



European Bank
for Reconstruction and Development

Region-specific constraints to doing business: evidence from Russia

Alexander Plekhanov and Asel Isakova

Summary

This paper looks at variation across Russian regions in terms of perceived constraints to doing business using the Business Environment and Enterprise Performance Survey of Russian firms. The analysis identifies a number of region-specific business environment components that businesses perceive as significantly more binding constraints to their operations compared with other regions. For several business environment components, however, including corruption and access to finance, inter-regional differences in their perception as constraints are insignificant. This supports the view that large observed differences in actual financial deepening across Russian regions are primarily demand-driven.

Keywords: business climate, institutions, regional policies, Russia

JEL Classification Number: O17; O43; R58

Contact details: Alexander Plekhanov, One Exchange Square, London EC2A 2JN, UK. Phone: +44 20 7338 7406; email: plekhana@ebrd.com. Asel Isakova, One Exchange Square, London EC2A 2JN. Phone: +44 20 7738 7208; email: isakovaa@ebrd.com

Alexander Plekhanov is a Principal Economist and Asel Isakova is an Economic Analyst at the EBRD's Office of the Chief Economist.

The authors are grateful to Erik Berglöf, Simon Commander, Helena Schweiger, Natalya Volchkova and Ralph de Haas for valuable comments and suggestions.

The working paper series has been produced to stimulate debate on the economic transformation of central and eastern Europe and the CIS. Views presented are those of the authors and not necessarily of the EBRD.

1. Introduction

Two things have been widely acknowledged about the business climate in Russia: that the business environment is difficult; and that it varies substantially from region to region (CEFIR (2006); Khaleeva and others (2009)). However, little is known about the exact nature of regional differences in terms of constraints to doing business. Broadly, two sets of indicators of the regional business environment are available: objective measures of its various components, such as infrastructure, financial deepening or registered crime; and subjective expert assessments of the quality of institutions and investment risk in the regions, such as investment potential and investment risk ratings compiled annually by Expert Rating Agency.

Objective indicators suggest, for example, that the most striking differences in terms of business environment are related to financial deepening: the ratio of corporate credit (issued by bank branches in a given region) to gross regional product (GRP), varies greatly across regions: from 3 per cent in Sakhalin to over 80 per cent in Moscow (based on 2008 data). However, based on these data alone, it is not possible to ascertain whether these differences are supply driven and represent a major constraint to firm growth, or whether they simply reflect a lack of demand for credit due to various other factors that hold back business development.

Subjective indicators based on expert assessments allow regions to be ranked according to various components of business risk—legislative, crime-related, social, financial and so on. The 2009 Expert risk indicators show for instance that risks related to social cohesion were lowest in Moscow and highest in Chechnya, while risks related to changes in legislation were lowest in St Petersburg and highest in Chukotka. However, these ratings do not give a clear indication of how large these differences are, how much these differences matter for an average business, and which differences matter most.

This paper aims to shed light on differences in various business environment components across Russian regions using firm-level data from the Business Environment and Enterprise Performance Survey (BEEPS) conducted in 2008-09 by the EBRD and the World Bank. The survey respondents, who were directors, senior managers or owners of firms, evaluated various elements of the business environment and public infrastructure

in terms of how much they were seen as a constraint to the firm's operations (on a five-point scale). For instance, customs and trade regulations could be ranked as "no obstacle", "minor obstacle", "moderate obstacle", "major obstacle" or "severe obstacle" to a firm's operations.

Of course, different firms may have a different propensity to complain, and some of the factors will and should always be a constraint on firm's growth. For instance, the provision of good infrastructure and law and order may require high levels of taxation, and taxes are then likely to be perceived by firms as a major obstacle to growth (holding the quality of public goods constant). Therefore, the analysis in this paper follows the approach of Carlin, Schaffer and Seabright (2010) in using the *relative* perceived severity of constraints as a measure of the quality of various business environment components. In other words, if a firm complains about electricity less than all other factors, electricity will receive a low score as a constraint to the business environment even if it was evaluated by a firm as a "major constraint", since other constraints are perceived to be immediately binding.

The analysis therefore does not determine whether the electricity supply or the crime situation in region *X* is better than in region *Y*. But it can provide an indication that a given constraint is perceived by firms as being much more binding in region *X* than in region *Y*, and therefore addressing it could be viewed as a policy priority in a given region. It can also provide an indication of whether regional differences and regional policies affect the extent to which firms see a given constraint as binding or whether such regional differences are insignificant.

The empirical results identify region-specific business environment components that businesses perceive as significantly more binding constraints to firms' operations compared with perceptions in other regions. These include, for instance, access to land and trade regulations and customs in Primorsky region, where the regional fixed effects estimates for relative severity of these constraints are statistically significantly higher than in all other regions.

On the other hand, for several business environment components, including corruption and access to finance, inter-regional differences in their perception as constraints prove to

be insignificant. This supports the view that large observed differences in financial deepening across Russian regions are primarily demand-driven. The differences in demand are likely to be explained by variation in other components of the business environment as well as different levels of economic development. Likewise, the absence of differences in perception of corruption, one of the top constraints country-wide, is consistent with the view that local rent-seeking behaviour adjusts to the level that the local economy can sustain based on its growth potential and other constraints to firms operations.

The rest of the paper is structured as follows: Section 2 discusses the data and our methodology. Section 3 presents the results of the empirical analysis for 10 regions of Russia. Concluding remarks follow in Section 4.

2. Perception of constraints to doing business

2.1. Data

The data come from the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the World Bank and the EBRD in all countries in emerging Europe and Central Asia. The latest round of the survey, completed in 2008-09, covered over 1,250 manufacturing and services firms in Russia across all federal districts, including the Far East. As part of this survey, respondents – top managers of the surveyed firms – were asked the following set of questions about each of the 17 potential obstacles to their firm’s operations: *“I would now like to ask you questions about the overall business environment in your country and how it affects your firm. Can you tell me how problematic are these different factors for the operation and growth of your business”*. The answers were given on a five-point scale: negligible (coded 0) – minor (1) – moderate (2) – major (3) – or very severe (4).

Table 1 summarises the descriptive statistics for answers to these questions given by Russian firms, as well as for the key firm characteristics, such as size and ownership.

Table 1: Descriptive statistics for selected variables

<i>Variable</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Coefficient of var., %***</i>
<i>Business environment constraints</i>						
Access to land	1.9	1.6	2.0	0.0	4.0	83.7
Trade regulations and customs	1.4	1.5	1.0	0.0	4.0	108.2
Tax rates	2.5	1.2	3.0	0.0	4.0	49.2
Compulsory certificates	1.4	1.3	1.0	0.0	4.0	98.8
Workforce skills	2.2	1.3	2.0	0.0	4.0	60.2
Transport	1.6	1.4	1.0	0.0	4.0	91.6
Political instability	2.1	1.4	2.0	0.0	4.0	68.7
Electricity	2.1	1.5	2.0	0.0	4.0	73.2
Labour regulations	0.9	1.1	1.0	0.0	4.0	120.8
Tax administration	1.7	1.2	2.0	0.0	4.0	70.0
Courts	1.5	1.3	2.0	0.0	4.0	83.4
Business licensing	1.6	1.4	1.0	0.0	4.0	86.4
Corruption	2.2	1.4	2.0	0.0	4.0	66.4
Crime	1.8	1.4	2.0	0.0	4.0	76.4
Access to finance	2.1	1.4	2.0	0.0	4.0	68.9
Business inspections	1.8	1.3	2.0	0.0	4.0	70.1
Informal sector	1.5	1.4	1.0	0.0	4.0	95.2
<i>Firm-level characteristics</i>						
Total employment (no. of employees)	302	3,101	40	1	100,000	1,026.4
Expanding firm dummy*	0.53	0.50	1	0	1	93.6
Contracting firm dummy**	0.22	0.42	0	0	1	186.3
Services sector	0.24	0.43	0	0	1	179.0
Construction sector	0.03	0.16	0	0	1	590.9
Privatised firm dummy	0.24	0.43	0	0	1	175.9
Majority state ownership (>=50%)	0.01	0.12	0	0	1	851.3
Foreign-owned (>=10%)	0.05	0.22	0	0	1	426.8
Exporter (>=10% of sales)	0.08	0.26	0	0	1	349.6

Note: Based on 1,256 observations.

* In expanding firms the number of employees increased from 2004 to 2007

** In contracting firms the number of employees has decreased from 2004 to 2007

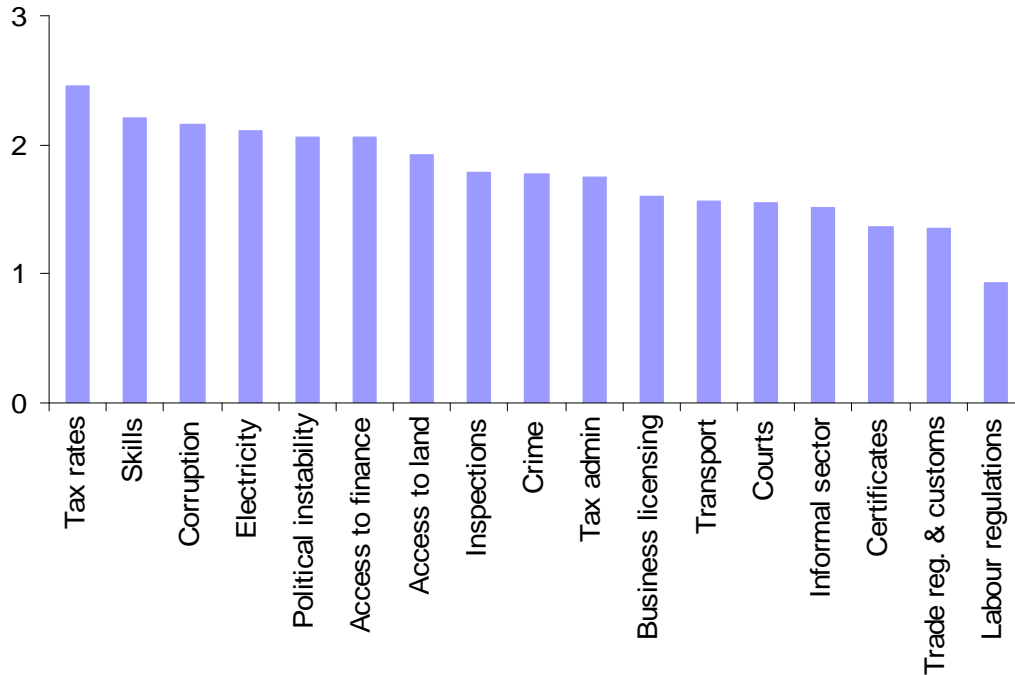
*** Coefficient of variation is the ratio of the standard deviation to the mean.

Source: BEEPS.

Chart 1 plots the average severity assigned to each obstacle by the respondents. Managers complained most about tax rates, workforce skills, corruption and electricity supply. Political instability and access to finance were also viewed as more-than-moderate obstacles to firms' operations. At the other end of the spectrum are labour regulations, trade regulations and customs and compulsory certificates, which were on average viewed as minor obstacles. This may reflect that perhaps only a minority of firms have to

deal with customs and certification agencies. Informal sector competition, crime and courts also received relatively moderate average scores.

**Chart 1: Average absolute severity of perceived business environment constraints
(on a 0 to 4 scale)**



Sources: World Bank/EBRD BEEPS Survey, authors' calculations.

The picture changes somewhat when the scores are expressed in terms of *relative* severity of obstacles, that is, for every firm a score for a particular obstacle is calculated as a normalised deviation of the severity of that obstacle from the average severity (across all obstacles) reported by that firm:

$$R_{ij} = \frac{s_{ij} - \bar{s}_j}{\bar{s}_j} \quad (1)$$

where subscript i denotes obstacle; subscript j denotes firm; s is the reported absolute severity of an obstacle (on the 0 to 4 scale); \bar{s}_j is the average severity of obstacles reported by firm j ; and R is the relative severity of an obstacle. For instance, if a firm reports electricity as a major obstacle (1), crime as a minor obstacle (2) and all other

obstacles as moderate (3), the average severity of all obstacles evaluated by this firm is 2; relative severity for all obstacles is zero, except for crime (-0.5) and electricity (0.5). If another firm ranks all obstacles as very severe, except for electricity, ranked severe, the relative severity of electricity as a constraint is evaluated as -0.23. Although both firms assign the same value to electricity as a business-environment constraint, the first firm implicitly sees it as the most binding (and thus addressing it could be associated with larger gains in terms of sales or profits), while the second firm sees it as the least binding (and thus addressing it may be associated with little or no gain unless other constraints are also relaxed). Thus if most firms were of type 1, improving electricity supply would be a policy priority, while if most firms were of type 2, improving electricity supply would not seem to be a policy priority. Relative scores reflect this important difference.

To analyse regional variation in terms of relative severity of these constraints, one needs to look at regional subsamples of firms. Table 2 shows survey coverage by region (in terms of number of responses to the questions about key obstacles to firms' operations).

Table 2: Regions and their selected characteristics

<i>Region</i>	<i>Number of observ.</i>	<i>Federal district</i>	<i>Population (million)</i>	<i>GRP pc (USD '000)</i>	<i>Corporate credit (% GRP)</i>	<i>Expert inv. risk ranking</i>
Bashkortostan	57	Volga	4.1	7.4	13.8	15
Krasnoyarsk region	41	Siberia	2.9	10.3	12.4	46
Leningrad region	77	NW	1.6	9.5	8.8	37
Moscow	264	Central	10.5	32.3	80.8	36
Moscow region	136	Central	6.7	10.1	12.2	14
Nizhny Novgorod region	44	Volga	3.3	7.2	34.6	9
Novosibirsk region	43	Siberia	2.6	7.0	44.1	31
Perm region	45	Volga	2.7	9.1	26.0	49
Primorsky region	98	Far East	2.0	6.5	20.0	64
Rostov region	50	South	4.2	5.5	35.6	3
St. Petersburg	139	NW	4.6	12.5	52.1	20

Sources: RosStat, Central Bank of Russia, BEEPS survey, authors' calculations. Based on 2008 data

Eleven regions in the sample have a coverage of over 40 observations: Moscow, Moscow region, St Petersburg, Leningrad region, Nizhny Novgorod, Bashkortostan, Perm, Primorsky region, Novosibirsk, Krasnoyarsk and Rostov. In each of these regions enterprises were surveyed in a number of different cities and across various industries. These regions represent a heterogeneous sample, both geographically (spanning eight time zones) and in terms of their level of economic and financial development (GRP per capita in Moscow was six times that of Rostov region; see Table 2 for key summary indicators). Regions are also diverse in terms of existing expert assessments of quality of institutions, such as the Expert rating on investment risk: Rostov and Nizhny Novgorod regions were among the top-rated regions in 2008 (when the survey started) while Perm and Primorsky regions were ranked in the bottom half. Ten more regions, which account for the remaining 250 or so observations (averaging just over 20 observations each) are aggregated as a control group.¹

¹ These regions are the Kaluga, Tver, Vladimir, Smolensk, Kursk, Voronezh, Samara, Sverdlovsk, Chelyabinsk and Krasnodar regions.

2.2. Economic policy in the Russian regions

Russia is a federal state divided into 83 regions.² Regional governments in Russia enjoy substantial policy-making and fiscal autonomy, particularly on the expenditure side (see for instance, Freinkman and Plekhanov (2010) and Martinez-Vasquez, Timofeev and Boex (2006)). Regional and municipal governments account for approximately half of consolidated government spending (equivalent to 15 to 20 per cent of GDP) and are primarily in charge of key public services, including all primary and secondary education, a substantial part of higher education; social and health services; local infrastructure and utilities. Key tariffs, such as electricity tariffs, are determined at the regional level within a federally approved framework (with an important exception of natural gas tariffs, which are set by the federal authorities). Municipal and regional governments also own and administer a significant part of all land and procedures for access to land and their implementation varies significantly across regions. Business permits and licenses are partly governed by federal legislation but are usually administered by the regional authorities, including in areas such as fishing.

By contrast, key taxes are determined at the federal level (even though tax revenues are shared with the regional and municipal governments). Courts, customs, tax administration, law enforcement and financial institutions supervision agencies are run and funded by the federal government and are regulated by federal laws. Nonetheless, they are typically structured along regional lines, with potentially important inter-regional differences in terms of actual organisation of their work. Cai and Treisman (2004) offer a number of case studies showing substantial regional differences in terms of tax collection and tax administration in the 1990s and early 2000s.

Overall, important differences across Russian regions have been documented in terms of efficiency of public services provision (Hauner, 2008); quality of public services (Freinkman and Plekhanov, 2010); and the general perception of legislative and political risks that appears to have an impact on foreign direct investment across regions (Iwasaki and Sukanuma (2005), Ledyeva (2009)). Regional economic performance also varied

² The 1993 Constitution initially established 89 regions. Six regions have been subsequently merged with their larger neighbours.

greatly throughout the 1990s and 2000s. Some studies linked these differences to uneven distribution of foreign direct investment (Bucclato and Santangelo, 2009) or differences in the (perceived) quality of institutions, although overall evidence on drivers of regional growth is somewhat inconclusive (Ahrend, 2008).

Eighty-three regions are aggregated into eight (until recently seven) federal districts. While the BEEPS survey has a reasonable coverage of seven federal districts (all except the recently created North Caucasus district), the districts remain largely statistical and geographical units while economic policies are set and implemented at the regional and federal levels. For this reason the analysis focuses on differences between regions rather than federal districts.

2.3. Analysis of regional differences: basic framework

To look at the inter-regional differences in various components of the business environment in a systematic way we follow Carlin *et al* (2010). For each business environment constraint i a linear model can be estimated as follows:

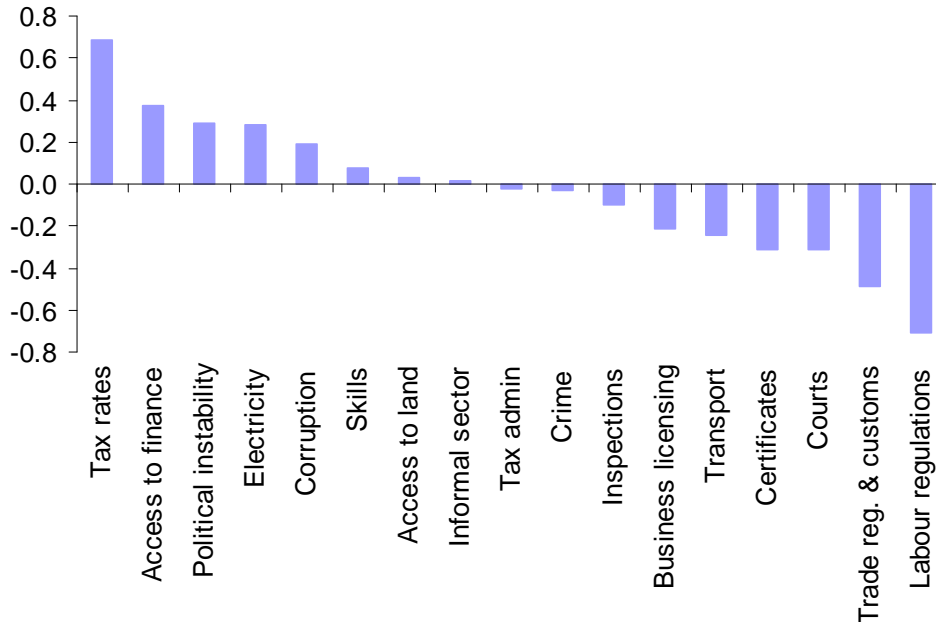
$$R_{ij} = \alpha_0 + \alpha_k + \beta X_{ij} + \varepsilon_{ij} \quad (2)$$

where R_{ij} is the relative severity of a particular constraint reported by firm j ; X is a vector of firm-specific characteristics such as size (logarithm of employment), type of ownership, export orientation and so on; and α_k are fixed regional effects (dummy variables for each region). Firm-level characteristics are included as they affect firms' demand for certain public goods and services and components of business environment, and therefore lead to different perceptions about the severity of specific business environment constraints.

All explanatory variables are normalised (through a linear transformation) so that they take zero values for a representative firm. Therefore, the estimated fixed effects correspond to the relative severity of business environment constraint as would be perceived by a hypothetical representative firm located in region k . A typical (median) firm in the sample is a manufacturing firm employing 40 people, privately owned without a history of state ownership, deriving less than 10 per cent of revenues from exports.

Chart 2 shows the estimated implied relative severity of obstacles reported across Russia, as perceived by a hypothetical average firm. While the top constraints evaluated this way are similar to those ranked highest in Chart 1, the ranking order changes somewhat, with constraints related to tax rates, access to finance, political instability, electricity supply, corruption and workforce skills seen as the most binding (in descending order). In particular, the estimate for skills is relatively lower compared with absolute average scores. This may be explained by the fact that firms that complain most about skills have specific characteristics that distinguish them from an “average”, less skill-intensive, firm.

Chart 2. Average relative severity of business environment constraints



Sources: World Bank/EBRD BEEPS Survey, authors' calculations.

The estimates of fixed regional effects can then be used to answer three sets of questions. First, one can look at the business environment in each region separately and identify business constraints that firms would see as the most binding in each region.

The second question of interest is whether for a given constraint there are any systematic inter-regional differences in terms of its perceived relative severity. This can be checked

by testing for joint significance of all fixed regional effects estimated for a given constraint.

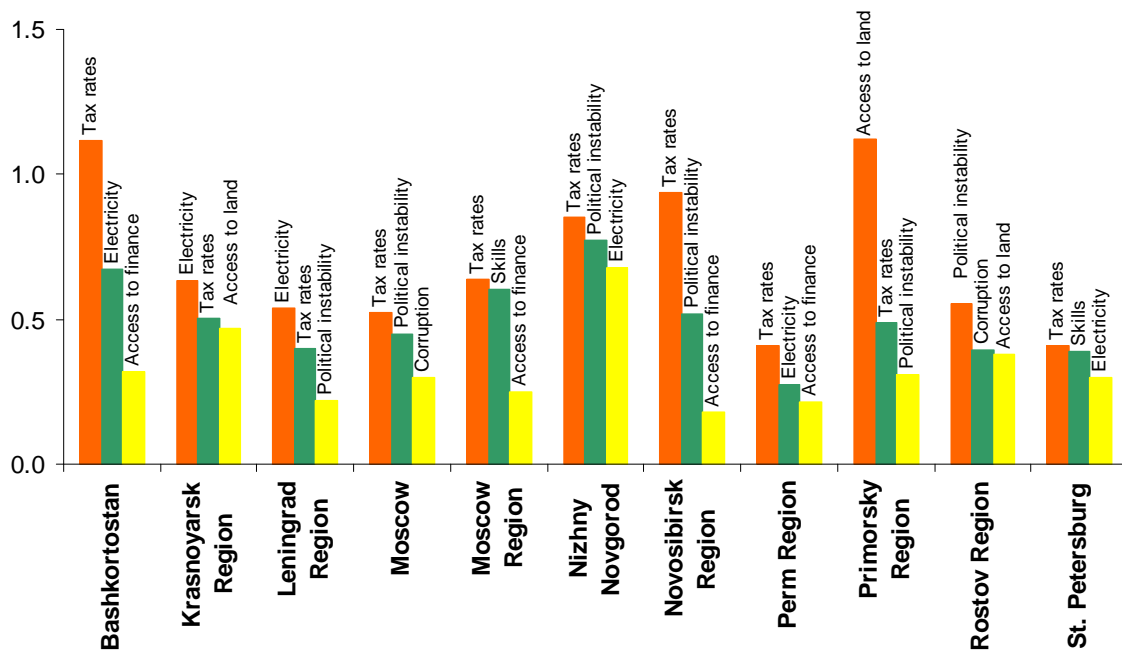
Third, one can look closely at a particular aspect of business environment across regions. For regions with high (or low) values of fixed effects for a particular constraint, it is possible to test whether this regional effect is statistically significantly different from those in other regions. This analysis can point towards region-specific policy priorities in terms of improvements in a particular component of the business environment. In other words, it can indicate that, say, trade regulations and customs are viewed as a significantly more binding constraint in region *X* than elsewhere, and if the work of customs were to be improved, gains are likely to be the highest in region *X*. It may also be the case that within region *X* some other constraint appears to be the most binding, for instance access to land. These different ways of looking at the regional business environment are complementary.

3. Results

3.1. Factors with significant regional variation

Chart 3 shows the top three constraints for each region, ranked by the average relative severity of constraints as perceived by a representative firm. By and large, the most binding constraints country-wide tend to also be the most binding in individual regions. These are tax rates, electricity supply, political instability and in fewer cases access to finance, access to land, corruption and skills.

Chart 3: Top three business environment constraints by region



Sources: World Bank/EBRD BEEPS Survey, authors' calculations

The results of estimation of specification (2) for each constraint to firms' operations are summarised in Table 3 (overall results) and Tables 4 and 5 (regional fixed effect coefficients). A number of interesting findings emerge.

The statistically significant coefficients in table three generally have expected signs. For example, firms in the service sector tend to perceive transport and business licensing as significantly more binding constraints compared with manufacturing firms, likely explained by higher dependence of the service providers on the timely deliveries of services or goods and more frequent utilisation of the transport in their operation, as well as higher propensity to be engaged in licensed activities such as minibus urban transport. Unsurprisingly, exporting firms perceive trade regulations and customs as a much more severe obstacle to doing business. Their rating of this constraint tends to be on average 0.4 points higher on the 4 point scale (0.3 of a standard deviation). Exporting firms also appear to be much more constrained by the quality of tax administration, as exports VAT refunds can be notoriously difficult to obtain. Larger firms tend to complain more about labour regulations, trade regulations and customs and workforce skills. Overall, the firm characteristics and regional fixed effects make approximately equal contributions to explaining variation in perception of business environment constraints.

For half of the identified business environment components regional differences appear to be statistically significant at the one per cent level, while for five constraints the inter-regional differences are statistically insignificant at the 10 per cent level (see Table 5).

Table 3: Fixed effects estimation results

<i>Dependent variable</i>	<i>Electricity</i>	<i>Transport</i>	<i>Trade reg. & customs</i>	<i>Informal sector</i>	<i>Inspections</i>	<i>Certificates</i>	<i>Access to land</i>	<i>Crime</i>	<i>Access to finance</i>	<i>Tax rates</i>	<i>Tax admin</i>	<i>Business licensing</i>	<i>Political instability</i>	<i>Corruption</i>	<i>Courts</i>	<i>Labour regulations</i>	<i>Skills</i>
Employment, log	0.01 (0.02)	0.02 (0.02)	0.06** (0.02)	-0.03 (0.02)	-0.04** (0.02)	-0.05*** (0.02)	0.03 (0.03)	-0.06*** (0.02)	-0.02 (0.02)	-0.02 (0.03)	-0.00 (0.02)	0.02 (0.02)	-0.01 (0.03)	-0.01 (0.02)	0.02 (0.02)	0.06*** (0.01)	0.06** (0.03)
Expanding firm	-0.08 (0.08)	0.11* (0.06)	-0.05 (0.07)	-0.06 (0.07)	0.12* (0.07)	-0.11** (0.06)	-0.07 (0.09)	-0.01 (0.07)	-0.06 (0.07)	0.02 (0.08)	0.02 (0.05)	-0.07 (0.06)	-0.04 (0.09)	0.05 (0.06)	-0.02 (0.05)	0.01 (0.05)	0.08 (0.09)
Contracting firm	-0.07 (0.09)	0.06 (0.07)	-0.00 (0.09)	0.04 (0.08)	0.11 (0.08)	-0.03 (0.07)	-0.03 (0.10)	0.05 (0.08)	-0.03 (0.08)	-0.09 (0.10)	-0.09 (0.06)	-0.10 (0.07)	-0.16 (0.10)	-0.09 (0.07)	-0.00 (0.06)	0.08 (0.05)	0.12 (0.11)
Services	-0.03 (0.08)	0.14** (0.06)	0.06 (0.08)	0.07 (0.07)	-0.06 (0.06)	-0.10* (0.06)	0.05 (0.09)	0.11* (0.06)	-0.15** (0.07)	-0.18** (0.08)	-0.03 (0.05)	0.10* (0.06)	-0.05 (0.08)	-0.06 (0.06)	-0.06 (0.05)	0.04 (0.05)	0.13 (0.09)
Construction	-0.33* (0.18)	0.08 (0.15)	-0.01 (0.23)	-0.02 (0.19)	0.05 (0.16)	0.01 (0.14)	0.01 (0.21)	-0.03 (0.16)	0.01 (0.17)	-0.14 (0.20)	0.06 (0.12)	0.17 (0.13)	0.11 (0.20)	0.22 (0.14)	0.11 (0.12)	-0.14 (0.11)	-0.06 (0.22)
Privatised	-0.12 (0.08)	0.01 (0.07)	-0.08 (0.08)	0.15* (0.08)	0.07 (0.07)	0.02 (0.06)	-0.07 (0.09)	0.07 (0.07)	0.03 (0.07)	0.18** (0.09)	-0.02 (0.06)	-0.13** (0.06)	-0.02 (0.09)	-0.10 (0.06)	-0.07 (0.05)	-0.11** (0.05)	0.03 (0.10)
State owned (over 50%)	-0.22 (0.27)	-0.10 (0.21)	-0.40 (0.26)	-0.26 (0.25)	-0.00 (0.23)	0.50*** (0.19)	-0.55* (0.30)	0.21 (0.24)	0.25 (0.24)	-0.33 (0.29)	0.03 (0.18)	0.24 (0.19)	-0.18 (0.29)	-0.00 (0.20)	-0.02 (0.17)	1.03*** (0.16)	-0.11 (0.31)
Foreign ownership (over 10%)	0.01 (0.14)	0.16 (0.11)	0.51*** (0.12)	-0.00 (0.12)	0.10 (0.12)	-0.01 (0.10)	-0.23 (0.15)	-0.05 (0.12)	-0.19 (0.12)	-0.04 (0.15)	0.04 (0.09)	0.18* (0.10)	0.05 (0.15)	-0.10 (0.10)	0.04 (0.09)	-0.14* (0.08)	-0.27* (0.16)
Exporter (over 10% of sales)	-0.25** (0.12)	-0.19** (0.09)	0.38*** (0.10)	-0.04 (0.11)	0.13 (0.10)	0.00 (0.08)	-0.02 (0.13)	-0.12 (0.10)	0.05 (0.10)	-0.18 (0.13)	0.17** (0.08)	-0.01 (0.08)	-0.11 (0.13)	0.04 (0.09)	0.01 (0.08)	0.05 (0.07)	0.15 (0.14)
Constant	0.32*** (0.07)	-0.28*** (0.06)	-0.33*** (0.07)	-0.21*** (0.06)	-0.10* (0.06)	-0.22*** (0.05)	0.11 (0.08)	-0.06 (0.06)	0.22*** (0.06)	0.54*** (0.08)	-0.05 (0.05)	-0.13*** (0.05)	0.30*** (0.08)	0.18*** (0.05)	-0.18*** (0.05)	-0.55*** (0.04)	0.24*** (0.08)
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	1,206	1,194	891	1,063	1,208	1,103	1,085	1,200	1,188	1,219	1,216	1,129	1,197	1,173	1,143	1,214	1,193
R-squared	0.01	0.01	0.05	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.01

Notes: Estimated by fixed effects, robust standard errors in parentheses. Values significant at the 1 per cent level are marked with ***; at the 5 per cent, with **; at the 10 per cent level, with *.

Table 4: Estimated regional fixed effects

<i>Dependent variable</i>	<i>Electricity</i>	<i>Transport</i>	<i>Trade reg. & customs</i>	<i>Informal sector</i>	<i>Inspections</i>	<i>Certificates</i>	<i>Access to land</i>	<i>Crime</i>	<i>Access to finance</i>	<i>Tax rates</i>	<i>Tax admin</i>	<i>Business licensing</i>	<i>Political instability</i>	<i>Corruption</i>	<i>Courts</i>	<i>Labour regulations</i>	<i>Skills</i>
Bashkortostan	0.33** (0.16)	0.27** (0.13)	-0.31** (0.14)	-0.15 (0.14)	0.06 (0.13)	0.23** (0.11)	-0.52*** (0.18)	-0.23* (0.13)	0.09 (0.14)	0.72*** (0.17)	0.19* (0.10)	-0.07 (0.11)	-0.23 (0.17)	-0.10 (0.12)	-0.10 (0.10)	-0.10 (0.10)	-0.20 (0.19)
Krasnoyarsk region	0.29* (0.18)	0.03 (0.14)	-0.38** (0.19)	0.23 (0.17)	0.06 (0.15)	0.10 (0.13)	0.20 (0.20)	-0.14 (0.15)	0.21 (0.16)	0.09 (0.19)	-0.17 (0.12)	-0.11 (0.13)	0.15 (0.20)	-0.06 (0.14)	-0.09 (0.12)	-0.26** (0.11)	-0.20 (0.21)
Leningrad region	0.20 (0.14)	-0.03 (0.11)	-0.08 (0.14)	0.09 (0.12)	0.19 (0.12)	0.21** (0.10)	-0.41*** (0.15)	-0.23* (0.12)	-0.09 (0.13)	-0.02 (0.15)	0.07 (0.09)	0.11 (0.10)	-0.00 (0.15)	-0.15 (0.10)	-0.01 (0.09)	0.23*** (0.08)	-0.27 (0.17)
Moscow	-0.12 (0.10)	0.02 (0.08)	0.16* (0.09)	0.05 (0.09)	-0.02 (0.08)	-0.07 (0.07)	-0.39*** (0.11)	-0.16** (0.08)	0.08 (0.09)	0.11 (0.10)	0.04 (0.06)	0.06 (0.07)	0.22** (0.10)	0.13* (0.07)	-0.00 (0.06)	-0.03 (0.06)	-0.06 (0.11)
Moscow region	-0.15 (0.11)	-0.07 (0.09)	-0.05 (0.11)	0.02 (0.10)	-0.05 (0.10)	-0.03 (0.08)	-0.16 (0.13)	-0.06 (0.10)	0.01 (0.10)	0.22* (0.12)	-0.01 (0.08)	0.06 (0.08)	-0.08 (0.12)	0.04 (0.08)	-0.16** (0.07)	-0.03 (0.07)	0.28** (0.13)
Nizhny Novgorod region	0.34* (0.17)	-0.01 (0.14)	-0.34** (0.16)	0.11 (0.16)	-0.08 (0.15)	-0.18 (0.12)	-0.21 (0.20)	-0.39*** (0.15)	-0.21 (0.16)	0.43** (0.19)	-0.07 (0.12)	-0.03 (0.13)	0.55*** (0.20)	-0.05 (0.13)	0.04 (0.12)	-0.04 (0.11)	-0.02 (0.20)
Novosibirsk region	-0.25 (0.17)	-0.03 (0.14)	-0.16 (0.16)	0.04 (0.16)	0.04 (0.15)	0.09 (0.12)	-0.29 (0.19)	-0.20 (0.15)	-0.05 (0.16)	0.52*** (0.19)	-0.04 (0.12)	0.00 (0.12)	0.30 (0.19)	-0.08 (0.13)	-0.10 (0.12)	-0.08 (0.11)	-0.30 (0.21)
Perm region	-0.06 (0.18)	0.27* (0.15)	0.15 (0.16)	-0.16 (0.16)	0.08 (0.15)	0.05 (0.13)	-0.24 (0.20)	0.00 (0.15)	-0.01 (0.16)	-0.01 (0.20)	0.19 (0.12)	0.28** (0.13)	-0.20 (0.20)	-0.14 (0.14)	-0.07 (0.12)	0.16 (0.11)	-0.20 (0.21)
Primorsky region	-0.08 (0.13)	-0.18* (0.10)	0.49*** (0.17)	0.06 (0.13)	-0.02 (0.11)	-0.05 (0.10)	0.86*** (0.15)	-0.16 (0.11)	-0.22* (0.12)	0.07 (0.14)	0.05 (0.09)	0.10 (0.09)	0.08 (0.14)	-0.07 (0.10)	0.03 (0.09)	-0.06 (0.08)	-0.39*** (0.15)
Rostov region	-0.14 (0.16)	-0.14 (0.13)	-0.07 (0.18)	0.07 (0.14)	0.02 (0.14)	-0.12 (0.12)	0.11 (0.19)	-0.27** (0.14)	-0.07 (0.15)	-0.07 (0.18)	0.16 (0.11)	0.05 (0.12)	0.33* (0.18)	0.22* (0.12)	0.14 (0.11)	-0.15 (0.10)	-0.28 (0.19)
St. Petersburg	-0.04 (0.11)	0.25*** (0.09)	-0.22** (0.11)	-0.12 (0.10)	0.18* (0.10)	0.22*** (0.08)	-0.51*** (0.13)	-0.14 (0.10)	-0.01 (0.10)	-0.01 (0.13)	0.25*** (0.08)	0.24*** (0.08)	-0.01 (0.13)	0.02 (0.09)	0.14* (0.08)	-0.00 (0.07)	0.07 (0.14)

Notes: Based on regressions summarised in Table 3. Estimated by fixed effects, robust standard errors in parentheses. Values significant at the 1 per cent level are marked with ***; at the 5 per cent level, with **; at the 10 per cent level, with *.

Table 5: Testing for inter-regional differences in business environment components
(Null hypothesis: all regional fixed effects are equal)

<i>Component (obstacle)</i>	<i>F-statistic</i>
Access to land	9.20 ***
Trade regulations and customs	3.92 ***
Tax rates	2.89 ***
Compulsory certificates	2.62 ***
Workforce skills	2.34 ***
Transport	2.32 ***
Political instability	2.31 ***
Electricity	2.28 ***
Labour regulations	2.25 ***
Tax administration	2.09 **
Courts	1.57 *
Business licensing	1.56 *
Corruption	1.41
Crime	1.30
Access to finance	1.07
Business inspections	0.91
Informal sector	0.88

Note: Values significant at the 10% level are marked with *; at the 5% level, with **; at the 1% level, with ***.

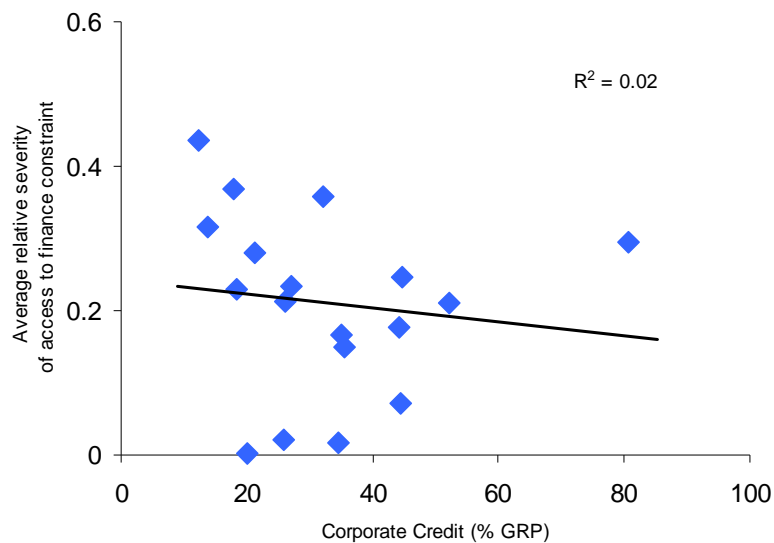
Regarding informal sector competition the lack of statistically significant differentiation across regions may reflect the fact that this constraint is not seen as binding by most Russian firms. The same may be partly true with respect to crime and business inspections. However, two other business environment components that fail to exhibit significant inter-regional differences in terms of their perception as obstacles to firms' operations are among the most severe constraints country-wide: access to finance and corruption.

In the case of access to finance, however, striking objective differences in terms of levels of financial deepening are well documented (see Table 2). In 2008 the ratio of corporate loans issued by branches of banks in a given region to gross regional product (GRP) varied between 81 per cent in Moscow and 12 per cent in Krasnoyarsk (the country average was 36 per cent).³

³ Technically, the ratio was even lower in the Leningrad region (9 per cent). However, this is an unusual case since the regional centre where many local enterprises would naturally obtain funding is a separate region (the city of St Petersburg).

However, differences in credit-to-GDP ratios appear to be very weakly correlated, if at all, with the perception of access to finance as a constraint by firms operating in the regions (see Chart 4). The correlation is negative, as one might expect (higher credit-to-GRP ratios are associated with access to finance being perceived as less of a constraint on average), but the dependence is very weak both in statistical and in economic terms (regardless of whether the Moscow region and the Leningrad region are included).

Chart 4: Financial deepening and perception of access to finance



Sources: Central Bank, WB/EBRD BEEPS, authors' calculations. Based on location of bank branch, 2008 data. Excludes Moscow and Leningrad regions.

Together with the absence of statistically significant differences between regional fixed effects for the access to finance constraint, this suggests that inter-regional differences in the levels of financial deepening largely reflect differences in terms of demand for finance (stemming from quality projects requiring financing). The differences in demand are in turn likely to be explained by a number of other factors, such as the level of economic development, as well as differences in other components of business environment, which constrain firms' ability to undertake and finance profitable projects.

It has long been acknowledged that financial development follows economic development (for example, Robinson, 1952) and GDP per capita tends to be the key determinant of the level of financial deepening in cross-country studies (for example, Dehesa, Druck and Plekhanov, 2007). At the same time, numerous studies showed that financial development in turn has a significant positive impact on economic growth (King and Levine (1993); Levine,

Loayza and Beck (2000); Levine (2004)). If finance is an important determinant of growth, one would expect firms in financially underdeveloped regions to feel more constrained by access to finance, as better access to finance would enable them to realise their growth opportunities. However, as Johnson, McMillan and Woodruff (2002) show, in the absence of strong property rights firms will be unwilling to invest, whether using retained profits or bank loans. Therefore, in a weak institutional environment, strengthening property rights and other institutions may be key to stimulating growth, while the availability of bank finance would not necessarily constitute a binding constraint for business expansion. Cull and Xu (2005) present evidence of the importance of institutional constraints for investment in China. The results of the BEEPS survey in Russian regions also appear to be consistent with demand for finance being constrained by various institutional factors.

Also consistent with this hypothesis is the remarkable stability of relative positions of regions in terms of corporate credit-to-GRP ratios. While in the 2000s Russia underwent a period of rapid financial deepening and private sector credit-to-GDP ratio increased from 16 per cent at end-2002 to 41 per cent at end-2008, two-thirds of the variation in regional corporate credit-to-GRP ratios in 2008 is explained by initial ratios in 2002. Although this is somewhat less than in a cross-country setting (credit-to-GDP ratios back in 2002 explain 80 per cent of the variation observed in 2008 in a broad sample of countries),⁴ this is nonetheless a high level of inertia for a space where capital can move freely and a period of very rapid financial deepening when supply constraints in finance became significantly less binding. In addition, in a broad cross-country sample, unlike in the case of Russian regions, the differences in perception of access to finance as a binding constraint are highly statistically significant.⁵

Lack of differences in perception of corruption may in principle be explained by a homogenous level of corruption across the country. However, this is unlikely, even though, unlike in the case of access to finance, the objective difference in the levels of corruption are hard, perhaps impossible, to document (see, for instance, Petrov (2004) on inter-regional differences in political institutions). An alternative explanation is that the level of corruption in the regions adjusts to what the local economy can sustain without corruption becoming too much of a constraint that would suffocate economic activity and the ability to extract rents. This would be consistent with the “roving versus stationary bandits” theory of rent-seeking (Olson (1993); McGuire and Olson (1996)) whereby non-benevolent authorities would

⁴ Calculations based on the New Database on Financial Development and Structure, see Beck, Demirguc-Kunt and Levine (1999).

⁵ The hypothesis of equal coefficients can be rejected at the 1 per cent level of significance: $F(29, 11177) = 14.8$.

determine the amount of rent-seeking in a way that maximises rents but also preserves their future rent income. The amount of rents will thus be endogenous with respect to the growth potential of the local economy and the elasticity of growth with respect to rent-seeking.

3.2. Region-specific features of business environment

The analysis now turns to individual business environment constraints in an attempt to identify regions where they are particularly prominent. The Annex shows the estimated average relative severity of business environment constraints in each region compared with the corresponding country averages (as perceived by a representative firm). Table 6 below summarises the key strong and weak points for each region (relative to other regions). “Strong points” refer to business environment constraints with much lower relative severity reported by firms in a given region, while “weak points” refer to constraints with much higher-than-average relative severity.

Table 6: Region-specific features of the business environment

<i>Region</i>	<i>Strong points (low scoring obstacles)</i>	<i>Significantly better than X regions</i>	<i>Weak points (high-scoring obstacles)</i>	<i>Significantly worse than X regions</i>
Bashkortostan	Access to land	4	Tax rates	8
			Electricity	7
			Transport	5
			Compulsory certificates	5
Krasnoyarsk	Tax administration	7	Access to land	8
	Labour regulations	6	Electricity	6
Leningrad region	Access to land	3	Labour regulations	9
	Tax rates	3	Certificates	5
	Corruption	3	Electricity	5
	Access to finance	0		
Moscow	Access to land	5	Customs	8
	Informal sector	1	Political instability	4
Moscow region	Courts	5	Workforce skills	8
	Informal sector	0	Access to land	5
			Business licensing	4
Nizhny Novgorod	Compulsory certificates	6	Electricity	7
	Crime	3	Tax rates	6
			Political instability	6
Novosibirsk	Electricity	4	Tax rates	7
Perm	Tax rates	3	Labour regulations	7
	Corruption	2	Business licensing	5
	Informal sector	1		
Primorsky region	Access to finance	4	Access to land	10
			Customs	10
rostov	Electricity	4	Access to land	5
	Transport	3	Corruption	5
	Tax rates	3	Political instability	4
	Crime	0		
St. Petersburg	Access to land	4	Transport	7
	Tax rates	3	Tax administration	7
	Informal sector	2	Business licensing	6
			Compulsory certificates	5
			Courts	5
			Workforce skills	4

Note: "Significantly better" or "significantly worse" refers to statistical significance at the 10% level.

For each combination of a region and a business environment component the number next to it corresponds to the number of regions for which the difference between the respective fixed effect and the fixed effect estimated for a given region is positive (for strong points; or negative for weak points) and statistically significant (at least at the 10 per cent significance level). This number can vary between 0 (none of the differences are statistically significant with the relevant sign) and 10 (when the regional fixed effect is statistically significantly different from all other estimated fixed effects).

The results are strongest for the Primorsky region in the Far East, where firms complain particularly strongly about access to land and trade regulations and customs. The corresponding fixed effects are different from those estimated for all other 10 regions. The result for customs underscores the importance of international trade for the economy of the Far East, and Primorsky region in particular. When in late 2008 as part of crisis response measures the federal government raised import tariffs on used passenger cars, the new measure applied to all regions. Yet only in Vladivostok large numbers of people took to the streets to protest, as the import of second-hand cars through the Pacific port of Vladivostok supported the livelihood of a significant part of the population. The sharply more acute perception of trade regulations and customs as a constraint to firms' operations in Primorsky region (compared with any other surveyed region) thus most likely reflects concerns about federal trade regulations that apply to all regions but are particularly important for the economy of the Primorsky region as well as scope for improvement in the work of local customs. Another region where customs come across as a particularly binding constraint is Moscow.

Access to land stands out not only in relative terms, but also in absolute terms, being the most binding constraint in the region according to the survey (Chart 3). Perception of access to land as a very severe business environment constraint might have been affected by the adoption in December 2006 of a new regional law on land issues, which came into force in February 2007, about a year or so prior to the survey. Among other things, the law reassigned certain responsibilities from municipal to regional authorities and changed procedures for land plot registration. It is important to note that in areas such as access to land regional legislation has played an important role and regional approaches may differ substantially within the broad federal framework.

Another interesting case is St Petersburg, where a large number of business environment components stand out both as strong points (access to land, tax rates) and weak points

(transport, tax administration, business licenses and permits, compulsory certificates, courts and workforce skills). All of the latter fixed effects are statistically significantly higher than in four to seven other regions (pointing towards more acute perception of these constraints). The results should not be interpreted as suggesting that the situation with transport or business licensing in St Petersburg is objectively worse than in most other regions. In fact, St Petersburg typically scores highly in various ratings reflecting quality of institutions (such as expert investment potential and risk ratings) as well as on objective measures of quality of infrastructure. Rather, the results indicate that most interviewed firms in St Petersburg tend to agree on components of the business environment that constrain their operations most (or least). The findings can be interpreted as suggesting that, according to the surveyed firms' perceptions, addressing transport bottlenecks in St Petersburg will yield the largest benefits in terms of growth of business (compared with efforts to upgrade transport networks elsewhere). This is not implausible, given that until a couple of years ago this city of five-million did not have a ring road. The expected completion of the western diameter of the ring road may further alleviate transport constraints to firms' operations, as would an upgrade of a road linking the city with the Finnish border.

In the Moscow region workforce skills are perceived to be a much more binding constraint compared with other regions, with the pair-wise differences being significant in eight out of 11 cases. This likely reflects tight labour market conditions in Moscow and widespread migration (or commuting) of skilled labour force to the capital. Another region with more pronounced complaints about the skills deficit is St Petersburg.

4. Conclusion

This paper explored the differences in regional business environments in Russia using enterprise survey data from the 2008-09 round of BEEPS. The paper looked closely at 11 regions with sufficient data coverage— Bashkortostan, Krasnoyarsk, Leningrad region, Moscow, Moscow region, Nizhny Novgorod, Novosibirsk, Perm, Primorsky region, Rostov and St Petersburg—and asked three key questions that jointly help to identify region-specific policy priorities in terms of improvements in business environment: which business environment constraints appear to be the most binding in each region; whether for a given constraint there are systematic inter-regional differences in terms of its perceived relative severity; and which region-specific constraints are statistically significantly different from those in other regions (as perceived by a representative firm).

Generally, Russian firms view high rates of taxation, difficulties in accessing finance, political instability, electricity supply, corruption and inadequate workforce skills as key constraints to their operations. These factors rank highly in most regions. In addition, access to land is estimated to be in the top three business environment constraints in three regions. The empirical analysis also identifies region-specific business environment components that businesses perceive as significantly more binding constraints to firms' operations compared with perceptions in other regions. These include, for instance, access to land and trade regulations and customs in the Primorsky region, where the regional fixed effects estimates for relative severity of these constraints are statistically significantly higher than in all other regions; transport in St Petersburg; workforce skills in Moscow region; electricity supply in Nizhny Novgorod and so on. These findings *per se* cannot be interpreted as suggesting that the quality of, say, transport infrastructure in St Petersburg is inferior to that in most other regions. Rather, the results suggest that given the other constraints that firms face, enterprises in St Petersburg view transportation as a more binding constraint (compared with how enterprises elsewhere view it). Hence if one looks at transport, upgrading the transport network in and around St Petersburg is likely to be associated with significant economic gains and could be viewed as a policy priority, while for Russia as a whole transportation does not appear to be a top area of priority. If one looks specifically at the St Petersburg business environment, the constraints estimated to be most binding for a representative firm are tax rates, skills and electricity supply (broadly in line with country-wide priorities).

For several business environment components, including corruption and access to finance, inter-regional differences in their perception as constraints prove insignificant. The absence of differences in perception of corruption, one of the top constraints country-wide, is consistent with the view that local rent-seeking behaviour adjusts to the level that the local economy can be sustained based on its growth potential and other constraints to firms' operations.

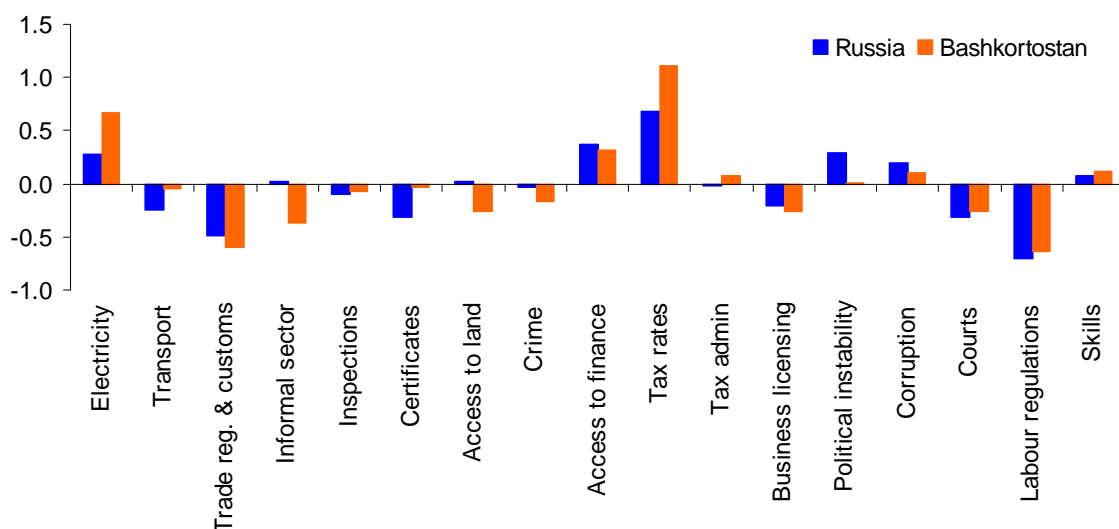
Homogenous perception of the severity of lack of access to finance as an obstacle to firms' operations supports the view that huge observed differences in financial deepening across Russian regions are primarily demand-driven. It suggests that although access to finance is perceived to be one of the major business environment constraints by firms across Russia, focusing policies on increasing supply of credit *per se* may not be the most efficient way of stimulating firms' growth. It may even be counterproductive if newly financed projects are in fact not bankable due to other constraints affecting firms' ability to grow. The numerous studies on the finance-growth nexus show that while financial deepening positively affects the long-term growth, it in turn crucially depends on the strength of the overall institutional and legal framework. Strengthening institutions and addressing related business environment constraints will go a long way towards promoting economic development and financial deepening in the less financially developed regions.

References

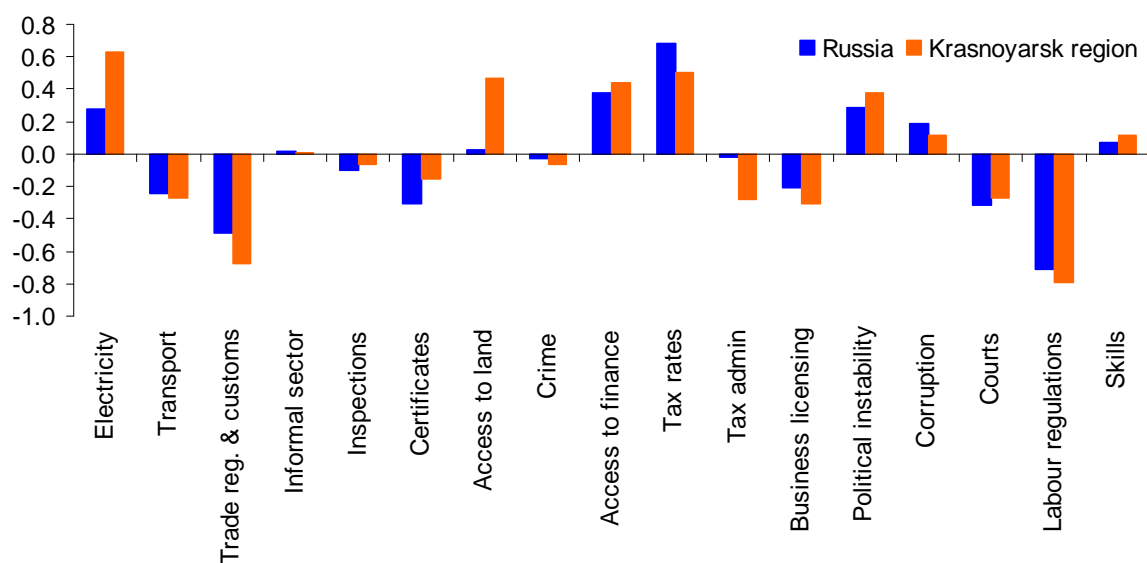
- R. Ahrend (2008), “Understanding Russian Regions’ Economic Performance during Periods of Decline and Growth: An Extreme-Bound Analysis Approach”, OECD Working Paper no. 644, OECD, Paris.
- T. Beck, A. Demirguc-Kunt and R. Levine (1999), “A New Database on Financial Development and Structure”, World Bank Policy Research Working Paper no. 2146, World Bank, Washington, D.C.
- T. Bucclato and F. Santangelo (2009), “Foreign Direct Investment Distribution in the Russian Federation: Do Spatial Effects Matter?”, UCL SSEES Economics Working Paper no.99, UCL, London.
- H. Cai and D. Treisman (2004), “State Corroding Federalism”, *Journal of Public Economics*, 88, no. 3–4: 819–43.
- W. Carlin, M. E. Schaffer and P. Seabright (2010), “A Framework for Cross-Country Comparisons of Public Infrastructure Constraints on Firm Growth”, CEPR Discussion Paper no. 7662, CEPR, London.
- CEFIR (2006), “Analytical Report on Growth and Investment in Russia’s Regions ‘Unleashing the Potential’”, Center for Economic and Financial Research Policy Paper 24.
- R. Cull and L. Xu (2005), “Institutions, Ownership, and Finance: The Determinants of Profit Reinvestment among Chinese Firms,” *Journal of Financial Economics* 77, no 1: 117–46.
- M. Dehesa, P. Druck and A. Plekhanov (2007), "Relative Price Stability, Creditor Rights, and Financial Deepening", IMF Working Paper 07/139.
- L. Freinkman and A. Plekhanov (2010), “Fiscal Decentralization and the Quality of Public Services in Russian Regions”, *Public Finance and Management* 10, no. 1.
- D. Hauner (2008), “Explaining Differences in Public Sector Efficiency: Evidence from Russia’s Regions”, *World Development* 36, no. 10: 1745–65.
- S. Johnson, J. McMillan and Ch. Woodruff (2002), “Property Rights and Finance,” *American Economic Review*, 92, no. 5: 1335-56
- I. Iwasaki and K. Suganuma (2005), “Regional Distribution of Foreign Direct Investment in Russia,” *Post-Communist Economies* 17, no. 2: 153–72.
- J. Khaleeva, I. Kirysheva, N. Volchkova, Y. Volkov and E. Zhuravskaya (2009), “Incentives for Implementation of Regulatory Reform: A Comparative Survey of Federal and Regional Government Officials in Russia”, CEFIR Policy Paper 30.
- R.G. King and R. Levine (1993), “Finance and Growth: Schumpeter Might Be Right,” *Quarterly Journal of Economics*, 108, no.3: 717–37.

- S. Ledyeva (2009), “Spatial Econometric Analysis of Foreign Direct Investment Determinants in Russian Regions”, *World Economy* 32, no. 4: 643–66.
- R. Levine, N. Loayza and T. Beck (2000), “Financial Intermediation and Growth: Causality and Causes”, *Journal of Monetary Economics*, 46, no. 1: 31–77.
- R. Levine (2004), “Finance and Growth: Theory and Evidence”, NBER Working Paper no. 10766.
- J. Martinez-Vasquez, A. Timofeev and J. L.F. Boex (2006), *Reforming Regional-local Finance in Russia*, Washington, DC: World Bank Institute.
- M.C. McGuire and M. Olson (1996), “The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force”, *Journal of Economic Literature* 34, no.1: 72–96.
- M. Olson (1993), “Dictatorship, Democracy, and Development”, *American Political Science Review* 87, no. 3: 567–76.
- N. Petrov (2004), “Regional Models of Democratic Development”, in Michael McFaul, Nikolai Petrov, and Andrei Ryabov, eds., *Between Dictatorship and Democracy: Russian Post-Communist Political Reform*, Washington, DC: Carnegie Endowment for International Peace: 239–67.
- F. Ricka and H. Schweiger (2010), “Evaluating and Improving the Business Environment”, *EBRD Transition Report 2010*, 78–94.
- J. Robinson (1952), “The Generalisation of the General Theory,” in *The rate of interest, and other essays*, London: Macmillan, 1952: 67-142.

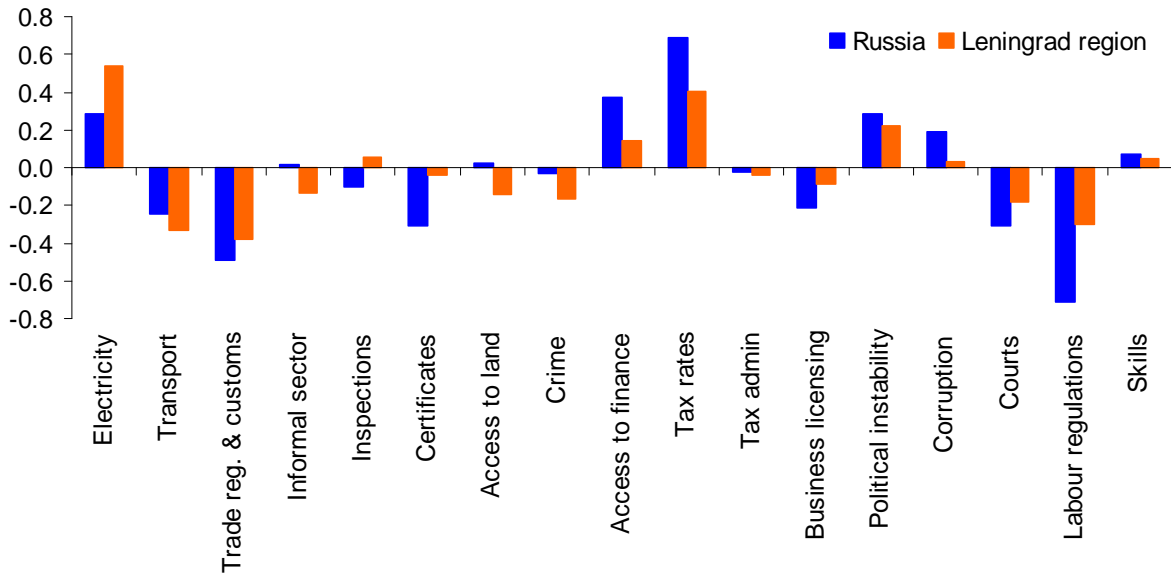
Annex: Average relative severity of business environment constraints by region



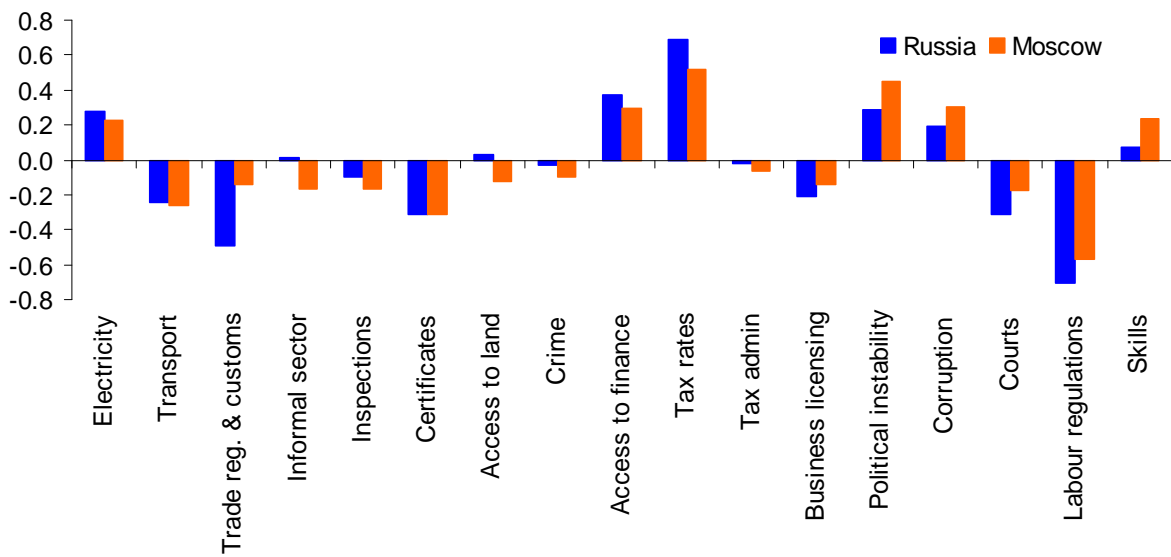
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



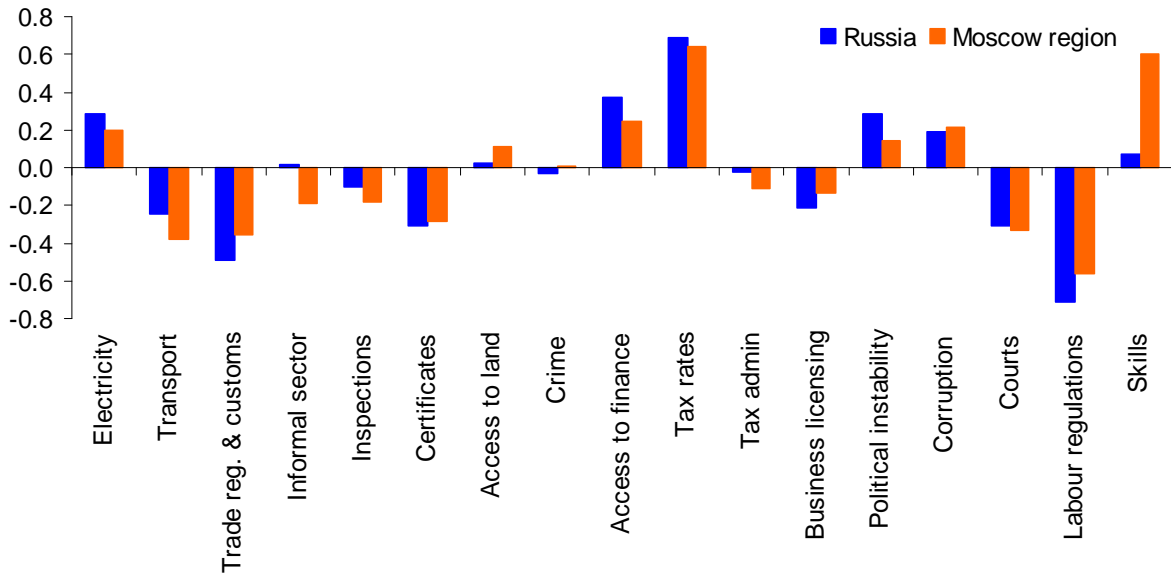
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



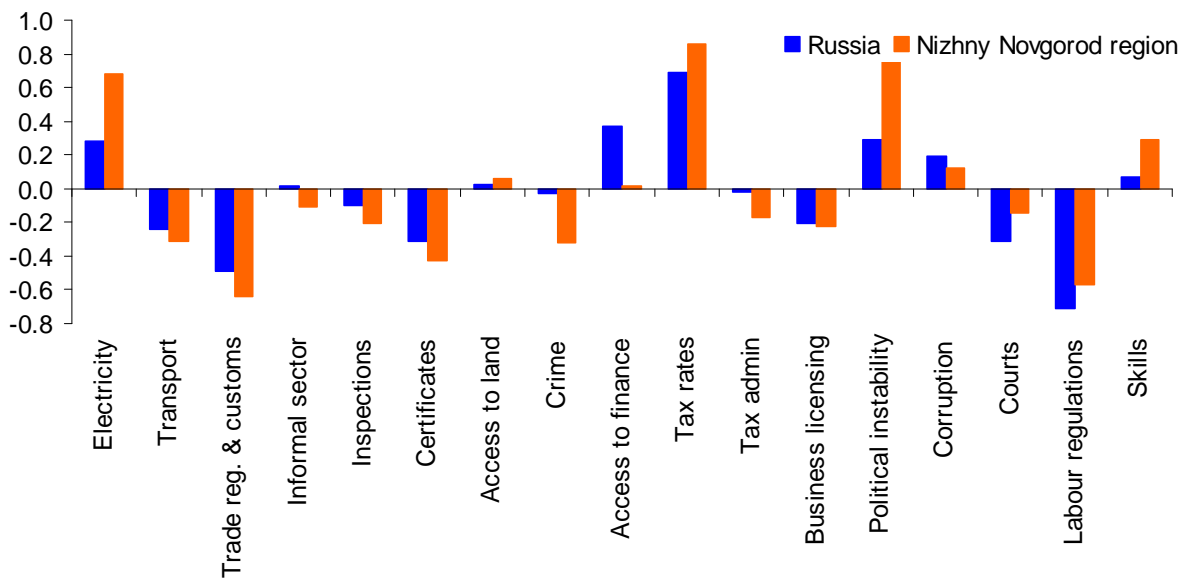
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



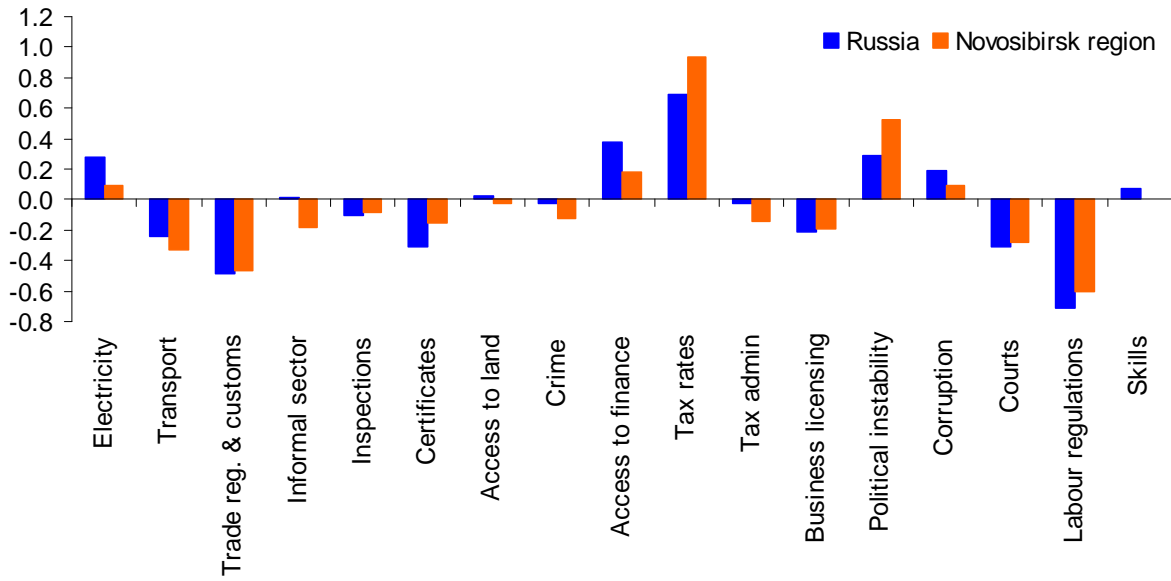
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



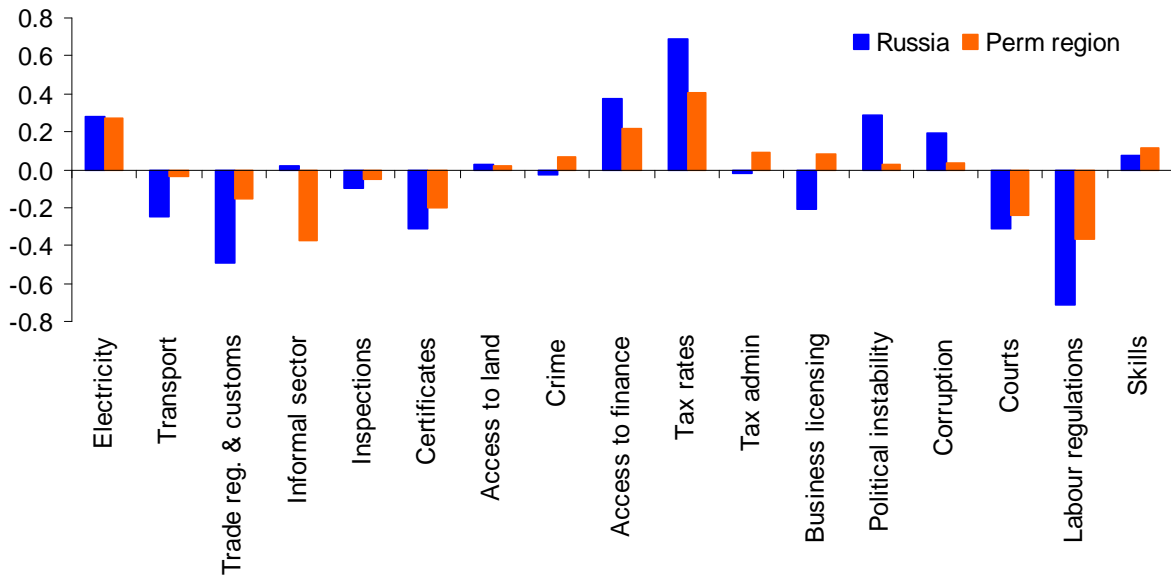
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



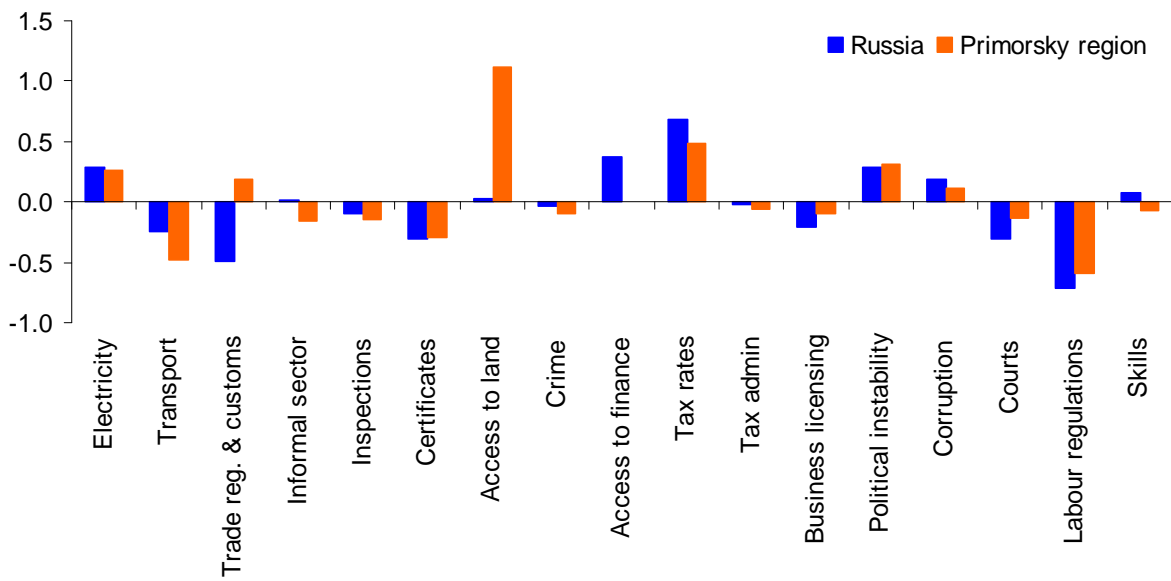
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



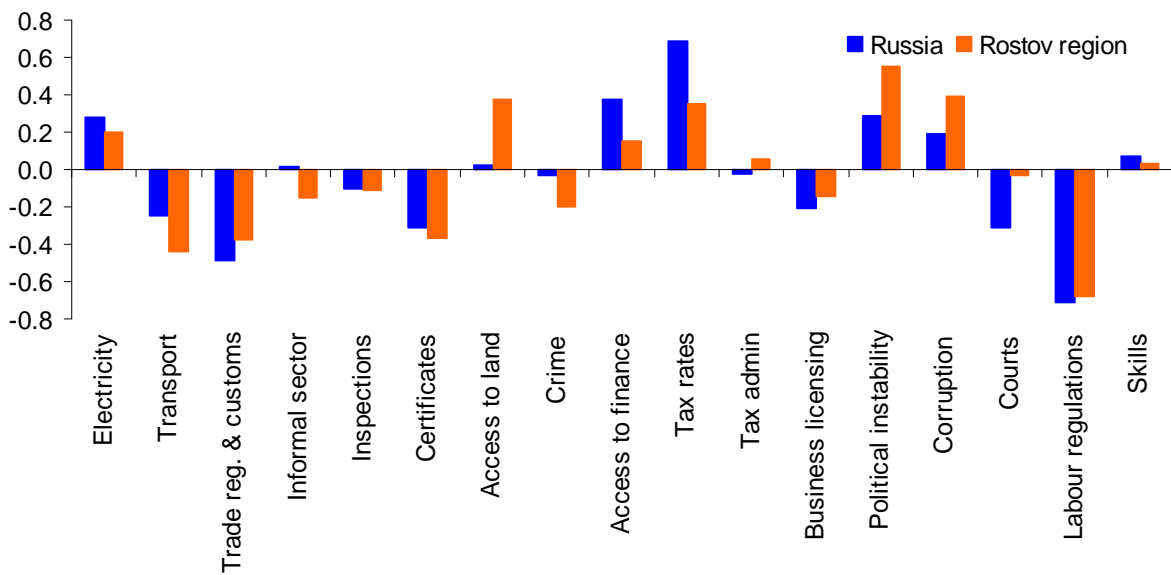
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



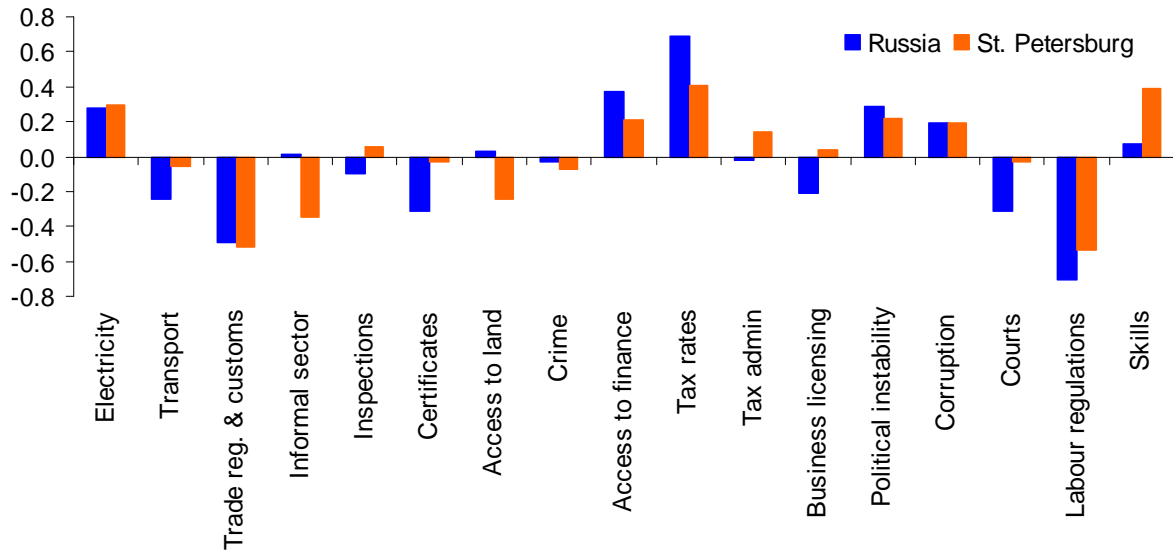
Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



Sources: World Bank / EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.



Sources: World Bank/EBRD BEEPS Survey, authors' calculations. Estimated for a hypothetical "average" firm.