

ROLLING BACK RUSSIA'S SPATIAL DISPARITIES

Re-assembling the Soviet Jigsaw under a Market Economy



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PRELU^E

Understanding the power of ‘where’: In Russia, spatial disparities matter for growth, equity, and institutional outcomes. Addressing them is therefore a priority for policymakers.

But one may ask, what exactly do “spatial disparities” refer to in the context of this report? Unlike the case of income inequality (which relies on the Gini coefficient), there is no standard approach to estimate spatial disparities. Instead, the literature contains different approaches and indicators. Some studies look at the convergence of nominal and real incomes and wages, while others compare poverty levels across regions. Still, others look at the distribution of access to services or the agglomeration of economic activity. In this report, spatial disparities are broadly understood as inter- and intra-regional inequalities along various macro- and micro-dimensions ranging from differences in Gross Regional Product per capita (GRP pc) to differences in households’ access to services. It is this broad notion of spatial disparities that this report endeavors to capture, and in doing so, specifies which indicator is used and when.

There is an extensive breadth of Russian scholarship analyzing spatial disparities in the country. However, earlier studies mainly looked at trends in regional convergence, and evidence on more recent trends is largely lacking. Moreover, at the micro-level, few studies have used survey data to understand the drivers of spatial disparities at the household level. While it is true that spatial disparities in Russia are high, it is not clear whether they have been increasing or decreasing, especially in the last decade or so. Taking a “macro- to-micro view”, this report aims to fill these much-needed gaps with an ensemble of new approaches, data, and methodologies. It takes stock of the current state of spatial disparities as measured by differences in both monetary and non-monetary welfare. The report also assesses how well Russian regions’ economic performances stack up against their “economic potential”. It is hoped that, collectively, these findings shed light on actionable policy directions for rolling back spatial disparities. And in harmony with continuous learning, and because there is always more work to be done, the report pitches some open-ended notes to prompt further discussion and debate related to Russia’s spatial disparities.

Recognition

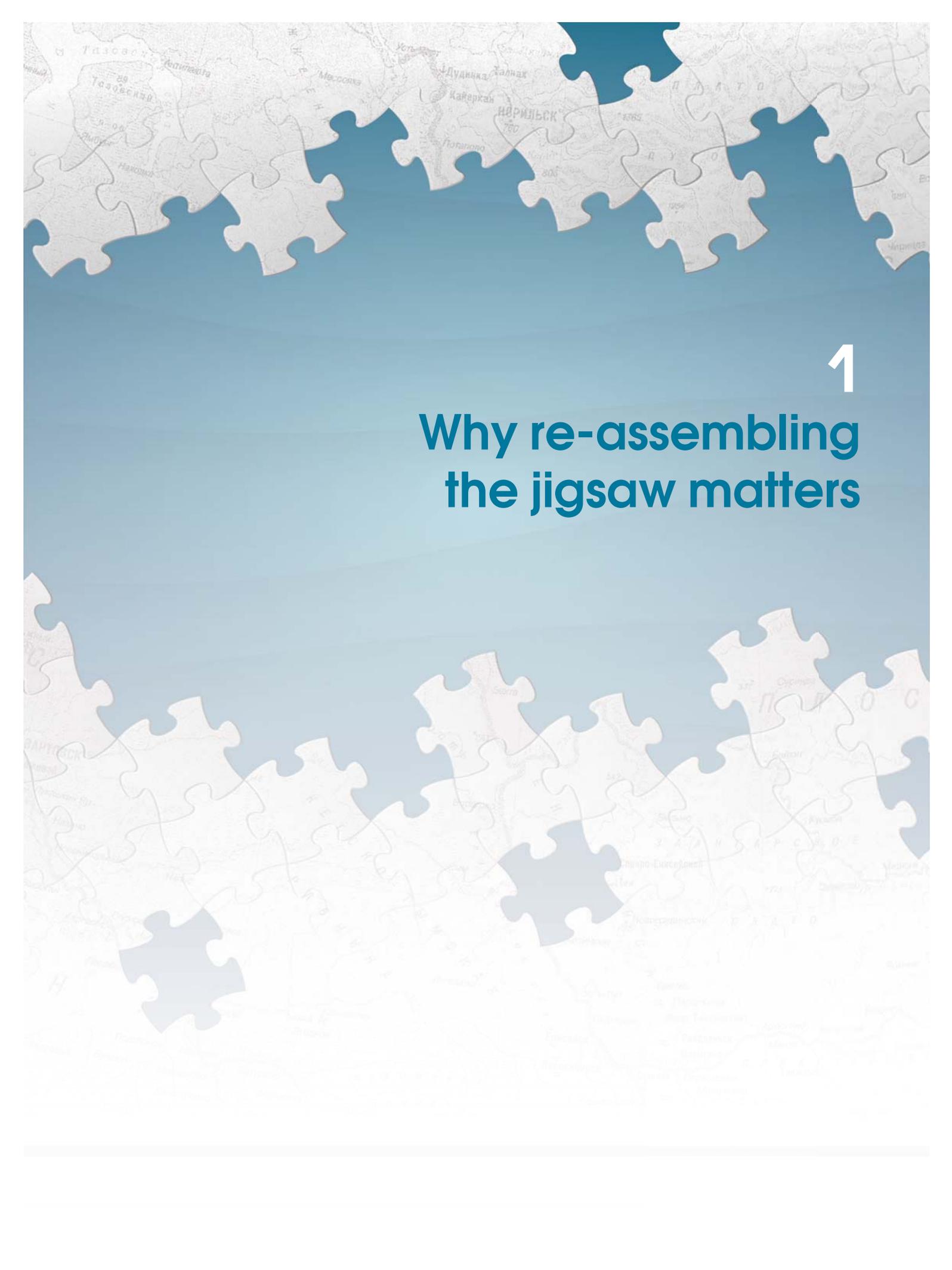
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1

Why re-assembling the jigsaw matters

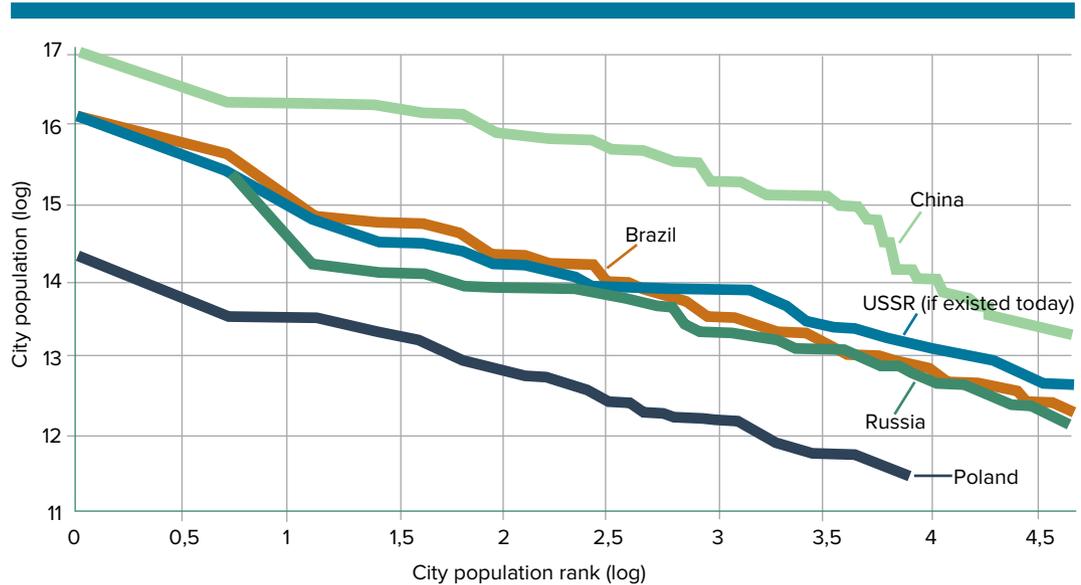
Russia's spatial disparities stem largely from its economic geography, which is unique and has no parallels even when compared to seemingly similar countries such as Australia and Canada. While Australia and Canada also have large land masses and even lower population densities than Russia, a large share of their populations live near the border or the sea. In contrast, Russia's people are more dispersed inland. Moreover, the populations of Australia and Canada are concentrated in major cities: more than two-thirds of their populations live in the three largest urban centers. On the other hand, Moscow, St. Petersburg, and Nizhny Novgorod are home to only one-eighth of Russia's population. Combined with its population decline, an aging workforce, and having to constantly adapt to a sequence of economic shocks, Russia's unique economic geography has therefore led to a spatial pattern of development counter to what is observed in other large countries.

What explains Russia's unique economic geography and its spatial disparities? A cocktail of three factors is useful for answering this question: (i) A persistent Soviet legacy; (ii) A diverse physical geography laced with harsh climactic conditions; and (iii) A dominance of natural resources (mostly oil / gas) in peripheral regions.

The Soviet legacy of a planned economy remains a burden for regions. One indicator of this persistent legacy can be seen in the ongoing socio-economic challenges facing Soviet-era industrial monotowns. Today, 319 settlements in Russia are legally identified as monotowns, with 94 classified as monotowns with a high level of socio-economic deprivation. This is despite them remaining a target of many support programs implemented by the federal government. Geography and climactic conditions do not help the situation. Russia accounts for 11 percent of the world's land mass but its population is less than 1.9 percent of the world's population. In addition, its extreme winter weather greatly impairs transportation services (built on continuous permafrost, Yakutsk is the coldest major city in the world, recording temperatures as low as minus 64.4°C). A sequence of shocks that hit the country over the last 25 years and the boom in the oil industry created rapid growth in peripheral, oil-rich regions. But other regions have been stymied by the persistence of structural constraints: an industrial legacy, population decline, and an aging population.

One manifestation of Russia's spatial inimitability is that the country does not follow Zipf's law, a robust empirical regularity in other parts of the world. According to this law, Moscow, St. Petersburg, and other large Russian cities should have populations larger than their current sizes. However, Russia has very few such cities. There are only two cities with a population larger than 1.5 million in Russia, while Japan, a smaller country by population, has five such cities, and Brazil (50 percent larger than Russia by population) has eight. Moreover, Russia's second tier cities are also not large enough. Cities ranked between 3rd and 10th by population only account for 6.6 percent of Russia's population. This share is well below that found in Brazil, Japan, and Poland, where cities in the same ranks account for between 8 and 11 percent of the respective populations. This effect can be seen clearly in the rank-size curves below (Figure 1).

Figure 1: Russia's large cities are not large enough



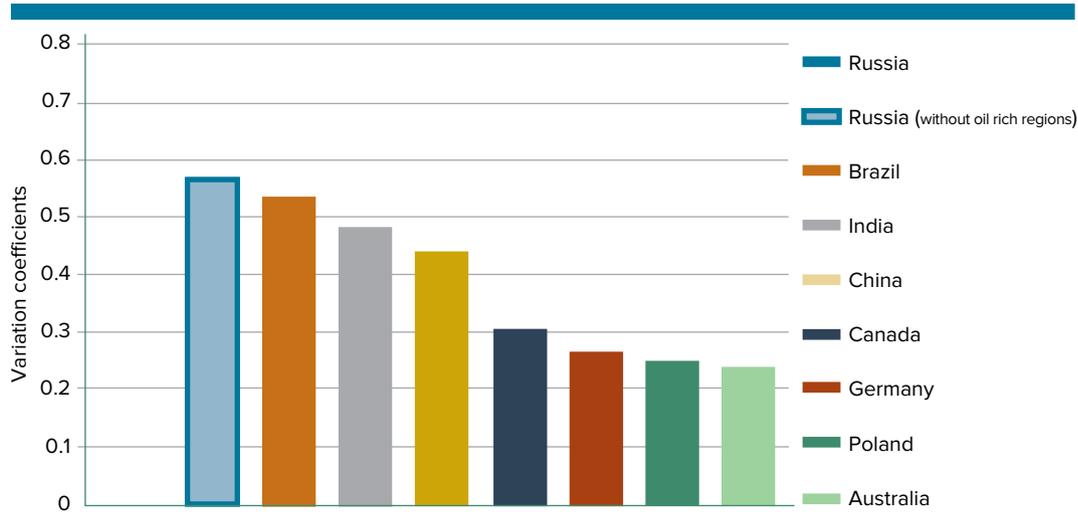
Source: World Bank, 2017 [3]

In the figure above, the curve representing Russia shows a substantial drop after the second largest city, a drop that is much bigger than in any of the comparators. Interestingly, if cities from the former Soviet Union are added to Russia, the curve starts resembling those of the comparators. This suggests that the system of cities in Russia has not adjusted since the breakup of the Soviet Union when several large cities such as Almaty, Kiev, Tashkent ended up in other newly-independent countries. This has stark implications that affect spatial disparities (yet another indication of the persistent Soviet legacy), namely: an unbalanced urban system with two dominant cities at the top, second-tier cities that are not large enough to affect regional development, and several urban settlements. It is also worth noting that urban systems are slow to change as has also been the case in the United States, France, and Japan for instance.

Spatial disparities are common in both developed and developing nations as they reflect the natural tendency of economic activity to concentrate in productive places. In fact, a sharp rise in regional inequality is often associated with periods of rapid economic growth. This was the case in Thailand, Vietnam, and Indonesia, as well as in Poland, which, like Russia, went through a transition to a market economy. However, Russia has higher levels of spatial disparities than most comparable economies (Figure 2).

Comparing Russian regions, GRP pc differs across regions by a high factor of 17. To illustrate these vast disparities, consider the differences in terms of GRP per capita. Sakhalin oblast has a GRP per capita comparable to Singapore, whereas Ingush Republic has one that is closer to Honduras (Table 1).

Figure 2: Russia exhibits higher spatial disparities than comparator countries (variations in GRP pc)



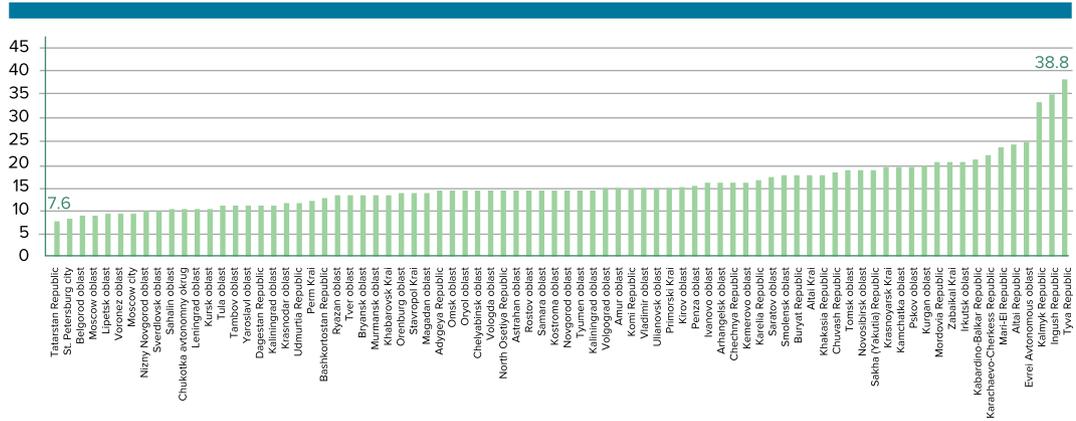
Source: World Bank, 2017 [3]

Table 1: Disparities in GRP pc among Russian regions vary by a factor of 17

Russian regions	2015 GRP per capita (2011 PPP)	Countries with similar GDP per capita
Top five regions		
Sakhalin Oblast	87,426	Singapore
Tyumen Oblast	69,412	United Arab Emirates
Chukotka Autonomous Okrug	54,187	Hong Kong SAR, China
Moscow City	47,105	Netherlands
Magadan Oblast	36,132	New Zealand
Bottom five regions		
Tuva Republic	6,414	Bolivia
Kabardino-Balkar Republic	6,214	Cape Verde
Karachaevo-Cherkess Republic	6,138	Congo Republic
Chechnya Republic	4,957	Myanmar
Ingush Republic	4,952	Honduras

Source: World Bank, 2017 [4]

Figure 3: Disparities in poverty incidence among Russian regions vary by a factor of five



Source: World Bank, 2017 [4]

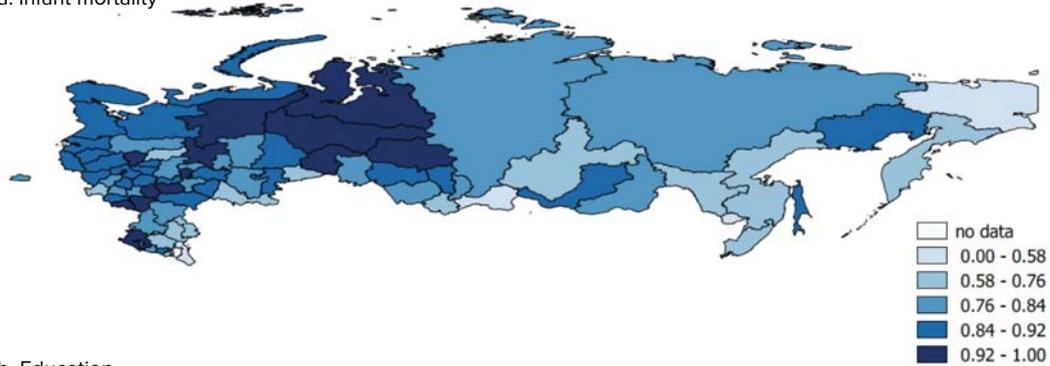
Similarly, another measure of spatial disparities – regional poverty rates – range from less than 10 percent in resource-rich Tatarstan and the large metropolitan areas of Moscow and St. Petersburg to almost 40 percent in the poorest regions in the North Caucasus, Siberia, and the Far East (Figure 3).

And yet another measure of disparities – those of a non-monetary nature– serve as another reminder of their incredible variation. Infant mortality incidence, education outcomes, and access to utilities vary significantly across regions (Figure 4, panels a-c). Taking into account the weighted average for these indicators (the ‘composite density of the state’), the top five regions with the highest state presence are Moscow City, Murmansk Oblast, Tatarstan Republic, St. Petersburg City, and Chuvash Republic (Figure 4, panel d). The five regions with the lowest state presence are Chukotka Autonomous Okrug, Tuva Republic, Jewish Autonomous Oblast, Altai Republic, and Sakha (Yakutia) Republic. The outcome for Chukotka is surprising given that its 2014 household income was the third highest, with only Moscow and St. Petersburg boasting higher figures. This is mainly a result of its having the highest infant mortality rate and its students being some of the worst performers in the country’s university entrance exam (third only after those in Amur and Magadan Oblasts).

The sheer scale, scope, and starkness of spatial disparities in Russia are startling by any standard. Rolling them back will require re-assembling the Soviet jigsaw. But what will that involve? Before getting there, the starting point is to understand whether these disparities have been increasing or decreasing, and what factors are associated with these increases and decreases? Some new findings and policy directions await in Chapters 3 and 4, but before turning to those, the next Chapter briefly summarizes the approaches, data, and new methodologies used to shed light on these disparities. The non-technical reader can easily skip this chapter though (but is nonetheless encouraged to skim it, and at a bare minimum, note the caveats that underpin the report’s ten findings).

Figure 4: Non-monetary indicators vary significantly across regions

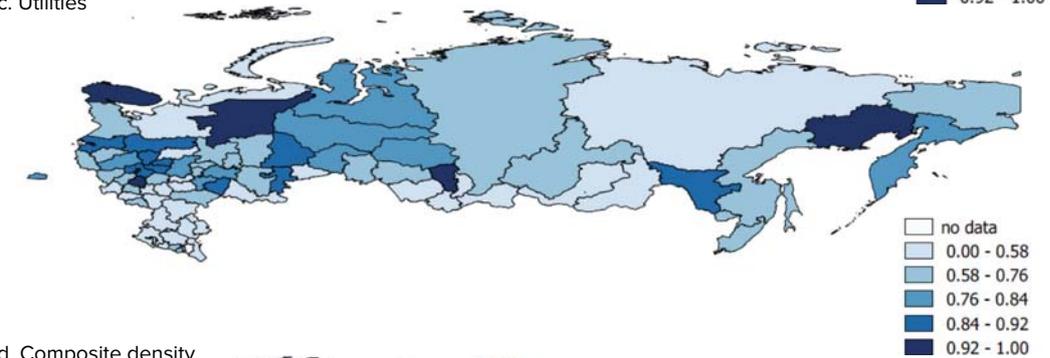
a. Infant mortality



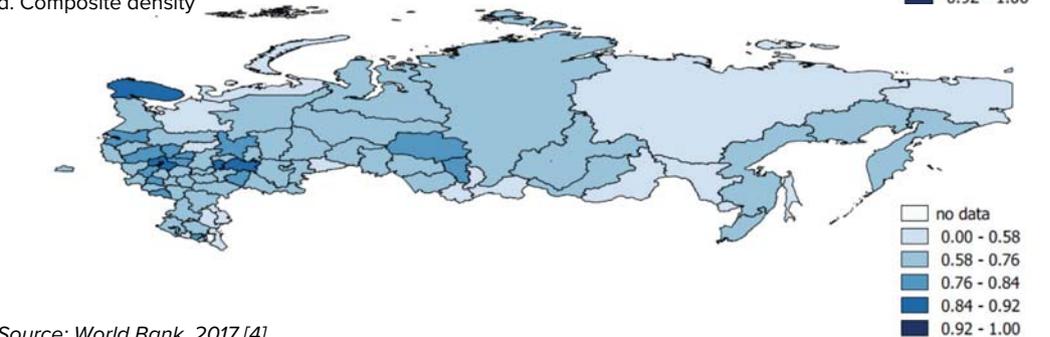
b. Education



c. Utilities

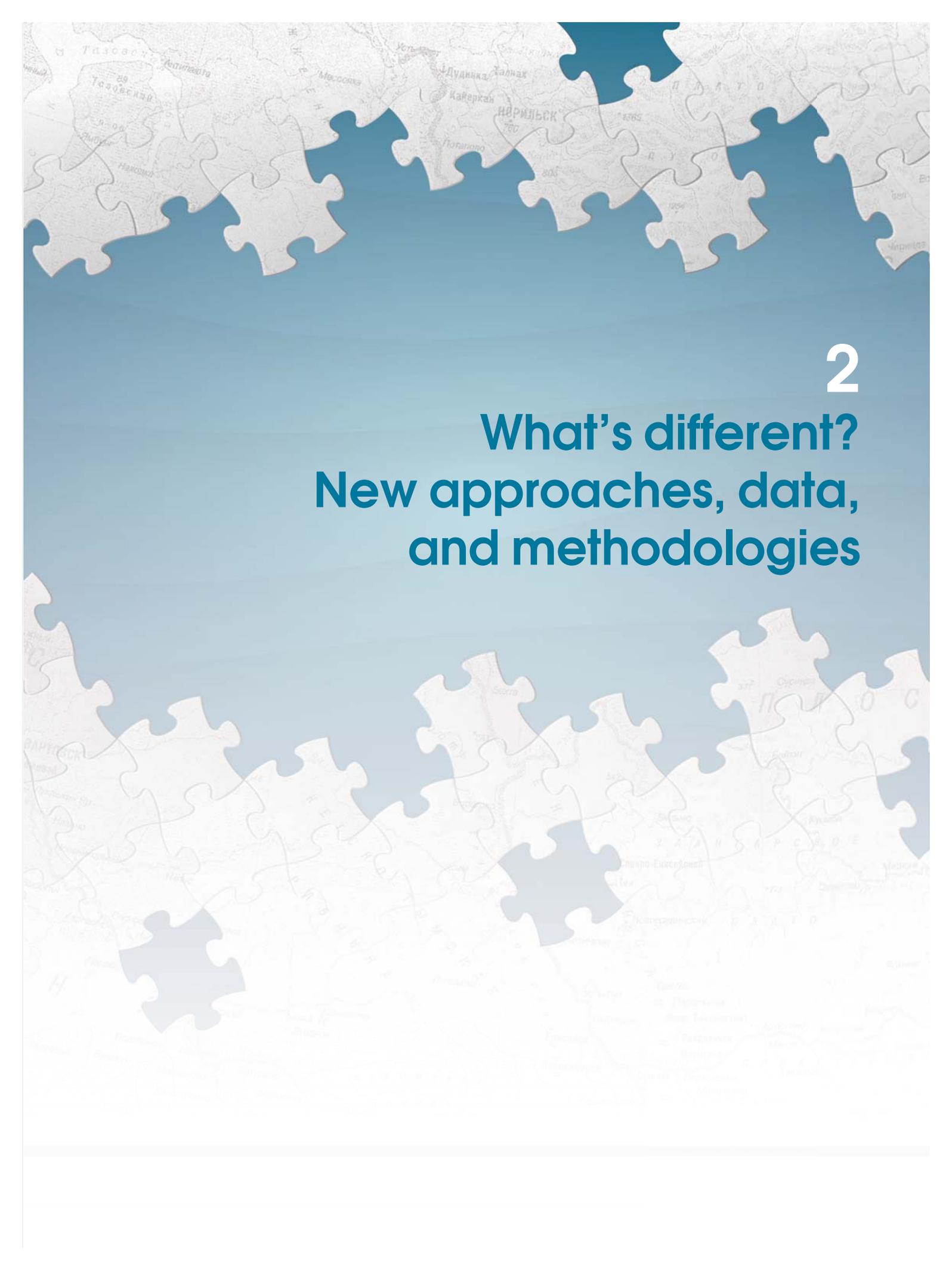


d. Composite density



Source: World Bank, 2017 [4]

Note: "Infant mortality" is measured by mortality rate under one year of age, per 1000 live births. "Education" is measured by the mean test score from Russia's university entrance exam (Unified State Examination). Access to utilities is measured as the average of three sub-indicators: whether the household experienced any electricity outages in the past year, whether the household is connected to the district sewage system, and whether the household receives piped water through the central supply system. Each indicator is normalized between 0 and 1. Darker blue shading indicates higher state effectiveness (indicator closer to 1). Composite density represents the equally weighted average of infant mortality, education, and utilities.



2

What's different? New approaches, data, and methodologies

(i) Approaches

This report applies an overall approach of carefully combining quantitative and qualitative practices, using the latest available data, and developing and customizing some new, sophisticated methodologies for Russian regions. The underlying philosophy is two-fold:

- First, findings are measured and quantified but in a meaningful sense. However, not everything that can be quantified has been quantified – quantification has its limits and needs to be relevant and contextual.
- Second, qualitative research and case studies are used to put the quantitative findings in context. In addition to providing context, case studies shed important light on factors that even sophisticated methodologies may not capture. For example, detailed case studies that examine the role of institutional factors and labor market integration were prepared for Bashkortostan, Krasnodar Krai, the Republic of Karelia, and Ulyanovsk.

(ii) Data

A wide range of data sources have been used, some of which were previously untapped such as 2005-2014 household data on consumption expenditure from HBS and the data from the 2014 Survey of Income and Social Program Participation. The individual papers that make up this synthesis report contain detailed information about the data and sources used.

(iii) Methodologies

An important contribution of this report is the development, application, and customization of new and/or sophisticated methodologies for Russian regions, namely:

- Constructing an Economic Potential Index (“EPI”) for 56 Russian regions that identifies which regions in European Russia have the most development “potential”;
- Calibrating and estimating a dynamic panel data model with spatial effects to test if Russian regions experienced something called conditional beta-convergence; i.e., whether disparities across Russian regions increased or decreased during 2004-2015;
- Customizing a Computable General Equilibrium (CGE) model for Russian regions to estimate to what extent – and in which regions – an increase in transport productivity would raise growth and welfare. A “freight connectivity index” is also developed specifically for Russia to estimate how quickly (or not) goods can move to / from regions.

Of course, no methodology or model is perfect, and all these come with caveats. The remainder of this chapter provides the gist of these methodologies and their limitations.

A. The Economic Potential Index (EPI):

The EPI is a methodology developed by the World Bank Group and it has been previously applied to study regional development in the European Union and India. It is used to identify the structural characteristics that best explain the differences in productivity (as measured by GRP pc) observed across regions. Structural characteristics are factors that are shown to have an association with productivity and economic development and are static in nature – meaning they cannot be altered substantially in the short or medium term (1-3 years). These structural factors include the level of urbanization, access to markets, quality of human capital, geographic characteristics of the regions, and sectoral composition of the economy. In adapting the EPI methodology to Russia, additional Russia-specific characteristics included in the analysis were the role of extractive industries and the Soviet legacy of central planning.

In its basic version, the EPI methodology uses a set of assumptions based on past empirical studies to create a list of structural conditions that define the potential of regions in the country under consideration. The version of the EPI methodology used here starts from a similar assumption, but it then uses multivariate regression analysis to test whether the identified structural conditions correlate with the observed level of regional productivity (GRP per capita). Table 2 summarizes the list of variables used for constructing the Russia EPI. It is worth noting that the factors that make up economic potential are structural; i.e., they derive from development patterns over a long period not shorter stretches (3-5 years), which can be driven by temporary external effects (market or geopolitical shocks) that may benefit or adversely affect certain industries or regions.

With this EPI approach, conclusions may be drawn about the relative importance of various structural conditions for achieving higher levels of economic productivity at a regional level. This approach also allows for a discussion of the potential of different regions to achieve higher levels of economic productivity within the model of economic development currently prevailing in the country. It is thus possible to call this approach an analysis of “revealed economic potential.” The approach provides a robust test of the role of the factors contributing to regional productivity. However, it may also result in counterintuitive findings that should be interpreted with caution. For instance, a negative correlation between a given factor and level of productivity does not mean the factor should be eliminated. Rather, it suggests that, on average, the factor is associated with forms of economic activity that yield lower productivity and possibly that there is a need for additional investigation into how this factor can be better utilized. A detailed description of the methodology behind the analysis presented in this chapter can be found in World Bank, 2017 [3].

Within this context, the EPI combines quantitative analysis of drivers of regional productivity with in-depth case studies to generate insights relevant for both national and regional governments. However, in the ultimate analysis, both remote and resource-rich regions were removed. This is because resource-rich regions overwhelm overall results, rendering them uninformative. In addition to the extractive regions, the remoteness of populated areas in the Far Eastern and Siberian Federal Okrugs display similar structural characteristics such as low population density and low market access. These remote regions also display distorted relationships to GRP pc since the latter is derived from other structural factors such as reliance on government support programs or access to foreign markets through

Table 2: The Russia EPI is constructed using variables with robust empirical relationships

Variables used to build the basic and extended EPI models (data available for 2010-2014)		
	Variables (sources)	Rationale
Productivity (dependent variable)	Gross Regional Product per capita (<i>Rosstat</i>)	Real GRP per capita is the dependent variable and is an indicator of a region's level of productivity. The model uses GRP in constant prices, equalized across regions. It is calculated using the index of the physical volume of GRP, which controls for regional differences in inflation. The price of the fixed basket of goods is used to correct for the price difference between regions in the base year.
Level of urbanization	Share of population living in a city with a population greater than 250,000 inhabitants (<i>Rosstat</i>)	<p>An increase in the share of population living in urban areas and in economic density confers benefits on firms and workers. This increase in urbanization and density gives rise to agglomeration economies and raises productivity and real wages. Additionally, proximity allows for knowledge spillovers, while dense labor markets can facilitate matching between firms and workers, and firms also benefit from sharing indivisible costs.</p> <p>Empirical evidence suggests that the forces of urbanization and agglomeration in Russia are not utilized in full.</p>
Human capital	Working-age population with university-level degrees (<i>Rosstat</i>)	A substantial body of literature confirms that the quality of human capital is closely associated with increases in firm productivity. Some mechanisms that foster this relationship include knowledge spillovers or the growth of consumption amenities in places where the highly-educated concentrate.
Market access	<p>Market access index calculated using travel time by road (<i>Google Maps</i>) and population by region (<i>Rosstat</i>)</p> <p>Port access index calculated using travel time by road (<i>Google Maps</i>) and throughput of port</p>	<p>Firms can trade and communicate with distant markets, which means that there is a spatial extent component to knowledge spillovers that occur when markets (i.e., cities) are in proximity. Following Harris' 1954 model, an "external" market potential was computed, whose impact is separate from the effect of the location's size.</p> <p>Previous studies have shown that market access contributes to productivity at a regional level as well as at a business level.</p>
Effect of central planning	Share of population living in monotowns	<p>Inefficient allocation of labor and capital in Russia slows down structural transformation of the economy and locks resources in unproductive forms of economic activity.</p> <p>Monotowns are widely recognized as a major social issue in Russia, but their presence also points to the significance of the Soviet industrial legacy in a given region.</p>
Geography and climate	Land suitability for agriculture	Natural endowments (like proximity to coastlines and temperatures favorable for agriculture) may confer advantages on cities as they develop. Given theories on path dependence and the variegated nature of Russia's geography, it is important to measure the role of geography and climate in shaping the fortunes of Russian cities.
Institutional factors	Number of economic crimes (<i>Rosstat</i>)	The level of economic crimes were used as a proxy for the strength of regional institutions; high values indicate either the degree of extraction by institutions or the weakness of property rights protections that leads to criminal activity.

Source: World Bank, 2017 [3]

land borders, which are not fully captured in this model. For example, the primary markets of Vladivostok, a major city with over 600,000 inhabitants in Primorsky Krai, are outside of Russia (only 1.1 percent of the region's GRP comes from natural resource extraction). The distance between Vladivostok and Moscow is over 4,000 miles; by contrast, Vladivostok is approximately 1,000 miles to both Tokyo and Shanghai.

Hence, the EPI restricts the analysis to a subset of 56 regions in Western Russia where the geography of regions is more consistent and natural resource influence is less prominent. Nonetheless, these regions still account for 75 percent of Russia's total population and 95 percent of its total output, once natural resources are excluded. All regions in the Far Eastern and Siberian Federal Okrugs were excluded from the model. Additionally, any region in which extractives contributed on average to more than 30 percent of GRP between 2010 and 2014 were excluded from the analysis.

While one downside of this selection approach is that it is not inclusive of all regions, another way of looking at it is that reducing spatial disparities and fostering sustainable growth in Russia requires looking beyond the lure of the extractive industry and natural resource endowments, as well as the challenge of remoteness. Given the role of the extractive industry and Russia's vast geography in distorting development outcomes in Russia's regions, it is important to design an EPI model that effectively controls for the niche role that these factors play in economic development.

One (standard) econometric caveat related to the EPI is in order: The EPI regressions capture only correlations, not causation, between the dependent variable (GRP pc in this case) and the independent variables. In addition, there might be additional missing variables – beyond those listed in the above table – that may also affect GRP pc. For example, the EPI does not account for some factors such as recreational resources that can contribute to higher economic potential in regions of southern Russia.

B. Conditional beta-convergence using a dynamic panel data model with spatial effects:

To estimate absolute regional convergence of real income per capita and the poverty rate, this analysis uses a conditional β -convergence model first developed by economists Robert Barro and Xavier Sala-i-Martin in 1991. However, it extends their approach in two key ways by exploiting the basic model's data structure. The basic estimation model is extended in this analysis specifically to incorporate (i) dynamic panel data, and (ii) spatial effects. The basic estimation model (1) is:

$$\ln\left(\frac{y_{i,t}}{y_{i,t-1}}\right) = \alpha_i + \delta_t - \beta \ln(y_{i,t-1}) + \sum_{k=1}^K \theta_k X_{k,i,t} + \varepsilon_{i,t}$$

In the basic estimation model (1), $y_{i,t}$ is the dependent variable for region i in year t , α_i is a regional fixed effect, δ_t is a time effect, $x_{k,i,t}$ is the set of explanatory variables, i is the region's index, k is the index of an independent variable, and β and θ_k are estimated coefficients. β represents the convergence. If $\beta > 0$, then there is conditional beta convergence. This means that poorer regions have higher growth rates than richer regions — which is why they are able to 'catch up'.

The dynamic panel data estimation model (2) is:

$$\ln(y_{i,t}) = \alpha_i + \delta_t + (1 - \beta) \ln(y_{i,t-1}) + \sum_{k=1}^K \theta_k X_{k,i,t} + \varepsilon_{i,t}$$

To incorporate a lag of the dependent variable as well additional independent variables, model (1) can be extended in such way that it becomes a dynamic panel data model (2). For this estimation model, a generalized method of moments (GMM) was used. In this model, two equations, in levels and in first differences, are jointly estimated with additional moment conditions. The equation in levels is instrumented with lagged differences, and the equation in differences is instrumented with a lagged variable in levels. To test the joint statistical validity of instrumental variables, the Sargan test was used for over-identifying restrictions. Since by requirement the absence of second and third order autocorrelation must be assumed in errors $\varepsilon_{-}(t,i)$, this is tested for using the conventional Arellano-Bond test.

The dynamic panel data with spatial effect estimation model (3) is:

$$\ln(y_{i,t}) = \alpha_i + \delta_t + (1 - \beta) \ln(y_{i,t-1}) + \rho \sum_{j=1}^J \omega_{i,j} \ln(y_{j,t}) + \sum_{k=1}^K \theta_k X_{k,i,t} + \varepsilon_{i,t}$$

In order to take into account spatial autocorrelation, model (2) can be extended by adding a spatial lag to create estimation model (3). In this estimation model, a spillover effect is analyzed, including the weighted average of the values of our dependent variable for all regions without the region for which the dependent variable is in the left side of the model. The weight for this variable $\omega_{i,t}$ is the inverse distance between the region i and all other regions as measured by the physical distance between their capitals by railway. To test spatial correlation significance for our dependent variable, Moran's I statistics is used. Researchers have shown that it is possible to use the system GMM estimates for the analysis of models involving spatial components. As a robustness check, the maximum likelihood (ML) approach is also used to estimate this model.

Regional spillover effects are captured in the following way. In spatial econometric models, the change in the independent variable in a region causes a change in the dependent variable not only in this region, but also in neighboring regions, which also affect this region. The marginal effect is described by a matrix of coefficients in this case. Consistent with the literature, this analysis presents the results by summarizing the matrix elements and calculating the so-called direct, indirect, and total effects. The direct effect is defined as the average (across all regions) change in the dependent variable in the region with a change in the independent variable in the same region. In other words, this is the average value of the diagonal elements of the matrix. The indirect effect is the average change in the dependent variable in the region with a change in the independent variable in all other regions (i.e., the mean value of the sum of off-diagonal elements of the matrix of marginal

effects). The indirect effect is also called as a spillover effect. The total effect is the sum of direct and indirect effects (i.e., the average change in real income per capita in the region with a change in independent variable in all regions).

The main caveat and limitation of the conditional beta convergence methodology is that it does not explain causality; i.e., why convergence did or did not happen. In addition, finding convergence does not necessarily imply that inter-regional differences are decreasing in absolute terms (as with “sigma convergence”). Conditional beta convergence simply means that poor regions grow faster than rich regions controlling for certain regional characteristics. Results may also be sensitive to the time period selected and to the weighted matrix used. In the case of this report, the inverse distance between regional centers is used as the weighted matrix; but other variants could also be used.

C. A Computable General Equilibrium (CGE) model to assess the impact of transport productivity in Russian regions and the Freight Connectivity Index:

A CGE model captures the effect of how an economy responds to changes in exogenous factors or policy changes. Its biggest strength is that it can quantify economy-wide effects of a change in a specific policy or improvements in technology that affect transport productivity. In this case, the report assesses what would happen to Russia's GDP and regions' GRPs if there was a positive shock in transport efficiency on regional productivity and welfare.

However, the downside is that the CGE methodology is not able to identify the drivers of transport productivity. Productivity shifts could be the outcome of some policy or regulatory reforms, infrastructure investment, or technological advancement (widespread adoption of GPS, autonomous vehicles). The link between changes in these variables and impact on better connectivity requires further analysis, which is beyond the scope of a CGE approach. The analysis in this report is based on estimations from a CGE model at the regional level of the Russian Federation. The model is divided into seven regions, each with representative households divided by quintile of income (Figure 5).

The biggest GRP is produced in the Central Federal District. This is the most densely populated region of Russia with 52 persons per km², which is six times higher than the national average density of 8.4 persons per km². The Far East is the least developed region of Russia: It has the smallest GRP and the biggest territory. The Southern Federal District is the poorest of the Russian federal districts, with a GRP per capita 2.3 times lower than the national average. The Ural Federal District, with the largest GDP per capita, is not only a manufacturing heart of the Russian economy; it is also rich in natural resources. Khanty-Mansi and Yamalo-

Figure 5: A breakdown of the seven Russian regions used in the CGE model



Source: World Bank, 2017 [2]

Nenets Autonomous Okrugs of the Ural Federal District have the country's largest oil and gas fields, which belong to the West Siberian oil and gas province. This province contains 66.7 percent of Russian oil reserves (or 6 percent of the known world oil reserves) and 77.8 percent gas reserves (or 26 percent of the known world reserves). The North-West Federal District and the Siberian Federal District have similar levels of GRP pc despite considerable differences in population.

One major caveat of the CGE approach applied as above is that there is no explicit reallocation of factors of production between regions in the model. Both labor and capital stocks are fixed for each federal district. Within each region, both labor and capital are mobile between industries. Thus, relocation of economic activity between industries and regions happens only through the pricing channel, and not through reallocation of factors of production.

In addition to the CGE modeling, a freight connectivity index is also developed, which shows the average time required for goods to move to/from regions. The official statistics used to calculate freight connectivity comes from Rosstat, and they use the travel times estimated through network analysis (GIS tool). "Freight connectivity" is defined as the weighted travel time between regions using volume of trade and the modal share of each transport method as key descriptive variables. For each region, the top five trading partners were considered. The formula used was:

$$\text{Freight connectivity} = \text{Percent of Trade by Mode: Road} * \text{Travel Time to Destination by Road} + \text{Percent of Trade by Mode: Rail/River} * \text{Travel Time to Region A by Rail/River}$$

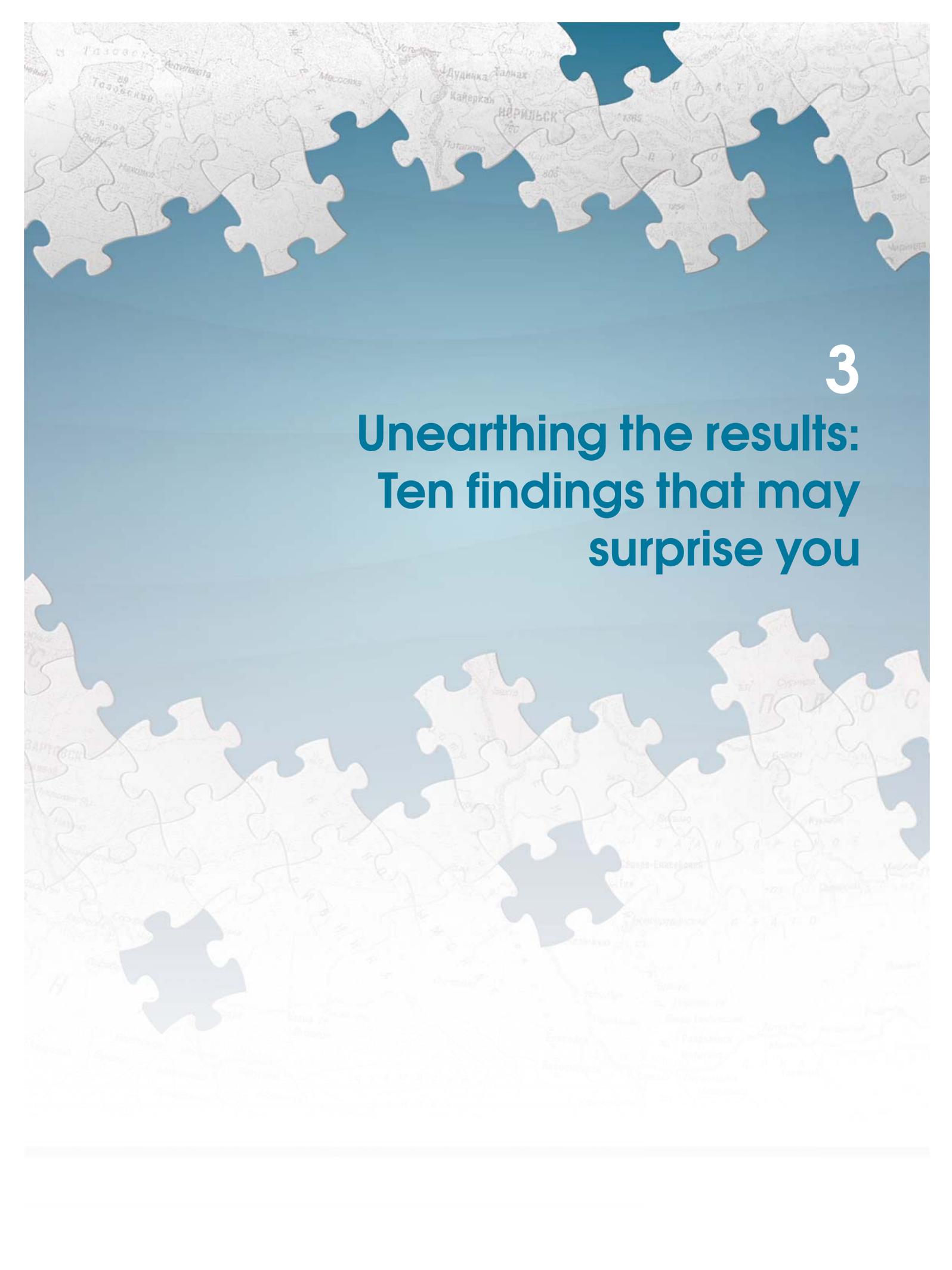
This calculation was repeated for the top five trading partners of each region and the values were added together. The final number is the weighted travel time to each region's top five internal trading partners.

An Origin/Destination (O/D) Cost Matrix was used to create routes along the network, and in this case, it calculated the cost value, which was set to travel time in minutes. The O/D Cost Matrix functions by calculating the routes between every given origin and any given destination. The resulting cost matrix connected each regional capital to every other regional capital in Russia and provided the cost as travel time in minutes. Estimates were prepared for all modes of transport.

While freight connectivity provides a useful way of characterizing the flow of goods, one downside is that, due to the lack of relevant data and information, it is not possible to track exports and imports from these regions.

Finally, “travel-time isochrones”, defined as the boundary surrounding an urban center that can be accessed within a given time spent traveling (in this case, 5, 10, and 15 hours), are calculated. These isochrones provide a visual depiction of economic distance across Russian regions.

The combination of the hybrid approaches, latest data, and new methodologies adopted in this study has yielded interesting – and often surprising – findings; the reader is invited to indulge in these in the following chapter.



3

Unearthing the results: Ten findings that may surprise you

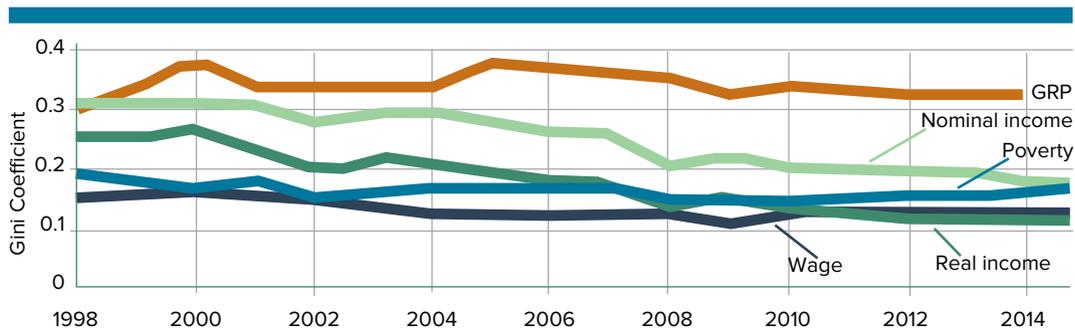
The results borne out of the analyses summarized in the previous chapter are presented in 10 salient points, elucidated upon below.

(i) Russian regions have experienced convergence in both real income per capita and poverty incidence.

Across regions, a look at the narrowing degree of variation in wages, incomes, GRP, and poverty incidence visually suggests that regions have experienced some convergence over the last 15 years (Figure 6).

While in 1998, regions were more heterogeneous in terms of real income per capita than poverty, this position had reversed by 2008; the regional variation of poverty incidence remained relatively stable and income continued to converge. Figure 7 is yet another

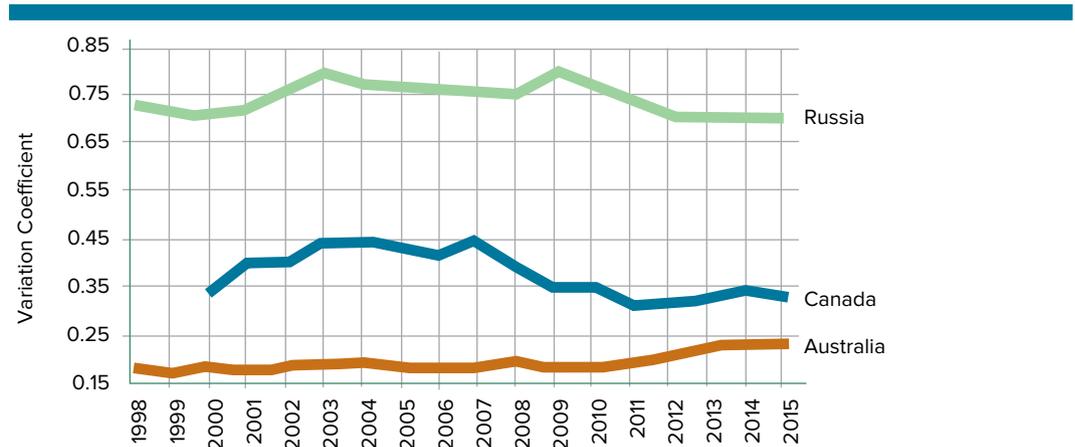
Figure 6: Russia’s regions have experienced some convergence over time: Wages, incomes, GRP, and poverty incidence across regions (1998-2015)



Source: World Bank, 2017 [3]

Note: In this figure, the Gini coefficient is used to measure the degree of variation for each indicator across regions.

Figure 7: Regional convergence in Russia is higher than in Canada and Australia (variation coefficient of GRP per capita in 2010 prices)



Source: World Bank, 2017 [3]

measure showing the declining variation of GRP pc over time, but as alluded to in Chapter 1, it remains significantly higher than in Australia and Canada (with the caveat that there are fewer regions in both Australia and Canada).

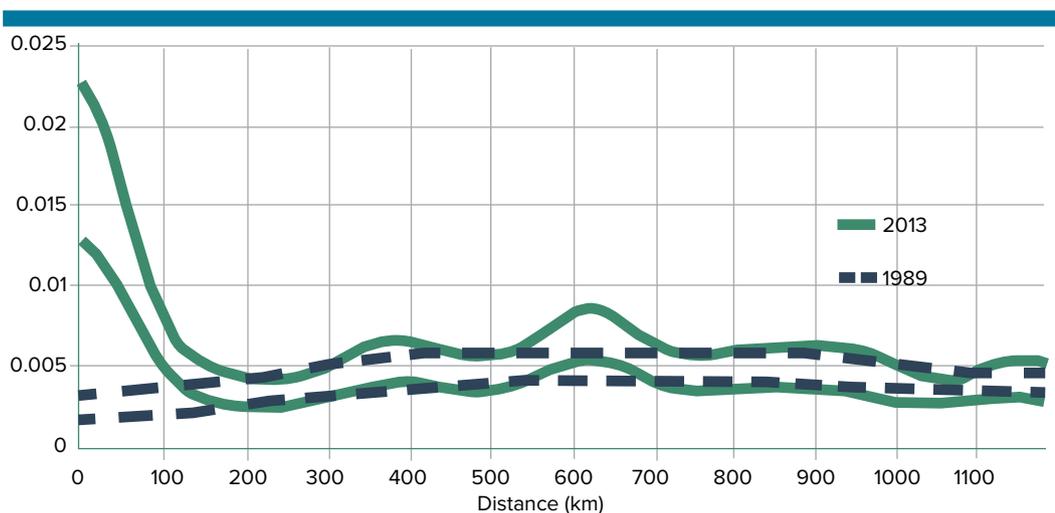
However, to understand inter-regional convergence from a deeper and more technically sound perspective, this analysis estimates “conditional beta-convergence” (as described in the previous chapter) to understand whether poorer regions have been able to ‘catch up’ with richer regions in terms of real income per capita or poverty incidence.

Encouragingly, there is evidence for convergence in both real income per capita and poverty incidence. This suggests that – conditional upon their other characteristics – poor regions are growing faster than rich regions. Moreover, there is evidence of positive spillovers from one region to another; i.e., factors that increase incomes and reduce poverty in one region increase incomes and reduce poverty in neighboring regions. Most regions also saw a substantial decrease in levels of consumption inequality (household consumption per capita) over the period 2005 – 2015.

(ii) Integration of labor and capital markets, initial increases in working-age populations in poorer regions, and federal transfers are all associated with more convergence. But these convergence engines are running out of steam.

Integration of regional capital and labor markets likely played a role in this convergence. For example, there is little correlation between savings and investment volumes on a regional scale, which suggests that capital is no longer trapped within regions. Figure 8

Figure 8: There is some spatial re-allocation of factors of production: Changes in the distribution of pairwise distances between registered enterprises*



* The share of all pairs of businesses that are located a certain distance (specified on X axis) from one another.

Source: “Reform agenda for the forthcoming policy cycle in Russia” by Chistyakov Dmitriev (unpublished), as cited in World Bank, 2017 [3]

shows changes observed in the spatial distribution of registered enterprises in Russia. If in 1989 the pairwise distribution of distances between enterprises suggested an almost uniform distribution across space, by 2010 enterprises were much more concentrated, which presents indirect evidence of spatial re-allocation of factors of production.

Regarding labor markets, the 1990s and early 2000s saw high rates of internal migration. For example, Chukotka and the Komi Republic lost two-thirds and one-fifth of their populations, respectively. Immigration to the large regional capitals of Yekaterinburg, Krasnoyarsk, Samara, and Novosibirsk slightly increased between 2003 and 2007. An initial increase in the working-age population, especially in poorer regions, also supported income convergence since the 1990s.

However, overall mobility in Russia, which was 3 percent per annum through the first half of the 1990s, declined to 1.2 percent by 2008. Moreover, emerging demographic trends could reverse this as Russia's dependency ratio is projected to increase rapidly with the recent decline in fertility and increasing life expectancy. Internal migration in Russia is also hampered by social factors, which especially affect youth and women (Box 1).

Box 1: Barriers restricting the labor mobility of youth and women in Russia

Russian youth face radically different job prospects depending on the regions they live in. Young people from the North Caucasus, for example, may be uncompetitive outside of their own region due to the low standard of education received. Unlike in the past, there are few active labor market policies currently available in Russia that cater specifically to young people. The young also need to rely more on kinship networks to negotiate what would otherwise be hard to access housing and job markets. Internal migration in Russia also has a gendered nature: it's much easier for men to migrate than women (although most men do so for temporary work). Women are constrained in migration by their domestic roles as well as being perceived as "natural homemakers". Moreover, the Russian Labor Code (Article 253) prohibits women from working in areas deemed to be too risky for them. Government regulation No. 162 of February 2000 lists 456 occupations from which women are prohibited from working in, including heavy lifting and underground work. Given the elevated position of the "mother" in Russian society, there are several measures to protect female employees who are pregnant or recent mothers. Interestingly, women themselves have sought to counter discriminatory practices in the workplace through entrepreneurship: While men are four times more likely to be "nascent entrepreneurs", nearly half of established businesses are owned by women, suggesting that they are better at backing a winner. However, men dominate in big business, while women are concentrated in SMEs, relying extensively on personal networks to a greater extent than men.

Sources: World Bank, 2017 [7] and World Bank, 2017 [9]

Federal transfers have played a role in income convergence. Indeed, each type of transfer (subsidies, subventions, and grants) is allocated to poorer regions. However, due to the 2014 – 2016 economic slowdown, the federal government drastically reduced transfers to regions by as much as 22 percent in real terms between 2013 and 2016. Regions in turn adjusted by considerably cutting expenditures, especially in human capital -- education, health, and social protection (Box 2). This points towards the ever-increasing importance of regions to better manage their finances in terms of managing their expenditures and enhancing own-source revenues.

Box 2: The period 2013-2016 saw cuts in federal transfers to regions and in spending on social sectors

The largest cuts, in absolute terms, were in education. Total spending on this sector fell 18 percent in real terms between 2013 and 2016 (increasing only 9 percent in nominal terms). Spending on health declined by 23 percent over the period, although this was partly offset by an expansion in the number of facilities covered by the Health Insurance Fund. There were even sharp cuts in spending on social protection, which fell 6 percent in real terms over the period. It should be noted that regional governments have considerable discretion in designing their own social-assistance programs. If federal guidelines are respected, regional governments may cut benefits to fit their own budget constraints, and they may have responded to the decline in their overall revenues by doing exactly that. In addition to the cuts in social spending, regions also made substantial reductions in infrastructure spending; cuts in the transport sector accounted for 14 percent (in real terms) between 2013 and 2016. Spending in the housing and communal services sector fell even further, by 22 percent.

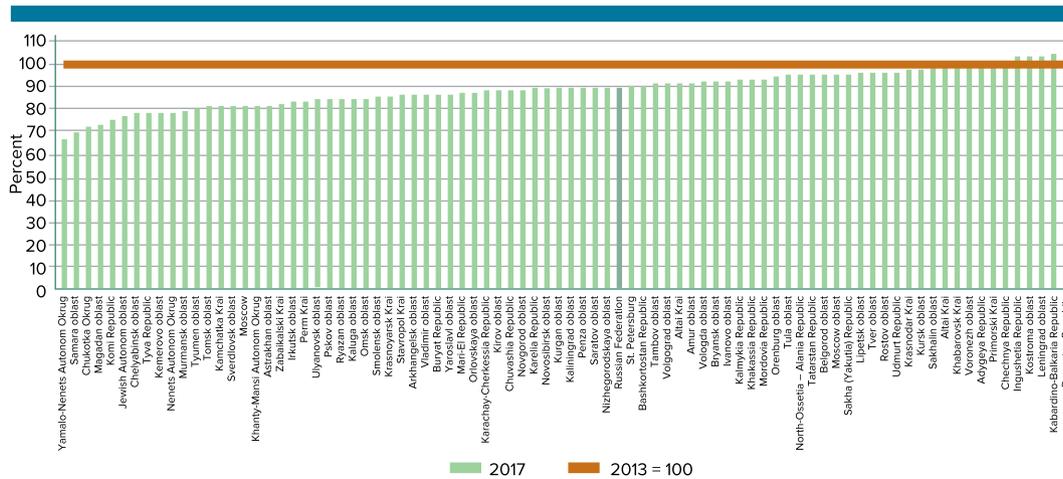
Source: World Bank, 2017 [1]

(iii) Features of the regional economic structure – shares of mining, manufacturing, and construction in GRP – as well as the persistence of high unemployment in the past, are associated with lower per capita real income of regions, and hence lower convergence. Moreover, in recent years, convergence has been driven by “convergence to the bottom.”

When controlled for other factors, regions that depend upon mining have lower real income per capita. But the right way to interpret this is not that these regions have lower income per capita per se. Rather, when controlled for other factors, having a high share of mining in a region's GRP separately from other factors does not guarantee a high level of income in the region. Higher unemployment in past periods is also associated with lower income today (suggesting frictions in the labor market).

Furthermore, while Russia's economy is now in recovery mode following the dual oil price and sanctions shocks of 2014, their effects have been felt differently in different parts of the country. Figure 9 shows that while the levels of GRP pc in all regions in 2017 were still lower than their 2013 levels, they remained much lower in (mostly) richer regions than in poorer ones. Ironically, the 2014 crisis seems to have played a “leveling role” and reduced disparities; however, that was largely because of such convergence to the bottom.

Figure 9: GRP pc fell more in richer regions as compared to in poorer regions (2017 vs. 2013)



Source: World Bank, 2018 [10]

Note: Computations based on a chain index method. For 2017, a ten-month growth rate was applied.

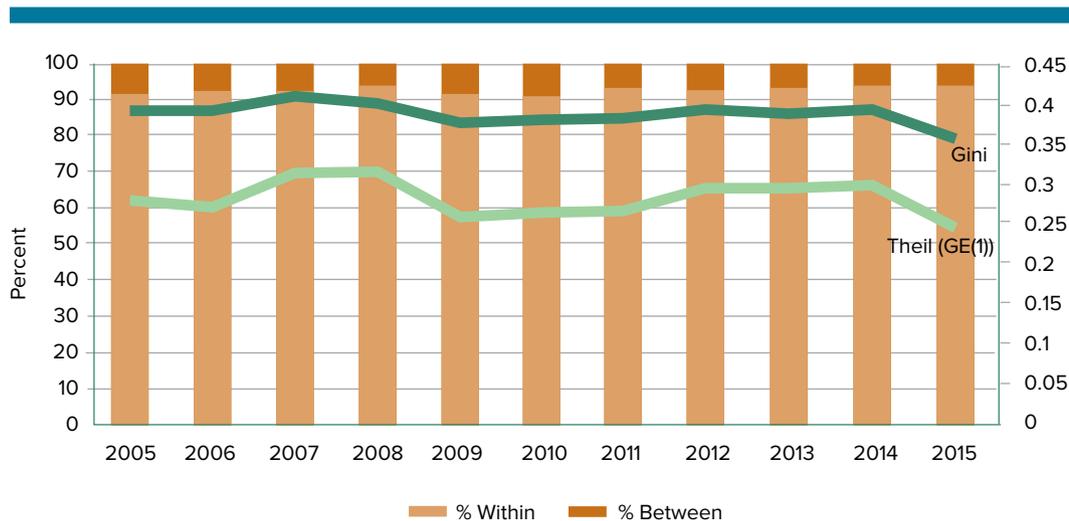
(iv) Despite convergence, gaps between the regions remain large and highly variable. Moreover, while inequality varies substantially across regions, the bulk of inequality is not across regions but within regions.

Consumption-based regional Gini estimates range from about 0.28 in Vladimir, Karachaevo-Cherkessiya, and Dagestan to greater than 0.40 in Irkutsk, Moscow, and Tyumen. A decomposition of household per capita consumption reveals that over 90 percent of current levels of inequality is due to intra-regional inequality (Figure 10). While this is consistent with findings that intra-regional inequality is typically greater than inter-regional inequality, this is a notable increase from the previous decade in Russia. During the 1994-2000 period, only about two thirds of the increase in inequality was driven by intra-regional distributions. This is now up to 90 percent.

(v) The concentration of inequality (as measured by per capita household consumption) is highest in the richest and most populous regions.

The top 15 regions (out of the 79 for which data are available) that contribute the most to inequality account for 21 percent of total inequality in Russia. These regions are also home to 46 percent of the country's population and tend to be either metropolitan areas

Figure 10: Within-regional inequality comprises a much higher share of total inequality than intra-regional inequality



Source: World Bank, 2017 [4]

Note: “% within” and “% between” indicators refer to the Theil measure of inequality

or resource-rich regions. The top three contributors are Moscow City, Moscow Oblast, and St. Petersburg. Of the remaining 12 regions, seven had a mining share of over 20 percent in 2015.

One reason why richer regions show high within-region inequality is because a large share of the country’s poor population is concentrated in these richer regions. While the percentage of people living in poverty is very high (34.7 percent) in poorer regions such as Tuva Republic and Kalmyk Republic, because of their small populations, the number of people living in poverty in these regions only accounts for 0.6 percent of all poor people in Russia. In absolute terms, because of their large populations, richer regions are home to a much larger number of poor people despite their low poverty incidence. For example, despite having some of the lowest poverty rates in the country (around 7.5 percent), the cities of Moscow and St. Petersburg together account for almost 10 percent of the poor people in Russia (Table 3). This is not uncommon as similar patterns are observed in other large countries such as Brazil and China.

It is also noteworthy that when comparing the per capita income of the richest and poorest regions, labor income (vs. income from assets or transfers) is the main income source in the richest regions (Figure 11).

Labor income typically exhibits high levels of inequality (vs. transfers), and because it accounts for a large share of household income (vs. asset income) in richer areas, greater reliance on it also drives income inequality. Indeed, labor income drives more than 90 percent of overall income inequality in Russia.

Table 3: Russia's richer regions house most of the country's poor

Region	Poverty rate 2014	Share of poor people living in this region	GRP 2014 (billion rubles)
Moscow City	7.5	6.6%	12,808
Moscow Oblast	7.6	3.3%	2,705
St. Petersburg City	8.3	2.6%	2,652
Krasnodar Krai	10.1	3.3%	1,792
Tyumen Oblast	12.1	2.6%	5,178
Tuva Republic	34.7	0.6%	46
Kalmyk Republic	34.7	0.6%	46
Ingush Republic	24.9	0.7%	52
Evrei Autonomous Oblast	21.4	0.2%	41
Altai Republic	20.7	0.3%	39

Source: World Bank, 2017 [4]

Figure 11: Labor income – which exhibits high inequality – is the main source of income for households (Share of income source in total household income, by quintile)



Source: World Bank, 2017 [4]

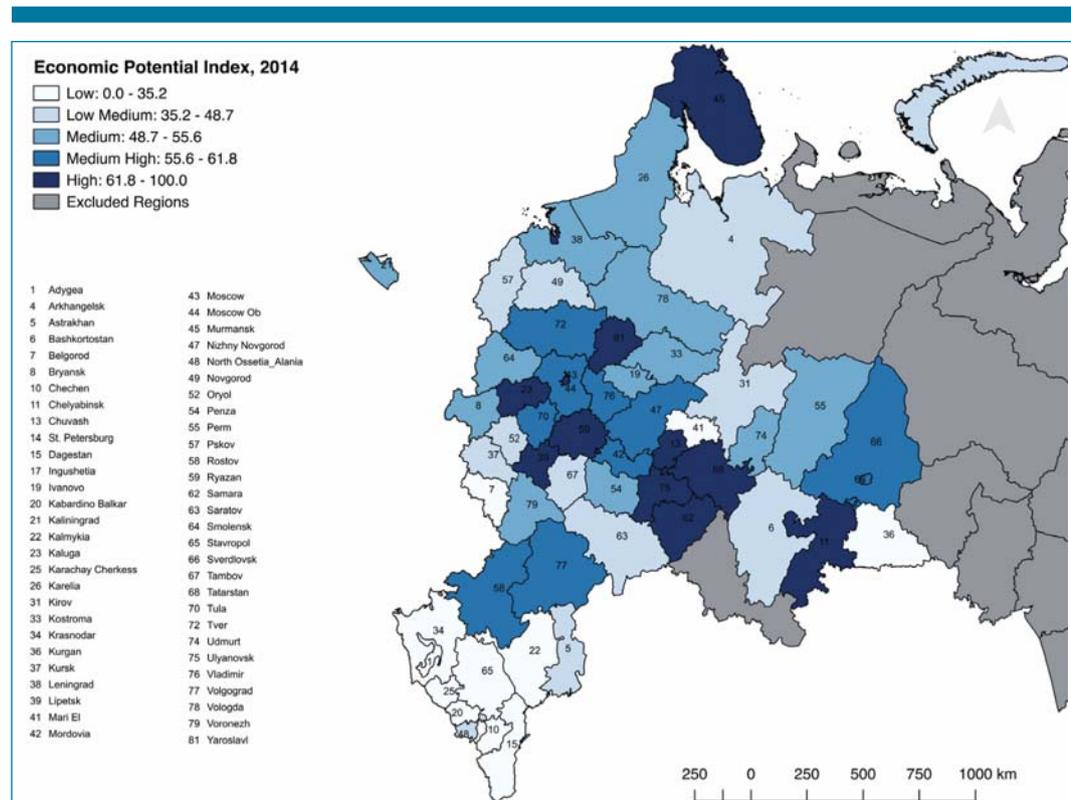
(vi) Natural resource wealth is not the sole driver of regional development in Russia, and high potential regions are not limited to just Moscow, St. Petersburg, or their immediate surroundings.

When applied to the 56 regions in the European part of Russia, the EPI methodology (outlined in the previous chapter) identifies three corridors of high potential regions (Figure 12).

Unexpectedly, as the above figure shows, high potential regions are not confined to Moscow and St. Petersburg:

- One band of medium-high and high potential radiates from Moscow and spreads slightly north and south to include high-potential regions such as Yaroslavl, Kaluga, Ryazan, and Lipetsk Oblasts among others. It appears that these regions benefit from their proximity to major population centers as well as from high rates of urbanization.

Figure 12: High potential regions are not limited to just Moscow or St. Petersburg: Economic Potential Index for the regions of Western Russia



Source: World Bank, 2017 [3]

- The second group of high-potential regions stretches from Rostov Oblast in the south along the Volga River to Tatarstan in the north and it includes Volgograd, Samara, Ulyanovsk Oblast, and Chuvash Republic. These regions are densely populated and have large urban centers, a highly-educated population, and established industrial bases that include technologically advanced companies.
- The third grouping of high-potential regions is concentrated in the southern Urals. It includes Sverdlovsk Oblast and Chelyabinsk Oblast. These regions are highly urbanized and are well known for being the industrial heartland of Russia.

The most surprising region identified as having high economic potential is Murmansk Oblast. Its high-potential status is driven primarily by its access to external markets given the number of ports located in the oblast and the volume of cargo transiting its ports. The potential is also driven by its highly-educated population and by its high urbanization levels that are typical of the sparsely populated territories in the north.

(vii) Low-potential regions are concentrated in Southern Russia.

This is largely due to the regions' remote locations, their low levels of urbanization, and the small size of their major cities. Additionally, these areas are 'penalized' for their highly favorable agricultural conditions. EPI results show a statistically-significant negative correlation between the measure of agricultural suitability – climate and soils – and GRP per capita. This suggests that regions specializing in agriculture, based on natural endowments, struggle to develop more productive forms of economic activity.

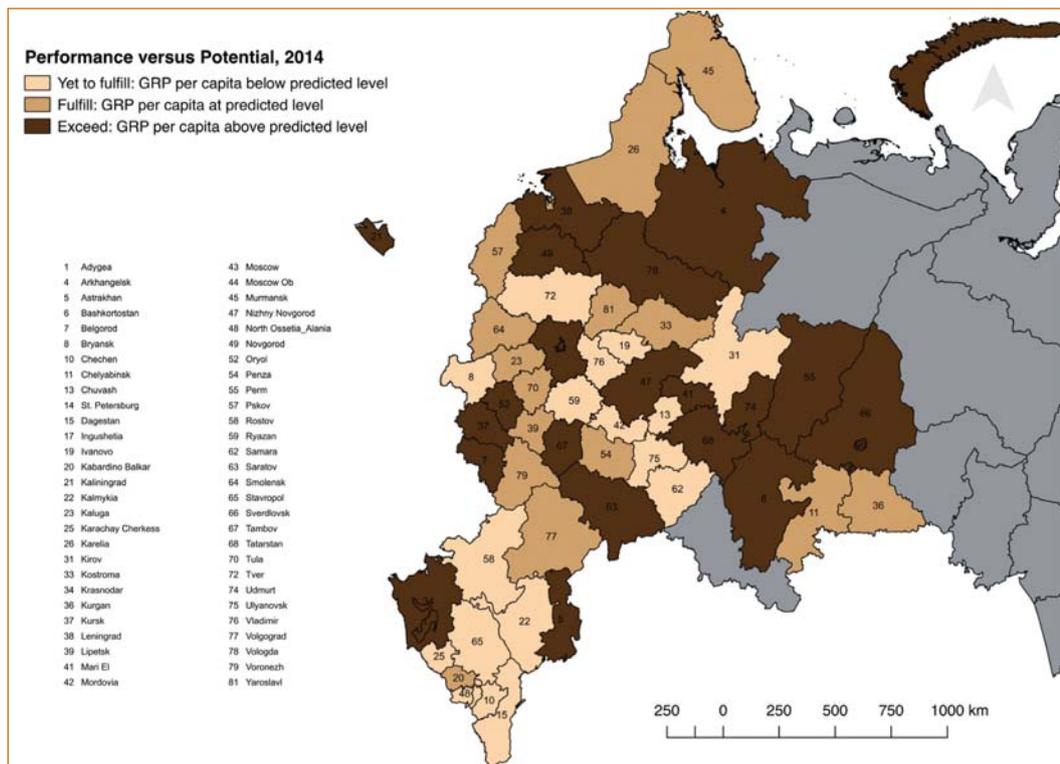
What is surprising is the low-potential ranking of Krasnodar Krai. However, the EPI results suggest that in addition to being penalized for having a highly conducive agricultural climate, the region also performs low on internal market access, human capital, high-tech industries, and urbanization. The strong performance of Krasnodar's ports – ranking 9th of 56 – does not make up for its performance in other areas.

(viii) However, actual performance does not match potential.

Figure 13 shows that a large share of regions that are estimated to have high potential fail to reach predicted levels of productivity. Out of 21 regions with high and medium-high potential, 8 are yet to fulfill this potential.

On the other hand, some low-potential regions manage to reach GRP per capita levels that exceed projections based on their structural endowments. And of the 22 regions that perform above their predicted level, 12 are low or low-medium potential. Clusters of over-performing regions are found in the north, on the border of Volga Okrug and the southern Urals, and in the southwest along the Ukrainian border.

Figure 13: Over-performers and underperformers



Source: World Bank, 2017 [3]

(ix) Four factors – urbanization, the presence of high-tech industries, advanced human capital, and connectivity (access to markets) – explain 60 percent of the variation between the EPI (i.e., European) regions.

- a) *Urbanization* is the factor most closely associated with higher regional productivity. The share of urban population explains more than 50 percent of variation in GRP pc in Western Russia. A one standard deviation increase in the share of the population living in cities with a population of 250,000 or more is associated with a 0.33 standard deviation increase in GRP per capita. This suggests that agglomeration economies are the key drivers of regional productivity in Western Russia. Yet, there are a few large cities in Russia, and many of these grow by sub-urbanizing rather than by densifying.
- b) *Nurturing high-tech sectors* is an important determinant of GRP pc. The share of people employed in high-tech and medium-tech industries is strongly correlated with higher per capita GRP in Western Russia. A one standard deviation increase in the share of employment in high/ medium-tech industries is associated with a 0.32 standard deviation increase in GRP per capita.

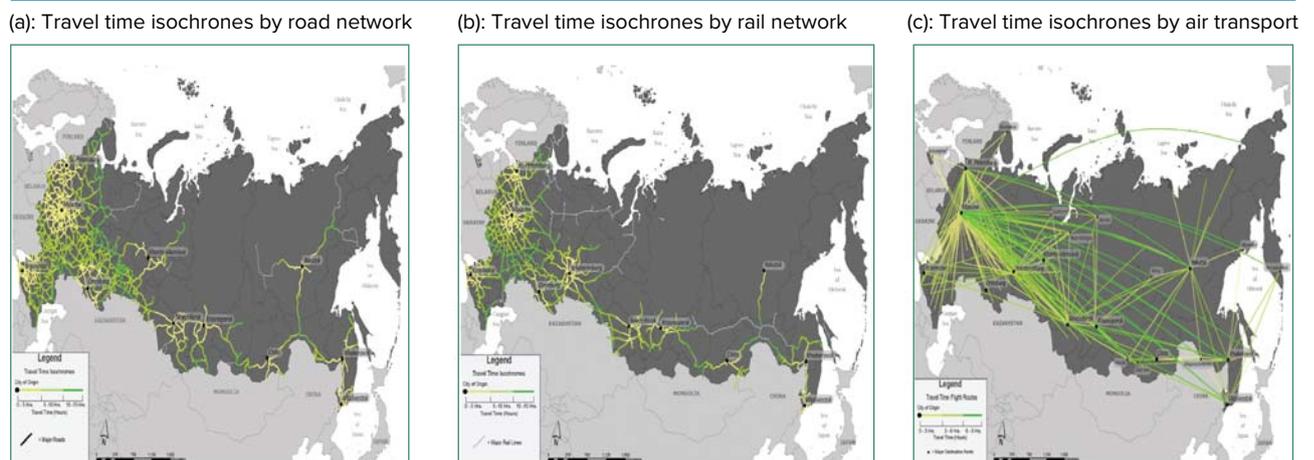
- c) *Developing human capital* is another central component of GRP pc even though the effect is weaker than expected due to measurement difficulties. In the EPI approach, there is not enough variation in the value of this human capital variable, which results in the mis-estimation of its significance. However, analysis of household data underscores the importance of human capital. At a household level, one can distinguish to what extent variation in the per capita income of households is attributable to differences in “portable” assets, such as human capital, versus returns to “non-portable” ones (i.e., location specific), such as infrastructure.
- d) *Connectivity or access to markets*, both external and internal, is highly important, not just for Western Russia but for all regions. Indeed, Russia's large spatial disparities in part reflect differences in transport connectivity, measured by the time it takes to travel to markets. This is readily seen in “travel-time isochrones”. As explained in Chapter 2, a travel-time isochrone is defined as the boundary surrounding an urban center that can be accessed within a given time spent traveling (in this case, 5, 10, and 15 hours) by a certain mode of transport. For all three modes of transport (road, rail and air) shown in the figures below, the average economic distance to market is much less in the well-connected western and central regions than in the more isolated eastern and northern regions – this is the case even for air transport.

Box 3: The importance of human (and physical) capital in bridging spatial disparities

The approach adopted examines households in 5 classifications of regions: (a) Metro, (b) Resource-rich urban; (c) Resource-rich rural, (d) Rest-urban; and (e) Rest-rural. Urban – rural differences *within* the same regions are large and attributed almost equally to portable vs. non-portable assets. Metro – Rest-urban differences *between* regions are also attributable almost equally to portable (versus non-portable assets). These results partly reflect the different sectoral distribution of economic activity across and within regions: On average, even with the same level of formal tertiary education, an investment banker in Moscow would get paid significantly more than an accountant working for a telecoms company in Krasnoyarsk, who in turn would make significantly more than a lecturer in Kalmyk Republic. These results point to the importance of enhancing both portable assets (i.e., human capital) and non-portable assets (i.e., connective infrastructure) as policy entry points.

Source: World Bank, 2017 [4]

Figure 14: Eastern regions have a much smaller “web” of major rail and road lines around them



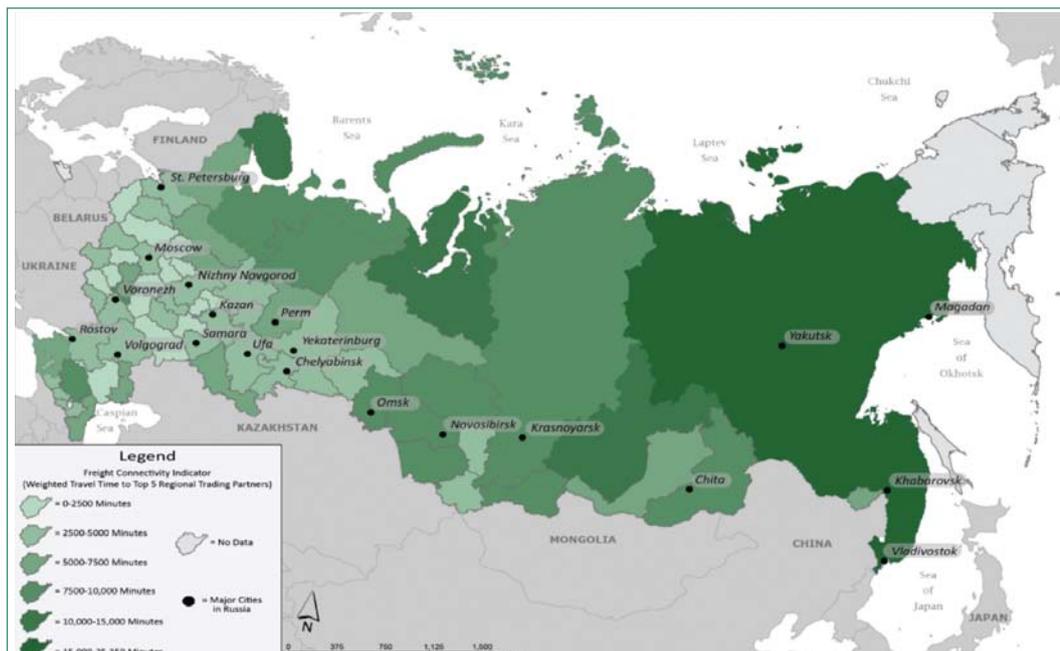
Source: World Bank, 2017 [2]

The Freight Connectivity Index (as described in the previous chapter) shows that the average time required to ship goods in the northern and central-eastern regions is significantly higher than in the western regions (Figure 15). For instance, in Sakha Republic/Yakutia, the sum of travel time to the region's top five regional trade partners exceeds 11 days, while for Moscow, the corresponding figure is only 4.6 days. Interestingly, half of Russia's regions have a neighboring region among their top five trading partners while the other half trade with regions they do not share a border with.

However, isolated regions (i.e., those located far from markets in the European side of Russia) are not necessarily "transport-disconnected" from their markets. For example, Zabaikalsky Krai is relatively well connected with its main regional trade partners despite being far from Moscow and St. Petersburg. This also includes being connected to China. Zabaikalsky Krai's trade in RUB with China is 11 times larger than its trade with regions in Russia. The domestic connectivity index for Zabaikalsky Krai is like Moscow Oblast although the trade value in Moscow is 75 times larger than in the former. That is, it takes the same time to move freight in both regions but the ratio of RUB/minutes of freight is much higher in the Moscow Oblast.

Results of the CGE methodology (described in the previous chapter) are striking: An exogenous increase in transport efficiency (resulting from the reduction of travel time or technological progress) has a major impact on both regional incomes and welfare. At the national level, a 10 percent increase in transport efficiency (labor, capital, and energy consumption) would raise GDP by as much as 0.8 percent. Poor or underdeveloped regions would enjoy the largest increase in GRP while the two richest regions would experience

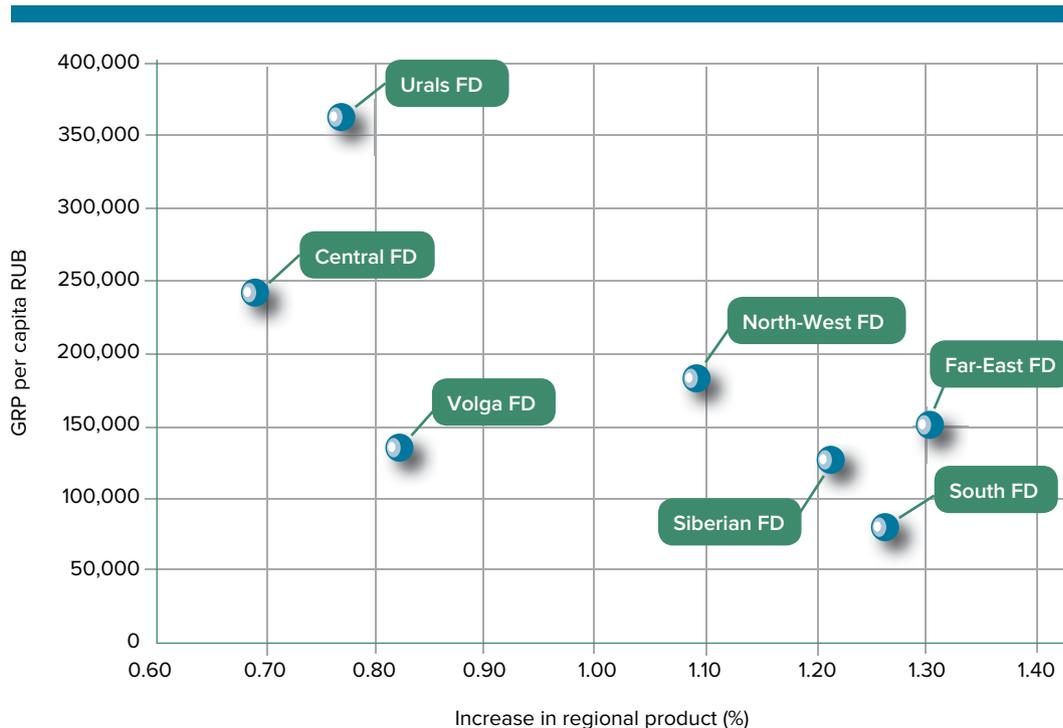
Figure 15: It is more time-consuming to ship goods in the northern and central-eastern regions than in the western regions (Freight connectivity -- weighted average time to five most traded regional partners, 2014)



Source: World Bank, 2017 [2]

the smallest increase, suggesting that an improvement across regions could potentially contribute to regional convergence. Overall, households are better off in terms of welfare and poverty reduction, but the main beneficiaries are in the western part of Russia (Figure 16). This is because welfare impact depends on population density and this is consistent with finding #5 that more poor people live in richer regions. However, it is worth remembering the major caveat of this CGE model that relocation of economic activity between industries and regions happens only through the pricing channel, and not through reallocation of factors of production. If factors of production were allowed to be reallocated, the results would be different.

Figure 16: All regions benefit from a hypothetical 10 percent increase in transport efficiency



Source: World Bank, 2017[2]

(x) Though difficult to pin down, the quality of regional institutions and governance matters.

In addition to the four factors described above that explain the variation in the economic potential of regions, the difference between the potential and performance of regions can be partially explained by institutional factors. Institutions and governance can help or impede utilization of economic potential of the region. For example, the shift of government priorities in Ulyanovsk was drastic. After the 2005 change of government, it went from the most conservative and protectionist regimes in the late 1990s to one of the most economically liberal and pro-business. Though gradual, Bashkortostan and Krasnodar Krai also saw a similar shift. These case study findings are elaborated upon further in the next chapter.

More broadly, if institutions are viewed through the lens of state density, as discussed in Chapter 1, the effect of state presence on non-monetary well-being in Russian regions reveals how some regions are systematically affected by low state presence.

* * *

The collective significance of these ten findings is that while spatial disparities in Russia are narrowing, the convergence engines of integration of labor and capital markets, initial increases in the working-age populations of poorer regions, and federal transfers are running out of steam. Driven by the high share of labor income in overall income and the fact that more poor people live in rich – rather than poor – regions, disparities are higher within regions than between regions. This has a powerful implication: Rolling back disparities does not necessarily imply “balancing growth” across regions. Because the bulk of inequality is intra-regional, and poor regions are not where most of the poor people live, it is richer regions with their large populations that “matter more”. It is also much more likely that new drivers of growth will emerge in the high-potential regions of Western Russia. The impetus of reducing disparities is therefore on making richer regions “work” for the poor in these regions while realizing that in other regions, the benefits of transport improvements are not realized in the form of agglomeration benefits and high growth; rather, these are realized in the form of access to basic services.

So, how can this be achieved? That is the focus of the next chapter.

The image features a map of Russia, where the landmass is represented by several interlocking puzzle pieces. The map is rendered in a light, semi-transparent style, showing major cities and regions. The background is a solid blue gradient that transitions from a darker shade at the top to a lighter shade at the bottom. The puzzle pieces are arranged in a way that suggests a fragmented or incomplete picture, with some pieces missing or slightly offset. The overall aesthetic is clean and modern, with a focus on the geographical outline of the country.

4

Where do we go from here? Laying out policy directions

To roll back spatial disparities, the policy directions that naturally emerge from the collective findings are to promote urbanization, invest in human capital, increase access to markets, and improve institutions and governance. However, they are generic, and as such, not helpful. In this chapter, therefore, these generic policy directions are broken down into actions along three dimensions: role of federal policies; role of regions; and role of third parties.

A. Policies for the federal government

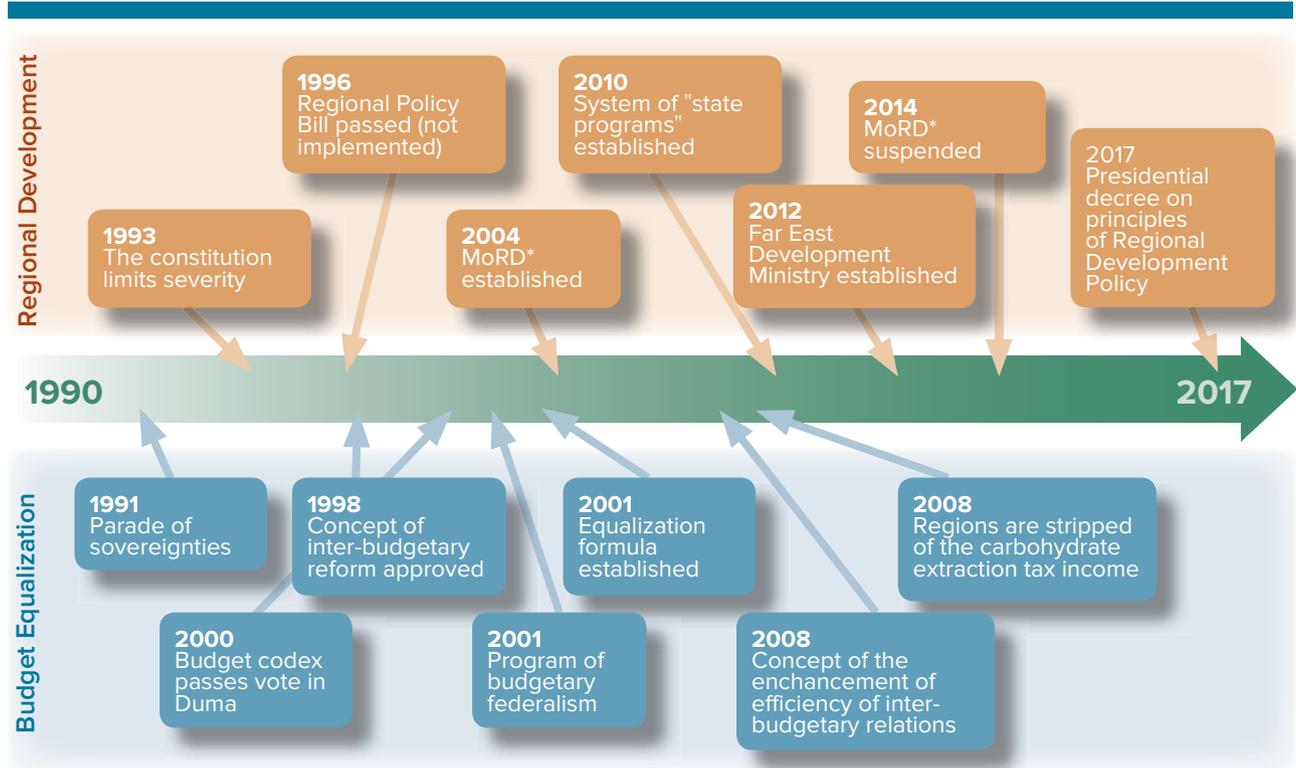
(i) *Provide consistency and fiscal stability to regions*: The federal government's approach to regional development has changed several times. The trend toward decentralization of power and resources in the early 1990s ("parade of sovereignties") was reversed in the 2000s (Figure 17).

Tellingly, the federal government's response vis-à-vis the regions was different in 2015 vs. 2008: In 2008, pensions and transfers increased income growth for those at the bottom end of the income distribution. In the more recent crisis, transfers to the regions have not increased in real terms and are at risk of being cut – these cuts may also end up disproportionately hurting regions with older and poorer populations, which are less mobile. Senior citizens are restricted in mobility by health, finances, and community ties. (Figure 18 illustrates that they are most fearful of losing their jobs and of not finding new ones).

Moreover, working pensioners work in low-end service jobs (watchmen, concierges, kiosk workers, janitors, ticket attendants etc.). This resulting lack of mobility means that regional inequality has its most severe impact on older people. More generally, investments in regions have been driven by geopolitical considerations or high visibility such as those around Sochi for the Olympic Games. Regions have a statutory requirement to fulfill social obligations of the federal government but federal transfers do not cover them. For example, regions are responsible for implementing the 2012 Presidential Orders that set targets for improving social standards, specifically pension and salaries of public sector employees (e.g., teachers and doctors). Federal transfers do not cover the cost of meeting these targets, and available funding is redistributed across regions on an equalization formula basis. The volume of transfers can vary from year-to-year, yet targets are fixed, which means that regions are expected to contribute varying (and always increasing) amounts of their revenue. Against the background of legacy and shifting goals, it makes it difficult for regions to adopt optimal policies for optimal development. Hence, one important role of federal policies is to help regions gain greater fiscal stability by reducing their dependence on the federal government's support for long-term capital investments, and by right-sizing regions' revenue streams against their statutory obligations.

(ii) *Promote densification*: Despite the benefits of high-density urban areas, the regional capitals of Russia tend to be sparsely populated. The density of 1 million plus cities in Russia ranges only between 1,000 and 5,000 people per sq. km. By comparison, the density of San Francisco is 7,100 per sq. km and the density of Lyon is 10,000 per sq. km. Suburbanizing, rather than densifying, is partially a result of poor management of cities in which federal policies have a role to play. For example, the rush to meet federal housing construction

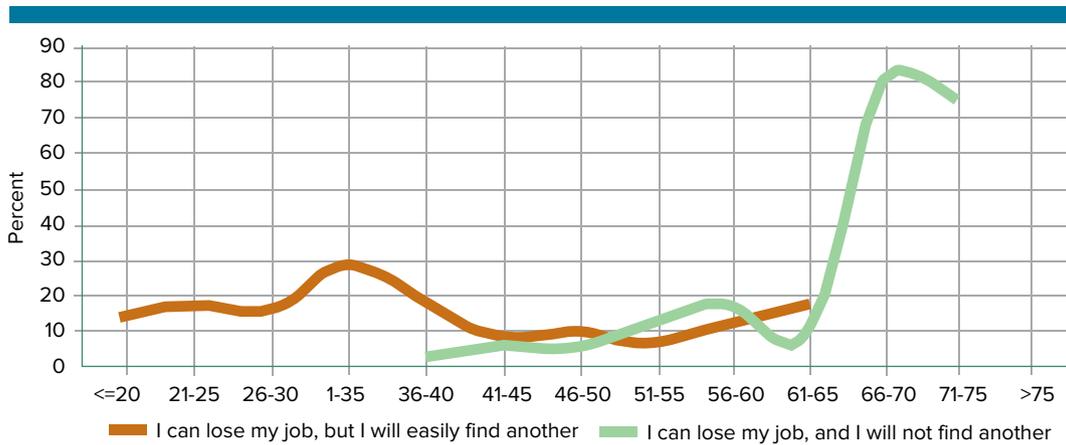
Figure 17: In the last 25 years, the federal government’s approach to regional development changed several times



* MoRD (Ministry of Regional Development), RDP (Regional Development Policy)

Source: World Bank, 2017 [3]

Figure 18: Senior citizens are more fearful of losing their jobs (Distribution by age of responses to the question «Is there a risk you can lose your job?»)



Source: World Bank, 2017 [8]

Box 4: Did high-speed rail unlock growth opportunities in Tver region?

In 2015, Tver, the capital of Tver region, was connected to Moscow (and St. Petersburg) with a high-speed rail link. Travel time between Moscow and Tver on passenger trains dropped from an average of just under 2 hours to 1 hour. It is possible that this was one of the key factors contributing to a strong performance of the region's economy in subsequent years. In 2015-16, the growth of the economy of the Tver Oblast exceeded forecasts (Figure 1, Figure 2), and the regional budget's own income grew by 7 percent, largely due to an increase in property tax revenue. Eyewitness anecdotal evidence suggests that with the introduction of the new train, Tver started attracting commuters from towns in Moscow Oblast. It is plausible that due to the significant difference in real estate prices and wages, the improvement of the transport connection made Tver much more attractive for industries that need access to Moscow market but otherwise do not benefit much from other aspects of agglomeration. Verification of this observation requires deeper research, but Tver might be a proof-of-concept for the model of dispersed conurbations linked by high-speed rail.

The counterhypothesis holds that improved connectivity to Moscow may strengthen the 'brain drain' effect discussed above, highlighting the importance of further research into the spatial redistribution effects of such infrastructure investments.

Figure 1: GRP growth in Tver Oblast vs. projections

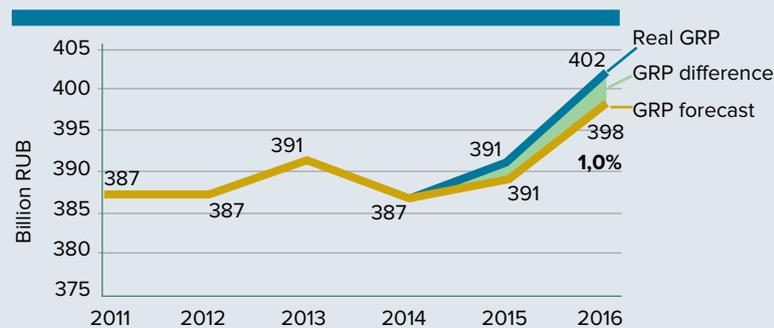
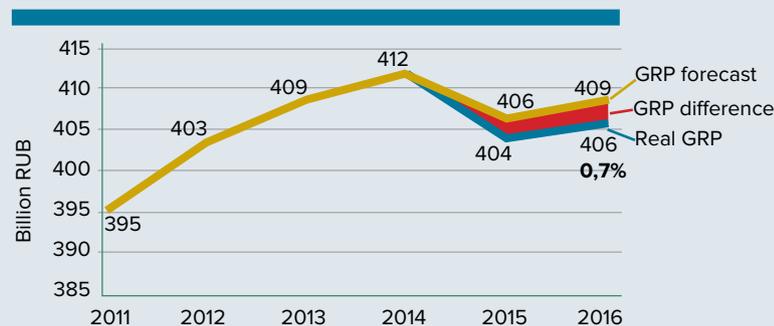


Figure 2: GRP growth in Vladimir Oblast vs. projections



Source: "Reform agenda for the forthcoming policy cycle in Russia" by Chistyakov Dmitriev (unpublished), as cited in World Bank, 2017 [3]

targets leads municipalities to issue permits for development of housing in green field sites in peripheral locations of cities rather than pursuing meaningful densification. Most strikingly, this is happening even in cities that are experiencing a population decline. Removing misaligned incentives that promote sprawl instead of density would help.

Another way of enhancing the benefits of agglomeration is targeting improvements in connectivity. As discussed in the previous chapter, a mere 10 percent increase in transport efficiency could raise national GDP by 0.8 percent, with such improved connectivity speeding up regional convergence and reducing disparities. Larger conurbations can also be formed by linking existing large cities, for example, with high-speed rail connections. But the idea is challenging as it is unclear how the new connections will shift the economic balance between the cities as Box 4 illustrates.

Moreover, such merged conurbations will require coordination not only between cities but also between and within regional governments. Federal policies can likely play a role in this area by creating incentives for cross-regional coordination. For example, the UK City Deals model, which offers cities more power and resources if they demonstrate an ability to collaborate and govern effectively, may be applicable in Russia.

(iii) *Delegate more to regions* and give them a greater say in formulating and implementing business regulations: Currently, the effectiveness of the regions' regulatory reforms is substantially constrained by the role of federal regulatory inspections. The regional branches of federal agencies that report directly to Moscow bypass regional authorities. In 2015, the number of inspections increased in 65 out of 81 regions because of an increase in unscheduled inspections that can be conducted without a court order in many cases. Moreover, regulatory measures introduced at the federal level often fail to account for circumstances in individual regions, with adverse impacts (Box 5).

Box 5: Federal regulatory measures are often misaligned with regional contexts, resulting in substantial adverse impacts

Whether such regulations are a result of lack of consultations, poor capacity of federal agencies, or corruption, they limit the ability of regions to improve their business climate. Examples are plentiful:

- In 2014, new sanitary regulations for butchering were passed without validating whether there were sufficient numbers of facilities in the regions to meet the new requirements. In many regions, including Bashkortostan, the added cost of butchering put thousands of smallholder farmers at risk of bankruptcy.
- A regulation passed in 2016 by the federal customs agency introduced new ways of calculating the guarantee payments for imported goods; however, the rule led to substantial overestimation of the cost of imported goods and thus substantially increased costs for importers of final products or inputs.
- In 2016, a federal law introduced a new requirement for cashier equipment. This required an addition of a device that digitally recorded all transactions. However, it was only after the law came into effect that it became obvious that there were only two companies that could produce equipment to fit the specifications. As the deadline approached, the cost of the equipment skyrocketed and put many small traders on the verge of closing shop.

Source: World Bank, 2017 [3]

There are also issues related to the implementation of federal development programs in regions. Federal programs often come with complicated bureaucratic protocols. One illustration is the Port Free Trade Zone in Ulyanovsk Oblast. On paper, the zone offers fantastic opportunities for businesses – with comprehensive tax discounts and relief from customs duties. Yet three years after its initiation and the construction of basic infrastructure, the zone is still mostly empty. However, next door, the “Zavolzhe” industrial park, which is managed by the region, has attracted six large foreign investors over the last five years. Differences between the two zones can be traced to the nature of federal legislation, which restricts the types of activities that can take place in the federal zone; the way the zone management company operates; and the process of granting investors the right to operate in the zone.

Thus, giving regions more say in formulating, enforcing, and implementing policies and programs that affect them would be desirable.

(iv) Be clear-eyed about goals of federal programs that target lagging regions: Such programs account for 7.7 percent of the total budget of all state programs. They are deemed important for ensuring territorial integration. However, they should not be expected to create new drivers of growth (the North Caucasus and the Far East contributed only 6.6 percent to national GDP and 6.4 percent to growth in 2009- 2015). It is much more likely that new drivers of growth can emerge in the high-potential regions of Western Russia as alluded to by the results presented in this report. This suggests a rethink of federal policies for lagging territories. Luring investors into lagging areas to help them catch up is often ineffective. Little substantial progress has been made in Southern Italy, Northern England, Northwest Brazil, rural India, and peripheral areas of Mexico. Hence, federal programs for lagging regions may be more effective if they recognized the reality that they are better geared towards promoting equality in social outcomes, and not economic outcomes.

B. Policies for regional governments

(i) Increase self-sufficiency by maximizing the utilization of tax authority given to regions: On the revenue side, regional governments could raise the CIT rate to the maximum 17 percent and refrain from granting exemptions and tax reductions to individual firms in the future. Given the importance of the CIT, this could have a significant impact on revenues, particularly in the more industrial and urbanized regions.

Regional governments could also increase the yields of other taxes. For example, they could accelerate the shift from book value to market value as the basis for assessing the tax on corporate property. They could also transition more quickly to market values as the basis for assessing the land tax and the building tax. The first of these measures could have a significant impact on regional revenues. For the latter to have an impact, the federal government would have to raise the ceiling on the maximum rates of the land and building taxes.

One note of caution is causing a race to the bottom among regions in terms of providing overly generous incentives. For example, 50 out of 83 Russian regions offer some form of tax discounts to investors. Further proliferation of this practice and tax discount wars between regions might prove costly for the regions. The U.S. offers a negative example of tax discount wars (Box 6).

(ii) *Fully utilize federal programs for developing high-tech regional economies:* Regions can better tap into policy initiatives promoting the development of high-tech regional economies. Recent federal initiatives have established RosNano Corporation and Skolkovo Innovation Center, and these have led to the opening of 94 business incubators, 85 techno parks, and 100 centers of tech transfer. However, the results of these initiatives are uncertain and it is not clear whether it is an “awareness issue” (i.e., regions are not aware of the benefits such federal initiatives offer) or an “advantage issue” (i.e., regions are aware but feel that such federal initiatives do not confer any advantages to them because they are executed poorly). Related, while investment in human capital should be the core function of the federal government, regions can also foster contacts between regional educational institutions and the private sector to ensure they prepare candidates to meet the needs of local enterprises.

(iii) *Develop public-private coalitions to expand regions' implementation capacity:* There may be good reasons as to why federal authorities may not trust regions to implement federal policies (because of insufficient capacity). Partnering with the private sector could help allay such concerns and help regions in their own right. For example, public-private coalitions have proven successful in cities like Gaziantep, Turkey in terms of helping to implement a comprehensive private sector development strategy and attracting even more major federal government investments. The practice of building public-private coalitions exists in Russia (the three successful regions of Kaluga, Belgorod, and Tyumen all had such coalitions), but this needs to be scaled up to other regions.

Box 6: The undesirable effects of tax discounts: The U.S. example

The USA offers a negative example of the unintended consequences of tax discount wars between jurisdictions. In the U.S., the tax discount competition between states has given large corporations a lot of bargaining power and helped them gain huge tax discounts by threatening regional governments with the relocation of their operations and resulting loss of local jobs and revenue. Boeing, the aircraft maker, negotiated \$9 billion in tax discounts from Washington state, and Nike, the sportswear manufacturer, got a \$2 billion discount from Oregon. The paradox is that both companies were founded and grew into global corporations in these states.

Russian regions should try to avoid such bidding wars, and priority should be given to competing over the quality of the business environment and investor services. Of course, tax discounts shouldn't be disregarded as a tool for investment promotion, particularly because they can help regions compensate for other factors that put them at a disadvantage compared to other regions. However, each tax discount offer should be seen as an investment (as it constitutes a loss of potential income to the regional budget) and should be put through rigorous economic analysis to ensure that its contribution to the regional budget and regional economy is positive.

(iv) *Improve governance and institutions*: Improving governance and institutions is a constant endeavor for any and all regions. Many Russian regions have adopted an “institutions for development” model. This model was first introduced in the Kaluga region and is now embraced by over 40 regions across Russia. These institutions are usually set up as government-owned commercial enterprises. Their functions may vary, but they typically use government funding to prepare public land for investors, provide investor support services, and help investors resolve problems by facilitating direct access to senior regional officials. Their main benefit is the ability to adopt a more agile, goal-oriented, and client-facing management approach—more typical in the private sector, but rare in highly-bureaucratized regional government ministries. However, not all “institutions for development” are equally successful. A lot of them struggle to establish effective systems and protocols necessary for analyzing market trends and opportunities, identifying potential investors, providing investor services of consistently high quality, and mobilizing and retaining qualified staff. Box 7 discusses the models of development institutions used in Ulyanovsk Oblast and Bashkortostan Republic.

While this somewhat narrow, institutions-for-development model has some attractiveness, it is worth noting that a broader view of institutions matters for rolling back spatial disparities. Institutions, broadly understood as the rules and organizations that emerge from agreements among state and non-state actors, differ across regions. Thus, differences in de jure policies and laws, as well as de facto social norms, can have large impacts on the effectiveness of local interventions.

C. The role of third parties in reducing disparities

Independent, third party actors provide a useful, if not as well-recognized a function, in helping regions catch up. Credit rating agencies and international organizations already provide independent monitoring, assessment, and benchmarking of regions' performances. But coverage of regions is limited. International rating agencies do not cover all regions. For example, Fitch Rating Agency covered only 45 regions in 2017, and Standard & Poors covered just nine. Expanding this coverage would help. However, this role, though useful, is limited in the absence of other reforms or complementary interventions by federal and regional governments as discussed above.

One interesting innovation in Russia is the establishment of the Agency of Strategic Initiatives (ASI) in 2011. ASI is a non-commercial and autonomous agency, and among its many activities, ASI has developed and applied a methodology that assesses and ranks investment climates in Russia's 80 plus regions along four business lines (regulatory environment; institutions that support business; infrastructure and resources; and strength of small and medium-sized businesses). According to ASI, raising a region's investment score by 1.3 points is associated with a 1 percent rise in per-capita private investment of that region. To the extent that such rankings help in identifying and improving regions' investment climates, autonomous organizations such as ASI can be expected to play a deeper role.

While the roles of the federal government, regions and third parties are clear, specific interventions will require in-depth consideration. Simple solutions are likely to lead to

unintended consequences. Masses of people can't be forced to move into cities; a new road alone cannot produce productivity gains; and investment in education needs to be tailored to the needs of the local economy. Hence, these proposed actions should be viewed more as entry points and as a basis for further debate and discussion. This is also because work remains to be done given that there are some open-ended questions that still need to be addressed. An insight into some of these ensuing and pertinent questions is presented next.

Box 7: Does the "Institutions for Development" model work? Comparing Ulyanovsk Oblast vs. Bashkortostan

The Ulyanovsk Region Development Corporation (URDC) and the Corporation for Development of Bashkortostan (DCB) fulfill similar functions, but the differences in the way they are organized highlight the range of variations for the model of "institutions for development."

The URDC was set up in 2008 and its structure was designed based on a thorough review of best practices from other regions. Over the course of its existence, the URDC has attracted the likes of Bridgestone, DM Mori, and Mars to the region. It was also pivotal for attracting several large-scale federal government investments, including the Port Free Trade Zone. In addition, other successful development institutions were spun out of the URDC itself over the years. The URDC's success can be attributed to three aspects of its organization and governance:

From the start, it used private sector principles for hiring and motivating staff.

It used rigorous analysis to identify investment attraction priorities, and it always had a strategy that was carefully followed. If some targets were not met (e.g., the target to attract aircraft builders to the region), they were re-evaluated and priorities were changed.

It enjoyed the support of the Governor. While the URDC has no direct mandate to request support from different ministries and government agencies, it does so de facto by placing a direct request to the governor whenever an issue needs to be resolved.

The URDC also actively promotes the localization of the supply chain of investors. It seeks out local companies that can produce the inputs required and gives them all necessary support in meeting the standards of the foreign investor.

The DCB is far less integrated with the government of the region, although the corporation is owned by the region. In the past, it received financial support from the region to develop the infrastructure of industrial zones, but today the organization is self-funded by offering paid services alongside the basic package to all investors.

The focus of the DCB is much narrower than in the Ulyanovsk case, and it can hardly claim to have as significant an impact on the region as the URDC does. However, it has a good record in developing infrastructure and in attracting investors, and its experience offers an example of a much leaner approach to regional investment promotion.

Source: World Bank, 2017 [3]



5

The work isn't over

This report raises some open-ended questions, elaborated upon below:

(i) What are the additional barriers to labor mobility in Russia?

As shown in Chapter 3, convergence was given a big initial boost due to integration of capital and labor markets. However, labor market integration seems to have slowed down. What are the barriers to internal migration (beyond social factors identified in this report)? Interestingly, one possible factor limiting mobility is home and land ownership. Russia's home ownership rate appears to have increased dramatically since 2000 and it currently stands at around 87 percent (up from 58 percent). Moreover, home ownership is higher in the poorest regions (92 percent) as compared to the richest regions (80 percent). This is partly a legacy of the transition when homes were transferred to occupants at little or no cost. Land ownership in the poorest regions is also higher than in the richest regions (55 percent vs. 26 percent) although this land is likely to be low value (agricultural/subsistence farming). In the absence of liquid and dynamic real estate markets, both the home and land ownership dynamics point to the "house lock" phenomenon, contributing to limited mobility.

(ii) Can other types of connectivity help explain Russia's spatial disparities?

Analysis of connectivity was restricted to transport connectivity. However, there are other types of connectivity that need to be explored. In particular, digital connectivity has the potential to drastically reduce internal connectivity as well as the economic distance between remote areas and global markets. Furthermore, given that last mile-connectivity (which in the Russian Far East may be the last 100 miles) is a perennial issue, digital and modern technology, such as the use of drones, may help. Regarding connectivity, one unknown is the extent to which China's intended Belt and Road Initiative (BRI) might affect economic activity in at least some of Russia's regions. Two economic corridors that are part of the BRI (the New Eurasian Land Bridge corridor and the China-Mongolia-Russia corridor) propose to link many Russian cities, including Yekaterinburg, Krasnoyarsk, Novosibirsk, Omsk, Ufa, Kazan, and Samara. How that may affect internal connectivity against a backdrop of presumably more external trade is an unknown.

(iii) How can a modified methodology be applied to understand disparities in the remaining regions?

The identification of high vs. low potential regions was restricted to Western Russia (for methodological issues). Can a modified methodology be extended to other parts of Russia, and if so, what would be its likely findings (beyond the overwhelming influence of resources)? Relatedly, can the Far East, which has been struggling to retain its population and which is reliant on natural resources exports, use its proximity to the large Chinese market to develop?

(iv) Are monotowns doomed to be a failed relic of the Soviet-era?

Contrary to expectations, the analysis shows that the share of the population living in monotowns in the regions of Western Russia do not necessarily hinder per capita incomes in their regions. Thus, the hypothesis that monotowns are a failed relic of Soviet-era central planning may not hold entirely in Western Russia. Some monotowns have potential, but they require tailored approaches. What are these approaches? For example, the Monotown Development Fund initiative allows regions to implement targeted investment in infrastructure and private sector development in monotowns. This approach seems to be promising as it can potentially allow for more tailored responses to the challenges of individual towns. However, its effectiveness may be limited by a focus on only those monotowns that face the greatest social challenges, and thus those that probably have the lowest economic potential. If this initiative were broad-based, a conscious effort of monitoring and evaluating results could offer insights into what works and under which conditions.

(v) Is there merit in applying the political-economy discipline to understand inter-regional disparities in Russia?

An important but missing part of this study is the political-economy dimension at the regional levels. What are the political incentives/dis-incentives that drive social and economic outcomes, which in turn affect both intra- and inter-regional disparities? For example, one seemingly uncomplicated measure that regions can embrace to reduce disparities is to utilize more revenue mobilization measures. Yet they do not. One possibility is that doing so may hurt special interests but this merits further investigation.

Repository of recent World Bank literature on Russian regions

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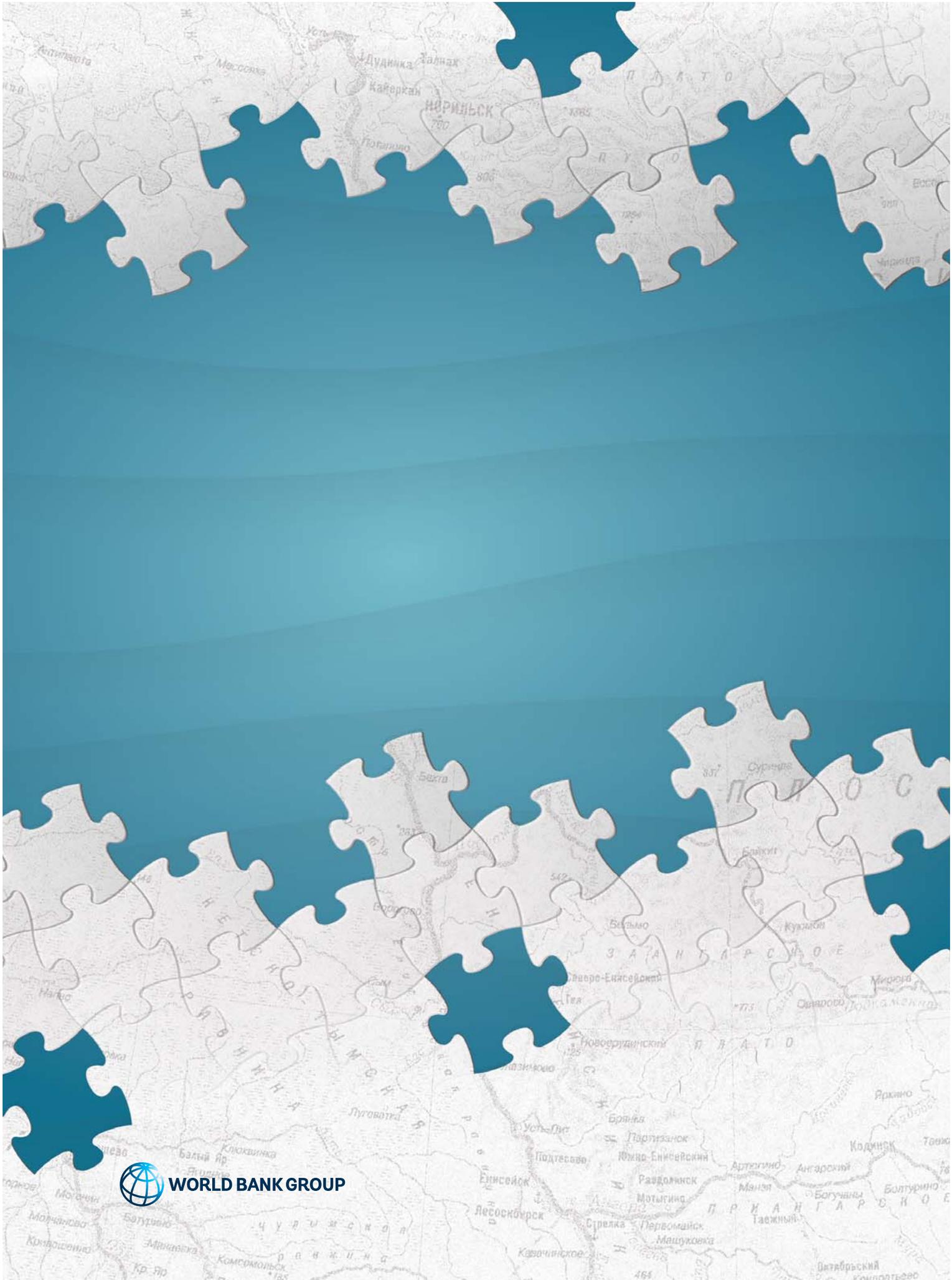
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One central finding of this report is that the bulk of Russia's inequality is intra-regional; it is concentrated in richer regions, and it is in richer regions where most people live and work. Thus, in the strict sense of reducing disparities, efforts ought to be concentrated exclusively in richer regions. As this report shows, promoting urbanization, providing connective infrastructure, and increasing human capital – while continually striving to improve the institutional environment – serve as the instruments to do so. However, lagging regions (i.e., poor and remote regions) cannot be left to market forces alone. Moreover, providing connective infrastructure can often be a double-edged sword leading to “brain drain” from lagging to leading regions. While this should not be used as an argument against connectivity and preventing those who want to move, there may be valid non-economic reasons (territorial integrity, social barriers to mobility) for developing remote areas. Furthermore, as this report argues, spatial disparities in Russia are unique and result from a peculiar interaction of a cocktail of factors, namely Russia's climate, demographics, geography, and history. And there will be some peripheral regions that have extremely limited economic potential (for example, areas beyond the Arctic circle). Expectations from some regions in terms of conventional economic indicators -- such as economic growth -- should be modest. Although such regions may not dance to the tune of conventional economic indicators, they should not lag in terms of non-economic, social and welfare outcomes. For such regions, above economic density, re-assembling the Soviet jigsaw necessitates paying careful attention to state density. After all, this report reveals that there is no homogenous path – if the cocktail of factors that cause Russia's inimitable spatial disparities is to be diluted, a balance between economic and social outcomes must be sought.



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