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How (not) to measure Russian regional institutions ☆

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Abstract

The paper explores various measures of institutional quality in Russian regions, and compares those measures to each other. Such analysis leads to the conclusion that Russian regional institutions are essentially multidimensional, and therefore comparisons of Russian regions in terms of their overall institutional quality could be problematic. New institutional indices are derived from Russian enterprise surveys held under the BEEPS project of the European Bank of Reconstruction and Development. Such indices yield a typology of Russian regions in terms of efficacy of regional administrations' control over economy and bureaucracy in their regions. Dynamics of regional institutional indices is investigated against the backdrop of Russia-wide institutional trends.

JEL classification: D73, D78, H73, H83, O17.
Keywords: institutions, institutional measurement, regional rankings, centralized and decentralized corruption, institutional dynamics.

1. Introduction

Successes and failures in economic development are associated with institutions — "rules of the game" in the economy and society, which create more of less favorable environments for economic activity. Effective institutions support entrepreneurship, attract investments, and promote economic growth. In contrast, stagnation and poverty, even when resources are abundant, are usually associated with flaws in the institutional environment.

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Once it is realized how important institutions are for economic development, it is natural to make an attempt to measure institutional quality. Interest in such measures occurs for at least three reasons. First, entrepreneurs and investors who choose countries and regions for their operations need assessments of the investment climate in prospective jurisdictions. Second, these indicators are useful in assessments of the performance of government agencies by voters, higher authorities (in the case of regions), and by international organizations, which often condition assistance, loans, or membership in developed countries' groups on the quality of national institutions. Measurable improvement of institutions reflected by international ratings could be included in political platforms and campaign promises, as recently happened in Russia. Finally, analysts need these ratings to forecast the development of national and regional economies, to identify their competitive advantages and "bottlenecks" and to evaluate the effect of various factors (e.g., history, geography, public policy, social structure, norms, and values) on the quality of institutions.

Of course, the measurement of institutions and their contribution to economic outcomes must be preceded by a clear definition of the institutions. There are different points of view in the literature as to what can and cannot be considered institutions. The common definition of institutions by D. North as man-made "rules of the game" in the economy and society admits various interpretations. In particular, there are formal and informal institutions; in addition, institutions are contrasted with organizations, however subtle the differences between the two could be. Both statutory regulations and their implementation and enforcement practices can be considered institutions. Long-term institutions are contrasted with shorter-term policies emphasizing the role of institutions as constraints on choices made by governments and private sector agents. A hierarchy can be established among institutions; basic institutions (such as constitutional provisions) shape the framework of economic activity, including dispute resolution, property and contract rights, competition, etc.. Various parts of such a framework, in their turn, could also be considered institutions. Disagreements in the literature about the extent to which institutions affect economic and social outcomes are largely due to different interpretations of the very concept of institution.

As definitions of institutions differ, so do approaches to institutional measurement. Measures of institutions can be formal; in this case, they record presence or absence of certain regulatory authorities, legislation, officially prescribed procedures, and so forth. Another possibility is to use substantive indices reflecting the opinions, experiences and appraisals of institutions' users (for example, entrepreneurs, managers, and citizens) and external experts who are able to compare the quality of institutions in different jurisdictions (Voigt, 2013). Finally, institutions can be gauged by indirect indicators that are observable and measurable and expected to be correlated with the institutions of interest. Presently, there many dozens of institutional quality measures produced by rating agencies, think tanks, international organizations and research groups. Although these measures are susceptible to criticism (see Langbein and Knack, 2010; Thomas, 2010; Glaeser et al., 2004), they are widely used in academic literature, applied analyses, and for other purposes.

Various measures are available for Russian institutions, including, e.g., the protection of property rights, rule of law, business climate, and government

accountability and effectiveness. However, it is well-known that the institutional environment in Russia is highly uneven across its vast territory, and Russian regions exhibit significant differences in investment attractiveness, business climate, and regional government effectiveness. Nation-wide institutional measures do not reflect (and in fact hide) such variations (Snyder, 2001); to have a better idea of the actual conditions on the ground, one needs institutional measures for particular regions.

Indices and ratings of Russian regional institutions have been produced over the last 10–15 years. Although they are not as varied and numerous as country-level indices of institutional quality, their number has exceeded a few dozen. It is not easy for potential "consumers" to navigate this variety; therefore, there is a need for an analysis of available indices and for an assessment of their suitability for academic and practical purposes. This problem has not received proper attention in the literature (one of the few such studies is by Libman and Kozlov, 2013).The present paper is intended to partially fill this gap.

Our first order of business is to analyze the links between indicators of the regional institutions and, in particular, to determine to what extent these indicators are correlated with one another. In the case of highly statistically significant correlations of most indicators with one another, one can rank regions in terms of their overall institutional performance. Conversely, a weak correlation between individual indices supports a "multidimensional" view of regional institutions. In this case, it would be problematic to derive composite institutional indices by aggregating partial indicators such as rule of law, competitiveness of the regional economy, corruption prevention, etc. It should be borne in mind that the above institutional categories are themselves generalized concepts ("constructs"), and the ability to measure them is not obvious a priori and must also be confirmed empirically using various specific indices.

In this paper, we consider as regional institutions various aspects and components of the actual regional environment for economic activities. As noted above, this extended interpretation contradicts the "narrow" one, which is common in the literature and defines institutions as long-term constraints on economic, administrative, and political decision-making. We base our interpretation on the fact that institutions "de facto" rather than "de jure" are relevant for development; furthermore, occasionally, there is no significant and robust relationship between de jure and de facto institutions. Cross-country studies show that formal legal provisions, including constitutional norms such as checks and balances, do not themselves systematically affect economic outcomes; the mere existence of these norms does not guarantee their enforcement (Glaeser et al., 2004). When governments are not properly accountable, bureaucrats and/or interest groups easily sidestep, if needed, statutory requirements or manipulate and misinterpret them (Acemoglu et al., 2008).

Implementation practices could be of greater immediate relevance for doing business than the formal rules proper. This is particularly likely in Russia, where lax and arbitrary implementation proverbially compensates for excessive tightness and rigidity of statutory requirements. Furthermore, legislation and other institutions in Russia are commonly misused (for more details see Polishchuk, 2008), which further widens the gap between formal institutions and the actual conditions on the ground.

In our analysis, we preserve the defining "man-made" characteristic of institutions, which emphasizes their dependence on government actions and policies, and on prevailing conventions and behavioral practices. Hence, institutions are contrasted with exogenous factors of regional development such as geography, resource abundance, historically shaped structure of the regional economy, and socio-cultural characteristics and ethnic mix of the population. Sometimes it is difficult to separate "man-made" institutions from exogenous factors because history and geography are powerful institutional determinants (technically speaking, they serve as "instrumental variables" for institutions) (Sokoloff and Engerman, 2000; Acemoglu et al., 2001, 2002). In turn, institutions affect other factors that are essential for regional development, such as norms and values of the population and human capital accumulation (Tabellini, 2008b).

It could be quite difficult to properly grasp this complex web of cause-effect relationships. However, cross-regional analyses within the boundaries of a single country could simplify such a task in comparison to cross-country comparative institutional studies, which are prevalent in the literature (Snyder, 2001). Russian regions are subject to the same federal laws, they are parts of the Russia-wide market, share a common history, and have similar politics, socio-cultural characteristics and other factors and features that affect relationships between institutions and economic outcomes. With such commonality, one can have greater confidence in statistical models describing institutional causalities. Regions of the same country more likely satisfy the "ceteris paribus" requirement than do different and often disparate countries of the world, and cross-regional analyses are less likely to be distorted by the "omitted variables" bias.

In the next section of this paper, we analyze the main approaches to the measurement of institutions presented in the literature, mostly at the cross-country level, to draw lessons and recommendations for institutional measurement in Russian regions. We then proceed to a discussion of how Russian regional institutions evolved from the outset of market reforms until the present; we are particularly interested in the causes of institutional diversity between regions observed under the conditions of economic and political decentralization in the 1990s, and sustained in the following decade of the "power vertical".

In the empirical part of the paper, we review various sources of data, including regional ratings and rankings, which are available for institutional measurement. To understand better what exactly such ratings measure and whether they can be used jointly or separately, we analyze how such measures relate to one another. We propose new indices of regional institutions making use of the recent Russian enterprise surveys, which leads to a taxonomy of regional institutional regimes. Next, we discuss regional institutional dynamics against the backdrop of institutional trends nationwide and argue that a decline of the quality of national institutions was concurrent with a divergence of regional institutional regimes. We conclude with a discussion of causes and consequences of institutional diversity among Russian regions.

2. Measurement of Institutions: Methodology and Dilemmas

The history of institutional measurement began in investment ratings produced by international consultancies for potential investors. These ratings characterized

the prospects of doing business in various countries. When economists turned to measuring institutions, they encountered a number of serious methodological and practical problems.

Measurement of institutions cannot be separated from the ongoing debates on the role of institutions in economic development. The main problem is to properly separate institutions from economic outcomes and not consider the latter when measuring institutions lest the link between institutions and development become tautological. The above-mentioned formal procedural approach fully meets this requirement but is not very helpful otherwise because the mere presence of formal rules is not systematically related to the outcomes.

This certainly does not imply that constitutional and other long-term formal constraints on political and economic actors are of no practical significance. Rather, such rules, when they are enacted formally but have no historical and cultural roots and no robust enforcement mechanisms, can be violated with impunity. In particular, it is well-known that simple copycat replication by developing countries of the institutions of developed market democracies rarely brings about the expected result (Weingast, 1997) because such constitutional provisions often die on the vine.[1] Thus, what matter are not the formal provisions per se, but rather their enforcement practices, which renders the formal approach to institutional measurement largely impractical.

The most common alternative is to use subjective opinions and judgments by experts and/or users of institutions. In this case, one should expect "noisy" results; the question is, to what extent are these noises random and uncorrelated with one another (if they are, one could hope to reduce noise by aggregating survey results or using opinions of different experts, for example), or do they reflect systemic distortions which cannot be eliminated by aggregation. Such distortions can be due to the "halo effect" (Bardhan, 2002), when judgments about an institution are actually inferred from social and economic conditions on the ground. Experts gladly award high marks to institutions in economically successful countries, and do not hesitate to award low scores to institutions of poor, stagnant and politically unstable nations.

Such an approach is justified inasmuch institutions are abstract categories that cannot be directly observed; therefore, it is natural to use for their assessment observable characteristics, which are expected to be linked to the underlying institutions. It is clear, however, that any statistical inferences obtained by using observable outcomes as institutional measures would be suspected of reverse causality.

To mitigate such risks, modern methods of institutional measurement are based on cross-country comparisons of "standard situations". Examples of such situations include common administrative procedures (e.g., opening a business, access to utilities, and issuance of permits and licenses (Djankov et al., 2002)), settlements of comparable commercial disputes (World Bank, 2014), and frequency of the occurrence of certain institutional pathologies (property expropriation or raider attacks on business). Experts, business consultants, managers and entrepreneurs are requested to assess, e.g., competition, corruption, independence of courts, and effectiveness and competency of the bureaucracy. It is hoped that

[1] This can be illustrated by, e.g., the absence of a clearly expressed link between the quality of monetary policy and the presence of a law on central bank independence (Acemoglu et al., 2008).

the use of specific questions and unified measurement techniques reduces distortions, and aggregation of institutional measurements obtained from various sources would further improve the precision of measurement and make it less subjective.

Such principles are implemented in the best known and most widely used institutional measurement project "Governance Matters" (Kaufman et al., 2011). The project takes stock of numerous institutional measures produced over the last decades and aggregates those into clusters that correspond to various aspects (dimensions) of the institutional environment. Authors of the project demarcate six main clusters: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. All data sources used to construct those measures are based on perceptions of institutions by respondents. To defend such a methodology, the authors argue that economic decisions, which are most likely to affect economic performance, are largely based on such perceptions; hence, institutional measures derived in this manner will likely be suitable to describe the effect of institutions on economic outcomes.

Aggregate indices of institutional quality mentioned above are widely used in economic studies, both explaining cross-country variations of institutional quality and using institutions to explain economic outcomes. These indicators are also widely used in various international programs and projects (Thomas, 2010). At the same time, "Governance Matters" indicators are subject to criticism that calls into question both the measurement methodology and the very definition of the measurement objects. The six clusters are abstract categories ("constructs") that aggregate sometimes-disparate phenomena and aspects of economic activity. For example, the notion of corruption incorporates low-level bureaucratic corruption, high-level corruption, political corruption, government capture, patronage etc. Different corruption measures, including those based on corruption perception or on corruption experience, do not agree with one another and are explained by various sets of factors (Treisman, 2007).

Vague definitions of corruption and other institutional clusters make it difficult to assign various specific measures to such clusters. This provides an extra reason to doubt the applicability of the "Governance Matters" aggregate indices; it is arguably unclear whether there is indeed a real-life object that is measured, rather than an artificial concept (Thomas, 2010).

Institutional indicators of the "Governance Matters" project are highly correlated with one another (their pairwise correlations range from 0.6 to 0.9 and higher), and factor analysis yields a principal component explaining over 60% of the total variation of all indices (Langbein and Knack, 2010). This could be interpreted as evidence of close connectedness of various institutions to one another, in which case one could make judgements about the overall quality of national institutions (Tabellini, 2008a) by using, e.g., the above-mentioned principal component as an aggregate institutional performance index.

Such a high degree of agreement between different measures can be expected when government and/or society have broad discretion over institutional choices and use it in the interests of society which requires commensurate progress along all of the institutional axes (in other words, various institutions are complements rather than substitutes so that, e.g., political stability cannot make up for high

corruption).This likely overstates and oversimplifies the realities of institution-making and contradicts the observed variability of institutions and their bundles across the world. An alternative explanation, corroborated by in-depth analysis of linkages between institutional indices of the "Governance Matters" project, is that the high correlations between these indices are due to the employed methodology and reflect either common measurement errors (e.g., the halo effect), or vague definitions of what is measured.

Different institutions play different roles in economic development, which is another indication that institutions are inherently multi-dimensional, should not be aggregated in a single measure of institutional quality, and could not be derived from one such measure. In particular, property rights protection is one of the fundamental factors of sustainable economic development, while the effect of contract enforcement on development is not as evident, although it strongly affects business activity and financial systems (Acemoglu and Johnson, 2005). Furthermore, property rights and contract enforcement have different historical roots, which is another argument for separate rather than aggregate analysis of institutional measures. Similar conclusions can be drawn from the economic success of countries such as China, with weak democratic accountability, absence of checks and balances, and unconventional protection of property rights, which receive low scores in some international rankings (Qian, 2003; Glaeser et al., 2004).

Another reason why institutions cannot be measured by a single aggregate indicator (or group of closely connected separate measures) is that the effect of a particular institution on economic outcomes depends on other characteristics of the institutional environment (Aoki, 2007). Due to complementarity of various institutions, similar reforms (such as liberalization, privatization, etc.) could lead to diverse outcomes depending on the institutional backdrop (see, e.g., Polishchuk, 2013; Dower et al., 2014). Obviously, such effects can be analyzed only with multiple institutional measures at hand.

Of particular interest are indirect institutional measures that can be derived from observable economic outcomes. It was noted earlier in the paper that a serious shortcoming of this approach is potential reverse causality. Nevertheless, such a measurement technique could be justifiable when economic indicators can serve as "litmus tests" for institutional quality. An example of such an indicator is the share of informal economy (in the GDP, employment, etc.). Usually, the informal sector offers inferior conditions for doing business by restricting access to finance, placing a "glass ceiling" on firms' growth, and denying legal protection to shadow businesses, etc. These extra costs of doing business informally suggest that firms are forced to exit into the informal sector to avoid even greater losses from staying in the official economy and suffering from red tape, predatory taxation and other institutional pathologies. The share of informal employment is thus strongly correlated with other measures of institutional quality (Djankov et al., 2002) and could thus itself serve as such a measure.

Institutional performance measures are being produced not only for nations of the world but also for regions of a given country; presently, such measures are available inter alia for subnational units of the US, China, India, Italy, Germany, Poland and other European countries. Measurement of regional institutions is not as active as of the national ones. However, the same methods and approaches

usually are applied in both cases (see for example Knack, 2002; Hall and Sobell, 2008; Tabellini, 2008a; Calì et al., 2011; Giordano and Tommasino, 2011; Xu, 2011), particularly because national and regional indicators are often produced by the same organizations (Karabegovich and McMahon, 2006).

The two decades-long experience of measuring institutions in various countries and regions of the world demonstrates that institutions are fundamentally diverse, that their effect on economic and social outcomes is as a rule multifaceted and that such measurement calls for a range of different methods and data sources. Another lesson is that a structure found in the institutional diversity should not always be imposed a priori; it might be better to obtain such structure endogenously, deriving it from the available data (e.g., by using factor analysis), and subsequently seek proper interpretation for the obtained measures that are grounded in data rather than hypothesized in advance.

3. Institutions in Russian Regions

It is well known that Russian regions significantly differ from one another in their investment attractiveness and business environment (Zubarevich, 2010). The interregional variations in the intensity of red tape, access to infrastructure and markets, costs and risks of doing business that are observed in Russia (Shchetinin et al., 2005; World Bank, 2014) are rarely observed within a single country. These variations are reflected in domestic and particularly in foreign investments in regional economies, sizes of informal sectors in the regions (Syunyaev and Polishchuk, 2014), and other key indicators.

Interregional institutional diversity is inevitable for a country as vast and diverse as Russia, with uneven distribution of resources, population, and economic activity. It is known from the literature that geography and natural environment shape institutions and thus could be causes of institutional diversity (Sokoloff and Engerman, 2000; Acemoglu and Robinson, 2012). History also plays a role (Acemoglu et al., 2001), and indeed, the institutional diversity between Russian regions has deep historical roots (see, e.g., Dower and Markevich, 2014; Kuzmina et al., 2014).

Therefore, spatial diversity of institutions in Russia is natural in many respects. However, such natural causes notwithstanding, the actual interregional variations in institutional environment far exceed what can be expected from a single country with a centralized political, administrative, and fiscal system and heavily restricted, at least over the last decade, regional legislative and regulatory discretion. Interregional variation of institutions in Russia shows that federal legislation is not uniformly and consistently enforced across the country (Yakovlev and Zhuravskaya, 2013). Hence Russia-wide measures of institutional quality could be at best accurate on the average and remote from the actual conditions on the ground in a particular region. Therefore, there is a strong need to measure institutional performance regionally.

The patchwork of institutional regimes emerged in Russia at the outset of market reforms, when a weak central government was unable to establish and effectively enforce the same "rules of the game" on the entire country.[2] Region-

[2] For a more detailed discussion of the recent history of Russian regional institutions, see Polishchuk (2013), Syunyaev and Polishchuk (2014).

al governments took full advantage of the offer to "take as much power as you can use". As a result, depending on the structure and conditions of regional economies, consolidation and composition of local elites and other exogenous factors, Russian regional institutions in the 1990s featured a panoply of "liberal", "conservative", and various hybrid regimes.

The transfer of the institution-making power to the regions was a pragmatic choice by an unstable regime that willingly offloaded painful and politically risky reforms to lower-level governments. Another expected advantage of a "reform from below" was in allowing institutional experimentation in which different versions of regional institutions had to demonstrate their relative strengths and weaknesses in competition for mobile investment and the capacity to stimulate economic growth. It was expected that more successful regional institutions would spread across the country by way of emulation. This logic was based on the well-known concept of market-preserving federalism (Weingast, 1995), which opens opportunities and creates incentives for competitive selection of efficient regional regimes.

Implementation of this idea in Russia in the 1990s did not produce the expected results and, in particular, did not lead to the elimination of inefficient regional institutions. Although regions indeed actively "learned from one another", they more often than not were adopting dubious ideas restricting competition, undermining property rights and threatening financial stability and the unity of the Russian market (Polishchuk, 2001). One possible cause of such outcomes was insufficient political centralization, without which economic decentralization failed to improve economic performance (Blanchard and Shleifer, 2001). Furthermore, institutional outsourcing to the regions was attempted during a deep and prolonged economic recession with minimal investments in the Russian economy. Under those conditions, nation-wide efforts to improve investment climate in a particular region were not properly rewarded because they remained in the shadow of an unfavorable investment reputation of the Russian economy at large (Polishchuk, 2013).

One would expect that the far-reaching re-centralization of the political system (also known as establishment of the "power vertical") which began in Russia in the early 2000s should have narrowed interregional institutional disparity. Indeed, radical measures were undertaken to put an end to the regional "parade of sovereignties", virtually eliminating regional legal and regulatory prerogatives. Russian public finance was similarly centralized. Finally, elections of regional governors by popular vote were cancelled (to be restored later with considerable restrictions and caveats), and regional chief executives were subordinated to the Russian president.

Against expectations, "power vertical" has not harmonized institutional regimes in Russian regions. Russian cities and regions still differ significantly from one another in their business environment, even if they are otherwise comparable in terms of the capacity of regional markets, population, and other exogenous factors that affect regional economic conditions and regions' attractiveness for investment. (In fact, we show later in the paper that regional institutions under "power vertical" exhibited further divergence, rather than the expected convergence.) In part, this was due to the limited ability of the federal government to exercise control over regional administrations, even when implementing key nation-wide reforms. Thus,

the implementation of the national de-regulation program was delayed and highly uneven across the country (Yakovlev and Zhuravskaya, 2013). Significant differences remained, e.g., in the pace of reforms of public administration, social services, and market development.

The failure of the central government to effectively resolve the agency problem vis-à-vis regional administrations left the latter with significant de facto autonomy in choosing regional economic policies and ultimately regional institutions. As a result, regional institutions have been shaped by the incentives of regional elites. Cancellation of gubernatorial elections weakened direct political accountability of regional governments to the society, hence undermining the political mechanism that aligns elites' incentives with sustainable regional development. Instead, the vertical accountability of regional governors to the central government linked regional institutions to the principles and criteria of the assessment of governors' performance by the federal center.

In theory, such principles should reflect the contribution of regional authorities to economic development and social welfare; in other words, to establishing and maintaining efficient regional institutions. Therefore, the problem of measuring regional institutions took on new, purely pragmatic, administrative and political significance. It turned out, however, that in practice, the assessment of governors' performance posed a number of serious problems. First, governors are responsible for numerous tasks; hence, the results of their work are inherently multi-dimensional. Accordingly, the official criteria of governors' performance quickly mushroomed, reaching several hundred in number. Second, even for a relatively small number of criteria, it is unclear how one should aggregate them with one another, what weights should be assigned to particular indicators, and so on. Finally, it is quite difficult to judge when successes and failures of regions should be attributed to the performance of local authorities, when to market conditions beyond regional governments' control, and when to other external factors and "shocks" of regional development. These difficulties notwithstanding, Russian government agencies for a number of years have been producing various indices of regional administrations' performance (more on that activity in the next section of the paper), which could be considered officially endorsed measures of regional institutions.

Actual preferences of the federal center concerning the performance of regional governors are revealed by governor reappointment decisions. The available data do not reveal any statistically significant association between governors' confirmation in the office for another term and the state of regional economies and public sectors. Instead, reappointment decisions are strongly predicted by the demonstrated electoral support of the ruling elites in federal and regional elections (Zhuravskaya, 2010; Reuter and Robertson, 2012). The desired voting targets were achieved by various means, and as long as ruling regional elites had sufficient resources to meet such requirements, they otherwise preserved broad discretion over regional institutions. The latter can thus be considered endogenous political equilibria, shaped by various factors but not pre-determined externally by the upper-level government, as one might expect with the "power vertical" firmly in place.

Some of the above factors, of a geographic or historical nature, are long-run determinants of regional development; otherwise, Russian regional institutions are outcomes of public choice involving regional elites and various interest groups,

which are often in symbiotic relationships with one another (Petrov and Titkov, 2010; Syunyaev and Polishchuk, 2014). As a result, the problem of assessment and measurement of Russian regional institutions is as topical as ever. In the next section, we review the sources of data that could be used to this end.

4. Data Sources

Regional indices of institutional quality are produced by private rating agencies, nonprofit organizations (including business associations and think tanks), government agencies, and individual researchers. In this section, we review the most widely cited sources of data on regional institutions and the new indicators developed by the authors.[3] A summary of the covered institutional measures for Russian regions is presented in Table 1.

Russian Regional Investment Attractiveness Rating by RA Expert rating agency is perhaps the best-known measure of the quality of institutions in Russian regions. The rating aggregates two components — investment risk and investment potential — and each of those combines several sub-components based on data collected by state statistical services and private consultancies. These data cover the quality of public administration, political and legal risks, and other factors. Weights used to aggregate sub-components are determined by annual surveys of experts from Russian and foreign consulting and investment companies. The RA Expert rating agency does not disclose its methodology in detail.

The business association of small and medium-sized enterprises "Opora Rossii" composes widely known *indices of entrepreneurial climate*. This business association has offices in every Russian region and its membership is approximately 450 thousand enterprises. Since 2005, "Opora Rossii" has been analyzing regional business climates and ranks regions accordingly. Neither sampling nor methodologies of such rankings have been consistent over the observation period. "Opora Rossii" publishes ratings of administrative climate, business security, corruption, and measures of "freedom from inspection agencies pressure", "freedom from law-enforcement agencies pressure", and "freedom from criminal pressure".

Lately, regional institutional measures have been regularly produced by central government agencies; this task has acquired added importance after the cancellation of direct gubernatorial elections. This has been sanctioned by a presidential decree that authorized a formal evaluation of the situations in Russian regions and specified several dozen indicators of the quality of regional governance and policies, including *indices of public opinion about the functioning and transparency of regional administrations*.[4] These data are stored in the Unified Interdepartmental Statistical Information System (UniSIS).[5] The Ministry of

[3] Our list of institutional indicators is incomplete; in particular, it does not include outdated indices developed many years ago and not updated since. Moreover, as already noted, the boundary between measures of institutions and institutional outcomes is often blurred. Hence, we do not consider various indicators of economic performance and business climate in the Russian regions, which in our opinion are more on the outcomes side. We also skip measures of political institutions, press freedom, or the state of civil society (with the exception of the democracy rating produced by the Carnegie Moscow Center). A short summary of indicators of regional institutional quality, including sources that are not used in this article, can be found in Syunyaev and Polishchuk (2014). A detailed review of regional corruption indicators is presented in Libman and Kozlov (2013).

[4] These assessments are used to allocate fiscal transfers to the best performers among Russian regions.

[5] UniSIS is a government statistical database (URL http://www.fedstat.ru/user/about.do).

Table 1
Regional institutions indices

Name	Type of institution	Number of regions	Year	Data source
Investment rating by RA Expert rating agency	Investment climate and risks	83–89	2000–2012	RA Expert website http://www.raexpert.ru/ratings/regions/
Opora Rossii	Entrepreneurial climate, corruption, red tape, crime prevention	40–80	2005, 2006, 2008, 2011, 2012	Opora Rossii website http://new.opora.ru/projects/index
Performance of regional administrations	Outcomes and transparency of regional governments	83	2007–2011	UniSIS
Satisfaction of the population with regional administrations	Quality and effectiveness of regional governance	83	2007–2010	The Ministry of Regional Development of the Russian Federation
Size of the shadow economy	General characteristic of institutional quality	89	2001, 2004, 2006–2013	Rosstat
Corruption rankings by the Carnegie Moscow Center	Level of corruption	88	2004, 2010	Petrov and Titkov, 2013; http://atlas.socpol.ru/indexes/index_democr.shtml
Democracy rating by the Carnegie Moscow Center	Political competition, openness and transparency of regional politics	88	2001, 2003–2010	Petrov and Titkov, 2013
Monitoring of anti-corruption legislation	Anti-corruption legislation	83	2008–2010	NISSE website http://www.nisse.ru/work/projects/monitoring/anti-corruption/
Regional crime statistics	Business protection from criminal attacks, violent pressure on business	89	2000–2010	UniSIS
Victims of business-related violence	Business security	74	1991–2010	Belokurova, 2012
Corporate raiding cases reported in the media; complaints about raider attacks	Property rights protection	89	1999–2010	Rochlitz, 2014; Business Against Corruption website http://www.nocorruption.biz/?cat=6
BEEPS institutional indices	Red tape, the rule of law, business security, access to infrastructure, the level of corruption	37	2012	BEEPS project www.ebrd-beeps.com

Regional Development of the Russian Federation also evaluates the performance of regional administrations; it separately calculates measures of *effectiveness* and *outcome-orientation* of regional authorities.

As noted above, the quality of formal institutions can be assessed by *the size of the shadow economy*, which provides a shelter from the excessive burdens and risks of the official institutional environment. At the same time, the shadow economy di-

verts resources that could otherwise be used to support formal institutions and public factors of production. The size of the shadow economy, and hence the quality of institutions, can be gauged by the number of those working in the informal sector. The Russian Statistical Service (Rosstat) annually estimates the size of informal employment for every region, based on quarterly employment surveys.

Corruption plays out prominently in measures of institutional environments in Russian regions. In addition to the above-mentioned ratings by "Opora Rossii", one should mention the *regional corruption rankings by the Carnegie Moscow Center (CMC)* (Petrov and Titkov, 2013). These ratings are based on expert assessments of the collusion between political and business elites, the effectiveness of anti-corruption efforts, and the frequency of corruption scandals. CMC also generated a *democracy rating of the regions*, reflecting experts' opinions on, e.g., openness and transparency of the political life of the regions, strength of political opposition, and fairness of elections.

Another index of corruption, developed by the National Institute for the System Studies of Entrepreneurship (NISSE), does not measure corruption per se; instead, it quantifies *efforts toward prevention of corruption*, such as enactment of regional anti-corruption legislation, existence of special agencies or bodies to combat corruption, and openness and transparency of anti-corruption policies (Saidullaev and Smirnov, 2010).

An important element of the institutional environment is business security, including property rights protection and personal safety of business executives. Russian law enforcement is highly centralized, and civil and criminal law is the same across the country. However, law enforcement practices and "rules of the game" for business activities vary considerably from region to region, affecting the risks of doing business. To estimate such risks, one could use official data such as the *number of economic criminal cases in the region* (in relation to the number of firms or regional population). It should be borne in mind that such measures could reflect both the level of economic crime in the region and the degree of violent pressure on business given that criminal law is often used in Russia for solving commercial disputes and for raider attacks.

Since police statistics may, for various reasons, be distorted, it is useful to supplement them with information from alternative sources about attacks on business executives. Belokurova (2012) presents comprehensive data on *business-related physical attacks on businessmen, including the number of injured and murdered business executives*. Sources of data are publications in the media, police and press releases, and court decisions. Another similar source is media coverage of raider attacks in various regions of Russia (Rochlitz, 2014). The disadvantages of such indicators are their possible bias due to uneven media development and freedom in various regions. Finally, the Center for Public Procedures "Business Against Corruption" keeps records of complaints about raider attacks, violation of the rights of businesspeople, and unjustified criminal cases opened against them (Yakovlev et al., 2014).

A useful and so far underutilized source of information for the assessment of institutional quality in Russian regions is the EBRD-administered Business Environment and Enterprise Performance Survey (BEEPS) project. This project conducts periodic surveys of enterprises in different transition countries, including Russia. In the last wave, the Russian sample included 4,220 randomly selected

firms from 37 regions. The sample is representative in each region. The BEEPS questionnaire includes dozens of questions on various aspects of enterprise activities, including, e.g., relationships with regulatory and supervisory bodies, access to resources and infrastructure, competition, dispute resolution, and threats to business. By averaging responses to such questions in a region, one can obtain various regional indicators of institutional quality. This approach does not suffer from possible distortions arising from the use of expert opinions; it describes actual conditions of regional institutions, as observed by those who confront them in their everyday life. Resulting institutional indicators have clear meaning and are derived in a transparent and reproducible manner.

Such indicators can be divided into several categories, including administrative barriers (the costs of compliance with legal and regulatory requirements, passing inspections, obtaining permits and licenses, and tax compliance), the rule of law (fairness, timeliness and effectiveness of the courts), safety of doing business (losses due to criminal actions, costs to businesses of private security services), access to infrastructure (connection to energy grids and telecommunications networks, access to finance), and the level of corruption (frequency and size of bribes in dealing with various government bodies). A drawback of the BEEPS project as a source of data for institutional measurement is the relatively small number of represented regions.

5. Interplay of Institutional Indicators

To what extent are the measures of regional institutional quality described in the previous section related to one another? To answer this question, we examine the correlations between those measures. Recall that in the case of measurement of institutional quality at the cross-country level, tight connectedness between different indicators raised questions about the soundness and reliability of measurement techniques and was ascribed to possible measurement errors.

Pairwise correlations between various institutional indices for Russian regions are presented in Table 2. In the table, we show only signs of correlation coefficients and only if those are significantly different from zero. To simplify reading the table, we assume that for all indicators, higher values correspond to higher institutional quality (e.g., better quality of governance, improved investment climate, and lower corruption or crime rates).[6]

Table 2 shows that the links between various institutional measures in Russian regions are far less pronounced and straightforward than in the case of the Governance Matters country indicators. First, correlations of regional indices in almost 60% of all possible pairwise combinations are statistically insignificant. Second, among significant correlations, only 70% are positive (positive correlations should be expected if various indices agree with one another in estimating institutional quality). Negative correlations suggest either inconsistencies of measurement techniques, or, if the involved institutions differ from one another in their role and purpose, possible substitution between such institutions.

[6] The first eight indicators in Table 2 are ordinal (rankings), whereas the rest are cardinal. If at least one indicator in a correlation is ordinal, we report Spearman correlations and conventional Pearson correlations otherwise.

Table 2
Pairwise correlations of institutional quality measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Effectiveness of executive branch (MRD)																			
Performance of executive branch (MRD)	$+^{***}$																		
Overall assessment of executive branch (MRD)	$+^{*}$	$+^{*}$																	
Overall effectiveness (MRD)	$+^{***}$	$+^{***}$	$+^{***}$																
Investment risk (RA Expert)			$-^{**}$																
Investment rating (RA Expert)	$+^{***}$			$+^{***}$	$-^{***}$														
Investment potential (RA Expert)	$+^{**}$			$+^{***}$		$+^{***}$													
Corruption (Carnegie Center)		$+^{*}$	$+^{**}$																
Died in business crimes (Belokurova)	$-^{***}$			$-^{***}$		$-^{***}$	$-^{***}$	$+^{**}$											
Businessmen died in business crimes (Belokurova)	$-^{**}$			$-^{***}$	$+^{**}$	$-^{***}$	$-^{***}$	$+^{**}$	$+^{***}$										
Number of economic criminal cases per firm (UniSIS)	$+^{***}$						$+^{*}$		$-^{**}$	$-^{*}$									
Number of appeals to Business against Corruption per economic crime (BAC)			$+^{*}$			$-^{*}$	$-^{*}$	$+^{*}$	$+^{***}$	$+^{***}$									
Share of employed in informal sector (Rosstat)							$-^{*}$	$-^{*}$	$+^{***}$	$+^{*}$	$-^{*}$	$+^{*}$							
Anti-corruption legislation (NISIPP)			$+^{*}$																
Satisfaction with executive branch performance (UniSIS)	$+^{**}$		$+^{***}$	$+^{***}$	$-^{*}$			$+^{***}$				$+^{**}$		$+^{*}$					
Freedom from bureaucratic pressure (OPORA)	$+^{*}$			$+^{***}$															
Freedom from criminal pressure (OPORA)			$+^{*}$	$+^{***}$	$+^{**}$											$+^{***}$			
Satisfaction with transparency of executive branch (UniSIS)			$+^{***}$	$+^{**}$	$-^{***}$			$+^{**}$	$+^{**}$	$+^{**}$		$+^{**}$	$+^{**}$		$+^{***}$				
Democratic rating (Carnegie Center)			$-^{*}$				$+^{*}$	$+^{***}$			$+^{**}$			$-^{*}$	$-^{**}$				
Raider attacks reported in media (Rochlitz)		$+^{**}$				$-^{***}$	$-^{***}$		$+^{***}$	$+^{***}$	$-^{**}$	$+^{***}$	$+^{***}$					$+^{*}$	$-^{*}$

Notes: **(1)** Effectiveness of executive branch (MRD); **(2)** Performance of executive branch (MRD); **(3)** Overall assessment of executive branch (MRD); **(4)** Overall effectiveness (MRD); **(5)** Investment risk (RA Expert); **(6)** Investment Rating (RA Expert); **(7)** Investment potential (RA Expert); **(8)** Corruption (Carnegie Center); **(9)** Died in business crimes (Belokurova); **(10)** Businessmen died in business crimes (Belokurova); **(11)** Number of economic criminal cases per firm (UniSIS); **(12)** Number of appeals to business against corruption per economic criminal cases (BAC); **(13)** Share of employed in informal sector of economy (Rosstat); **(14)** Anti-corruption legislation (NISIPP); **(15)** Satisfaction with executive branch performance (UniSIS); **(16)** Freedom from bureaucratic pressure (OPORA); **(17)** Freedom from criminal pressure (OPORA); **(18)** Satisfaction with transparency of executive branch (UniSIS); **(19)** Raider attacks reported in media (Rochlitz).
(+) positive correlation; (−) negative correlation; *** 0.05 significance level; ** 0.1 significance level; * 0.2 significance level.

Three indicators of executive branch performance included in our analysis are positively associated with one another, which is probably due to similar methods used by the same government agency — the Ministry of Regional Development (MRD) — to derive those measures, and due to their semantic proximity with each other. The above indicators are also significantly correlated with RA Expert investment rating with the expected sign. Surprisingly, the risks of doing business as measured by crime rates (G. Belokurova's data) are higher in regions where MRD deems regional administrations more effective and that have higher investment ratings and potential.[7] Perhaps this is an indication that economic crimes follow ebbs and flows of economic activity. At the same time, lower levels of corruption (measured by the Carnegie Canter) are, as expected, associated with lower crime rates.

We also find that corruption (measured by the Carnegie Center) is lower in regions with larger shares of the informal sector in the regional economy. A possible explanation is that corruption occurs largely in the formal sector, or, in other words, that the informal economy provides a shelter against corruption. Existence of anti-corruption legislation in a region is weakly correlated with the actual levels of corruption and other indicators of institutional quality. The last finding agrees with earlier studies, concluding, based on cross-country comparisons, that formal institutions themselves do not necessarily generate the expected outcomes.

Another measure of regional institutional quality is the UniSIS index of satisfaction with regional governments' performance. This measure is consistent with analogous indicators produced by MRD and is, furthermore, positively correlated with absence of corruption. Additionally, according to UniSIS data, transparency of regional administrations is an important factor of institutional quality because it is positively correlated with most of the official measures of regional governance and economic security indices. Finally, Carnegie Center's democracy rating is weakly correlated with most indicators except the corruption index produced by the same agency.

In general, it is hard to find any consistent patterns in the patchwork of links or lack thereof between institutional quality indicators across Russian regions. On a positive note, regional institutional measures do not feature the "near unanimity" observed for some national indicators of institutional quality; recall that such "consensus" between various measures raised doubts about their applicability in applied institutional studies. Conversely, many indices of Russian regional institutions are produced in a non-transparent manner, and their derivation cannot be independently reproduced and verified. Therefore, it is difficult to say to what extent the "disagreement" between such indices reflects actual multidimensionality of regional institutions and to what extent it is an artifact of ad hoc approaches to institutional measurement and the subjectivity of expert judgments.

It could also be problematic to compress the multidimensional bundle of measures into a smaller number of aggregate indices by factor analysis because factors thus obtained could reflect not necessarily objective links between institu-

[7] Note that measures based on the data collected by G. Belokurova largely agree with similar measures produced from the dataset independently collected by M. Rochlitz; such agreement lends credibility to both measures. This is in some contradiction with the OPORA's data suggesting that the assessment of the executive branch's performance is positively correlated with freedom from criminal pressure on business.

tions and their measures but instead, e.g., commonality of measurement techniques. In such a case, interpretation of aggregate factors is hardly possible.

In what follows, we use an alternative approach to discerning a structure in regional institutions, based on the BEEPS dataset (2012 survey of Russian firms) and on a common methodology of measuring institutions by aggregating opinions expressed by businesspeople about various aspects of their institutional environment. Some of the resulting indices characterize various aspects of the same "cluster" of closely related institutions, in which case they can be with greater confidence aggregated within such a cluster in a single integral index. However, by using BEEPS data, we restrict our analysis to the 37 regions that were covered by the project, thus reducing the sample size of regions by more than half.

Among the indicators of institutions from BEEPS, calculated as regional averages of responses to particular questions, we single out two clusters of indices that we call hereafter "institutions-rules" and "institutions-services". Both of these clusters characterize business environment, and as such can be considered institutions. Institutions-services are public factors of production, such as access to infrastructure (electricity and telecommunications), security, and access to finance. We measure access to finance by using survey responses to a direct question from the BEEPS survey, whereas in the case of access to infrastructure and security, we aggregate responses to several related questions by using a structural equation model[8] (Table 3).

We also construct three indices of institutions-rules, two of which characterize different types of institutional pathologies, whereas the third one measures the rule of law in a region. In the case of the first pathology, there is no "strong hand" in a region that effectively controls the regional economy and bureaucracy. This could be a sign of a split between various groups of economic and political elites, in which case the regional bureaucracy is not constrained by either

Table 3
Factor loadings of aggregated indices.

	Institutional type 1	Institutional type 2	Rule of law	Access to infrastructure	Security
Frequency of bribing officials	0.776				
Frequency of bribery at customs	0.810				
Frequency of bribery related to courts	0.818				
Frequency of bribery related to tax administration	0.811				
Taxation as a barrier to business	0.404				
Licensing and permits as a barrier to business	0.251				
Average kickbacks in public procurement		0.536			
Average size of bribes paid to government officials		0.536			
Fairness of court system			0.673		
Efficiency of court system			0.697		
Enforcement of court decisions			0.633		
Difficulties in accessing electricity				0.664	
Difficulties in accessing telecommunications				0.664	
Absence of security costs					0.432
Absence of losses from crimes					0.540
Crimes and disorder as a barrier to business					0.542

[8] See, e.g., Reiss and Wolak (2007) for an overview of this aggregation methodology. Similar techniques are used on several other occasions later in the paper.

democratic or administrative accountability, leading to decentralized and uncoordinated corruption with frequent bribery of multiple bureaucrats. A flip side of uncoordinated corruption is excessive red tape. A measure of such an institutional pattern of "administrative chaos" (hereafter Type 1) is constructed by aggregating responses to BEEPS questions about frequency of bribery and tax administration/bureaucratic burden (see Table 3).

An alternative to "administrative chaos" is "administrative order" (hereafter Type 2), which is characterized by a firm grip on power by the regional governor. Such regimes usually involve centralized corruption organized on a "one-stop-shop" basis whereby a large one-off payment secures an informal "license to operate" which protects from petty uncoordinated and unauthorized bribery by lower-level bureaucrats. A measure of Type 2 aggregates answers to the survey questions about size of bribes and kickbacks in public procurement. Finally, to measure the rule of law in a region, we aggregate responses to questions about fairness and efficiency of the court system and enforcement of court decisions.

It is well known that centralized corruption is less burdensome and damaging for the private sector than decentralized corruption, being "the lesser of two evils"(Shleifer and Vishny, 1993). Numerous and uncoordinated extortions reproduce the "tragedy of the commons", turning the regional economy into an open-access resource for uncontrollable lower level bureaucracy. BEEPS data show that another advantage of Type 2 over Type 1 is higher quality and availability of institutions-services.

Indeed, according to Table 4, all three types of institutions-services are positively and highly significantly correlated with one another, making it possible to rank regions according to technical conditions of doing business. At the same time, institutional Type 2 is significantly correlated with all three institutions-services, whereas Type 1 is significantly correlated only with access to finance.[9] Therefore, regions of "administrative order" offer better conditions for doing business than regions of "administrative chaos" do due to less red tape, greater availability of public production inputs and services, and a lower total burden of corruption. Such advantages agree with the view that non-democratic regimes with a strong grip on power have "encompassing" interests in economic development and hence stronger incentives to supply public production inputs (Olson, 1993).

Table 4
Pairwise correlations of aggregate indices.

	Institutional type 1	Institutional type 2	Rule of law	Access to infrastructure	Security
Institutional type 2	+***				
Rule of law					
Access to infrastructure		+***			
Security		+***		+***	
Access to finance	+***	+***		+***	+***

Notes: (+) positive correlation; (−) negative correlation; *** 0.05 significance level; ** 0.1 significance level; * 0.2 significance level.

[9] Note that regional financial systems are integrated into the national one and thus depend on and are affected by regional governments much less than are infrastructure and security, which are largely localized within a region.

Notice that neitherof the above types conforms to the conventional view of enabling institutions, which rule out both high- and low-level corruption, ensure efficient provision of public goods and services and are based on the rule of law. It is symptomatic that the rule of law in Russian regions is orthogonal (both literally and metaphorically) to both institutional types and in addition is not significantly related to any of the above-described institutions-services.

Most pairwise correlations of the two institutional types with other indices are usually statistically insignificant. This could be due to differences in methodologies, lower number of regions for which BEEPS-originated measures could be calculated, and, last but not least important, could be an indication that the Russian institutional palette is essentially multi-dimensional and cannot be adequately described by only a few indicators. It is noteworthy, however, that institutional Type 1 is negatively correlated with the assessment of regional administrations by MinRegion, and the correlation is highly significant. In contrast, MinRegion's assessments are neutral to Type 2 (there is no significant correlation between the two). Evidently, the federal government dislikes "administrative chaos" and ceteris paribus gives preference to the "administrative order", despite the large-scale centralized corruption that could be present in such regimes.

6. Dynamics of Regional Institutions

Apart from institutional differences across regions, changes of institutional quality over time are also of considerable interest. Institutional indicators that are available both across regions and for different periods in time could be used to study institutions along both spatial and temporal dimensions, shedding light on a number of additional questions. Is it true that institutional trends for particular regions follow such trends for the country at large, or deviate from those? Is it possible to improve institutions in a region against the backdrop of institutions deteriorating nationally? Is there any rotation among regions holding top and bottom positions in institutional rankings? Finally, is there evidence of convergence of regional institutions, or are deep variations between regional institutional regimes preserved, perhaps even growing deeper?

We do not have sufficient data to fully address all of the above questions. Most of the available measures of regional institutions exist only for one period, or if they are available for several periods, those are years far apart from one another. Furthermore, various indices cover non-identical sets of regions. Nevertheless, those indicators that were produced repeatedly over time and for a sufficiently large number of regions allow us to gain at least an approximate picture of institutional dynamics in Russian regions.

The most regular source of data on regional institutional quality in Russia is the investment climate rating of Russian regions, which is annually updated by the rating agency "RA Expert". Unfortunately, this indicator provides only *relative* (ordinal) ranking of the investment attractiveness of Russian regions, and thus is not suitable to gauge absolute changes of institutional quality in a given region. However, the ratings show how often regions change their positions with respect to one another, and therefore shed light on how stable (or fluid) is the cross-regional institutional profile. To this end, we use (Spearman) correlations between the "RA Expert" rankings for different years (Table 5).

The closer such coefficients are to 1, the less Russia's regions change their relative positions in the ranking. We find that the correlation coefficients for regional rankings can actually fall as much as to 50%–60% for selected years, revealing significant changes in regions' positions vis-a-vis one another in terms of institutional quality.

Another approach to evaluating regional institutional dynamics is to examine the number of people employed in the informal sector. As indicated above, the size of the informal sector can serve as a "litmus test" (with the opposite sign) for the quality of institutions in the formal sector. Data on informal sector employment has been regularly collected for all Russian regions for a number of years, and in contrast to the rankings produced by "RA Expert", the size of the informal sector is not a subjective and ordinal measure of institutional quality but an objective and cardinal one. As before, we examine the correlation coefficients (this time conventional Pearson correlations) of this measure for different years to assess the changes in interregional institutional profiles over time (Table 6).

Table 5
Correlation Coefficients for "RA Expert" rating over time.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1998	1	0.80	0.64	0.65	0.61	0.64	0.56	0.57	0.63	0.66	0.52	0.61	0.54	0.64	0.71	0.71
1999		1	0.73	0.70	0.66	0.68	0.60	0.57	0.60	0.57	0.54	0.62	0.46	0.66	0.71	0.72
2000			1	0.78	0.72	0.72	0.53	0.54	0.56	0.47	0.46	0.60	0.45	0.50	0.56	0.59
2001				1	0.77	0.80	0.56	0.57	0.58	0.53	0.49	0.54	0.45	0.54	0.58	0.61
2002					1	0.86	0.65	0.65	0.63	0.50	0.47	0.54	0.39	0.51	0.63	0.59
2003						1	0.65	0.68	0.66	0.62	0.54	0.61	0.50	0.57	0.62	0.64
2004							1	0.84	0.75	0.65	0.70	0.64	0.61	0.62	0.61	0.65
2005								1	0.81	0.67	0.65	0.63	0.64	0.68	0.63	0.70
2006									1	0.70	0.65	0.66	0.59	0.67	0.62	0.66
2007										1	0.73	0.77	0.58	0.78	0.72	0.73
2008											1	0.80	0.77	0.72	0.67	0.76
2009												1	0.71	0.66	0.71	0.74
2010													1	0.62	0.63	0.73
2011														1	0.82	0.84
2012															1	0.93
2013																1

Note: all correlations are statistically significant at the 1% level.

Table 6
Correlations of informal sector employment in the regions for various years.

	2001	2004	2006	2007	2008	2009	2010	2011	2012	2013
2001	1	0.83	0.80	0.74	0.68	0.67	0.72	0.73	0.72	0.71
2004		1	0.88	0.82	0.78	0.75	0.74	0.74	0.72	0.68
2006			1	0.93	0.85	0.83	0.85	0.83	0.82	0.82
2007				1	0.89	0.85	0.83	0.83	0.83	0.79
2008					1	0.91	0.87	0.85	0.88	0.85
2009						1	0.92	0.91	0.91	0.87
2010							1	0.91	0.92	0.90
2011								1	0.96	0.87
2012									1	0.93
2013										1

Note: all correlations are statistically significant at the 1% level.

Here too, we see significant changes in regional institutions, measured by the level of informal employment, with correlation coefficients decreasing by 25% and more for selected years. This is yet another confirmation of significant institutional fluidity in Russian regions, suggesting that regional institutions are affected not only by national institutional trends but also by various local factors.

Finally, a range of proxies for property rights security in Russian regions can be used to illustrate changes in regional institutional regimes. Such proxies make use of crime data published by the Federal State Statistics Service, or specific databases tracing assaults on businesspeople (Matveeva, 2007; Belokurova, 2014) and raiding attacks against firms in a given region (Rochlitz, 2014).

Table 7 lists regions with the highest levels of violent pressure on business for various years, measured by the number of fraud cases, raiding attacks and physical assaults on businesspeople.[10] According to the table, between the first and second half of the 2000s, the groups of regions with the greatest danger of doing business (variously measured) have changed their compositions by more than 50%. This is a yet another evidence of significant instability in Russian regional institutions. Viewed positively, badly performing regions can pull themselves out

Table 7
Regions with the highest levels of violent pressure on business.

Fraud Cases		Raider attacks against firms		Attacks against businessmen	
1998–2003	2004–2010	1998–2003	2004–2010	1998–2003	2004–2010
Magadan Oblast	Novosibirsk Oblast	Chuvashia Republic	Ulyanovsk Oblast	Sakhalin Oblast	Adygeya Republic
Komi Republic	Oryol Oblast	Sverdlovsk Oblast	Perm Krai	Moscow (City)	Primorsky Krai
Khanty-Mansiysk AO	Magadan Oblast	Tatarstan Republic	Voronezh Oblast	Astrakhan Oblast	Astrakhan Oblast
Kamchatka Krai	Stavropol Krai	Marij El Republic	Primorsky Krai	Primorsky Krai	Moscow (City)
Kabardino-Balkaria	Smolensk Oblast	Tyumen Oblast	Sverdlovsk Oblast	Novgorod Oblast	Kaliningrad Oblast
Chukotka AO	Vologda Oblast	Kemerovo Oblast	Tver Oblast	Samara Oblast	Orenburg Oblast
Yamalo-Nenets AO	Tatarstan Republic	Penza Oblast	Volgograd Oblast	Khabarovsk Krai	Moscow Oblast
Volgograd Oblast	Bashkortostan Republic	Volgograd Oblast	St. Petersburg (City)	St. Petersburg (City)	Zabaykalsky Krai
Kursk Oblast	Tomsk Oblast	Tver Oblast	Saratov Oblast	Smolensk Oblast	Kamchatka Krai
Tyumen Oblast	Tuva Republic	Chelyabinsk Oblast	Chelyabinsk Oblast	Moscow Oblast	Khabarovsk Krai
Vologda Oblast	Perm Krai	Arkhangelsk Oblast	North Ossetia-Alania	Kemerovo Oblast	Samara Oblast
Kaluga Oblast	Astrakhan Oblast	Vladimir Oblast	Murmansk Oblast	Mordovia Republic	Novgorod Oblast

[10] Fraud cases and attacks against businessmen are normalized on a per capita basis, whereas raiding attacks are measured in relation to the number of firms in a region. Regions are listed in descending order of the above measures.

of the dangerous zone of significant risks of physical violence and property rights violations for local business communities. However, read differently, this table suggests that in a relatively short period, a safer region could slip to the bottom of the ranking. Such instability can be a powerful deterrent for investments and private enterprise.

During the last two decades, the overall quality of institutions in Russia remained low and even continued to decline, as evidenced, e.g., by the "Governance Matters" indices (mode details can be found in Polishchuk, 2013). Although a slight improvement was recorded for a number of institutional measures in the early 2000s, it proved to be short-lived. The above indices of criminal pressure on business also demonstrate a lack of clear-cut and sustainable tendency toward institutional strengthening in the country (Fig. 1).

Although our results indicate that institutions in Russian regions evolve in different directions, one should still expect that regional indicators of economic, legal and political institutions broadly follow overall Russian trends — if for no other reason than because national indices are aggregates of regional ones. Furthermore, as was already noted, a negative image of national institutions suppresses incentives to improve regional ones. Although it is indeed true that in most regions, institutions follow Russia-wide trajectories in accordance with such expectations, they significantly deviate from national trends in some instances.

According to Fig. 2, the number of raider attacks in Russia peaked in the mid-2000s. Regions with a large share of heavy industries (e.g., Sverdlovsk oblast and Tatarstan) suffered from multiple raider attacks in the late 1990s and early 2000s. Once the fight for redistribution of industrial assets came to an end in these regions, the property rights situation became more stable. In Moscow, corporate raiding attacks had a slower start and reached a peak, as in Russia at large, in the mid-2000s. Some other regions, such as Primorsky krai, experienced an increase in raiding attacks only toward the end of the decade, possibly due to massive investments in large-scale infrastructure projects.

Fig. 1. Dynamics of violent pressure on business in Russia.

Note: Victims — the number of killed or injured businessmen in Russia per year as documented by media sources (Belokurova 2014); Raids — number of companies attacked by corporate raiders per year in Russia as documented by media sources (Rochlitz 2014); Cases — the number of property related crimes per year in Russia from official police statistics. To present all three curves on a single graph, the numbers of raids have been multiplied by 10, and property-related crimes documented by police have been divided by 100.

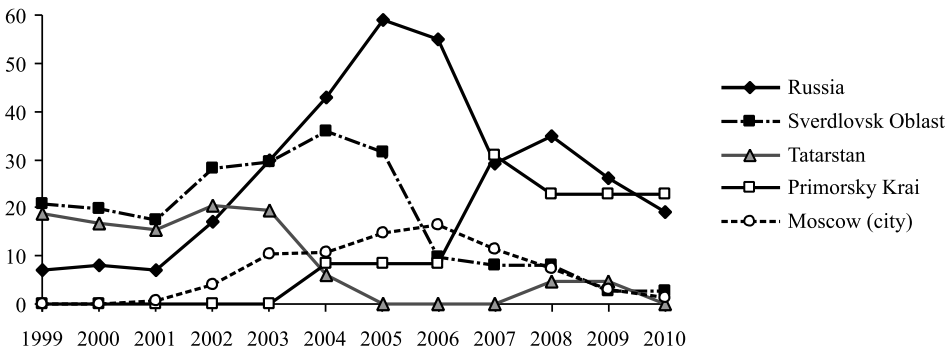

Fig. 2. Raider attacks on businesses for Russia and selected Russian regions.

Note: Russia—number of raider attacks per year; regions (Sverdlovsk Oblast, Tatarstan, Primorsky krai, Moscow)—number of raider attacks per year divided by the number of firms.

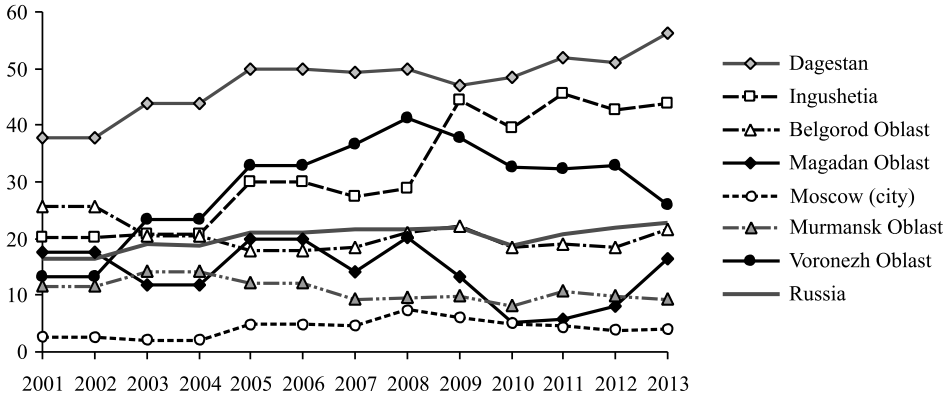

Fig. 3. Employment in the informal sector in Russia and selected Russian regions (% of overall employment).

The interrelationship between national and regional trends can also be explored by using regional informal employment data. For Russia at large, the share of informal employment increased from 16.4% in 2000 to 21.8% in 2012, again reflecting a decline in overall institutional quality. During that period, the share of informal employment increased in 63 regions (particularly in the North Caucasus and some regions in central Russia and Siberia), whereas in 17 regions, the share of informal employment actually *de*creased. However, in none of these 17 regions was the observed decrease significant or sustainable (Fig. 3).

It is usually assumed that the informal sector grows in response to increasing pressure on businesses operating in the formal sector. Although there is some reflection of such an effect in our data, it is not sufficiently robust, and occasionally opposite tendencies transpire. According to Table 8, the correlation coefficients between various measures of violent pressure on business and the share of informal employment in Russian regions, calculated for the years between 2000 and 2010, are often small and subject to significant change over time. The link between informal employment and violence against entrepreneurs is more clearly pronounced, although this link, too, becomes weaker toward the end of

Table 8
Pairwise correlation between various proxies for institutional quality and the share of informal employment.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
raid/vic	0.03	0.04	**0.30**	**0.77**	**0.71**	**0.63**	**0.86**	**0.44**	**0.85**	**0.45**	**0.64**
raidw/vicw	0.05	–0.05	0.17	–0.01	0.01	0.08	0.02	–0.04	0.05	–0.01	0.02
159/raid	–0.05	0.06	–0.07	0.03	–0.05	0.00	–0.06	–0.05	–0.02	0.01	–0.06
159/vic	–0.02	–0.02	–0.01	0.13	0.02	0.02	0.05	–0.08	–0.15	–0.10	0.06
inf/159	–0.12	–0.09	–0.11	–0.15	**–0.22**	**–0.26**	–0.16	**–0.24**	**–0.23**	**–0.29**	**–0.25**
inf/raid	–0.16	–0.09	**–0.26**	**–0.33**	**–0.35**	**–0.35**	**–0.27**	**–0.21**	–0.18	**–0.22**	**–0.21**
inf/vic	**–0.51**	**–0.44**	**–0.41**	**–0.49**	**–0.42**	**–0.47**	**–0.29**	0.02	**–0.38**	**–0.32**	**–0.26**
inf/raidw	–0.10	–0.02	–0.18	–0.06	–0.12	–0.07	–0.02	–0.06	–0.04	–0.09	**0.26**
inf/vicw	**–0.22**	–0.09	–0.21	**–0.40**	**–0.26**	–0.15	–0.03	0.14	–0.16	–0.08	0.09

Note: raid = number of raiding attacks per year and region; vic = numbers of businessmen injured or killed per year and region, raidw = number of raiding attacks per year and region weighted by the number of firms in a region in the given year; vicw = numbers of businessmen injured or killed per year and region weighted by regional population; 159 = number of fraud cases per year and region weighted by regional population; inf = % share of the regional workforce employed in the informal sector.

the observation period.[11] This is yet another indication of the complexity and "multidimensionality" of regional institutions and their heavy dependence on geographic, economic and other idiosyncratic factors.

As already mentioned, Russia's regions feature profound institutional heterogeneity. It is important to know how the spatial institutional disparity evolves over time, and in particular, whether there is institutional convergence of Russian regional institutional regimes, or are they drifting further apart. The logic of "market-preserving federalism" would suggest a convergence of regional institutions to best-practice patterns because the regions that are lagging behind their neighbors are forced to improve their institutions in order not to lose out in the competition for mobile investments and other resources. However, essential preconditions of the theory of "market-preserving federalism", such as the effective protection of Russia-wide markets, are not met in the Russian context. Therefore, the question of conversion or diversion of regional institutions must be answered empirically.

To this end, we use once again the share of informal employment to examine how the national average of such shares and their variances evolve over time. Table 9 shows that against the backdrop of nationally declining institutional quality, regional institutions exhibit significant divergence. A possible explanation might be that the inadequate national institutions suppress investments in the Russian economy and impede the development of a national market and the integration of regions into a single economic space, which could have led to institutional convergence across the country. Instead, what we observe is an ongoing institutional divergence reminiscent of the first years of economic reform in the early 1990s.

Table 9
Mean and variance for the share of informal sector employment.

	2001	2004	2006	2007	2008	2009	2010	2011	2012	2013
Mean	16.40	18.86	21.14	21.59	21.75	22.03	18.78	20.72	21.84	22.89
Variance	4.86	5.79	7.29	7.27	6.48	7.17	6.63	6.73	7.02	7.33

[11] Recall that a negative association between informal economy and violence against businesses could be an indication that the informal economy provides shelter from crime.

7. Conclusion: Causes and Consequences of Institutional Divergence

Availability of clearly interpretable indices of institutional quality improves the odds of quantifying the roles of institutions in socio-economic development in Russian regions, and of identifying the root causes of the institutional heterogeneity across the country. Such analyses could reveal the potential for institutional reform in advancing regional development and long-term exogenous determinants of regional institutions that facilitate or impede progressive institutional change.

In-depth discussion of these issues is beyond the scope of this paper, which is primarily about institutional measurement per se, rather than using institutional measures in applied regional studies. We will conclude with several examples drawn from the recent literature that illustrate how regional institutional measurement expands opportunities for linking regional institutions to their causes and consequences.

In a number of papers, institutional measures are used to explain interregional variations of economic outcomes. Thus, corruption, crime, and excessive red tape are shown to impede foreign direct investments in Russian regions (Kuzmina et al., 2014). Taking a different perspective, Menyashev and Polishchuk (2011) demonstrate that accountability of local administrations affects life satisfaction in Russian cities.

Various institutions could be linked to one another in effecting economic outcomes. Thus, liberalization of a regional economy (easing licensing requirements and cutting the number of inspections) complements the quality of regional governance; in regions with transparent administrations, liberalization boosts SME development, whereas no such effect is observed in poorly governed regions (Yakovlev and Zhuravskaya, 2013). In the same vein, institutional quality, including control of corruption, affects the economic outcomes of privatization. According to Dower et al. (2014), the "De Soto effect" (i.e., economic benefits of formal land ownership by commercial firms) is considerably weakened or simply absent in regions with weak institutions, in part because land ownership increases the risks of raider attacks.

The conditions of regional institutions also affect the allocation of talent in the economy and ultimately the economic returns to investments in human capital. In Russian regions with strong institutions, the percentage of talented students choosing sciences and engineering as study areas is higher in comparison to regions with weak institutions, in which education in law and public administration is far more popular (Natkhov and Polishchuk, 2012).

The value of reliable institutional measures is not only in establishing and quantifying links from institutions to outcomes but also in revealing historical, social and political causes of institutional variations between regions. Such analysis, being of considerable interest in and of itself, could also be useful in ruling out reverse causality between institutions and their outcomes. Institutional "roots" exposed with the help of institutional quality measures could serve as instrumental variables providing consistent estimators of the association between institutions and development.

Institutional diversity is often rooted in history. Thus, Kuzmina et al. (2014) link the quality of today's institutions in Russian regions to labor unrests in Russia over 100 years ago. Similarly, Dower and Markevich (2014) established a connection between the recent privatization of the Russian economy and the inten-

sity of conflicts during the Stolypin land reform in 1906; such connections reveal stable views and preferences that could have been shaped by historical events and continue to shape institutional outcomes in the present era.

The quality of regional institutions and of subnational governance in Russia is influenced by norms and values of the population, which in turn are often determined by historical, geographical or other exogenous factors. Menyashev and Polishchuk (2011) show that the link between civic culture and local government accountability observed in a number of European countries holds for Russia. The ethnic mix of the population many decades ago could be uncorrelated with today's ethnic composition, but remains relevant by shaping sustainable norms and values that are significant for the quality of contemporary political and economic institutions (Grosfeld et al., 2013).

Finally, the quality of regional institutions, including the investment climate, may be affected by regional political processes, symbiotic relationships between political and business elites, and by the prevailing patterns of the private sector's representation in the political domain. Thus, political competition in a region has an effect on the activities of business associations that in turn are relevant for the protection of property rights (Pyle, 2011). Protection of property rights and the investment attractiveness of regions depend on the rotation of regional governors and their affiliations with the private sector (Syunyaev and Polishchuk, 2014).

The above examples do not exhaust the analytical possibilities that are opened up by access to reliable indicators of regional institutional quality. One can anticipate that improvement in regional institutional measurement will increase the quantity and quality of such studies in the future.

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