterson Institute for International Economic.

Eaton, J. and S. Kortum (2002) "Technology, Geography, and Trade", *Econometrica*, 70(5), 1741-79.

Erixon, F. and I. Dreyer (2010), "Vested and Invested Interests: The Role of Investment Protection in EU-Russia Relations", *ECIPE Policy Brief No. 02/2010*, Brussels: ECIPE.

European Commission (2006) "Russia: EU Bilateral Relations with the World", *Data fact sheet*: http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113440.pdf

Francois, J., O. Pinduyk and J. Woerz (2009) "Trends in International Trade and FDI in Services", *IIDE Discussion Paper*, No. 200908-02, Institute for International and Development Economics.

Frankel, J., E. Stein and S. Wei (1995) "Trading Blocks and the Americas: The Natural, the Unnatural and the Supernatural", *Journal of Development Economics*, 47(1), 61-95.

Frye, T. (2010) "Corruption and Rule of Law" in A. Aslund, S. Guriev and A.C. Kuchins (eds) *Russia After The Global Economic Crisis*, Washington DC: Peterson Institute for International Economics,

Gil-Pareja, S., R. Llorca-Vivero and J.A. Martínez Serrano (2008) "Measuring the Impact of Regional Export Promotion: The Spanish Case", *Papers in Regional Sciences Volume*, 87(1), 139-146.

Global Trade Alert, *Trade Tensions Mount, 10th GTA Report,* November 2011.

Hatzichronoglou, T. (1997) "Revision of the High-Technology Sector and Product Classification", OECD Science, Technology and Industry Working Papers, No. 1997/2, Paris: OECD.

Head, K. and J. Ries (2010) "Do Trade Missions Increase Trade?", *Canadian Journal of Economics*, 43(3), 754-775.

Hindley, B. (2008) "Kazakhstan and the World Economy: An Assessment of Kazakhstan's Trade Policy and Pending Accession to the WTO" *ECIPE Jan Tumlir Essay No. 01/2008*, Brussels: ECIPE.

Inklaar, R., P. Timmer and B. van Ark (2008) Market Services Productivity across Europe and the US, *Economic Policy*, (23)1, 139-194.

International Herald Tribune (2010), *Obama Aims to Build Economic Ties with Russia*, by Peter Baker, June 22: www.nytimes.com

Jensen, J., T. Rutherford and D. 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), 482-506.

Kaufman, D., A. Kraay and M. Mastruzzi (2009) "Governance Matters VIII: Aggregate and Individual Governance Indicators, 1996-2008", *World Bank Policy Research Working Paper*, No. 4978, Washington DC: World Bank.

Levchenko, A. (2007) "Institutional Quality and International Trade", *Review of Economic Studies*, 74(3), 791-819.

Lissovolik, B. and Y. Lissovolik (2004) "Russia and the WTO: The Gravity of Outsider Status", *IMF Working Paper*, No. WP/04/159, Washington DC: International Monetary Fund.

Nitsch, V. (2007) "State Visits and International Trade", *World Economy*, 30(12), 1797-1816.

Nunn, N. (2007) "Relationship-Specificity, Incomplete Contracts and the Patter of Trade", *The Quarterly Journal of Economics*, 122(2), 569-600.

Rauch, J.E. (1999) "Networks Versus Markets in International Trade" *Journal of International Economics*", 48(1), 7-35.

Rautava, J. (2004) "The Role of Oil Prices and the Real Exchange Rate in Russia's Economy—A Cointegration Approach", *Journal of Comparative Economics*, 32(2), 315-327.

Rigobon, R. and D. Rodrik (2004) "Rule of Law, Democracy, Openness, and Income: Estimating the Interrelationships. *NBER Working Papers*, No. 10750, Cambridge MA: NBER.

Rodrik, D., A. Subramanian and F. Trebbi (2004) "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. *Journal of Economic Growth*, 9(2), 131–165.

Rose, A. (2004) "Do We Really Know that the WTO increases Trade?", *American Economic Review*, 94(1), 98-114.

Rose, A. (2005) "The Foreign Service and Foreign Trade: Embassies as Export Promotion", *NBER Working Papers*, No. 11111, Cambridge MA: NBER.

Santos Silva, J.M.C. and Tenreyro, S. (2006) "The Log of Gravity", *The Review of Economics and Statistics*, 88(4), 641-658.

Sprenger, C. (2008), "State-Owned Enteprises in Russia – Presentation at the OECD Roundtable on Corporate Governance of SOEs", Moscow, October 27, 2008.

Tarr, D. And N. Volchkova (2010) "Russian Trade and Foreign Direct Investment Policy at the Crossroads", *Policy Research Working Paper No. 5255*, Washington DC: The World Bank.

Figures and Tables

Figure 1: Russia's total trade and rule of law

Table 1: Summary of Russia's partner countries and their rule of law

4th quartile	3rd quartile	2nd quartile	1st quartile
AIA, AUS, AUT, CAN, CHE, DEU, DNK, FIN, FRA, GBR, GRL, IRL, ISL, LUX, MLT, NLD, NOR, NZL, SGP, SWE, USA	ABW, ANT, ARE, ASM, ATG, BEL, BHR, BHS, BMU, BRB, BRN, BWA, CHL, CRI, CYM, CYP, CZE, DMA, ESP, EST, FSM, GRC, GUM, HKG, HUN, ISR, ITA, JPN, KIR, KNA, KOR, KWT, LCA, LTU, LVA, MAC, MUS, MYS, OMN, POL, PRT, QAT, SMR, SVN, TUV, URY, VCT	ARG, ARM, BEN, BGR, BLZ, BRA, BTN, CHN, COK, CPV, EGY, FJI, GAB, GHA, GMB, GRD, HRV, IND, JAM, JOR, LBN, LKA, LSO, MAR, MDA, MDG, MDV, MEX, MHL, MKD, MLI, MNG, MNP, MWI, NAM, NCL, NRU, PAN, PHL, ROM, SAU, SEN, STP, SUR, SVK, SYC, SYR, THA, TON, TTO, TUN, TUR, TZA, VNM, VUT, ZAF, ZMB	AFG, AGO, ALB, AZE, BDI, BFA, BGD, BIH, BLR, BOL, CAF, CIV, CMR, COG, COL, COM, CUB, DJI, DOM, DZA, ECU, ERI, ETH, GEO, GIN, GNB, GNQ, GTM, GUY, HND, HTI, IDN, IRN, IRQ, KAZ, KEN, KGZ, KHM, LAO, LBR, LBY, MMR, MOZ, MRT, NER, NGA, NIC, NPL, PAK, PER, PNG, PRK, PRY, RWA, SDN, SLB, SLE, SLV, SOM, SWZ, TCD, TGO, TJK, TKM, TMP, UGA, UKR, UZB, VEN, YEM, YUG, ZAR

Notes: This division of country quartiles based on the variable Rule of Law from Kaufman et al. (2009) has been set up using trade data in goods, services and FDI.

Table 2: Summary statistics of the selected variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Goods					
Exports	310541	5863500	1.57E+08	1	3.30E+10
Imports	346187	3604220	5.05E+07	1	1.14E+10
ln(GDP) part	477871	25.21941	2.19424	17.97143	30.2961
EU part	487852	0.229172	0.4203005	0	1
EAEC	487852	0.045389	0.2081555	0	1
CEZ	487852	0.016735	0.1282754	0	1
CIS	487852	0.148475	0.3555709	0	1
WTO	487852	0.776221	0.4167761	0	1
OECD	487852	0.405873	0.4910607	0	1
Quartile 4					
Khod Y1	487852	0.017028	0.1293746	0	1
Khod Y3	487852	0.051272	0.2205516	0	1
Khod Y5	487852	0.085915	0.2802394	0	1
Khod Perm.	487852	0.119801	0.3247286	0	1
Quartile 3					
Khod Y1	487852	0.019522	0.1383518	0	1
Khod Y3	487852	0.058622	0.2349166	0	1
Khod Y5	487852	0.098311	0.2977344	0	1
Khod Perm.	487852	0.137226	0.3440862	0	1
Services					
Imports	5637	167.6149	1367.662	0	44738.92
Exports	5629	123.8272	873.7213	0	30927.36
ln(GDP) part	5683	26.48075	1.516514	20.92303	31.53205
FDI stock					
Inward	288	441.0739	911.9738	-1248.88	6596.074
Outward	312	1532.644	3598.74	-15.5587	30863.66
ln(GDP) part	427	25.62933	2.037858	20.70742	30.2961

Figure 2: Quartile groups of Russia's partner countries with their level of rule of law

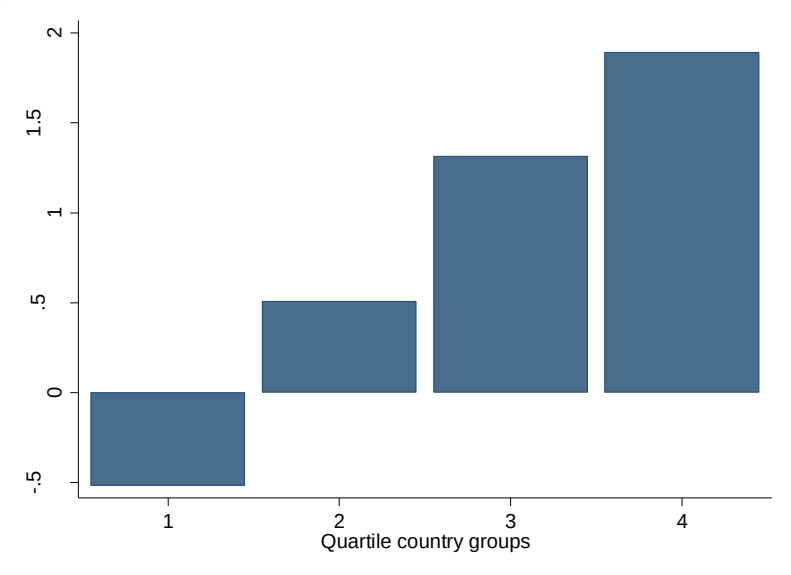

Table 3: PPML Regression results on Russia's goods exports

	(1) GRAV	(2) Y09 EXCL	(3) GAZ EXCL	(4) DIFF GDS	(5) TECH GDS	(6) GAZ ONLY
Gravity						
ln(GDP) part.	0.232	0.170	0.247*	0.210	-0.00130	-0.143
	(0.195)	(0.208)	(0.141)	(0.141)	(0.196)	(0.493)
EU part.	-0.0644	-0.0621	-0.111*	-0.122	0.0114	-0.0941
	(0.0918)	(0.0844)	(0.0630)	(0.0921)	(0.104)	(0.137)
EAEC	0.0846	0.0841	-0.134	-0.0347	-0.185	0.424*
	(0.135)	(0.135)	(0.0894)	(0.0992)	(0.114)	(0.237)
CEZ	0.0833	0.128	0.356***	0.321***	0.322***	-0.826**
	(0.175)	(0.177)	(0.108)	(0.114)	(0.121)	(0.421)
CIS	-0.0642	0.134**	-0.149*	-0.256***	-0.166	0.655**
	(0.0714)	(0.0682)	(0.0904)	(0.0858)	(0.170)	(0.286)
WTO	-0.236***	-0.172**	-0.245***	-0.383***	0.0762	-0.00692
	(0.0851)	(0.0875)	(0.0693)	(0.128)	(0.167)	(0.240)
OECD	-0.0309	0.00902	-0.258*	-0.326**	-0.0814	0.0564
	(0.287)	(0.259)	(0.135)	(0.143)	(0.204)	(0.386)
Quartile 4						
Khod Y1	-0.214	-0.222	-0.274	-0.321*	-0.166	0.409
	(0.153)	(0.155)	(0.193)	(0.170)	(0.246)	(0.294)
Khod Y3	-0.149	-0.131	-0.169	-0.322**	0.0988	-0.0230
	(0.127)	(0.128)	(0.103)	(0.150)	(0.103)	(0.229)
Khod Y5	0.144	0.141	0.330***	0.258	0.0907	-0.104
	(0.0979)	(0.103)	(0.0841)	(0.175)	(0.206)	(0.177)
Khod Perm.	-0.0758	-0.0773	-0.473***	-0.671***	-0.191	-0.0978
	(0.363)	(0.364)	(0.171)	(0.231)	(0.408)	(0.789)
Quartile 3						
Khod Y1	-0.103	-0.114	-0.274**	-0.246**	0.0476	0.542*
	(0.117)	(0.120)	(0.122)	(0.114)	(0.199)	(0.277)
Khod Y3	-0.0464	-0.0320	-0.0213	-0.338**	0.0966	0.0757
	(0.101)	(0.100)	(0.0682)	(0.165)	(0.120)	(0.217)
Khod Y5	0.0449	0.0619	0.161*	0.139	-0.163	-0.0498
	(0.0726)	(0.0789)	(0.0961)	(0.129)	(0.208)	(0.0995)
Khod Perm.	0.000269	-0.0178	-0.268	-0.291	-0.253	-0.175
	(0.160)	(0.167)	(0.168)	(0.222)	(0.310)	(0.419)
Observations	477,871	443,366	473,681	302,511	52,308	4,190

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Trade data cover the years 1996-2009.

Table 4: PPML Regression results on Russia's goods imports

	(1) GRAV	(2) Y09 EXCL	(3) GAZ EXCL	(4) DIFF GDS	(5) TECH GDS	(6) GAZ ONLY
Gravity						
ln(GDP) part.	-0.0428	-0.262	0.00125	-0.181	0.829***	-0.925**
	(0.290)	(0.250)	(0.291)	(0.312)	(0.258)	(0.381)
EU part.	0.00215	-0.0127	0.00367	0.0143	0.0382	-0.177*
	(0.0616)	(0.0534)	(0.0629)	(0.0746)	(0.122)	(0.0941)
EAEC	-0.226*	-0.208*	-0.171	0.0959	0.240	0.735***
	(0.135)	(0.123)	(0.143)	(0.109)	(0.176)	(0.254)
CEZ	-0.454	-0.300	-0.463	-1.049***	-1.844***	-0.130
	(0.370)	(0.351)	(0.368)	(0.311)	(0.388)	(0.218)
CIS	1.389***	1.180***	0.810**	2.069***	2.622***	2.201***
	(0.323)	(0.297)	(0.322)	(0.316)	(0.230)	(0.228)
WTO	0.123	0.249	0.121	0.157	0.138	0.258
	(0.222)	(0.225)	(0.221)	(0.230)	(0.208)	(0.179)
OECD	0.319**	0.352***	0.312**	0.103	0.194	-0.512
	(0.154)	(0.136)	(0.157)	(0.143)	(0.333)	(0.586)
Quartile 4						
Khod Y1	0.194	0.173	0.196	0.547***	0.711***	-0.121
	(0.165)	(0.167)	(0.162)	(0.183)	(0.251)	(0.177)
Khod Y3	-0.00520	0.0599	-0.0116	0.131	0.276	0.0508
	(0.114)	(0.121)	(0.116)	(0.163)	(0.202)	(0.203)
Khod Y5	0.0373	0.0439	0.0320	0.122	0.0102	0.0280
	(0.0698)	(0.0721)	(0.0699)	(0.0803)	(0.134)	(0.0926)
Khod Perm.	-0.290	-0.331	-0.273	-0.827***	-1.165***	0.516
	(0.302)	(0.337)	(0.301)	(0.298)	(0.353)	(0.421)
Quartile 3						
Khod Y1	0.0127	-0.0192	0.0152	0.334*	0.530**	0.00555
	(0.185)	(0.185)	(0.182)	(0.193)	(0.257)	(0.204)
Khod Y3	-0.0949	-0.0340	-0.100	0.0295	-0.201	-0.208
	(0.124)	(0.133)	(0.125)	(0.177)	(0.222)	(0.221)
Khod Y5	0.0350	-0.0115	0.0302	0.111	0.0159	-0.0931
	(0.0744)	(0.0712)	(0.0733)	(0.0853)	(0.119)	(0.181)
Khod Perm.	0.106	0.136	0.124	-0.407	-0.410	-0.643
	(0.304)	(0.343)	(0.302)	(0.283)	(0.430)	(0.565)
Observations	477,871	443,366	473,681	302,511	52,308	4,190

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Trade data cover the years 1996-2006.

Table 5: PPML Regression results on Russia's services exports

	(1) GRAV	(2) PROD SRV	(3) MARK SRV	(4) BUSS SRV	(5) TRNS SRV	(6) OFFS SRV
Gravity						
ln(GDP) part.	1.489***	1.536***	1.592***	1.362***	0.978	1.497***
	(0.249)	(0.508)	(0.540)	(0.494)	(0.738)	(0.466)
EU part.	0.0999	0.335	0.321	0.260	0.0453	0.359
	(0.201)	(0.237)	(0.258)	(0.212)	(0.209)	(0.263)
WTO	6.729***	6.061	6.583	5.580	2.753	5.873
	(2.012)	(4.092)	(4.347)	(3.985)	(5.969)	(3.753)
OECD	-1.754***	-2.735***	-2.843***	-1.669***	-0.121	-2.774***
	(0.119)	(0.166)	(0.187)	(0.157)	(0.140)	(0.194)
Quartile 4						
Khod Y1	0.00177	0.0921*	0.116**	0.0279	-0.0235	0.0845
	(0.0652)	(0.0505)	(0.0578)	(0.0370)	(0.0537)	(0.0552)
Khod Y2	-0.0225	-0.0279	-0.0130	-0.0611	-0.0912	-0.0144
	(0.0270)	(0.0783)	(0.0677)	(0.0423)	(0.0566)	(0.0575)
Khod Perm.	-0.147**	-0.560***	-0.677***	-0.298***	-0.0570	-0.601***
	(0.0724)	(0.124)	(0.153)	(0.0907)	(0.162)	(0.138)
Quartile 3						
Khod Y1	-0.0482	-0.0162	-0.0239	0.0129	0.0217	-0.0636
	(0.0594)	(0.144)	(0.154)	(0.0912)	(0.105)	(0.155)
Khod Y2	0.0170	0.147*	0.142*	-0.0114	-0.104	0.185**
	(0.0725)	(0.0783)	(0.0792)	(0.0826)	(0.103)	(0.0735)
Khod Perm.	-0.206***	-0.707***	-0.799***	-0.593***	-0.468**	-0.784***
	(0.0733)	(0.124)	(0.119)	(0.157)	(0.223)	(0.139)
Observations	2,424	1,212	1,010	1,010	202	404

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Trade data cover the years 1996-2006.

Table 6: PPML Regression results on Russia's services imports

	(1) GRAV	(2) PROD SRV	(3) MARK SRV	(4) BUSS SRV	(5) TRNS SRV	(6) OFFS SRV
Gravity						
ln(GDP) part.	1.347	0.328	0.134	0.226	0.497	-0.329
	(0.970)	(1.194)	(1.260)	(0.592)	(0.425)	(1.573)
EU part.	-0.346	0.493	0.499	-0.274**	-0.339***	0.634
	(0.240)	(0.760)	(0.795)	(0.135)	(0.0838)	(0.891)
WTO	5.341	-3.970	-5.858	-2.893	0.286	-9.323
	(7.842)	(9.676)	(10.21)	(4.800)	(3.447)	(12.78)
OECD	-0.529***	-1.342***	-1.355***	-0.101	0.0509	-1.098**
	(0.176)	(0.477)	(0.491)	(0.0771)	(0.0661)	(0.513)
Quartile 4						
Khod Y1	-0.0863	-0.149	-0.157	-0.177	-0.0486	-0.330*
	(0.108)	(0.156)	(0.166)	(0.124)	(0.0517)	(0.176)
Khod Y2	-0.161	-0.167	-0.153	-0.123	-0.153	-0.110
	(0.205)	(0.305)	(0.313)	(0.226)	(0.108)	(0.328)
Khod Perm.	0.189	0.313	0.314	0.338**	0.230*	0.663***
	(0.140)	(0.250)	(0.260)	(0.155)	(0.131)	(0.218)
Quartile 3						
Khod Y1	0.0781	0.0929	0.0838	-0.0139	0.0109	0.0233
	(0.127)	(0.0996)	(0.105)	(0.0600)	(0.0664)	(0.0861)
Khod Y2	-0.187	-0.335***	-0.343***	-0.0989	0.109	-0.410***
	(0.119)	(0.0790)	(0.0754)	(0.0938)	(0.0726)	(0.0869)
Khod Perm.	-0.228	0.469***	0.497***	0.177	-0.259*	0.928***
	(0.291)	(0.0643)	(0.0575)	(0.214)	(0.156)	(0.0918)
Observations	2,424	1,212	1,010	1,010	202	404

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Trade data cover the years 1998-2009.

Table 7: PPML Regression results on Russia's inward FDI stock

	(1) GRAV	(2) Y09 EXCL
Gravity		
ln(GDP) part.	-1.298	-0.868
	(1.063)	(1.067)
WTO	1.293*	1.288*
	(0.744)	(0.696)
OECD	-2.722**	-2.555**
	(1.059)	(1.124)
Quartile 4		
Khod Y1	3.663***	3.562***
	(1.252)	(1.206)
Khod Y3	-0.320	-0.368
	(0.330)	(0.346)
Khod Y5	-0.477	-0.766
	(0.484)	(0.489)
Khod Perm.	-2.418**	-1.948**
	(0.954)	(0.960)
Quartile 3		
Khod Y1	3.414***	3.349***
	(1.281)	(1.247)
Khod Y5	-0.700	-0.654
	(0.513)	(0.506)
Khod Perm.	-1.960*	-1.960*
	(1.038)	(1.026)
Observations	427	393

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Investment data cover the years 1998-2009.

Table 8: PPML Regression results on Russia's outward FDI stock

	(1) GRAV	(2) Y09 EXCL
Gravity		
ln(GDP) part.	-0.522	0.241
	(0.841)	(0.678)
WTO	1.188*	0.898
	(0.683)	(0.595)
OECD	-1.025***	-0.963***
	(0.247)	(0.243)
Quartile 4		
Khod Y1	-0.248	-0.465
	(0.405)	(0.389)
Khod Y3	-0.0671	-0.117
	(0.170)	(0.162)
Khod Y5	-0.0577	-0.410
	(0.326)	(0.295)
Khod Perm.	-0.0116	0.675
	(0.550)	(0.469)
Quartile 3		
Khod Y1	-0.736	-0.916*
	(0.513)	(0.504)
Khod Y5	-0.920**	-1.377***
	(0.418)	(0.432)
Khod Perm.	0.956	1.613***
	(0.669)	(0.582)
Observations	427	393

Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Robust standard errors with partner country and year fixed effects for all specifications. Standard errors are clustered by partner country. Investment data cover the years 1998-2009.