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RUSSIA

Reshaping Economic Geography

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Executive Summary

Introduction

After a decade of turbulent adjustment following the transition from plan to market and another decade of economic growth driven by natural resources, Russia now strives to move from middle to high income. To escape the "middle income trap", Russia needs to modernize, diversify, and increase the competitiveness of its economy. The report shows that these three national objectives—and the problems they address—relate to the geographic organization of Russia's economy.

The report has three main chapters discussing modernization, diversification and competitiveness (Table S1). The chapters examine problems and barriers facing households, private firms and public agencies to achieving these objectives, and then identify the instruments that can help Russia achieve the necessary spatial transformation of its economy.

Table S1. Summary of the report

Objectives	Problems	Debates	Priorities	Policy Instruments
A modern Russia will be a more mobile Russia				
Modernization	Still too much misplaced labor and capital	What to do about monotowns?	Facilitate mobility	Remove work-specific social entitlements, and regulatory barriers of movement to manage lagging cities in decline while ensuring safety nets for those who stay, and investing in portable skills
A more diversified Russia will be a concentrated Russia				
Diversification	Leading areas struggle to deliver economic growth	Is Moscow too big?	Encourage concentration	Improve institutions (esp., land markets) and infrastructure (intra- and inter-urban) to promote a more efficient urban size distribution
A more competitive Russia will be an internationally integrated Russia				
Competitiveness	Counter-productive pursuit of economic independence	Why have SEZs not worked?	Promote openness	Join the WTO and leverage its membership to improve the business environment; and encourage foreign investment and knowledge transfers through early reforms

In 1945 at the Yalta Conference and in the decades following World War II, the USSR and the United States were the world's two undisputed superpowers (map S1). In 1994, after the fall of communism, Russia convened a major meeting in Magadan focusing on hydrocarbons and mineral resources. It was then compared with Canada and Australia—vast countries, well endowed with natural resources. In 2009 Russia hosted the first *BRIC* conference at

Yekaterinburg. Russia is now also considered an emerging economy, compared with countries with sometimes far lower per capita incomes. Russia has been grouped with Brazil, China and India not just because in 2001 Jim O'Neill of Goldman Sachs came up with a memorable nickname for the four largest emerging economies, but because Russia is still a middle-income economy.

Map S1. From Yalta to Yekaterinburg: Russia's comparators changed overtime

Yalta, 1945. With the US, one of the world's two undisputed superpowers.

Magadan, 1994. With Canada and Australia, one of the three most endowed with natural resources

Yekaterinburg, 2009. With Brazil, China, and India, one of the four biggest emerging economies.

Russia's long history as one of Europe's leading nations and its more recent past as a superpower give it grounds for greater aspirations. To realize them will require significant improvements across all aspects of the economy. Russia's economy faces many challenges, some of which are a persistent legacy from its tumultuous history in the 20th Century of civil war, two world wars and a long period of communism. But as the largest country in the world, it is not surprising that *many of Russia's problems relate to its economic geography which is the focus of this report*. Map S2 of Russia's economic geography shows production per square kilometer. Moscow is the big economic mountain on this map, but many of the secondary peaks are located far from world markets in Western Europe and East Asia. The map is indicative of the effects of seven decades of centrally directed policies to spread out people and production—that is, of trying to make use of more of Russia's vast land than would have likely happened in a market economy; this left Russia's economy much more inefficient and uncompetitive than it otherwise would have been.

As a result, Russia entered the Post-Soviet era with an economic geography that sapped market-based growth across its vast space. Its human and capital resources are located across regions and throughout the urban hierarchy in a manner that differs from the patterns in advanced market economies and that raise cost of production and transportation.

Given Russia's vast size and its inherited legacy of spatial inefficiency—with people and production in places where they are not used most effectively—its mobility should be higher than in other countries. But not only was migration low before the collapse of the Soviet Union, but according to some measures, it appears that it has fallen further since. About 5.8 percent of Russians moved annually in 1979 which steadily declined to 4.2 percent in 1989, and 3.0 percent in 1991. After the political liberalization in the 1990s and the large external migration, the measured proportion fell further to 1.5 percent during 2002-2006 and 1.6 percent in 2007-2008. While these data do not capture the indisputably greater freedom and opportunities for movements today compared with the Soviet time, the numbers are indicative that mobility in Russia remains much below potential in a vibrant, market based economy. By contrast, in the

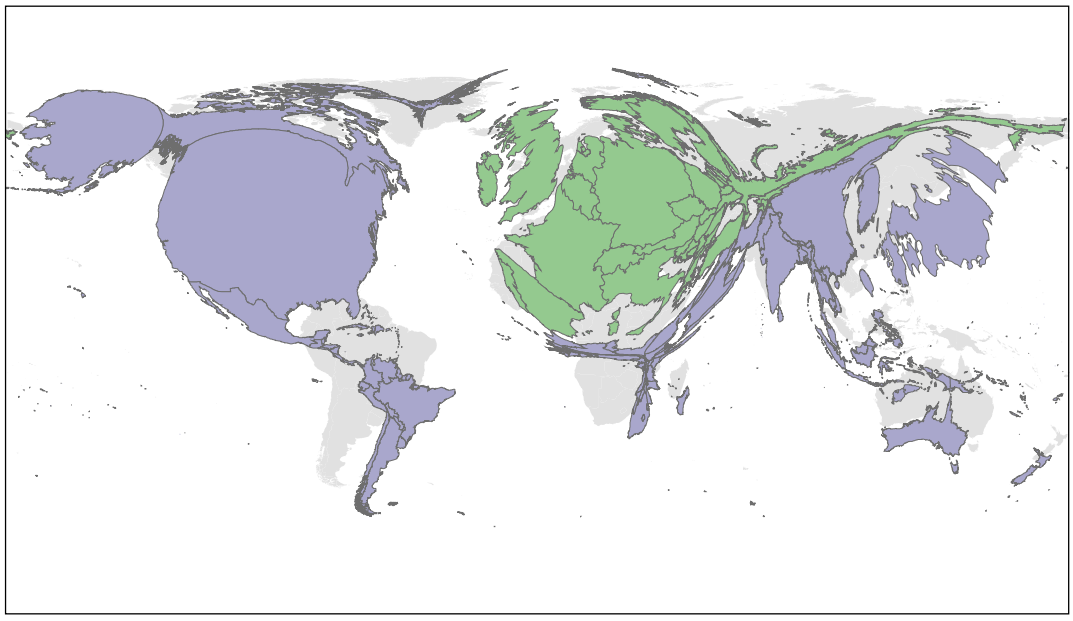
U.S., the figure has remained between 18 and 20 percent for over four decades since 1948, and only in recent years fell by a few percentage points.

Map S2. Russia's economic geography shows widely dispersed economic activity

Note: Height is proportional to economic output measured as GDP per unit area.

The result has been an underperforming economy due to misallocated factors of production. Map S3 resizes physical size to reflect *economic size* as measured by local/regional GDP. Viewed through these lenses, Russia's economy appears much smaller in the global context. The economic world remains dominated by the United States, Western Europe and East Asia.

Map S3. When countries are resized by economic mass, Russia is reduced to a thin sliver



What are the problems?

Spatial policies are inconsistent with Russia's economic aspirations

This report uses the principles and lessons of the *World Development Report 2009 Reshaping Economic Geography* to analyze these patterns, and propose policies that can improve Russia's economic geography. These policies relate to three main economic forces --- *migration, agglomeration, and specialization* --- that are important in any economy, but especially in Russia, the largest country on the planet and one of the largest middle income economies in the world. These forces are important because they determine the direction, the strength, and the speed of spatial transformations. It is a useful simplification to think of these forces as acting through labor, land, and product markets, respectively. When these markets do not work well, they stunt structural transformations. When they work well, they bring the economic benefits that come from spatial efficiency, and the social progress associated with converging living standards.

The obstacles to Russia's economic objectives have been that, comparatively speaking,

- *Russians are less mobile*. For example, Americans today have five times the per capita income of Russians—they are also ten times more mobile, which makes it easier to match talent with opportunities. Modernization seems to come with a need for mobility. A country cannot significantly change what it produces unless it also changes where it produces new goods and services. Russian capital and labor have been directed to isolated areas but modern, high-value production and services have to be located closer to world markets.

- *Russians are more dispersed.* Russia is among the least concentrated when compared with other vast countries that are sparsely populated. More than two of every three Australians and Canadians live in one of the largest three conurbations; only one of every eight Russians live in Moscow, St. Petersburg, and Nizhny Novgorod. The point is not to argue how much population should specific Russian cities have, but simply that greater dispersion of people impedes agglomeration economies, which make people more productive. Diversification in a resource-rich country usually means a growing concentration of economic activities and skilled people in large cities.

- *Russia is less competitive.* Compared to other large emerging economies, Russia is less connected with the global production networks, in large part because many of its firms are not as productive, cost-competitive or technologically advanced as their counterparts in the most dynamic economies. A forthcoming World Bank firm-level study shows that the main correlate of Russian firms' propensity to export is productivity: it is the highly productive firms that export and integrate with foreign markets. By contrast, Brazil, for example, has not only highly efficient producers of primary goods like soya and orange juice, but specialized manufactures of cars and airplanes, and exporters of deep-sea drilling, highly specialized and productive industries. China exports textiles, garments, and electronic components. India is exporting software and back-office services. These countries have pursued policies that allow them to integrate with international markets.

To address these problems requires increasing mobility and migration, facilitating concentration in cities, and encouraging specialization and trade. These obstacles facing Russia are at the heart of three current debates. The report takes a position on each of these debates, based on the experience of the next six largest countries in the world: the United States, Canada, Australia, Brazil, China, and India. The chapters illustrate these problems and help identify policy instruments to address them.

- **Monotowns**. What to do for residents of several hundred "monotowns" built around a single industry or employer and home to about a quarter of Russia's urbanites? More generally, how can labor mobility best be facilitated? The experiences of the United States, Canada, and Australia offer lessons for Russia.

- **Congestion in Moscow**. What to do about Moscow, the priciest metropolis in the world, and still growing? More generally, will greater geographic concentration hurt or help national economic diversification?

- **World Trade Organization accession and Special Economic Zones.** Where should Special Economic Zones be located and how to manage them to kickstart the shift? What is the best way to create a modern economy that is globally integrated to promote specialization and trade?

What to do?

Make spatial policies more congruent with structural objectives

The spatial processes of migration, agglomeration, and specialization can, when driven by informed policies, yield high and sustained economic growth rates and regional convergence in living standards. These three market forces are changing the economic landscapes of today's successful emerging countries in ways that are similar in scope and speed to the transformations seen in earlier developers.

Mobile people, growing cities, and vigorous trade have been the catalysts for progress in the developed world over the last two centuries: first Western Europe and the United States, then Australia and Canada, followed by countries in Northeast Asia. Now these forces are powering the developing world's most dynamic economies, such as China, India and Brazil. This report discusses how Russia can intensify the same forces to facilitate the geographical transformations necessary to drive development and become a diversified and productive modern economy.

Mobility and modernization

Capital can move quickly over long distances. People also move, but they move more quickly to nearby concentrations of economic activity than to those further away. But once entrepreneurs and workers come to a place, others follow. Countries do not seem to prosper for long without

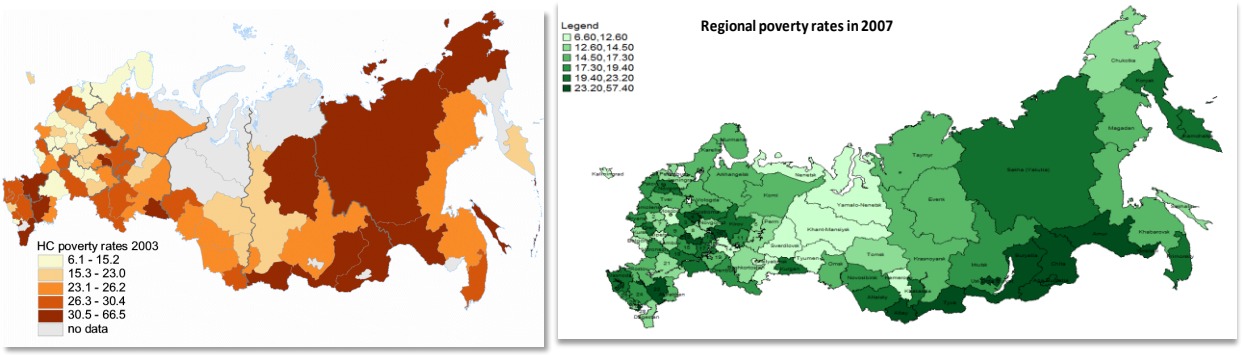
mobile people. The ability of a people to move seems to be a gauge of their economic potential, and their willingness to migrate a measure of their desire for advancement.

For mobility and modernization, we contrast Russia with the United States. The two countries have completely different attitudes toward internal migration. One has made voluntary migration a pillar of its development; the other has discouraged it. One has reached a per capita income of $45,000, the other has an income just a fifth of that.

Today, despite large differences in poverty rates, many poor people still live in cold, distant places of Russia (map S4). In contrast, spatial inequality is low in the United States—lower than even in Western Europe. Russia is a large country, with a relatively immobile population. Good news is that tecent evidence shows that this might be changing for the better. But mobility will have to increase a lot for Russians to be even half as mobile as Americans, Australians, and Canadians.

Map S4. Low mobility and slow convergence despite vast regional disparities

Poverty rates in 2003 **Poverty rates in 2007**



Source: Sulla, Victor, (2009). "Regional Disparities in the Russian Federation, 1990-2007." World Bank.

Reforms, therefore, need to address the main barriers to mobility. They must focus on areas where people have limited economic opportunities and would gain by moving to more dynamic parts of the country. The policy responses have often focused on place-based interventions such as providing subsidies to failing enterprises and local populations. These interventions perpetuate immobility, tying labor to a location where it is unproductive, so they drain public resources and reduce national output. Where the firms are inherently uneconomic and cannot be operated profitably, it would be better to close them than to subsidize or re-invest in them. Another response has been to develop investment programs to modernize existing industries or create new ones. But unless these are *market-driven investments*, they risk repeating the errors that created the mono-towns in the first place. In short, this report recommends the following three main lines of policy action to address the underlying problems:

- ***Simplify land and real estate transactions including reform of titling and registration***. Currently, many people are unable to sell assets and an inflexible housing market makes it difficult to find a home in areas where jobs are available.

- ***Remove administrative obstacles to greater mobility***. Simplify registration for housing and healthcare at the place of permanent residence.

- ***Manage lagging cities in decline:*** Invest in portable skills so the population can move to leading areas and seek gainful employment; remove work-specific social entitlements; and ensure safety nets for those who stay.

The mono-town problem, the most prominent manifestation of labor immobility, is symptomatic of a broader problem. Mutually re-enforcing policies were designed for a different economic system and are no longer effective. Current labor regulations are rigid and even though they are far from well enforced, they may contribute to distortions such as labor hoarding, avoiding labor downsizing or retrenchments in the formal sector. Another constraint on mobility is that people in lagging regions have equity in their homes which they cannot monetize. Workers and their families cannot sell their homes or land easily, and even if they could, those in lagging regions would struggle to secure affordable accommodation in more prosperous areas. The absence of dynamic rental markets in destination (flourishing) regions is also a barrier.

Greater mobility would help to reduce the mono-towns' drain on public and economic resources. As the mono-towns' output declines, labor can be employed more productively elsewhere. In the long term, some mono-towns should be abandoned, but others can be re-dedicated to more diversified and more profitable production. Market-based mechanisms would be the best methods to determine each mono-town's future. U.S. experience with declining industrial areas, like the Rust Belt, suggests that small towns are more difficult to revive than large ones. Mono-towns in remote inhospitable areas that cannot generate revenues to sustain their communities should be managed to encourage the orderly relocation of their populations to centers of expanding growth opportunities. In the United States, findings based on county- and metropolitan-level responses to the 1977-84 wave of job losses in the US steel and automobile industries suggest that cities experiencing severe employment loss in warmer regions and those close to large metropolitan areas were more successful in achieving growth and had the most successful post-shock recoveries. To be successful and socially acceptable, however, such relocations must be carefully managed to mitigate the social costs using appropriate social safety net instruments and perhaps financial incentives to promote voluntary mobility.

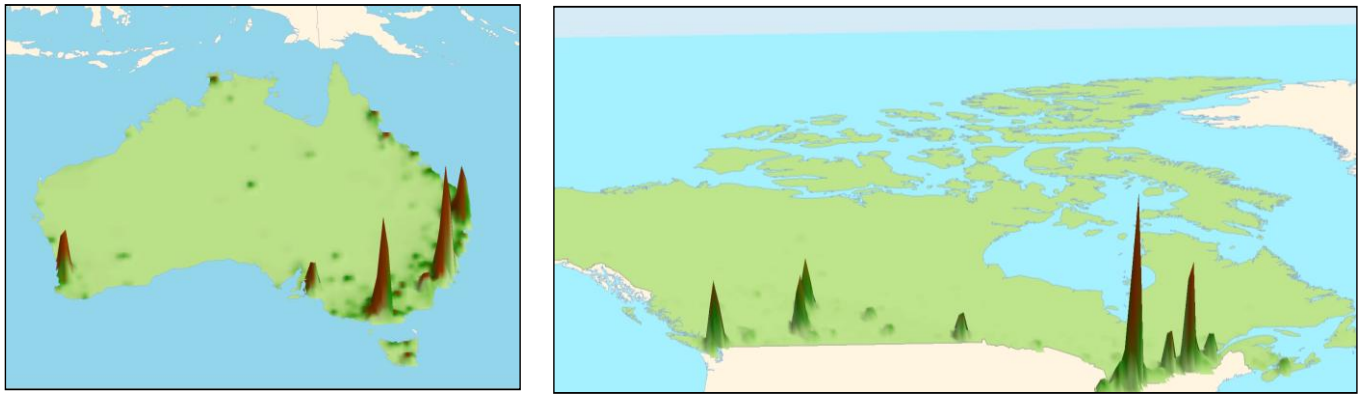
Concentration and diversification

Being close to large numbers of productive enterprises and people confers economic advantages that cannot easily be encouraged solely through government action, nor captured by private agents. But these benefits can be identified and categorized: benefits that come from organizing production in large enterprises are called "internal economies", those shared by firms in the same industry and location are called "localization economies", and those more generally available to producers in larger urban areas due to diversity are called "urbanization economies". Spatially concentrated production and population facilitate both diversification and innovation.

For concentration and diversification, the report contrasts Australia and Canada with Russia. Russia is much less concentrated than Canada or Australia, less than the United States, and of course less than Japan. Almost three of every four Australians lives in one of three cities. Similarly, two of every three Canadians live in Toronto, Montreal, or Vancouver. Sparsely populated resource-rich countries tend to have a large share of their population in a few big cities. It seems to be the best way to make use of people, the scarce resource in these countries.

And academic research and empirical evidence confirm that concentration or agglomeration helps make economies more productive and ultimately richer (Map S5).

Map S5. Canadians and Australians are concentrated in a few areas



Russia has a much bigger population than Australia or Canada, so one should not expect the same concentration. The population is, indeed, quite spread out, outside Moscow. But even if one takes Moscow and the next 114 largest cities in Russia, one only gets to about 40 percent of the population. In Japan, which has almost the same population as Russia, a higher share exists in just two cities: Tokyo and Osaka. It is precisely because Russia is such a large country that it needs to worry more about promoting concentration that comes naturally to smaller countries with relatively large populations.

If oil, gas, and other mineral deposits are conceptualized as untapped underground wealth, cities can be conceived as above-ground wealth in "human capital wells." Just as wealth can be extracted from oil wells, wealth can be extracted from agglomerated populations as ideas and innovations. The difference is that even with strong governance, oil and gas resources are non-renewable, while agglomeration economies constantly renew and multiply in metropolitan areas that are reasonably well-managed. Spatially concentrated production and populations promote specialization that nourishes economic diversification and innovation. The most innovative and diversified economies around the world are associated with dense urban agglomerations. Without a simultaneous spatial transformation to accommodate increased agglomeration of economic activity, Russia's economic and sectoral transformations will be sluggish.

Policy reforms need to be designed to facilitate market-driven concentration of people and firms. So they must focus on areas that are doing well and that will most likely attract the lion's share of people leaving monotowns and lagging areas.

- **Land use regulations must become more flexible. They** must move away from the normative model of detailed plot's purposes of individual activity. Regulation, property rights and tax reform can make large cities more efficient. For instance, while apartments and buildings are now fully tradable, land is not, often leading to misallocation of land.

- **Traffic management and public transport need to be improved to reduce urban congestion**. Physical infrastructure is part of the solution, but getting both prices and economic instruments right should also be a priority.

- **Intercity connectivity must be a key part of urban development strategies**. Highways are poorly maintained, encouraging concentration for the wrong reasons. Firms that could otherwise move to secondary cities with lower wages and cheaper land must locate in primary cities to maintain access to suppliers, specialized services, and governments, thereby unnecessarily adding to congestion.

Moscow, whose economy is the most diversified in Russia, will be best positioned to deliver urbanization economies, and incubate new industries. Its size and scale can potentially make it a hub for Eurasia and Eastern and Central Europe but Moscow has under-delivered benefits from agglomeration economies (map S6). Large cities in Russia have been hampered by place-based interventions, such as registration requirements and the lack of affordable housing designed to keep people from coming to Moscow. And while the movement of people across Russia is now much freer than before, there remain numerous obstacles to mobility. Therefore, policy should aim to remove these barriers to unleash the forces of spatial concentration rather than attempt to inhibit them could help Russia diversify sectorally.

Map S6. Moscow against the economic landscapes of Europe and Japan

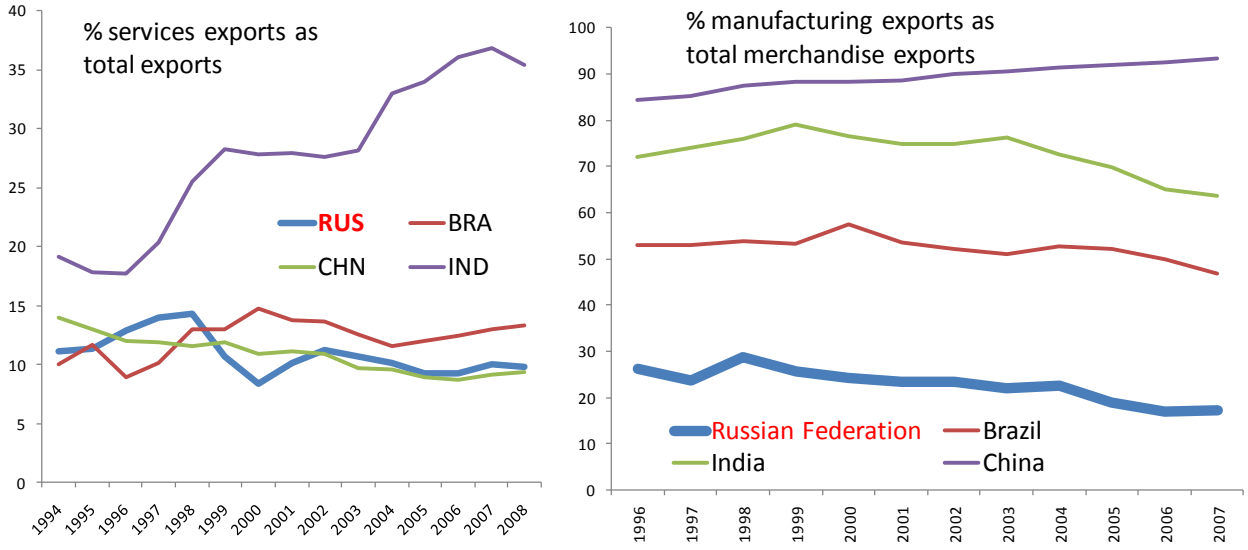
Specialization and competitiveness

Across the globe, transport and communication costs have fallen rapidly over the last century, allowing greater specialization. This has radically altered the location of firms, the structure of production, and the nature of trade. Countries now trade more with everyone: exports as a share of world production quadrupled to 25 percent over the last three decades. But falling costs of transportation and communication have made economic activity more geographically concentrated. Economic *independence* is no longer an option for a country that seeks to be prosperous, diversified, and innovative: *interdependence* is the attribute associated with the most

prosperous and rapidly growing economies. Being a part of global production networks that link China, Japan, the United States, and the EU enhances both prosperity and influence.

The reality today is that, to diversify its production and modernize, Russia must compete not only with other G-8 members but also with Brazil, China, and India. Brazil has been a leader in agricultural technology and mineral resource exploration. It has judiciously used foreign investment and expertise, pursued world markets for its commodities, and moved up the value chain—for instance, by becoming the world leader in ethanol production from sugar cane. It has also managed to recycle resource rents to build world-class manufacturers (viz. airplanes). China has become part of a sophisticated international production network that spans East Asia. It integrated regionally to boost supply capacity and globally to maximize demand for its products. India has become a world leader in software and specialized business services (Figure S1). Not only are its customers located in the rich countries of the world, practically all global IT leaders also invested in research and development facilities in India, further strengthening India's global competitiveness.

Figure S1. Brazil, India, and China are parts of the global production networks



Until now, Russia has staked its economic fortunes on natural resource exports. But it has not promoted sufficient innovation even in this sector to ensure its future competitiveness in world commodity markets. Nor has it managed to leverage resource rents to create competitive manufacturing enterprises despite a long legacy of excellence in engineering. Nor has it taken advantage of its wealth in human capital to become a global player in business services. It has failed to promote an investment climate that would attract foreign capital, knowledge, and technology. And it has pursued economic policies aimed more at economic independence than international integration.

Russia must develop economic policies that are most appropriate for its specific circumstances. In doing so, it can learn from its other BRIC peers.

- **Russia needs to significantly improve its investment climate**. In almost all rankings of competitiveness, transparency, and logistics performance, Russia ranks behind the other BRICs. Its large domestic market and oil wealth have attracted foreign investment but less than other countries relative to GDP. China has shown how foreign investment encourages efficiency in domestic firms through increased competition and knowledge spillovers. Regulatory reform will encourage a similar process in Russia.

- **WTO accession will significantly benefit Russia andthe government is seriously pursuing membership**. Significant benefits will come not only from improved market access but also from the external pressure for domestic economic policy reform. Russia's competitiveness will depend on how well and how quickly it implements the required regulatory and legal changes. The biggest beneficiaries may be small and medium size enterprises, the underdeveloped section of Russia's economy.

- Besides international trade agreements, another way to increase pressure for economic reform is by creating "islands" of good economic governance and infrastructure that attract foreign, but also domestic, investment. In contrast to Russia's existing special economic zones, these need to be located near economic agglomerations, should ideally not be sector-specific, require no subsidies, and should not be subject to a sunset clause. All of China eventually benefited from the demonstration effect of its economic reform zones, and the software sector in India was able to develop free from bureaucratic hurdles or barriers to international integration.

Each of the other three BRIC countries pursued a different growth path. Brazil specialized in adding value to commodities and nurtured specialized manufacturing. China became the low-cost producer for the world and has been steadily moving up the technology ladder into higher value production. India has become the back-office for the world and develops sophisticated IT applications. ***But the common thread across all three countries is that they implemented strategic reforms to generate investor confidence, attract investment and know-how, and target foreign markets for their products***. All adapted policies aimed at economic interdependence: to become closely integrated in global markets. This significantly increased their standing on the world stage: witness the shift from the G-8 to G-20 as the main global economic forum. And it contributed to significant per capita income growth.

Main messages

Russia's national aspiration is to become a diversified competitive economy with a high income and global influence to match. This will require greater and quicker structural transformations, grounded in new policies backed by more resilient institutions, so that Russia can shift its economic base from natural resources toward productive manufacturing and services.

This report argues that the required structural transformation cannot take place without a facilitating geographic transformation through increased mobility of labor and increased concentration and spatial efficiency to capture the benefits of agglomeration. These conditions will make the Russian economy sufficiently competitive to permit its integration into the global economy, which in turn will provide impetus for domestic reforms. The report also tries to show how this can be done.

- It proposes that Russia should make its spatial policies consistent with these major national objectives—until now, they have been inconsistent.

- It focuses on the market forces: migration, agglomeration, and specialization.

- It then tries to organize the lessons that come from the next six largest countries. They are the same countries Russia has been compared with over the last 50 years: the United States, Canada, Australia, Brazil, China, and India.

The main messages may seem a little contradictory, but to those familiar with economic geography they will make sense:

- A more modern Russia will be a ***more mobile Russia***—with prosperity, people will have to move more, not less. So modernization will mean a less ossified population.

- A ***more diversified Russia*** will be a more spatially concentrated Russia—diversification will happen most in the bigger cities, not in the monotowns and villages. So diversification will mean a less dispersed population.

- A ***more competitive Russia*** will be a more internationally integrated Russia—a more specialized and open Russia will also be more influential. Competitiveness will require a population that is less economically distant from world markets.

Modernization, diversification, and competitiveness involve producing new things and doing so more efficiently, sometimes in different places. The planners' perspective encourages subsidies on nonviable enterprises in lagging regions to ease the disparities, an approach that misallocates resources and in the process dissipates the agglomeration benefits to the detriment of long-term growth. The alternative is to help people migrate from areas of low economic opportunity to areas of rising opportunity and in so doing prevent the fossilization of the economy—and rapidly raise incomes.

The Russian government and public are justified in being concerned about disparities in welfare. But there are proven policy instruments to promote flexibility and thereby strengthen economic integration to reduce disparities. These policy instruments can be grouped into three main categories, the three 'I's outlined in the *World Development Report 2009*: institutions, infrastructure, and interventions.

- *Institutions*—concern the universal provision of basic amenities and social services and the regulation of factor and product markets. Provision of schooling, healthcare, water and sanitation, electricity and heating should be widespread and *spatially blind*. Institutional changes can also create flexible markets for land, labor, and international trade.

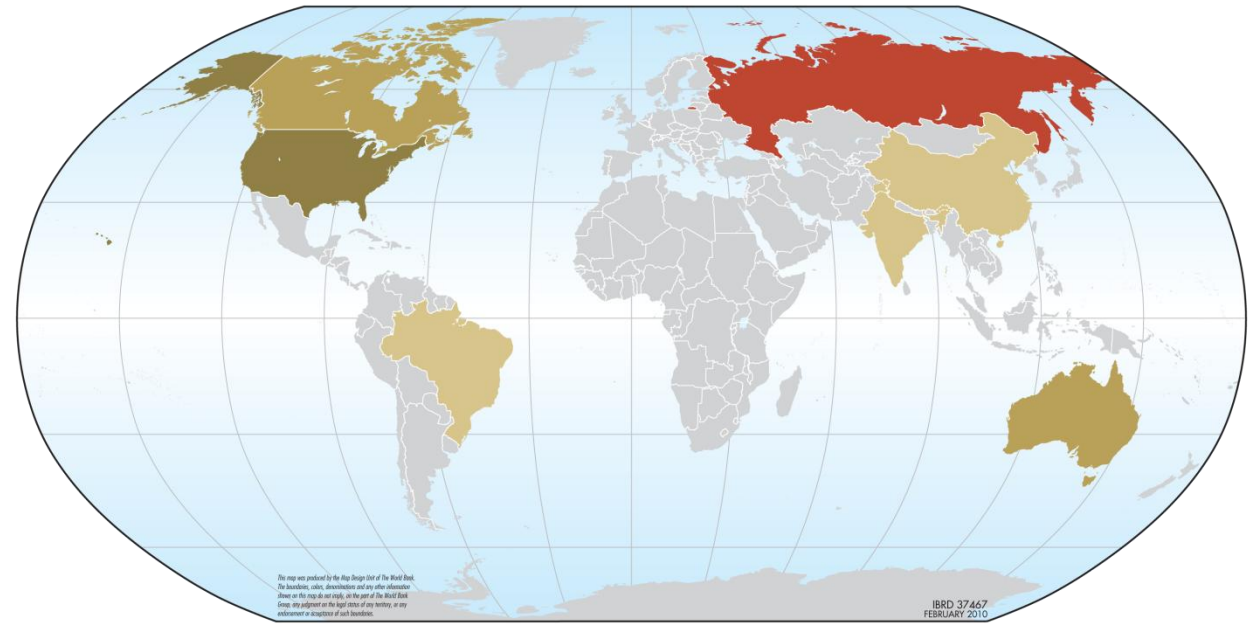
- *Infrastructure*—so that institutions function effectively concerns investments that enhance *spatial connectivity*. These investments include roads, railways, airports, harbors, and communication systems that facilitate the movement of people, goods, services, and ideas locally, nationally, and internationally.

- *Interventions*—concern the *spatially targeted* programs that often dominate the policy discussion. In a market economy, such interventions usually aim to overcome market failure, notably coordination failures. They include slum clearance programs, creating early reform zones to accommodate competitive firms within a distorted economy, and preferential trade access to surmount thick borders.

Much of the agenda for promoting the spatial transformations necessary for progress concerns spatially blind 'institutions'. For a large country that has to reverse a legacy of misplaced production and people, large investments in connective infrastructure will also be necessary. In addition, given the entrenched interests for the *status quo* and the need to integrate Russia into global production networks, spatially targeted interventions may also be necessary. But in the absence of the unifying institutions and connective infrastructure, these interventions are not likely to help Russia make its spatial policies consistent with its structural change objectives.

Spotlight 1: ***From Yalta to Yekaterinburg***

Russia's position has changed—from being a peer of the US in 1945, to that of a resource-abundant, vast country like Australia and Canada in 1990, to being grouped with other large middle-income countries—Brazil, China and India in 2009



In the winter of 1945, with the world still at war, Chairman Stalin and President Roosevelt met in Yalta to discuss post World War II alliances and power sharing. Britain's Prime Minister Churchill was also there. It was a meeting among equals, and observers even then saw it as the beginning of decades of global domination by America and the Soviet Union, with Russia at its core.

In the summer of 2009, with the world in financial crisis, President Medvedev hosted a meeting in Yekaterinburg, with President Hu Jintao of China, President Luiz Inácio Lula da Silva of Brazil, and Prime Minister Manmohan Singh of India, the first among the four large emerging market economies with a GDP of more than $1 trillion. If there were to be any winners in the financial crisis underway at the time, the BRICs were expected to be the likeliest.

These two meetings bookend a period of striking change in the company that Russia has kept.

- At the end of the Second World War, the Soviet Union was compared with America. In 1950, the US had a population of about 150 million people and a per capita income of $9,000, coincidently almost the same as Russia's population and income in 2010. Today, the US has a population of more than 300 million and a per capita income of more than $45,000.

- After the end of the cold war in 1990 and the breakup of the Soviet Union, Russia emerged as the largest country in the world and, along with Australia and Canada, among the best endowed in natural resources. Among other areas, Russia still wields global

influence as an exporter of oil and gas. Australia and Canada have gone on to reach income levels of more than $35,000.

- Today, 65 years after Yalta, Russia is grouped with the three largest emerging economies. But China, India, and Brazil are exhibiting a dynamism that Russia is not. Today, China is the world's factory, India is fast becoming an important player in business services, and Brazil is rapidly diversifying beyond agriculture and minerals.

This report is structured around comparisons with these six countries. In one important aspect—physical geography—these countries are natural peers. After Russia, they are physically the largest countries in the world. Russia covers almost 17 million square kilometers; the six countries range in size from about 10 million sq. km. (Canada, China, and the US) and about 8 million (Australia and Brazil) to 3.3 million sq. km. (India). Together, these countries cover 44 percent of the Earth's land surface area and have almost half of the world's population (Table 1).

Table 1. Key Country Size and Economic Indicators, Russia and Six Comparator Countries, late-2000s

Economy	Land area (millions of squared kilometers)	Population 2009 (millions)	Agglomeration index (%)	Gross National Income 2009 ('000 millions of dollars)	GNI per capita ($ 2009)
Australia	7.7	21	76	931	43,770
Brazil	8.5	199	64	1,604	8,070
Canada	10.0	33	71	1,412	42,179
China	9.6	1,331	37	4,819	3,620
India	3.3	1,157	52	1,354	1,170
Russia	17.1	140	65	1,312	9,370
USA	9.6	307	72	14,513	47,240

Source: the World Bank, *World Development Report 2009, Annex Tables* for Agglomeration Index. The World Bank, *World Development Indicators*, 2010. http://siteresources.worldbank.org/DATASTATISTICS/Resources/GNIPC.pdf

In perhaps an even more important aspect—economic geography—these countries have a lot to learn from one another. This is a report for Russia, so it is designed to provide Russia's government and its people an analysis of the policy choices made by its peers.

The comparisons trace a path from the Yalta Conference in February 1945 to the Yekaterinburg Conference in June 2009. Overall, this was a period of relative decline for Russia, despite initially rapid economic growth in the 1950s. It was also a period of important policy choices:

- *The United States at the end of World War II* –A prominent feature of the spatial transformation of the US has been the mobility of people. The middle of the country has hollowed out as Americans moved from the heartland to the coasts, a process that reduced regional income inequality and reallocated the population to locations of higher amenity value. In contrast, because of forced movement into cold and remote areas during Stalin's era, and the subsequent inertia, Russians have been dispersed to fill its vast territory, including the inhospitable and high-cost regions. The report asks whether there are lessons that Russia could learn from the US's spatial transformation.

- *Australia and Canada at the end of the Cold War* – At the end of the Cold War, Russia, Australia, and Canada were the three countries that were both unusually rich in natural-resource endowments and sparsely populated. Australia and Canada have emulated the

United States in concentrating their population in urban agglomerations located in belts that extend along the coast in the case of Australia, and along the United States border in the case of Canada. The report asks how natural resource-rich Australia and Canada transformed themselves into prosperous, innovative and increasingly service-driven economies, and how Russia can do the same.

- *Brazil, India, and China today* – The BRICs are the four largest emerging economies, constituting 15 percent of the world's GDP. Some economists have predicted that they will surpass current leading economies in size by 2050. Each of the other three economies is making important advances to catch up with Russia.

- Like *Brazil*, Russia is resource rich not just in minerals such as oil and natural gas, but also in agriculture and forestry. Brazil has experienced decades of painful economic upheaval, including real exchange rate volatility that undermines non-commodity export production. But Brazil has moved beyond natural resources to develop a broader export base than Russia. It has developed a manufacturing base that is competitive in world markets. It is even the world's third largest aircraft manufacturer, and exports high quality automobiles.

- Like *China*, Russia could become a leading exporter of manufactured products. Russia has a history of heavy industry and skilled engineering. Russia can benefit from foreign investment and expertise in modernizing its industries, along with public investment in infrastructure to improve market access. China's experience also identifies a successful strategy of using special economic zones to accelerate access to foreign markets and investment.

- Like *India*, Russia is rich in human capital, in the sciences, in mathematics and in computer science. This wealth can be utilized to supply increasingly sophisticated business services and other information technology exports. But such activity is usually concentrated in a few specialized hubs. Russia can also stimulate such activity if it improves intellectual property rights, corporate governance, and the investment climate to encourage entrepreneurs and enterprises, both foreign and domestic.

Russia is now compared to Brazil, India, and China rather than to the wealthier OECD economies. Economists now project that in 50 years, the BRICs will be advanced, diversified, modern, and influential, and produce half of the world's GDP. Whether this will happen will depend on the policy choices they make.

Chapter 2. Russia Today

Spatial policies are inconsistent with Russia's development objectives

1. With an average annual per capita income of $9,760 per capita in 2008, Russia is an upper middle-income country, using the World Bank's classification. But Russian aspirations are higher, and they should be. Russian policymakers express the desire of becoming a modern, diversified, and innovative economy, and join the group of high-income economies whose annual per capita income averages $36,100. Only a handful of countries such as Singapore and South Korea have made this transition within a generation. Many others such as Brazil have remained middle-income for decades, some such as Argentina for longer than a century. Russia has been a middle-income economy for 200 years. [1]

2. The transition from middle- to high-income depends on policy decisions that facilitate the sectoral transformations necessary for development. These in turn require spatial transformations: an economy's transformation from one producing primary commodities to secondary goods to tertiary services requires changing the organization of economic activity over a nation's territory. These sectoral transformations require policies that reduce transport costs and generate and exploit economies of scale.

3. Over the past three decades, researchers in Russia and elsewhere have been documenting the changes in economic geography needed to become spatially efficient. They have studied the effects of larger populations, urbanization, globalizing markets, and international borders on the location of people and production, and they are starting to assess how governments can help or hurt these transformations. Their insights have been distilled in the World Bank's World Development Report 2009 *Reshaping Economic Geography* (henceforth WDR 2009). This report applies the principles and lessons of the WDR 2009 to assess actions to improve Russia's economic geography.

4. The policies proposed in this report relate to three main economic forces that are important in any economy, but especially in Russia, the largest country in the world: migration, agglomeration, and specialization. These forces are important because they determine the shape, the strength, and the speed of spatial transformations. It is a useful simplification to think of these forces as acting through labor, land, and product markets, respectively. When these markets do not work well, they stunt structural transformations. When they work well, they bring the economic benefits that come from spatial efficiency, and the social progress associated with converging living standards. This report is mainly about these three transformative forces of economic geography:

    - *Migration*—Capital can move quickly over long distances. People also move, but they move more quickly to nearby concentrations of economic activity than to those further away. But once entrepreneurs and workers come to a place, others follow. Countries do not seem to prosper for long without mobile people. The ability to move seems to be a

[1] Based on data from Angus Maddison (2008), *Statistics on World Population, GDP and per capita GDP, 1-2006 AD*, several Eastern European countries and a few from Latin America were middle-income in the late 19th century.

gauge of one's economic potential, and the willingness to migrate a measure of one's desire for advancement.

- *Agglomeration*—Being close to other productive enterprises and people confers economic advantages that cannot easily be encouraged solely through government action, nor captured fully by private agents. But these benefits can be identified and categorized: benefits that come from organizing production in large enterprises are called "internal economies", those shared by firms in the same industry and location are called "localization economies", and those more generally available to producers in larger urban areas due to diversity are called "urbanization economies". Spatially concentrated production and population facilitate both diversification and innovation.
- *Specialization*—Across the globe, transport and communication costs have fallen rapidly over the last century, allowing greater specialization. This has altered the location of firms, the structure of production, and the nature of trade. Countries now trade more with everyone: exports as a share of world production quadrupled to 25 percent over the last three decades. But falling costs of transportation and communication have made economic activity more geographically concentrated. Economic independence is no longer an option for a country that wants to be prosperous, diversified, and innovative. *Interdependence* is the attribute associated with the most prosperous as well as the rapidly growing economies. Being a part of global production networks that link China, Japan, the United States, and EU enhances both prosperity and influence.

5. The spatial processes of migration, agglomeration, and specialization can, when driven by informed policies, yield high and sustained economic growth rates and regional convergence in living standards. These three market forces are changing the economic landscapes of today's successful emerging countries in ways that are similar in scope and speed to the transformations seen in earlier developers. Mobile people, growing cities, and vigorous trade have been the catalysts for progress in the developed world over the last two centuries: first Western Europe and the United States, then Australia and Canada, followed by countries in Northeast Asia. This report discusses how Russia can harness the same forces to facilitate the geographical transformations necessary to drive development and become a diversified and productive modern economy.

6. This report has four more chapters. Chapter 2 discusses the role of *mobility* in modernization and shows how mono-towns—the Russian terms for isolated small single-industry settlements—manifest the problem of immobility. Chapter 3 analyzes how *agglomerations* foster the rising productivity that spurs economic diversification. The chapter also highlights the fact that the debate about Moscow should focus not on its size but on its functions and how efficiently it performs them. Chapter 4 investigates how Russia can improve its competitiveness by fostering *specialization* in subsectors of comparative advantage that increase Russia's integration with the other major economic centers. Chapter 5 concludes with policy recommendations.

Mobility for a Modern Russia (Chapter 2)

7. The United States and Russia are the two leading destinations for international migration, but their experiences with internal migration are polar opposites. An American, on average, moves 13 times in his lifetime; the average Russian moves just twice.[2] This is not because there are no economic gains from moving. In fact, these gains have increased over time. Regional disparities have been rising within Russia. Income per capita in the lagging region in 1985 was half the national average whereas that in the leading area was twice the national average. Since then, income per capita in the lagging region has fallen to a quarter of the national average, while that in the leading region increased to five times the national average[3]. Despite the expanding gap, population mobility has been falling.[4] In 1995, more than 3 million Russians changed their regions of residence. A decade later, only 1.5 million moved.[5] Why is this happening? And how can barriers to mobility be removed to facilitate the convergence of living standards across the country?

8. While the United States followed a path more reliant on markets and Americans moved voluntarily toward economic activity shifted toward the south and the west and became concentrated in cities, Soviet planners forced people to relocate to remote areas to even out their distribution across the vast territory.[6] Even today, millions of Russians are subsidized to live in cold-climate and isolated places in the northeast, where they cannot take advantage of new economic opportunities in the more dynamic areas of the west. In marked contrast to Russia, Americans moved from rural to urban areas and from the heartland to the coasts. The resulting U.S. geographical configuration of population and production is associated with high spatial efficiency—and high per capita income.

9. These present-day mobility problems have deep roots in the the Soviet-era forced relocations that created company towns—"mono-towns"—built around a single industry with little regard for transport and energy costs or long-term viability. The town-forming enterprise was responsible for social services and amenities, from health care and schools to heat, water, and electricity for between 5,000 to 700,000 residents. Today, Russia has nearly 467 cities and 332 towns classified as mono-towns, and a quarter of Russia's urban population (25 million people) live in them.[7] There is no official or universally accepted definition of mono-towns. A mono-town may have a sole "town-making enterprise" (*gradoobrazuiushchee predpriiatie*) or more commonly it may consist of a single industry with a few enterprises (*monopromyshlennye goroda*). The economies of the mono-towns are increasingly obsolete,

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[2] Philip Rees, Martin Bell, Oliver Duke-Williams, Marcus Blake, "Problems and solutions in the measurement of migration intensities: Australia and Britain compared", *Population Studies*,54 (2000): 2, 207-222; Vladimir Iontsev, Ivan Aleshkovski, "Determinants of internal migration in contemporary Russia," manuscript at the EAPC European Population Conference 2006 Liverpool (UK), 21-24 June 2006. http://epc2006.princeton.edu/download.aspx?submissionId=60484

[3] The World Bank, 2008. *World Development Report 2009—Reshaping Economic Geography*, p.89.

[4] Andrienko, Yuri and Guriev, Sergei, 2004, "Determinants of inter-regional mobility in Russia," *Economics of Transition* 12(1), pp. 1-27.

[5] *ibid* and also see Iontsev Vladimir (2006) Theoretical background of studying migration in *Migration and Economic Development*. M.: INFRA-M

[6] Treivish, Andrei (2005) "A New Russian Heartland: The Demographic and Economic Dimension." *Eurasian Geography and Economics* 46 No. (2): 123–56.

[7] According to the Ministry of Economy's study "*Monotowns and Core Enterprises"* carried out in 1999-2000, based on Valentin Bogorov, "Russian Monotowns: A Brief Survey", a background paper for this report , mimeo, March 2010.

with crumbling infrastructure, but most of their largely immobile workforces are unable to seek employment elsewhere because of a lack of affordable housing.[8] Among the different types of mono-towns are some that have profitable enterprises or are closed military complexes but, for public policy, the towns with failing enterprises are the most problematic.

10. The policy responses have focused on place-based interventions such as providing subsidies to failing enterprises and local populations. These interventions perpetuate immobility, tying labor to a location where it is unproductive, so they drain public resources and reduce national output. Where the firms are inherently uneconomic and cannot be operated profitably, it would be better to close them than to subsidize or re-invest in them. Another response has been to develop investment programs to modernize existing industries or create new ones. But unless these are market-driven investments, they risk repeating the errors that created the mono-towns in the first place.

11. The mono-town problem, the most prominent manifestation of labor immobility, is symptomatic of a broader problem. Mutually re-enforcing policies were designed for a different economic system and are no longer effective. Current labor regulations, when enforced in the formal sector, also contribute to distortions as labor hoarding, frictions with respect to labor downsizing or retrenchments. Another constraint on mobility is that people in lagging regions have equity in their homes which they cannot monetize. Workers and their families cannot sell their homes or land easily, and even if they could, those in lagging regions would struggle to secure affordable accommodation in more prosperous areas. The absence of dynamic rental markets in destination (flourishing) regions is also a barrier.

Agglomeration for a Diversified Economy (Chapter 3)

12. In 1989 when Russia began its transition to a market economy, , Russia, Australia, and Canada seemed similar natural-resource rich countries with vast geographically extensive territories. The trio accounted for about half the world's production of nickel and titanium and close to a third of the global production of iron, natural gas, and bauxite.[9] But Australia and Canada were already diversified, mature, high-income economies. During the last two decades, while the share of agriculture in Russia's GDP has fallen, agriculture's share of employment has not declined. Meanwhile, manufacturing has seen its share of both GDP and employment fall, symptoms associated with the Dutch Disease in an economy at Russia's level of development. Today, more than three-quarters of Russia's exports are from extractive industries, compared with less than a third of Australia's and Canada's.

13. To sustain an increasingly *diversified economic structure*, Australia and Canada *concentrate their economic geography*. Their three largest metropolitan agglomerations—Sydney, Melbourne, and Brisbane in Australia, and Toronto, Montreal, and Vancouver in Canada—make up over 60 percent of their populations. By comparison, Russia's three largest cities,

[8] Aron, Leon . (2009) "Russia's 'Monotowns' Time Bomb," AEI Outlook Series, October 2009, http://www.aei.org/outlook/100080.
[9] Data from http: //www.euromines.org//mm_antimony.html.

Moscow (11.5 million), St. Petersburg (4.8 million), and Novosibirsk (1.5 million), have only 12.5 percent its population.

14. As Russia has reoriented its economy from plan to market, spatial efficiency has been improving. Between 1989 and 2004, almost all new firms chose to locate near Moscow and St. Petersburg, the gateways to international markets.[10] The sectoral composition of the economies of Moscow and Saint Petersburg is more diversified than elsewhere, and the two cities are better positioned than others to lead Russia's diversification.

15. But even in Moscow, whose economy is the most diversified in Russia, the services sector is dominated by lower end services (retail, wholesale, communal services), which expanded dramatically during the transition to a market economy. Butthere remain very few high-end financial, banking, insurance, and real estate services in Moscow compared with London, Paris, Tokyo, or New York.[11] In that sense, Moscow has posed a challenge for Russian public policy and its aspirations of Moscow becoming an international financial center. It could become the main economic hub for Eurasia and Eastern Europe, but many Russians feel that it is already too big, with too much influence and an unduly large share of public resources. What this may reflect is that Moscow has become highly congested so it is not facilitating large benefits of agglomeration. Today, it lacks the world-class amenities of London, Tokyo, Hong Kong, and New York.

16. It does not have to stay this way. Indeed, for Russia to diversify its economy, both Moscow and Saint Petersburg will have to flourish and grow—but differently from the past. These and other large cities in Russia have been hampered by place-based interventions, such as registration requirements and the lack of low-priced housing designed to keep people from coming to Moscow. Moscow's Masterplan is overly restrictive in dictating where to locate activities. The policy regime could work much better to help Russia diversify sectorally if it shifted toward more market-based policies that manage the forces of spatial concentration rather than attempt to prohibit them.

Specialization for a Globally Competitive Russia (Chapter 4)

17. By 2009, the United States produced 25.4 percent of world GDP, Russia just 2.4 percent. Russia's peer group today is the BRIC nations—Brazil, Russia, India, and China. Brazil, India, and China have been catching up. When Yuri Gagarin became the first man to travel into space in 1961, the per capita GDPs of Brazil, India, and China, were respectively those of Congo, Niger, and Zambia today. Today, the situation is different. Tables 2 and 3 trace

[10] J. David Brown, Marianne Fay, John Felkner, Somik V. Lall, and Hyoung Gun Wang, "Profiting from Proximity: Rising Economic Densities in the Russian Federation " the World Bank Policy Research Working Paper Series

[11] Gritsai, O., 2004, "Global Business Services in Moscow," *Urban Geography* 41, pp. 2001-2024; Gritsai, O., 1997, "The economic restructuring of Moscow in the international context" *GeoJournal* 42.4: 341-7. Piterski, Dmitri, 1997, "The cities of Russia: some recent trends and experience of regional and urban planning," *GeoJournal 43:4, p. 385-388* and city data sheets taken from Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision* and *World Urbanization Prospects: The 2007 Revision*

the changing size of the economic output of Russia and the comparator countries from 1879 to 1998 and the associated changes in per capita income.[12]

Table 2. Changing GDP 1870–1998 for Russia and selected comparators (1990 PPP billion International $)

	1870	1913	1950	1973	1990	1998
Australia	6.5	27.6	61.3	172.3	291.2	382.3
Brazil	6.9	19.2	89.3	401.6	743.8	926.9
Canada	6.4	34.9	102.2	312.2	524.5	622.9
China	189.7	241.3	239.9	740.0	2109.4	3873.4
India	72.2	147.0	362.6	494.8	1098.1	1702.7
Russia	83.6	232.4	510.2	1513.1	1988.0	1132.4
United States	98.4	517.4	1455.9	3536.6	5803.2	7394.6

Source: Maddison, A. (2001), *The World Economy: A Millennium Perspective*, Paris: OECD, pp. 184, 194 and 214.

Table 3. Changing per capita GDP 1870–1998, Russia and selected comparators (1990 PPP international $)

	1870	1913	1950	1973	1990	1998
Australia	3,645	5,715	7,493	12,759	17,043	20,390
Brazil	713	811	1,672	3,882	4,924	5,459
Canada	1,695	4,447	7,437	13,878	18,923	20,599
China	530	552	459	839	1,858	3,117
India	533	673	619	823	1,309	1,746
Russia	943	1,483	2,834	6,058	6,871	3,893
United States	2,445	5,301	9,561	16,689	23,214	27,331

Source: Maddison, A. (2001), *The World Economy: A Millennium Perspective*, Paris: OECD, pp. 185 and 215.

18. Central planning initially proved proficient at reallocating underused resources, but it struggled to sustain rising productivity thereafter. So Russian economic growth decelerated after the 1950s. These policies left the post-Cold War Russia at an economic disadvantage. Economic activity was located with little regard to transport costs, which are central to efficient location decisions by firms in manufacturing and services. When transport costs became explicit after the transition, old production networks collapsed. In Russia's traditional hinterland (Central Asia, Caucasus), the flow of goods has been replaced by flows of factors—large labor migrations and capital flows move from the former Soviet Republics to Russia.

19. Today, Russian production requires a greater reorientation toward prosperous western markets. Its traditional hinterland generates a small aggregate GDP and offers little expertise or capital compared with its dynamic neighbors in Western Europe or Northeast Asia. If Russia is to improve its economy and international influence, it cannot be through inward-looking policies to preserve economic independence. By tapping into world markets, and acquiring the knowledge and capital in the world's largest economies to drive specialization

[12] Maddison, A. (2001), *The World Economy: A Millennium Perspective*, Paris: OECD.

and exploit returns to scale, Russia can be globally influential while also helping its smaller neighbors.

20. Russia cannot continue to rely only on its natural resources. As it diversifies it can draw on lessons from its BRIC peers. China and India made economic gains only by integrating with world markets, generating internal pressure for reform, and attracting international investment, expertise, and capital. Brazil, China and India reformed their economies to become reliable economic partners. They also reformed regulations and bureaucracies to encourage private investment. And they aligned their domestic policies with international norms—adopting international standards in customs and accounting, joining the WTO, giving foreign companies equal legal standing with locals—to become richer and better integrated economies with more influence on the world stage.

21. Russia is taking steps toward economic integration, but two initiatives have not yet borne fruit: special economic zones and WTO membership. A second generation of special economic zones could provide a better business environment for foreign firms and attract investment, but they require better planning and support. In addition, Russia is negotiating for accession to the World Trade Organization, but its negotiations have been slow. Importantly, however, good progress was made in 2010-11 so that WTO membership is now within sight.

22. Looking ahead, three interrelated elements are required to ensure that reform is effective:

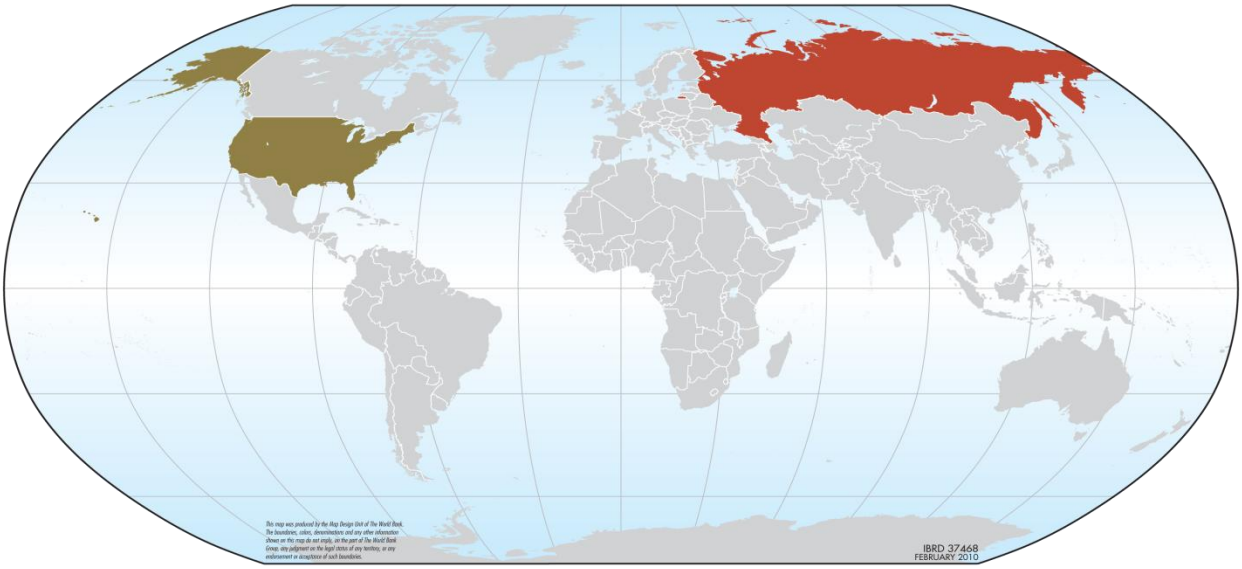
    - *Institutions to help integrate into the world economy.* The most propitious change would be accession to the World Trade Organization, not just for the trade benefits but also for the related domestic economic and judicial reforms. Beyond that are opportunities to build institutions to improve the investment climate, to strengthen the rule of law, and to make national borders thinner by reducing trade barriers.

    - *Infrastructure to connect to world markets.* Russia's trade facilities have been built principally around natural resource exports and trade with non-European countries. With a re-orientation of markets, imports and exports can be facilitated by improving the infrastructure for integration with the EU. Such improvements include port development, roads linking to Western Europe, and transshipment options through the Black Sea and Far East.

    - *Incentives to attract capital and knowledge.* Special economic zones are a good starting point, but they need to be more specifically targeted both spatially and to support the reform agenda. Russia can draw useful lessons from countries that successfully developed such zones, including China, Malaysia, and Mauritius. The experience suggests that successful zones can become catalysts for economy-wide change within just 15 years, rapidly transforming the entire economy.

Spotlight 2: ***At the End of World War II***

The mobility of Americans helps make the US economy flexible, innovative, and advanced; Russia remains a relatively immobile economy.



After growing at a seemingly stellar pace through the 1950s, the economy of the USSR slipped into relative decline. During the four decades after 1950, the USA and the USSR followed markedly different paths of development. The US population doubled and its GDP per capita tripled. By 1991, US per capita GDP was 5.6 times greater than that of the Soviet Union collapse. When Gorbachev announced the end of the Union of Soviet Socialist Republics, US per capita GDP was $31,652 compared to $5,610 (in 2005 dollars) for the USSR.[13] What factors lay behind these polar economic outcomes? Structural Evolution and Spatial Adjustment in the USA

Economic growth, an inflow of migrants—first from northern Europe and then from southern Europe—and rising per capita incomes combined to make the USA the world's largest economy by the second half of the 19th century. The US economy grew by 3.9 percent per annum throughout 1870-1913 compared with 2.4 percent for Russia, 1.9 percent for Britain and less than 1 percent for China and India. By 1913 total US GDP had reached $517 billion (19 percent of the world GDP) compared with $237 billion for Germany, $232 billion for the Soviet Union, and $225 billion for the UK.[14] By 1913 the per capita income of the US at $5,300 had surpassed

[13] Real Historical Gross Domestic Product (GDP) Per Capita and Growth Rates of GDP Per Capita for Baseline Countries/Regions (in 2005 dollars) 1969-2009. ERS International Macroeconomic Data Set. Updated 11/02/2009. Available at: http://www.ers.usda.gov/data/macroeconomics/.
[14] Maddison, A. (2001) *the World Economy: A Millennium Perspective*, Paris: OECD.

that of Britain at $4,900 and was fast gaining on Australia.[15] After the Second World War, US output and productivity set the benchmarks to which most other economies aspired.

The sustained growth of the US economy since the nineteenth century has been accompanied by the restructuring of the economy away from primary production via industrialization to a service-based knowledge economy. The total share of the American workforce employed in the services sector increased from 39.5 percent in 1900 to 78.0 percent in 2007.[16] This restructuring of US production was an essential component of US growth and rising per capita incomes. It also required a spatial transformation that shifted labor from primary production in rural areas to urban manufacturing and service-based activity, with services eventually becoming dominant.

Movement toward a service-based economy tends to increase demand for skilled workers at the expense of unskilled workers, necessitating adjustment by labor markets in declining industrial regions. The US Rust Belt which emerged in the 1970s in the once-resilient and diversified Midwest region is an example of this phenomenon of creative destruction. The restructuring of production towards a service economy has implications not just for the fortunes of different regions but also for the size distribution of both firms and settlements.

Between 1950 and 1990 the number of US metropolitan areas increased from 169 to 284 and their combined population more than doubled from 85 million to 193 million. This boosted their share of the US population from 45 percent to 78 percent.[17] The growth of several metropolitan statistical areas caused them to merge, with the largest such agglomeration embracing New York, New Jersey and Connecticut, with 19.3 million people in 1990. Los Angeles-Riverside and Anaheim had over 14.5 million, Greater Chicago 8 million, and the Washington-Baltimore area about 6.7 million. But the fastest growing urban areas in the US through the 1980s were the mid-sized metropolitan areas mainly in warmer Florida, Arizona and Nevada, which—aided by air-conditioning technologies—increased their populations by 46.9 percent. These trends at the macro and micro regional level confirm the interactions between sectoral change and US spatial structure as flexible markets reallocate labor and land to efficiently accommodate the trends.

Regional Income Convergence and Labor Mobility

In response to this economic restructuring, the US center of population gravity has shifted in a south-westerly direction away from Maryland in 1800, to Indiana in 1900, to Illinois in 1950, and Missouri in 2000.[18] But the US population has also become increasingly concentrated close to the coast and ocean-linked sea-ways (Map 1). One consequence of this hollowing out of the continent is that about 40 percent of the U.S. population today lives in only six states: California, Texas, New York, Florida, Illinois, and Pennsylvania.[19] Setting aside administrative boundaries,

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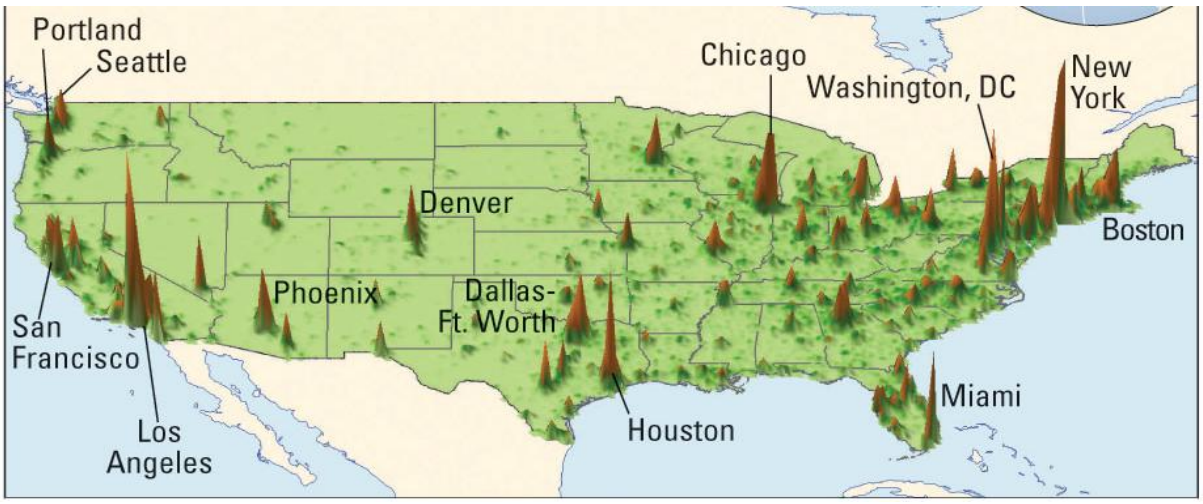
[15] Auty, R.M. (2010) "The Dynamics and Spatial Structure of Mineral-Driven Development in Australia, Canada and Russia, Paper" Prepared for the World Bank, Washington DC: PREM, World Bank.
[16] World Bank (2008) *World Development Report 2009: Reshaping Economic Geography*, Washington DC: World Bank for estimates 1980-2007; US 1900, 1930 and 1960: US Census.
[17] Balchin, P.N., Isaac, D. and Chen, J. (2000) *Urban Economics: A Global Perspective*, London: Palgrave.
[18] World Bank. 2008. "Geography in Motion: Overcoming Distance in North America." *World Development Report 2009—Reshaping Economic Geography* 44-46.
[19] US Census Bureau (2009) https://www.census.gov/ and OECD (2007), OECD Regions at a Glance, p. 14

about 50 percent of the US population occupies just 10 percent of its land area. This compares with the slightly higher figures of 64 percent of the Australian population, and 61 percent of Canadians, respectively, in 10 percent of their land areas.[20]

Map 1. The US population is concentrated in only a few parts of the vast country



Source: The World Bank (2008), *World Development Report 2009 Reshaping Economic Geography*, Washington D.C. Map G0.2, page xi.

The evolving spatial structure of the US economy is not only concentrating the population but it is also closing the income gap between the macro regions. The narrowing regional income disparity provides clear evidence of the benefits of labor mobility and a flexible economy. The North-South income differential in the USdeclined by 44 percent through 1880-1940, with one-third of this closure due to the faster shift of southern labor out of agriculture. Increasing mobility of factors of production, both capital and labor, re-located agricultural production to the better growing conditions of the South region and thereby boosted overall national farm productivity. States with the most rapid relocation of labor out of agriculture experienced the fastest rate of income convergence putting mobility and employment choice at the heart of the convergence.[21]

In contrast to the incessant US spatial adjustment in response to price or wage signals that reflect changing demand and drive US economic geography, the Russian authorities have attempted to direct the distribution of population rather than accommodate it. Large numbers of workers were forcibly relocated under Stalin. The involuntary shift of population into north-east Russia was similar in magnitude to the total estimated net overseas migration from Europe to the Americas, Africa, and Oceania through the nineteenth century and into the twentieth century until 1945.[22]

In addition, in contrast to the voluntary movement of the US population, which has shifted the population center of gravity towards milder climates, forced movement of population within the

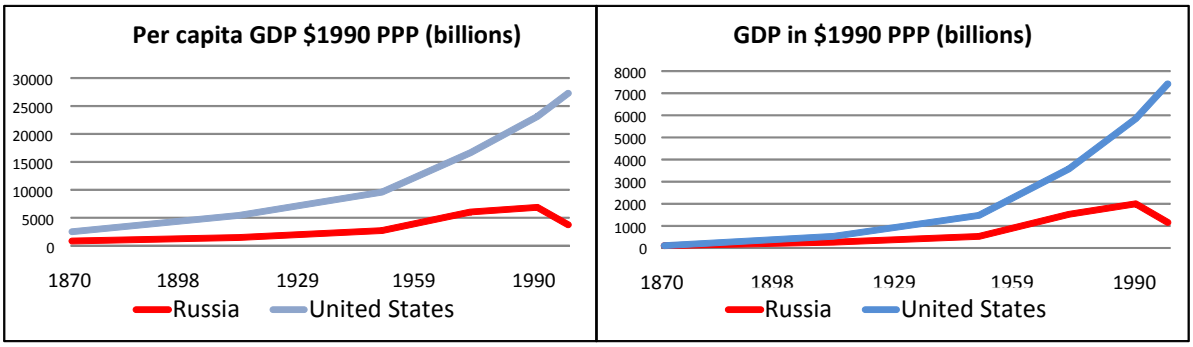
[20] OECD (2007) *Regions at a Glance*, Paris, OECD.
[21] Caselli, F. and Coleman, W.J. (2001) "The US structural transformation and regional convergence," *The Journal of Political Economy* 109(3), 584-616.
[22] Harris, C. (1970) *Cities of the Soviet Union*, Monograph Series of the Association of American Geographers. Chicago IL: Rand McNally and Company.

Soviet Union has been to colder, remoter and smaller settlements. Take for instance the town of Vorkuta. The town was established in 1943 in the extreme northeast of European Russia, 150 kilometers north of the Arctic Circle. With a major coal mining enterprise and an infamous Gulag work camp, this small town of 7,000 grew rapidly with the influx of workers and political prisoners to a population of nearly 180,000 in 1959 and 217,000 at the time of the Soviet Union's collapse.[23] Due to its location, the average yearly temperature in Vorkuta is -6° C and the average number of days without frost is fewer than 70. There are no roads connecting the city to the rest of Russia; automobile drivers en route to Vorkuta must stop in the nearest railhead city, Ukhta (with 103,000 inhabitants), and wait an average of one or two days for an available rail car onto which they can load their automobile and undertake the 20-hour train ride to complete the 680 kilometers journey to Vorkuta.[24]

Whereas the population of Siberia and the Far East increased forty-fold over the course of the 20th century, the region's GDP only increased five-fold,[25] indicating a drastic fall in labor productivity. Instead of allowing the population to spread out organically and agglomerate in the most economically promising regions, Soviet planners repressed market forces and fragmented the workforce into small cities like remote Vorkuta beyond the Arctic Circle.

In 1970 the Soviet Union's total GDP lagged behind the United States by just $15 billion (in 1990 USD PPP terms). By the end of the Cold War, US GDP was $5,083 billion, while Russia's was $1,990 billion. Between 1990 and 1998, Russia's GDP collapsed to $1,132 billion while US GDP rose to $7,385 billion (Figure 1). The US is the world's largest and arguably most flexible, economy. As Chapter 2 explains, labor mobility is an essential component of a flexible economy. And flexibility is perhaps the most important attribute needed to reach and sustain high income levels.

Figure 1. Increasing gap in economic power between the US and Russia



Source: Maddison, A. (2002) *the World Economy: A Millennium Perspective*, Paris: OECD.

[23] These figures are measured as the number of people present in the city and its near vicinity at the beginning of the given year (i.e., it includes temporary inhabitants in addition to permanent ones). E. N. Toropova. "De facto population in and around Vorkuta." State Statistics Committee of the Komi Republic. http://www.vorcuta.ru/statistics.htm.

[24] http://www.vorcuta.ru/auto-moto.htm

[25] The World Bank (2008), *World Development Report 2009 Reshaping Economic Geography*, Box 2.5 pp.90-91

Chapter 3. A Modern Russia

An advanced Russia will be more mobile

23. To become a dynamic economy, Russia will have to be more flexible—to constantly move human resources and productive capital from low-value to high-value opportunities. This usually entails shifts of labor and capital from declining regions to expanding regions. New opportunities can emerge quickly and unexpectedly, and exploiting them requires speedy adjustments to changes in resource endowments, production and transport technology, and market demand. The role of policy is to facilitate these movements—avoiding encumbrances that keep people tied to one location—and to enable changes that will attract labor and capital to superior opportunities. These two complementary aspects of the adjustment are discussed separately: enabling mobility is covered in this chapter and creating opportunities is discussed in chapter 3.

The problem: low mobility.

24. Because of low labor mobility, Russia ties too much of its human capital to locations where it cannot be used most productively. The overall pattern is inherited from central planning. One obvious aspect of spatial inefficiency is high transport costs, because Soviet planners assigned a low priority to minimizing them. The high costs made industry less competitive when the collapse of the FSU opened Russia to world markets. The costs of keeping labor in the wrong locations are now being paid, and they appear as in the form of lower productivity, reduced GDP, and slower growth.

25. In the world's most dynamic economies, people move to maximize the returns to their education and skills. Russia and the United States are the two largest recipients of immigrants because they offer attractive employment opportunities. But the United States' history of internal labor mobility could not be more different. In the 19th century large numbers of people, including many recent immigrants, moved from the east coast to the Midwest, where land was cheap and agriculture flourished. When new technology increased agricultural productivity and reduced labor demand, people moved to growing industrial hubs such as Detroit. In the post-industrial phase, people moved from the north to the south and southwest and to thriving—usually coastal—cities that had most of the innovative high-tech and service industries. These large population movements responded to relative changes in wages that reflected shifting technology and market demand.

26. Although labor mobility is fairly low in some prosperous countries such as those that form the core of the European Union, their economic geography has adjusted over centuries, largely in response to market forces. Distances within national economic boundaries are shorter than continental countries such as Russia, the United States, Australia, and Canada. Nor did the core EU countries inherit a distorted distribution of population and production that had ignored transport costs. East and West Germany present an instructive contrast.

Whereas West Germany developed in a spatially efficient manner, East Germany's planned economy shared characteristics of Russia today, since much economic activity suddenly became no longer viable. The adjustment to the integration of East and West Germany included sizable migration from east to west, often involving female workers as well as many skilled men.[26] It also required improvements in infrastructure and basic services in the east, and some incentives for new industries in the east only some of which were successful.

27. With its legacy of centrally planned mono-towns and their inefficient facilities, Russia entered the Post-Soviet era with an economic geography that sapped growth. Its human and capital resources are located across regions and throughout the urban hierarchy in a manner that differs from the patterns in advanced market economies. Within the Soviet Union's closed economy, migrants were attracted by higher wages in peripheral regions compared with regions elsewhere.[27] The movement out of the north and far east has been small relative to the total Russian population. Abstracting from Russia's declared strategic interests of its demographic and economic presence in the Far East, some estimates suggest *economic surplus* population of Siberia and the far east remains as much as 17.6 million compared to population densities in Canada's remote frontier regions, where the economic geography has been largely market-driven.[28]

28. Given Russia's legacy of spatial inefficiency—with people and production in places where they are not used most effectively—its mobility should be higher than in other countries. The of migrants according to official figures was a low 1.5 percent during 2002-2006 and 1.6 percent in 2007-2008.[29] In the U.S. the figure has remained between 18 and 20 percent for over four decades since 1948, and only in recent years fell by a few percentage points.[30] The crude migration probability for Australia in 1995-6 was 18.3 percent and it was 8.8 percent for Britain in 1990-91.[31] Russia's internal migration is consistently at the low end. Take for example the estimated migration probabilities for several countries in 1998: Korea (11.8), Finland (10.0), Australia (7.9), Norway (6.5), Switzerland (6.1), Japan (4.9), Netherlands (4.0), Hungary (4.0), and Russia (1.8).[32] Another measure of internal migration is the estimated average number of times that people would expect to move during their lives.[33]

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[26] The World Bank, *World Development Report 2009, Reshaping Economic Geography*, box 8.2

[27] Vladimir Kontorovich, "Can Russia Resettle the Far East?", *Post-Communist Economies*, Vol. 12, No. 3, 2000, pp. 365-384.

[28] Tatiana Mikhailova, "Where Russians Should Live: A Counterfactual Alternative to Soviet Location Policy", background paper for this report, mimeo, August 26, 2005.

[29] Timothy Heleniak, "Migration and Mobility in Russia," background paper for this report, mimeo, February 2010, p. 52 based on Interstate Statistical Committee of the CIS, *Commonwealth of Independent States in 2001: Statistical Yearbook*, Moscow: 2002, pp. 116-117. In some cases the sum of internal and international migrants don't sum to the total because people did not indicate their place of previous residence. Interstate Statistical Committee of the CIS, *Naseleniye i usloviya zhizni v Stranakh SNG: Statisticshekskiy sbornik*, Moscow: 1998, pp. 26. International migration data are only with other CIS countries..

[30] U.S. Census Bureau, *Current Population Survey*, Annual Geographical Mobility Rates, By Type of Movement: 1947-2008 (Internet Release, April 2009); U.S. Census Bureau, "Residential Mover Rate in U.S. is Lowest Since Census Bureau Began Tracking in 1948", Press release 22 April 2009 (http://www.census.gov/Press-Release/www/releases/archives/mobility_of_the_population/013609.html accessed 30 November 2009).

[31] Bell, M., M. Blake, P. Boyle, O. Duke-Williams, P. Rees, J. Stillwell, and G Hugo, "Cross-National Comparisons of Internal Migration: Issues and Measures", *Journal of the Royal Geographical Society. Series A (Statistics in Society)*, Vol. 165, No. 3 (2002), pp. 435-464.

[32] Mkrtchian, N.V., "Analysis of Migration Mobility in Russia", Higher School of Economics, background paper for this report, mimeo, June 2009.

[33] Plane, D. A. and Rogerson, P. A., 1994. *The Geographical Analysis of Population: With Applications to Planning and Business*, New York, Chichester, Brisbane, Toronto, and Singapore: John Wiley and Sons, Inc., pp. 108-112. There are two

This measure for Russia in 2007 indicates that average Russians make only 1.3 moves in their lifetimes.[34] The estimate for the United States for 2007 was 11.7 moves[35] and in 1995-1996, the average Australian was estimated to move between 13 to 15 times and the average Briton 6 to 8 times.[36] Mobility is typically highest among the young —those 14 to 24 years of age—but mobility declined the most in this cohort between 1990 and 2004. Opportunities to pursue studies away from home have been reduced because of lower student allowances, reduced dormitory facilities, and higher food prices.[37]

29. Russia is handicapped by its underlying demographics. Fertility rates remain below replacement level despite recent increases. The birth rate peaked in 1987 and lower birth rates led to a "natural" decline in the population of about 8 million people up to mid-2003 (5.4 percent of the 1989 population).[38] Life expectancy is low by international standards. These trends, combined with an older age structure, will leave Russia with a declining population in the foreseeable future: the number of deaths will likely exceed the number of births, and immigration—with current policies—will be insufficient to compensate. Because the national population is expected to decline, the population of many regions will decline as well, and this will reduce regional growth. For this reason, spatial efficiency will become an increasingly important policy priority.

30. Internal migration in Russia has been low for many reasons. Russia's vast distances inhibit mobility through high job search, transport, and relocation costs. Many studies confirm the negative correlation between distance and migration.[39] The difficulty of affordable housing in destination regions has been cited as a barrier to migration. This makes it difficult to move up the city size gradient because housing becomes prohibitively expensive.[40] For example, the ratio of apartment price to annual average earnings ranged from less than three in lagging regions (e.g., Tyumen and Nenetsky) to over seven in the prospering European part of Russia.[41] The lack of a market for rented housing also makes moving difficult.[42] The following factors also inhibit internal migration:

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conceptually similar measures, *migration expectancies* and the *gross migra-production rate*. Both use current age-specific mobility rates; the difference is that the *migration expectancies* index adjusts for mortality effects while the gross migra-production rate does not.

[34] Vladimir Ionstev and Ivan Aleshkovski, "Determinants of Internal Migration in Cotemporary Russia", EAPC European Population Conference, Liverpool, UK, 21-24 June 2006).

[35] United States Census Bureau, *Geographical Mobility/Migration: Calculating Migration Expectancy*, (http://www.census.gov/population/socdemo/migrate accessed 22 November 2009).

[36] Philip Rees, Martin Bell, Oliver Duke-Williams, Marcus Blake, "Problems and solutions in the measurement of migration intensities: Australia and Britain compared", *Population Studies*,54 (2000): 2, 207-222.

[37] Savlulkin Lev, "Legislation that regulates the migration processes and man-made barriers to mobility," St. Petersburg, background paper for this report, mimeo, June 2009.

[38] World Bank (2005). Country Economic Memorandum for Russia, *From Transition to Development*

[39] Kazuhiro Kumo, "Interregional Population Migration in Russia: Using an Origin-to-Destination Matrix," the Institute of Economic Research, Hitotsubashi University, Tokyo, Discussion Paper Series A, No. 483. July 2006.

[40] A.I. Alexeev and V.P. Krasnoslobodstev, "Changes in The Territorial Mobility of Rural Population In Post-Soviet Russia," *The Rural Citizen: Governance, Culture, and Well-Being in the 21st Century*, 2006.

[41] Limonov, Leonid (2010), 'Land market in urban territories in Russia', a background paper for this report, mimeo.

[42] Savlulkin Lev, "Legislation that regulates the migration processes and man-made barriers to mobility," St. Petersburg, background paper for this report, mimeo, June 2009.

- *Administrative barriers.* Before 1993, migration required government permission. A 1993 law permitted migration but required notification, and this is still seen as a barrier.[43] Legal registration at a place of permanent residence is tied to entitlements that include housing, utilities, and social benefits. It is often necessary to have a local registration to be able to work. Many employers prefer to hire people with a local registration because they are deemed more reliable and because it reduces paperwork.[44] There are considerable discretionary powers for local officials in enforcement. In addition, significant differences remain between federal legislation and registration laws in some regions such as Moscow. Likewise, migrant networks that propel so much migration in other countries are poorly developed in Russia.[45] And moving away from Soviet-era social networks is difficult for many.[46]

- *Labor market distortions.* Perhaps more than in other countries, Russians acquire firm-specific human and social capital which is not transferable to other enterprises in locations outside of a given region.[47] Poor information about conditions in distant labor markets also remains a barrier to mobility.[48] While the problems of in kind wage payments and wage arrears have subsided significantly over the second half of 2000s, the monthly average amount of wage arrears during 2010 remained non-trivial at 3 billion Rubles affecting about 1 million workers.[49] While the scale of wage arrears is far more limited compared to a decade ago, this liquidity constraint may still form a financial burden for some to move, and contribute to slower regional income convergence in some areas. [50,51] Poverty and the lack of credit access prevent those in the less developed areas from moving to regions where they could earn a better living. So, the disparity among regions in unemployment rates is high despite the fact that national unemployment has been falling.[52]

- *Agricultural land markets.* Russia has met the necessary pre-conditions to develop agricultural land markets: most agricultural land has been privatized, landowners have

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[43] Savlulkin Lev, "Legislation that regulates the migration processes and man-made barriers to mobility," St. Petersburg, background paper for this report, mimeo, June 2009.
[44] Tatiana Mikhailova, "Migration and Mobility of Population in Russia," background paper for this report, mimeo, June 16, 2009.
[45] Gerber, Theodore P., "Internal Migration Dynamics in Russia, 1985-2001: Determinants, Motivations, and Consequences," University of Wisconsin-Madison, Report prepared for the National Council on Eurasian and East European Research September 2005.
[46] Anne White, "Internal Migration, Identity and Livelihood Strategies in Contemporary Russia," *Journal of Ethnic and Migration Studies*, Vol. 35, No. 4, April 2009, pp. 555-573.
[47] Denis V. Kadochnikov, "Human Mobility in Russia," St. Petersburg, background paper for this report, mimeo, 2009, p. 10. Also see Gimpelson V. and Kapelyushnikov R., ed. Moscow: State University - High School of Economics. 2007 and Gimpelson V. and Kapelyushnikov R., (2011) "Labor Market Adjustment: Is Russia Different" IZA Discussion Paper 5588, Germany, that examine between-enterprise mobility within a given region.
[48] Tatiana Mikhailova, "Migration and Mobility of Population in Russia," background paper for this report, mimeo, June 16, 2009, p. 8.
[49] See Figure 12 and page 11 in Gimpelson V. and Kapelyushnikov R., (2011) "Labor Market Adjustment: Is Russia Different" IZA Discussion Paper 5588, Germany.
[50] Yuri Andreinko and Sergei Guriev, "Determinants of interregional mobility in Russia: evidence from panel data," unpublished draft, February 2003.
[51] Guido Friebel and Sergei Guriev, *Should I Stay or Can I Go? Worker Attachment in Russia*, November 2000. Guido Friebel and Sergei Guriev, *Attaching Workers Through In kind Payments: Theory and Evidence from Russia*, March 2005.
[52] Brown, A., "The Economic Determinants of Internal Migration Flows in Russia During Transition." Working Paper #89, Davidson Institute, Ann Arbor, Michigan, 1997.

rights to most agricultural land, and buying and selling land is legal. Land markets have responded well to these changes and there have been transactions that involve individual landowners, and not only the state. But further market development is now hampered by the weak administrative and technical infrastructure. There is no public registry of plans and maps to complete transactions, the bureaucracy has created numerous procedural obstacles that complicate transactions, and the agents do not have effective access to market information about land prices or demand and supply of land. (See Box 1)

31. Government policy can stimulate economic growth by increasing mobility. Although international migration and the dramatic decline in life expectancy are important parts of the ongoing adjustments in Russia, there is a strong argument that Russia's medium-term economic prospects depend to a larger extent on internal migration. [53] For the expanding urban agglomerations in Russia's west, the sustainability of growth is threatened by labor shortages, infrastructure constraints, and a protectionist lobby against competitive pressures from all-Russian markets and world markets.[54] The labor shortages can be alleviated by policies that encourage migration, which in turn will be helped by resolving the debate over mono-towns, the adverse legacy of a rigid planning system and inflexible labor market.

[53] The World Bank, *Russia Country Economic Memorandum: From Transition to Development.* Report No. 32308-RU, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region, March, 2005.
[54] The World Bank, *Regional Development and Growth Agglomerations: The Longer Term Challenges of Economic Transition in the Russian Federation.* Report No. 45486-RU, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region. January 16, 2009 (page ii).

Box 1. Difficulty of Agricultural Land Transactions

Russia's agricultural land area has been stable at 220 million hectares since 1990. The rural population has barely declined over the last 15 years, but employment in agriculture dropped by more than 30 percent between 1994 and 2007. Official land registry records indicate few transactions because of cumbersome and costly registration procedures and widespread misunderstanding of the registration system and its embedded bureaucratic barriers. People appear to be stuck on rural land.

The costs of registering ownership rights vary widely. Officials often require a full survey to identify an individual plot which is too expensive for the private landowner. The documents that should be presented in each office are not strictly defined, requiring multiple visits. The registration procedure is determined by law, but the law does not specify precise requirements so local officials can set their own demands. Corporations can hire advisors but land-share owners, peasant farmers, and traditional corporate farms have to spend so much time and money on registration that they sometimes give up their rights or use land that is not legally registered.

To simplify land transactions, sellers use general power of attorney or give the land as a gift. With general power of attorney, the seller gets the money and empowers a third person to sell the land share and complete the necessary arrangements. With a gift of land, there is no need to offer the share to other pre-emptive buyers (the joint owners, the oblast government, or the municipality). These "under-registration" mechanisms are risky for the buyer. A power of attorney can be revoked before the rights are registered and transferred to the buyer and gifts can be annulled as fictitious transactions.

These barriers to registration and obstacles to land transactions reduce the value of land holdings, suppress agricultural productivity, impede adjusting farm sizes to optimal levels, and implicitly hold back outmigration.

Source: *Lerman, Zvi (2010) "An overview of Russia's land reform since 1991", background paper for this report, mimeo.*

The debate: what to do about mono-towns? International experience and some lessons

32. Russia's low labor mobility is exacerbated by the legacy of Soviet era planning for mono-towns.[55] To simplify somewhat, mono-towns are urban settlements with economic bases that are dominated by a single industry or a core enterprise. Soviet planners created the mono-towns by designating "rational" enterprise locations which they thought contrasted with the "chaotic" and "wasteful" patterns of capitalist economies. The main principle was that of the spatial division of labor, which meant achieving maximum regional specialization in certain types of production within the autarkic national economy. The underlying logic was a mix of military, strategic, political, bureaucratic, and economic rationales.

33. There is no agreement on exactly what constitutes a mono-town, or how many mono-towns there are. The most authoritative study, "Mono-towns and Core Enterprises," was commissioned in 1999–2000 by the Ministry of Economy. It classified 467 cities and 332 smaller towns as mono-towns which have about 900 core enterprises and produced more than

[55] See also the mono-town discussion in Chapter 3 of World Bank (2010d). Russian Economic Report No. 22, World Bank Moscow office, June.

30 percent of Russian industrial output. Nearly two-thirds of the enterprises are in manufacturing (including automotive industry, heavy machinery, etc.) or else resource processing such as fuels, metallurgy, food processing, or timber and pulp industries.

34. There are mono-towns in all regions, ranging from small urban settlements to major urban centers. Many—particularly in extractive industries—are in remote areas with difficult accessibility and harsh climates. Norilsk, the world's largest Arctic city with 230,000 residents, is above the Arctic Circle in central Siberia. It is built around zinc, platinum, and molybdenum mines and smelters, now owned by the NorNickel Corporation. Togliatty, one of the largest mono-towns with more than 700,000 residents, depends almost entirely on a single industrial core enterprise—the VAZ auto works, which employed 106,000 people at the end of 2008. Other large mono-towns (with population more than 300,000) include Novokuznetsk in Kemerovo oblast (coal industry), Cherepovets in Vologda oblast (iron and steel production), and Ivanovo (textile industry). The smaller monotowns include Dalnegorsk (40,000 people), 524 kms from Vladivostok, whose population depends on two enterprises, which produce producing boric acid, colemanite, and other cleaning pastes; and Baikalsk (population 14,600) in Eastern Siberia which was created when its core enterprise, the Baikal Pulp and Paper Mill was built in 1966.

35. The Soviet system was biased toward large enterprises. Size can be efficient if the production process confers economies of scale, but other factors were involved in biasing the Soviet system. Prices were centrally controlled, and the prices of labor and resource inputs were set artificially low, encouraging their overuse in large-scale projects. Moreover, within the bureaucratic system, bigger facilities gave local and departmental officials more resources and leverage so that bureaucratic competition for resources encouraged each ministry and each region to impress others with more and larger industrial development plans. Huge facilities were also prized as symbols, offering proof of Soviet superiority over capitalism. The Soviet system also enlarged pre-Soviet enterprises, often making them into Soviet "giants," and few industrial enterprises were closed if they were inefficient.

36. Soviet industrial enterprises provided social services such as subsidized housing, canteens, shops, hospitals, and recreation facilities for employees, their families, and other residents. Large enterprises were usually able to get more resources, and their services were often better than those in an average municipality. Since all salaries were set within a narrow range, the quality of social services and the availability of consumer goods were often the primary incentive in recruiting and retaining a quality workforce. Large enterprises also built roads and other transportation facilities, treated sewage, and provided heat and electricity. Sizable communities thus relied on the fate of single enterprises.

37. When the Soviet Union fell in 1991, the economic system collapsed with dire consequences for the mono-towns. Most of their core enterprises were privatized in the 1990s, ending up in the hands of large Russian industrial conglomerates that sought to free themselves of social service obligations. In uncompetitive industries, many zombie enterprises survived into 2011 (e.g., Kuznetsov, Radygyin), bringing further decline to their towns. Others managed to thrive — primarily those resource-based activities that found export markets, e.g., fuel, metallurgy, chemicals, forestry and paper products. The government tried to devolve the social services to municipalities, which in the 1990s did not have the resources to finance

them. Often the municipalities either closed the social facilities or postponed their transfer. A few firms continued to fund social facilities after they were transferred to a municipality.

38. The US also experienced serious adjustment problems in its industrial cities when their leading sectors declined. Box 2 provides the illustration of Pittsburgh and explains why its mono-product economy proved less dynamic than that of New York and also how local agencies revived its stricken economy. Pittsburgh was the center of the US steel industry through mid-20th century when new technology, labor costs, shifting markets, and international competition led to an exodus as steel plants shut down and people moved. In 1950, the population of Pittsburgh city was 676,806; by 2000 it had fallen by half to 334,563. However, Pittsburgh had a large presence of banks, corporate headquarters, and universities to offset the deindustrialization. From 1978 to 1998, non-manufacturing employment increased by 289,000, significantly offsetting 134,00 jobs lost in the manufacturing sector; in the process, the economic structure of the city shifted towards services[56]. The city has long had public-private partnerships, led by the Allegheny Conference on Community Development. Successive mayors teamed with businesses to promote investment in downtown real estate, infrastructure, and environmental projects. They tapped into the intellectual vigor of its 25 colleges and universities. Such industries as telecommunications, and robotics grew with the city's pool of skilled labor in research and development. Pittsburgh today ranks among the most livable cities in the US.[57]

39. During the economic expansion of the 2000s, many Russian mono-towns benefited from high prices for resources and semi-finished products, and the commodity price boom stimulated the local economy. Rapid expansion of the construction sector created new demand for metal and wood products. In these circumstances, most of the core enterprises that survived the crash of the Soviet economy in the 1990s did well. Devolution of social assets was stopped or reversed, as the prosperous core enterprises reverted to providing social services for their employees.

[56] Giarattani, Frank, Vicay Singh and Christopher Briem (1999). "Dymanics of Growth and Restructuring in the Pittsburg Metropolitan Region," University of Pittsburg, Pittsburg Center for Social and Urban Research.
[57] Sabina Deitrick, "Multi-layered Economic Restructuring in an Old Industrial Region: The Pittsburgh Transition", *The Great Lakes Geographer*, Vol. 6, Nos. 1 and 2, 1999, pp. 12-28.

Box 2. Pittsburgh: Explaining the Decline and Revival of a US Industrial City

The rapid decline in the 1970s of the US Rust Belt in the Midwest provides startling examples of both urban decline and workable solutions. The Rust Belt was a consequence of the unanticipated fall of competitiveness of traditional heavy industry such as steel. The region lost one-third of its industrial employment between 1969 and 1996. [58]

A decade earlier, the economy of Pittsburgh was far less diversified than that of New York or any other large US city except for Detroit. [59] Primary metal generated almost half of manufacturing employment in Pittsburgh and was produced by a handful of large vertically integrated oligopolistic firms. In contrast, New York's industrial structure relied on many more subsectors and many more firms of smaller average size, which created a competitive environment that led to a high ratio of entrepreneurs to workers. Much of the capital generated in Pittsburgh was cycled through the large metals firms to subsidiaries often in other regions, rather than as in New York where capital was loaned to other *local* firms in start-up or expanding mode. Pittsburgh's metal firms also internalized many more services than New York's smaller firms tended to do. Consequently, the potential agglomeration economies generated for the region's non-steel firms to tap were proportionately less in Pittsburgh than in New York.

In short, Pittsburgh's economy was less dynamic and resilient than that of New York due to its dominance by a single sector and a few large firms. In consequence, the economy of Pittsburgh was far more vulnerable to shocks.

But its economy proved to be flexible. Although Pittsburgh lost 42 percent of its manufacturing jobs (115,000) between 1980 and 1986, half within the steel industry, total employment declined by only 7 percent due largely to offsetting gains in service sector employment. Between 1980 and 1986, employment in services grew by 28 percent, health services expanded by 21 percent to become the major employer with 84,684 jobs, while business services rose 28 percent to 45,699 jobs—finance, insurance and real estate alone grew by 12 percent—and educational services grew by 85 percent to 27,626 jobs. This restructuring of the Pittsburgh economy reflected the success of local business-political partnerships that sought to reduce reliance on steel and to revive the central city through redevelopment projects. Large firms vied with non-profit institutions like universities, foundations and community-based organizations to secure improvements. [60]

40. During the global economic crisis of 2008-09, many mono-towns with narrow economic bases were hit hard. Most core enterprises were in industries hit by the crisis—metallurgy, chemicals, machinery, and wood and paper products, and there are few opportunities for alternative employment. Enterprises that were still providing social services curtailed them, including central heating. The slump also led to crises in municipal finance since personal income tax is the major source of municipal revenues, and receipts suffered due to unemployment, falling wages, and flailing small businesses.

41. The mono-town debate has focused on how government policy can remedy obsolete physical capital, restore crumbling infrastructure, and aid immobile populations. But these deficiencies are the symptoms, not the causes, of the mono-towns' problems. The causes lie

[58] Kahn, M.E. (1999) The Silver Lining of Rust Belt Manufacturing Decline, *Journal of Urban Economics* 46, 360-376.
[59] Chinitz, B. (1961) Contrasts in agglomeration: New York and Pittsburgh, *American Economic Review: Papers and Proceedings* 51, 279-89.
[60] Detrick, S. (1999) The post-industrial revitalization of Pittsburgh: Myths and evidence, *Community Development Journal* 34(1).

in the system of Soviet planning that result in many mono-towns today producing the wrong products in the wrong places, with resultant misallocations of capital and labor. Some resemble once-booming mining towns in the US that became "ghost towns" after the ore was depleted. Once not self-sustaining, they were abandoned, and their inhabitants gradually left.

42. An example of Russian initiatives to close down towns is the 'Northern Restructuring Project'[61] which provided assistance to vulnerable populations (disabled, veterans, or pensioners) in their resettlement. The project differed from earlier resettlement programs in that while the older programs provided newly-constructed housing in certain target areas and channeled migrants to specific locations, this project provided a migration allowance in the form of non-transferable housing certificates that could be used anywhere outside the Northern regions. Program participants were provided with information on housing prices and availability in potential destinations through a website called zhilfund.ru and a housing certificate which allows the purchase of housing in any Russia region outside of the Northern territories. The economic returns—of closing housing and communal infrastructure—were expected to cover project costs within seven years[62].

43. More recently, the Intergovernmental Committee on Mono-towns invited towns to submit comprehensive plans with specific measures to tackle economic and social problems and a medium-term road map for diversification leading to sustainable long-term growth. It approved 27 billion rubles (about $920 million) from the 2010 federal budget for 27 mono-towns (Table 4). Of this amount, 10 billion will come as interbudgetary transfers through the Ministry of Finance, 10 billion as subsidies from the Ministry of Regional Development, 5 billion from the federal Housing and Communal Services Reform Fund, and 2 billion by the Ministry of Economic Development as subsidies for small business.[63]

44. There is a question to what extend the amount allocated will help the underlying problems of the 27 mono-towns, and applying the same level of assistance to all mono-towns would cost about 460 billion rubles, or 5.1 percent of Russia's 2009 annual budget. The 27 towns range in population from 2,000 to 705,000 with a total population of 2.9 million and an average size of 106 thousand. They are heavily concentrated in mining/metallurgy and automobiles, two sectors which are suffering globally from lower demand and which are threatened by longer-term competitive trends, though the latter is showing significant growth in the post-great recession period reflecting the emergence of the Russian middle class with rising purchasing power. The towns have a range of economic problems and prospects for diversification differ according to their human resources, locational parameters, and infrastructure.

[61] This was a project launched in 2000, and partially financed by the World Bank, piloted in Vorkuta, Norilsk, and Susuman region in Magadan oblast.
[62] World Bank (2005), *From Transition to Development: A Country Economic Memorandum for the Russian Federation*. Washington, DC: The World Bank, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region. http://go.worldbank.org/47BLR525K0 p.34.
[63] http://www.rostechnologii.ru/archive/0/detail.php?ID=7106

Table 4. Prioritized Monotowns for Support by the Intergovernmental Committee on Monotowns

Monotown	Population	Industry	Core enterprise
Togliatti	705,000	Automotive	VAZ
Naberezhnye Chelny	506,000	Automotive	KAMAZ
Nizhny Tagil	376,000	Mechanical engineering, Metallurgy	Uralvagonzavod
Prokopyevsk	212,000	Coal industry	Prokopievskugol
Kamensk-Uralski	181,000	Metallurgy	Kamensk-Uralski Metallurgical Plant, Sinar Pipe Plant
Leninsk-Kuznetski	108,000	Coal industry	SUEK-Kuzbass
Sarapul	100,000	Electrical engineering	Sarapul electric generator plant, Sarapul radio plant
Asbestos	71,000	Mining	Uralasbest
Budennovsk	65,000	Chemical	Stavrolen
Pavlovo	61,000	Automotive	Pavlovo Bus
Chusovoi	49,000	Metallurgy	Chusovskoi Metallurgy Plant
Satka	48,000	Metallurgy	Kombinat Magnesit
Zavolzhie	42,000	Automotive, Mechanical engineering	Zavolzhsky Motor Plant
Sokol	41,000	Pulp and paper, Woodworking	Sokol Pulp and Paper, Sukhona Pulp and Paper, Sokol Woodworking
Tutaev	41,000	Automotive	Tutaev motor plant
Gukovo	40,000	Coal mining	Rusugol
Vyatskie Polyany	39,000	Mechanical Engineering	Molot
Dalnegorsk	38,000	Mining	GHK Bor
Semiluki	24,000	Construction materials	Semiluki Refractory Plant
Pikalevo	22,000	Aluminum, Construction materials	Pikalevo Alumina Plant, Pikalevo Cement, Metakhim
Kovdor	19,000	Mining	Kovdorsky GOK
Gavrilov-Yam	18,000	Textiles, Mechanical engineering	Gavrilov-Yam Linen Factory; Gavrilov-Yam Machinery Plant
Karabash	16,000	Copper Metallurgy	Karabashmed
Baikalsk	15,000	Pulp and paper	Baikal Pulp and Paper
Kamskie Polyany	15,000	(none)	
Revda	9,000	Mining	Lovozersky GOK
Svetlogorye	2,000	Mining	Russian Wolfram

Source: Bogorov, Valentin (2010) "Russian Monotowns: A Brief Survey", a background paper for this report, mimeo, 2010.

45. The mono-town problem was created by government's poor planning and controls but it is compounded by the changed local and international environment. But these problems are far from unique to Russia.Many nations have managed the economic restructuring that is necessary when conditions turn against their declining cities. Box 3 describes Canada's experiences in transforming its declining company towns, and Box 4 presents some useful lessons from the United Kingdom. The Russians have used a process similar to Canada's to assess the prospects of its company towns. Two factors important in evaluating monotowns were size and proximity to large cities of more diverse economies or gateways to the global market. For example, Dalnegorsk is a small, remote town (population 38,000; 517 km from Vladivostok, 36 km from the sea) with environmental problems from lead and zinc mining, and its prospect of diversification is poor. But its core enterprise GHK Bor is one of the

world’s largest specialty chemical firms and its production from borosilicate ores is, in fact, competitive in export markets. This illustrates the complexity involved in the assessments and in formulating appropriately tailored policies towards monotowns.

Box 3. Transforming Company Towns in Canada

Canada's company towns and Russia's monotowns have similar location and economic activity profiles. In both countries, primary industry was instrumental in their economic development and shaped their roles in the global economy. [64] In Canada this started in the early days of fur trading and ship building, and communities have been dependent on forestry, fishing, agriculture, mining, oil, and gas. Before the 1880s, Canadian forestry companies built sawmills and small forestry towns, and company-managed communities grew rapidly. Provincial governments undertook some forms of regulation to improve the quality of life for residents, and control was gradually passed from companies to residents.[65] Canadian mining and resource towns began a rapid decline in the 1970's. Mill closures and layoffs resulted from a mix of new technologies, increased mechanization, new resource discoveries, global trade, resource depletion, corporate downsizing, and government cutbacks. [66]

Most Canadian single-industry towns are dependent on primary industry employment but some have relied on tourism, government administration, or defense.[67] As in Russia, many are in remote northern areas. As Canada shifts to a modern, diverse economy, some towns are transitioning to take advantage of opportunities but others are not viable.[68] [69] Canadians have a process which contributes to successful transitions. There has been guidance and assistance from the federal and provincial governments, but decisions about a town's future have rested primarily with the local administration. Transition usually starts with an assessment of a community's strengths, weaknesses, opportunities, and threats.[70] If the community decides it can diversify to revitalize its economy, it creates a strategic plan with broad community involvement. If not, people relocate—as many in Canada have. [71]

Size and geography are significant factors for single-industry towns to be viable. Larger communities in Southern Canada have more promising long-term outlooks than isolated settlements in northern locations where residents have few prospects other than to move. Single industry towns close to cities, where workers are able to commute, are more likely to benefit from the knowledge economy. Size matters because it enables diversification. Over 1986 to 2001, incomes in larger single industry towns rose from $20,600 to $28,500 while those in small single industry towns declined.[72] Diversification and restructuring are necessary for transition but success can be limited by geographic and other factors, and Canadian company towns have to make this determination.[73]

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[64] Hayter, R., & Barnes, T. (2001). Canada's resource economy. *Canadian Geographer*, 45, 36-41.
[65] Williamson, T. and S. Annamraju. 1996. Analysis of the Contribution of the Forest Industry to the Economic Base of Rural Communities in Canada. Ottawa: Industry, Economics and Programs Branch, Canadian Forest Service, Natural Resources Canada. Working Paper No. 43.
[66] Robson, R. 1991. A Short History of Mining Communities. In *Long Distance Commuting in the Mining Industry: Conference Summary*. M. Shrimpton and K. Storey (eds.). Centre for Resource Studies, Queen's University.
[67] Natural Resources Canada. 2005. *Industries and Communities in Transition*. Natural Resources Canada. http://canadaforests.nrcan.gc.ca.
[68] The Rural and Small Town Programme. Mount Allison University, *Survival Skills: The Economic Transitioning of Forestry and other Single Industry Communities*, March 2007.
[69] Sean O'Hagan and Ben Cecil, "A Macro-level Approach to Examining Canada's Primary Industry Towns in a Knowledge Economy", *Journal of Rural and Community Development*, Vol. 2, 2007, pp. 18-43.
[70] Conway, F., P. Corcoran and G. Tilson. 1996. *Towns in Transition: Managing Change in Natural Resource-Dependent Communities Study Guide*. Oregon State University, Extension Service.
[71] The Rural and Small Town Programme. Mount Allison University, *Survival Skills: The Economic Transitioning of Forestry and other Single Industry Communities*, March 2007.
[72] Hamelin, L. (1979). *Canadian Nordicity: It's your North Too*. Montreal: Harvest House.
[73] Canada, Employment and Immigration Advisory Council (1988). *Inventory: Canadian Association of Single Industry Towns (CASIT)*. Saskatoon: Canadian Association of Single Industry Towns.

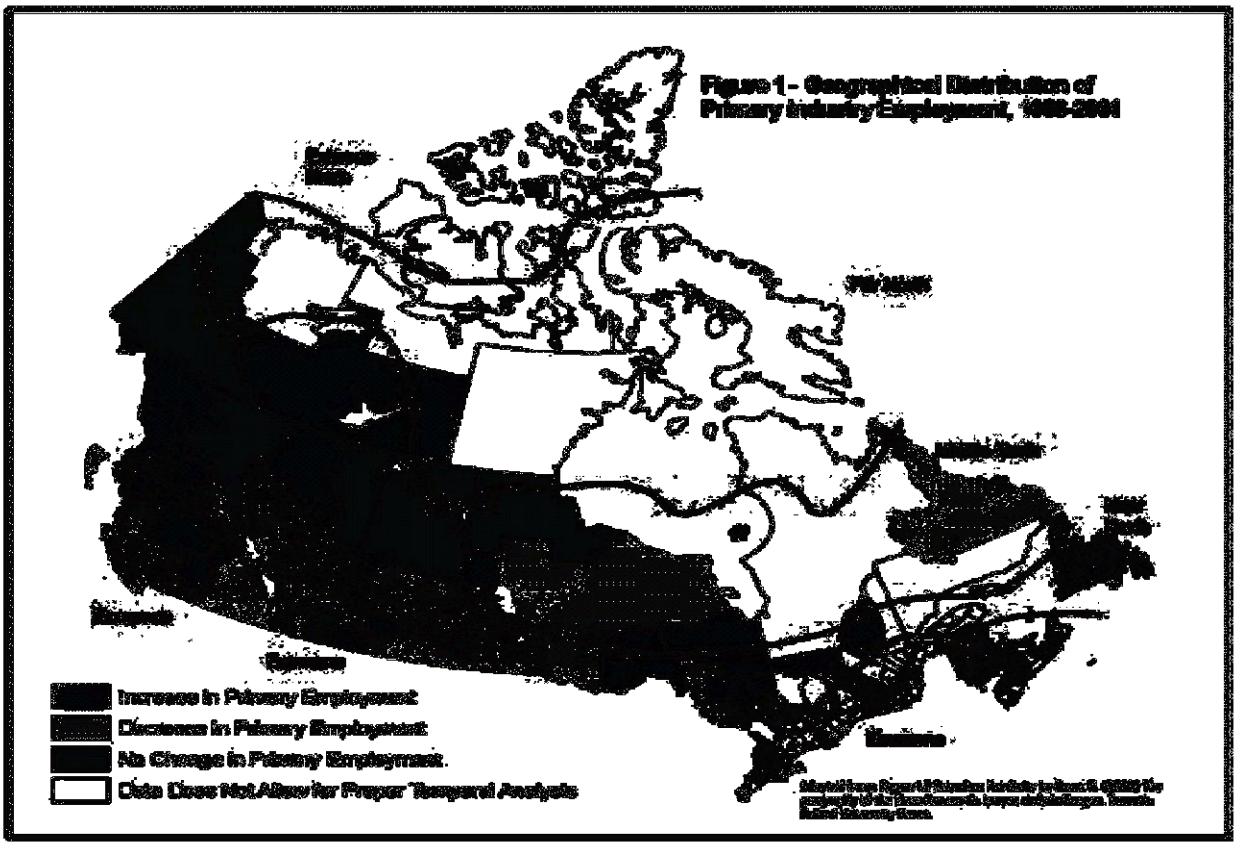


Figure 1 - Geographical Distribution of
Primary Industry Employment, 1986-2001
Increase in Primary Employment
Decrease in Primary Employment
No Change in Primary Employment
Data Does Not Allow for Proper Temporal Analysis

Box 4. Strategies to Manage Declining Towns in the United Kingdom

Industry replacement – Glasgow was once one of the world's major producers of industrial machinery. As manufacturers relocated outside the city center, unemployment, crime, and poverty increased. Glasgow sought to replace its manufacturing sector with a diversified range of services by improving infrastructure, providing education and re-training opportunities, and developing services and tourism. In a decade, 50,000 jobs were created and services provide more than 90 percent of all jobs.

Retraining – The collapse of the UK mining industry destroyed nearly 70,000 jobs in South Yorkshire. One study investigated the effects of such a large-scale funding retraining program. A large retraining program had mixed results. Most participants agreed that the training had been worthwhile, but not all participants found jobs. Nearly half were simply not motivated. Many had already paid off mortgages, providing little financial incentive for returning to work. Others were eligible for state sickness benefits, which they deemed preferable to the less financially lucrative (at least in the short term) jobseeker's allowance. Barriers to finding work were mainly bureaucracy and lack of skills for the available job market. None of the participants started their own business, citing a lack of state support.

Free economic zones – Corby, Northamptonshire, was created in the 1930s as a center for steel production but it suffered when industrial decline devastated the UK steel industry. Corby created an Industrial Development Centre (IDC) to regenerate the region and establish England's first free economic zone. The state guaranteed minimal regulation and offered a ten-year "rate and rent" holiday, as incentives for businesses to relocate. The location in the center of the country helped to attract investment and in five years the zone created nearly 4000 jobs. The zone was successful largely because investors and businesses were confident of the stability of the incentive schemes and the predictability of the UK taxation system.

Business clusters – Birmingham was home to state-owned British Leyland which controlled 36 percent of the British car market in the 1970s and provided most of the jobs in the area. But competition from Japanese and German firms led to an eventual bankruptcy in 2005. Leyland broke up into clusters of component manufacturers, service companies and newly privatized manufacturing businesses. Some formed part of the later Rover Group while other units were sold as Jaguar-Land Rover and Mini. Company rivalry fostered innovation, lowering costs and supporting the viability of the cluster. Today Birmingham is less dependent on manufacturing and has developed as a transportation and logistics hub.

Source: *B. Teuber, A. Titov, N. Zapatero, L. Keopaseuth, "Deindustrialisation in Russia: UK experience of modernising and restructuring single industry cities," UK Trade and Investment.*

The principal solution: remove barriers to mobility

46. A modern economy requires flexible markets for the speedy reallocation of land, labor, and capital to meet changing demands and technologies. Traditional extractive industries tend to involve standardized processes and technologies, so they can be planned and managed in traditional ways. But modern activities, driven by innovation, require continual invention and sustained improvements in processes and products. Innovation, by its very nature, is not amenable to long-range planning, but it can be fostered and encouraged. The primary factor that promotes innovation is human capital. The production of human capital entails creating and maintaining it through education, health, and other basic services; and placing it in an environment that enables it to thrive by combining it with other talented people. The first

requirement is met by providing access to good basic human services everywhere; the second, by enabling people to move to areas of highest opportunity, not least to urban agglomerations, where the returns to education are highest—both for individuals and for society.

47. Mobile labor is an essential part of a modern economy, and it thrives when barriers to its improved application are removed. Box 5 illustrates the role of migration in the historical restructuring of the US economy, and the associated convergence in regional incomes. To facilitate internal migration in Russia, reforms should reduce barriers to mobility so that they do not bias location decisions, either negatively (as at present) or positively (by, say, subsidizing alternative locations):

- ***Labor markets***. Removing rigidities and distortions in the regulations that inhibit layoffs or retrenchments, and enforcing labor contracts to prevent firms from paying wages in arrears or in kind will enhance mobility.

- ***Social services***. Providing *basic* services of a uniform quality throughout the country will facilitate people to make optional location choices. Some were reluctant to move because they would lose their entitlements. Governments should be accountable for serving all citizens at uniform, basic levels across regions.

- ***Administrative obstacles***. Removing discretionary enforcement powers for local officials and the differences in regional and federal registration laws so that people can relocate without a complicated and bureaucratic registration system.

- ***Housing and land markets***. Improving land and rental market institutions to ensure fair value of individuals' real estate holdings and people feel confident about finding satisfactory housing at new locations. More liquid markets and responsive supply of housing, especially in the more dynamic agglomerations, will encourage mobility.

Box 5. Labor migration and regional income convergence in the US 1880-1980

The shifts in US economic geography since 1880 reflect gains in economic efficiency as activity concentrated where it earned the highest return. Table 5 summarizes trends in structural change, and the associated income convergence across the country's four major regions.[74]

The initially low income in the south reflects the legacy of slavery and the subsequent perpetuation of low incomes among rural workers due to negligible rural educational opportunities at that time. A more productive yeoman farming system dominated the Midwest but still higher incomes prevailed in the West Coast resource frontier region and also in the Northeast, which became the industrial hub serving the westward-moving settlement of the country. Table 5 shows that the income of the West region converged on northern incomes from an initially higher level and then maintained a similar level, while the Midwest eventually rose from an initial level four-fifths that of the North as it too industrialized.

The South started out with less than half the income of the North but the rate of closure accelerated from the Second World War, due largely to the expansion of basic education within southern regions that allowed southern farm workers to migrate to the industrial cities of the north-east.[75] The South's adjustment reflects the falling costs of migrating to non-farm employment, which resulted from the re-skilling (schooling) of rural workers that enabled them to migrate to areas of higher economic opportunity. Another factor involved is the increasing mobility of both capital and labor that, nationally, re-located agricultural production to the superior growing conditions of the South region and helped lift agricultural wages in the increasingly prospering South towards northern levels.

Table 5. Structural change and regional convergence in the US 1880-1980

Structural transformation	**1880**	**1900**	**1920**	**1940**	**1960**	**1980**
Farm share in GDP	0.27	0.19	0.13	0.09	0.06	0.02
Agriculture employ share	0.50	0.39	0.26	0.20	0.06	0.03
Farm relative price (1967=1)	1.20	1.23	1.54	…	1.10	1.01
Agriculture relative wage	0.20	0.21	0.22	0.35	0.51	0.69
Regional convergence						
South/North relative wage	0.41	0.44	0.59	0.60	0.78	0.90
Mid West/North relative wage	0.82	0.89	0.90	0.84	0.96	1.00
West/North relative wage	1.28	1.15	1.00	0.99	1.03	1.04

Source: Caselli, F. and Coleman, W.J. (2001) The US structural transformation and regional convergence, *The Journal of Political Economy* 109(3), p. 585

48. Greater mobility would help to reduce the mono-towns' drain on public and economic resources. As the mono-towns' output declines, labor can be employed more productively elsewhere. In the long term, some mono-towns should be abandoned, but others can be re-dedicated to more diversified and more profitable production. Market-based mechanisms would be the best methods to determine each mono-town's future.

49. In the near term, U.S. experience with declining industrial areas, like the Rust Belt, suggests that small towns are more difficult to revive than large ones. Mono-towns in remote inhospitable areas cannot generate revenues to sustain their communities and should be

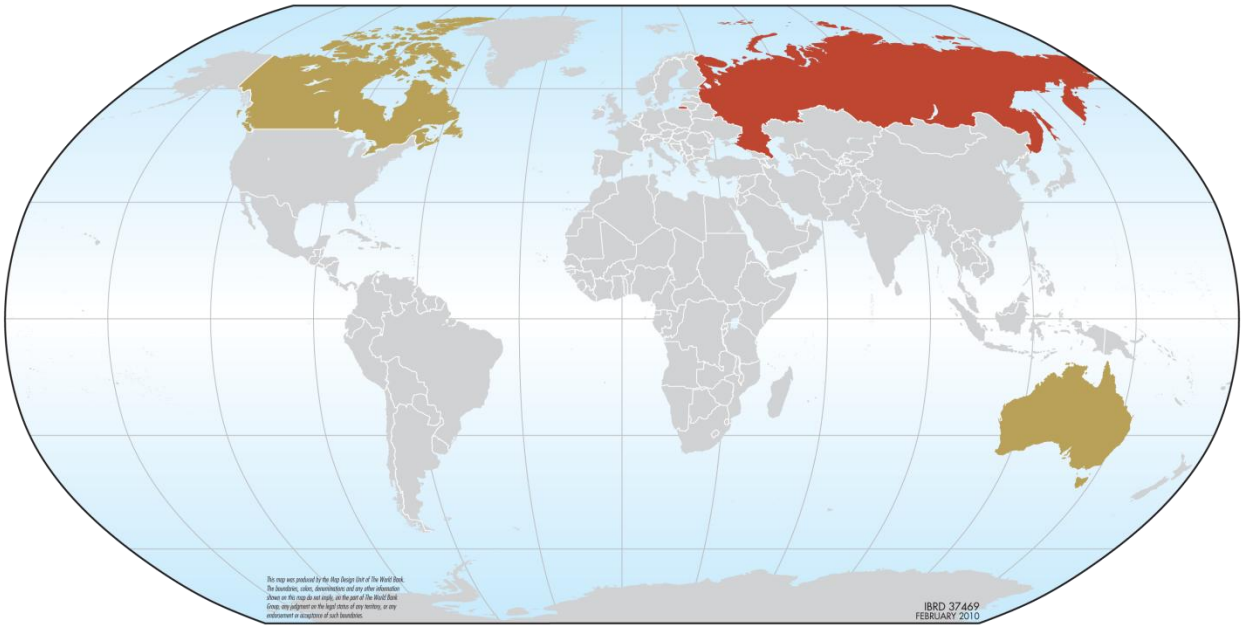
[74] Caselli, F. and Coleman, W.J. (2001) "The US structural transformation and regional convergence," *The Journal of Political Economy* 109(3), 584-616.
[75] Ferrie, J.P. (2003) "Internal Migration" in: Carter, S. et al. (eds.), *Historical Statistics of the United States, Millennial Edition,* New York: Cambridge University Press.

managed to achieve the orderly relocation of their populations to centers of expanding growth opportunities. In the United States, findings based on county- and metropolitan-level responses to the 1977-84 wave of job losses in the US steel and automobile industries suggest that cities experiencing severe employment loss in warmer regions and those close to large metropolitan areas were more successful in achieving growth and had the most successful post-shock recoveries. [76] But most struggling Russian mono-towns appear to be situated in precisely the wrong places: in colder climes distant from large metropolises.

[76] Feyrer, J. Sacerdote, B. and Stern, A.D. (2007) Did the Rust Belt become shiny? A study of cities and counties that lost steel and auto jobs in the 1980s, *Brookings-Wharton Papers on Urban Affairs* 2007, 41-102.

Spotlight 3: At the End of the Cold War

Concentration in a few metropolitan areas has helped Australia and Canada grow from commodity dependence to diversified, service-oriented knowledge economies; Russia is much less agglomerated.



Unlike Russia, Canada and Australia—also spatially vast, sparsely population, resource-rich countries—are high-income economies, with per capita incomes more than 4.5 times higher than that of Russia. How did Canada and Australia utilize their geographies to become advanced, modern, and diversified economies? What can Russia learn from their success?

Settlers and Serfs: Historic Differences in Population Mobility

In Australia the discovery of gold in 1851 led to a spike in immigration that saw the national population nearly triple in a decade, rising from 400,000 in 1850 to 1.14 million in 1860.[77] Nevertheless, the population was small for such a large territory, and the combination of mineral wealth and labor scarcity made it one of the wealthiest regions of the world. In 1870, with a

[77] Australian Bureau of Statistics. Population by sex, states and territories, 31 December, 1788 onwards

population density of roughly 0.2 persons per square kilometer, Australia's estimated GDP per capita was $3,645, well above that of Canada, Russia, or the United States.[78]

Canada also provided prosperity for early immigrants. The colony's wealth of fur, timber, and wheat secured the livelihoods of many of its inhabitants, who numbered just 2.4 million in 1851.[79] The completion of a transcontinental railway in 1885 forged a prosperous domestic market that allowed Canada to exploit resources with greater ease and on a bigger scale.

However, whereas Australia and Canada experienced major economic and demographic transformations from the mid 19th century due to the discovery of natural resources and the influx of European settlers, Russia was by then an established empire, whose long and storied history had concentrated political power in the hands of a monarch and economic power in the hands of a small class of aristocratic landowners. Serfdom, the system of indentured labor that bound many peasants to the land that they farmed, was abolished only in 1861.

Throughout the 20th century, the newly arrived populations in Canada and Australia were free to move to realize their economic potential. They concentrated in large cities located in accessible border or coastal regions, and their economies diversified gradually from being purely commodity-based to high-tech and service-oriented. Further, after experimenting with moderate degrees of autarky, their governments opted for integration into global markets.

Agglomeration and Accessibility: The Benefits of Concentration

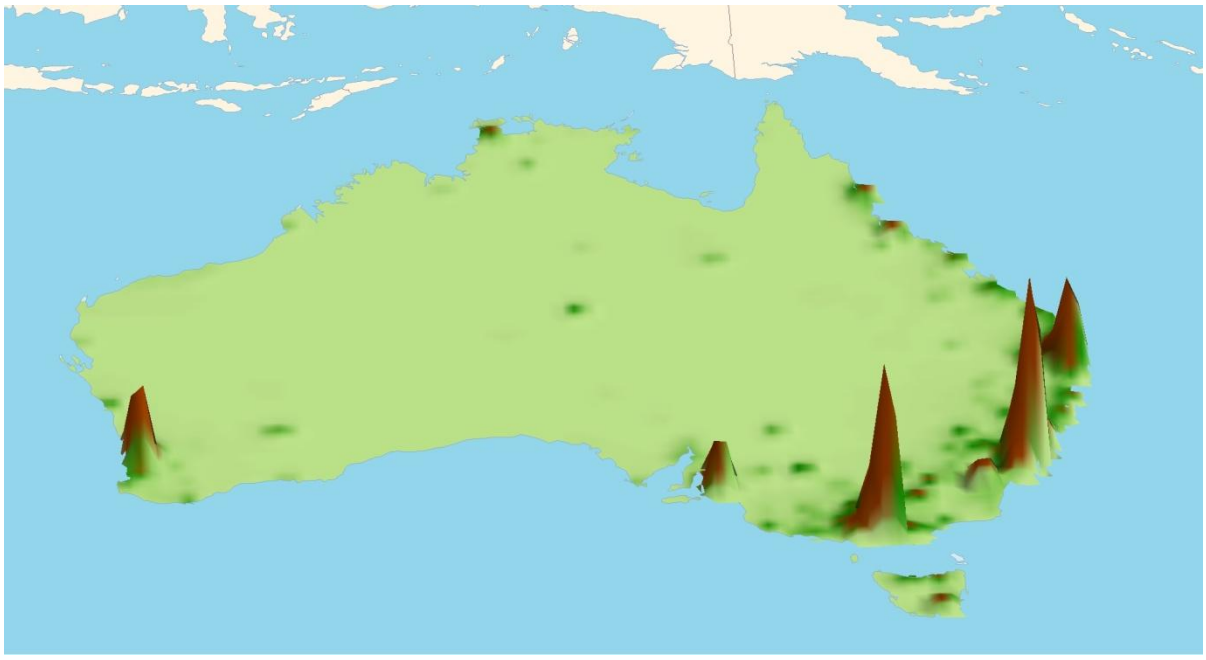
The settlement hierarchies in both Canada and Australia have evolved, like that of the United States, to confer agglomeration and localization economies. In Russia, the settlement hierarchy is distorted away from high and middle order cities. This skewed spatial configuration dissipates potential agglomeration economies and leaves capital and labor over-reliant on single-product firms in high-cost places with weak economic prospects. As Chapter 3 explains, the cost of living in many of the remote settlements is up to four times as high as elsewhere in Russia, creating a dependence on the central government for food, fuel, and transportation subsidies.[80]

Despite their histories of commodity-driven development, Australia and Canada have evolved into urbanized countries, with respectively, 88.2 percent and 80.1 percent of their populations living in cities. The urban percentage of the population has risen by 1 percent per five-year-period in Australia and Canada since 1990. Russia, in contrast, has experienced *decreasing* urban shares, which fell by 0.4 percent over each five-year-interval since 1990. Moreover, at 73.0 percent, Russia was less urbanized to start with. The urban populations of Australia and Canada are also concentrated in the largest cities. The five largest cities in Australia (Sydney, Melbourne, Brisbane, Perth and Adelaide) and in Canada (Toronto, Montreal, Vancouver, Ottawa, and Calgary) have 67.9 percent and 50.5 percent, respectively, of their total urban populations (Map 2 and Map 3). In contrast, the five largest cities in Russia (Moscow, St Petersburg, Novosibirsk, Yekaterinburg, and Nizhny Novgorod) account for just 18.7 percent of its urban population. Furthermore, none of the largest cities in Australia or Canada are

[78] Maddison, A. 2002. *The World Economy: A Millennium Perspective*, Paris: OECD.
[79] K.G. Basavarajappa and Bali Ram, *Statistics Canada.* Population of Canada, by province, census dates, 1851 to 1976
[80] Hill, F. (2004) *Siberia: Russia's economic heartland and daunting dilemma*, Current History, October.

experiencing declining population, whereas at least eleven out of Russia's top sixteen cities, and three out of the top 5, experienced *falling* populations in every five-year period since 1990.[81] However, the most recent, preliminary 2010 census data suggest the reversal of this trend with three largest cities—Moscow, St. Petersburg, and Novosibirsk—showing significant gains in population.[82]

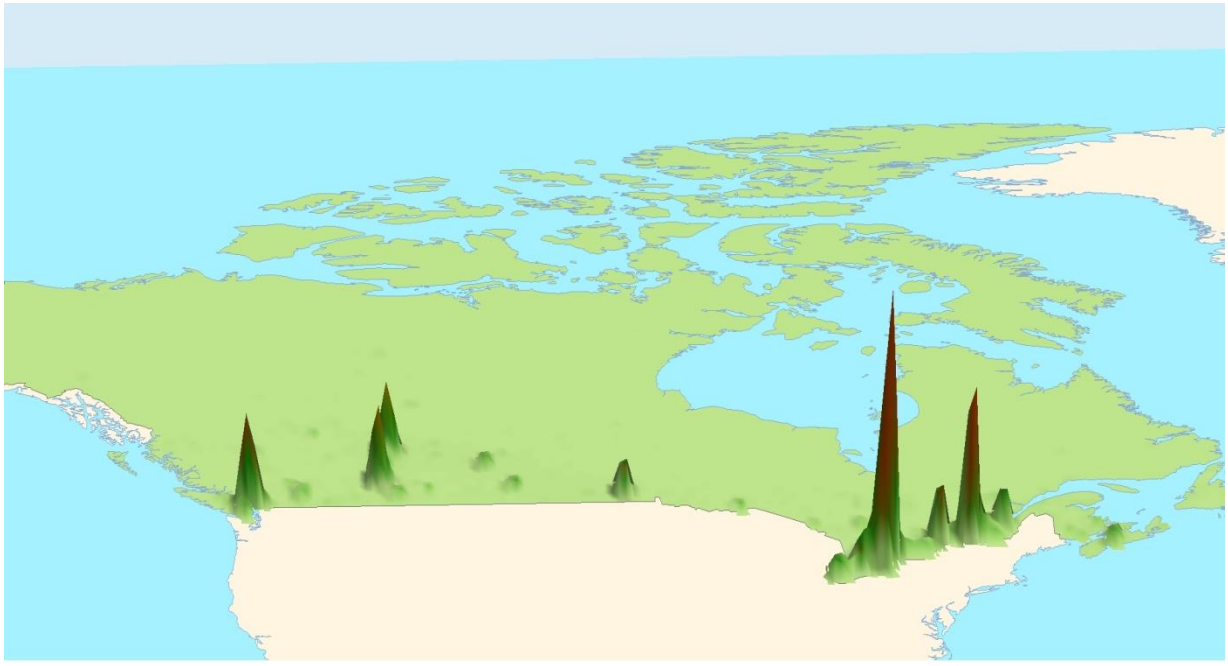
Map 2. Australians have conglomerated in a few cities



Globally, the most dynamic urban centers are not only large, but also well-connected to domestic and international markets. Location matters even more in geographically vast countries like Australia, Canada, and Russia, where distances between cities can be thousands of kilometers and journeys by ground transportation may take days to complete. Cities in both Australia and Canada are efficiently located to maximize market access and connectivity. All five of Australia's largest cities are located on a coast, four along the densely populated southeastern coast and one (Perth) on the west coast. Out of Canada's six largest cities, five are located within one or two hundred kilometers of the northern US border. The exception is Edmonton, a hydrocarbon center, situated farther north among the oil reserves.

[81] UNDP, *World Urbanization Prospects: The 2009 Revision Population Database*.
[82] *http://www.perepis-2010.ru/results_of_the_census/results-inform.php*

Map 3. Canadians are concentrated along the US border in a few cities



Russia's largest cities are both more dispersed and more remote than either Canada's or Australia's (Map 4). Only two, St. Petersburg and Rostov-na-Donu, are near a coastline or international border, and only 13 percent of Russia's population lives within 75 kilometers of an international border, a surprisingly small percentage given the length of Russia's land border and the potential access to a wide array of diverse neighboring international markets. In contrast, some 61.8 percent of Canada's population lives within 75 kilometers of the US border, and 87.5 percent of Australia's entire population lives within 75 kilometers of a coastline.

There is no equivalent in Russia of a highly urbanized sub-national unit like Australia's New South Wales or Canada's Ontario that contains several sizable cities (i.e. of population above 250,000). Among Russia's 89 regions, not a single one has more than two cities with populations over 250,000. In the Moscow oblast, the next largest city after Moscow is Podolsk with 181,000 inhabitants. In contrast, six of Australia's ten largest metropolitan areas are located in the state of New South Wales. Eight of Canada's sixteen largest metropolitan areas are located in the province of Ontario, which is within one day's trucking distance of (i) two-thirds of the Canadian consumer market, (ii) half of the US consumer market, (iii) three-quarters of Canadian manufacturing firms, and (iv) half of US manufacturing firms.[83]

[83] Courchene, T.J. (2001) "Ontario as a North American region-state, Toronto as a global city-region: Responding to the NAFTA challenge", In: Scott, A.J. (ed.) *Global City regions: Trends, Theory and Policy*, Oxford: Oxford University Press, pp. 158-90.

Map 4. Russians are much more dispersed

Economic Diversification and Global Integration

The economic geographies of Australia and Canada have evolved to facilitate structural change towards a productive service economy. The economies of Australia and Canada are diversified and oriented toward high value-added services, offering greater potential for innovation and economic development than reliance on commodities would afford. Russia generates over two-thirds of its exports from hydrocarbons and only 17.7 percent from manufactures, much of it weapons. Canada generates more than half of exports from manufactures. But exports can be less diversified than production: More than three-quarters of Australian and Canadian workers are employed in the services sector, compared with 61.8 percent of the Russian workforce.

Russians worry that its natural resources condemn it to remain a commodity-driven economy, with an unhealthy dependence on hydrocarbon exports.[84] Although Australian commodities still dominate the country's exports, specialized functions within mining and sheep rearing are now spatially unbundled, taking place in different locations. In fact, as Chapter 3 illustrates, much commodity-related activity is undertaken within the largest cities like Perth in Western Australia, rather than in the principal mining areas.[85] Perth is Australia's fourth largest urban area and a regional hub for Western Australia. It is also home to the headquarters and R&D clusters of the Australian mining industry. In conjunction with this spatial unbundling of the mining industry, Australia has diversified economically to become a world leader in such high-tech products and services as mining trucks, exploration tools, and mining software. This concentration of higher-

[84] Gaddy, C.G. and Ickes, B. W. (2010), "Russia after the global financial crisis", *Eurasian Geography and Economics* vol. 51.
[85] Eggert, R.G. (2002) "Mining and economic sustainability: National economies and local communities", MMSD Paper 19, London: IIED.

order activity in larger settlements has helped to increase the longevity of the region's mines and has elevated international competitiveness.

Through the second half of the 20th century, the Canadian economy became increasingly reoriented from its original domestic-focused east-west axis to an internationally-oriented north-south axis, with a growing orientation to US markets. In the 1970s, for instance, Ontario's domestic (interprovincial) exports equaled its overseas exports. By the 1990s, the latter had become three times larger than the former.[86] This opening-up of the Canadian economy to larger North American markets has led to increases in the long-run growth of labor productivity (by 0.4 percent) and GDP per capita (by 0.6 percent),[87] largely due to the pressures on Canadian firms to stay competitive not only with domestic firms, but also with American and Mexican manufacturers.

The largest cities facilitated integration into the global economy. Toronto surpassed Montreal as a growth motor in the latter half of the 20th century and the city spearheaded Canada's NAFTA-driven economic re-orientation by sustaining support services capable of competing in international markets. By the 1990s, Ontario had 37 percent of Canada's population and generated 41 percent of its GDP, but accounted for 90 percent of Canada's public accounting firms, main advertising agencies, foreign banks and machine tool manufactures; 80 percent of the top law firms; 50 percent of the design industry and chemical production; and 40 percent of aerospace sales.[88] Greater Toronto, with 4.5 million people and 40 percent of Ontario's population, accounts for much of this specialized activity.

The largest cities also receive the stimuli from the international economy to drive rising productivity, which they then transmit throughout the national settlement hierarchy. After almost four decades of subsidies to lagging peripheral regions, during which national productivity growth decelerated, Canada launched economic reforms in 1995 to bolster Toronto's international competitiveness and cut subsidies to the periphery. The reforms pressured other Canadian cities and their provinces to follow suit, helping to strengthen national productivity, and accelerating out-migration from lagging regions. In contrast, the spatial structure that Russia inherited from decades of central planning dissipates agglomeration economies and traps considerable capital and labor in areas that have low opportunity and high maintenance costs. This adds to the effects exercised by the dependence on oil rents, reducing the capacity of the economy to respond flexibly to the changes in comparative advantage.

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[86] Courchene, T.J. (2001) "Ontario as a North American region-state, Toronto as a global city-region: Responding to the NAFTA challenge," In: Scott, A.J. (ed.) *Global City regions: Trends, Theory and Policy*, Oxford: oxford University Press.

[87] Coulombe, S. (2003) "International trade, interprovincial trade and Canadian provincial growth," *Industry Canada Working Papers* 40, Ottawa: Industry Canada, p. 25.

[88] Courchene, T.J. (2001) "Ontario as a North American region-state, Toronto as a global city-region: Responding to the NAFTA challenge," In: Scott, A.J. (ed.) *Global City regions: Trends, Theory and Policy*, Oxford: oxford University Press. p. 166.

Chapter 4. A Diversified Russia

An innovative Russia will be spatially more concentrated

50. Soviet planners promoted large-scale development projects, usually based on natural resources, in northern Russia, the Ural Mountains, Siberia, and the Far East. Because of harsh environmental conditions and uneven growth, people, cities, and economic resources were concentrated in the central and southern parts of European Russia at the turn of the 20th century. In the 1960s and 1970s a doctrine of territorial-industrial complexes became one of the principles of the planning system, achieved by adding resource processing at the point of extraction. Large production complexes were constructed in areas with difficult geographic accessibility, a strategy facilitated by artificially low transport costs.

The problem: Spatial dispersion

51. Today, Russia's population and economic activity are more dispersed across the settlement hierarchy compared with large resource-rich high-income countries. Two-thirds of Australia's population is in Sydney, Melbourne, and Brisbane, and more than half of Canada's is in Toronto, Montreal, and Vancouver. Russia's three largest metropolitan areas—Moscow, St. Petersburg and Nizhniy Novgorod—comprise only 12 percent of its population. Excluding Moscow, only 10 cities in Russia have more than a million people, and they account for less than 20 percent of the population. Even in the more densely populated European Russia, the average distance between cities larger than 250,000 people is *twice* that in Western Europe.[89] The distribution of Russian cities impedes the capture of the agglomeration economies that spearhead the diversification into productive service activities.[90]

52. Russia's population is so widely distributed that its dispersion is considerably greater than in any mature market economy. The coefficient of variation of population measures the uniformity of population density among regions, with a lower value indicating more uniformity. If all regions had the same population density, the coefficient would be 1.0. For Russia's 11 macro-regions, the coefficient is 2.5, but for Canada's 11 provinces it is 14.8. A second measure of variation in population distribution is the max-min ratio of population density, which for Canada's provinces in 2004, was 1313 and for Russia's regions was 195.[91] A third indicator of population concentration is simple population density: Canada's remote Nunavit Territory has fewer than 1.5 persons per 100 square kilometers whereas Russia's Sakha-Yakutia has 30.5 people per 100 square kilometers. If Alaska were populated at the

[89] Grigory Iofee and Tatyana Nefedova, "Environs of Russian Cities," University of Birmingham, Russia regional Research Group Working Paper No. 14, 1998.
[90] Russian rail transport system is amongst the most effective in terms of unit costs and over 70 percent of cargo transportation is by rail. However, under-developed surface and air transport systems exacerbate its physical distance.
[91] Treivish, Andrei. "A New Russian Heartland: The Demographic and Economic Dimension" *Eurasian Geography and Economics*, 2005, Vol. 46, No. 2, pp. 123-156

same densities as similar Russian regions, its population would be nine million, 14 times its actual size of 650,000 residents.[92] And if East Siberia and the Russian Far East had Alaska's density, they would have barely 1 million residents, and not the 15 million they have now.

53. Canada and Australia now have similar spatial structures that facilitate agglomeration economies and service-oriented economic structures (Table 6). This spatial structure concentrates the economic stimulus from commodity exports in areas of high economic opportunity and high amenity within narrow corridors along each country's periphery: the northern U.S. border for Canada and around the coast for Australia. The Russian spatial structure constrains structural change.

Table 6. Change in Employment Structure: Australia, Canada, and Russia 1890-2007

	Australia			Canada			Russia		
Year	Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
1890	25.5	34.9	39.6	49.5	26.3	24.2	59.1	16.2	23.9
1910	23.3	36.1	40.5	39.5	27.1	33.4	n.a.	n.a.	n.a.
1930	22.3	39.9	42.8	32.6	16.5	50.9	86.7	6.1	5.4
1960	12.5	40.3	39.8	14.2	30.2	55.6	45.8	35.3	27.8
1980	6.5	31.0	62.4	5.4	28.5	66.0	16.0	44.0	40.0
1990	5.5	25.0	69.5	2.9	24.4	71.4	13.9	40.2	45.6
2000	5.0	21.8	73.3	2.3	22.5	74.1	14.5	28.4	57.1
2007	3.4	21.2	75.1	2.5	21.6	75.9	9.0	29.2	61.8

Source: World Bank (2009 World Development Report 2009), 1980-2007. For Canada, 1890-1960: O.J. Firestone (1958), Canada's Economic Development, London; and S.G. Peitchinis (1970), Canadian Labour Economics, Toronto. For Russia/USSR, 1890-1960: B.R. Mitchell (1992), International Historical Statistics - Europe 1750-1988, New York: Stockton Press. For Australia: Maddison, A. (2008) The West and the Rest in the World Economy, Australian Treasury (2001) Australia's Century Since Federation, Canberra.

Notes: For Canada, 1890-1960, data are for the first year in each decade (1891, 1911, etc.) and refer to the primary, secondary and tertiary sector. For Russia/USSR, data are for 1897, 1926 and 1959. The sum of data does not add up to 100 per cent because of a residual other category. For Australia, Maddison gives employment in 1870 as agriculture 30.0; industry 38.0 and services as 32.0; compared with 1950 14.6; 36.5 and 48.9 respectively. And for Australia the data for year 1910 above were drawn from actual data of year 1914.

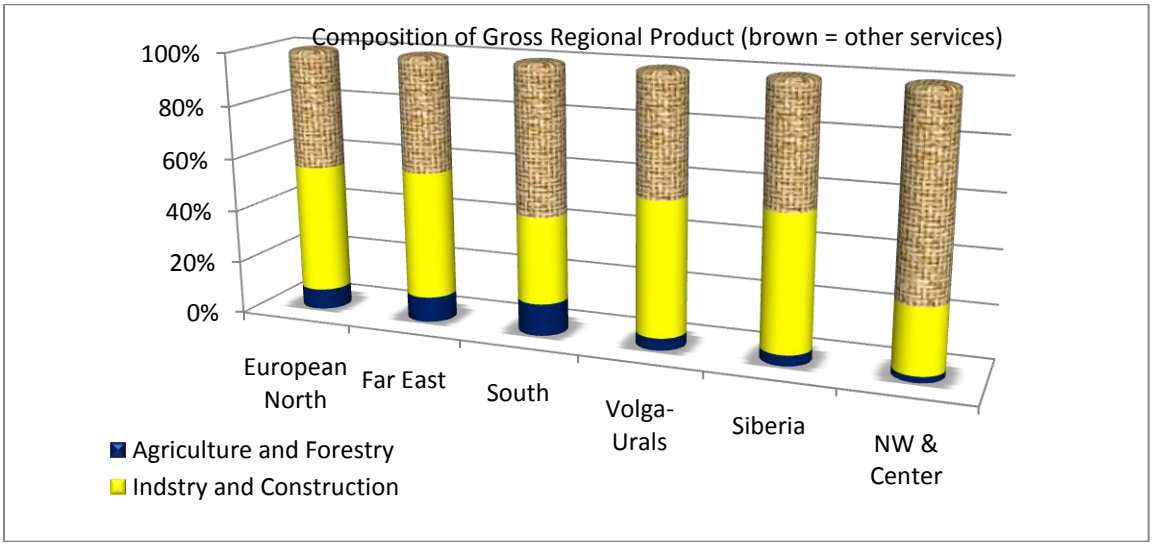
54. The Russian government may still be continuing efforts to maintain the country's inefficient spread of economic production, rather than permit it to become more concentrated in Moscow, St. Petersburg, and Russia's other largest cities. Many places that are distant from European Russia have costs of living up to four times higher than elsewhere in the Federation, and they rely on government subsidies for food, fuel, and transport. In 1998, the costs to support people in harsh, remote regions were estimated at 2–3 percent of GDP, but this may not capture the efficiency costs of making the entire workforce immobile.[93] There is less support for these remote settlements than in the Soviet era, but the support continues. In June 2006, President Putin announced a program to attract ethnic Russians from abroad to repopulate Siberia and the East. A letter in the *International Herald Tribune* in May 2010 appealed for donations to raise the incentives from $4,000, set by the Putin government, to $25,000 per person, for Russians to move to Siberia. Such policies typically cite a statistic that "fewer than 5 percent of Russia's people live in the region, which occupies 36 percent of

[92] Gaddy, Clifford G. (2007), 'An Impossible Trinity?: Resources, Space and People', *Foreign Service Journal*, p. 37.
[93] Hill, Fiona (2004), 'Siberia: Russia's Economic Heartland and Daunting Dilemma', *Current History,* October 2004, p.328.

the country's territory,"[94] or highlight security concerns that "it would stabilize Siberia and NATO's eastern border."[95]

55. Siberia generates wealth from its natural resources but government policies to populate it with people and industries have been a long-term economic burden. Figure 2 shows the sectoral composition across Russian macro-regions. Services expectedly dominated Central Russia, but the Volga-Urals, Siberia, North, and Far East have similar shares of services and industry, despite the comparative advantages of the former pair in natural resource extraction and processing. There is no inherent reason for a place of resource wealth to be heavily populated or have settlements or economic activity beyond what is needed to extract the natural resource wealth.

Figure 2. Sectoral composition does not reflect regional comparative endowments



Source: reproduced from Figure 12 in Treivish, Andrei I. (2005), 'A New Russian Heartland: the demographic and economic dimension', *Eurasian Geography and Economics*, 46 (2), pp. 123-155.

56. Rather than locating towns at mine sites, which have finite reserves whose extraction depends on prices and may have a short life-span, Australian mining companies unbundle mine functions and locate them across the settlement hierarchy. Box 6 shows that the economic multiplier from mining is distributed across the mining region's urban settlements, sensitive to basic infrastructure, access to production inputs, and localization economies. This confers the strongest economic stimulus from mining production on the largest cities, further compounding their scale advantage. Australia locates only essential activity at the mineral deposit site so that the workforce may be transported to the mine to work on weekly shifts but live in a larger town with superior social amenities, but some distance away. Higher order services such as finance and mine inputs are supplied from major cities with diverse economies. If a mine becomes uneconomic, it is relatively simple to close it down

[94] Gaddy, Clifford G. (2007), 'An Impossible Trinity?: Resources, Space and People', *Foreign Service Journal*, p.36.
[95] Slucis, Aivars "Yalta to Siberia" in the May 5 2010 issue of the *International Herald Tribune*, p. 9.

and, perhaps, to shift production to another more competitive deposit in the same mining area, also serviced from the larger town and central city.

Box 6. Australia: Mining linkages concentrate the economic stimulus on large cities

Leonora is a small mining settlement (population 1500) some 100 kilometers from the larger town of Kalgoorlie (population 30,000). Still more distant from Kalgoorlie is the state capital of Perth, some 600 kilometers away, the region's dominant agglomeration and Australia's fourth largest city with 1.5 million people. Perth hosts many firms that produce inputs as well as services for Western Australia's numerous mines. The multiplier generated by the Leonora mine is strongest in Perth. It is minimal in Leonora, which remains too small to supply many of the mine's needs and therefore experiences a high rate of leakage of the mine's direct expenditure to the two larger and more diversified settlements.[96]

Most of the miners reside in Kalgoorlie and commute to the mine, an emerging global trend among new mines in isolated areas. In effect, much of the production linkages accrue to Perth along with the fiscal linkage, whereas Kalgoorlie attracts low order final demand linkage from Leonora. In this way, more than a century-and-a-half of commodity-driven economic development has concentrated 63 percent of the Australian population, some 13.4 million people, into its five largest cities (Sydney, Melbourne, Brisbane, Perth and Adelaide) rather than the rural areas where the commodities are produced.

57. Russia's efforts to spread out population are contrary to the natural tendency of industry and services to concentrate. Despite a persisting bias in national policies to distribute population across the country, there are indications that the production and population are rebalancing itself toward centers of growth.[97] With the decline of Soviet-era subsidies and artificial incentives, there was large out-migration during the first half of 1990s: for example, the Komi Republic (west of the Urals) lost one-fifth of its population, and Chukotka (at the far north-eastern tip of Russia) lost fully two-thirds[98]. Immigration to the large regional capitals of Yekaterinburg, Krasnoyarsk, Samara, Novosibirsk increased in small numbers between 2003 and 2007.[99] These moves are consistent with market-driven adjustments that suggest Russia's secondary cities will grow as markets become more effective but institutional obstacles of mobility have to fall more rapidly.

58. These spatial misallocations in Russia's economy are important precisely because Russia is so big. Subsidies and incentives to specific areas of a smaller country like Japan or France would do less damage simply because there is less 'room for error': markets can compensate for geographic distortions over shorter distances[100]. But in Russia cities can be days or weeks away from each other by land transportation. Placing an industry in the wrong part of the country—where it is too far from markets—is far more problematic in such a large country.

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[96] Eggert, R.G. (2002) 'Mining and economic sustainability: National economies and local communities', *Mining Minerals and Sustainable Development Paper 19*, London: International Institute for Environment and Development.
[97] J. David Brown, Marianne Fay, John Felkner, Somik V. Lall, and Hyoung Gun Wang, "Profiting from Proximity: Rising Economic Densities in the Russian Federation " the World Bank Policy Research Working Paper Series
[98] Treivish, Andrei I. (2005), 'A New Russian Heartland: the demographic and economic dimension', *Eurasian Geography and Economics*, 46 (2), p.144.
[99] Figures from Rosstat, in Baburin, Vyacheslav (2009), 'Accelerated Economic Growth in Major Urban Agglomerations in Russia's Non-Capital Regions', a background paper for this report, mimeo.pp. 3, 8.
[100] Gaddy, Clifford G. (2007), 'An Impossible Trinity?: Resources, Space and People', p. 35.

The debate: Is Moscow too big?

59. For some years now, Moscow has been the world's priciest city, but its income per person and spatial efficiency are only a fraction of the world's richest metropolises. Table 7 shows the income per capita and gross product for Moscow, St. Petersburg, and selected global wealthy cities. Tokyo has the largest total gross product and the highest economic density of $88 million of gross product per sq km, with a per capita GDP of $33,800. New York ranks second in gross product, with a density of $79 million per square kilometers and a per capita GDP of $60,600. Moscow lags behind both with gross product of only $20 million per square kilometer and a per capita GDP of $20,000.

Table 7. Spatial efficiency and income per person in major cities

Agglomeration	Rank by total GDP of the agglomeration	GDP of the agglomeration ($ billion)	Population (million)	Income per person Per capita GDP (2005, '000 USD)	Economic density (million USD per km^2)
Tokyo	1	1479	36	33.8	87.7
New York	2	1406	19	60.6	78.6
Paris	5	565	8.6	46.8	38.2
London	6	564	9.9	53.2	39.6
Moscow	15	321	10.5	19.5	19.9
St. Petersburg	71	91	4.5	11.5	2.60

Source: Background note by Mikhail Dmitriev of Moscow's Center of Strategic Research based on the PriceWaterhouse Cooper Ltd., the *UK Economic Outlook* (2009).

Note: Los Angeles and Chicago ranked 3rd and 4th in the GDP of their agglomerations.

60. Moscow is the largest city in Europe and could become the hub for Eurasia and Eastern Europe, but many Russians feel it is too big, too congested, and with too much influence, claiming an undue share of public resources. Including its functional metropolitan area—such as the core city of 10.5 million[101] plus labor pool defined on the basis of commuting—the Moscow agglomeration may contain 13.6 million or more[102]. Residents complain of congestion, traffic, pollution, immigrant influx, crime, and the overcrowded public transportation. These problems are not unique to Moscow. Box 7 describes the problems in St. Petersburg, much the same as those that characterize Moscow and other Russian cities.

61. Moscow's economy does not match the diverse sectoral composition in other world cities. This is not surprising given that the city had (over the past century) less than 20 years of urban growth under the conditions of a market economy and many remaining barriers to agglomerations, compared to centuries of market-based growth of many leading cities in the world. But for general welfare and quality of life, any large city needs a growing service sector. Moscow also needs higher *quality* and innovative services that concentrate control and coordinating economic functions in metropolitan areas. New York, London, Paris, and

[101] Moscow City Government, http://www.mos.ru/wps/portal/WebContent?rubricId=15408

[102] See, for example, http://www.citypopulation.de/world/Agglomerations.html The European Spatial Planning Observation Network (ESPON) 'Study on Urban Functions' uses a more comprehensive system but it did not include Moscow: http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_StudiesScientificSupportProjects/urbanfunctions.html

Tokyo have passed on lower-value economic activity, such as manufacturing and lower-end services, to other cities in their countries, while deepening their specialization in core competencies, such as financial services, advertising, design, and legal services. Moscow has the most diverse city economy in Russia, but its service sector is dominated by lower end services (retail, wholesale, communal services). The scope of high-end financial, banking, insurance, and real estate services are still limited despite the shrinking manufacturing share in in the metropolis' GDP and a corresponding rise in tertiary sector.

Box 7. Urban Problems in St. Petersburg

St. Petersburg, with a population of over 4 million, is a center for education and scientific research, transportation, trade and industry, with its recent growth led by telecommunication services, retail trade, and transportation services. It has a well-educated labor force with low unemployment (2.4 percent in 2006), and there are shortages of skilled labor.

St. Petersburg typifies the urban problems of many Russian cities. The waiting list for municipal housing is long—272,400 families. There are 120,000 shared apartments and the housing stock has been poorly maintained. The increasing motorization of the city resulting from rising incomes has created enormous traffic and environmental problems. The city administration has responded by expanding the road network, which is still inadequate, at the expense of the public transport system. There is a shortage of rolling stock for public transport and an overloaded metro. There are insufficient free-flowing highways and ring roads, poor road layout around train stations and also shortage of bridges and metro stations.

"In-fill" housing developments are replacing public spaces, public gardens, and recreation areas and affecting the appearance of the historic city center which accounts for only six percent of the city area. Meanwhile, the industrial zones occupy almost 40 percent of the urban area, many adjacent to the central core and although industrial production is declining or has been terminated, the land is being converted to alternative uses at a slow pace.

Dated technology and weak engineering systems resulted in inefficient and unreliable infrastructure. There are large losses of energy and water resources. There is a crisis in water supply and sewage disposal, and inefficient use of drinking water exacerbates the problem. City residents put up with crowded courtyards where playgrounds and lawns are used as parking lots. These urban ills create numerous conflicts which cannot be resolved because there is no clear legal mechanism to handle them.

Source: Based on Nina Oding (2009), "St. Petersburg Development," background paper for this report.

62. Moscow's high value-added services are a small fraction of the economy. The employment share of lower-end retailing and catering rose from 12.4 to 20.5 percent between 1991 and 2005. Construction also expanded substantially (from 9.3 to 14.0 percent). Although finance, insurance, and real estate in Russia grew from 5.7 to 8.9 percent, the Global Competitiveness Report 2009-10 shows that Russia is lagging in financial market sophistication compared to many developing economies. Worryingly, the share of total employment by science and scientific services in Moscow was halved from 15.8 percent to 7.0 percent during 1991-2005.[103]

63. Moscow has to be better managed for Russia to diversify into high-order service activity. Spatially concentrated production and populations are necessary for diversification and

[103] Voznyuk, Ilya (2010), 'Agglomerations in Russia', a background paper for this report, mimeo, pp. 7-10.

innovation, and better-managed cities tend to grow larger as they attract investment and residents. The most innovative economies around the world are associated with large urban agglomerations. Just as prudently managed oil extraction can help a country grow, good urbanization policies will help to extract ideas and innovations from agglomerations and turn them into wealth. Russia's desired economic transformation can take place only with a simultaneous spatial transformation to capture the external economies of scale that urban agglomerations generated. The announced priorities to transform Moscow into an international financial center and the efforts of the new City administration to reduce congestion and other urban challenges are hence important new initiatives.

64. Russia's other urban settlements can do much for diversification. The Soviet Union transformed rapidly from a mostly agrarian society with over half of its population rural in 1959 to an industrial society with three-quarters of its population urban in 1989. It went from 50 large cities (populations more than 100,000) with 24 million people in 1939 to 87 large cities with 37 million in 1959 to 165 large cities with 66 million in 1997. Despite the abundance of cities, its two largest cities, Moscow and St. Petersburg, according to comparative benchmarks, are not excessively large but perhaps more important is that Russia is missing a large swath of sizable cities (populations above 1 million).[104]

65. Moscow, now highly congested, is not delivering substantial agglomeration benefits. It incurs the costs of size-related concentration of economic activity without the benefits seen in London, Tokyo, Paris, Hong Kong, or New York. Greater Toronto shows how metropolises boost productivity throughout the national economy (Box 8).

[104] The World Bank (2005) *From Transition to Development* Report No. 32308-RU, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region, pp. 18-19

Box 8. How Greater Toronto boosts Canadian productivity

The post-war boom decades established social entitlements that Canadian provincial governments found difficult to sustain through the 1980s and early-1990s, eventually forcing radical economic adjustments to stabilize the public finances and restore more buoyant economic growth. Radical economic reforms were spearheaded in 1995 by a new provincial government in Ontario. The reforms boosted trade and curbed public expenditure, which combined with a real depreciation of the Canadian exchange rate to spur a vigorous economic recovery. The reforms also reinforced a dramatic spatial reorientation of the entire Canadian economy from maximizing east-west trade between Canadian cities to boosting north-south trade with the global economy. Whereas in the late-1970s Ontario's inter-provincial exports equaled its overseas exports, by the late-1990s the latter had sharply expanded to three times the former as Toronto emerged as Canada's first North American city region[105]. The U.S. dominated Ontario's increased overseas exports, accounting for 90 percent, as NAFTA re-oriented the Canadian economy from an east-west focus to a north-south trade focus.

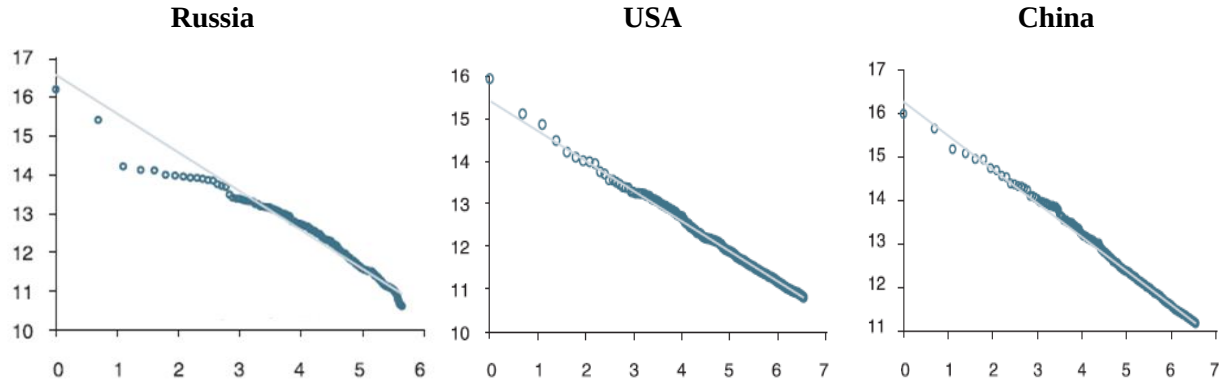
The acceleration in international trade through the 1990s is estimated to have raised the long-run growth rates of labor productivity and GDP per capita by 0.4 percent and 0.6 percent, respectively.[106] The productivity gains appear to arise from the exit of non-export manufacturing firms that could no longer compete with imports and the substitution for some of their output by the expansion of more productive existing domestic exporting firms, thereby boosting national sector productivity.[107] The beneficial impacts of Canadian economic reform in output growth, total factor productivity and real wages have been by far the strongest for Ontario and weakest for the long-subsidized and remote Maritime Provinces. Ontario's radical economic reforms in 1995 included tax cuts and exerted pressure on other Canadian provinces to follow suit. Toronto shows that integration into the world economy transmits pressure to raise productivity toward global best practice across the larger cities and then throughout the domestic economy.[108]

66. An insight comes from the "rank-size rule", a robust and persistent finding that city sizes in any country follow a pattern: a graph of logarithm of city sizes against the logarithm of their ranks within the country usually takes on a linear relationship. The distribution of city sizes in Australia, Brazil, Canada, China, and the United States closely follow this pattern. But Russia's deviates markedly (Figure 3). The rank-size rule predicts that Moscow and St. Petersburg's populations would be around 13 and 7 million, rather than 11.5 and 4.8 million.[109] And, more strikingly, Russia's next leading cities —such as Novosibirsk, Yekaterinburg Nizhny Novgorod, , , and Samara—would have populations of 4 million or more, rather than their current 1.5 million or fewer. These larger cities will need to flourish and grow further—but differently—to realize the benefits of agglomeration. If mobility

[105] Courchene, T.J. (2001) "Ontario as a North American region-state, Toronto as a global city-region: Responding to the NAFTA challenge," in: Scott, A.J. (ed.) *Global City regions: Trends, Theory and Policy*, Oxford: oxford University Press, 158-90.
[106] Coulumbe, S. (2003) "International trade, interprovincial trade and Canadian provincial growth", *Industry Canada Working Papers* 40, Ottawa: Industry Canada.
[107] Lileeva, A. (2008) "Trade Liberalization and Productivity Dynamics: Evidence from Canada", *Economic Analysis Research Paper Series* 051, Ottawa; Statistics Canada.
[108] Gu, W. and Sawchuk, G.D. (2006) "How are Canadian Regions Adjusting to a Larger and More Integrated North American Market?" *Economic Analysis Research Paper Series* 039, Ottawa: Statistics Canada.
[109] See World Bank (2005), *From Transition to Development: A Country Economic Memorandum for the Russian Federation*. Washington, DC: The World Bank. p. 27. Population figures from the October 2010 Census (State Statistical Office). The next largest cities after Moscow and St. Petersburg are Novosibirsk 1.5 million; Yekaterinburg 1.4; Nižnij Novgorod 1.3; Samara 1.2; Omsk 1.2.

restrictions were lowered and market forces operated, Russians would relocate from smaller towns to larger cities.

Figure 3. Russia's size distribution of cities deviates from the normal pattern



Source: Background note by Mikhail Dmitriev of Moscow's Center of Strategic Research based on the data and figures in Chapter1 (Figure 1.2) and Box 1.1 in World Bank (2008), World Development Report 2009. *Reshaping Economic Geography*

67. The legacy of Soviet planning has skewed not only the size distribution of cities, but the size distributions of farms and firms. Just as Russia's city size distribution varies from those that evolved in a market economy, its ownership structures in industry and agriculture vary from what might be most efficient. In brief, Russia does not have sufficiently concentrated populations, but its agricultural and industrial sectors are overly concentrated: a handful of gigantic farms dominate land ownership with an outsized number of tiny family plots, and large establishments dominate the industrial sector with an underdeveloped segment of small- and medium-sized enterprises (Box 9). The central planners' preoccupation with prescribing size has, ironically, bequeathed a double error: the size distribution of cities is skewed away from the large cities that generate agglomeration economies towards medium- and small-sized population settlements, and firms and farms are skewed toward large units at the expense of mid-size and smaller production units. The inefficient size distributions of both cities and production units are proving slow to unwind almost two decades after market reform commenced.

Box 9. Odd Size Distribution of Firms and Farms

Agriculture. Beginning in 1991, reforms privatized land ownership and individualized land tenure. Initially, land was not freely transferable and buy-and-sell transactions were not allowed until 2006. The share of private farms increased from the 2 percent level of the 1970s and 1980s to about 20 percent in 2004-2005, about equally divided between the peasant farms and household plots. The shift from corporate farming is a notable achievement, but other CIS countries have done more. In four of the five Central Asian countries 70 to 80 percent of arable land has shifted to individual tenure. Even Kazakhstan, which lags, has individualized almost 40 percent, about double Russia's achievement.

After more than 15 years of reforms, Russia still has a farm structure with most of the land concentrated in a small number of large farms and the remainder distributed over a very large number of small farms. Agricultural enterprises control around 80 percent of land, but they produce only 40 percent of output. Peasant farms are twice as productive, producing 10 percent of the output on 10 percent of the land. However, the household plots are most productive, producing 50 percent of the output on 10 percent of land. If even half of the corporate land were operating at the productivity of the household plots, then agricultural output could nearly triple.[110] This does not mean that smallholder agriculture should be expanded. Rather, the problem is that agricultural enterprises are undercapitalized, which prevents the emergence of modern, efficient agribusinesses. This would likely lead to fewer, but far more productive farms and a further reduction in agricultural labor force.

Industry. Enterprise sizes and ownership are the result of Soviet industrialization andof subsequent privatization which was biased toward insiders—managers and workers. Most production units were built too large and then sold as single firms, leaving a legacy of gigantic establishments. Compared to Western market economies, Russia has huge over-staffed establishments of low productivity. Small and medium enterprises contributed to only 10 percent of the total Russian workforce whereas in the EU and the US, the figures are, respectively, 72 and 52 percent.[111]

In sectors where average firm size is large, such as oil and raw materials, automobiles, and chemicals, the 22 largest private owners and their financial-industrial groups control 47 percent of employment and 45 percent of sales.[112] In the early 2000s, small and mid-sized enterprises of up to 100 employees numbered around 850,000[113], and about half are estimated to be companies registered for one-time transactions because the process of company's closure is cumbersome.[114] In prosperous market economies most firms are small. Among some 22 million firms that exist in the US, about 21 million are micro firms with fewer than 10 employees. These micro businesses operate in all sectors including light manufacturing..[115] The

[110] This portrayal of land productivity differences by farm size does not argue against scale economies of modern, technology– and capital intensive farming. It is meant to note that marginal increases of plot size to individual farmers can bring about large productivity gains.

[111] Yegorov, Igor (2001) "Development of Small and Medium Enterprises in Russia" in and Aidis, Ruta Korosteleva, Julia and Mickiewicz, Tomasz "Entrepreneurship in Russia" Centre for the Study of Economic and Social Change in Europe Economics Working Paper No. 88,

[112] The World Bank (2005) *From Transition to Development* Report No. 32308-RU, Poverty Reduction and Economic Management Unit, Europe and Central Asia Region

[113] Igor Yegorov (2001) "Development of Small and Medium Enterprises in Russia", American-Russian Business Council Report, November http://www.russiancouncil.org/reports/hell1.htm. See also I. Astrakhan, and A. Chepurenko (2003) "Small business in Russia: any prospects after a decade?" *Futures* 35 pp. 341–359

[114] Barre, Xavier (2005) "Problems of SME financing in Russia," Russian-European Centre for Economic Policy Working Paper Series, Moscow, Zhuplv, Anatoly and Fred Kiesner "Impediments to Small Business Development in Russia." Working Paper, United States Association for Small Business and Entrepreneurship

[115] Zhuplev, Anatoly V., Kon'kov Alexander T., and Kiesner, Fred (1998), "Russian and American Small Business: Motivations and Obstacles,"*European Management Journal*, 16 (4), and Haltiwanger, John, Ron Jarmin and Javier Miranda Davis, Steven J., "Business Formation and Dynamics by Business Age: Results from the New Business Demography Statistics" mimeo

Global Entrepreneurship Monitor finds that Russian Index of entrepreneurial activity is on the low end of 2.5 compared to the US of 10.5, and Thailand, with the highest index of 18.9.[116]

Source: based on Dethier, Jean-Jacques (2010) "Russia's Skewed Firm and Farm Sizes," background note for this report; Lerman, Zvi (2010) "An overview of Russia's land reform since 1991", background paper for this report, mimeo; and other references

68. Russia's slow spatial transformation mirrors a sluggish structural transformation. While agriculture share in GDP has fallen from 15 percent in 1989 to 6 percent in 1994 and to 4 percent in 2008, employment in agriculture has not decreased much from 15 percent in 1980 to 10 percent in 2008. The share of rural population remained unchanged over the last 30 years, from 30 percent in 1980 to 27 percent in 2008, numbering around 40 million. Besides the ossified employment in agriculture and rural population, the structural changes in Russia have been slow. The share of non-market oriented services, benchmarked against 50 market and 22 transition economies, in Russia remained over-expanded. Non-market oriented services refer to public administration, utilities, social and communal services. Russia's share of employment in non-market services was higher than all, but three, advanced economies. [117] The shares of non-market services in 2009 were 18 percent, 13 percent, and 11 percent, respectively, in Russia, Canada, and Australia. Moreover, non-market services share in Russia was high not only in the better-off regions (as might be expected) but also in the lowest income regions.[118]

69. Too many Russians are involved in non-market service activities. Since the transition, the share of nonmarket services in overall employment has increased. Employment in education, health and government administration remained flat, while total employment declined, so that the share of employment in nonmarket services has risen to almost 30 percent, about 10 percentage points above the benchmark for market economies. The additional employment consists mostly of low-wage labor hired in poor regions, such as janitors, street cleaners, and workers helping in hospitals and schools.[119] These jobs aim to alleviate the hardship of unemployment, but they reflect the inadequate mobility of the Russian labor market, which they then compound by tying people to locations where they are not productive and by discouraging the internal migration that would lead to city hierarchies that better facilitate diversification and growth.

70. In areas of greater opportunity, such as Moscow and other cities, growth is limited by place-specific social entitlements (e.g., housing), rigid planning of land use, and poor traffic control. Several barriers discourage mobility (chapter 2), particularly the small stock of low-priced housing and bureaucratic obstacles. Land use regulations in cities are restrictive in

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downloadable http://econweb.umd.edu/~haltiwan/papers.htm ; Haltiwanger, John and Scott Schuh (1996), *Job Creation and Destruction*, MIT Press.

[116] Niels Bosma and Jonathan Levie (2010), *Global Entrepreneurship Monitor 2009 Executive Report*, Global Entrepreneurship Research Association , available at http://usasbe.org/knowledge/proceedings/proceedingsDocs/USASBE2004proceedings-Zhuplev.pdf

[117] UNDP Russia's Human Development Report 2008

[118] World Bank (2005), *From Transition to Development: A Country Economic Memorandum for the Russian Federation*. Washington, DC: The World Bank

[119] World Bank (2005), *From Transition to Development: A Country Economic Memorandum for the Russian Federation*. Washington, DC: The World Bank.

dictating where activities should be located.[120] There is a shortage of rolling stock for public transport, and where metro systems exist they are overloaded. Investment will be required to first maintain and then increase public transport's market share. The fact that transport subsidies have been stagnant or declining increases pressure to use the available resources more productively but new revenue sources are also required.

71. Several factors contribute to the relatively low levels of agglomeration benefits in Russia's largest cities. First, housing is difficult to find. Russia's low-end housing stock has high demand and low supply, resulting in shortages. The waiting list for public housing in some cities is about 18-20 years, with around 645,200 people waiting for municipal housing in St. Petersburg alone.[121] In 2005 only around 40,000 families—of 5 million on a waiting list—got a mortgage to buy an apartment. And the ratio of the market value of an average apartment (with a gross area of 54 meters) to the annual average earnings of a family of three could range from between 5 to more than 7 in the European parts of Russia. Without an active mortgage market, families would have to accumulate large savings to own an apartment. Since 2005, there has been significant improvement in mortgage access. About 35 percent of Muscovite household could now try to purchase a home through mortgage.[122]

72. Second, registration requirements and other bureaucracy can be onerous. Moscow's registration system—a legacy of the Soviet system of *propiska*, which required place-based registrations—endures long after it was abolished at the federal level. Registration is still required for staying in Moscow beyond three months. Some ignore this requirement, but they have more difficulty in accessing formal jobs, social benefits, and such public services as kindergartens, schools, and healthcare. In most regions, approval is granted to all applicants, although in some (such as Moscow) the authorities can deny registration even though this is against federal law.[123]

73. Third, regulatory constraints have undermined cities' spatial efficiency by tying land to low-value or non-productive uses and by rigid micro-planning of land uses. The five-story *Khrushchyovka* apartment buildings built in the 1950-60s and the eight-story Brezhnev apartments of the 1970s are still considerably close to Russian city centers, sandwiched by Soviet-era industrial zones. As cities grow, such low-rise housing should be replaced by more intensive land uses, such as commercial buildings or denser residential buildings. If urban land markets were efficient, flats four kilometers from the center of Moscow or St. Petersburg should not be similar sized from those four kilometers from the center of Murmansk, as is still the case now.[124] But this kind of upgrading cannot happen. Since the land is not priced, demolishing existing buildings would incur a cost that cannot be offset by the gain in land value that would result from the higher densities. So, land use remains locked into its existing applications.

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[120] Batchev, Arthur (2010), 'Main trends of change in economic structures of Moscow and St. Petersburg: Comparison of key parameters with the largest cities of the world', a background paper for this report, mimeo.
[121] Oding, Nina (2009), 'St. Petersburg Development', a background paper for this report, mimeo.p. 23.
[122] Belanovsky, SA, Dmitriev, Mikhail, and Missikhina, SG (2010) "Middle class in a rent oriented economy: Why Moscow is not like Russia?" *SPERO* vol. 13 Winter Issue, December. Paper can be downloaded at http://spero.socpol.ru/current.shtml
[123]Andrienko, Yuri & Sergei Guriev (2005), 'Understanding Migration in Russia', *Policy Paper No. 23*, Moscow: Center for Economic and Financial Research, New Economic School. pp. 18-21
http://www.nes.ru/~sguriev/papers/UnderstandingMigration2005.pdf
[124] Alain Bertaud (2010) "The development of Russian cities: Impact of reforms on spatial development," mimeo for this report.

74. Fourth, inheriting an outdated traffic control system and an underdeveloped road network that lacked access roads to the ring and radial corridors, the government further exacerbated congestion with attention to and investments in arterial roads, notably ring roads, instead of sub-arterial street networks and on-street public transport operations. On-street parking management by time controls and charges is far behind demand and there are no attempts to improve operating conditions for street-based transport modes, used by two-thirds of all public transport passengers, such as reserved lanes and priority at signals.[125] There should also be more concerted effort to tackle the outdated planning standards; gaps between plans and funds; poor demand and supply data; and inadequate investment analyses.

75. City development plans have tended to focus on a 'vision' for a city, rather than letting cities adjust and adapt to their logical place in an evolving economy and settlement hierarchy. As of 2005, six of Russia's 11 cities of more than a million had strategy documents: St. Petersburg (1997), Novosibirsk (2002), Yekaterinburg (2003), Omsk (2002), Rostov-on-Don (2004), and Kazan (2003). But the plans' authors often proceeded from the assumption that municipal administrations can choose and guide their development path without regard for the external and internal forces that shape development.[126] These strategies typically resemble a declaration of intentions, which mentions objectives without specifying how to achieve them. They might contain a prescription for very detailed programs of action, but they rarely provide a coherent analytically guided link between policies and outcomes. This approach to city development, suited to a centrally planned economy, is misaligned with Russia's evolving market economy.

The solution: Better land markets, affordable housing, and targeted investments in connective infrastructure

76. If Russia is to change what it produces, it will have to change where these commodities and services are produced. Much of what will help Russia diversify and modernize will be produced in its larger cities. The solutions to the problems that accompany urban growth lie in better city planning and management, not in limiting its size. Every world-class city faces problems in expanding, and Russia can learn how to maximize the benefits of large city growth by observing how other countries have managed their growth.

77. The real choice for Russia is not between growing cities or containing their size, but between deliberately growing a productive economy and inadvertently aiding stagnation. Comparator economies that have relied heavily on natural resources to drive their growth, such as the United States in the nineteenth century and Australia and Canada through the twentieth century, currently rely on a hierarchy of cities. The largest cities help to capture agglomeration (urbanization) economies, while smaller ones help firms exploit localization economies and plant-level economies of scale. Despite Russia's continued reliance on hydrocarbon exports, cities will accommodate most economic activity, and the largest cities

[125] The World Bank (2009) An Implementation Completion and Results Report, Num 503, of the Loan Project of Moscow Urban Transport

[126] Vendina, Olga (2007), 'A development strategy for Russia's largest cities', *Russia in Global Affairs*, No. 1, January—March 2007. http://www.eng.globalaffairs.ru/numbers/18/1092.html.

will pioneer the diversification towards a knowledge-based economy. The comparator countries show that such spatial transformations are needed for economic modernization.

78. Contrary to the assumptions of the 'Chief Architects' in Russian cities, there is no known optimum urban spatial structure. Matching the locations of housing and jobs is not possible when people change jobs more often than houses, or change houses without changing jobs. An efficient urban structure is constantly evolving, following a self-organizing principle driven by the buyers and renters of land and floor space. Urban planners cannot predetermine this structure or micromanage it—but with effective regulations, they have the power to create the conditions for this self-organizing spatial structure to emerge and evolve.

Land market institutions

79. Land use regulations can improve spatial efficiency by reducing negative externalities. They can also reduce uncertainty about the future uses of land and make real estate investments less risky. Robust and responsive regulations can facilitate the planning, financing, and construction of infrastructure. Forward-looking land regulations would move away from the design and normative model of past plans and focus on enabling market choices and reducing externalities. This means:

    - Secure and well-defined property rights that allow liquidity of real assets and transparent and predictable exchange systems with low transaction costs.

    - Land use regulations that are clear, predictable and reduce externalities without constraining land supply or artificially distorting land consumption.

    - Infrastructure that increases mobility and decreases constraints on land supply.

    - Taxes and tariffs that reflect the full cost of products and services so they do not distort demand and do not unreasonably increase transactions costs.

80. Zoning laws and regulations should be simple and transparent, with clear objectives. Russian cities have made progress in designing market-friendly regulations, but they are moving from a tradition of complexity, control, and unclear objectives that made zoning decisions seem arbitrary. These earlier practices are reflected in constraints on building heights and floor-area ratios that are detached from land values and lead to urban sprawl, congestion, high demands on public transportation, and diminished quality of life for residents. As they review existing land use regulations and draft new ones, planners should audit regulations to test their impact on markets—particularly their potential for artificially restricting land uses and values. Box 10 illustrates some of the remaining inconsistencies and rigidities.

Box 10. Inefficient Land Use Rules, Incompatible Regulation, and Inconsistent Enforcement

The legislative assembly of St. Petersburg adopted new land use regulations, including a new zoning plan and zoning regulations, in February 2009. The new regulations are a step toward transparency and predictability about permissible land use and floor spaces in each location. But there are ample inconsistencies, incompatibilities, and rigidities.

Inefficient land use rules

Arbitrary distinctions of land use types. For instance, industrial land use types ТП1 to ТП6 separate land by the material used as productive inputs, rather than by environmental externalities: industrial activities using paper are segregated from activities using wood, which are segregated from activities using textiles.

Excessive differentiation of land use types by micro-activities. Regulators have designed a continuum of land use types, subdividing them in small degrees rather than identifying and grouping incompatible uses. This discriminates against small entrepreneurs by reducing their choices of location and the prices they must pay for real estate.

Incompatible regulations and economic rationale

Floor area ratios (FARs) have only two values – 1.7 and 2.3 – for low-rise and high-rise residential areas. Both are very low, and have been set without consideration of location in the city and the price of land.

Arbitrary control of building heights. An area with maximum building heights of 80 or 90 meters might be adjacent to an area with maximum height of 20, 28, 40, or 55 meters although those height restrictions are irrelevant with such low FARs. For example, in residential zone ТЗЖ2, the FAR is 2.3 and requirements for green space and two-level parking would limit the footprints of buildings to about 25 percent of the lot. A FAR of 2.3 would then allow an average of 10 floors, or about 30 meters high. The limiting factor is therefore the FAR and not the 55 to 90 meters height restriction.

Height zones and use zones do not take into account potential land values or transport facilities. For example, the land fronting Leninsky Prospect – an avenue 70 meters wide with major bus lines joining a railway station and a metro station – has the same height and zoning types as land in the middle of residential areas, and there is no commercial zoning around the metro and railway station.

Inconsistent zoning stipulation and enforcement

The area ТЗЖД3 was zoned for multipurpose use, with a maximum height of 35 to 55 meters. But the zoning map shows 4 special projects, composed of 4 towers that are 120 meters high, plus 12 towers that are 72 meters high. That means a FAR of approximately 5.2, without counting ancillary buildings. The project is strikingly different from what is permitted by zoning in adjacent areas and poses a question: either the developer's building is right and the zoning which would prevent similar projects in similar areas is wrong; or the zoning is right and the developer's special project is wrong and will create huge neighborhood externalities. Most likely, since the project is in a highly accessible area surrounded by wide avenues and within 100 meters of a metro station and 1200 meters of a railway station, the special project is right and the zoning is wrong.

Source: Alain Bertaud (2010) "The development of Russian cities: Impact of reforms on spatial development," mimeo for this report.

81. Moscow and St. Petersburg's transport systems are inefficient, partly because of their atypical intracity density profiles. Population densities in Moscow vary with distance from

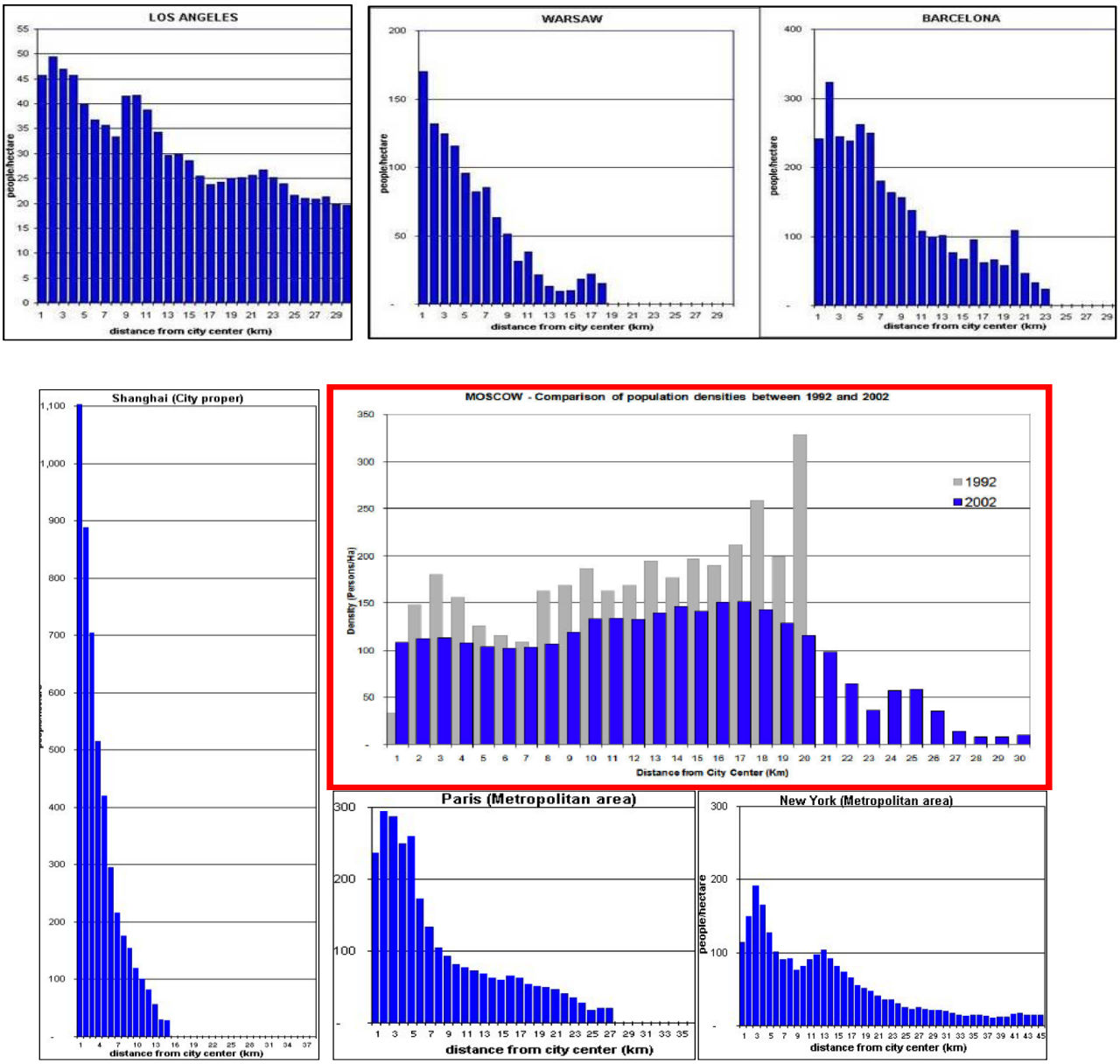
the city center (Figure 4). Cities developed under market economies all have a negatively sloped density profile (denser in the center than in the suburbs—because of higher land values in the center). But Moscow has a lower consumption of land four to seven kilometers from the center than in its suburbs, giving its density-profile an upward slope toward the periphery. So, for the same total length of transport network, the average distance per person to the center would be higher than for a city with similar average density but more of its population closer to the center. St. Petersburg's problem is worse: the historical center is surrounded by an industrial belt about three kilometers wide, comprising mostly obsolete industries. Two concentric residential belts surround the industrial belt: the inner one with low density '*Khrushchyovka*' blocks (four to five floors), and the outer one with Brezhnev-era housing (8-floor) mixed with low rise and more recent individual housing units.

82. Industrial use takes up a disproportionate amount of land in Russian largest cities. While Moscow and St. Petersburg's populations became more concentrated toward the center between 1992 and 2002—through improved functioning of the existing apartment market and the development of vacant areas of land—their population density profiles are still skewed away from a market-sensitive pattern. In 1992, industries occupied 32 percent and 44 percent of the built-up area in Moscow and St. Petersburg. By contrast, major cities such as New York or London now use only 4-5 percent of their built-up area for industrial use even though they had an industrial belt close to the city center in the late 19th century[127] but by the early 20th century, increasing land prices pushed these large industrial buildings away from the city center. Even in industrial Chinese cities, such as Zhengzhou, industrial land use is only around 23 percent.[128] This suggests that Russian cities will need to redevelop this land in the years ahead.

[127] Moses, L.N. and Williamson, H.F. (1967) "The location of economic activity in cities", *American Economic Review: Papers and Proceedings* 57, 211-222. Moses and Williamson explain why commercial activity, including manufacturing and warehousing, concentrated around the center of nineteenth century cities. They demonstrate that the cost of moving goods within the nineteenth century city was higher than the cost of moving people. Consequently, commercial activity sought a central city location to minimise access to rail freight for receiving inputs and dispatching products while residences located further out and labour commuted to work in the central area. The diffusion of road transport through the twentieth century rendered a much greater area accessible to industry, which relocated to suburban industrial sites.

[128] Bertaud, Alain (2007) "Urbanization in China: land use efficiency issues," unpublished mimeo, available http://alain-bertaud.com/AB_Files/AB_China_land_use_report_6.pdf

Figure 4. Moscow's atypical upward sloping density profiles (1992 and 2002) vis-à-vis downward sloping density profiles of Shanghai, Paris, New York, Barcelona, Los Angeles, and Warsaw



Source: Alain Bertaud (2010) "The development of Russian cities: Impact of reforms on spatial development," background paper for this report

83. Rather than recycling obsolete industrial land, there have been 'infill' housing developments in the city centers of Russian metropolises which reduced public space, gardens, and recreation areas.[129] New urban development in Russia had been mainly at cities' peripheries, and built-up land (excluding roads) grew by 80 percent, from 30,000 to 54,000 km^2, between

[129] Oding, Nina (2009), 'St. Petersburg Development', a background paper for this report, mimeo.p. 24.

1990 and 1999.[130] The rate of expansion of the built environment during one decade alone is comparable with that of previous hundreds of years of Russian history. In contrast, despite ample open space in the United States, almost all recent developments have been less than one kilometer from earlier developments, and even today only 2 percent of the land area of the United States is developed.[131]

84. Another problem is that land is not fully tradable in most cases. It is difficult to conceive efficient spatial development of a modern city without a land market -- ignoring the market value will result only in widespread misallocations of land. Many Russia's cities have a stagnant economy and an outflow of population, so land use will change slowly or not at all, even with good land regulations. Changes to land use regulations will have concrete consequences only in a growing city where new investments are made to recycle land to new uses or new buildings. In those cities, changes to land use regulations must be accompanied by a compatible development strategy, though the land use regulations are themselves an important strategic element.

85. Finally, land development procedures appear to be extremely costly, complicated, and time-consuming. According to the head of *Gosstroy* (the National Buildings Authority), an applicant acquiring land for a development must obtain between 50 and 250 approvals, depending on the region. Making those approvals are more than 40 entities, involving more than 70 official payments by the developer. The preparation of 'preliminary-permissive documentation' usually accounts for 40 to 60 percent of the time involved in preparing construction investments.[132] According to *Doing Business 2009,* Moscow had the most onerous procedures for construction permit amongst other Russian regions, and in contrast to other countries. In a country where spatial transformation is a prerequisite for diversification, modernization, and growth, policies should encourage and reward developers rather than penalize and tax them.

Urban infrastructure

86. Traffic management is inadequate, and public transport systems are overloaded. Transportation infrastructure has been managed with a bias toward expanding road networks to accommodate the increasing stock of private cars, to the detriment of public transport systems.[133] Although Russia had one of highest levels of per capita use of public transport, the system has declined in quality even as sharply rising car ownership increased traffic congestion. Some 85 percent of Russian motorized trips use public transport, compared to 20 percent for Western Europe and 3 percent for the United States.

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[130] Federal Service for Land Cadastre of Russia (FSLCR) figures in Golubchikov, Oleg (2004), 'Urban planning in Russia: towards the market', *European Planning Studies,* 12 (2), March 2004, p.233.
[131] Burchfield, Marcy, Henry G. Overman, Diego Puga, and Matthew Turner. 2006. "Causes of Sprawl: A Portrait from Space." *Quarterly Journal of Economics* 121 (2): 587–633.
[132] Golubchikov, Oleg (2004), 'Urban planning in Russia: towards the market', *European Planning Studies,* 12 (2), March 2004, pp. 229-247.
[133] Eijbergen, B., Thompson, L., Carruthers, R. Gwilliam, K. and Podolske, R. (2004) "Russia: The transport sector", World Bank Policy Note, Washington DC: World Bank.

87. The Russian Urban Passenger Transport system serves one of the largest networks, incorporating buses, trams, and trolleys on more than 11,000 routes. Revenues still fell below required expenditures and the system was under-maintained and in decline. Inadequate maintenance combined with a doubling in vehicle traffic accelerates the deterioration. Meanwhile, extra vehicles compete with a proliferation of poorly regulated purveyors of public transport further worsen congestion. Three things are needed: (i) regulate competitive private bus firms, operating along specific bus routes with franchises of sufficient duration to encourage fleet investments; (ii) invest in traffic management to improve the flow of urban traffic, especially public transport; (iii) improve the administrative capacity of the Ministry of Transport.[134]

88. The United States provides lessons on what happens when vested interests bias policy away from public transport. US cities exhibit a flexible land market, and have in recent decades suffered from urban sprawl, with cities occupying a greater land area at lower density and with commutes longer than is efficient. Two features of US urban policy bias the urban transport system towards the private car, and thereby feed urban sprawl into low-density suburbs. One is the under-pricing of energy (relative to its social costs), and the second is the dominance of zoning regulation by wealthier residents. US zoning was originally introduced in the early decades of the twentieth century to protect home owners and residential areas from the intrusion of industry and apartments when the spread of the automobile facilitated the shift of these activities to suburban locations. Wealthier residents began using zoning to discriminate against lower-income home owners and concentrate the poorer members of society within central city areas This eroded the central city tax base and accelerated central city decline in a vicious circle. For instance, Chicago's urban sprawl was facilitated by the highway system and sustained federal subsidies for private housing in the suburbs, weak regional planning and acquiescent local governments.[135] Russia can avoid both these policy failings to limit the waste of land and energy resources that urban sprawl represents.

89. A more rational (higher) gasoline taxation policy in the US would raise the cost of automobile use and encourage greater use of public transport, which in turn promotes denser settlements. In this context, Russia still has some way to go in pricing gasoline in line with the real cost of its use.[136] In 2010, Russian gasoline prices, including taxation, were $0.78/liter, slightly above the US figure ($0.71/liter) but less than half the EU norm (around $1.80/liter). In a similar vein, cities—particularly Moscow and St. Petersburg—could raise the prices of their parking spaces to levels that balance supply and demand. Any car using land for parking, on-street or off-street, should ideally pay a market rate for the space it occupies. The fees for street parking in Moscow (25 rubles ($0.80) an hour in the southern part of *Tverskaya*, a major artery in city center) appear to be too low to encourage a more efficient use of land and transportation systems. Pricing to reflect the full economic cost of an activity is essential to the rational use of scarce resources: in the case of large cities, the scarcest resource is space.

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[134] Ibid.
[135] Fischel, W.A. (2001) "An economic history of zoning and a cure for its exclusionary effects," Working paper, Hanover NH: Dartmouth College Department of Economics.
[136] Parry, I.W.F. and Small, K.A. (2004) "Does Britain or the United States have the right gasoline tax?" Working Paper 02-12rev, Washington DC: Resources for the Future.

Inter-urban infrastructure

90. In Russia, the infrastructure linking cities is inefficient. Russia has numerous city clusters, which already have links between them: for example, Chelyabinsk and Magnitogorsk, Yekaterinburg and Nizhny Tagil, Samara and Togliatti, Khanty-Mansiisk and Surgut-Nizhnevartovsk, or Krasnodar and Novorossiisk-Sochi. But intra-city transport infrastructure investments are needed to improve these routes and develop additional ones. For example, the 250 kilometers between Chelyabinsk and Magnitogorsk take about six hours by road, and the fastest bus between Krasnodar and Stavropol, two of the largest cities in the North Caucasus, also takes six hours to travel a similar distance. More than 15 million Russians have no access to the federal highway system and fewer than half of federal roads meet federal quality standards. According to the Ministry of Economy, the country loses 3 percent of its annual GDP because of poor roads alone.[137]

91. The collapse of the Soviet Union was associated with a more than halving in the transport intensity of the Russian economy, measured as the freight tons per kilometer required to produce a given value of GDP. The trend, expected to continue with the restructuring of production, has been for average freight consignments to become smaller and for the destinations served to increase. Essentially, Russian restructuring is accelerating the shift from heavy reliance on bulk transport, which favors railways, to just-in-time delivery of smaller high-value cargo, which favors truck transport. The accompanying diversification of freight destinations into the global economy will call for improved shipping facilities, notably containerization, since the port infrastructure has been poorly maintained. The ongoing sharp rise in road transport means that many highways lack adequate capacity. Moreover, closer integration is required between railways (competitive for longer hauls) and roads, which are cheaper for short hauls and offer more flexible access to customers than rail. Containers facilitate this integration and link land transport to shipping. But many Russian ports are near congested city centers and will require relocation to provide easier access for land transport and more operating space. Some may also require access to deeper water to secure adequate berthing depth.

92. Improvements in road connectivity may confer significantly greater benefits than other trade facilitation options (e.g., reductions in tariffs or the streamlining of customs procedures) executed on a comparable scale. The quality of roads and infrastructure is important for expanding trade opportunities.[138] Upgrading all connecting regional roads to a minimum standard (of 74 percent paved surface) would boost trade by 50 percent, cutting customs documents to the regional mean (8 for exports and 12 for imports) would boost it by 20 percent. And lowering all tariffs to 8 percent or less would confer a mere 6 percent gain in trade. The crude ratio of benefits to costs for road upgrading to the 74 percent mean target is estimated at 5.5. System-wide upgrades are important to ensure that the potential benefits are fully secured. But unilateral improvements in road quality would confer net gains.

[137] See also World Bank (2011a). Russia: Public Expenditure Review, World Bank report No. 58836-RU, Washington D.C. (April 24), for a recent discussion of the infrastructure construction and maintenance backlog in Russia.
[138] Shepherd, B. and Wilson, J.S. (2007) Road Infrastructure in Europe and Central Asia: Does Network Quality Affect Trade? *Journal of Economic Integration*, 22(4), 723-47.

93. Russia has been under-investing in transport for more than two decades. In 2002 road investment in Russia received barely 0.51 percent of GDP or just $1.8 billion, 60 percent of it to federal highways linking cities. This was an order of magnitude below comparator country levels of investment. Vehicle ownership per thousand people in Russia at 161 is less than one-third that of Germany, so demand for road transport is expected to rise sharply.[139] Demand is expected to increase faster in the west than in the east and north, where rail transport is better adapted. An investment rate of 1 percent of GDP is required to maintain the existing road network, plus a further 1.25 percent of GDP is required to expand the system to accommodate 5 percent annual growth in demand. But on top of this, a further 2 percent of GDP needs to be invested annually for 20 years to make up for deferred maintenance and expansion programs.[140] So, Russia requires a six- to eight-fold increase in the budget allocations to road improvements if it is to match other middle-income countries. Road maintenance, if deferred further, will have especially dire consequences: maintenance not performed by the twelfth year on a road with a 20-year life will quickly lead to deterioration at a rate eight times faster than otherwise.[141]

94. To shift Russia's primary route system to four-lane highways would require upgrading 8,000 kilometers and adding another 2,000 kilometers. Since toll charges are likely to be viable on the most densely used stretches (currently the 700 kilometer Moscow-St Petersburg road), some $4 billion annually might be raised by public-private initiatives. A $0.10/liter tax on gasoline (priced at only $0.35/liter in 2002) would raise $2.25 billion more.[142] A further $2 billion could be raised by an average vehicle license fee averaging $100 for the country's fleet of 12 million cars and 300,000 trucks, assuming a 5:1 ratio for the charge to trucks and to cars. In sum: upgrading the road network to a minimum level would require $100-150 billion of investment. Almost one-third of the investment would come from the federal budget, a similar level from the private sector, one-fifth from a fuel tax, one-sixth from licenses and the rest from loans from international financial institutions.

95. Russia also has a large, intensively used and efficient rail network that lost 60 percent of its traffic volume during the transition collapse. Even though usage has again risen to 60 percent of its 1988 peak, deficient maintenance is starting to create problems. The rail network hauls 80 percent of freight traffic but only 10 percent of passengers (compared with 50 percent in Europe). And while it is likely to continue to dominate transport in the north and east, it will face increasing competition in European Russia. Freight revenue subsidizes loss-making suburban rail services, half of which serve Moscow and St Petersburg. A new national rail company was established in 2003 and competition is being introduced in both passenger and freight services while cross-subsidies will be abolished and loss-making passenger services will be funded by local governments in exchange for a greater say in service provision. As this report is going to print, the government is finalizing its rail reform

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[139] World Bank (2009) *Russian Economic Report Number 20*, Washington DC: World Bank.
[140] Eijbergen, B., Thompson, L., Carruthers, R. Gwilliam, K. and Podolske, R. (2004) *"*Russia: The transport sector*"*, World Bank Policy Note, Washington DC: World Bank.
[141] Katsu, S. (2010) "Meeting Russia's infrastructure gap", mimeo, Washington DC: World Bank, ECA Region. http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/RUSSIANFEDERATIONEXTN/0,,contentMDK:21481768~menuPK:305622~pagePK:2865066~piPK:2865079~theSitePK:305600,00.html
[142] Eijbergen, B., Thompson, L., Carruthers, R. Gwilliam, K. and Podolske, R. (2004) *"*Russia: The transport sector*"*, World Bank Policy Note, Washington DC: World Bank. By 2010, gasoline prices had risen to $0.78 per liter.

agenda that include tariff adjustment to reflect actual costs, and establishment of an independent system regulator to ensure coherence and efficiency.[143]

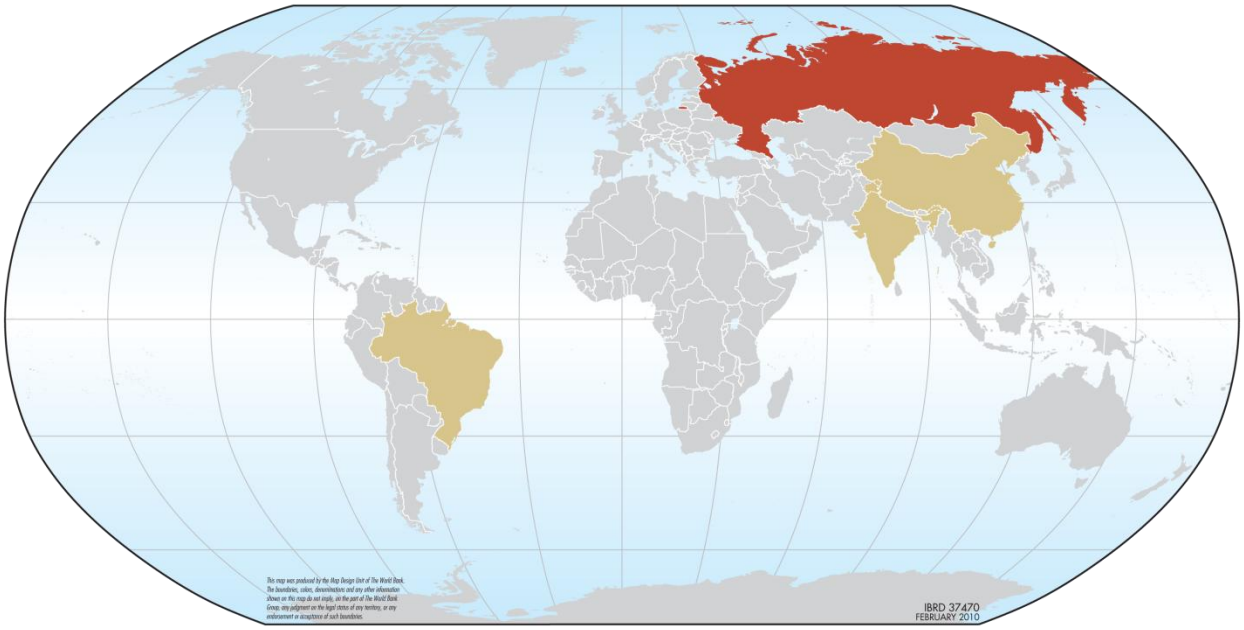
96. Russia has much to gain from expanding and upgrading its deteriorating transportation systems. It can usefully deploy some of the accumulated oil revenue to cushion the economy to the oil price downswing by compensating for neglect of transport maintenance and expanding the system in line with trends in economic geography. On 20 May 2008, Prime Minister Putin committed to a massive increase in investment in transport in 2008, pledging $570 billion over seven years to overhaul the country's transportation infrastructure—Russia's largest spending project since the collapse of the Soviet Union. But the allocation was announced just as falling oil prices squeezed federal revenues, so it may have to be trimmed. But it should not be postponed.

97. Russia should concentrate resources where the returns are highest—in areas of emerging economic opportunity. This means improving urban public transport and traffic management in the largest cities as part of wider reforms to price transport and land inputs at their true economic cost. In addition, intercity highways should be improved, notably in the west, and fully integrated through containers with renovated long-haul rail systems and seaports linked to the global economy.

[143] EBRD (2010) http://www.ebrd.com/pages/project/case/russia_railway.shtml

Spotlight 4: ***At the End of the Transition***

Brazil, China, and India have been integrating into the international economy, and this has allowed them to specialize, grow, and increase their influence; Russia can do the same.



At the time President Medvedev hosted the BRIC Summit in Yekaterinburg in 2009, Brazil, Russia, India, and China accounted for 25 percent of the world's land area, 40 percent of the world's population, and 15.8 percent of the world's GDP using market exchange rates. The world has started paying much more attention to these countries because this share has increased from 6 percent in 1969.[144]

Since the dismantling of communism almost two decades earlier, Brazil, China and India were on convergent paths. Russia's economic transition was different. In Brazil, China, and India, the population grew by 26, 32, and 15 percent, respectively, between 1991 and 2008; in Russia it fell from 149 to 142.9 million (the latter being a preliminary estimate from the latest 2010 census). In 2009, China, India and Brazil ranked among the top forty in terms of business sophistication on the Global Competitiveness Index (GCI); Russia ranked 95th. In terms of overall GCI rankings, Brazil, China, India, and Brazil were in the 29th, 49th, and 56th places, respectively; Russia ranked 63rd. Between 2008 and 2009, Russia had fallen by twelve spots while the others had moved up.[145]

[144] World Bank, World Development Indicators, http://databank.worldbank.org/ddp; IMF, International Financial Statistics; Oxford Economic Forecasting, and the Economic Research Service *www.ers.usda.gov/data/.*

[145] In comparison, Switzerland was ranked first in the Global Competitiveness Index, and the United States, was ranked second

Moreover, in 1969, Russia's real GDP was more than twice of the other BRICs. But over the subsequent four decades, Russia's economic heft was surpassed by all of them: by Brazil and China in 1993 and by India in 2009.[146] Altogether, the BRIC nations contain 18 of the top 100 urban areas according to GDP in 2008, but Russia has only two of these, whereas Brazil and China have five each, and India has six.[147] Among the largest urban areas according to GDP, Moscow currently ranks 15th, five places behind Brazil's São Paulo. Over the next half century, will Russia keep pace with Brazil, India, and China?

During 1969-1989, China's growth was phenomenal. In Brazil, India and Russia, it had been relatively modest. In the subsequent 20 years, Russia stagnated in contrast with growing China, India, and Brazil (Table 8). India's economy expanded from 3 percent of the US GDP to 8 percent between 1969 and 2009; for Brazil the figures were 5 and 9 percent of the US GDP. Meanwhile, China's economy grew from 2 percent of US GDP in 1969 to 26 percent in 2009. Russia was the exception: its GDP fell from 12 percent of the US to 7 percent (Table 9).

In the early post-war decades the BRICs' domestic market potential encouraged them to pursue economic autarky. Russia and China were at the extreme with central planning. India adopted at independence what Paul Romer has since termed "command capitalism", while Brazil maintained what former president Fernando Henrique Cardoso called "controlled capitalism" which began as involuntary import substitution in post-Depression 1930s. All four countries managed to shrink their exports to as low as 2-5 percent of GDP by distorting their economies.

Table 8. Per Capita and Total Real GDP for BRIC Nations between 1969 and 2009

(in constant 2005 US$)

	$\frac{percapGDP1989}{percap\ GDP1969}$	$\frac{percapGDP2009}{percap\ GDP1969}$	$\frac{totalGDP1989}{total\,GDP1969}$	$\frac{totalGDP2009}{total\,GDP1969}$
Brazil	1.87	2.25	2.98	4.80
China	3.61	19.60	5.11	32.80
India	1.54	3.67	2.35	7.84
Russian Federation	1.62	1.71	1.84	1.85

Sources: World Bank, World Development Indicators, http://databank.worldbank.org/ddp; IMF, International Financial Statistics; Oxford Economic Forecasting, and the Economic Research Service *www.ers.usda.gov/data/.*

Table 9. Per Capita and Total Real GDP of BRIC Nations and the US,

1969-2009 (constant 2005 US$)

	$\frac{Brazil GDP}{US GDP}$		$\frac{China\,GDP}{US GDP}$		$\frac{India\,GDP}{US GDP}$		$\frac{Russia GDP}{US GDP}$	
	per capita	Total	per capita	total	per capita	total	per capita	total
1969	.12	.05	.01	.02	.01	.03	.18	.12
1989	.15	.09	.01	.07	.01	.04	.19	.11
2009	.13	.09	.06	.26	.02	.08	.16	.07

[146] World Bank, World Development Indicators, http://databank.worldbank.org/ddp; IMF, International Financial Statistics; Oxford Economic Forecasting, and the Economic Research Service *www.ers.usda.gov/data/.*

[147] Global city GDP rankings. PricewaterhouseCoopers. Retrieved from https://www.ukmediacentre.pwc.com/Media-Library/Global-city-GDP-rankings-2008-2025-61a.aspx.

Sources: World Bank, World Development Indicators, http://databank.worldbank.org/ddp; IMF, International Financial Statistics; Oxford Economic Forecasting, and the Economic Research Service *www.ers.usda.gov/data/.*

Brazil, India, and China reformed over the last 20 years to integrate with the world economy. China has become the world's factory,[148] India has become a leader in outsourced IT services, and Brazil has reaped the benefits of its massive natural resource stocks while also developing a few more technologically advanced sectors. Russia continues to rely on hydrocarbon exports.

China and Russia

As China began to reform, its economic growth rapidly outpaced the Soviet Union. Its average GDP growth rate increased from 4 percent in the 1960s and 1970s to 9.5 percent during 1978-2005. Its per capita GDP increased from 3 percent of the US' in 1978 to 16 percent in 2005. Total trade as a share of overall GDP was 10 percent prior to reforms, increased to 39 percent in 1995, and reached 64 percent in 2005, a level far higher than that of most other large countries.[149] In 1980, China's exports totaled $18 billion,[150] which tripled to $62 billion in 1990, and reached a staggering $1.2 trillion in 2009, overtaking Germany to become the world's largest exporter.[151]

China was able to attain such rapid and consistent economic growth through a series of trade liberalization measures that opened up its markets to competition and foreign investment. During the 1980s, the average statutory tariff rate in China decreased from 56 percent to 43 percent and later fell to 15 percent. Import restrictions fell sharply, with only 8.5 percent of commodities regulated by quotas in 2001, compared to 18 percent in 1992, and 50 percent at the end of the 1980s. In 1978, only 12 firms in China held trading rights; over the next decade, this number ballooned to more than 5,000. By 2001, it was 35,000.[152]

China used dual track reforms to develop a vibrant, market-oriented economy in "early reform zones" parallel to the distorted planned economy. Once the dynamic economy was large enough to generate exports and tax revenues and to absorb workers and capital, China reformed the distorted sector, which was the legacy of central planning. The dynamic sector helped to stimulate global-scale agglomerations in the Pearl River delta, the Yangtze delta and the Bohai triangle where competitive enterprises provided a demonstration effect for nearby state-owned enterprises.[153] The "early reform zones" incubated exporting firms that were central to this strategy and they encouraged investors to demand legislation to safeguard private property rights and independent courts, free of government manipulation, to enforce contracts.

[148] Chen Xiangguo, (2007) "Is China the Factory of the World." Ritsumeikan Asia Pacific University, Occasional Paper No. 07-4 July
[149] Loren Brandt, Thomas Rawski (2008). *China's Great Economic Transformation*. Cambridge University Press.
[150] China National Bureau of Statistics (1999), *China Statistical Yearbook*; and China National Bureau of Statistics (1998), *China Foreign Economic Statistical Yearbook.*
[151] Mufson, Steven. "China surpasses Germany as world's top exporter." *Washington Post*. 11 Jan 2010.
[152] Branstetter and Lardy (2008)
[153] Johnston, M.F. (1999) "Beyond regional analysis: Manufacturing zones, urban employment and spatial inequality in China," *China Quarterly* vol. 161, 1-21.

India and Russia

Throughout the 1950s and 1960s, the Soviet Union transferred technology, capital, equipments, and skills to help India establish its heavy industries. The first Indo-Soviet project was a 1.0 million ton per annum steel plant in Bhilal in 1955. In 1957, the Soviet Union helped establish a heavy machine building plant in Ranchi, a mining machinery plant and an ophthalmic glass plant in Durgapur and the Neyvelli Thermal Power Station. In 1959, Russia helped set up the Barauni oil refinery, thermal power stations in Obra and Korba, and a precision instrument factory in Kota.[154] Soviet infusion of capital and technology continued into the 1960s. The two nations signed a Treaty of Friendship and Cooperation in 1971, formalizing years of Soviet military and economic assistance to India.[155]

In the 1950s, the Soviet Union also helped India set up the Indian Institute of Technology (IIT) in Bombay (now Mumbai), which grew to prominence along with the other IITs. In 1973, through the establishment of the Indo-Soviet Joint Commission on Economics, Scientific and Technical Cooperation in New Delhi, both countries cooperated closely in trade, transport, and communication.[156] Close ties between India and Russia continued after the collapse of the Soviet Union. Today, Russia supplies more than 70 percent of India's military hardware,[157] and India is reported to be Russia's largest market for weapons at 30-40 percent of total arms exports.[158]

But India learned a lot more from Russia. Upon independence in 1949, Nehru's Congress party quickly established state control of the "commanding heights" of the economy, while tightly licensing entry of enterprises in other sectors. Its series of Five-Year Economic Plans were based on models first developed by the GOSPLAN planning commission, and aimed at making India self-sufficient. These central planning efforts—nationalization of large industries, imposition of trade regulations, and a focus on heavy industry at the expense of other sectors—led to a low average GDP growth of approximately 3 percent.[159]

Liberalization measures began in 1991 to integrate India into the global economy. India's growth can in part be linked to its flourishing services sector (Figure 5). In 2005-07, ICT services accounted for more than 45 percent of India's exports, a share substantially greater than that of most developed or developing economies. While China is a formidable exporter of manufactured goods, India has acquired a global reputation for exporting back office services.

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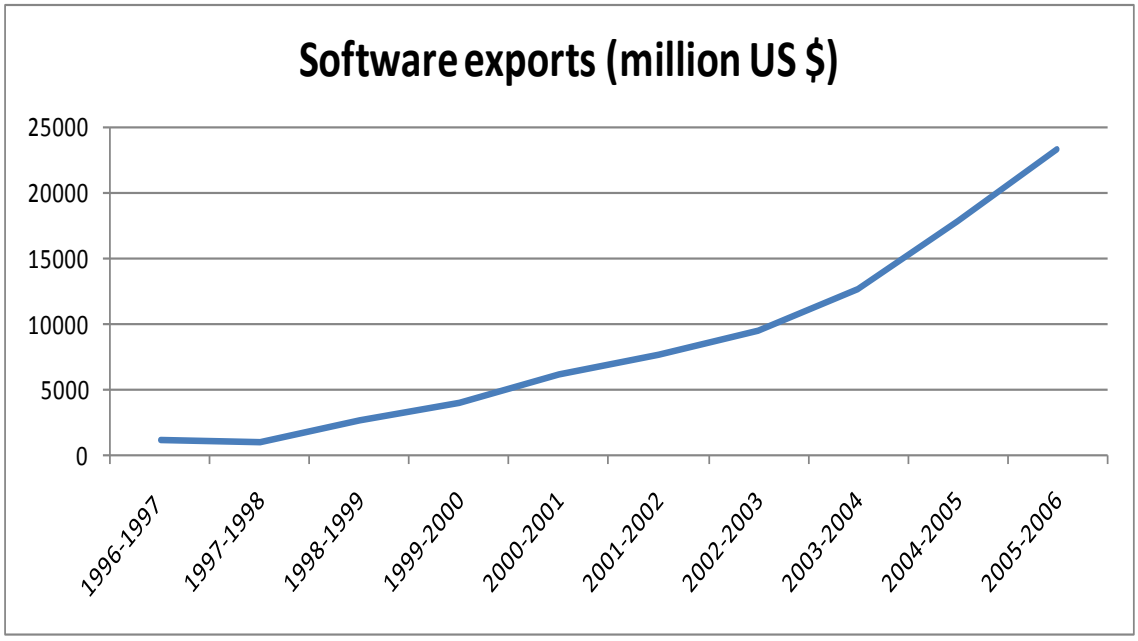
[154] D'Mello, Bernard (1988) "Soviet Collaboration in Indian Steel Industry, 1954-1984." *Economic and Political Weekly*, Vol. 23, No. 10, 473-486.
[155] http://countrystudies.us/india/122.htm
[156] Rao, R.V.R. Chandrasekhara. "Indo-Soviet Economic Relations." *Asian Survey*. 13.8 (1973): 793-801.
[157] Lisa McAdams (2004). *Voice of America Report*. http://www.globalsecurity.org/military/library/news/2004/01/mil-040119-3ae77eaf.htm, 19 January
[158] http://vpk.name/news/36704_rossiya_indiya_zanimaet_do_40_eksporta_oruzhiya.html
[159] Lal 2005

Figure 5. India's software exports grew 25-fold in a decade



Source: The World Bank (2009). *The Service Revolution in South Asia,* Poverty Reduction and Economic Management Unit, South Asia Region, Washington DC: The World Bank. Table 3.2.

India's service export success was driven by four factors: (1) human capital investments through strong educational institutions in technology and management; (2) an international network of overseas Indians that forged business contacts and supplied capital to the software sector; (3) geographic concentration of the service sector that created localisation economies, which increased productivity but incurred low congestion costs (as a service activity); and (4) government maintenance of favorable telecommunication rates and improved labor regulations within the export service sector. This combination allowed domestic firms with international connections to take advantage of low-cost labor to supply standardized services to the mature economies.

As an example, take Hyderabad, the capital of the state of Andhra Pradesh. Within two decades, Andhra Pradesh has been catapulted from a poor and agricultural economy into a major service center. It has transformed itself from a lagging to a leading region. Fuelled by an increase in service exports of 45 times between 1998 and 2008, the number of information technology companies in Hyderabad increased 8 times, and employment increased 20 times.[160] In 2008 India accounted for 40 percent of the world's outsourcing market. India's IT parks and campuses of Infosys and HITEC City rival those of Microsoft and Google in size. The employment in Infosys was 113,800, compared to 93,000 in Microsoft, and 20,621 in Google.[161] India's experience offers lessons to other developers that have a well-educated workforce because globalization of services is still in its infancy, and services account for more than 70 percent of global output.

[160] The World Bank "The Service Revolution in South Asia" Poverty Reduction and Economic Management Unit, South Asia Region (June 2009).
[161] Agence France-Presse. "India's outsourcing industry sets 50 billion revenue target." 29 Jan 2008.

Brazil and Russia

Following disappointing outcomes of bilater trade relations in the 1960-1980s[162], after the fall of the Soviet Union, Brazil and Russia grew noticeably closer, forming a Russian-Brazilian Cooperative Commission in October 1995 that would convene several times over the subsequent decade in order to negotiate bilateral trade treaties.[163] Leading Brazilian firms pursued export markets by adding value to primary products, pioneering new primary products (like non-hydrocarbon fuels), making commercial aircraft, and fabricating automobiles.[164]

Consider the example of ethanol fuel. The Brazilian government, in an effort to become energy independent, mandated that automobile fuel be composed of a mixture of gasoline and ethanol, a cheap and highly energy-efficient alternative fuel that could be produced from the country's large sugarcane crop. Brazil is now the world's second-largest producer of ethanol fuel (after the United States) and the largest exporter, with over 90 percent of the global export market.[165] Compared to the US's corn-based ethanol industry, Brazil's sugar-based industry is more productive, economical, and occupies a comparatively larger percentage of the country's overall fuel consumption: Brazil's ethanol productivity is 727 gallons per acre (compared to 321 for the US), its cost of production is 83 cents per gallon (compared to $1.14 for the US), and its use relative to overall fuel consumption stands at 40 percent (compared to 2 percent for the US).[166]

From 1992 to 2006, Brazil's trade-to-GDP ratio increased from 16 percent to 25 percent, demonstrating the effects of government measures to liberalize and integrate Brazil's economy into the global market.[167] Brazil's agri-business firms led the export strategy, which subsequently extended through the manufacturing sector. Brazil's now has the world's second largest mining company (Vale)[168], the third largest aircraft manufacturer (*Embraer*), and the fourth largest energy company (Petrobras)[169]. Brazil is also the largest exporter of sugar, beef, poultry, meat, coffee, orange juice, and tobacco; and the second-largest exporter of soy bean, soy meals, beef, and broiler meat. Brazilian forests supply much of global demand for wood pulp. Along with mining and agribusiness, Brazilian manufacturing boomed through the 2000s, spearheaded by automobiles (30 percent of manufacturing growth) then machinery and equipment (12 percent) and electronics and communication equipment (7 percent). Brazil also has significant programs in space, bio-fuels and deep offshore hydrocarbon extraction.

Brazil's economic dynamism can be attributed in part to increasing mobility. From the 1950s through 1970s, Brazil saw one of the world's largest rural-to-urban demographic shifts, with

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[162] http://countrystudies.us/brazil/113.htm and Miller, Nicola, *Soviet Relations with Latin America, 1959-1987*. Cambridge: Cambridge University Press, p. 172-179.
[163] http://www.mid.ru/ns-rlat.nsf/601debeef6efe270432569dc002f680c/dd5d49bc1a8e9f6fc3256f5c00417fd4?OpenDocument
[164] Castro, A. (2009) "The impact of public policies in Brazil along the path from semi-stagnation to growth in a Sino-centric market", in: Cimoli, M, Dosi, G. and Stiglitz, J.E. (eds) *Industrial Policy and Development* Oxford: Oxford University Press, 257-76.
[165] http://www.eia.doe.gov/cabs/Brazil/Oil.html
[166] http://www.wilsoncenter.org/topics/pubs/Brazil_SR_e3.pdf; Sources: UNICA, USDA, USITC, Ministério das Minas e Energia, World Watch Institute, RFA. 2006/7 data for Brazil and 2005/6 data for US. 2004 data for production costs.
[167] Castro, A. (2009) The impact of public policies in Brazil along the path from semi-stagnation to growth in a Sino-centric market, In: Cimoli, M, Dosi, G. and Stiglitz, J.E. (eds) *Industrial Policy and Development* Oxford: Oxford University Press, 257-76.
[168] http://www.newstatesman.com/economy/2010/07/brazil-mining-vale-company
[169] http://www.newstatesman.com/energy-and-clean-tech/2010/07/brazil-company-petrobras

approximately 20 million people moving to large urban centers in the country's southeastern region.[170] The Southeast is responsible for nearly 60 percent of Brazil's GDP with less than 40 percent of the country's population.[171] Three of the four states in the Southeast (São Paulo, Rio de Janeiro, and Minas Gerais) account for 58 percent and 54 percent of Brazil's industrial and services sectors, respectively.[172] Thus, migration from the less prosperous Northeast has made the Brazilian economy more productive and more efficient by concentrating human capital in the country's highest-performing region.[173]

Russia's BRIC colleagues demonstrate the benefits of integration into the global economy. They have specialized in a relativelty narrow range of products, and become globally competitive. Large agglomerations in Brazil, China, and India spearhead productivity gains throughout the economy. Mobile labor has flocked to these gateways to the global economy; as they attract labor from low productivity sectors in areas of fading economic opportunity, they are powering these countries towards income levels that are closer and closer to that of Russia.

[170] http://countrystudies.us/brazil/29.htm
[171] http://www.ibge.gov.br/cidadesat/topwindow.htm?1
[172] http://www.ibge.gov.br/english/presidencia/noticias/noticia_visualiza.php?id_noticia=1497&id_pagina=1
[173] Yap, Lorene (1976). "Internal Migration and Economic Development in Brazil." *The Quarterly Journal of Economics*. 90.1, 119-137.

Chapter 5. A Competitive Russia

An influential Russia will be more globally interdependent

98. Russia's diversification and modernization strategy aim to make Russia's economy more competitive. Policy reform in this area—revising the competition law, entry and exit regulations, or removing red tape and state aid—will help Russian firms become more competitive, as outlined in a recent World Bank report.[174] This chapter focuses on another pathway to greater competitiveness: more effective integration with the global economy. Greater openness to international cooperation and investment can support Russia's objectives of restructuring its economy, facilitate its investment abroad and increase its stature in the world economy. WTO accession and selective interventions such as early reform zones can help overcome barriers to reform.

The problem: not part of global production networks

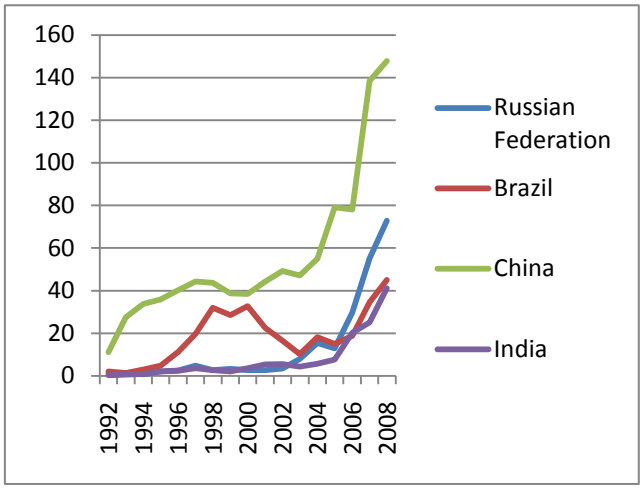
99. During the last decade Russia has made progress in opening up its economy. The prospect of joining the WTO has been a motivation for domestic reforms. The Russian parliament has passed 42 packages of legislation in preparation for WTO accession.[175] Among other concessions, Russia has agreed to an increase in the maximum foreign ownership share by foreign banks and insurance companies from 15 percent to 50 percent and has scrapped the Rostelecom monopoly on fixed line telephone services. It also agreed to lower nonagricultural tariffs by 50 percent to about 8 percent and has made major concessions to open its market for agricultural products under a bilateral agreement with the United States. Despite a long and drawn-out process—Russia started negotiating in 1993—the government has repeatedly affirmed its commitment to WTO membership and relatively few barriers remain to accession.[176]

100. Increasing FDI and trade flows show that these policies already promote closer integration in the world economy. Between 2000 and 2008, FDI inflows increased from $2.7 billion to $72.8 billion (figures 6 and 7). As a share of GDP, direct investments in 2008 were higher than in China. Portfolio investment increased from $10 billion to $28 billion. Other investments increased from $4 billion to $182 billion,[177] while total outflows increased from $21 billion to $122 billion. In the same period, merchandise exports rose from about $100 billion to more than $500 billion, imports from about $60 billion to $375 billion,[178] doubling

[174] World Bank (2011). Competition, Innovation and Export Diversification: A Policy Agenda, World Bank, Washington D.C. (draft; March).
[175] Tarr, David G. and Natalya Volchkova (2010), Russian trade and foreign direct investment at the crossroads, Policy Research Working Paper 5255, World Bank, Washington, D.C.
[176] Tarr, David G. and Natalya Volchkova (2010), Russian trade and foreign direct investment at the crossroads, Policy Research Working Paper 5255, World Bank, Washington, D.C.
[177] Khomiakova, Tatiana (2009), What factors hinder and facilitate foreign direct investment in Russia? Background paper for this report.; Oding, Nina (2009a), Foreign direct investment in Russia. Background paper for this report."Other investments" include commercial credits, trade credits and bank deposits.
[178] Kadochnikov, Denis V. (2009a), Russia's external trade. Background paper for this report.

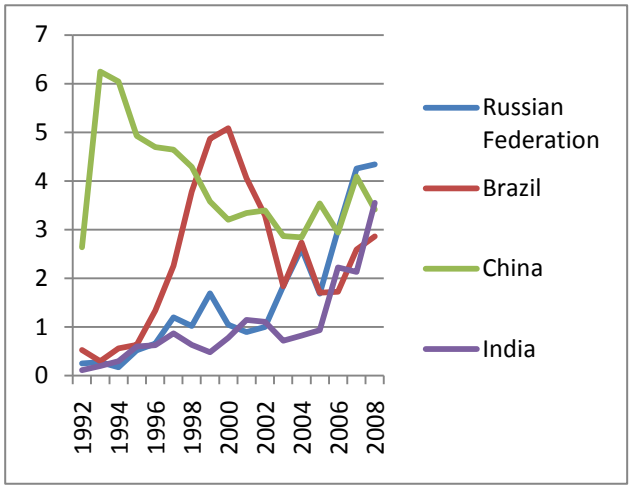
Russia's share in global exports of goods and services. Greater openness and international economic integration promote growth through a variety of channels. Increased competition encourages domestic firms to restructure more quickly. Technological spillovers and easier availability of foreign inputs increase productivity. And foreign firms' investments provide links to external markets that help increase exports further.

Figure 6. Foreign direct investment, net inflows (BoP, current US$, billion)



Source: World Bank WDI (2010).

Figure 7. Foreign direct investment, net inflows (% of GDP)



Source: World Bank WDI (2010).

101. A more open Russia will be in a better position to achieve its goals of modernization, diversification and competitiveness, and to be more influential abroad. But some policies suggest ambivalence about economic opening and closer economic integration. The turbulent period after the disintegration of the Soviet Union may be part of the reason. During the 1990s a complex process of establishing a democratic political system coincided with painful economic adjustments. Rapid removal of price controls, an opaque privatization process, and massive capital flight contributed to economic turmoil with a plummeting GDP and rising poverty. But falling commodity prices due to the Asian financial crisis, a rigid exchange rate policy, and speculative capital flows attracted by high interest rates on government bonds resulted in the Russian financial crisis in 1998.

102. As a result, the Russian government pursued economic policies aimed at strengthening economic sovereignty and stability. One priority was to overcome the perception of financial fragility. Rising natural resource revenue allowed Russia, ahead of schedule, to pay off its IMF loans in 2005 and its Paris Club debt inherited from the Soviet Union in 2006.[179] An express objective was to avoid conditionality attached to loans from foreign governments or multilateral lenders.[180] At the same time, Russia has attempted to reestablish strong bonds

[179] Gaddy, Clifford G. and Andrew Kuchins (2008), Putin's plan, Washington Weekly, Spring 2008, 117-129
[180] Gaddy, Clifford G. and Ickes, Barry W. (2005) Resource rents and the Russian economy, Eurasian Geography and Economics, 46,8: 559-583.

with some CIS countries including a customs union with Kazakhstan and Belarus. The government has also asserted greater control over natural resources, technology and the media through the strategic sector law in 2008.[181] Foreign ownership in these sectors now requires prior authorization by a government commission, rather than be granted based on clearly defined criteria. The law also significantly broadens the definition of what is considered a strategic sector and allows government officials considerable leeway in delaying clearance decisions.

103. Early repayment of debt can be sound macroeconomic poli*cy.* Greater regional integration ahead of global integration can strengthen supply ca*pacity* and promote regulatory improvements. And the strategic sector law has been welcomed by some as a means to increase legal certainty and transparency. All of this is consistent with a Russia that wants to pursue international economic integration, on its own terms. Actions by government agencies have contributed, however, to an international reputation for an unfavorable business climate. Together with protectionist measures such as high export tariffs on timber to encourage domestic wood processing industries and an agricultural marketing board, this suggests a preference for industrial policies aimed at import substitution and state support to sectors that stand in contrast to the progress made in complying with WTO rules.

104. Russia's ambivalent policies and actions for international economic integration are reflected in its poor standings in international surveys of countries' business environment (table 10). Russia ranks 146 of 180 countries in Transparency International's *Corruption Perception Index*, 120 of 183 in the *Doing Business* comparisons, and 94 of 155 in the *Logistics Performance Index*. By these measures, Russia is not an attractive place to invest. On corruption and logistics, Russia ranks significantly lower than the other BRIC countries. On the overall business climate, it ranks slightly better than Brazil and India, but lower than China. The low quality of logistics and of the 'trading across borders' indicators underline Russia's poor performance in facilitating international trade.

Table 10. Rankings in international business environment surveys

	Russia	Brazil	India	China
Corruption perception index[182]	146	75	84	79
Doing business index[183]	120	129	133	90
Starting a business	106	126	169	151
Dealing with construction permits	182	113	175	180
Employing workers	109	138	104	140

[181] Tarr, David G. (2010), Political economy of Russian trade policy: Early transition, customs unions, WTO accession and protection for industrial diversification, Working Paper, New Economic School, Moscow; Gati, Toby T. (2008), Russia's new law on foreign investment in strategic sectors and the role of state corporations in the Russian economy, Akin Gump Strauss Hauer & Field LLP. www.akingump.com/files/upload/Foreign_Investment%20in%20Russian%20Strategic%20Sectors%20-%20by%20Toby%20T.%20Gati.pdf.

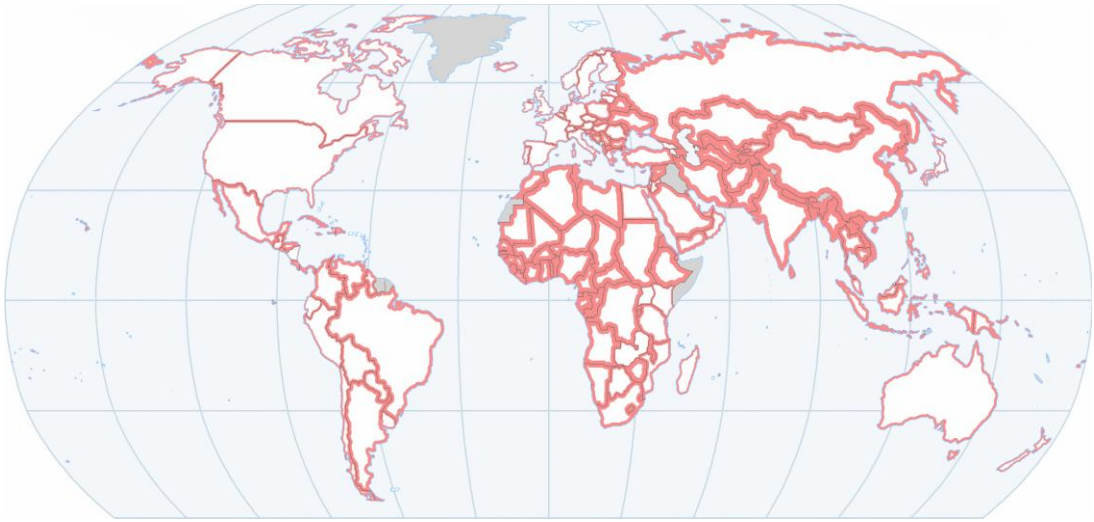
[182] http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table

[183] http://www.doingbusiness.org/economyrankings/

Registering property	45	120	93	32
Getting credit	87	87	30	61
Protecting investors	93	73	41	93
Paying taxes	103	150	169	125
Trading across borders	162	100	94	44
Enforcing contracts	19	100	182	18
Closing a business	92	131	138	65
Logistics performance index[184]	94	41	47	27

105. The result is that on a world map indicating restrictions by countries to the flow of goods, capital, people, and ideas, Russia's borders are as thick as those of India (Figure 8). A large domestic market, prospects for reform and rapid economic growth, and an abundance of qualified low-wage workers can help countries engage with the world despite thick borders. China, for instance, also has high formal restrictions, but is *de facto* closely integrated in the world economy. Its vast population, future market potential and highly competitive producers compensate for the extra cost of passing through thick borders. It is not clear whether the same is true for Russia.

Figure 8. Thick borders



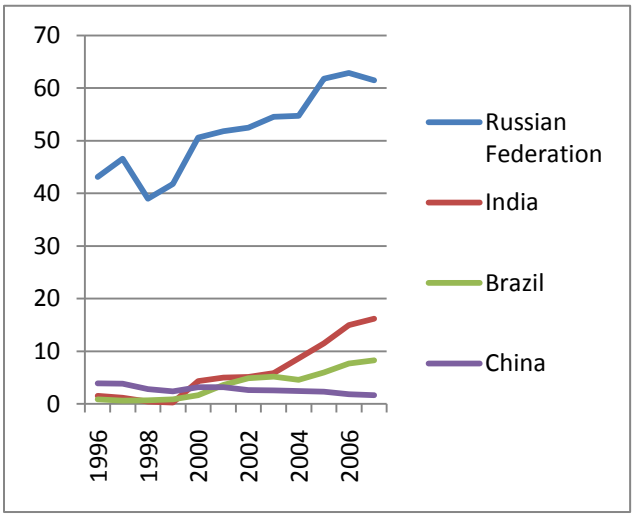
The problem: Relying on high oil prices, and investing the rents poorly

106. Russia's strong economic performance despite a poor investment climate is largely due to high export earnings from oil and gas. Russia's fossil fuel exports increased from $70 billion

[184] http://info.worldbank.org/etools/tradesurvey/mode1b.asp#ranking

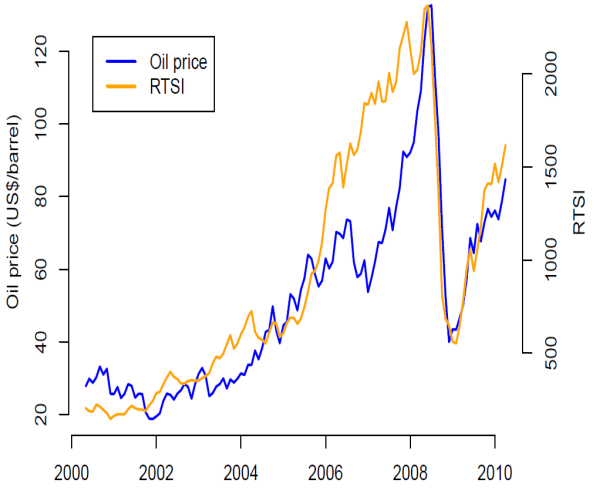
in 2000 to $312 billion in 2007 (in current dollars). Their share in total merchandise exports during the same period rose from 51 percent to 61 percent (figure 9). As fuel prices go, so goes much of the rest of the Russian economy. Over the last 10 years, Russia's main stock market index (RTSI, see figure 10), the revenue of the largest non-oil sector firms, household income, consumption and retail sales, and even the production of railway cars have tracked oil prices closely.[185] While the sectoral destination of foreign investments roughly mirrors GDP shares, even non-mineral sector investments will largely be driven by oil revenue (table 11).[186] Furthermore, the origin of foreign investment suggests that a large share is repatriated money that left the country during the period of massive capital flight or funds that are "round tripping" to avoid taxes and regulations: a third of FDI in 2007 and 2008 has come from Cyprus, an off-shore banking center.

Figure 9. Undiversified exports: Share of fuel exports in total merchandise exports (percent)



Source: World Bank WDI (2010).

Figure 10. Undiversified economy: Russian stock market performance closely tracks oil prices[187]



[185] Gaddy, Clifford G. and Barry W. Ickes (2010), Russia after the global financial crisis, CRIFES Working Paper, Center for Research on International Financial and Energy Security, Penn State University. (forthcoming in Eurasian Geography and Economics).

[186] The share of *direct* investments that has gone into the minerals sector is higher than the share of foreign investment overall, but specific data are not available.

[187] Gaddy, Clifford G. and Barry W. Ickes (2010), Russia after the global financial crisis, CRIFES Working Paper, Center for Research on International Financial and Energy Security, Penn State University. RTSI from www.rts.ru; oil prices (Brent Europe) from US Department of Energy (USEIA).

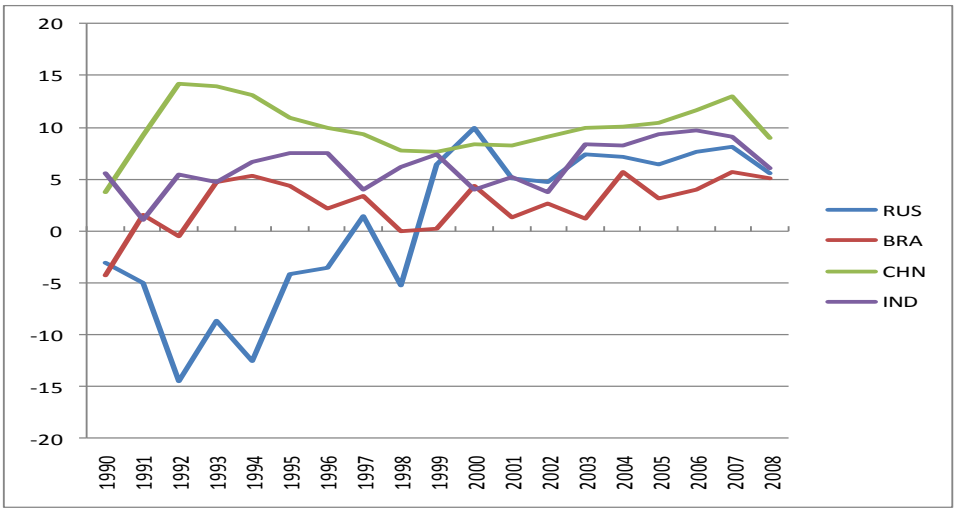
Table 11. Foreign investment by sector (percent)[188]

	2003	2004	2005	2006	2007	2008
Agriculture, hunting, and forestry	**0.5**	**0.3**	**0.2**	**0.6**	**0.4**	**0.8**
Mining and quarrying	**19.3**	**24.5**	**11.2**	**16.6**	**14.4**	**12.0**
Mining and quarrying of energy producing products	17.3	21.6	9.6	14.1	13.1	9.5
Mining and quarrying, except of energy producing products	2.0	2.9	1.6	2.5	1.3	2.5
Manufacturing	**22.0**	**25.3**	**33.5**	**27.5**	**26.4**	**32.7**
Manufacture of food products	3.4	2.3	2.2	2.5	2.4	3.8
Manufacture of chemicals and chemical products	1.2	1.9	2.7	2.8	1.4	2.4
Manufacture of metals and fabricated metal products	10.3	12.6	6.4	6.8	12.6	14.0
Manufacture of transport equipment	0.7	2.1	1.8	2.6	2.5	2.7
Manufacture of coke and mineral oil	0.6	0.2	15.1	7.2	3.6	3.2
Services	**58.2**	**49.9**	**55.1**	**55.3**	**58.7**	**54.5**
Construction	0.3	0.6	0.4	1.3	2.4	3.3
Wholesale, retail, repair activities	36.1	32.9	38.2	23.7	39.1	23.0
Transport and communication	3.8	5	7.2	9.6	5.5	4.7
of which communication only	2.3	3.4	6.1	8.5	2.7	1.3
Financial intermediation	2.6	2.5	3.4	8.5	3.7	4.8

107. Oil and gas will continue to be mainstays of the Russian economy. Russia's oil and gas wealth has been the main driver of growth in the first decade of the twenty-first century when growth averaged more than 5 percent a year (figure 11). Through export taxes and other payments, it contributes almost half of all federal revenues.[189] Export earnings fed a stabilization fund whose balance increased from $82 billion to $157 billion between 2006 and 2008.[190] As public debt fell, reserves built up, although private sector debt increased.[191] Clearly, oil and gas exports have been instrumental in turning around an economy that was badly damaged in the 1998 financial crisis. But this also raises the issue whether Russia's reliance on resource rents is a sustainable growth strategy. The answer depends mostly on the stability of revenues and how those revenues are used.

[188] "Russia in figures – 2009": http://www.gks.ru/bgd/regl/b09_12/IssWWW.exe/stg/d02/24-09.htm & http://ec.europa.eu/economy_finance/publications/publication10969_en.pdf (Table 2)
[189] http://www.tradingeconomics.com/Economics/GDP-Growth.aspx?Symbol=RUB#ixzz0mWBQ7hkG
[190] http://www1.minfin.ru/en/stabfund/statistics/aggregate/. After 2008, the fund was split into an Oil Stabilization Fund managing official reserves, and a sovereign wealth fund, the National Welfare Fund.
[191] Foreign investments other than direct investment (in physical capital, shares, etc.) increased from 4billion to 182 billion between 2000-2008. Three-quarters of this was for long term foreign loans. Russian companies borrowed abroad because of better conditions—longer duration and better terms. Another reason for the preference for foreign loans was that, compared to FDI, borrowing did not dilute Russian ownership shares (Khomiakova, Tatiana (2009), "What factors hinder and facilitate foreign direct investment in Russia? Background paper for this report).

Figure 11. Annual GDP growth, percent



Source: World Bank WDI (2010).

Box 11. Are large resource endowments bad for long-term growth?[192]

There is a common perception that resource-rich countries are economic underperformers. Of 65 resource-rich countries, only four achieved long-term investment rates of more than 25 percent of GDP and long-run growth of 4 percent or more: Botswana, Indonesia, Malaysia, and Thailand. The three Asian countries used resource wealth to diversify and industrialize. But even they did less well than resource-poor South Korea, Hong Kong, and Singapore. The reason most often put forward is that resources crowd out foreign, social, human, financial, and real capital—and this, in turn, reduces growth. Resource-rich countries tend to be less open to trade and foreign investment. They are more at risk of rent seeking through exclusive licensing, protection, or outright capture. They have lower incentives to accumulate human capital. Their wealth appears to reduce incentives to invest and to develop strong financial institutions. And their economic performance tends to be weakened by higher volatility. As a consequence, observed savings in many resource-rich countries may be positive, but genuine savings—the degree to which resource assets are invested into other forms of capital including human and environmental—are often negative.[193]

But a "resource curse" is avoidable. Trade openness, good institutions, and high investments in productive capital, but also in more efficient resource exploration and production capacity, appear to inoculate a country against the corrupting effects of resource wealth. Canada, Australia, Norway, and Botswana are examples. Furthermore, a recent empirical study by Alexeev and Conrad (2009) finds that oil and mineral endowments, when properly estimated, are associated with higher per capita incomes and faster long-term growth. They further argue that the often-found link between resource wealth and poor quality institutions is because discovery of mineral wealth is an external shock that immediately affects income, but not other characteristics of a country—at least in the short to medium term. In other words, countries with recent mineral wealth are "prematurely rich," and the quality of their institutions has not caught up to that level of wealth yet. This study is unlikely to be the final word on the effects of natural resources on national wealth. The link will remain elusive, simply because the experience of resource-rich countries ranges so widely from Nigeria to Norway. But one insight is that resource wealth does not inevitably reduce growth. What matters is how resource revenues are put to work in creating other forms of capital that deliver more sustainable and less volatile growth

108. Some evidence suggests that Russia may not be able to rely in the long term on sustained high oil prices for two reasons: costs and prices. Russian fossil fuel exploration does not achieve industry-wide efficiency due to insufficient investment in state-of-the-art technology. So production costs are relatively high and may increase further. While current oil and gas production is centered on the western side of the Ural Mountains, future expansion may need to locate in the far less accessible and even less hospitable regions of eastern Siberia and the Arctic. Estimates of required investment are $900 billion by 2030 for oil and more than $200 billion for gas by 2020.[194]

[192] Based on Gylfason, Thorvaldur (2001), Natural resources, education, and economic development, European Economic Review, 45, 847-859; Lederman and Maloney (2008), In Search of the Missing Resource Curse, Economía, 9, 1, 1-56; Alexeev Michael and Robert Conrad (2009), The elusive curse of oil, The Review of Economics and Statistics, 91, 3: 586–598; and van der Ploeg, Frederick (2010), Challenges and opportunities for resource rich countries, Department of Economics, University of Oxford, mimeo.

[193] World Bank (2006) presents estimates suggesting that Russia, as well as resource-rich Azerbaijan, Kazakhstan, Uzbekistan, and Turkmenistan, all have negative genuine savings rates, implying that they consume more of their wealth than they invest.

[194] World Bank (2010a), Lights out. The outlook for energy in Eastern Europe and Central Asia, Washington, D.C.

109. Since prices are set in world markets, higher production costs will eat into rents. But prices that recovered somewhat from the lows during the recent financial crisis of 2008/09 could also fall again. Sustained high prices will trigger an economic response in the form of efficiency improvements (and therefore decreasing demand) or substitution with alternative energy sources. Demand from emerging economies will remain strong for some time, but resource-poor economies like China are also investing heavily in reducing dependence on imported fossil fuels.

110. Climate change concerns drive some of this process as countries invest in renewable energy or nuclear power to lower the carbon intensity of their economies. Vast tar sands in Canada and elsewhere already provide significant supplies. Recent technological breakthroughs may open up shale gas deposits in the eastern United States and Western Europe at relatively low-prices.[195] And a globally competitive liquefied natural gas (LNG) market will put pressure on long-term pricing contracts for pipeline delivery.[196] Finally, returning stability in the Middle East could expand global supplies from low-cost producers such as Iran and Iraq, putting downward pressure on prices. There is no consensus about how these developments will play out. But this uncertainty needs to factor into Russian economic planning, especially as the public sector's reliance on fuel revenues increases rapidly. Until 2007, the oil price for the Russian budget to break even was $20 to $30 per barrel. In 2008 it was $60. In 2009, $99, and in 2010 it is estimated to be $100 or above.[197] Given persistent oil price volatility that is unlikely to recede in the future, Russia will need to enter a period of systematic fiscal adjustment to reduce the budget dependence on rents from fossil fuels.[198]

111. The second question in judging whether development that is dependent on oil and gas is sustainable is how resource rents are invested. Resource rents are the excess revenues after subtracting production costs of an efficient producer including a risk-adjusted return to capital. For oil and gas, revenue is determined by the world market price (or long-term contract price). Where producers are not efficient, some of the rents do not go to profits that could be distributed or invested. These extra production costs are profits or other gains for someone—extra revenue for a supplier or extra compensation for workers or managers.

112. Inefficiency rents are mostly a problem of resource abundance. Resource-rich countries tend to be less efficient in extraction, while increasing scarcity—such as in the aging oil fields of the United States—fosters innovation and efficiency gains.[199] But an equally plausible explanation is that excess costs can be a primary channel of rent sharing.[200] More broadly, large rents in many natural resource sectors create incentives for its capture or diversion to prop up inefficient suppliers, obsolete SOEs and uncompetitive firms in mono-

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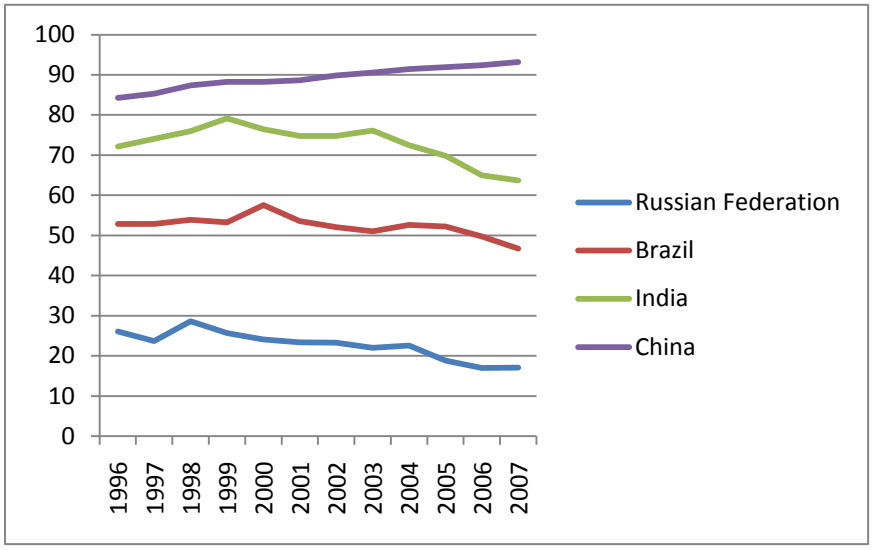
[195] Ruehl, Christof (2010), Global energy after the crisis, Foreign Affairs, 89, 2:65-75. In the USA, production from unconventional gas has doubled over the last decade.
[196] Ruehl, Christof (2010), Global energy after the crisis, Foreign Affairs, 89, 2:65-75.
[197] Estimates by Russia's Alfa Bank. See http://www.ft.com/cms/s/0/9599bfae-4e6f-11df-b48d-00144feab49a.html .
[198] Bogetic, Zeljko, Karlis Smits, Nina Budina and Sweder van Wijnbergen (2010). Long-Term Fiscal Risks and Sustainability in an Oil-Rich Country: The Case of Russia, World Bank Policy Research Paper No. 5340 , World Bank, Washington D.C. (March 23).
[199] van der Ploeg, Frederick (2010), Challenges and opportunities for resource rich countries, Department of Economics, University of Oxford, mimeo.
[200] Gaddy, Clifford G. and Barry W. Ickes (2010), Russia after the global financial crisis, CRIFES Working Paper, Center for Research on International Financial and Energy Security, Penn State University. Appendix A.

towns, or subsidize excessive energy consumption. This has significant costs beyond the direct outlays. It wastes energy and ties up labor and capital in unproductive activities. It prevents beneficial spatial transformations in the economy as described in Chapter 2. It reduces the resources that could be available for investments in human capital—education, health—or technology upgrading. And all of this increases the productivity gap between Russian and international firms in many sectors.

113. This low productivity and competitiveness is reflected in the low share of manufacturing in Russia's exports which has dropped below 20 percent, far lower than that of the other BRICs (Figure 12). Internationally comparative figures on productivity are scarce. A recent study[201] shows that compared to Russia, manufacturing value added per employee in 2004 was 50% higher in Brazil, two-times higher in Poland, three times higher in South Africa, and almost ten times higher in Germany. Manufacturing productivity per worker is about the same as in China, which has far lower labor costs. Estimated total factor productivity in small and medium-size enterprises is about twice Russia's in Brazil, four to five times in South Korea or Germany, and, again, about the same as in China.

Figure 12. Share of manufacturing exports in total merchandise exports (percent)



Source: World Bank WDI (2010).

The debate: Why is Russian productivity low?

114. What makes Russia stand out in international comparison is that its low productivity persists despite scoring high on some R&D and education indicators.[202] Russia ranks higher than most OECD countries in the number of students and researchers as a share of total

[201] Schaffer, Mark and Boris Kuznetzov (2008), Productivity, in Raj M. Desai and Itzhak Goldberg (eds), Can Russia Compete? Brookings Institution Press, Washington, D.C., 12-34.
[202] Schaffer, Mark and Boris Kuznetzov (2008), Productivity, in Raj M. Desai and Itzhak Goldberg (eds), Can Russia Compete?, Brookings Institution Press, Washington, D.C., 12-34. Kastueva-Jean (2008).

population. But this does not seem to translate into productive innovation—for various reasons: low expenditures leading to low quality of education (per student expenditures are only about a fifth the OECD average and professors are chronically underpaid), a mismatch of skills taught to students and embedded in researchers, or missing linkages between research and businesses. Russia may also concentrate too much on the quantity of higher education output while neglecting trade crafts and practical skills required for modern production.

115. In short, it appears that Russia's most important resource, its people, remains underdeveloped and underused. These shortcomings in the education sector are mirrored by an underdeveloped research sector in private industry. Russian private businesses finance only 30 percent of total R&D compared with 50 percent in the EU, 60 percent in the United States, and 75 percent in Japan.[203] Moreover, Russian research is dominated by military-industrial groups, which are not pro-business, favor secrecy and are not likely promote innovation in the private sector.[204]

116. As with human capital, Russia also has nominally good endowments in physical infrastructure such as power supply, telecoms and transport. In business climate surveys, Russia scores better in these categories than the other BRIC countries which are still more agriculturally oriented and have a much shorter history of industrialization. But upkeep of the infrastructure stock has been insufficient. Total projected investment needs to address shortcomings in electricity generation, transmission and distribution are estimated to reach about $450 billion over the next twenty years.[205] Between 2000 and 2006, there had been no expansion in Russia's paved road network.[206]

117. Infrastructure upgrading in Russia is also hampered by a high cost structure. To build a coal-fired power plant in Russia costs 40 percent more per kW than in the EU and 3.5 times as much as in China.[207] Road construction is much costlier than in Western countries.[208] China is also allocating a large share of its export earnings to upgrade its productive infrastructure. It has completed 41,000 km of new or upgraded highways between 1990 and 2005. And it is currently building the largest high-speed train network in the world with 9000 km under construction—five times the entire current network of France.[209] While China may now be overinvesting in infrastructure—such spending is part of its economic stimulus program—it appears that Russia's resource rents have not been effectively deployed to improve human and physical capital formation.

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[203] Auty, Richard M. (2009), Natural resource endowment, policy incentives and spatial restructuring in Russia. Background paper for this report.
[204] Auty, Richard M. (2010b), *BRIC Lessons for Russia on Economic Restructuring for Global Integration*, Background paper for this report, and Liuhto, Kari (2009), Special Economic Zones in Russia – What do the zones offer for foreign firms?, Electronic Publications of Pan-European Institute 2/2009, Turku School of Economics, Turku.
[205] World Bank (2010a), Lights out. The outlook for energy in Eastern Europe and Central Asia, Washington, D.C.
[206] Aslund, (2008), Op-ed: 10 Reasons Why the Russian Economy Will Falter Moscow Times, September 3, 2008. http://www.iie.com/publications/opeds/oped.cfm?ResearchID=997
[207] MGI (2009), Lean Russia. Sustaining economic growth through improved productivity, McKinsey Global Institute, Moscow.
[208] Aslund, (2008), Op-ed: 10 Reasons Why the Russian Economy Will Falter Moscow Times, September 3, 2008. http://www.iie.com/publications/opeds/oped.cfm?ResearchID=997
[209] Keith B. Richburg and Dwuan June/The Washington Post - May 12, 2010.

118. Government policies also do not create sufficient incentives for investments in productivity growth. The generally poor ranking of Russia in investment climate surveys has been discussed. Administrative costs, policy and regulatory risk, and barriers to competition remain high: Russian firms lost about 12 percent of total sales to delivery delays, utility service disruptions, crimes and bribes.[210] This is 50 percent more than Chinese firms and twice that of South African firms. Another major factor contributing to weak competitiveness is that domestic firms are still too sheltered from foreign competition. Trade has been progressively opened in advance of WTO membership. But Russia ranks 70 of 125 countries in trade restrictiveness.[211] Furthermore administrative hurdles increase the cost and difficulty of FDI and foreign acquisitions.

119. Greater openness to trade and investment would be disruptive for some firms, but would encourage productivity growth and competitiveness through a variety of channels:

- Openness creates market discipline by exposing domestic firms to international competition.

- Openness injects capital and know-how. Privatization of firms in transition economies to foreign owners considerably improved their performance.[212] Privatization to domestic owners had no or even a negative effect in Russia and other CIS economies.

- Openness encourages reciprocity. Bilateral market access liberalization tends to proceed on a quid pro quo level. Well capitalized Russian firms in the energy but also service sectors currently face barriers for investments in western companies that would recede with mutual market opening.[213]

- Openness reduces economic risk. Sharing capital investments with foreign firms, for instance in modernizing extractive industries, shelters domestic companies from some of the risk of falling commodity prices. Diversification, encouraged by open markets, reduces the volatility of an economy depending on only a few sectors.[214]

- Openness, finally, encourages institutional reforms and improvements in governance. International investors expect a comparable legal and regulatory environment which also benefits domestic firms.

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[210] Desai, Raj M. (2008), Improving the investment climate, in Raj M. Desai and Itzhak Goldberg (eds), Can Russia Compete? Brookings Institution Press, Washington, D.C., 91-112.
[211] Trade Tariff Restrictiveness Index (MFN applied tariff) - All Goods - reflects the equivalent uniform tariff of a country tariff schedule that would maintain domestic import levels constant. Data for 2006-09 (latest) from World Bank World Trade Indicators 2009/10.
[212] Estrin et al. (2009). Correa et al. (2010) suggest this may be related to technology use: "Fully foreign-owned firms and joint ventures exhibit significantly better technology adoption outcomes, but privatization to domestic owners is not systematically associated with more frequent technology adoption."
[213] Langhammer, Rolf J. (2007), Sectoral Distortions and Service Protection in Russia. A Comparison with Benchmark Emerging Markets and EU Accession Candidates, Kiel Working paper No. 1385, Kiel Institute for the World Economy.
[214] Tarr, David G. (2010), Political economy of Russian trade policy: Early transition, customs unions, WTO accession and protection for industrial diversification, Working Paper, New Economic School, Moscow.

Learning from peers

120. Russia has the structural endowments to make its economy outside the resource extraction sector internationally competitive. Although its per capita GDP is higher and it has a far longer history of industrialization, Russia can draw useful lessons from the recent successes in the other BRIC economies. Each has pursued a development path that built on inherent structural advantages. Russia shares elements of all of them, but has not taken sufficient advantage of them. The four BRICs each have a large geographical area and sizable population. They also share a legacy of poor economic governance. Large domestic market potential and adoption of fashionable development theories encouraged the pursuit of autarkic development strategies. Each differed in implementation. Central planning with high (Russia) or low (China) levels of industrialization, command capitalism in India, and import substitution followed by an industrial big push strategy in Brazil. But through effective reforms and focusing on structural strengths, each has become an influential member of the G-20. The scope for learning from each other is considerable.

Brazil—adding value to commodities and nurturing specialized manufacturing

121. Like Brazil, Russia is resource-rich, not just in oil and gas but also in agriculture and forestry products. But Russia has so far mostly relied on large resource rents from raw materials exports, without developing the specialized expertise to increase domestic added value. Where Russia has tried to increase local value added, it has often been through trade protection rather than market forces—as with the export tax on lumber products. Brazil, in contrast, achieved competitive diversification despite resource abundance following the dismantling of autarkic policies and adoption of unilateral trade liberalization in the 1990s.[215] Brazil's agri-business firms led the way in pioneering aggressive export strategies.

122. Today, Brazil is the world's largest exporter of beef, chicken, orange juice, green coffee, sugar, ethanol, tobacco and soya beans, meal and oil, and the fourth biggest exporters of pork and maize.[216] This is in part a result of productivity gains from large investments in R&D, especially through EMBRAPA, which receives about $300 million in funding per year, and strong research universities.[217] But Brazilian firms also took strategic advantage of foreign investment, expertise, and market access that enabled commodities firms to steadily increase their competitiveness. US firms have large investments in Brazil. But Brazilian firms also invest abroad, owning large stretches of Florida orange groves and Midwestern meat processing plants, for instance.

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[215] Veiga, Pedro da Motta (2009), "Brazil's Trade Policy: Moving Away from Old Paradigms", in Lael Brainard and Leonardo Martinez-Diaz (eds.), Brazil as an Economic Superpower? Understanding Brazil's Changing Role in the Global Economy, Brookings Institution Press, Washington, D.C.; Barros, Geraldo (2009), "Brazil: The Challenges in Becoming an Agricultural Superpower", in Lael Brainard and Leonardo Martinez-Diaz (eds.), Brazil as an Economic Superpower? Understanding Brazil's Changing Role in the Global Economy, Brookings Institution Press, Washington, D.C.

[216] "Brazilian farms sow seeds of openness", Financial Times, April 15, 2010.

[217] One example is the development of soya and other plant varieties and soil enrichment techniques that made agricultural production possible in the dry *Cerrado* (engl: "inaccessible" or "closed") region (Barros 2009). Expansion into the Cerrado significantly increased Brazil's agricultural outputs, but also raised environmental concerns.

123. Success in agriculture has spilled over into mining, manufacturing, and even services. Petrobras, a state-owned oil company, is efficiently run in large part because it lost its monopoly in 1997 and had to face national and foreign competition.[218] It is pushing the technological frontiers in deep sea exploration and extraction. Brazil has the world's third largest airplane manufacturer, Embraer, and hosts a large competitive automobile industry, largely subsidiaries of foreign firms. And even the financial sector has strengthened significantly, including a domestic development bank, BNDES, with a balance sheet larger than the World Bank's.[219] But Brazil's experience also offers a cautionary note.[220] Like Russia, it will face contradictory effects from growth in China and India. As commodity exporters, they will benefit from increasing demand for raw materials. But this will strengthen their real exchange rates. This will make it harder to continue diversification into manufacturing and service sector exports.

124. Brazil's move into highly efficient commodity exports that helped drive specialization and diversification in other sectors contrasts with Russia, where despite slow improvements, agriculture remains inefficient by international standards with low yields for major crops and low productivity in livestock farming. As a result, the country with the largest land area in the world has depended significantly on food imports. In the first quarter of 2009, Russia imported 147,000 tonnes of chicken and 184,000 tonnes of beef.[221] Major problems include continuing land ownership uncertainties, decline of agricultural science and education, rural credit shortages, and insufficient marketing channels.[222] In the oil and gas sector, Russian state-owned firms' relatively low productivity is in large part also due to the fact that the sector is sheltered from competition. Allowing new domestic and foreign firms to enter the sector, as in Brazil, would likely increase returns.

China—workshop for the world, moving up the technology ladder

125. Like China, Russia can become a bigger exporter of manufactured products. China has become a leading exporter of manufacturing goods. It achieved this through deliberate opening of its economy to foreign investment and significant investment in infrastructure and education at all levels—from adopting elements of the European dual vocational training system to building top-class universities. Like Russia's, China's reformers faced opposition from those benefiting from the status quo of rent recycling under central planning. China managed to reform its economy by using selective opening and regulatory reform, first in special economic zones located to maximize export potential. This reduced rent seeking and opposition to reforms.

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[218] World Bank (2010b) 34, 139; Sennes and Narciso (2009). However, Wood (2010) reports that with potentially vast new resources in the so-called pre-salt region, Brazil has now established a new SOE, Petrosal, which will have a monopoly ownership of these reserves and is tasked to give preference to Petrobras for extraction. Opportunities for other firms and thus competitive pressure on Petrobras would diminish if a more state-centric oil development model emerges.

[219] Economist, November 14, 2009. "Special report on business and finance in Brazil."

[220] Auty, Richard M. (2010b), BRIC Lessons for Russia on Economic Restructuring for Global Integration, Background paper for this report.

[221] http://www.interfax.com/newsinf.asp?id=163397. Chicken imports have since declined following a trade dispute with the United States.

[222] Foreign Agricultural Service, USDA, "Russia Agricultural Economy and Policy Report 2009". http://www.fas.usda.gov/country/Russia/Russia%20Agricultural%20Economy%20and%20Policy%20Report.pdf

126. During 1979-95 China received 40 percent of all FDI to developing countries, of which the coastal areas received 90 percent and Guangzhou Province alone 40 percent.[223] By the time SEZ privileges were phased out and larger parts of the economy were reformed, there was enough pressure from export-oriented firms and entrepreneurs to counter rent seekers and reform opponents. Another key to China's emergence as a leading exporter has been its close integration in regional production networks. China, in fact, runs trade deficits with many of its neighbors, as it imports components that are assembled and exported to world markets.[224] China integrated regionally to expand its supply capacity—especially for more advanced technological components—and globally to expand the effective market demand for its products. These regional buyer-supplier networks and the global market reach pre-dated China's WTO accession.

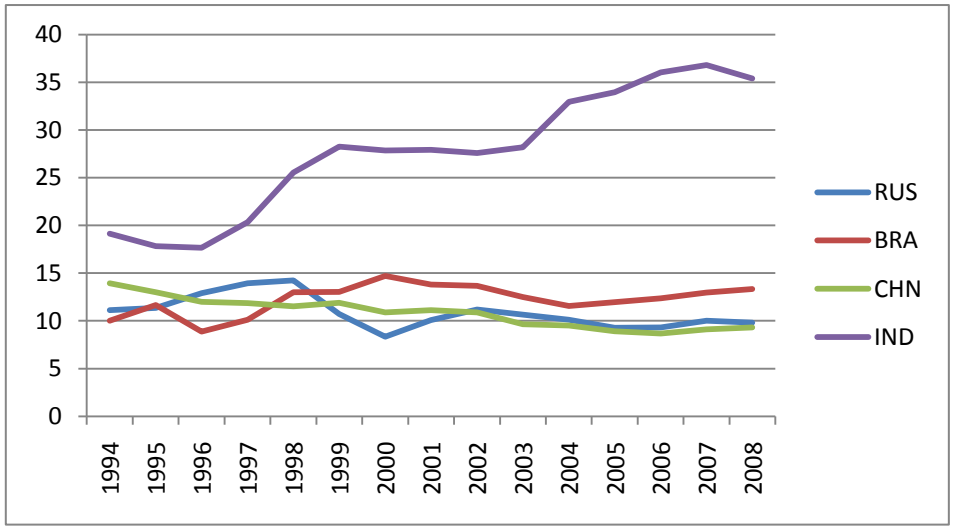
127. Russia has a long history in heavy industries and other manufacturing, a legacy in science and engineering, lower wages than in Western Europe or Japan, and relatively good market access to Europe. But manufacturing industries are protected from foreign competition, inefficient firms are kept in business through state aid, and low education investments combined with a demographic crisis have led to shortages of qualified labor.[225] Currently, most sectors of Russian manufacturing are globally uncompetitive, suffering from low quality and low levels of innovation. Its once large aircraft industry, for instance, today primarily exports military planes. Russian civilian aircraft production is less than 1 percent of the global total.

India—back office to the new world, developing sophisticated IT applications

128. Like India, Russia has considerable capacity in software development. Over the last 20 years, India has seen a remarkable growth of its business services and IT sector. In 1990, service exports were only 20 percent of total exports and 1.4 percent of GDP (figure 13). By 2008, 35 percent of the value of exports came from services, compared with less than 10 percent for both Russia and China. More than half came from ICT services worth $52 billion. India now has some of the world's largest ICT companies, such as Wipro and Infosys.

[223] Auty, Richard M. (2010b), BRIC Lessons for Russia on Economic Restructuring for Global Integration,
[224] World Bank (2008a), World Development Report 2009 - Reshaping economic geography, Washington, D.C.
[225] For a summary of Russia's demographic problems see Eberstadt, Nicholas (2009), Drunken Nation: Russia's Depopulation Bomb, World Affairs, Spring 2009. www.worldaffairsjournal.org/articles/2009-Spring/full-Eberstadt.html.

Figure 13. Share of services exports of total exports, percent



Source: World Bank WDI (2010).

129. India's competitiveness in service exports rests on four reasons.

- First is human capital. The Indian Institutes of Technology, partially modeled on the Massachusetts Institute of Technology, represent the tip of a vast education system that produces trained service sector employees at all levels.

- Second, the sector exploited agglomeration economies. A large share of the most innovative companies is located in Bangalore and Hyderabad. Even the more standardized back-office and call center services tend to be concentrated in a handful of large cities.

- Third, to facilitate exports the sector took advantage of the large number of overseas Indians, many of whom returned to take advantage of opportunities in their home country.

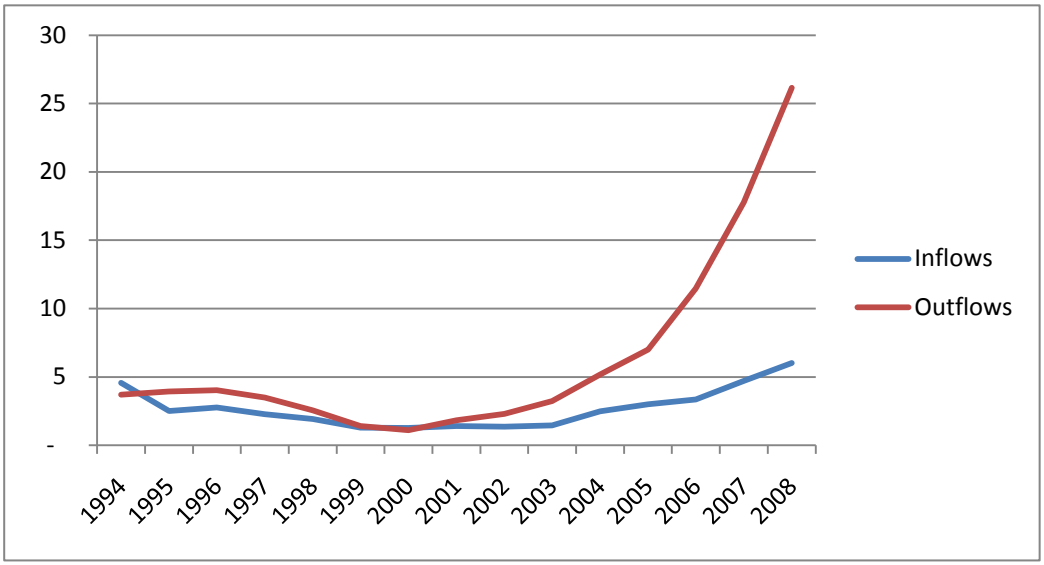
- Fourth, the Indian government eventually supported the process—by controlling telecommunication price rates and relaxing labor market rigidity within the export service sector; and less deliberately by not interfering in exports. In contrast to manufactured goods, service exports could not easily be taxed or subjected to export duties and red tape. By the time the significance of the sector became obvious, it was strong enough to fight back against rent-seeking officials. India has shown that service sector led growth can be an alternative to the standard resource or manufacturing driven model.[226]

130. India sees Russia as one of its likely competitors and, given Russia's potential, it should. But to capture a larger share of the global market for services, Russia needs to improve its IT engineering education, expand English language training, provide a better environment for innovation among small and medium firms, and improve the rule of law and intellectual property rights to attract more foreign investment in the sector. Like India, Russia

[226] Ghani, Ejaz and Homi Kharas (2009), The service revolution in South Asia, World Bank, Washington, D.C.

experienced a large emigration of skilled people, (in Russia's case) mostly to the United States, Western Europe and Israel. Between 1989 and 2000, more than 20 000 academics emigrated from Russia and by 2005 another 30,000 trained specialists worked abroad under contract.[227] The direct financial returns have not been large. Russia ranks 19 in total remittances received of about $6 billion in 2008.[228] But this is only 0.4 percent of GDP (rank 122). India ranks first with about $50 billion, although much of that comes from laborers in the Middle East. Russia is a far larger source of remittances (Figure 14). At $26 billion it is second only to the United States. Perhaps more important, Russia has not yet seen a large return flow of highly skilled professionals and entrepreneurs—a major source of innovation and job creation in India's services sector.

Figure 14. Remittance flows from and to Russia, US$ billion



Source: World Bank (2010c).

Russia—Following its own path to integration

131. Each of the other three BRIC countries pursued a different growth path. Brazil specialized in adding value to commodities and nurtured specialized manufacturing. China became the low-cost producer for the world and has been steadily moving up the technology ladder into higher value production. India has become the back-office for the world and develops sophisticated IT applications. But the common thread across all three countries is that they implemented strategic reforms to generate investor confidence, attract foreign investment and

[227] UNESCO Science Report 2005 (Chapter on the Russian Federation) http://www.unesco.org/science/psd/publications/sc_rp_05.shtml
[228] World Bank (2010c), Outlook for remittance flows 2010-2011. Development Prospects Group, Washington, D.C. www.worldbank.org/prospects/migrationandremittances

know-how, and target foreign markets for their products. All three departed from policies aimed at economic independence to become closely integrated in global markets. This significantly increased their standing on the world stage: witness the shift from the G-8 to G-20 as the main global economic forum. And it contributed to significant per capita income growth. How to achieve closer integration of the Russian economy in the face of interests that are vested in the status quo is the topic of the remainder of this chapter.

The debate: Special economic zones and WTO membership

132. Russia set up a number of special economic zones in the 1990s to support more rapid economic restructuring.[229] Starting in the early 1990s, free economic zones (FEZs) and special economic zones (SEZs) were established across Russia. The SEZs received preferential tax status and advantages for foreign investors to encourage productive investments. But overall, these early stage SEZs were created without clear selection criteria, targets, or policy. Most of the zones established at that time became marred by accusations of corruption and abuse arising from alleged bribes paid to permit dubious enterprises to evade official oversight and taxation.[230] SEZs essentially became off-shore havens where businesses were registered that generated their revenue elsewhere.

133. In part, the abuse of SEZs may have been a response by businesses to high and unstable taxation. In an economy that is in the process of restructuring, if most firms generate profits and pay taxes, government revenue will increase and taxation can be held at reasonable levels.[231] If only a small number do so—in part because of limited enforcement—governments may need to raise the tax burden to unsustainable levels that further encourage tax avoidance. Regardless of entrepreneurial motivation—response to government failure or criminal intent—the experience of the first wave of SEZs damaged the reputation of economic zones within Russia.

134. Despite skepticism induced by the earlier experience, the Russian government created a second wave of SEZs in July of 2005. The law "On Special Economic Zones in the Russian Federation," abolished all but two of the existing SEZs—in Kaliningrad and Magadan which survived due to their geo-political role and their importance for a remote region, respectively. It then established sixteen new SEZs (table 12): two aimed at industrial production SEZs; four are technological-innovative SEZs; seven in tourism-recreation; and three port SEZs.[232] Further reforms in 2009 revised the management structure of SEZs by decentralizing and strengthening the regions' role, simplified administrative procedures and provided more targeted budget support.

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[229] This section is based mainly on background work for this report by Matusevich, Vera A. (2009), Special Economic Zones: Background Report, and by Richard Auty.
[230] "By 2000, the mode and operation of SEZs had had an infamous reputation in Russia, and the SEZs turned to be centers of illegal business, criminal activity, and corruption." Vladimir Mau, "Vedomosti, #125, 09.07.2008, as citied in Matusevich (2009).
[231] Litwack, John M. and Yingyi Qian (1997), Balanced or Unbalanced Development: Special Economic Zones as Catalysts for Transition, Journal of Comparative Economics, 26, 117-141.
[232] Liuhto, Kari (2009), Special Economic Zones in Russia – What do the zones offer for foreign firms?, Electronic Publications of Pan-European Institute 2/2009, Turku School of Economics, Turku.

135. The new SEZs were located mostly in more advanced regions in order to target firms attracted by access to domestic markets rather than just natural resources. SEZs can in principle be located anywhere, but their placement is constrained by the government's objectives of assisting depressed regions. The law aims to strengthen the governance of the new SEZs by emphasizing anticorruption. Roles among levels of government in creating and managing SEZs are better defined. And the government intends to create a vibrant business environment by providing efficient infrastructure, client orientated management, tax and customs preferences, and "one-stop" administrative services.

Table 12. Special economic zones in Russia, early 2009

Zone Type	Specialization	Location
Established		
Kaliningrad	Tax free imports assembly	Kaliningrad region
Magadan	Tax free imports assembly	Magadan East Sibeia
Innovation		
St Petersburg	Analytical instruments	Novo-Orlovsk and Neudorff,
Tomsk	Industrial electronics, biotech	Tomsk Region
Dubna	ICT and nuclear technology	Moscow Region
Zelenograd	Micro- and nano-electronics	Moscow region
Manufacturing		
Lipesk	Domestic appliances	Lipetsk region
Alabuga	Auto parts, chemicals	Republic of Tatarstan
Yemelyanovo Port	Air cargo Krasnayarsk	
Ulyanovsk Port	Air cargo	Volga Area
Sovetskaya Gavan	Ship repair, fish processing	Khabarovsk region
Tourism		
Altay valley	Tourism	Republic of Altay
Biriuzovaya Katun	Ecological tourism, skiing	Altay Territory
Grand SPA Yutsha	Health tourism, skiing	Stavropol Territory
New Anapa	Yachts and marine sports	Krasnodar Territory
Irkutsk	Tourism, hunting, fishing	Irkutsk Region
Buryatia	Ecological tourism	Republic of Buryatia
Kurshkaya Kosa	Ecological tourism, yachts	Kaliningrad region

Source: Luihto (2009), 8.

136. Five years may not be sufficient to evaluate the success of the new generation of SEZs. But some initial experiences can be summarized. So far, FDI in SEZs has not been significant. As of September 2009, only 26 of 207 SEZ residents have been at least partially foreign-owned entities with a cumulative investment of about $1 billion. At this rate, yearly investments would be only about 0.3 percent of average annual FDI in Russia during 2007–09. There are three main reasons for the slow progress in SEZ development. One is the continuing high degree of state participation in SEZ creation and management, in contrast to a world-wide trend toward private sector managed SEZs. So, SEZs are over-regulated, with complex administrative procedures. This has motivated one observer to comment that "the Law on SEZs is written not so much in the spirit of ideas of economic pragmatism attributed

to market economy as in the line with the current political directives to strengthen the State principles in the economy."[233]

137. Second, the locations of many of the zones are not well chosen. Placing zones in underdeveloped regions with generally poorer infrastructure and thin labor markets have contributed to a low return on investment. Most of the zones have not managed to generate localization economies in which firms in closely related sectors co-locate to develop shared buyer-supplier networks, pools of qualified labor, and information spillovers. Such specialized clusters tend to benefit from a large number of highly specialized small and medium sized firms—a segment notably absent in most SEZs. Dynamic firms also need easy access to a range of complementary legal, financial and business services which cannot easily be generated in newly developed clusters. In many of the SEZs, firms have had trouble finding or attracting sufficient qualified staff.

138. Third, regulation of what activities are eligible in SEZs restricts market based location choice by firms. The list of permitted activities in each SEZ has recently been enlarged. Production of science-intensive production can now occur in technical-innovative SEZs, ships and aircraft can be produced in port zones, and some metallurgical activities are now permitted. But significant restrictions remain. By limiting the types of firms that can locate in each SEZ, administrators demonstrate a belief that a modern and diversified economy can be best created by planning rather than through location choices of firms responding to market signals.

139. Overall, Russia's SEZ program suggests confusion about their purpose.234 The design and functioning of the Russian zones appears to have been less to accelerate the expansion of a dynamic market economy and more to establish specialized clusters to somehow 'catch' innovative technology. This suggests a preoccupation with using zones to resolve investment coordination failures and establish competitive agglomerations that can alter the comparative advantage of national economies. In many instances, SEZs could create potential conflicts if Russia accedes to the WTO. In general, policies toward SEZs should be consistent with good economic policy and WTO rules and constraints generally lead toward good policy. Some incentives, such as duty drawback on imported inputs contained in exports are both WTO legal and economically advisable. But there are other subsidies that are questionable economically and would violate WTO rules. For example, subsidies dependent on the use of Russian inputs or export subsidies (including income tax concessions on exports) are constrained by the WTO.

140. While tax preferences may attract some firms, SEZs have been only partially successful in addressing other impediments that deter potential investors. SEZs supply better and more reliable infrastructure within the zone and make some administrative tasks easier. But they have so far had a limited impact on broader improvements of the business climate in Russia. Investors remain concerned about shortages of qualified labor, administrative bottlenecks outside the SEZ, an unstable legal system, limited access to financial services and resources, as well as crime and corruption. SEZs should be designed to demonstrate the benefits of

[233] S. Vasiliev in Biznes-Advokat, 2006, No. 8 (as cited in Matusevich, Vera A. (2009), Special Economic Zones: Background Report. Background paper for this report).
[234] Tuominen, Karita and Eero Lamminen (2008), Russian special economic zones, Electronic Publications of Pan-European Institute 18/2008, Turku School of Economics, Turku.

good governance and infrastructure which should create the pressure for overall domestic reform. So far, Russian SEZs have not delivered on this task.

Box 12. Russia's experience with specific SEZs

The St. Petersburg SEZ targeted the production of analytical instruments, aiming to attract seventy firms and 7,000 jobs by 2010. But it has struggled to acquire one-third the target number of firms and most are little-known.[235] Moreover, no firms had been physically established on the site by early 2009. The objectives of the St. Petersburg zone may be unrealistic since they resemble the aims of the previously established Kaliningrad SEZ located not far away. However, there is scope to connect the St. Petersburg zone better with Finnish high-tech firms. The Kaliningrad zone is scheduled to close in 2016, but a new zone is proposed with a six year tax holiday followed by a 50 percent reduction in the tax rate for six more years. Imports are duty-free if the value added is 30 percent or more, while for consumer electronics the required figure is 15 percent. Investors must invest at least €4 million over three years. The new Kaliningrad zone will terminate in 2031.

The Tomsk zone seems to be established to capture spillover effects from the established Novosibirsk technological zone as it seeks to establish itself as a biotechnology centre. Although it attracted slightly more firms than St. Petersburg, new start-ups have complained about deficient services and labor shortages while the merits of the specific technical focus have been questioned and might change.[236] Of the two zones around Moscow, which specialize in nano-technology and information technology, the Dubna zone has progressed fastest and claims to have rejected many zone applicants due to the inadequate quality of their plans. A further 4 percent reduction in tax liability increased the zone's attraction. But one may ask whether aspiring research firms need location-specific (as opposed to national) tax breaks given the other advantages of the site such as state-of-the-art infrastructure, access to the external economies from the Moscow conurbation (including its research institutions) and coordination benefits are provided.

Of the two industrial zones, the Lipetsk zone has attracted most firms for its focus on fabricating domestic appliances, including three foreign firms whereas the automotive parts industrial zone of Alabuga has struggled to attract start-up plants. The tourist zones, including the proposed gambling zones, will likely succeed in attracting domestic demand.[237] But their scale will be small, and their inclusion with industrial and technology zones reflects a lack of focus in the national SEZ strategy.

The solutions: Join the WTO and reform the SEZs

141. Twenty years after transition, 10 years into an economic recovery, and despite managing the global economic crisis capably, Russia has not reached global competitiveness in any economic sectors of significance. Yields are low in agriculture, manufacturing suffers from low technology and quality, and business services are underdeveloped. Even in oil and gas exploration and extraction, its main export earner, revenues are built on abundance of

[235] Liuhto, Kari (2009), Special Economic Zones in Russia – What do the zones offer for foreign firms?, Electronic Publications of Pan-European Institute 2/2009, Turku School of Economics, Turku; Tuominen, Karita and Eero Lamminen (2008), Russian special economic zones, Electronic Publications of Pan-European Institute 18/2008, Turku School of Economics, Turku

[236] Tuominen, Karita and Eero Lamminen (2008), Russian special economic zones, Electronic Publications of Pan-European Institute 18/2008, Turku School of Economics, Turku.

[237] Lev, Savulkin (2009b), Tourist and recreational special economic zones. Background paper for this report.

availability rather than efficiency in extraction.[238] Russia has not effectively used its resource rents to sufficiently develop human resources. Lack of qualified labor force is one of the most often voiced constraints. Despite commendable progress in preparing for WTO accession, Russia has not yet exposed its domestic sectors to substantial foreign competition and investment. And perhaps most important, Russia has neglected administrative and governance reforms that would instill confidence among domestic and international investors, encourage innovative small and medium size enterprises to enter the Russian market, and bring about dynamic and globally competitive businesses.

142. These problems have been well documented. For many, the solutions suggested would raise the competitiveness of Russia's economy. A recent Brookings Institute study, for instance, recommends steps to improve allocation of intellectual property rights, strengthen the consultative basis for regulatory decisions, and adopt review mechanisms to deal with existing regulations.[239] The more difficult question, however, is how to implement such reforms against vested interests keen to preserve the status quo. Two approaches have the potential to create sufficient pressure for reform: Taking advantage of WTO accession to open up the economy and revisiting the design, and better implementation of special economic zones to make them demonstrate and spread the benefits of good governance—effectively making them *early reform zones*.

WTO accession as an agent for reform

143. Russia remains the largest economy in the world that is not a member of the WTO. Accession talks have proceeded far, and the Russian government has reconfirmed its commitment to membership. Direct benefits of WTO accession are estimated to be significant. Foreign competition will bring better access to finance and business services which could raise GDP by more than $50 billion annually in the medium term and more than $170 billion annually in the long term. [240] These gains will be distributed to households across the income distribution. Geographically, gains will accrue in all regions, but their magnitude will not be uniform. Welfare benefits will likely be highest in regions near Western European markets—especially in St. Petersburg and surrounding regions—and in the Far East.[241] Furthermore, WTO membership is a prerequisite for closer integration with nearby Central and Western European markets, which are Russia's most important trading partners.

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[238] World Bank (2005), Russian Federation – From Transition to Development. A Country Economic Memorandum for the Russian Federation, Report No. 32308-RU, Washington, D.C.

[239] Desai, Raj M. (2008), Improving the investment climate, in Raj M. Desai and Itzhak Goldberg (eds), Can Russia Compete?, Brookings Institution Press, Washington, D.C., 91-112

240 Rutherford, Thomas F. and David G. Tarr (2010), "Regional Impacts of Liberalization of Barriers against Foreign Direct Investment in Services," the case of Russia's accession to the WTO," Review of International Economics, Vol. 18(1), February, 30-46.

[241] Rutherford, Thomas F. and David G. Tarr (2008), Poverty effects of Russia's WTO accession: Modeling "real" households with endogenous productivity effects, Journal of International Economics, 75, 131-150.

144. The principal sources of gains, however, are unlikely to be realized by changes in market access and tariff reduction. Russia already has trade agreements with its main trading partners that reflect most favored nation status. A perhaps more significant impact will come from incentives for modernization, domestic reform and liberalization as a result of WTO membership.[242] Experience from the Uruguay Round shows that countries that committed to greater liberalization also gained more. Increased market access had more limited effects unless countries actively opened and reformed their economy. Analysis of likely impacts shows the same result for Russia. The largest gains will come from commitments to liberalization, especially in facilitating foreign investment in business services.

145. In principle, Russia could liberalize unilaterally, without WTO accession. But in Russia's political economy, those who gain from current protections, represent a small, but well-organized group of entrepreneurs—in the still relatively protected automobile industry (where duties would drop from 30 percent to 15 percent), banking and insurance services (where the maxium market share of foreign firms will increase from 15 percent to 50 percent), and agriculture. Those who will gain—with the exception of some successful exporters, for example, in the chemicals and steel industry—are a more diverse group less likely to successfully lobby for domestic reforms. WTO membership is a much better road to international trade integration: it creates tangible welfare benefits, it increases foreign business inputs, it engages high level policymakers in the process of reform, and it creates an internationalcommitment that is not easily reversed.

Benefiting from early reform zones

146. Besides the more general institutional commitments associated with WTO accession, redesigned and repurposed special economic zones can be a second—more targeted—instrument for encouraging improvements in the business environment. To distinguish them from past SEZs we term them early reform zones (ERZs).[243] Their purpose is explicitly to showcase conditions for generating a dynamic market economy and to create a strong constituency for expanding those conditions country-wide. They are part of a dual track reform strategy where ERZs form track 1 in an environment of excellent infrastructure, enabling services, market friendly institutions and good governance. Major reforms in the rest of the economy (track 2) that is subject to distortions and rent seeking is postponed to avoid early confrontation with opponents of reform. The track 1 economy has the potential to rapidly expand production and employment and create a pro-reform coalition that over time will be able to trump those profiting from the status quo. Experience in other countries has shown that this occurs within 15 years.

147. Three countries of varying sizes have successfully followed this model: China, Malaysia, and Mauritius. China's enterprise reform in the 1980s faced strong opposition from political forces and from the state-owned industrial sector. Initially four ERZs were established along the coast with more following gradually. Their locations were carefully chosen to facilitate access to foreign markets and investors. These zones received enhanced infrastructure and

[242] This discussion is largely based on Tarr (2009) who also points out that Russia's prime minister (then president) Putin publicly recognized as early as 2002 that WTO would be a tool for strengthening the Russian economy.
[243] See the background papers by Richard M. Auty for this report.

firms benefited from lower taxation. Productivity gains eventually spilled over from the ERZs to state-owned companies outside the zones. Expansion of local competition between firms also reduced scope for rent seeking among government officials. With a more dynamic and market oriented economy, managers of private firms demanded greater safeguards for private property rights and more independent courts to enforce contracts without government interference. Taxation preferences were phased out by 1994 when ERZ business conditions had essentially expanded to the rest of the economy.

148. The driving force for establishment of special economic or reform zones in Malaysia was a desire to diversify away from a largely natural-resources-based economy. Starting in the late 1960s export oriented zones were established with reduced taxation linked to export performance, preferential financing and special customs status. The main investors were from the United States and Japan and later from Taiwan. Initially based on low-wages, the zones became increasingly technologically advanced. Between 1982 and 1993, the share of manufacturing in Malaysia's exports jumped from 22 percent to 74 percent with an increasing share in telecommunications.

149. While Russia is the largest country in the world, Mauritius is one of its smallest. But it also provides useful lessons for using ERZs. Initially dependent on sugar plantations, government policies encouraged investments of a share of sugar windfalls in industrial zones that had attracted textile firms from Hong Kong, in part by keeping tax rates at only 5–12 percent. Rapid economic growth enabled investments in social services which aided the move from resource-based to a manufacturing-based economy. Mauritus' textile industry moved toward more specialized production while relocating lower wage production to Madagascar. In summary, Mauritius' ERZs attracted competitive manufacturing as part of a dual track economic strategy. This delayed confrontation with those benefiting from resource rents as well as with pro-redistribution political forces, including the powerful unions in the initially dominant sugar industry. Once the dynamic sector was sufficiently strong, both economically and politically, it was able to absorb surplus labor from the lagging sector and reform it.

150. These success stories provide six lessons that can inform a redesign of Russia's economic zone strategy.

- First, ERZs should not be narrowly restricted to chosen industrial sectors. It is hard for policymakers to anticipate synergies among dynamic firms. So within broad guidelines to avoid abuse of preferential zone status, firms should be allowed to select their location. Granting entry and incentives automatically based on clearly articulated conditions also reduces the possibility of rent seeking.[244]

- Second, they need to be endowed with world class IT and physical infrastructure. Physical infrastructure within the zone is crucial, but so is infrastructure to connect the zone to markets. At least initially this favors ERZ establishment in areas that already have good endowments. Some existing SEZs in Russia fit the bill, others do not.

[244] James, Sebastian (2010), Providing incentives for investment. Advice for policy makers in developing countries. Investment Climate in Practice No. 7, January, IFC/World Bank, Washington, D.C.

- Third, ERZs require business friendly institutions. This favors some form of private management, which is now the norm around the world.[245]

- Fourth, incentives need to be carefully designed and exclude subsidies that violate WTO rules in favor of commercial incentives. Under current conditions in Russia, the elimination of labor, administrative, and infrastructure impediments is, in any case, considered more important for investors than tax preferences.

- Fifth, ERZs should not have a near-term sunset date. The goal is that they remain in effect until conditions in the rest of the economy have caught up and they become superfluous.

- Sixth, they must receive credible protection from policy capture, interference, or capricious rule changes. This requires building a strong coalition among those who want these zones to succeed, for instance, labor representatives and members from local and oblast governments. International participation, such as that of international financial institutions, could provide a safeguard.

151. It is important to keep in mind that ERZs (SEZs) are not a first best solution to bring about policy reform. The government and administration can, in principle, establish the governance structures that assure investors and promote a dynamic private sector. But vested interests that gain from rents, policy distortions, and inefficiencies are prevalent in Russia's current business environment. ERZs, like SEZs elsewhere, therefore "may be a necessary price to pay for escaping a bad equilibrium trap. As special economic zones can reduce the costs of institutional and political constraints, they may be viewed as catalysts for transition."[246] Either by themselves or in tandem with WTO accession, they can strengthen the constituencies for reform to make Russia a more globally competitive economy.

[245] FIAS (2008), Special economic zones. Performance, lessons learned, and implications for zone development, Multi-Donor Investment Climate Advisory Service, World Bank, Washington, D.C.
[246] Litwack, John M. and Yingyi Qian (1997), Balanced or Unbalanced Development: Special Economic Zones as Catalysts for Transition, Journal of Comparative Economics, 26, 117-141.

Chapter 6. A Prosperous Russia

Making spatial policies congruent with structural objectives

152. For several decades following World War II, victorious Russia was the core of a superpower—politically and technologically. But its planned economy was inefficient and its growth rate decelerated so that relative to the advanced market economies, Russia's per capita income fell. The shock of transition caused Russian GDP to contract by 45 percent during 1989–98, compared with a decline of 25 percent for the less distorted central European economies. Today, with its per capita GDP ranking 59th in the world Russia is seen as a large, resource-rich middle income economy, competing against other dynamic emerging market economies. Russia enjoys some distinct advantages in this competition, but remains dependent on volatile hydrocarbon rents to prop up a relatively inflexible and inefficient economy.

153. Russia's national aspiration is to become a diversified competitive economy with a high income and global influence to match. This will require greater and quicker structural transformations, grounded in new policies backed by resilient institutions, so that Russia can shift its economic base from over-reliance on natural resources toward productive manufacturing and services. This Report has argued that the required structural transformation cannot take place without a facilitating geographic transformation through increased mobility of labor (chapter 2) and increased concentration and spatial efficiency to capture the benefits of agglomeration (chapter 3). These conditions will make the Russian economy more competitive to permit closer integration into the globally economy, which in turn will provide impetus for domestic reforms (chapter 4).

154. Modernization and diversification involve producing new things and doing so more efficiently, sometimes in different places. Russian policymakers worry that emerging production will concentrate in some places of high economic opportunity and leave many workers trapped in less favored places. They worry that this will concentrate much of the nation's wealth in a few cities and regions while leaving others with disproportionately high poverty. Even if this situation were temporary, this would be unfair and is unacceptable to many. The planners' perspective encourages subsidies on nonviable enterprises in lagging regions to ease the disparities, an approach that this Report has shown misallocates resources and in the process dissipates the agglomeration benefits to the detriment of long-term growth. The alternative is to help people migrate from areas of low economic opportunity to areas of rising opportunity which promotes economic modernization and raises incomes.

155. The Russian government and public are justified in being concerned about spatial disparities in welfare. But there are proven policy instruments to promote flexibility and strengthen economic integration to reduce these disparities. These policy instruments can be grouped into three main categories, the three 'I's outlined in WDR 2009: institutions, infrastructure, and interventions:

- *Institutions*—concern the universal provision of basic amenities and social services and the regulation of factor and product markets. Provision of schooling, healthcare, water and sanitation, electricity and heating should be provided everywhere. In other words, these policies should be *spatially blind*. Institutional changes can also create flexible markets for land, labor, and international trade.

- *Infrastructure*—supports the economic integration of lagging and leading areas by enhancing *spatial connectivity*. These investments include roads, railways, airports, harbors, and communication systems that facilitate the movement of people, goods, services, and ideas locally, nationally, and internationally.

- *Interventions*—concern the *spatially targeted* programs that often dominate the policy discussion. In a market economy, such interventions usually aim to overcome market failure, notably coordination failures. They include slum clearance programs, creating early reform zones to accommodate competitive firms within a distorted economy, and preferential trade access to surmount thick borders.

156. Much of the agenda for promoting the spatial transformations necessary for progress involves spatially blind 'institutions'. For a large country that has to reverse a legacy of misplaced production and people, large investments in connective infrastructure will also be necessary. In addition, given the entrenched interests for the *status quo* and the need to integrate Russia into global production networks legacy of the past, spatially targeted interventions may also be necessary. But in the absence of the unifying institutions and connective infrastructure, these interventions are not likely to help Russia make its spatial policies congruent with its structural change objectives. This chapter summarizes the role of each of the three sets of policy instruments in creating a flexible and prosperous Russian economy.

Institutions to increase flexibility and labor mobility, promote efficient land use, and facilitate international trade

157. The central government has primary responsibility for building institutions that enable efficient location decisions and promote effective urbanization in all parts of the country.

Increasing flexibility

158. The institutions with most direct relevance to spatial flexibility encompass three broad types: universal provision of basic amenities and social services; regulations of factor markets; and the facilitation of trade. These institutions should be "spatially blind" in the sense that they do not direct the location decisions of individuals or enterprises, but allow such decisions to be based on the underlying economic incentives arising from intrinsic location characteristics. Currently, Russian institutions distort economic decision-making for the location of labor and migration decisions; the management of land and the flexibility of allocating it to its most efficient use; and the stability of regulatory barriers to regional and international trade and their compatibility with global norms.

Increasing labor mobility

159. Existing labor institutions in Russia are not spatially blind. Instead, they tie labor to its present location and discourage migration to areas of rising opportunity. This traps people in areas of relative decline where economic opportunities are few, impeding their relocation to the more dynamic regions where employment is expanding. This penalizes the immobilized workers by lowering their productivity and incomes. It also retards the evolution of the settlement hierarchy that is required to capture both the localization economies and agglomeration economies that help propel structural change for the most efficient allocation of economic inputs.

160. There are three main barriers to improved labor mobility in Russia. First, administrative obstacles to worker mobility persist, often with discretionary enforcement so that outcomes are arbitrary and unpredictable, introducing another unnecessary risk into migration decisions. Second, labor market institutions are rigid and distortionary. Its employment protection is punitive towards layoffs and its many clauses are obsolete and contradictory. Worker turnover continues to be low with little variation throughout 1992-2009.[247] Wage arrears and in-kind payments are no longer prevalent as during the 1990s when it inflicted two-thirds of the work force. Monthly wage arrears in 2010 averaged about 2 percent of the wage bill and affect less than half a million workers. Some amenities and services continue to be supplied by employers rather than being the responsibility of the appropriate tier of government, so giving up a job is risky because there is no certainty about gaining entitlement to particular levels and quality of services elsewhere. Third, illiquid housing and land markets prevent many people from being able to sell their existing accommodation while rigidity in supply and differential house prices reduce the prospects for acquiring adequate housing in destination areas of employment opportunity.

161. The overriding goal of reform is to create conditions so that labor can redistribute itself in line with emerging regional economic advantages rather than be trapped in lagging areas by outdated and seemingly capricious past incentives. This requires measures to ensure that labor contracts are enforceable; release enterprises from having to provide services so that the state, municipalities, or markets provide services at a comparable quality everywhere (in both improving areas and lagging areas); standardize interregional migration protocols; and free up land and housing markets.

Using land more efficiently

162. Land will continue to be used inefficiently until there are credible mechanisms to allow individual land ownership that can be legally enforced by contracts and also to permit resolution of conflicts; comprehensive land registries to certify land titles; housing finance to facilitate life-time purchases of property; and measures to facilitate the conversion of land from low-value to high-value uses, such as flexible and rational zoning laws and also versatile subdivision regulations. More specifically, the transformation of the agricultural sector from communal land rights to individual property rights is essential to encourage rural sector consolidation and productivity increases that also benefit urban areas, as is land titling

[247] Gimpelson, V. and R. Kapeliushnikov (2011) "Labor Market Adjustment: Is Russia Different?" ISA Discussion Paper 5588

for converting usable property into wealth. When property rights have been established and the intensity of land use is increasing in high-growth areas, land regulation and planning can permit efficient coordination of complementary land uses. In contrast, inflexible (and sometimes irrational) regulations can undermine the benefits of intensifying economic activity and reduce the economies from agglomeration. Stringent restrictions on land use conversion lead to shortages of affordable housing that hurt migrants, while the absence of housing finance institutions further impedes labor mobility.

163. Similar considerations apply to the availability of land for industrial and commercial use. Zoning can help to conserve areas of unique value such as historical buildings and neighborhoods as well as parkland and valued riverside landscapes. But zoning should not be allowed to retard the conversion of obsolete land uses, such as those found within the large industrial areas that still surround the centers of Russia's largest cities. Such areas demonstrate the importance of creating an efficient land market that signals to developers the potential value of land in more intensive uses. Such intensification of land use builds demand for public transport corridors, whose attraction increases with the frequency of service that in turn is positively linked to the density of demand. Greater use of obsolete land within the city (brown-field development) can help to relieve pressure on green-field sites at the margin of cities, which can be expensive to develop and service but can expand very rapidly to produce wasteful urban sprawl.

164. The key reforms to boost land use flexibility include legally secure property rights, improved housing finance, market-friendly regulations and zoning with clear priorities to conserve heritage and neighborhood amenities while promoting the highest value compatible land uses. The goal of policy reform is to make cities more efficient by facilitating the concentration of people and enterprises where they can be most productive. The reforms will favor cities that are doing well and can attract people from the lagging areas. Other geographically extensive countries like Australia and Canada suggest that within lagging regions, migrants will follow economic activities and in doing so move up the settlement hierarchy to larger cities. Interestingly, Russia also began to do just this in the 1990s, but progress slowed during the oil boom. It needs to be rekindled.

Facilitating international trade

165. In most rankings of competitiveness, transparency, and logistics, Russia ranks behind the other BRICs. Business surveys indicate that many Russian firms find interregional competition, let alone international competition, so there is considerable ground to make up—and sizable economic benefits to secure. Russia's large domestic market and oil wealth have attracted significant investment, but many foreign investors are reluctant to make long-term commitments due to continuing perceptions of business risk. China has shown how foreign investment can lead to efficiency gains in domestic firms as a consequence of increased competition and knowledge transfers. More predictable, transparent, and secure legal enforcement of contracts along with market-supporting regulation will encourage similar processes in Russia.

166. WTO accession would significantly benefit Russia, and the government is seriously pursuing membership. In 2010-11, major progress was made with agreements concluded

with the United States and the EU. Significant economic benefits will come not only from improved market access but also from the external pressure for, and government commitment to, domestic institutional and economic policy reforms. The benefits from WTO membership could add an extra 3 percent to GDP in the medium term and 11 percent in the long term. More important, the expansion of competitive domestic and foreign firms at the expense of rent recipients in manufacturing, such as automobile assembly, and in services will accelerate the conversion of the Russian economy to a mature market economy capable of sustaining long-term gains in productivity and welfare. Russia's competitiveness will depend on how well and how quickly it implements the required legal and regulatory improvements. The biggest beneficiaries could be small and medium size enterprises, an underdeveloped part of Russia's economy.

167. Russia needs a political strategy to facilitate trade reform, and Australia in the 1980s provides an example. The main Australian reform was trade liberalization, which acted as the catalyst by exposing hitherto protected activity to international competition, and creating pressure for further reforms to boost their competitiveness.[248] To retain political support for reform, measures were taken to compensate losers by subsidizing efficiency-enhancing measures in textiles and automobile assembly before exposing them to competition. In addition, the government enlisted pro-reform support by publishing estimates of potential per capita gains from reform and demonstrating to the losers from the status quo (who paid prices for manufactured products above world levels) what they eventually stood to gain. WTO strictures may no longer permit subsidizing the potential losers from reform. But an alternative for Russia is to establish early reform zones within a dual track strategy, which can act as an incubator for dynamic competitive firms, domestic and foreign.

Infrastructure to boost connectivity

168. In addition to flexible factors of production, a modern Russia needs an efficient infrastructure. Compared with its BRIC comparators, Russia has fairly developed infrastructure, but like much else in the country, the collapse of central planning and subsequent economic dislocation have constrained maintenance. Improved infrastructure must accompany the reform of institutions, and this Report focuses on urban transportation and intercity connections. Rather than spreading transport infrastructure across the territory, it may be better to target scarce investment resources in the most dynamic cities and regions to maximize localization and agglomeration benefits.

169. Traffic management and public transport need to be improved to reduce urban congestion. Competitive markets that price the full cost of economic activity, including externalities that arise from congestion (including parking charges) and pollution (whose damage is added to the cost of fuel) are necessary to obtain the most efficient modal split of urban transportation between private vehicles and public transit. In recent years, urban planners in Russia have sought to accommodate private transport at the expense of public transport, intensifying congestion and leading to calls to curb the growth of the largest cities, like Moscow.

[248] Banks, G. (2005) Structural reform Australian style: Lessons for others? Paper presented to the World Bank, Washington DC.

170. Correctly priced transportation services with greater flexibility in labor and land markets will intensify urban land use around the city center, reducing the average commute. The corollary is that pressure for urban sprawl will ease and thereby reduce demand for private cars and roads in favor of mass transport. Following the U.S. pattern, secondary business centers will develop in the suburbs of the very largest cities or in close proximity to them. This development effectively restructures the larger city away from the unicentric pattern associated with congestion and toward a multi-centric city that shortens journey times.

171. As cities specialize, intercity transportation becomes a priority in dynamic regions. There is a symbiosis between city centers and their suburbs, but economic relationships also join other cities in an urban hierarchy. Transport links between cities can reinforce agglomeration economies within the largest settlements but they can also generate complementary and specialized functions in lower order centers. But Russian highways are poorly maintained, encouraging the wrong sort of concentration, for the wrong reasons. Firms that in a well-connected city system could move to secondary cities with lower wages and cheaper land must in Russia locate in primary cities (boosting congestion) to maintain access to suppliers, specialized services and governments. But the emphasis in intercity transportation policy should not be on extending the infrastructure network across the country but on maintaining and selectively upgrading the existing network. The priority to improve congested transport links between Moscow and St. Petersburg has borne fruit, as many places are now served by a three-lane highway and the Sapsan bullet train service reduced travel time to less than 4 hours. Such improvements and the upgrading of international transport links have good potential to develop a dynamic 700 km long growth corridor.

172. Overall, the goal of improving transport infrastructure is to reduce transport costs and, thereby, to facilitate more efficient use of urban land, in the process achieving a more efficient allocation of economic activity throughout the country.

Interventions to overcome market failures

173. As emerging economies close the gap with the leading economies, the process of development becomes more complex since reliance for growth upon deploying the existing stock of technology declines and investment in R&D and innovation become more necessary to sustain rising living standards. In economies that have been heavily distorted, like Russia, efforts to increase the flexibility of the economy and improve connectivity may be insufficient. Spatially targeted interventions may also be required to cope with market failures, notably coordination failures, which occur when simultaneous commitments by several investors are required but the risks to the first mover are so high as to deter any commitment.

174. The redevelopment of run-down districts around the central business area of large cities is one example while the start-up of a globally competitive firm in a high-risk environment (the distorted Russian economy) is another. Experience has shown, however, that spatially targeted interventions succeed where land markets work reasonably well, basic social services are widely accessible, and intra-city transport links the city's core to its periphery. Institutions and infrastructure are therefore prerequisites for successful interventions.

Successful programs to redevelop run-down inner-city zones have benefited from a foundation of spatially blind and spatially connective policies.

175. Conditions in modern Russia create scope for selective government spatial policies to kick-start development where uncertainties deter commitment by the private sector. Within the fossilized industrial zones that ring the central areas of Russia's larger cities, there is scope for the city governments to identify areas for renewal within which they apply reformed market-friendly regulations. The provision of developer-sympathetic regulations along with the creation of an efficient land market and effective connections to the urban infrastructure network will provide the basis for the market to function effectively, guided by pragmatic planning. The lessons from the first pioneer program could then be incorporated in the redevelopment of additional zones of derelict industrial land.

176. A second example of intervention to remedy market failure is managing the decline of settlements in remote regions that have lost their dominant industry and cannot be restructured. The government needs to maintain adequate basic services for those unable or unwilling to move from such regions, while facilitating the migration of younger and more mobile workers to areas of higher opportunity. This intervention requires paying wage arrears, compensating for abandoned accommodation, and providing information about opportunities in prospering regions. Given chronic shortages of accommodation in receiving areas of higher opportunity, the governments in the reception areas may need to provide modest accommodation. This latter measure risks tension between immigrants and long-term urban residents on waiting lists. So, such accommodation might in part be most expeditious in smaller settlements within the zone of influence of a large city, if transport connections allow firms to capture the localization economies in such settlements.

177. A third useful intervention is to create a second generation of special export zones, which, to avoid erroneous comparison with earlier Russian attempts, can be defined as early reform zones (ERZs). Russia's early special economic zones proved ineffective in attracting investment because they are poorly located, sector specific, bureaucratically managed, and subject to a sunset clause. In contrast, ERZs eliminate deterrents to investment by dynamic competitive firms, both domestic and foreign, by immediately providing post-reform conditions of *world class infrastructure*; efficient business services provided by a reputable private company along with a competitive tax regime (but no subsidies); and guarantees of property rights and the rule of law, underpinned by international financial institutions' participation through investment in the ERZ infrastructure. The objective of the ERZs is to combine underused Russian skills and market access with internationally competitive technology and management and thereby to sharply accelerate the incubation of precisely the kind of firms that Russia needs to reform its economy.[249] In addition, the ERZs will expand employment, exports, and taxes as well as skills.

[249] China adopted this approach by creating whole cities with access to major markets and transportation networks. Shenzhen was the first special economic zone approved by Deng Xiaoping in 1980. It grew from 30,000 inhabitants to 800,000 by 1988 and 7 million by 2000. The new residents include the best-trained professionals in the country, attracted by high salaries, better housing, and education opportunities for their children. GDP per capita increased more than 60 times.

178. China's experience shows that effective ERZs can produce a demonstration effect on adjacent areas that applies pressure for economic reform. In effect, ERZs create pockets of good economic governance and infrastructure that attract investment—both foreign and domestic. All of China eventually benefited from the demonstration effects of its economic reform zones.

179. After a decade of turbulent adjustment following the transition from plan to market and another decade of economic growth driven by natural resources, Russia now is striving to grow from middle to high income. To escape what a report on *The East Asian Renaissance* called the "middle income trap", Russia needs to modernize, diversify, and increase the competitiveness of its economy. The report shows that these three national objectives—and the problems they address—relate fundamentally to the geographic organization of Russia's economy. (Table 13)

Table 13. Summary of the Report

Objectives	Problems	Debates	Priorities	Policy Instruments
A modern Russia will be a more mobile Russia				
Modernization	Still too much misplaced labor and capital	What to do about monotowns?	Facilitate mobility and migration	Remove place and work-specific social entitlements, and regulatory barriers of movement to manage lagging cities in decline while ensuring safety nets for those who stay, improving contract enforcement, and investing in portable skills
A more diversified Russia will be a concentrated Russia				
Diversification	Leading areas struggle to deliver economic growth	Is Moscow too big?	Encourage spatial efficiency and concentration	Improve institutions (esp., land markets) and infrastructure (intra- and inter-urban) to promote a more efficient urban size distribution
A more competitive Russia will be an internationally integrated Russia				
Competitiveness	Counter-productive pursuit of economic independence	Why have SEZs not worked?	Promote openness and specialization	Join the WTO and leverage its membership to improve the business environment; encourage foreign investment and knowledge transfers through early reform zones

Annex

Table A.1 POPULATION

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Total population	1940	7,042.0	41,114.0	11,688.0	532,607.0	386,800.0	195,970.0	132,637.0
	1960	10,361.3	71,694.8	18,266.8	667,070.0	434,000.0	213,779.9	180,671.0
	1980	14,615.9	123,020.0	24,593.3	981,235.0	679,000.0	265,926.0	227,726.5
	2000	19,053.0	176,320.0	31,100.0	1,262,645.0	1,004,124.0	146,710.0	282,158.0
	2008	21,007.0	196,343.0	33,213.0	1,324,786.0	1,147,996.0	140,702.0	304,228.0
% urban population in largest city	1960	25.0	12.0	14.0	6.0	5.0	10.0	11.0
	1980	26.0	15.0	16.0	4.0	5.0	8.0	9.0
	2000	24.0	12.0	19.0	3.0	6.0	9.0	8.0
	2008	24.0	12.0	20.0	3.0	6.0	10.0	8.0
% population in areas (> 1 million inhabitants)	1960	54.0	20.0	30.0	11.0	7.0	14.0	38.0
	1980	61.0	32.0	37.0	12.0	9.0	17.0	40.0
	2000	61.0	36.0	43.0	16.0	11.0	18.0	42.0
	2008	61.0	39.0	44.0	18.0	11.0	18.0	43.0
% population in rural areas	1960	18.0	55.0	31.0	84.0	82.0	46.0	30.0
	1980	14.0	33.0	24.0	80.0	77.0	30.0	26.0
	2000	13.0	19.0	20.0	64.0	72.0	27.0	21.0
	2008	11.0	15.0	20.0	57.0	70.0	27.0	18.0
Population Density (sq. km)	1940	0.9	4.8	1.2	55.5	117.7	8.8	13.8
	1960	1.3	8.4	1.8	69.5	132.0	9.6	18.8
	1980	1.9	14.4	2.5	102.2	206.6	11.9	23.6
	2000	2.5	20.7	3.1	131.6	305.5	8.6	29.3
	2008	2.7	23.1	3.3	138.0	349.2	8.2	31.6
% growth in population (p.a)	2000-07	1.3	1.4	1.0	0.6	1.4	-0.5	0.9
Agglomeration Index (%)	2000	75.9	63.6	70.5	37.2	52.4	64.8	71.9
% population in urban areas	2007	76.0	64.0	71.0	37.0	52.0	65.0	72.0
Urban-Rural Disparities: % urban population	1960	82.0	45.0	69.0	16.0	18.0	54.0	70.0
	1970	85.0	56.0	76.0	17.0	20.0	62.0	74.0
	1980	86.0	67.0	76.0	20.0	23.0	70.0	74.0
	1990	85.0	75.0	77.0	27.0	26.0	73.0	75.0
	2000	87.0	81.0	80.0	36.0	28.0	73.0	79.0
	2003	88.0	83.0	80.0	39.0	28.0	73.0	80.0
	2005	88.2	84.2	80.1	40.4	28.7	73.0	80.8
	2008	89.0	85.0	80.0	43.0	30.0	73.0	82.0
	2015	89.9	88.2	81.4	49.2	32.0	72.6	83.7
Rural Urban Disparities: % of urban population with water access	2004	100.0	96.0	100.0	93.0	95.0	100.0	100.0
Rural Urban Disparities: % of rural population with water access	2004	100.0	57.0	99.0	67.0	83.0	88.0	100.0
Rural Urban Disparities: % of urban population with sanitation services	2004	100.0	83.0	100.0	69.0	59.0	93.0	100.0

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Rural Urban Disparities: % of rural population with sanitation services	2004	100.0	37.0	99.0	28.0	22.0	70.0	100.0
Geography: Population living at less than 25 kms from an international border (%)	2000	0.0	1.0	17.6	1.1	5.6	3.5	3.1
Geography: Population living at less than 75 kms from an international border (%)	2000	0.0	2.4	61.8	3.7	16.1	13.0	6.9
Geography: Population living at less than 25 kms from a coastline(%)	2000	69.1	25.4	20.6	11.6	10.3	8.0	28.9
Geography: Population living at less than 75 kms from a coastline (%)	2000	87.5	46.5	23.1	21.8	19.7	10.7	41.4
Education: Population age composition % ages 0–14	2007	19.0	27.0	17.0	21.0	32.0	15.0	20.0
Education: % age group enrolled primary school	1960	103.0	95.0	107.0	67.0	61.0	100.0	118.0
	1980	111.0	98.0	102.0	118.0	68.0	101.0	98.0
	2000	100.0	98.0	100.0	100.0	71.0	100.0	100.0
Education: % age group enrolled secondary school	1960	51.0	11.0	46.0	37.0	20.0	49.0	86.0
	1980	86.0	32.0	89.0	63.0	27.0	104.0	97.0
	2000	96.0	81.0	95.0	70.0	51.0	88.0	96.0
Education: % age group enrolled tertiary school	1980	26.0	11.0	37.0	1.0	8.0	21.0	52.0
Gender Equality: Ratio of girls to boys enrollments in primary and secondary school	2006	97.0	103.0	98.0	100.0	91.0	99.0	100.0
Health: Life Expectancy (Male years)	2006	79.0	69.0	78.0	70.0	63.0	59.0	75.0
Health: Life Expectancy(Female years)	2006	83.0	76.0	83.0	74.0	66.0	73.0	81.0
Health: Under-five child mortality rate per 1,000	1990	10.0	57.0	8.0	45.0	115.0	27.0	11.0
	2006	6.0	20.0	6.0	24.0	76.0	16.0	8.0
Health: Births attended by skilled health staff (% of total)	2000-07	100.0	97.0	100.0	98.0	47.0	99.0	99.0
Health: HIV prevalence ages 15-49	2005	0.1	0.5	0.3	0.1	0.9	1.1	0.6
% Share of the poorest quintile in national consumption or income	1992-2005	5.9	2.9	7.2	4.3	8.1	6.1	5.4
Net migration	1960	404,632.0	0.0	524,416.0	-230,278.0	-4,248.0	-973,612.0	1,902,534.0
	1970	542,325.0	0.0	904,630.0	-5,245.0	-296,332.0	-277,421.0	1,665,374.0
	1980	485,336.0	0.0	400,460.0	-491,960.0	-268,954.0	622,887.0	3,176,499.0
	1985	489,399	-16,000	329,961	-241,308	-338,299	1,107,000	3,171,006
	1990	666,530.0	-92,000.0	889,397.0	-367,848.0	-373,995.0	906,615.0	5,448,681.0
	1995	371,064	-184,000	642,733	-829,411	-960,154	2,219,718	6,565,231
	2000	465,677.0	-210,000.0	732,967.0	-785,754.0	-1,400,000.0	2,208,219.0	7,980,001.0
	2003	480,700.0	-55,188.0	760,000.0	-296,332.0	-74,025.0	2,195,000.0	6,195,000.0
	2005	641,231	-229,000	1,088,701	-2,058,276	-1,540,000	964,424	5,675,799
	2008	595,000.0	-15,707.0	186,657.0	-516,666.0	-573,899.0	39,396.0	888,346.0
	2000-05	593,000.0	-229,000.0	1,041,000.0	-1,900,000.0	-1,350,000.0		
Migration: International migrant stock (% population)	1960	17.0	2.0	15.0	0.0	2.0	2 (rf)	5.4
	1970	20.0	1.0	15.0	0.0	2.0	2 (rf)	6.0
	1980	20.0	1.0	15.0	0.0	1.0	2 (rf)	7.0
	1990	21.0	1.0	16.0	0.0	1.0	8.0	9.0
	1995	21.3	0.5	17.2	0.0	0.7	7.9	10.5
	2000	21.0	0.0	18.0	0.0	1.0	8.0	12.0
	2003	23.4	0.0	18.8	0.0	0.5	1.0	11.7
	2005	21.3	0.5	19.5	0.0	0.5	8.4	13.0
	2008	24.0	0.3	16.0	0.0	0.5	1.0	12.1

Table A.2 GEOGRAPHY

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Location		27 00 S, 133 00 E	10 00 S, 55 00 W	60 00 N, 95 00 W	35 00 N, 105 00 E	20 00N, 77 00 E	60 00 N, 100 00 E	38 00 N, 97 00 W
Total land (sq km)		7,741,220.0	8,514,880.0	9,984,670.0	9,598,088.0	3,287,260.0	22,272,000.0	9,632,030.0
Forest land (% of land area)	2007	21.3	56.5	34.1	21.2	22.8	49.4	33.1
Coastline (kms)	2007	25,760.0	7,491.0	202,080.0	14,500.0	7,000.0	37,653.0	19,924.0
Land boundaries (kms)	2007	0.0	16,885.0	8,893.0	22,117.0	14,103.0	20,097.0	12,034.0
Arable land (%)	2007	6.4	7.0	5.0	11.0	54.0	7.4	19.0
Plains (% of total land area)	2007	29.7	21.1	6.7	3.9	13.2	10.0	12.6
Plateaus (% of total land area)	2007	33.5	37.6	27.9	8.9	27.4	6.4	24.6
Hills (% of total land area)	2007	8.8	8.0	21.3	12.7	22.8	22.1	12.8
Mountains (% of total land area)	2007	4.8	12.5	23.2	64.2	18.7	25.5	36.9
Rails (km)	2008	9,639.0	29,487.0	57,042.0	63,637.0	63,327.0	84,158.0	191,771.0
Roads (km) per capita	1990	47.8	11.0	29.7	1.0	2.4	6.0	4.3
	2000	42.6	9.8	0.0	1.1	3.3	3.6	0.0
Goods Transported on Rail (million ton-km)	2008	46,036.0	232,297.0	353,227.0	2,211,246.0	480,993.0	2,090,337.0	2,820,061.0
Air Transport Freight (million ton-km)	2000	1,731.0	1,728.0	1,896.0	3,900.0	548.0	1,041.0	30,172.0
	2003	1,355.0	1,478.0	1,496.0	5,651.0	580.0	1,113.0	34,206.0
	2008	2,348.0	1,478.0	1,430.0	11,190.0	968.0	1,224.0	40,618.0
National average distance to capital city (kms)	2000	1,946.0	1,378.0	2,449.0	1,668.0	992.0	4,322.0	2,595.0
Airports with paved runway (number)	2007	311.0	714.0	509.0	403.0	243.0	616.0	5,119.0
Ports and terminals (number)	2007	11.0	9.0	8.0	7.0	8.0	10.0	12.0
Rail density (rail km per 100 km2)	2000-06	0.5	0.3	0.5	0.8	2.1	0.5	2.5
Road density (road km per 100 km2)	2000-06	10.5	20.7	15.5	20.7	113.8	3.3	70.2

Table A.3 ECONOMY

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
GNI ($ billions)	2009	900.6	1,541.3	1,317.3	5,028.7	1,303.2	1,192.4	14,011.0
GNI ($ per capita)	2009	43,770.0	8,040.0	41,980.0	3,650.0	1,180.0	9,340.0	46,360.0
PPP GNI ($ billions)	2009	835.7	1,976.0	1,262.3	9,170.1	3,758.2	2,603.6	14,011.0
PPP GNI ($ per capita)	2009	38,210.0	10,200.0	37,410.0	6,890.0	3,250.0	18,350.0	45,640.0
GDP (Avg. annual % growth)	2000-07	3.3	3.3	2.7	10.2	7.8	6.6	2.7
GDP (per capita % growth)	2006-07	2.9	4.2	1.7	11.2	7.7	8.8	1.5
% GDP agriculture	1980	5.0	11.0	4.0	30.0	36.0	16.0	3.0
	1990	4.0	8.0	3.0	27.0	29.0	17.0	2.0
	2008	3.4	7.0	2.0	11.0	18.0	5.0	1.0
% GDP industry	1980	36.0	44.0	37.0	48.0	25.0	62.0	34.0
	1990	28.0	39.0	31.0	41.0	27.0	48.0	28.0
	2008	26.8	28.0	28.4	49.0	29.0	38.0	22.0
% GDP services	1980	58.0	45.0	59.0	22.0	40.0	57.0	64.0
	1990	68.0	53.0	66.0	32.0	44.0	35.0	70.0
	2008	69.8	65.0	69.6	40.0	53.0	57.0	77.0
% GDP export	1970	13.0	7.0	22.0	3.0	4.0	5.0	6.0
	1990	17.0	8.0	26.0	19.0	7.0	18.0	10.0
	2000	22.0	10.0	46.0	23.0	13.0	44.0	11.0
	2008	23.0	14.0	36.0	35.0	24.0	33.0	11.0
% GDP import	1970	13.0	7.0	20.0	3.0	4.0	5.0	5.0
	1990	15.0	7.0	26.0	16.0	9.0	18.0	11.0
	2000	20.0	12.0	40.0	21.0	14.0	24.0	15.0
	2008	21.0	14.0	32.0	28.0	30.0	23.0	14.6
Agricultural value added per worker 2000 $	1900-92	20,838.0	1,506.0	28,243.0	254.0	324.0	1,825.0	20,793.0
	2003-05	29,924.0	3,126.0	43,055.0	401.0	392.0	2,519.0	41,797.0
Changing GDP 1870-1998, Russia and selected comparators ($1990PPP billion International)	1870	6.5	6.9	6.4	189.7	72.2	83.6	98.4
	1913	27.6	19.2	34.9	241.3	147.0	232.4	517.4
	1950	61.3	89.3	102.2	239.9	362.6	510.2	1,455.9
	1973	172.3	401.6	312.2	740.0	494.8	1,513.1	3,536.6
	1990	291.2	743.8	524.5	2,109.4	1,098.1	1,988.0	5,803.2
	1998	382.3	926.9	622.9	3,873.4	1,702.7	1,132.4	7,394.6
Changing PCGDP 1870-1998, Russia and selected comparators ($1990PPP International)	1870	3,645.0	713.0	1,695.0	530.0	533.0	943.0	2,445.0
	1913	5,715.0	811.0	4,447.0	552.0	673.0	1,483.0	5,301.0
	1950	7,493.0	1,672.0	7,437.0	459.0	619.0	2,834.0	9,561.0
	1973	12,759.0	3,882.0	13,878.0	839.0	823.0	6,058.0	16,689.0
	1990	17,043.0	4,924.0	18,923.0	1,858.0	1,309.0	6,871.0	23,214.0
	1998	20,390.0	5,459.0	20,599.0	3,117.0	1,746.0	3,893.0	27,331.0
GDP implicit deflator (Avg. annual % growth)	2000-07	3.7	8.5	2.0	3.7	4.4	16.7	2.6
Exports ($ millions)	2007	141,079.0	160,649.0	418,493.0	1,217,939.0	145,288.0	355,177.0	1,163,183.0
Exports (% of GDP)	1990-94	16.8	9.6	28.4	2.2	8.9	32	10
	1995-99	19.1	7.4	40	21.1	11	30.9	11.1
	2000-04	20.1	13.5	41.4	26.9	14.7	37.2	10.2
	2005-07	19.9	14.5	37.1	39	21.1	33.2	11.3

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
% manufacturing export of total merchandise export	1980	22.0	37.0	48.0	49.0	59.0	50.0	66.0
	2000	24.0	58.0	63.0	88.0	76.0	24.0	83.0
	2003	25.0	51.0	61.0	91.0	76.0	22.0	81.0
	2008	19.0	47.0	53.0	93.0	64.0	17.0	77.0
% high technology exports (of total manufacturing exports)	2000	18.0	19.0	19.0	19.0	5.0	17.0	33.0
	2003	16.0	12.0	14.0	27.0	5.0	19.0	31.0
	2008	14.0	12.0	14.0	30.0	5.0	7.0	28.0
% machinery export	1980	5.0	16.0	30.0	3.0	8.0	20.0	41.0
% food export (of total merchandise export)	2000	20.0	23.0	6.0	5.0	13.0	1.0	7.0
	2003	18.0	29.0	7.0	4.0	11.0	2.0	9.0
	2008	13.0	26.0	8.0	3.0	9.0	2.0	8.0
% ore and metal export (of total merchandise export)	2000	20.0	10.0	4.0	2.0	3.0	9.0	2.0
	2003	20.0	9.0	4.0	2.0	4.0	7.0	2.0
	2008	29.0	12.0	9.0	2.0	8.0	8.0	4.0
% agriculture raw material export (of total merchandise export)	2000	6.0	5.0	6.0	1.0	1.0	3.0	2.0
	2003	5.0	5.0	5.0	1.0	1.0	3.0	3.0
	2008	3.0	4.0	4.0	0.0	2.0	3.0	2.0
Trends in Export Composition, 1990-2007: Agricultural raw materials (%)	1995-99	7.7	4.2	7.6	1.4	1.8	3.51	2.8
	2000-04	5.6	4.3	5.6	0.8	1.1	3.2	2.5
	2005-07	3.6	3.8	7.5	0.5	1.7	2.8	2.5
Trends in Export Composition, 1990-2007: Food (%)	1995-99	22	29.5	7.7	7.2	17.3	1.5	9.4
	2000-04	19.7	27	7.3	4.7	12.1	1.6	8.1
	2005-07	14.4	25.6	7.5	2.9	8.9	1.8	7.6
Trends in Export Composition, 1990-2007: Fuel (%)	1995-99	18	0.8	9.3	3.3	1	42.6	1.8
	2000-04	20.5	4	14.8	2.8	5.4	52.8	2
	2005-07	24.1	7.3	21.6	1.9	13.7	62.1	3.6
Trends in Export Composition, 1990-2007: Ores & Metals (%)	1995-99	19.8	10	5.7	2	2.9	12.2	2.2
	2000-04	23.3	9	4.6	1.8	3.7	7.7	2.1
	2005-07	26.4	11.1	7.6	2	7.5	7.3	3.4
Trends in Export Composition, 1990-2007: Manufactures (%)	1995-99	23.3	53.2	63.7	85.9	75.1	26	80.3
	2000-04	23.6	53.3	61.9	89.7	75.7	23.1	81.4
	2005-07	19.1	49.5	55	92.5	67.2	17.7	78.9
Trends in Export Composition, 1990-2007: ICT services (%)	2000-04	2.9	3,7	5.7	3.6	46	0.8	3.4
	2005-07	2.5	3.3	4.7	3.9	45.1	0.5	3.8
Exports: % manufactured exports (of total merchandise exports)	2006	23.0	51.0	56.0	92.0	70.0	17.0	79.0
Exports: % high technology exports (of manufactured exports)	2006	12.0	12.0	15.0	30.0	5.0	9.0	30.0
Imports ($ millions)	2007	165,331.0	126,581.0	389,670.0	955,845.0	216,682.0	223,059.0	2,016,978.0
Household final cons. Expenditure (% of GDP)	2007	57.0	48.0	55.0	34.0	55.0	50.0	71.0
General gov't. final cons. Expenditure (% of GDP)	2007	18.0	28.0	19.0	14.0	10.0	17.0	16.0
Gross capital formation (% of GDP)	2007	27.0	22.0	22.0	44.0	38.0	25.0	19.0
External balance of goods and services (% of GDP)	2007	-1.0	2.0	4.0	8.0	-3.0	8.0	-6.0

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Current account balance ($ millions)	2007	-56,783.0	1,460.0	12,815.0	249,866.0	-9,415.0	78,310.0	-738,641.0
Domestic credit provided by banking sector (% of GDP)	2007	142.0	96.0	166.0	136.0	63.0	25.0	240.0
Foreign Direct Investment: Net Inflows ($ millions)	1970	2.0	1.0	2.0	0.0	0.0	0.0	0.0
	1980	1.0	1.0	2.0	0.0	0.0	0.0	1.0
	2000	3.0	5.0	9.0	3.0	1.0	1.0	3.0
	2003	2.0	2.0	1.0	3.0	1.0	2.0	1.0
	2006	26,599.0	18,782.0	69,068.0	78,095.0	17,453.0	30,827.0	180,580.0
	2008	5.0	3.0	8.0	4.0	2.0	4.0	2.0
Foreign Direct Investment: Net Outflows ($ millions)	1970	0.0	0.0	1.0	0.0	0.0	0.0	1.0
	1980	0.0	0.0	2.0	0.0	0.0	0.0	1.0
	2000	1.0	0.0	6.0	0.0	0.0	1.0	2.0
	2003	4.0	0.0	3.0	0.0	0.0	2.0	1.0
	2008	4.0	1.0	6.0	1.0	1.0	3.0	2.0
Foreign Direct Investment in the United States: Direct investment position on a historical-cost basis	2004	40,107	1,195	125,276	435	629	419	N/A
	2005	36,392	2,051	165,667	574	1,497	511	N/A
	2006	38,777	1,054	165,281	785	1,438	756	N/A
	2007	50,233	1,750	207,925	916	2,822	892	N/A
	2008	64,316	778	221,870	1,235	4,527	1,683	N/A
Foreign Direct Investment in the United States: Capital inflows without current-cost adjustment (outflows(-))	2004	3,099	668	33,164	150	277	(D)	N/A
	2005	-5,253	985	14,868	146	868	142	N/A
	2006	2,174	-468	14,770	315	443	305	N/A
	2007	15,506	481	43,962	137	1,387	152	N/A
	2008	15,628	1,459	23,684	368	1,764	712	N/A
Labor Force: % employed in agriculture	1960	11.0	52.0	13.0	56.0	74.0	42.0	7.0
	1970	10.0	44.3	8.0	37.0	69.0	26.0	4.0
	1980	6.0	30.1	5.0	71.0	69.0	14.0	4.0
Labor Force: % employed in industry	1980	31.0	23.9	28.0	17.0	13.0	45.0	31.0
Labor Force: % employed in services	1980	62.0	46.0	66.0	12.0	18.0	41.0	66.0
Labor Force: Participation	1990	64.0	61.0	67.0	79.0	61.0	67.0	66.0
	2000	63.0	68.0	65.0	78.0	59.0	60.0	67.0
	2003	64.0	69.0	67.0	76.0	59.0	61.0	66.0
	2008	64.0	70.0	68.0	75.0	59.0	63.0	65.0
Labor Force: Participation (men)	1980	78.0	84.0	78.0	87.0	87.0	77 (rf)	77.0
	1990	76.0	85.0	76.0	85.0	85.0	76.0	76.0
	2000	72.0	82.0	72.0	83.0	83.0	68.0	74.0
	2003	72.0	81.0	73.0	81.0	82.0	68.0	73.0
	2008	72.0	82.0	73.0	80.0	82.0	69.0	72.0
Labor Force: Unemployment	2000	6.0	7.1	7.0	3.0	4.0	10.0	4.0
Energy: Oil (Billion Barrels)	2007	4.0	13.0	28.0	15.0	5.0	79.0	30.0
Energy: Natural gas (Trillion Cubic Feet)	2007	89.0	13.0	58.0	67.0	37.0	1,577.0	238.0
Energy: Oil Rank	2007	27	15	12	14	23	7	11
Energy: Natural Gas Rank	2007	14	39	21	18	25	1	5
Energy: Carbon dioxide emissions per capita metric tons	2004	16.2	1.8	20.0	3.9	1.2	10.6	20.6

Table A.4 INTERNATIONAL INTEGRATION METRICS

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
International integration, Ideas: International voice traffic (incoming and outgoing, minutes per person) (minutes)	2000-06	213.8	11.7	438.7	7.3	3.0	15.3	279.5
International integration, Ideas: International Internet band with (bits per person) (bits)	2000-06	11,593.4	149.9	6,731.9	195.7	24.3	100.3	3,306.6
International integration, Trade: Total trade as share of GDP (%)	2005-06	42.1	26.4	72.0	72.4	48.8	55.1	26.8
International integration, Trade: Index of shipping difficulties (Index)	2008	34.0	93.0	39.0	42.0	79.0	155.0	15.0
International integration, Trade: Share of trade with neighboring countries (% of total trade) (%)	Average 2000-2005	0.0	13.2	73.0	15.4	9.9	33.1	30.7
International integration, People: Countries that need a visa to visit this country (number)	2004	161.0	140.0	149.0	191.0	189.0	183.0	158.0
International integration, People: Countries for which this country's residents need a visa (number)	2004	59.0	85.0	57.0	161.0	160.0	134.0	52.0
International integration, People: Cost of obtaining a passport relative to GDP per capita (%)	2005	0.4	1.3	0.3	2.9	3.6	0.4	0.2
International integration, People: International migration stock (% of foreigners) (%)	2005	20.2	0.3	18.9	0.0	0.5	8.4	12.9

Table A.5 GLOBAL COMPETITIVENESS INDEX METRICS

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Institutions: 1.03 Diversion of public funds	2009	10.0	121.0	19.0	55.0	58.0	106.00	28.0
Institutions: 1.04 Public trust of politicians	2009	14.0	127.0	23.0	26.0	79.0	80.00	43.0
Institutions: 1.05 Judicial independence	2009	5.0	78.0	11.0	62.0	37.0	116.00	26.0
Institutions: 1.06 Favoritism in decisions of government officials	2009	13.0	74.0	15.0	35.0	54.0	96.00	48.0
Institutions: 1.07 Wastefulness of government spending	2009	22.0	129.0	29.0	35.0	55.0	81.00	68.0
Institutions: 1.08 Burden of government regulation	2009	66.0	132.0	42.0	21.0	95.0	124.00	53.0
Institutions: 1.09 Efficiency of legal framework in settling disputes	2009	12.0	95.0	16.0	43.0	37.0	109.00	33.0
Institutions: 1.10 Efficiency of legal framework in challenging regs	2009	20.0	81.0	16.0	57.0	21.0	111.00	35.0
Institutions: 1.11 Transparency of government policymaking	2009	15.0	96.0	14.0	32.0	43.0	114.00	31.0
Institutions: 1.12 Business costs of terrorism	2009	84.0	5.0	74.0	66.0	117.0	80.00	121.0
Institutions: 1.13 Business costs of crime and violence	2009	48.0	118.0	38.0	43.0	50.0	71.00	74.0
Institutions: 1.14 Organized crime	2009	34.0	111.0	40.0	71.0	63.0	96.00	72.0
Institutions: 1.15 Reliability of police services	2009	18.0	89.0	11.0	49.0	52.0	112.00	21.0
Institutions: 1.16 Ethical behavior of firms	2009	11.0	95.0	10.0	54.0	57.0	112.00	22.0
Institutions: 1.17 Strength of auditing and reporting standards	2009	10.0	70.0	7.0	72.0	27.0	119.00	39.0
Institutions: 1.18 Efficacy of corporate boards	2009	5.0	58.0	4.0	92.0	63.0	74.00	20.0
Institutions: 1.19 Protection of minority shareholders' interests	2009	18.0	59.0	8.0	71.0	36.0	127.00	28.0
Infrastructure: 2.01 Quality of overall infrastructure	2009	38.0	81.0	13.0	66.0	89.0	86.00	14.0
Infrastructure: 2.02 Quality of roads	2009	37.0	106.0	21.0	50.0	89.0	118.00	11.0
Infrastructure: 2.03 Quality of railroad infrastructure	2009	29.0	86.0	15.0	27.0	20.0	33.00	17.0
Infrastructure: 2.04 Quality of port infrastructure	2009	50.0	127.0	14.0	61.0	90.0	87.00	13.0
Infrastructure: 2.05 Quality of air transport infrastructure	2009	28.0	89.0	25.0	80.0	65.0	92.00	20.0
Infrastructure: 2.06 Available seat kilometers*	2009	7.0	12.0	9.0	2.0	10.0	13.00	1.0
Infrastructure: 2.07 Quality of electricity supply	2009	28.0	55.0	15.0	61.0	106.0	73.00	17.0
Infrastructure: 2.08 Telephone lines*	2009	21.0	61.0	10.0	49.0	103.0	40.0	14.0
Higher Education and Training: 5.01 Secondary enrollment*	2009	1.0	25.0	21.0	89.0	107.0	43.0	78.0
Higher Education and Training: 5.02 Tertiary enrollment*	2009	13.0	73.0	25.0	80.0	100.0	6.0	14.0
Higher Education and Training: 5.03 Quality of the educational system	2009	14.0	103.0	5.0	52.0	37.0	22.0	56.0
Higher Education and Training: 5.04 Quality of math and science education	2009	30.0	123.0	14.0	35.0	22.0	48.0	42.0
Higher Education and Training: 5.05 Quality of management schools	2009	18.0	66.0	2.0	72.0	15.0	4.0	93.0
Higher Education and Training: 5.06 Internet access in schools	2009	25.0	64.0	12.0	23.0	67.0	10.0	63.0
Higher Education and Training: 5.07 Local availability of research and training services	2009	17.0	29.0	11.0	47.0	32.0	3.0	69.0
Higher Education and Training: 5.08 Extent of staff training	2009	18.0	52.0	12.0	50.0	34.0	8.0	91.0
Goods market efficiency: 6.01 Intensity of local competition	2009	17.0	52.0	24.0	13.0	12.0	106.0	5.0
Goods market efficiency: 6.02 Extent of market dominance	2009	12.0	35.0	13.0	26.0	22.0	92.0	7.0
Goods market efficiency: 6.03 Effectiveness of anti-monopoly policy	2009	7.0	36.0	19.0	50.0	25.0	107.0	11.0
Goods market efficiency: 6.04 Extent and effect of taxation	2009	66.0	133.0	65.0	32.0	29.0	99.0	59.0
Goods market efficiency: 6.05 Total tax rate*	2009	89.0	117.0	75.0	124.0	118.0	87.0	67.0
Goods market efficiency: 6.06 No. of procedures required to start a business*	2009	3.0	126.0	1.0	117.0	111.0	60.0	26.0

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Goods market efficiency: 6.07 Time required to start a business*	2009	2.0	128.0	6.0	99.0	82.0	80.0	9.0
Goods market efficiency: 6.08 Agricultural policy costs	2009	3.0	33.0	41.0	6.0	82.0	108.0	59.0
Goods market efficiency: 6.09 Prevalence of trade barriers	2009	22.0	117.0	45.0	69.0	79.0	125.0	44.0
Goods market efficiency: 6.10 Tariff barriers*	2009	96.0	94.0	36.0	120.0	104.0	125.0	33.0
Goods market efficiency: 6.11 Prevalence of foreign ownership	2009	24.0	71.0	22.0	98.0	65.0	120.0	46.0
Goods market efficiency: 6.12 Business impact of rules on FDI	2009	55.0	70.0	51.0	23.0	45.0	124.0	68.0
Goods market efficiency: 6.13 Burden of customs procedures	2009	24.0	121.0	31.0	41.0	71.0	130.0	39.0
Goods market efficiency: 6.14 Degree of customer orientation	2009	17.0	50.0	18.0	71.0	57.0	112.0	9.0
Goods market efficiency: 6.15 Buyer sophistication	2009	12.0	51.0	14.0	13.0	33.0	60.0	9.0
Labor market efficiency: 7.01 Cooperation in labor-employer relations	2009	43.0	87.0	31.0	60.0	40.0	97.0	26.0
Labor market efficiency: 7.02 Flexibility of wage determination	2009	90.0	110.0	29.0	53.0	44.0	59.0	14.0
Labor market efficiency: 7.03 Rigidity of employment*	2009	4.0	96.0	7.0	43.0	54.0	89.0	1.0
Labor market efficiency: 7.04 Hiring and firing practices	2009	62.0	118.0	21.0	77.0	103.0	43.0	8.0
Labor market efficiency: 7.05 Firing costs*	2009	6.0	68.0	52.0	109.0	85.0	38.0	1.0
Labor market efficiency: 7.06 Pay and productivity	2009	33.0	68.0	26.0	12.0	46.0	35.0	8.0
Labor market efficiency: 7.07 Reliance on professional management	2009	7.0	35.0	9.0	46.0	30.0	77.0	11.0
Labor market efficiency: 7.08 Brain drain	2009	26.0	34.0	14.0	39.0	41.0	53.0	1.0
Labor market efficiency: 7.09 Female participation in labor force*	2009	47.0	78.0	22.0	20.0	122.0	21.0	39.0
Financial market sophistication: 8.01 Financial market sophistication	2009	12.0	13.0	3.0	78.0	32.0	92.0	11.0
Financial market sophistication: 8.02 Financing through local equity market	2009	27.0	44.0	17.0	66.0	3.0	96.0	35.0
Financial market sophistication: 8.03 Ease of access to loans	2009	10.0	62.0	25.0	89.0	34.0	99.0	33.0
Financial market sophistication: 8.04 Venture capital availability	2009	10.0	68.0	18.0	38.0	23.0	86.0	7.0
Financial market sophistication: 8.05 Restriction on capital flows	2009	41.0	91.0	37.0	125.0	73.0	122.0	54.0
Financial market sophistication: 8.06 Strength of investor protection*.	2009	42.0	55.0	5.0	71.0	31.0	71.0	5.0
Financial market sophistication: 8.07 Soundness of banks	2009	3.0	10.0	1.0	66.0	25.0	123.0	108.0
Financial market sophistication: 8.08 Regulation of securities exchanges	2009	6.0	10.0	21.0	91.0	11.0	113.0	47.0
Financial market sophistication: 8.09 Legal rights index*	2009	5.0	98.0	58.0	58.0	18.0	98.0	18.0
Technological readiness: 9.01 Availability of latest technologies	2009	21.0	49.0	9.0	87.0	39.0	102.0	5.0
Technological readiness: 9.02 Firm-level technology absorption	2009	16.0	36.0	21.0	47.0	30.0	104.0	5.0
Technological readiness: 9.03 Laws relating to ICT	2009	8.0	41.0	12.0	48.0	39.0	93.0	9.0
Technological readiness: 9.04 FDI and technology transfer	2009	11.0	23.0	9.0	77.0	19.0	104.0	32.0
Technological readiness: 9.05 Mobile telephone subscriptions*	2009	47.0	81.0	92.0	104.0	116.0	14.0	69.0
Technological readiness: 9.06 Internet users*	2009	25.0	47.0	12.0	72.0	104.0	74.0	13.0
Technological readiness: 9.07 Personal computers*	2009	n/a	35.0	1.0	81.0	96.0	56.0	6.0
Technological readiness: 9.08 Broadband Internet subscribers*	2009	17.0	54.0	10.0	52.0	91.0	68.0	16.0
Market Size: 10.01 Domestic market size index*	2009	17.0	9.0	14.0	2.0	4.0	8.0	1.0
Market Size: 10.02 Foreign market size index*	2009	30.0	22.0	15.0	1.0	4.0	7.0	2.0
Business sophistication: 11.01 Local supplier quantity	2009	32.0	10.0	17.0	11.0	3.0	102.0	7.0
Business sophistication: 11.02 Local supplier quality	2009	16.0	35.0	8.0	53.0	41.0	110.0	9.0
Business sophistication: 11.03 State of cluster development	2009	37.0	29.0	8.0	16.0	20.0	90.0	2.0
Business sophistication: 11.04 Nature of competitive advantage	2009	38.0	89.0	48.0	61.0	67.0	103.0	16.0

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Business sophistication: Value chain breadth	2009	78.0	57.0	38.0	46.0	26.0	92.0	11.0
Business sophistication: Control of international distribution	2009	34.0	26.0	33.0	45.0	44.0	85.0	5.0
Business sophistication: Production process sophistication	2009	23.0	31.0	20.0	50.0	43.0	76.0	8.0
Business sophistication: Extent of marketing	2009	13.0	25.0	10.0	46.0	33.0	89.0	1.0
Business sophistication: Willingness to delegate authority	2009	13.0	40.0	10.0	65.0	36.0	99.0	5.0
Innovation: Restrictive labor regulations	2009	15.8	14.0	13.3	5.4	10.6	1.4	3.9
Innovation: Access to financing	2009	14.0	10.4	22.6	16.8	9.8	16.9	19.0
Innovation: Tax rates	2009	11.8	18.5	16.7	7.1	4.0	8.2	14.1
Innovation: Tax regulations	2009	11.2	19.0	12.3	9.6	8.0	11.6	12.8
Innovation: Inefficient government bureaucracy	2009	10.7	11.0	12.8	11.1	14.0	8.2	12.0
Innovation: Inadequate supply of infrastructure	2009	10.5	9.5	6.0	8.5	24.6	3.6	3.5
Innovation: Inadequately educated workforce	2009	8.7	4.9	4.1	7.3	2.6	4.1	5.6
Innovation: Poor work ethic in national labor force	2009	6.4	0.9	3.6	5.2	3.8	2.4	7.0
Innovation: Policy instability	2009	4.0	1.1	4.7	9.3	6.0	1.7	4.3
Innovation: Inflation	2009	2.9	1.0	1.2	5.8	1.0	8.7	7.9
Innovation: Foreign currency regulations	2009	2.0	0.9	1.6	3.6	2.3	2.9	1.4
Innovation: Government instability/coups	2009	1.2	0.3	0.1	1.3	0.9	1.4	1.1
Innovation: Crime and theft	2009	0.2	0.7	0.5	0.7	0.4	9.0	2.3
Innovation: Corruption	2009	0.1	7.0	0.0	7.4	11.0	19.0	2.7
Innovation: Poor public health	2009	0.5	0.6	0.6	0.9	0.9	0.9	2.2

Table A.6 DOING BUSINESS INDEX METRICS

Indicator	Year	Australia	Brazil	Canada	China	India	Russia	USA
Ease of doing business (rank)	2011	10	127	7	79	134	123	5
Starting a business (rank)	2011	2	128	3	151	165	108	9
Procedures (number)	2011	2	15	1	14	12	9	6
Time (days)	2011	2	120	5	38	29	30	6
Cost (% of income per capita)	2011	0.7	7.3	0.4	4.5	56.5	3.6	1.4
Minimum capital (% of income per capita)	2011	0.0	0.0	0.0	118.3	188.8	1.9	0.0
Dealing with construction permits (rank)	2011	63	112	29	181	177	182	27
Procedures (number)	2011	16	18	14	37	37	53	19
Time (days)	2011	221	411	75	336	195	540	40
Cost (% of income per capita)	2011	11.7	46.6	101.0	523.4	2,143.7	4,141.0	12.8
Registering property (rank)	2011	35	122	37	38	94	51	12
Procedures (number)	2011	5	14	6	4	5	6	4
Time (days)	2011	5	42	17	29	44	43	12
Cost (% of property value)	2011	5.9	2.7	1.8	3.6	7.4	0,1	0.5
Getting credit (rank)	2011	6	89	32	65	32	89	6
Strength of legal rights index (0-10)	2011	9	3	6	6	8	3	8
Depth of credit information index (0-6)	2011	5	5	6	4	4	5	6
Public registry coverage (% of adults)	2011	0.0	26.9	0.0	63.9	0.0	0.0	0.0
Private bureau coverage (% of adults)	2011	100.0	53.5	100.0	0.0	10.0	14.4	100.0
Protecting investors (rank)	2011	59	74	5	93	44	93	5
Extent of disclosure index (0-10)	2011	8	6	8	10	7	6	7
Extent of director liability index (0-10)	2011	2	7	9	1	4	2	9
Ease of shareholder suits index (0-10)	2011	7	3	8	4	7	7	9
Strength of investor protection index (0-10)	2011	5.7	5.3	8.3	5.0	6.0	5.0	8.3
Paying taxes (rank)	2011	48	152	10	114	164	105	62
Payments (number per year)	2011	11	10	8	7	56	11	11
Time (hours per year)	2011	109	2,600	131	398	258	320	187
Total tax rate (% of profit)	2011	47.9	69.0	29.2	63.5	63.3	46.5	46.8
GNI per capita (US$)	2011	43.770	8,070	42,170	3,620	1,170	9,370	47,240
Population (m)	2011	21.9	193.7	33.7	1,331.5	1,155.3	141.9	307.0
Trading across borders (rank)	2011	29	114	41	50	100	162	20
Documents to export (number)	2011	6	8	3	7	8	8	4
Time to export (days)	2011	9	13	7	21	17	36	6
Cost to export (US$ per container)	2011	1,060	1,790	1,610	500	1,055	1,850	1,050
Documents to import (number)	2011	5	7	4	5	9	13	5
Time to import (days)	2011	8	17	11	24	20	36	5
Cost to import (US$ per container)	2011	1,119	1,730	1,660	545	1,025	1,850	1,315
Enforcing contracts (rank)	2011	16	98	58	15	182	18	8
Procedures (number)	2011	28	45	36	34	46	37	32
Time (days)	2011	395	616	570	406	1,420	281	300
Cost (% of claim)	2011	20.7	16.5	22.3	11.1	39.6	13.4	14.4
Closing a business (rank)	2011	12	132	3	68	134	103	14
Time (years)	2011	1.0	4.0	0.8	1.7	7.0	3.8	1.5
Cost (% of estate)	2011	8	12	4	22	9	9	7
Recovery rate (cents on the dollar)	2011	81.8	17.1	91.2	36.4	16.3	25.3	81.5

Notes and Sources for the Annex Tables

TABLE A.1 POPULATION

Data for the variable "Total Population" of Table A.1 can be found in:
Maddison, Angus. 2006. The World Economy. Paris: Organisation for Economic Co-operation and Development.
Maddison, Angus. 2008a. The World Economy: Volume 1: A Millennial Perspective. Paris: OECD.
Maddison, Angus. 2008b. "World Population, GDP, and Per Capita GDP, 1–2003 AD." University of Gröningen Growth and Development Centre, Gröningen, Netherlands.
Remaining statistics can be found in the 2010 World Development Indicators and on pages 331-60 of the 2009 World Development Report

TABLE A.2 GEOGRAPHY

All data in Table A.2 can be found in the 2010 World Development Indicators and on pages 331-60 of the 2009 World Development Report

TABLE A.3 ECONOMY

Data for the variables "Total GDP", "Per capita GDP", "Changing GDP 1870-1998" and "Changing PCGDP 1870-1998" of Table A.3 can be found in:
Maddison, Angus. 2006. The World Economy. Paris: Organisation for Economic Co-operation and Development.
Maddison, Angus. 2008a. The World Economy: Volume 1: A Millennial Perspective. Paris: OECD.
Maddison, Angus. 2008b. "World Population, GDP, and Per Capita GDP, 1–2003 AD." University of Gröningen Growth and Development Centre, Gröningen, Netherlands.
Data on the variables "Foreign Direct Investment in the United States: Direct investment position on a historical-cost basis" and "Foreign Direct Investment in the United States: Capital inflows without current-cost adjustment" can be found in the "Foreign Direct Investment in the U.S.: Balance of Payments and Direct Investment Position Data" section of the U.S. Department of Commerce, Bureau of Economic Analysis' website.
Data for the variables starting "Energy: Oil" through "Energy: Natural Gas Rank" can be found in
2007 BP Statistical Review of World Energy.

TABLE A.4 INTERNATIONAL INTEGRATION METRICS

All data in Table A.4 can be found in the 2010 World Development Indicators and on pages 331-60 of the 2009 World Development Report

TABLE A.5 GLOBAL COMPETITIVENESS INDEX METRICS

All data in Table A.5 can be found in the 2009-10 Global Competitiveness Report

TABLE A.6 DOING BUSINESS INDEX METRICS

All data in Table A.5 can be found in the 2011 Doing Business Report

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