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RUSSIA'S REGIONS: GOVERNANCE AND WELL-BEING, 2000-2008[7]

This paper assesses the impact of the quality of governance on economic performance in Russia's 83 regions (Oblasts, Republics, Krais and Okrugs) from 2000 to 2008, a period of rapid economic advancement. Defining governance broadly as how authority is exercised, and using as a proxy a measure of the investment risk by region, this paper contributes to the literature on identifying the economic impact of governance. Our results find a significant association between governance in Russia's diverse regions and economic well-being, that is, we find a performance gap in government practices. Specifically, our study shows that the main components of effective governance are the ability of the government to run effective public health programs aimed at decreasing the overall mortality rate among the working-age population, to create fair labor market conditions for all individuals who are still capable of working, and to improve the investment climate in the region leading to a higher level of investment in fixed assets. Our results implicitly suggest that effective governance comprises the tangible aspects of policymaking such as the adoption of effective public health, investment and labor policies and most importantly, for the regions of Russian Federation, although effective governance can be also an artifact of unobserved and unmeasurable managerial attributes of the local government to implement federal and region level laws and regulations.

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Introduction

There is a common assumption that good governance is an effective stimulus for growth (Knack and Keefer 1995, Barrow 1997, Chong and Calderon 2000, Kaufmann and Kraay 2002). The quality of governance is especially important for the long run. In institutional economics, governance is a critical component of sustainable economic advancement (Commons 1950, Knight 1952, Coase 1960, Davis and North 1971, North 1990, 1991 and 1994). This is because stable and effective market institutions encourage sustained investment in physical and human capital and better technologies (Acemoglu, Johnson and Robinson, 2002; Acemoglu, 2003). More simply, there can be large benefits from how authority is exercised in a particular country" (Kaufmann et al., 2000, Kaufmann et al., 2003 and Kaufmann et al., 2005).

The objective of this paper is twofold. The first objective is to assess the impact of the quality of governance on economic performance in Russia's 81 regions (Oblasts, Republics, Krais and Okrugs) from 2000 to 2008, which is considered by many experts as a period of rapid economic advancement. The second objective is to understand the main components of effective governance with respect to economic development in the regions of Russian Federation.

To assess governance quality by its impact requires a clear definition of institutions, one which can be correlated with other factors associated with economic welfare. By function, governance institutions are intended to produce long run effective management of financial and other resources (Keefer, Knack et al. 2000). Thus, it is important to measure observance of the law, avoidance of corrupt practices, and establishment of efficient program delivery in the attempt to quantify the effect of governance on the regional economic growth. In our empirical inquiry, we introduce a single measure of effective governance which has been used before in the literature (Granville and Leonard 2010), represented by the investment environment index, «investment risk», a measure produced by a special agency for Russia's regions (Expert.ru). The way the index is constructed, it reflects two elements of effective governance such as the "risk" level of region and its economic "potential" for investors. Unfortunately, the composite nature of the index does not allow one to separate these two elements and explore them separately in the analysis of the governance/growth gradient. Despite this limitation, the index still provides substantial information enabling one to successfully compare effectiveness of the government in one region relative to another and draw correct implications of best policy and practices of the effective governance which lead to improvements in economic outcomes.

This paper consists of four sections. The first is a review of governance transformation in Russia and related literature on both governance and growth in Russia using regional statistics. The second addresses the data and methods; the third presents the findings, and the last section is a conclusion.

Russia's Regional Transformation and Growth, 2000-2013

Governance reform has been a priority of centralizing measures undertaken in the 2000s, when the government aimed to ensure that federal programs were realized in all regions. A significant outcome of centralizing reform was the end of conflict between federal and regional laws. Another was a more competitive framework for budgeting, where some federal funding was tied to long run strategic plans to encourage innovation and modernization of public services, including improvement of information infrastructure. Other governance improvement federal directives include a focus on small enterprise development in the regions, the balancing of the regional budget and funds for unemployment relief and retraining of labor (Lavrov, Litwack et al. 2001, Berkowitz and DeJong 2003, Berkowitz and DeJong 2003, Berkowitz 2005, Berkowitz and DeJong 2005, Ahrend 2012).

Of these and other measures, budget reform was arguably the most important. Tax and expenditure rules are far more clear than before, although non-transparent formula for federal budgetary transfers still limit the degree to which regional governance is formally and informally independent of federal authority (Treisman 1999, Stewart 2000, Zhuravskaya and Handelshögskolan i Stockholm. Östekonomiska 2000, Martinez-Vazquez and Boex 2001, Martinez-Vazquez, Timofeev et al. 2006, De Silva and ebrary 2009, Freinkman, Kholodilin et al. 2011, Vartapetov 2011, Yakovlev, Marques et al. 2012, Alexeev, Weber et al. 2013). Budget reform used "sticks and transfers" to limited the power of regional elites and to guarantee that expenditures conform to federal rules.[8] Reform thus resulted in a loss of regional autonomy but a gain in clarity of expenditure assignment and the devolved design of services. The new regulations in the 2001 budget code were an advancement toward global standards (Diamond 2005). They introduced greater accountability through closer monitoring and more transparency by uniform audit rules (Chegrinets 2011).[9] The Kozak commission (June 2001) clarified relations between levels of government, which increased the federal power in fundamentally important ways: to enforce the law (Nelson Kuzes 2003).

To be sure, governance in terms of "funding" is a very small part of what has powered regional growth and development in the past decade or so. During the first decade of the century, the Russian economy rapidly improved, and between 2005 and 2011, GDP per capita rose annually by 4%. One/quarter of Russia's 83 regions saw growth rates of over 5% per annum,

[8] Yakovlev et al (2012) observe both the stability emerging from centralization and new weight on regional government from the recent era of reforms. In particular, those: "…carried out by the Kozak commission, resulted in withdrawal of residual rights to a substantial fraction of revenues from regional and local authorities, along with imposition of the majority of previous liabilities on them."

[9] The 2011 Federal law No 6-F3 Ob obshchikh printsipakh organizatsii I deiatel'nosti kontrol'no-schetnykh organov sub'ektov Rossiiskoi Federatsii i munisipal'nykh obrazovanii, for example, which confirmed principles of "legality, objectivity, effectiveness, independence and openness" in the regional control-audit function, although the same limitations of these powers at the federal level apply at the regional level. See (Chegrinets 2011: 80).

reaching to 10 and 11%, regional wealth tending rise particularly in resource abundant regions as oil and other mineral prices went up. This rise in per capita income was not universal. Poverty has significantly diminished overall, but some regions--subpolar subnational units lacking in minerals, southern regions overwhelmed by civil strive, regions in the urals overwhelmed by rural poverty and severe unemployment—did not do so well. 8% of regions experienced between 0 and 1 % growth per annum.[10] The gap in performance between the less well-off regions and the leaders, described in a substantial literature (Gel'man 2000, Ahrend 2006, Solanko 2008, Berkowitz and DeJong 2011, Ahrend 2012), remains far wider than would be expected from Che and Spilimbergo's estimate of «normal» interregional differences for 32 countries, although some convergence has recently been observed (Che and Spilimbergo 2012, Guriev and Vakulenko 2012).

This substantial gap encourages ongoing reform efforts. For example, fiscal equalization intensified after 2008, when the revenues of many Russian regions, especially the most advanced, suffered a loss in the profit tax on firms affected by falling global demand (Siluanov 2011, Vartapetov 2011). Although annual amendment of budget rules and opaque formula for transfers limit regional planning, there have been efficiencies in many of these changes, including regional service delivery. Much of the literature on Russia's regional finance and development is focused on the loss of regional decision-making authority, inherently arguing that decentralized governance is in principle more "democratic".(Chebankova 2008, p. 993; Sakwa 2004; Christenko 2002; Hale, 2006; Gel'man, 2008; Golosov, 2008; Zubarevich, 2002).[11] In theory, there is little question that centralization can dampen the stimulus required for innovative growth strategies. Empirically, however, it cannot easily be demonstrated from cross country surveys that decentralization is effective in producing growth (Iimi 2005, p. 449).

For countries in the transition from the communist economy, moreover, country-wide imposition of new administrative routines based on fundamental changes in the constitution and start-up budget rules were virtually required for a functional government structure. Centralization ended some perverse institutional effects in the 1990s, legacies from the past in the regions that subverted small business growth, tax collection, and social public spending(Slinko, Yakovlev et al. 2004). Since 2003, policies suppressing competition have largely been removed at the regional level.[12] Egoverment is expanding, which may improve the

[10] The data in this paper are mainly official government statistics by RosSTAT, chiefly *Rossiiskii Statisticheskii Ezhegodnik* (2000-2013), provided by Eastview for the University of Oxford online subscription service and by the National Research University-Higher School of Economics online resources.

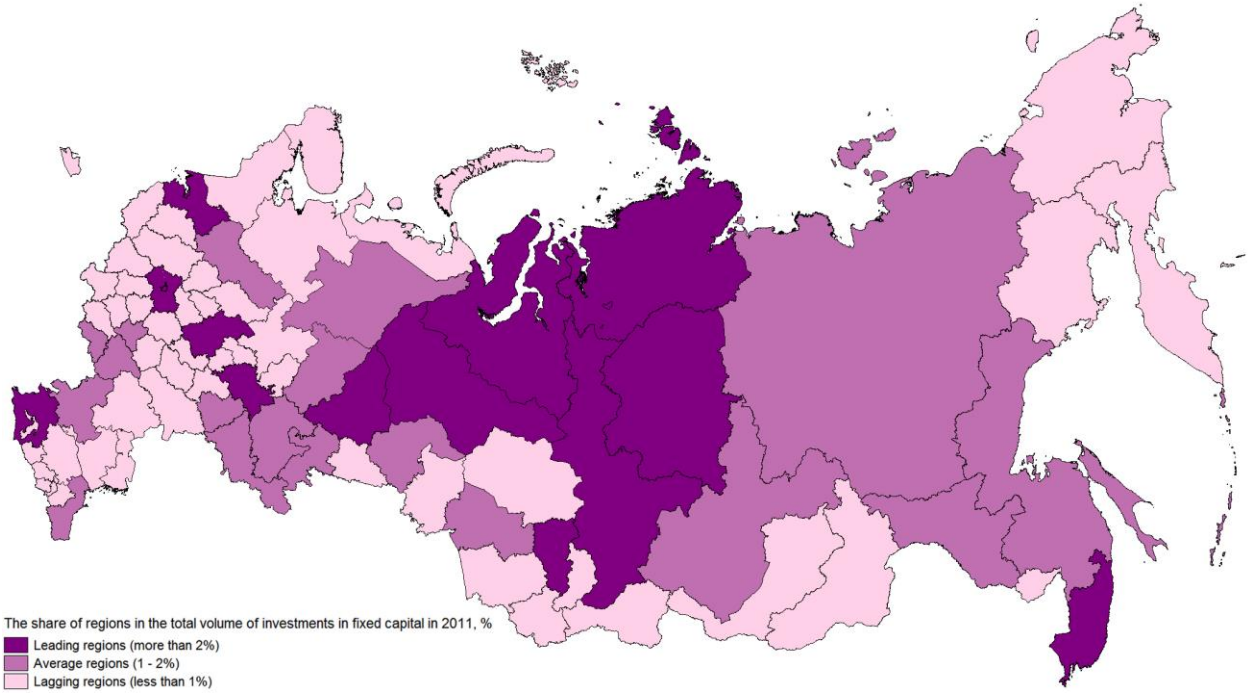
[11] Direct elections of regional governors were reinstated in 2012, after being suspended in 2004, and a new law in 2013 gave regional legislatures the option of either direct election or a choosing from candidates proposed by the federal government. These political developments are foremost in the literature.

[12] July 2003, Decree of the President of the Russian Federation №824, On measures for implementing the administrative reform in 2003-2004 years; Decree of the Government of the Russian Federation №451 "On Commission on Administrative Reform".

quality of measurement of information, which is understood to improve growth potential (Allen 2012). By 2011, a government assessment found reduced waste of resources and improved services throughout Russia.13 Surveys reflect a mixed assessment: only 35% was satisfied with administrative effectiveness in de facto privatized health care, 63% of the populace has become satisfied with administrative activity in the sphere of education.[14]

As noted above, our proxy is an index of investment risk/potential. Formally, this can be defined as in a report by the Bleyzer Foundation (Bleyzer Foundation, 2002) as composed of the following factors that attract investment: liberalization and deregulation of business activities, provision of a stable and predictable legal environment, and improved corporate and public governance. These factors include such policies as the removal of restrictions on international capital and foreign trade, stimulation of the finance sector activity in order to facilitate the financing of business ventures, and reduction of corruption levels (Kenisarin and Andrews-Speed 2008). As is visible in the map (2011) below, Russia's regions show uneven penetration of investment funds and, by implication, investment friendly policies:

Figure 1. Share of Russian regions in the total volume of investments in fixed capital in 2011, %



Compiled from statistical yearbook "Regions of Russia. Socio-economic indicators. 2012" (Federal state statistics service) by Evgenij Plisetskij

Thirty-eight out of 83 regions, located in the central and resource-abundant areas, show average or above average levels of investment; the others show less investment activity. Especially vulnerable is production located in Russia's still weak crop producing southern agricultural regions in the troubled Southeast, where the investment is mainly in processing

[13] "Ob otsenke effektivnosti deiatel'nosti organove ispolnitel-noi vlasti sub''ektove Rossiiskoi Federatsii," as determined by regulation of 15 April 2009, no 322.
[14] Doklad 2011.

rather than production(European Bank for Reconstruction and 2009), in the war torn Caucasus and in the Artic and near Artic far Northern regions. The relative income of the poorest quintile of the population, in fact, declined between 1990 and 2008 (Akhmedjonov, Lau et al. 2013). However, the number of regions suffering from a real earnings poverty trap—that is extreme conditions where, even with rising regional income, there is steadily increased outmigration—has been significantly reduced to just one (Guriev and Vakulenko 2012).

Guriev and Vakulenko (2012, p. 3) argue that the growth dynamic has little to do with governance: the main force in development, or regional convergence—at least in real cash income--was the fall in barriers to labor mobility:

> *There are multiple potential explanations: (i) economic growth simply allowed most of Russia's regions to grow out of the poverty trap; (ii) the development of financial and real estate markets reduced the transactions costs of moving therefore reducing the importance of the poverty trap; (iii) the development of capital markets increased capital mobility…*

Yet case studies, as well as investment rankings, suggest governance can be an important force in development. Kaluga oblast', for example, has benefited from infrastructure development, effective use of long-term credit to foster real estate development near urban areas and greenfield investment in automotive production (Zimine 2010). GRP per capita in the industrial Kaluga and Vladimir oblast has been growing since 2005 at 21% per annum, and Mari-El –with 13% of GRP in agriculture—and Voronezh, the operating center of the Southeastern railway, at 20%. The resource rich regions have, naturally, consistently performed among the top fifteen in growth of GRP per capita, in view of the sparsity of settlements, including Sakhalin (134%), Dagestan Republic (124%) and Chukhotka (128%), which averaged a population loss of roughly 0.8% per annum.[15]

To summarize, there has been extensive governance reform affecting the regions, a first wave in the early 1990s, including systemic measures such as privatization, the liberalization of barriers to interregional trade, and company law (Pistor and Spicer 1997, Pistor, Raiser et al. 2000, Popov 2001, Berkowitz and DeJong 2003, Berkowitz and DeJong 2003, Gluschenko 2003, Freinkman and Plekhanov 2009, Gluschenko 2010, Granville and Leonard 2010, Berkowitz and DeJong 2011, Freinkman, Kholodilin et al. 2011, Ahrend 2012, Alexeev, Weber et al. 2013). This literature tends to find particularly strong effects of early reform (1994-1996) on later entrepreneurial activity.[16]

[15] Russia is the world's biggest energy producer. The energy super power holds the world's largest natural gas reserves, the second largest reserves of coal, and the eighth largest crude oil reserves. The country is the world's largest exporter of natural gas. By 2009, it surpassed Saudi Arabia as the largest crude oil producer.

[16] A more detailed review of these works can be found in Ahrend (2012).

A second wave of governance reforms after 2000 diffuse their impact—in the social services and budget management.[17] Berkowitz and DeJong (2011) write, the growth framework has changed enormously after 2000. Eprocurement has introduced greater transparency in the major market cities.[18] The spread of capital city practices in local administration is assisted by the enforcement of federal financial regulations and the development of exchange infrastructure, including commercial networks, which depend upon uniformity of regulations across a country. Regional program delivery is evolving toward national norms, and international standards surveys show rising satisfaction.[19] Why for this later period, (K. Yudaeva 2004) find no influence of policy on performance is a point that requires further testing with updated information (Parret 2011). We argue that the power and reach of centralizing reforms can be tested through a measure of investment environment to see if they have fostered an improved level of performance.

Model

To model the effect of governance in the regions of the Russian Federation one needs a good measure of governance reflecting institutional development of all regions of Russian Federation. Our measure of institutional development follows (Granville and Leonard 2010) in adopting the regions' "investment risk" ranking, a variable for the investment climate developed by the Ekspert RA (Ratings Agency) as indicative of the level of local protection of property rights, and observance of federal laws and regulations. Founded by Ekspert, the Russian business and financial weekly,[20] the agency is an authorized agent of the Central Bank of Russia and the Federal Securities Commission for the disclosure and dissemination of information on banks, financial institutions, insurance companies, and issuers of securities. The ratings for investment potential and investment risk, the latter of which we use, have been issued from 1996, and they are based on a series of indicators, comprised of the same components as numerous variables that have been found in other studies to correlate with per capita income growth in developed countries (Aron 2000). We used the rating for investment climate (investment risk) based on surveys, covering the key institutional variables, including the legislative base, legal protections for property rights, from enforcement of the Basic Law (Constitution) of 1993 and Civil Code of 1994 to the appearance or reliable real estate cadastres and the strengthening of creditor and

[17] Jack Diamond, "Reforming the Russian Budget System: Move to more devolved budget management?" IMF working paper WP/05/104 (2005).

[18] Pt 8, Postanovleniia Pravitel'sktva RF ot .08.06.2011 No 451 "Ob infrastructure, obespechivaiushchei informatsionno-tekhnologicheskoe vzaimodeistvie informatsionnykh system, ispol'zuemykh dlea predostavleniia osudarstvennykh i munitsipial'nykh uslug v elektronnoi forme". See Sokolova (2011), p. 95.

[19] Doklad ob Effektivnosti deiatel'nosti organov izpolnital'noi vlasti sub''ektov Rossiiskoi Federatsii za 2010 god (Ministry of Regional Economic Development 2010).

[20] Ekspert is a Russian language weekly that provides news, including the latest index and exchange rate figures, and feature length articles on business, finance, and economic issues. It also includes a number of **"**specials**"** or overview reports focusing on, for example, particular sectors or trade with particular countries.

shareholder rights; corporate transparency, including the use of international accounting standards and improved disclosures; completion of structural reforms, notably in taxation (simplification, reduction in rates, balanced budget), but also in factor markets (Land and Labor Codes), state-controlled energy and transport utilities, pensions, exchange and currency control liberalization, and the judiciary.

Other control variables are measured using equally comprehensive sources—official economic statistics covering each of Russia's regions, as described in the Appendix.

To estimate the relationship between effective governance and economic development in the region, we first estimate the empirical model similar to the one suggested by Barro & Sala-i-Martin (1991). Specifically, within linear regression analysis, we control for a lag of the dependent variable along with other independent variables. This approach should enable us more precisely to evaluate the underlying association of interest. To be more concrete, the linear regression model investigating the main association of interest is given by the following mathematical expression:

$$GRP_{i,t} = \rho GRP_{i,t-1} + X_{i,t}\beta + \delta G_{i,t} + Y_t + M_i + \varepsilon_{i,t} \quad (1)$$

In the above regression, Gi,t, is investment ranking for ith region at period t-1 approximating governance and Xi,t represents a vector of variables characterizing different aspects of the region's economic and social development, which, by assumption, can be correlated with Gi,t (the particular property we exploit in the second round of the empirical analysis to understand the mechanisms through which effective governance is associated with economic development of the region). We also control for year fixed effects (Yt) and fixed effects of the two largest metropolitan areas of Russian Federation, Moscow and Saint-Petersburg (Mi). Finally, by assumption of linear regression, $\varepsilon_{it}$is an independent and identically distributed random variable with zero mean and variance σ_ε^2. The dynamic component of the above equation is the lag of the dependent variable, and the given model can be estimated successfully using conventional Ordinary Least Square (OLS) method. However, despite its widespread use in the macroeconomic literature, the consistency of the main parameters of interest of the empirical model depends on several assumptions which can be regarded, in certain situations, as quite restrictive ones. Specifically, one should explicitly assume that neither $GRP_{i,t-1}$, $X_{t,i}$ nor $G_{t,i}$ correlate with $\varepsilon_{t,i}$ (strict exogeneity assumption). Furthermore, one should assume no serial autocorrelation in idiosyncratic errors.

To reduce the bias due to violation of the first restrictive assumption, we propose to estimate the empirical model of the underlying empirical association between effective governance and well-being of a region using a more flexible panel data approach known as the

Blundell-Bond estimator (1998). Specifically, we introduce a system of equations representing equation (1) in levels and first differences and then estimate them jointly. The first equation representing the key variables of interest in levels is instrumented with lags of first differences of these variables, and the latter equation is instrumented with the lagged variables in levels. This approach assumes that $E(\Delta Y_{i,t-1}\varepsilon_{i,t}) = 0$ and $E(Y_{i,s}\Delta\varepsilon_{i,t}) = 0$ for $s \leq t-2$, where $Y_{i,t}$ is a set of endogenous independent variables. To satisfy the latter condition, we use the lags of potentially endogenous variables as instrumental variables. To test statistically the validity of the chosen instruments, we use the Sargan test.

It should be noted first that our independent variables in the analysis are not entered in lag form. Second, we conjecture that four independent variables, the investment risk ranking, the unemployment rate, the investment in fixed assets per capita and the mortality rate, could be correlated with certain elements of the error term ε_{it} bringing into question the consistency of the parameters corresponding to the given variables. Following the Blundell-Bond recommendations, we use the lags of these variables as instrumental variables to reduce the potential bias of the associated parameters. However, we have further to assume that the remaining independent variables are uncorrelated with the error term, $\varepsilon_{t,i}$. Finally, for sake of efficiency, we have also to assume no second order autocorrelation in idiosyncratic errors $\varepsilon_{t,i}$. The validity of the latter assumption can be tested by the conventional Arellano-Bond test.

In the second part of the paper, we attempt to understand the mechanisms through which governance may affect regional growth in GRP per capita. We do this using the stepwise approach. Initially, we start with an "empty" model controlling only for a measure of governance in the GRP per capita regression. Then we add a group of control variables at a time which should allow us to track the major components of the effective governance within the ordinary linear regression. The groups of control variables include all the key variables included in $X_{t,i}$, such as regional level information about the mortality rate, the current situation in the labor market, certain infrastructure variables, and variables revealing the overall investment and innovation climate in the region.

Finally, it is worthwhile to mention that in our analysis, we have normalized all monetary variables to 2010 rubles using publicly available data on annual inflation rates; later runs used official CPI data for the Russian regional economy.

Data Description

All the key variables of interest used in our analyses, with the exception of investment risk ranking, which is developed by the Ekspert RA (Ratings Agency), are drawn from the

statistical handbook known as "Regions of Russia. Socio-economic indicators: 2012." Description of the variables is in Table 1 (Appendix). The statistics in the handbook are generated by various state-level statistical agencies through various data collection and survey activities of local enterprises, organizations, and population. More information about data collection and survey methods are discussed extensively in the handbook.

Descriptive statistics of all key variables used in our study are presented in Table 2. The average real GRP in 2010 dollars is 192.5 million rubles. However, the dynamic consideration of the given variable shows that regions have experienced substantial growth in economic development in the study period, and the average GRP within nine years has increased from 128 million rubles to 272 million rubles. Taking into consideration that our main independent variable represents a region's ranking in terms of investment risk, the values representing the mean and median of this variable should be identical. In our case, the mean and median are 42 and as expected, the values have not fluctuated substantially over time. The average mortality rate per 1,000 individuals is 15.40 persons, and it has been fluctuating around this number over the period under study. The share of innovative firms in the average region is almost 9 percent, and it can be observed the trend that innovation activity have been increasing lastly in Russian Federation. The average depreciation of assets of the typical firm at the end of the year has been decreasing in Russian Federation from 49 percent to 41 percent in the period between 2002 and 2008. The average region produces 11.7 billion kwh of electricity with slightly an increasing trend for the study period. In the average region the level of investment in fixed assets per capita is 66.4 million rubles (2010) with significant variation over time from 32.3 million to 105.2 million rubles. Per 1,000 squared kilometers of the average region, only 196 kilometers of roads are asphalted, a statistic which has been steadily increasing during the study period. Finally, the average unemployment rate in all regions of Russian Federation is 9.7 percent and it can be observed the drastic decline in the unemployment rate from 12.1 percent to 8.3 percent in the period between 2000 and 2008.

One of the possible concerns of readers is the level of collinearity across independent variables. Because each independent variable reveals the socio or economic situation of the given region, although through a very different perspective, one may expect the relatively high level of correlations across different independent variables leading to the statistical problem known as the multicollinearity problem. The variance inflation factor (VIF) analysis, although not reported in this paper but which can be requested from the authors, shows that the VIF statistic for any independent variable does not exceed value 3 suggesting a minimal level of correlation across independent variables, which can be ignored in our multivariate analyses.

The following map illustrates cartographically our variable representing effective

governance in 2008, the final year of our panel data, "investment risk ranking," as determined by a survey by the rating agency ekspert.ru (see above). The map uses three categories (high, average, and low) for the ranking, to simply for the objective of illustration:

Figure 2. Differentiation of Russian regions by value of investment risk* (2008)

Compiled from thirteenth rating of investment attractiveness of Russian regions in 2008 (Expert RA)[21] *by Evgenij Plisetskij*

Results

Effective Governance and Economic Development

Using various panel data approaches discussed in the model section, as our main objective, we estimate the relationship between effective governance and economic development of regions in the Russian Federation. Due to the potential of the main independent variable, investment risk ranking, along with other independent variables, the unemployment rate, the investment in fixed assets per capita and the mortality rate, to be correlated with unobserved factors not included in the dynamic specification of the GRP per capita or reversely correlated with the latter variable, our preferred empirical model should control for the potential endogeneity of the given set of variables (Blundell & Bond approach). However, to convince our readers that the endogeneity issue is worth addressing, we also present in Table 3, the results from the pooled regression, which ignores any longitudinal variations in the main dependent variable or its simultaneity with any of independent variables (model 1), and from the pooled regression, which addresses one of these issues by introducing the independent variables in the lagged form in the set of controls in the regression analysis (model 2). The latter approach

[21] http://raexpert.ru/ratings/regions/2008/

closely resembles the approach suggested by Barro & Sala-i-Martin (Barro and Sala-i-Martin 1991). Finally, the consistency and efficiency of our preferred approach, Blundell & Bond, depends on the absence of any serial autocorrelation in error terms and the absence of any correlation between the chosen instruments and the error terms in the main regression. The Arellano-Bond test and Sargan test both provide substantial evidence confirming the validity of underlying assumptions.

At first glance, the results across all three approaches may suggest the relative unimportance of addressing potential endogeneity of the effective governance measure in the relationship of interest. Regardless of model specification and underlying assumptions, the results display the substantial and statistically significant relationship between investment risk ranking and GRP per capita. However, visual inspection of the main parameter of our empirical analysis shows that its magnitude has substantially increased in size after controlling for potential endogeneity of investment risk ranking. The substantial change in the estimate corresponds to a trivial increase in uncertainty around the estimate (standard errors) pointing toward the fact that the latter result is not an artifact of unobserved intricacies of the unemployment estimator. In the next subsection, we will pay close attention to the factors explaining the potential mechanism through which investment risk ranking may affect economic wellbeing of the region.

Despite the fact that we have limited gain from employing the more complex estimation technique for understanding the relationship between effective governance and economic development of regions of the Russian Federation, several other results signal the importance of estimating the more dynamic model controlling for unobserved traits. First, the positive sign and significance of the parameter corresponding to the lagged dependent variable in the Blundell-Bond model provides support for the more dynamic model specification of economic wellbeing of regions. Furthermore, visual comparison of results across three models also reveals the importance of addressing potential endogeneity of the other three independent variables, that is, the mortality rate per 1,000 individuals, the region's unemployment rate and the level of investment in fixed assets per capita. The parameters for the given variables have dropped substantially in size, although preserving their statistical significance, except for the unemployment rate. The main implications from the estimated parameters for these variables, using the Blundell-Bond model, are that the lower mortality rate and to some extent the unemployment rate and the higher level of investment in fixed assets in the region are positively associated with regional economic development. Finally, our preferred model also suggests that the increased production of electricity has a positive implication for the region's economic development.

Components of Effective Governance in Economic Development

In the main model, we find a negative relationship between investment risk, our effective governance indicator, and regional economic development. In the above section, we attempt to unravel the mechanism through which the main variables of interest can be related to each other. To achieve this goal, we use quite a simple approach discussed in the model section (stepwise approach), which does not account for potential endogeneity of any of independent variables. However, by capturing the simple correlation between the set of independent variables used in the analysis and the effective governance measure, we suggest to readers something about the factors explaining the components of effective governance in regional economic development of regions of the Russian Federation.

The completely unrestrictive model (See Table 4, column 1) shows the absence of any association between our measure of effective governance and GRP per capita, which is not a totally surprising finding. The investment risk ranking has two components which may have dissimilar impacts on GRP per capita. An increase in the risk level of investment should lead to a lower level of economic development, while an increase in investment "potential" increases economic outcomes of the region. As a result, the positive association offsets the negative one and we observe no statistical or economic association between our variables of interest in the unadjusted model. However, in the second model we add the regions' mortality rate per 1,000 individuals in our regression analysis, which uncovers not only a substantial correlation between this variable and GRP per capita, but also its correlation with investment risk ranking. The strong negative association between our variables of interest can be suggestive of the importance of public health programs targeted at increasing workers' health and consequently their labor market productivities and overall well-being in the development of any region.

We further add the regional unemployment rate in our analysis (See Table 4, Model 3), which we use as a proxy of the region labor market situation. Interestingly, after adding this variable in our analysis, we are able to capture fully the observed correlation between the measure of governance and GRP per capita. This finding may suggest that effective governance may constitute the ability of the government through actions and policies to improve the labor market fortunes of workers in the region. One of the policies targeted at improving labor market conditions of workers in the region can be through altering investment behaviors of firms and organizations by either directly improving transportation infrastructure and electrical power generation or improving investment and innovation climate in the region. As a result, the observed link between labor market conditions, investment ranking and the GRP per capita can also be partially explained by infrastructure and investment related variables.

To test the underlying hypothesis, in the next model (Model 4), we first add in our analysis the variables capturing electricity production and the level of development of transportation infrastructure in the region in terms of the length of asphalted roads per 1,000 square kilometers. Unsurprisingly, extensive provisions of public goods in the form of improved transport infrastructures and higher electrical power generation have a substantial impact on our parameter of interest. Specifically, although the relationship between the effective governance measure and GRP per capita does not return its statistical significance, we observe substantial change in its magnitude. This may imply that policies aimed at increasing the provision of public goods can be associated with the willingness of investors to invest in the region.

Further, we add in the empirical specification of region's economic development, a set of variables capturing the overall regional investment climate approximated by the region level of investment in fixed assets per capita, depreciation of assets and innovation activity. Specifically, our subjective expectation is based on the fact that regions with better governance can be associated with a higher level of investment in fixed assets, which, in turn, should be associated with the improved well-being of the population in the form of improved labor market fortunes and overall productivity. The results of model 5 illustrate that the coefficient for the governance proxy retains its statistical insignificance at most conventional levels. However, the absolute value of the coefficient measuring the relationship between regional labor market conditions and GRP per capita along with the main parameter of interest has substantially decreased in magnitude suggesting that the changes in labor market fortunes can be accompanied by the acquisition of new fixed assets by regional firms leading to improvement in economic conditions of the region.

In model 6 and 7, we subsequently add the indicators for two largest metropolitan areas of Russian Federation and the corresponding year of the given observation. These two sets of additional controls return statistical significance of the measure of effective governance in the specification of economic development of the regions of the Russian Federation. A quick comparison of the results across the last three models reveals that the statistical significance of the main parameter of interest can be a product of the disproportionate distribution of economic resources across regions of the Russian Federation favoring the largest metropolitan area and unobserved time trends. However, the significance can be also explained by the decreased uncertainty around the estimates pointing toward increased efficiency of estimates after controlling for the last two sets of controls.

Conclusion

Our main results show that investment risk ranking and GRP per capita can be negatively associated with each other, implying that more effective governance leads to the higher economic development of the region. Specifically, we find a statistically significant result regardless of whether we controlled for potential endogeneity of the given measure in the empirical specification of regional economic development. To explain this finding, we need to understand more about the nature of endogeneity of the given variable in our analysis. We suspect that certain variables attributable to actual enforcement and implementation of federal and regional level laws and regulations across regions including the ability of regional government to suppress any corrupt practices play an important role in regional economic development. It is a widely accepted view that the effective governance consists of observance of the law, avoidance of corrupt practices and the ability of the region to establish efficient social and economic programs. Our empirical strategy enables us explicitly to test for the importance of the last item from this list assuming that the first two items are comprised as region specific unobserved traits. By exploiting the panel data approach, we have probably been able implicitly to control for these key variables too in our empirical analyses which enabled us to draw a more accurate conclusion about their importance in the underlying relationship of interest.

Our second analyses have been performed to gain a better understanding of the types of social and economic programs which may explain the effective governance and economic development gradient. These analyses reveal that the other components of effective governance are the ability of the government to run effective public health programs aimed at decreasing the overall mortality rate among the working-age population, fair labor market conditions for all individuals who are still able to work, and improving the investment climate in the region leading to a higher level of investment in fixed assets. Our results implicitly suggest that effective governance comprises the tangible aspects of policymaking such as the adoption of effective public health, investment and labor policies and most importantly, for the regions of Russian Federation, although effective governance can be also an artifact of unobserved and unmeasurable managerial attributes of the local government to implement federal and region level laws and regulations. This would imply that in the market based economy, effective governance constitutes the ability of local government to adopt and manage various social and business programs aimed at maximizing the social welfare function and enforce implementation of laws and regulations by all entities of the economic system.

It is worth mentioning that our measure of effective governance, investment risk ranking, can be perceived as a noisy and imperfect measure for the statistical inquiry of the relationship

between effective governance practices and economic growth. Economists have a long aversion toward the use of any indices or rankings in statistical analyses due to difficulties with interpretation of parameters corresponding to such measures. However to defend our choice of the governance variable, we should admit that investment risk ranking has two inseparable components such as a “risk” level of the region and its “potential” for investors. So, the low rank of the region can serve as a signal for investors of either high “risk” associated with investment in any business activity in the given region or low “potential” return from investment. Despite the issue of inseparability, both of these components of investment risk ranking point toward the inability of investors to receive the satisfactory return from their investment in the given region. The riskier and less “potential” is the region for investors, the lower is economic activity in that region. Furthermore, in combination, the latter two components may also signal the insufficient level of investor protection in the region. Thus, the improvement in investor protection can be considered as an effective policy to reduce inter-regional differences in individuals’ well-being (Guriev and Vakulenko, 2012). Our study implicitly suggests that an increase in investor protection can be in the form of programs generating a more healthy labor force, stable labor market conditions and improved investment climate in the region.

Appendix

Table 1. Description of Key Variables Used in the Analysis

Variable Name	Description
	Independent Variables
Asphalted Roads	Length of asphalted roads per 1,000 square kilometres in Russia's regions
Mortality	Number of deaths per 1,000 population
Innovation activity of organizations	Percent of firms and other organizations producing innovative products or processes
Investments in fixed assets	Aggregate cost of reproduction of fixed assets (new construction, expansion and reconstruction, and modernization, which increase the cost of purchasing machinery, equipment, vehicles, adding to the herd, or to the sowing and output of perennial crops, etc.)
Depreciation of the fixed assets	Ratio of accumulated fixed assets (difference between their total book and the net book value) to the total book value of these assets
Electricity production	Total volume of electricity produced from all types of power plants
Unemployment rate	Percentage of the regional work force that is unemployed
Regional CPI	Change of the general price level of goods and services purchased by households for non-productive consumption in the given region
Investment Risk Ranking	Region's ranking with respect to return to investment and its risk
	Dependent Variable
GRP per capita	Indicator of regional economic activity, which characterizes the process of production of goods and services for final use.

Table 2. Descriptive Statistics of Key Variables Used in the Analysis by Year: 2000-2008.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
GRP per Capita (millions of 2010 rubles)	128.3	136.4	145.3	160.2	185.8	203.5	234.2	264.4	272.2	192.5
Investment risk ranking	42.8	42.5	42.5	42.4	42.6	42.1	42.6	42.3	42.2	42.0
Mortality per 1000	14.9	15.3	16.0	16.2	15.9	16.1	15.1	14.5	14.5	15.4
Firm innovative activity (in percent)	8.3	8.7	8.9	9.0	8.7	9.4	9.5	9.5	9.1	9.0
Electricity production (billion kwh)	10.8	11.0	11.0	11.3	11.5	11.8	12.3	12.5	12.7	11.7
Depreciation of assets (end year, percent)	43.6	44.5	49.2	42.2	42.0	43.1	42.3	42.1	40.6	43.3
Asphalted Roads	111.1	111.5	112.7	113.3	113.6	111.4	127.4	134.6	136.0	119.1
Unemployment rate	12.1	10.6	10.0	10.6	9.5	9.1	9.1	7.9	8.3	9.7
Investments in fixed assets per capita (millions of 2010 rubles)	32.3	37.7	43.2	48	51.2	56	73.4	100.6	105.2	66.5

Table 3. Associations between Key Independent Variables in the Lag Form and GRP per Capita Estimated Using Various Panel Data Techniques.

Variables	(1) Pooled	(2) Pooled with lagged regressors	(3) Blundell-Bond estimator
Lag of dependent variable: GDP (t-1)			0.445*
			(0.254)
Investment Risk Ranking	-0.391*	-0.445*	-1.155***
	(0.229)	(0.264)	(0.279)
Mortality per 1000	-18.789***	-21.135***	-13.692**
	(2.371)	(3.817)	(6.981)
Innovation activity	-1.986**	-2.614**	0.720
	(0.980)	(1.218)	(8.850)
Electricity production per 1000	3.160***	3.171***	4.480*
	(0.601)	(0.662)	(2.309)
Depreciation of Assets	1.750**	1.309*	2.894
	(0.687)	(0.758)	(3.500)
Asphalted Roads	-0.101*	-0.129*	-0.159
	(0.059)	(0.072)	(0.327)
Unemployment	-7.878***	-9.258***	-2.873
	(1.828)	(2.557)	(2.380)
Investment in Fixed Assets per capita	1.176***	1.211***	0.632***
	(0.085)	(0.281)	(0.239)
Time effects	Yes	Yes	Yes
Constant	394.876***	486.597***	168.514
	(49.825)	(93.624)	(225.817)
Observations	694	616	617
R-squared	0.866	0.807	
Arellano-Bond test, AR(2), p-value			0.3422
Sargan test, p-value			0.9032
Number of regions	81	81	81

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4. Factors Associated with GRP per Capita and Effective Governance (OLS).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Investment Risk Ranking (IRR)	0.257	-1.083***	-0.245	-0.645	-0.353	-0.385*	-0.431**
	(0.384)	(0.381)	(0.426)	(0.444)	(0.232)	(0.227)	(0.220)
Mortality per 1000		-33.028***	-38.277***	-35.084***	-18.565***	-17.146***	-16.914***
		(4.701)	(4.670)	(4.264)	(2.337)	(2.426)	(2.470)
Unemployment			-18.920***	-18.042***	-8.601***	-7.919***	-6.749***
			(3.929)	(3.969)	(1.821)	(1.734)	(1.675)
Asphalted Roads				-0.448***	-0.099*	-0.194***	-0.212***
				(0.115)	(0.058)	(0.037)	(0.036)
Electricity production per 1000				2.104**	3.178***	2.714***	2.651***
				(0.922)	(0.611)	(0.659)	(0.644)
Innovation activity					-1.790*	-2.235**	-2.529***
					(0.979)	(0.945)	(0.946)
Depreciation of Assets					1.331**	1.789***	2.399***
					(0.627)	(0.563)	(0.618)
Investment in fixed Assets					1.177***	1.179***	1.177***
					(0.087)	(0.088)	(0.086)
Moscow						209.5***	232.7***
						(64.307)	(62.647)
St. Petersburg						-2.284	5.305
						(14.707)	(12.823)
Constant	178.5***	752.5***	967.9***	954.9***	435***	406.5***	346.7***
	(15.9)	(87.4)	(100.2)	(111.7)	(48.3)	(49.1)	(50.8)
Time effects	No	No	No	No	No	No	Yes
Observations	694	694	694	694	694	694	694
R-squared	0.001	0.181	0.274	0.315	0.862	0.868	0.873

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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