



European Bank
for Reconstruction and Development

DIVERSIFYING RUSSIA

Harnessing regional diversity





About this report

The EBRD seeks to foster transition towards open market-oriented economies and promote private entrepreneurial initiative in central and eastern Europe, the Baltic states, south-eastern Europe, the Commonwealth of Independent States and Mongolia. To perform this task effectively, the EBRD needs to understand the key remaining transition challenges that these countries face.

Russia, the largest economy where the EBRD operates, faces a very specific and difficult challenge – the task of diversifying its economy, ending its heavy reliance on exports of oil, gas and other minerals. This publication looks in detail at policies that can help to achieve economic diversification. It pays particular attention to Russia's regional diversity and uses evidence from a number of surveys conducted jointly by the EBRD and the World Bank, including the Business Environment and Enterprise Performance Survey and the Life in Transition Survey.

Contents

02 Preface
04 Overview

01

**Diversification from
a comparative perspective**

14 Introduction
14 Pathologies of dependence on
natural resources
16 Russia's natural resource wealth
16 Experience with diversification
17 Conclusion
17 References

02

How diversified is Russia?

20 Introduction
21 Russia's "product space"
24 From regional diversity to a
diversified economy
28 Conclusion
29 References

03

Entry, exit and growth of firms

32 Introduction
32 The entry and contribution of SMEs
34 Competition in product markets
34 Barriers to exporting
35 Business environment: new survey
evidence
37 Policy implications
39 References

04

**Improving the business
environment in Russia's regions**

42 Regional variation in the business
environment: survey-based evidence
44 Regional business
environment profiles
46 Differences in attitudes to corruption
47 Uneven implementation
of liberalisation reforms at
regional level
48 Policy implications
49 References

05

The management dimension

52 Introduction
52 Management skills in Russia:
survey evidence
52 Factors determining the quality of
management
55 Policy implications
55 References

06

Skills and migration

58 Introduction
58 Russian education in context
61 Migration
63 Policy implications
65 References

07

Innovation in Russia

68 Introduction
68 Russian innovation from a
comparative perspective
72 Role of the public sector in innovation
72 Reforming Russia's research
arrangements
73 Infrastructure for innovation
75 Innovating through industrial policy
76 Tax treatment
76 Policy implications
77 References

08

Financing innovation

80 Introduction
80 Constraints on the funding of
innovation
81 Russia's financing landscape
87 Policy implications
89 References

90 Acknowledgements

Preface

Breaking dependence on natural resources

As much of the rest of the world struggles to cope with the fragmentation of manufacturing value chains and strives to move up the value-added ladder, Russia continues to rely on a largely commodity-based growth model. But for all its extraordinary endowments, the country does not have sufficient reserves to sustain economic growth solely on the basis of the extraction and refinement of natural resources. And even if it did, international experience suggests that commodity-based policies lead to weaker growth in the longer term. Moreover, such policies are very often associated with weak institutions and unequal distribution of income and wealth.

A range of policies have been tried with a view to diversifying the Russian economy. The pioneering Gref programme under the first Putin administration contained a broad range of measures designed to stimulate both the entry of new firms and the growth of existing small and medium-sized enterprises. Putin's second term saw determined state-led efforts to stimulate innovation and kick-start strategic non-commodity industries. The Medvedev presidency was then marked by the global financial crisis. While it broadly curtailed direct aid to specific sectors, the balance sheets of state-backed financial institutions expanded dramatically. President Medvedev also launched a number of high-profile initiatives aimed at stimulating innovation.

Despite these efforts, the Russian economy is arguably more dependent on natural resources today than it was at the turn of the millennium. The government's heavy investment in the promotion of high-tech industries has yielded only limited results. While China and India have both managed to dramatically increase the percentage of exports of goods and services accounted for by information and communication technology, the corresponding shares have hardly changed at all in Russia. Barely 20 per cent of Russia's manufacturing exports are products with high skill content.

President Putin has now been elected for a third term and a new government is in place. This report takes a close look at the challenges that the new administration faces, basing its assessment on a unique dataset drawn from a range of recent surveys and literature. Based on a research project involving a large team of Russian and international economists, it sheds light on the strengths and weaknesses of the measures attempted to date and outlines the key elements of a strategy to diversify the Russian economy. While there is no "silver bullet", the report puts forward a combination of "horizontal" policies aimed at improving the general climate for innovation and broad-based growth and "vertical" policies tweaking existing state-led initiatives in order to increase the likelihood of diversification succeeding.

Horizontal policies should focus on improving the general business environment in the country. Given that Russia is commonly depicted as a centrally run monolith, the extraordinary variation in the business environment across the country's regions is striking. This diversity suggests that policy initiatives

at the federal level will face serious challenges, but also that institutional development could be promoted through the transfer of experience and competition between regions. That opportunity has not been lost on the government, and considerable effort has recently gone into improving the measurement of performance and strengthening incentives for regions to improve the local investment climate. The report strongly endorses this approach and suggests ways in which this could be developed further. It also suggests means of strengthening the implementation of federal reforms at the regional and local levels – namely improvements in the transparency of local government and the establishment of feedback mechanisms for businesses and individual citizens.

Federal policies must also place greater emphasis on skill formation. Russia has a long tradition of high-level research and a culture of excellence in its secondary schools and universities. However, the overall quality of education still does not compare to that seen in the world's finest education systems and there are strong signs that it has deteriorated over the last decade. More needs to be done to link education with the needs of industry, and industry must be given incentives to improve vocational training. Importantly, Russia also needs to open its borders to skilled migrants.

Generally, access to finance has improved in Russia, but there are still significant financing gaps at the initial stage of the innovation cycle. The government should aim to take minority stakes in privately managed funds, rather than attempting to launch or majority-own investment funds. The grant programme run by the Russian Foundation for Basic Research is an important step forward in terms of achieving a more effective allocation of resources. Private-sector participation in the governance of such programmes is critical in bridging the divide between universities and industry.

Harnessing potential

Much of the debate about innovation in Russia concerns the issue of finding resources. Consequently, people often overlook the fact that demand for innovation is also critical. Companies and organisations must have incentives to innovate. Much of this demand comes from firms competing on the international stage. In Russia, the number of exporting firms is very small, as the economy is dominated by government and monopolies – and government monopolies – with limited pressure to innovate. This vicious circle of small numbers of internationally competitive companies, limited pressure to innovate and little need to innovate needs to be broken.

Given the extent of these challenges, it is understandable that successive Russian governments have tried state-led policy initiatives with a view to breaking the country's dependence on natural resources. The report discusses several of these projects and develops some general principles to bear in mind when



assessing and potentially modifying them. The overall objective must be to harness the state's catalytic potential while ensuring that decisions are made in a transparent way and ultimately lead to a sustainable structure consistent with a well-functioning market economy. This requires engagement with private investors at an early stage and a willingness to ultimately cede full control to the private sector.

The EBRD has tried to play a role in some of these state-led projects and could get involved in future projects in order to promote these objectives. We worked with the Russian Venture Company at an early stage and have recently engaged in fruitful cooperation with Rusnano and Vnesheconombank (VEB) on the basis of memoranda of understanding. I will now sketch out a way forward for the major state-led initiatives on the basis of this report and the EBRD's own experience.

The Russian Venture Company, which was originally modelled on the successful state-led formation of a venture capital industry in Israel, experienced serious problems when it was first established. It has since gone through a series of different guises, but has now returned to its original format as a fund of funds and currently backs 12 funds investing in more than 100 companies. The emphasis here must be on creating transparent governance and bringing in private investors, preferably investors with significant international experience.

The highly ambitious Rusnano, which was originally founded in order to foster the establishment of a high-tech niche in the nanotechnology industry, was transformed into a national innovation framework by its dynamic CEO Anatoly Chubais. While the design of this national framework might have been somewhat different had it been conceived as such from the very beginning, Rusnano now has strong management and significant capital,

and has attracted some of the finest talent in the country. Its management aspires to follow international best practices in terms of investment standards and has declared its intention to eventually privatise the fund. The immediate aim is to bring in external investors and open up its governance, but the long-term objective must be for the government to reduce its stake to less than 50 per cent of the fund's share capital.

VEB has rapidly expanded its activities since it was re-formed as Russia's state development bank around five years ago. Since then, its management has been striving to build competence and adopt state-of-the-art procedures for investment.

Understandably, the government uses the bank to solve specific problems, using VEB even more than the majority state-owned commercial banks. However, VEB should also continue seeking to co-invest alongside private-sector investors in order to enhance both transparency and investment practices.

Investing in innovation

The most recent of these high-profile state-led initiatives is VEB's Direct Investment Fund, which was set up with a view to co-investing alongside leading international investors. The Direct Investment Fund has established informal links with a number of highly qualified potential co-investors and has now made its first investments. It has invested, alongside private partners, in the unified Moscow Stock Exchange and the power generating company OGLK-5. However, it is still too early to say how successful it will be in meeting its objective of generating significant foreign direct investment across a range of sectors. Nevertheless, having competent management and now a stronger supervisory board and international advisory board increases its chances of eventually finding experienced international private-sector partners who can help to attract skills and foster innovation.

Finally, Skolkovo Innovation City – the “Russian Silicon Valley” – is probably the most high-profile and ambitious government project fostering innovation and diversification. The Massachusetts Institute of Technology has been contracted to build a local campus, attracting investment from some of Russia's finest research universities. A number of global leaders in high-tech industries have pledged to help build five science clusters. Tax and other legal exemptions have been granted, creating an attractive environment for investing companies. However, efforts should be made to extend these conditions to the rest of the country.

Getting these state-led initiatives to deliver will take significant effort and resources, and success is not guaranteed. Ultimately, the success of Russia's diversification efforts rests on its ability to harness the country's tremendous regional diversity, improve the overall business environment and re-establish educational excellence on a par with advanced economies. Only then will Russian and foreign investors commit sufficient capital and skills to break the country's dependence on natural resources.

A handwritten signature in black ink, appearing to read 'Erik Berglöf'.

Erik Berglöf
Chief Economist
EBRD

Overview

Leveraging regional diversity for economic growth

Sustainable long-term growth in Russia requires economic diversification to reduce the country's dependence on natural resources. To achieve this, Russia needs to broaden and refocus its diversification strategy. This requires much greater efforts to improve education and skills, as well as the business environment, at both the regional and the national level. Russia's enormous regional diversity can be leveraged in order to achieve these aims. While there is also a need for targeted policies in support of innovation, these should focus on improving incentives for market-relevant research and development and complementing private sector-led sources of finance for early-stage firms.

1. Introduction

Few discussions of Russia's economic policy in the last decade have neglected to refer to the need for the country to alter the composition of output and trade. Sometimes the policy objective has been termed "diversification", and on other occasions it has been called "modernisation". But whatever the terminology used, Russian policy-makers have always stressed that a radical shift away from a natural resource-based economy is a central policy goal. During the 2012 presidential campaign, former and future president Vladimir Putin reaffirmed the Russian authorities' commitment to stimulating the non-commodity sectors of the economy, improving the business climate and making the economy more attractive for foreign direct investment (FDI). At the same time, he conceded that, despite significant reform initiatives over a number of years, "until now, no significant change has occurred".¹

Indeed, in 2012 Russia remains highly dependent on its natural resources. Oil and gas now account for nearly 70 per cent of total goods exports, and the structure of exports has narrowed somewhat since the mid-1990s. Oil and gas revenues also contribute around half of the federal budget. The non-oil fiscal deficit has averaged more than 11 per cent of GDP since 2009, while the oil price consistent with a balanced budget is now in the region of US\$ 115 per barrel and rising. The economy also remains highly energy-intensive, not least because of the persistent under-pricing of energy seen until recently. And unlike other leading emerging markets, Russia has failed to sustain large inflows of capital and much-needed FDI. In 2011 capital flight totalled more than US\$ 80 billion.

This report seeks to understand why more progress has not been made, basing its assessment on careful analysis of potential barriers to successful diversification in Russia. It reaches three main conclusions. First, despite significant efforts to improve the business environment and strengthen competition in Russia, implementation in this area has not been particularly successful because top-down reform initiatives have paid insufficient attention to the enforcement of new laws and regulations, particularly at the regional and local levels. Second, government initiatives aiming to develop new high-technology sectors have had a disproportionate focus on the funding of innovation, but neglected skills and education, which are essential for structural change. Third, while a case can be made for the state having a role in the promotion of innovation, the government's interpretation and implementation of this role has, for the most part, been skewed, with insufficient emphasis on areas such as improvements in the quality of government-

¹ Vladimir Putin, "Russia needs more technology and less corruption", FT Beyond BRICS, 30 January 2012.

funded research, incentives to commercialise this research, and the development of private sources of early-stage and innovation financing.

Progress in these areas is challenging, but by no means impossible. Indeed, the shortcomings identified in this report have increasingly been recognised by the Russian authorities themselves, who have begun to broaden and adjust their diversification strategy as a result. State-led efforts to promote innovation have been extended in the last two years. There has been a greater emphasis on skills, efforts have been made to attract foreign co-financing, and a broader view has been taken of the sectors that are worth funding. In addition, new and promising efforts are being made, led by the Agency for Strategic Initiatives, with a view to improving the business environment.

The report contains a number of specific ideas and recommendations that could be of assistance in the next phase of Russia's diversification efforts. These are summarised below. Beyond these specifics, a recurring theme in this report relates to Russia's enormous regional diversity, which we document in some detail. From the perspective of reform efforts, this can complicate matters, but also represents an opportunity. There are opportunities, for example, in the area of skills and education, where regions can (and have begun to) collaborate with companies in setting up training programmes, or with regard to the business environment, where regions (particularly regions that are not rich in natural resources) may have (or be given) incentives to compete. Furthermore, the gap between federal legislation and regional implementation can be helpful if

Oil and gas now account for nearly 70 per cent of total goods exports, and the structure of exports has narrowed since the mid-1990s

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it is used to establish federal rules that monitor and incentivise implementation – particularly by fostering transparency and creating feedback mechanisms for both businesses and individuals.

The report is based on a host of evidence collected in Russia over the past decade, particularly the last three years. Perhaps the most important contribution in this respect lies in its harnessing of evidence from Russia's regions. This includes evidence on the regional implementation of federal legislation designed to foster firm entry, which is based on annual surveys conducted by the Centre for Economic and Financial Research (CEFIR) since autumn 2002 for 20 of Russia's regions. The report



also draws on a new nationally and regionally representative survey of the business environment and firms' performance, which was conducted by the EBRD and the World Bank in 2011-12 and looked at the situation in 37 Russian regions.

The remainder of this overview summarises the main findings of the report, sometimes combining material from a number of chapters, but broadly retaining the sequence in which analysis is presented in the main report. A concluding section describes the main policy implications.

2. Why diversify?

There is no strong economic argument as to why diversification is necessarily advantageous. Indeed, most policy discussions relating to countries' economic strategies are concerned with specialisation – more precisely, the question of how to achieve more productive specialisation. Empirical evidence suggests that specialisation is most pronounced at either end of the income spectrum. When countries are rich, they tend to be more highly specialised, but the same is true of countries that are poor and largely agricultural. Middle-income countries such as Russia, however, tend to be more diversified in terms of both output structures and trade. Cross-country evidence indicates that specialisation begins occurring, on average, at an income level that is significantly higher – around 65 per cent higher – than that currently seen in Russia.

In a nutshell, the argument in favour of diversifying Russia lies in the fact that excessive dependence on the natural resource sector – Russia's main area of specialisation at present – is undesirable. Thus, diversification is necessary as an intermediate stage allowing the development of new industrial capabilities, potentially providing a platform for future specialisation in Russia. These areas should initially complement – and in time replace – natural resources as the main driver of Russia's growth. Underlying this view is a body of international evidence suggesting that, while natural resources can play an important role in giving societies a developmental "push", they are rarely associated with strong long-term growth. They are also less likely to create jobs, given the high capital intensity typically observed in natural resource sectors. In addition, Russia's natural resource wealth may not be large enough to achieve and sustain high levels of per capita income in the long term. New deposits may be discovered in the future, but these are likely to be in remote, inhospitable areas with high extraction and transportation costs.

There are two main reasons why exports of natural resources may not be conducive to growth in the long run. First, fluctuations in commodity prices result in macroeconomic volatility, which discourages investment across the economy, not just in the natural resource sector. Second, and most importantly, it is much more difficult to improve the business climate if the economy is dependent on natural resources, as the presence of natural resource revenues encourages rent-seeking behaviour and weakens constituencies that support institutional reform. This, in turn, undermines growth in non-commodity sectors.

Hence, diversification is necessary as a means of improving the business environment. But a better business environment is also a necessary precondition (although by no means the only one) for diversification. In the conclusion, we return to the central question of how Russia can break out of this vicious circle.

3. How diversified is Russia?

Russia's output structure may, at first sight, appear to be reasonably diversified. However, the export structure – which indicates the areas in which a country's products are competitive in international markets and, to some extent, predicts a country's growth potential – tells a different story. Not only are Russian exports highly concentrated in natural resources, this concentration has increased over time: the shares of oil, gas and other minerals in Russia's exports are higher today than they were 15 years ago. This is partly a reflection of higher international commodity prices, but even when measured using constant prices, the share of commodity exports has, if anything, increased somewhat over the years.

As a result, the range of exported goods where Russia enjoys a comparative advantage is limited at present. Moreover, it is concentrated in product areas that are poorly connected to potential new higher-value-added exports in terms of the technological inputs and skills required to produce them. This makes economic diversification particularly challenging and may provide a rationale for an active role on the part of the state. It highlights, in particular, the need to pursue policies that will help to establish a much broader skill base, with a view to successfully bridging the gap between the existing skill set and the skill set needed in order to move over to innovative exports (a gap that exists in terms of both technical skills and management skills).

Analysis at regional level suggests that specialisation has also been on the rise within individual regions. However, diversification at the level of Russia as a whole does not necessarily require economic diversification in individual regions. On the contrary, Russia's enormous regional diversity could be leveraged in order to achieve economic diversification, as individual regions develop their own comparative advantages and specialise with a view to reaping the economic benefits of clustering.

That said, the experience of the last two decades suggests that such discovery of new comparative advantages may not



potentially be applied in parts of Russia. The one thing that these different approaches have in common is their willingness to tolerate greater diversity in the supply of education, often with the state remaining responsible for the provision of finance and oversight of the curriculum. In certain regions, there is already evidence of some such steps being taken. In Kaluga, where an automotive cluster has been formed, investors have been hampered by the poor state of the vocational training system. In response, they have joined forces with the regional government to set up training centres. These are largely state-funded, but have also received financial support from the firms in question. Complementary measures – such as tax incentives encouraging workers and firms to take up training opportunities – can also be helpful.

At the same time, the significant skills gaps that the report documents could, in part, be addressed by means of a more flexible and open set of migration policies. At present, Russia operates a restrictive migration regime, which, combined with linguistic and cultural barriers, strongly limits the employment of highly skilled migrants. While other countries actively seek to attract talent, Russia has effectively spurned this option, leaving other countries (with some degree of success) to attract Russian talent instead.

6. Fostering and funding innovation

Since the mid-2000s, the Russian government's modernisation strategy has focused heavily on the promotion of innovation, particularly in high-technology areas, using a set of policy instruments – such as technology parks and dedicated non-bank financing vehicles – that have been adopted fairly widely in other countries. However, despite pockets of success, survey and other evidence suggests that although incumbent firms do introduce new products and processes (which may occasionally be associated with productivity improvements), there is still a real paucity of entrants and survivors in innovative sectors, notably in the high-technology areas that the government has targeted.

There are a number of reasons why innovation – particularly the shift towards new, higher-value-added areas of activity – has not yet taken off in Russia. For a start, the supply of high-quality research from public-sector institutions remains limited and is unlikely to improve in the foreseeable future. Until recently, little attention was paid to the critical need to link research with demand in the market. Indeed, for research conducted in public institutions, the incentives and vehicles facilitating this process have been largely absent. The legal framework has recently begun to evolve in the right direction, but recent changes are yet to yield results. The incentives for private companies to invest in research and development (R&D) also remain limited, whether in terms of tax or because of the general nature of the business environment. There is clearly scope for further fiscal incentives for innovation, so long as these remain simple in terms of design and target specific activities, rather than broad sectors.

Moreover, an economy's ability to innovate will always be determined by the skills and capabilities available, which are, in turn, fundamentally shaped by its education and training system. In Russia, as noted above, the quality of education and training has failed to improve – and has, in some instances, deteriorated. The quality of management is also likely to have had an adverse impact. In this respect, experience in other countries shows unequivocally that foreign companies tend to be major drivers of innovation, often in collaboration with local companies. The

scarcity of this kind of investment in Russia has, predictably, had a detrimental impact.

The Russian government's approach is based on the view that the lack of innovation reflects a market failure that is best addressed by means of appropriate public policy. This initially saw the directing and funding of innovation in certain predetermined sectors and technologies (such as nanotechnology). More recently, though, effective eligibility criteria have been relaxed in order to cover a wider range of areas. Such "vertical" or "sectoral" industrial policies have, however, had very mixed results in other countries, particularly when the emphasis has been on public-sector functions, rather than facilitating collaboration between the private and public sectors. This can be seen most clearly in the financing of innovation. Recently, greater attention has been paid to establishing a business environment that facilitates innovation, but reforms in this area remain incomplete and are yet to bear fruit.

The cornerstone of public policy in the field of innovation has been the provision of public funding. The most prominent examples of such policy efforts are Rusnano, a state-owned fund co-financing investment projects in the nanotechnology sector, and initiatives such as the Russian Venture Company and the Direct Investment Fund. As in other countries, the profile of the companies supported by means of government funding looks to be skewed towards relatively mature, low-risk activity, rather than truly innovative activity. This may be perfectly consistent with both commercial viability and the objective of modernising the relevant industry, but may not necessarily address the perceived shortfall in terms of innovation.

Although government finance has occasionally proved to be a successful catalyst, fostering innovation and, in particular, the growth of a venture capital industry, for every Israel there are countless examples of countries that have tried and failed to use and manage public resources in the service of innovation and/or diversification. Furthermore, most successful instances of government involvement in venture finance have seen governments investing in privately managed funds. In Russia, the usual risks surrounding government involvement in venture funding will need to be managed carefully. These include a lack of transparency, an absence of neutrality when allocating resources, the introduction of multiple objectives and weak governance. Recently, attempts have been made to mitigate such risks by strengthening the governance of state-sponsored financing vehicles and seeking to co-finance projects with foreign strategic and institutional investors.

An economy's ability to innovate will always be determined by the skills and capabilities available, which are, in turn, shaped by its education and training system.



A further question concerns the impact that such public funding of innovation has on private-sector funding and investment. At this stage, it is not possible to see with any accuracy whether recent initiatives have led to additional investment in R&D or pushed out private investment and funding. Given the scale of the resources invested in Rusnano, it is likely that some crowding-out has occurred. However, this experiment with public venture funding is a relatively recent development, so it is difficult – if not impossible – to evaluate at this stage. It will be important in the future for an open, rigorous and independent evaluation of these public venture funds' activities to be carried out and for the government to send a signal affirming its intention to gradually cede majority ownership of entities such as Rusnano to private investors.

Furthermore, evidence indicates that private-sector funding for early-stage companies or initiatives in Russia is largely – if not entirely – absent. Early-stage investing, as practised in some advanced economies by “angel investors” and spin-offs from multinational firms, is still largely lacking in Russia. The fact that this remains the case may be directly related to the wider factors that have, among other things, deterred multinational firms from operating in Russia and undermined incentives for private agents to invest in local ventures.

Although incumbent Russian firms, including SMEs, have had greater access to organised credit (principally through bank finance), external funding for R&D can still be highly problematic. At the same time, specialist finance for start-ups and small innovative firms has remained very scarce. To address these limitations, small grants for researchers could be complemented by grants for entrepreneurs. Taking an idea to market depends

not just on the quality of the innovation, but also on the business model and the strategy adopted. Consequently, small grants at an early stage can be particularly beneficial if they provide entrepreneurs with access to business support services and advice. The constraining factor in Russia, as in many emerging markets, remains the fact that this support is limited and/or skewed mainly towards the provision of physical infrastructure (such as industrial or techno-parks). Rather than trying to direct matters through a government agency or ministry, a better solution would be to establish an independent authority with governance shared between the government (as the initial provider of funding) and representatives of the private sector in the form of both local and international firms. It is obviously essential that the procedure followed when allocating grants be transparent, expeditious and subject to oversight and subsequent evaluation.

Although innovators need assurances that funding will remain available throughout the cycle, their ability to securely derive rents from their innovation is also a critical consideration. Patent protection and the ability to enforce contracts play a central role in this regard. In neither instance is the situation in Russia particularly supportive. In this context, legislation passed in December 2011 with a view to establishing an intellectual property rights court by 2013 is a step in the right direction.

7. Conclusion

The Russian government is right to make economic diversification and modernisation a high priority. Moreover, this report agrees that the state has an important role to play in supporting the diversification of the economy. At the same time, the report also shows that, despite significant state-led efforts since the mid-2000s, the Russian economy has not diversified, many sectors continue to suffer low levels of productivity, and shifts into higher-value-added activities have been limited. In particular, attempts to establish competitive high-technology sectors – not least by means of state support – have, as yet, borne relatively little fruit. And in the arena that provides the greatest incentives for innovation and the toughest test of viability – export markets – the evidence shows that relatively few Russian firms compete internationally, with very few doing so in higher-value-added sectors.

Diversification in Russia has had limited success so far, partly because reform efforts have not been able to effectively address fundamental obstacles to private sector-led firm entry, innovation and growth, and partly because state-led innovation initiatives have been slow to address impediments to innovation outside their main focus area (namely the funding of high-technology projects). If it is to be successful, Russia's modernisation strategy must be both adjusted and broadened.

First, the state must adjust its focus with respect to direct support for innovation. While access to finance has generally improved in Russia, financing gaps at the earliest stage of the innovation cycle show that there is no alternative to the development of a private venture funding industry. To achieve this, the state must stop taking centre stage when it comes to the financing of innovation and take up a supporting role. Looking at experience in other countries, governments' involvement in venture finance has been most successful when they have taken minority stakes in privately managed funds, rather than attempting to start or majority-own investment funds. Grant programmes (such as the programme run by the Russian Foundation for Basic Research) can be useful, particularly if they are also directed at entrepreneurs, rather than just research activities. International experience suggests that such programmes work best if they are subject to a governance structure that includes strong private-sector representation. And beyond the provision of finance, there remains significant scope for enhancing both private and public-sector incentives encouraging market-relevant R&D – for example, by adjusting the way that R&D expenditure is treated for tax purposes, by providing researchers in government-funded institutions with a wider range of options as regards the commercialisation of their inventions, and by improving the quality of public-sector research.

Second, the government's modernisation strategy needs to place greater emphasis on education and skills. The evidence in this report points to a deterioration in the quality of skills and human capital, including a limited supply of high-quality management skills. This particularly affects innovative companies. Although limiting or eradicating these constraints is far from straightforward – particularly in a very large country with significant regional variation – the broad policy direction and options are fairly well understood. They involve decentralisation, empowerment and the diversification of supply. This need not imply privatisation (as greater diversity in the supply of education can be reconciled with state funding and government oversight of the curriculum), merely a move away from a purely public-sector operation. Transparency through public participation and feedback mechanisms – not least input from potential future employers – is also essential.

Last, but not least, the role of the state needs to be reduced or refocused in those areas where it currently has the most detrimental impact on firm entry and growth – namely, all areas where there is the potential for corruption and other forms of rent-seeking (including licensing, inspections, tax administration and customs). Effective reform in this area is difficult, as it involves the state reforming itself – akin to a man pulling himself up by his own bootstraps. This is hard to achieve in any country, but is particularly difficult – as research shows – in countries with significant revenues from natural resources.

Russia's best hope in this and other areas (such as skill creation) may be its regional diversity and opportunities to exploit the relationship between its federal and regional levels of government. Regional diversity can lead to competition on the basis of the quality of local government, particularly for regions that are not rich in natural resources and are therefore dependent for their revenues on the creation of vibrant non-commodity-related tax bases. Constructive competition between regions can be further incentivised through mechanisms for the allocation of federal transfers. Reforms at the federal level can also be used to limit rent-seeking at the regional level. Indeed, this was the intention of laws passed in the early and mid-2000s aimed at liberalising firm entry and reducing inspection requirements. With respect to such reform efforts, the main conclusion of this report is that top-down legislation is not enough. It needs to be supplemented by a strategy promoting enforcement. The single most important tool in this respect is transparency – the establishment of information channels that monitor enforcement and invite public feedback. By the same token, the roadmaps for the improvement of the business environment that are currently being drawn up by the government's Agency for Strategic Initiatives are a promising development, but it is crucial that this initiative be extended right down to the level of individual regions – work that is now beginning.

In time, efforts along the lines described in the previous paragraph should bear fruit beyond the confines of economic diversification by improving the quality of government institutions. This will, in turn, have a broader impact on growth and the general quality of life in Russia. There is little reason to question the old adage of an open society being best suited to creative and productive activity. To paraphrase former president Dmitry Medvedev, "the task is to create a country that Russians themselves want to live in".

The Russian government
is right to make
economic diversification
and modernisation
a high priority.





01:

Diversification from a comparative perspective

International experience shows that commodity wealth is often an impediment to growth outside those natural resource sectors, as an abundance of natural resources tends to weaken institutions, increase macroeconomic volatility and divert capital and labour from other sectors, raising labour costs and making it more difficult to establish a broad skills base in the economy. At the same time, Russia's reserves of minerals are not large enough to make Russia prosperous in the long term. Consequently, diversification away from natural resources is Russia's key development challenge.

KEY FACTS:

70%

Share of oil and gas in goods exports of Russia



20

estimated number of years of production left for Russia's known oil reserves



US\$20,000

Approximate income per capita threshold beyond which countries start specialising in areas of comparative advantage



Diversification from a comparative perspective

1. Introduction

In an article in 2009, the Russian President emphasised the importance of economic diversification: “Achieving leadership by relying on oil and gas markets is impossible. ... In the end, commodity exchanges must not determine Russia’s fate; our own ideas about ourselves, our history and future must do so.”¹ Yet the Russian economy still remains heavily dependent on commodity exports, and this dependence has, if anything, increased since the mid-1990s (see Chart 1.1 and Chapter 2 for details). This has, in turn, led policy-makers to implement a set of initiatives aimed at reversing this reliance on natural resources.

This chapter briefly sets out the rationale underpinning Russia’s quest to diversify, thereby laying the foundations for the remainder of this report. In short, that rationale stems from the fact that Russia’s wealth in terms of natural resources is likely to be an impediment to growth outside of those specific sectors, but is not, at the same time, large enough to bring long-term prosperity to Russia by itself. The chapter ends with a brief overview of other countries’ experience of diversification.

2. Pathologies of dependence on natural resources

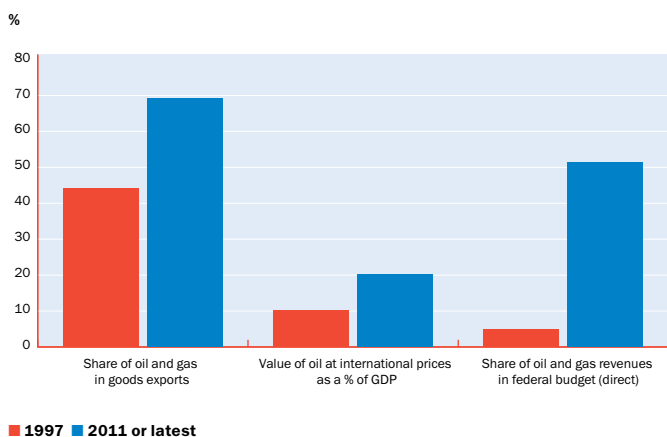
2.1 Institutions

Excessive reliance on natural resources tends to be problematic for several reasons. These include the corrosion of economic and political institutions, an adverse impact on the competitiveness

of other sectors, weaker productivity growth and increased macroeconomic volatility.² Indeed, there is a body of evidence indicating that an abundance of natural resources commonly undermines institutional integrity and vitality, not least because commodity rents and other liens are easier to appropriate in the presence of weaker institutions. In turn, compromised institutions, such as property rights or courts of law, limit the growth of other sectors of the economy, as economic agents face higher transaction costs or fear arbitrary expropriation. Crucially, without stable institutional support, the private sector may not have incentives to invest or innovate. Available cross-country evidence also supports the view that there is a strong link between the sophistication of exports – higher-value-added manufacturing and agricultural exports as a percentage of total goods exports – and the quality of institutions. Not only do more diversified economies tend to have better institutions, but the quality of institutions appears, in turn, to be the key determinant of long-term changes in the sophistication of exports in a cross-country context, controlling for the initial structure of exports, the level of income and other relevant factors.³

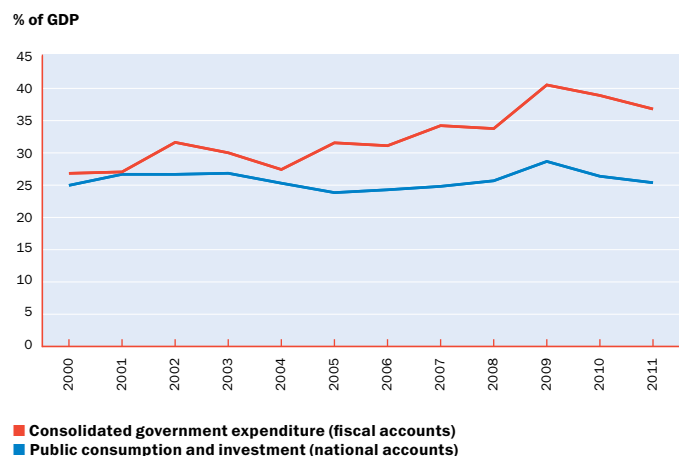
A further benefit of diversification stems from the fact that a need to increase revenues from cost-sensitive industries in tradeable sectors (such as manufacturing and agriculture) is likely to impose greater discipline on governments as regards improving the efficiency of public spending and the quality of public services.⁴ This is particularly important for a country such as Russia, where the public sector accounts for a large percentage of the economy in terms of spending (see Chart 1.2).⁵ Moreover, the Russian public sector’s share of spending grew steadily during the natural resource boom of the 2000s (in line with developments in other commodity-rich countries), increases

Chart 1.1
Share of Russian oil and gas in selected economic indicators



Source: US Energy Information Administration, IMF, Russian Finance Ministry, Rosstat and authors’ calculations.

Chart 1.2
Public expenditure in Russia as a percentage of GDP



Source: Russian Finance Ministry, Rosstat and authors’ calculations.

¹Dmitry Medvedev, “Go Russia!”, 10 September 2009.

²See Guriev et al. (2009) for a more extensive discussion of this point.

³Guriev et al. (2009).

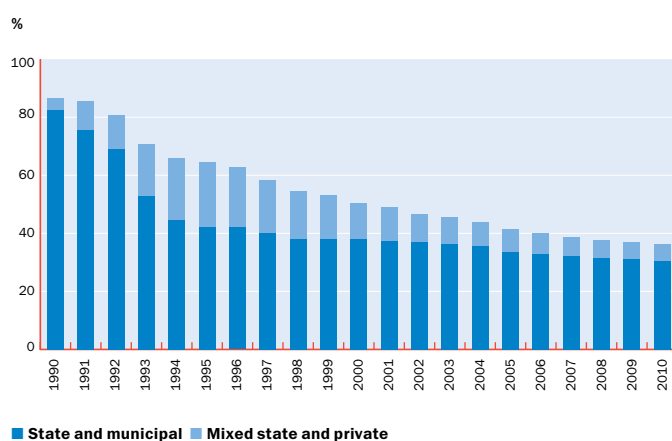
⁴Karl (1997).

⁵In the national accounts, some items of government spending (such as transfers) may be recorded as private consumption by the recipients of those transfers. This explains the difference between the two measures of the size of the state in Chart 1.2.

that were closely related to the loss of competitiveness seen in sectors not related to natural resources. The state still accounts for more than 40 per cent of total employment, although private-sector employment has been rising slowly (see Chart 1.3).

A host of available measures suggest that the quality of institutions in Russia is relatively low and has not improved significantly in recent years. For example, in various frequently cited global rankings of political and economic institutions, Russia has occupied positions ranging between 78th (2010 Heritage Foundation Index of Economic Freedom) and 167th (2010 Freedom House Index of Political Rights) in the world. Dependence on natural resources also tends to be associated with increases in economic inequality, as commodity rents (that is to say, revenues net of extraction costs) tend to be distributed narrowly. High levels of inequality can, in turn, have a negative impact on long-term growth, not least by limiting access to education, capital and other less tangible resources. On the basis of standard measures of inequality, such as the Gini coefficient, Russian society appears to be fairly unequal, but perhaps not very unequal (with a Gini coefficient of 42 per cent, compared with 25 per cent in Sweden and 54 per cent in Brazil). However, that moderate Gini coefficient conceals a very large concentration of wealth at the very top end of the distribution. For example, the list of the 500 wealthiest individuals in the world compiled by Forbes includes 39 Russians, compared with 19 people from Brazil, a larger economy with similar income per capita, and a mere 9 from Turkey. Russia also has a fairly limited middle class relative to its level of income, estimated at around one-quarter of the population.⁶

Chart 1.3
Breakdown of employment in Russia by type of ownership



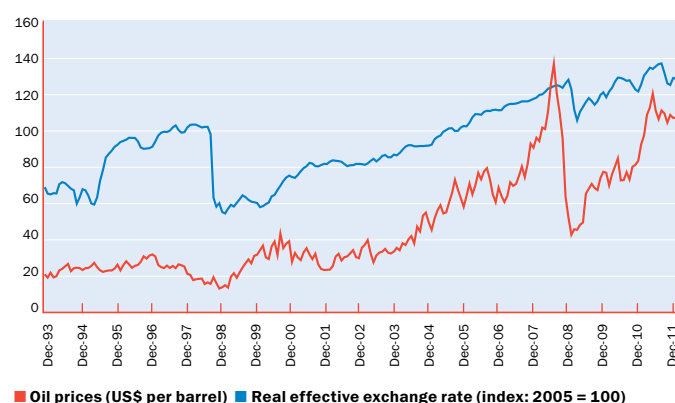
Source: Rosstat and authors' calculations.

2.2 Volatility, "Dutch disease" and growth

A high degree of dependence on natural resources significantly increases economic volatility on account of fluctuating revenues from commodities, whether due to changes in world prices or changes in export volumes as deposits are depleted. In turn, that volatility and associated uncertainty discourage investment in physical and human capital. In addition, periods when commodity prices are booming often see higher demand for non-tradeable sectors (such as services and construction). As demand in non-tradeable sectors rises, so do their prices, and the real effective exchange rate increases (either through nominal appreciation or as a result of consistently high inflation). Indeed, the Russian rouble has appreciated strongly in real terms over the past decade, in line with developments in oil prices (see Chart 1.4). Increases in real exchange rates result in higher labour costs across all industries, as wages in tradeable and non-tradeable sectors tend to be aligned with each other. Higher wages and a stronger currency lead to a loss of competitiveness in tradeable sectors (manufacturing and agricultural sectors not related to natural resources). This leads to a structural shift in the economy, whereby the percentage of total output and employment accounted for by non-tradeable sectors rises (termed "Dutch disease").

Commodity-induced macroeconomic volatility can be reduced by means of specific macroeconomic and structural policies, notably by promoting financial deepening and establishing a sovereign stabilisation fund. Financial deepening helps economic agents to smooth out consumption and maintain investment in physical and human capital throughout the commodity cycle. Stabilisation funds can help to offset the impact of a decline in commodity revenues, while also limiting increases in real effective exchange rates when commodity prices rise. They can

Chart 1.4
Oil prices and Russia's real effective exchange rate



Source: IMF International Financial Statistics, World Development Indicators and authors' calculations. Note: Oil prices are expressed in real terms (on the basis of 2008 prices) using US consumer price index (CPI) data.

⁶Calculated using the EBRD's Life in Transition Survey (LITS); see EBRD (2007).

also be used as a vehicle for saving commodity wealth for future generations. While Russia has established such funds, they are relatively small by the standards of other major oil exporters, with the total contents of Russia's Reserve Fund and National Welfare Fund currently standing at less than 10 per cent of gross domestic product (GDP). Chart 1.5 shows that this was also true prior to the recent crisis, as Russia's stabilisation funds peaked at just below 15 per cent of GDP in 2008.

While appropriate macroeconomic policies can help to manage volatility, the wholesale shifting of resources into non-tradeable sectors during commodity booms can weaken long-term growth on account of differences in productivity, as more diversified economies tend to possess sets of skills that are better able to facilitate productivity growth. Indeed, there is some evidence that it is these skills that drive convergence between emerging and advanced economies. Convergence tends to occur within higher-value-added manufacturing sectors, even if convergence at the level of entire economies remains weak.⁷

3. Russia's natural resource wealth

Russia's natural resource endowments are substantial, but probably not large enough to sustain a high level of average income for the population as a whole over the longer term. Indeed, oil production per capita is already relatively low by the standards of oil-rich countries (such as Qatar and other Gulf states, as well as Azerbaijan, Kazakhstan and Norway; see Chart 1.6).

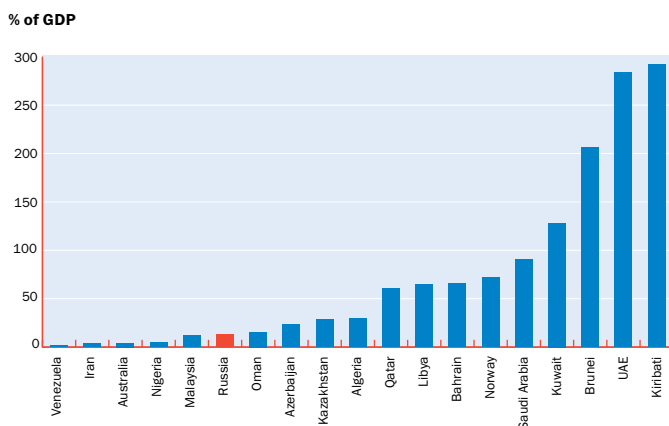
This picture would remain broadly unchanged if other resources were included, as oil is by far the most important export commodity both globally and in Russia, accounting for

more than 55 per cent of Russia's goods exports (with natural gas accounting for only around 12 per cent, for instance). Consequently, continuing to specialise in oil and other natural resources is unlikely to result in significant increases in Russia's average income per capita in the medium term. Moreover, there is significant uncertainty as to how long Russia's reserves of natural resources will last. Current estimates suggest that Russia's known oil reserves, including fields located in the Arctic, will be sufficient for 20 years of production at the current rate of extraction. This is a relatively short period: Kazakhstan's reserves, for instance, are set to last for more than 60 years, Saudi Arabia's for more than 70 years, and the United Arab Emirates' for more than 90 years.⁸ New reserves may be discovered, but these will mainly be offshore and in the Arctic, where exploration and extraction costs are higher, reducing available rents (that is to say, revenues net of costs). In addition, there is a possibility – only hypothetical thus far – that new technologies could sharply reduce the importance and price of fossil fuels.

4. Experience with diversification

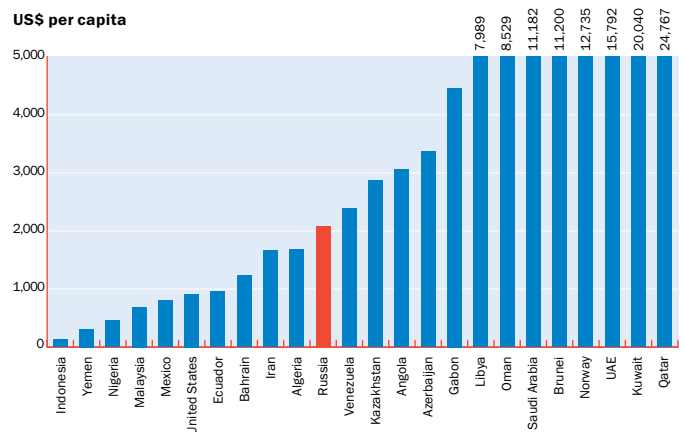
Must successful economies diversify? Available evidence suggests that as countries develop, they tend, initially, to diversify. It is only when per capita income levels reach around US\$ 20,000 that some economies begin specialising in areas where they have comparative advantages. As a result, measures of output and employment concentration – such as the Gini or Herfindahl indices – initially decline as income rises. Measures of the concentration of value-added then begin increasing again, while measures of the concentration of output remain roughly constant (see Chart 1.7).⁹

Chart 1.5
Assets of sovereign wealth funds



Source: Sovereign Wealth Fund Institute and World Bank.
Note: Selected countries only. Data are for 2008.

Chart 1.6
Value of oil produced per capita in 2010



Sources: US Energy Information Administration, IMF and authors' calculations.
Note: Selected countries only. Oil is valued at international prices.

⁷Rodrik (2011).

⁸BP (2011).

⁹Imbs and Wacziarg (2003).

There are many potential explanations for this pattern. At earlier stages of a country's development, diversification provides insurance against idiosyncratic economic shocks, matches diversification in consumption patterns as people's income rises, and helps in the development of a broad skills base, leading to stronger productivity growth. At the technological frontier, however, the cost of copying technologies becomes high, and progress requires the investment of large amounts of physical and human resources in specific areas. As a result, resources become concentrated in certain sectors, leading to constant or increasing levels of specialisation. Indeed, specialisation – and the question of how to specialise effectively – is a key issue for advanced economies and features prominently in their policy considerations.

The empirical threshold where diversification ends and specialisation begins is somewhat above Russia's current per capita income of around US\$ 13,000.¹⁰ In addition, moves towards specialisation at higher levels of income rely on the "discovery" of a country's long-term comparative advantages, which are based on a broad skills base developed as the country progresses through the middle-income stage. This essential discovery process is significantly impeded by Russia's considerable dependence on natural resources.

5. Conclusion

There is strong evidence that, in the long run, countries that are rich in natural resources tend to grow more slowly than other economies with similar levels of income and different characteristics. This has sometimes been referred to as the "resource curse".¹¹ What is also clear is that specialising narrowly in the extraction of natural resources is associated with

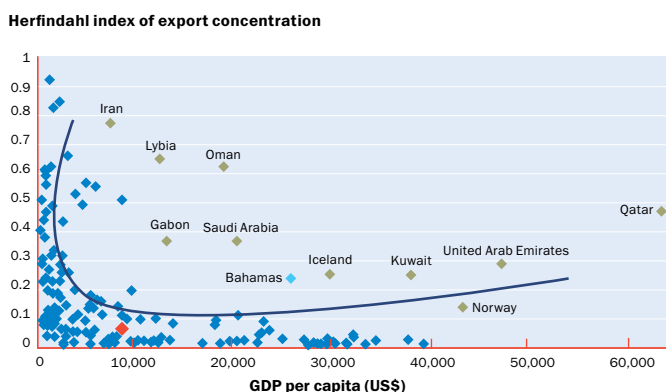
considerable risks to long-term growth. Indeed, given Russia's current income level, narrow specialisation would be a viable strategy only if it were able to efficiently extract and sell much larger volumes of commodities (primarily oil) at prices that were consistently and reliably higher than those seen to date. This chapter has also indicated a range of other issues associated with commodity-based economies – including high levels of macroeconomic volatility and rent-seeking – that provide reasons to move away from this specialisation.

In conclusion, there is a strong case for seeking to diversify Russia's output structure and exports, moving away from the current dependence on hydrocarbons. At the same time, this remains a very challenging task, as possessing an abundance of natural resources tends to have a negative impact on the operating environment for other industries through a number of channels, ranging from increases in real exchange rates (the "Dutch disease") to the weakening of the economic institutions that underpin a dynamic market economy and entrepreneurship. The next chapter addresses the question of just how undiversified Russia's economy currently is, before later chapters look at barriers to further diversification and the policies that are most likely to help achieve greater diversification.

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Chart 1.7
Specialisation and income per capita



Sources: Feenstra et al. (2005), IMF and authors' calculations.
Note: Based on data for 2000 for 156 countries. Data on GDP per capita are provided at purchasing power parity on the basis of 2005 prices.

¹⁰Both the general pattern and the income threshold at which specialisation begins to dominate are robust across time periods, country samples and industry breakdowns; see Hesse (2008).

¹¹See, for example, Auty (1993).



02:

How diversified is Russia?

Oil and gas account for a large and increasing share of Russian exports, currently making up around two-thirds of total exports. As a result, a large proportion of Russia's capital and labour is tied up in natural resources and related service sectors. This makes diversification a particularly challenging task, since the skills and technological inputs required by non-commodity exports are likely to be fairly different from those used in Russia's current exports. At the subnational level, diversification of the economy as a whole may be achieved by leveraging regional diversity, with different regions specialising in different areas.

KEY FACTS:

10% approximate percentage of workforce employed in manufacturing sectors not directly related to oil, gas or other natural resources in average region

103 Number of products where Russia has revealed comparative advantage, compared with 513 in China

20% Share of higher-technology products in total manufacturing exports

How diversified is Russia?

1. Introduction

Russia emerged from the Soviet Union with a very particular, industry-heavy economic configuration. In 1990 industry accounted for around 50 per cent of GDP, while services contributed only 35 per cent. Since then, the structure of the economy has shifted significantly, driven by two main factors.

The first is the liberalisation of prices and Russia's integration into the world economy. As in most other transition economies, this has led to the expansion of services and, in parallel, the contraction of both industry and agriculture. The sectoral breakdown seen in 1990 has now been broadly reversed, with services now making up nearly two-thirds of GDP, while manufacturing, in particular, accounts for just 16 per cent (see Charts 2.1 and 2.2).

The second factor is the increase seen in international hydrocarbon prices since the late 1990s, which has encouraged further specialisation in natural resources – particularly oil, gas and other minerals – within the industrial sector. Increases in hydrocarbon prices have also reinforced the shift from industry to services, as they have led to an improvement in Russia's terms of trade and an increase in its domestic purchasing power. These have, in turn, raised wages and prices in the service sectors. Thus, the de-industrialisation process that began in the early 1990s has been reinforced by a shift in relative prices resulting from soaring oil and gas prices and strong increases in government revenues.

Given the current breakdown of GDP (see Chart 2.2), the Russian economy may seem fairly diversified. However, the official breakdown overstates the extent of diversification, as oil, gas and other mineral resources are recorded all the way along the production chain – as mining and quarrying (the extraction of those resources), as manufacturing (the refining of oil, for example), as transportation (the moving of oil around the country), as wholesale trade (trade in oil and oil products), and so on.¹

Russian exports tell a clearer story (see Charts 2.3 and 2.4). These show both the consistently large proportion of exports accounted for by natural resources (with mineral products, metals and precious stones making up more than 75 per cent of Russia's exports since the mid-1990s) and the sharp rise in mineral exports resulting from the natural resource boom seen since 2000. By 2009 mineral fuels accounted for nearly two-thirds of Russia's exports in nominal terms – up very strongly from around 45 per cent in the mid-1990s. The largest contributors to exports are crude oil, which makes up 43 per cent of mineral exports and 28 per cent of overall exports, petrochemicals (22 per cent and 14 per cent respectively) and natural gas (14 per cent and 9 per cent respectively). The next largest commodity group is metals, which accounted for 12 per cent of mineral exports in 2009, down from 16 per cent in 2000. Metals exports themselves are highly concentrated, with ferrous metals accounting for 44 per cent of the total. Chart 2.4, which calculates export shares using constant (2007) prices, shows that most of the increase seen in the export share of mineral products since 2000 can be attributed to higher hydrocarbon prices. In other words, there has, in real terms, been very little reallocation across commodity groups, so the concentration of exports has remained broadly stable since 2000. However, even

Chart 2.1
Russian GDP by sector, 1990-2010

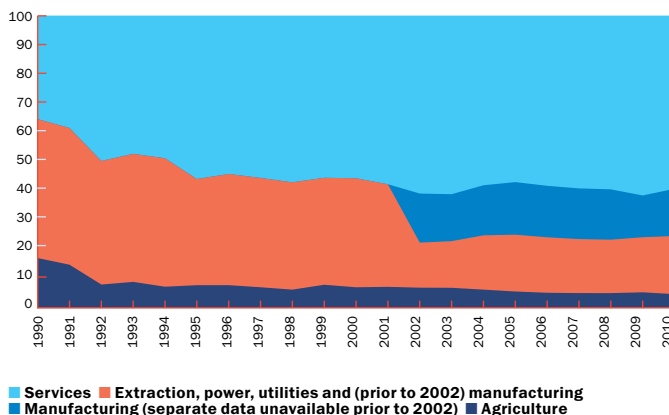
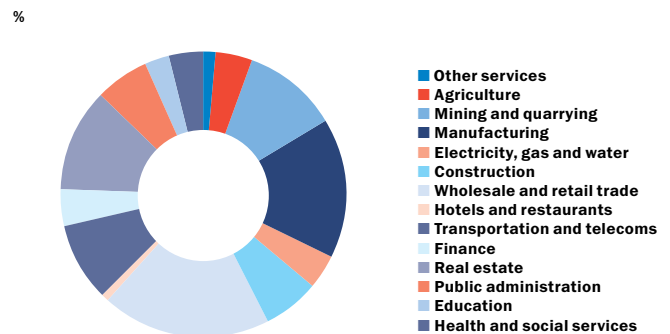


Chart 2.2
Russian GDP by sector in 2011



¹ See Kuboniwa et al. (2005) for a detailed discussion of how the output of the oil and gas sector is recorded in the national accounts.

with constant prices, mineral products have risen slightly as a percentage of total exports.

Alongside the shift in the composition of production and exports, large shifts have also been seen since 1990 in the relative importance of Russia's various trading partners and the goods traded with particular countries. While trade with countries in the Commonwealth of Independent States (CIS) has declined, trade with the European Union (EU) has increased, driven mainly by exports of mineral fuels. At the same time, exports of manufactured goods have gone mainly to other CIS countries, attributable in part to historical relationships. Recent analysis by the OECD has shown that, besides raw materials, manufacturing exports have been dominated by low to medium-technology items. Higher-technology products account for barely 20 per cent of total manufacturing exports, which is very low by international standards. Given the structure of exports, the contribution made by high-technology industries to Russia's manufacturing trade balance has, accordingly, been highly negative.²

2. Russia's "product space"

How easy would it be for Russia to move away from its current commodity-dominated export profile and diversify its production and exports? This question can be answered with the aid of a method developed by Ricardo Hausmann, Cesar Hidalgo and a number of co-authors,³ which uses detailed trade data to map a country's "product space". This method assigns a "value" to every product on the basis of the average income of the countries that export it worldwide. On the basis of the values for individual products, one can then measure the income associated with a country's total export basket (as a weighted average of the values of exported goods). Furthermore, this method can be used to

measure the "distance" between each pair of goods – that is to say, the probability of a country exporting both products at the same time (more precisely, the minimum of the probability of it exporting product A, conditional on it being an exporter of product B, and vice versa). Using this measure, it is possible to map a country's "product space" on the basis of the distances estimated between the various exports.

The usefulness of these country-specific product maps lies in the fact that, by showing the "location" of the country's current exports, they also indicate neighbouring product regions in which a country might be able to develop a comparative advantage relatively easily. This is based on the assumption that, although the distance between two goods in the product space is based purely on export patterns, "proximate" export goods rely on similar sets of inputs (such as physical assets, knowledge and infrastructure) that are specific to that activity. Established industries will generally have an organised supply of inputs and other requirements, such that, from a dynamic perspective, the cost of introducing and producing proximate products will be correspondingly lower and the chances of developing a comparative advantage will be higher.

This implies that if a country specialises in products located in a dense part of the product space where small distances separate a large number of products, it is easier to capitalise on existing comparative advantages and increase exports in adjacent areas. By contrast, if a country specialises in products located in peripheral, poorly connected areas of the product space, where inputs and skills tend to be highly specialised, developing new exports is likely to be more difficult.

The starting point for our analysis is Russia's product space in 1996. At that point in time, Russia had a comparative advantage

Chart 2.3
Structure of exports in nominal terms

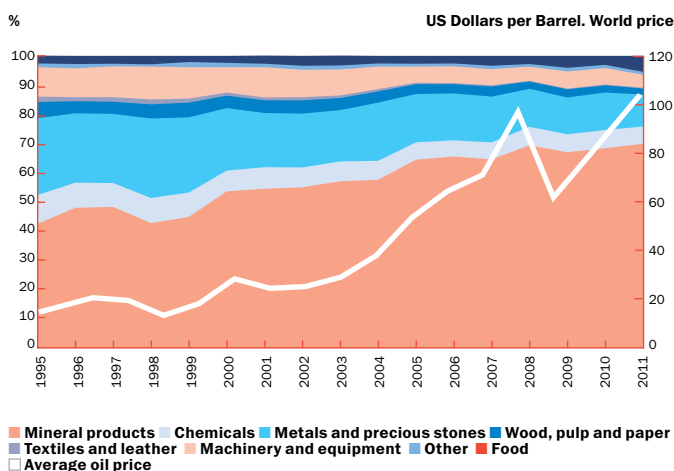
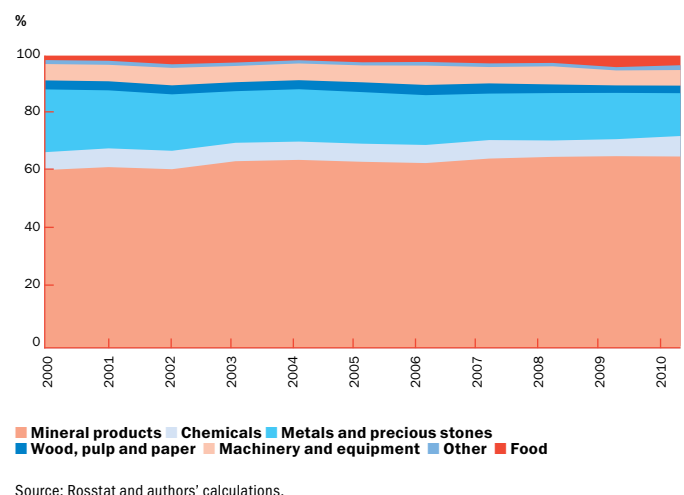


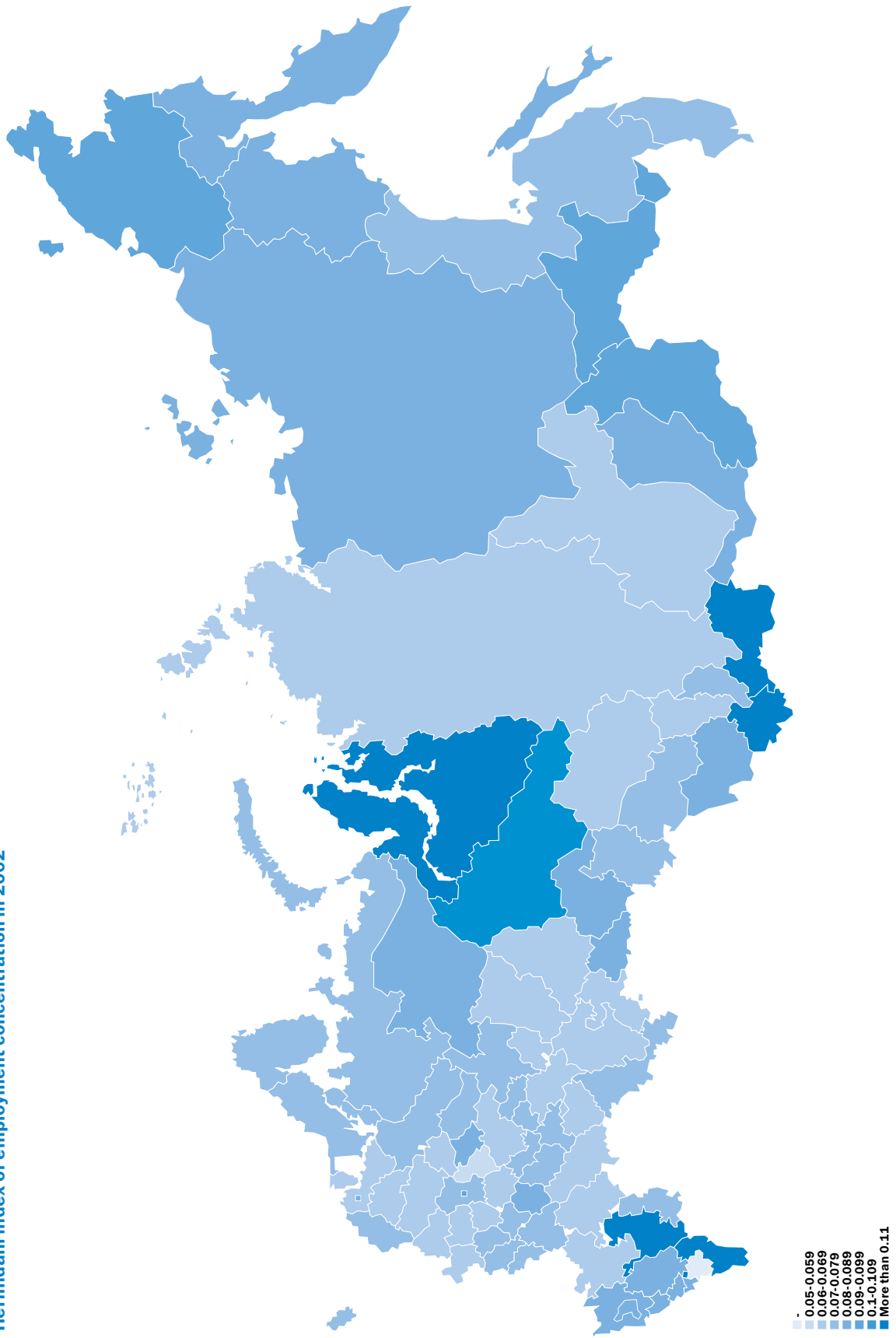
Chart 2.4
Structure of exports in real terms (at constant prices)



² OECD (2011), p. 77.

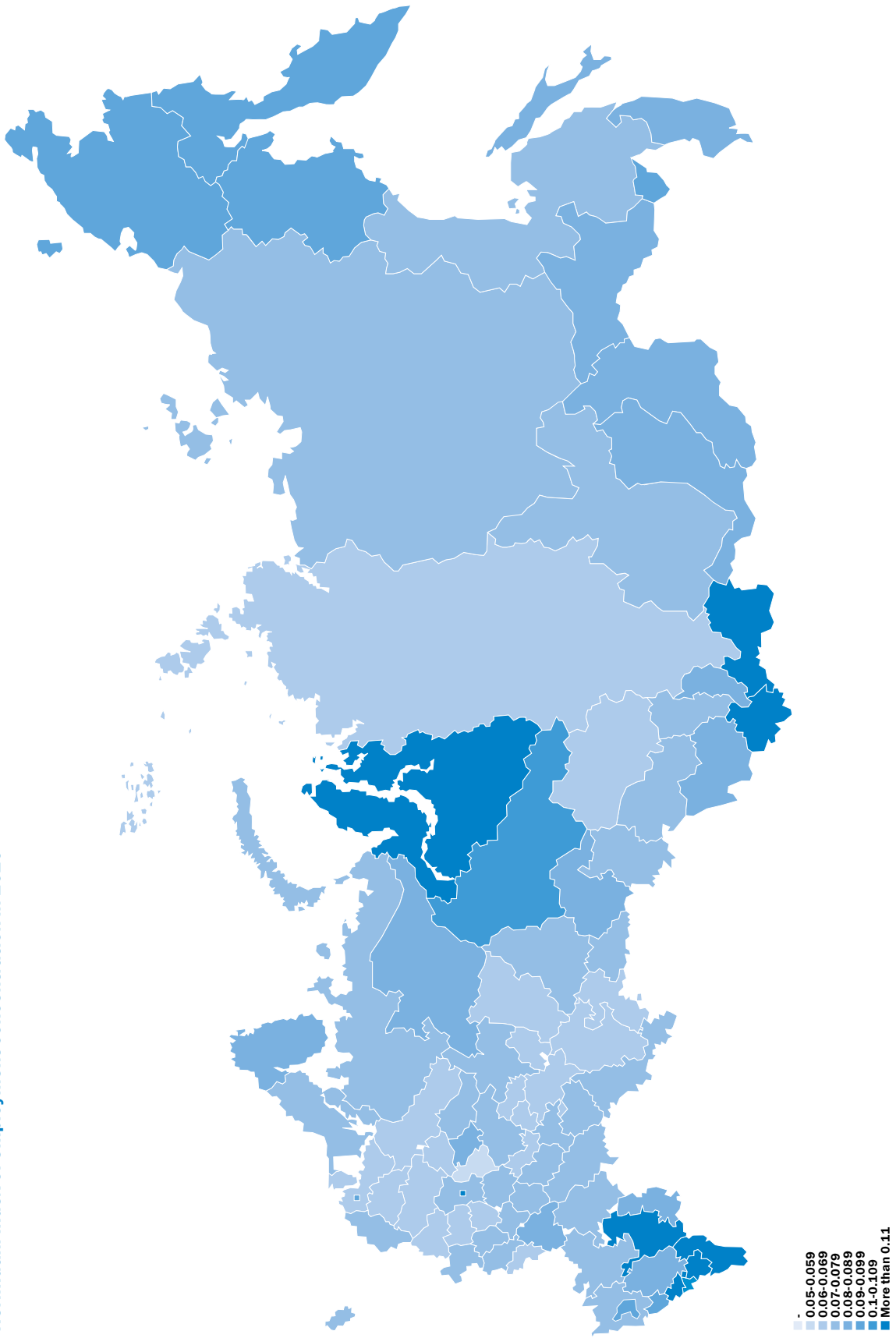
³ See Hausmann et al. (2007), Hidalgo et al. (2007) and Hausmann and Klinger (2007) for more details and the application of this method to countries in Europe and Central Asia.

Map 2.1
Herfindahl index of employment concentration in 2002



Sources: Rosstat and authors' calculations.

Map 2.2
Herfindahl index of employment concentration in 2010



Sources: Rosstat and authors' calculations.

Box 2.1

**Herfindahl index
and location quotients**

The Herfindahl index is a widely used measure of economic concentration, a tool originally used to evaluate the market power of firms in a given industry and the degree of competition in a market. It is defined as the sum of the squares of the market shares of firms in the industry (usually taking the top 50 firms). The index ranges from 0 (indicating perfect competition between an infinitely large number of small producers) to 1 (indicating a single producer). Thus, higher index values correspond to greater concentration in terms of production.

When applied to the issue of economic specialisation, the Herfindahl index is calculated as the sum of the squares of the employment shares of the various sectors, with higher values corresponding to greater specialisation (and lower levels of diversity).

The location quotient approach compares the structure of regional employment with the structure of national employment. The location quotient for industry i is calculated as the ratio of the share of industry i in total regional employment to the share of that same industry in total national employment. A location quotient of less than one means that a given region is less strongly specialised in a given sector than the country as a whole, while location quotients of more than one correspond to greater than average specialisation in a particular industry.

in only 156 out of 1,242 product lines on the basis of four-digit Standard International Trade Classifications (SITCs). This means that there were 156 product lines where Russia's share in total world exports of the relevant good was larger than Russia's share in total world exports of all goods combined. By comparison, China had a comparative advantage in 479 product lines in the same year. Most of the products in which Russia had a comparative advantage were natural resources. These products are poorly connected to the rest of the product space and are not, in particular, located very close to many manufactured goods. Not surprisingly, the average distance between the Russian export basket and other potential exports was around 9.3 in 1996, compared with only 2.9 for China.

Turning to the present, data for 2010 show that increased concentration in exports of natural resources and an overall contraction in manufacturing have led to a further narrowing of Russia's area of comparative advantage, with Russian exports moving further away from other potential exports. The number of product lines where Russia enjoys a comparative advantage has fallen to 103 (while the figure for China has increased to 513), and the average distance between the Russian export basket and other potential exports has increased to 14.2 (while the figure for China has fallen to 2.6).

These figures emphasise the fact that, despite the policy rhetoric, Russia's export basket has become even more concentrated since the mid-1990s. Furthermore, Russia's ability to shift into proximate products and diversify appears to be highly constrained. In short, the evidence indicates that Russia's exports have narrowed and that, given their composition, it will not be easy to diversify. A focus on natural resources is associated with a narrow set of specialist inputs and capabilities that cannot readily be redeployed in other areas of activity.

**3. From regional diversity
to a diversified economy**

Thus far, our analysis has used data aggregated at the national level. When this issue is considered from a regional perspective, however, the picture becomes more varied. Regions clearly vary both in terms of the initial concentration of production and exports and with respect to changes over time. In order to gauge the level of diversification (or the opposite – specialisation) in each of Russia's 83 regions, we use data on employment disaggregated at the two-digit sector/industry level (looking, for instance, at agriculture, oil and gas extraction, mining, various manufacturing industries, utilities, construction and various service sectors). Data availability limits the analysis to a relatively short period (the period between 2002 and 2010) and measures of diversification based on employment, rather than value added.

With these caveats in mind, the two measures of concentration used to assess the extent of regional specialisation are a Herfindahl index of employment concentration and location quotients (see Box 2.1). Maps 2.1 and 2.2 show regional Herfindahl indices for 2002 and 2010.

35%

Share of services
in GDP at the
start of transition



The index values are relatively low on average, but vary widely across regions (ranging from 0.05 to 0.2). Regions in the Urals (such as the Yamalo-Nenets Autonomous District) and the south of the country (such as Dagestan and North Ossetia) tend to be the most specialised. In the Urals, this is due to natural resource endowments, which lead to higher levels of employment in mining industries and mineral-related manufacturing. In the south, it is the large numbers of people employed in public administration and social services that account for the high levels of concentration. By contrast, regions in European Russia (that is to say, the Central and North-West federal districts) tend to be more diversified (with the Vladimir Region having the lowest level of concentration).

A comparison of the two maps reveals that production patterns have remained broadly unchanged, with only a limited shift in the level of specialisation over time. In other words, regions that were more specialised in 2002 remained more specialised in 2010. If anything, the maps point to the further concentration of employment in some already specialised regions. Only 34 of the 83 regions saw their index values decline (corresponding to moves towards greater diversity), and in only 15 cases were such changes of a non-negligible magnitude. The five most diversified regions in 2002 – the Tula, Kaluga, Leningrad, Vladimir and Tver Regions – were also the five most diversified regions in 2010, albeit in a slightly different order. And the four most specialised regions in 2002 – Tyva, Ingushetia, Dagestan

Chart 2.5a
Location quotients for the oil and gas industry

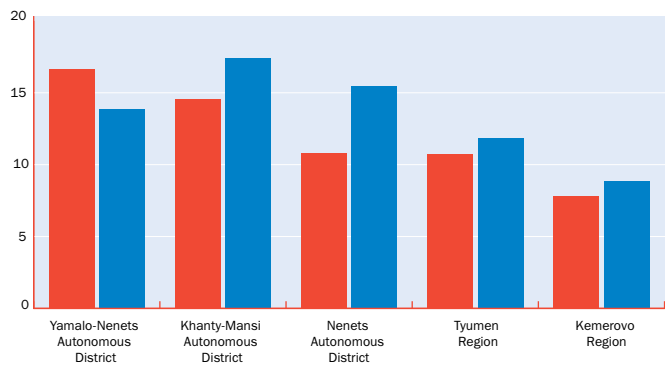


Chart 2.5b
Location quotients for other mining industries

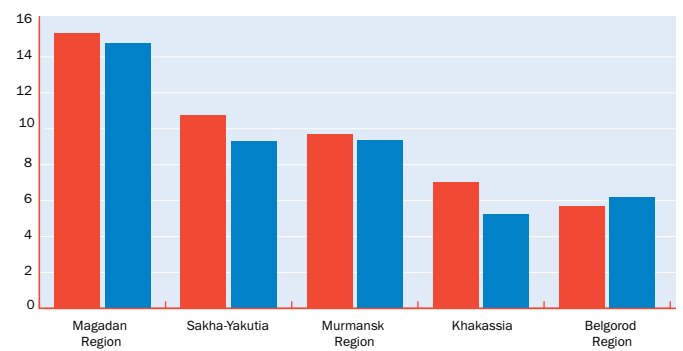


Chart 2.5c
Location quotients for textile manufacturing

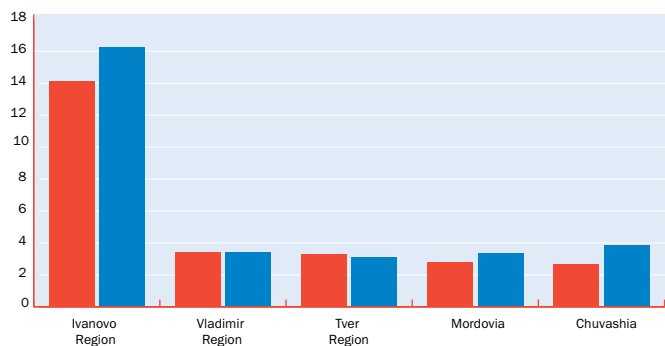
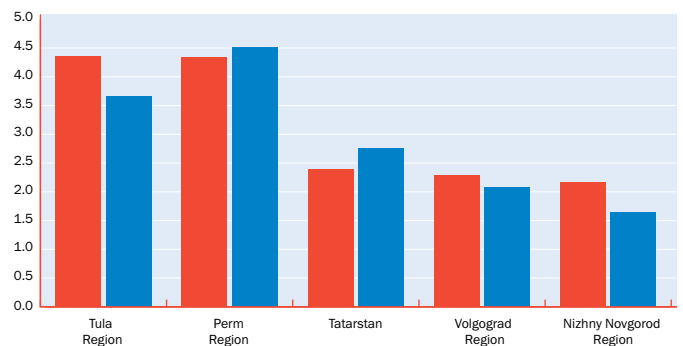


Chart 2.5d
Location quotients for chemical manufacturing



■ 2002 ■ 2010

Sources: Rosstat and authors' calculations.

Note: The location quotient for industry i is calculated as the ratio of the share of industry i in total regional employment to the share of that same industry in total national employment.

Box 2.2 Silicon Taiga

This technological hub has its roots in the 1950s, when the Soviet Academy of Sciences founded the educational and scientific centre Akademgorodok in Novosibirsk, a large city in Siberia, and established dozens of research institutes there. A few years later, the Novosibirsk State University opened its doors. Following the collapse of the Soviet Union, government investment in scientific activity declined sharply and many scientists left long-established institutions in search of better conditions. Some decided to leave Russia, while others established their own private businesses, often software-related high-technology IT companies. Over time, some of these companies have grown into large, internationally recognised software providers.

Building on the success of what has become known as “Silicon Taiga”, a technology park was launched in 2010 to further support innovation in a number of high-technology areas. These include telecommunication systems, power supply, bioengineering, laser technologies, precision instruments, medical tools and equipment, and new materials (such as nanoceramics and superhard and biocompatible materials).

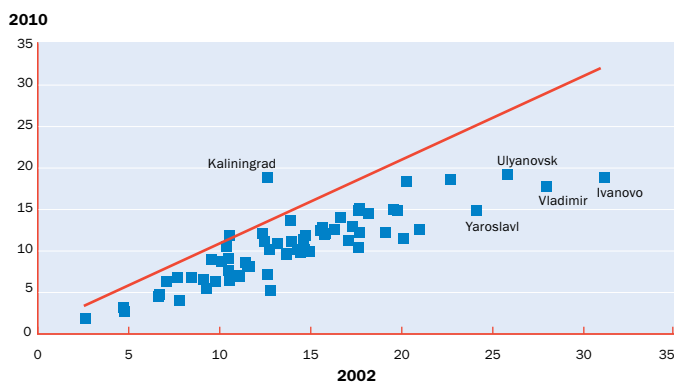
and the Yamalo-Nenets Autonomous District – remained the least diversified in 2010.

Analysis based on location quotients, which compares the structure of regional employment with the structure of national employment (see Box 2.1), confirms that regional specialisation patterns have been fairly stable over time (see Chart 2.5). For example, the Ivanovo Region remains heavily specialised in the textile industry, while regions in the Urals and Siberia (such as the Khanty-Mansi Autonomous District, Sakha-Yakutia and the Tyumen and Kemerovo Regions) tend to be heavily specialised in one or more of the mining or metals industries. In many of these regions, location quotients for dominant extraction industries have increased over the last decade. Similarly, the Ivanovo Region has increased its specialisation in textiles, the Kostroma and Kirov Regions are specialising more in the wood and paper industry, the Perm Region and Tatarstan are specialising more heavily in the chemical industry, and Samara has increased its specialisation in vehicle manufacturing.

The picture is similar if one looks specifically at employment in manufacturing sectors not directly related to oil, gas or other natural resources (see Chart 2.6). In an average region, around 10 per cent of the workforce are employed in these sectors. Chart 2.6 shows that this share declined almost universally between 2002 and 2010, with the exception of the Kaliningrad Region. Non-commodity manufacturing sectors account for around one-fifth of total employment in the Ivanovo and Ulyanovsk Regions, the largest shares of all the Russian regions.

Furthermore, employment has gradually shifted away from manufacturing, towards service sectors (such as finance and real estate, trade, and public administration and social services; see

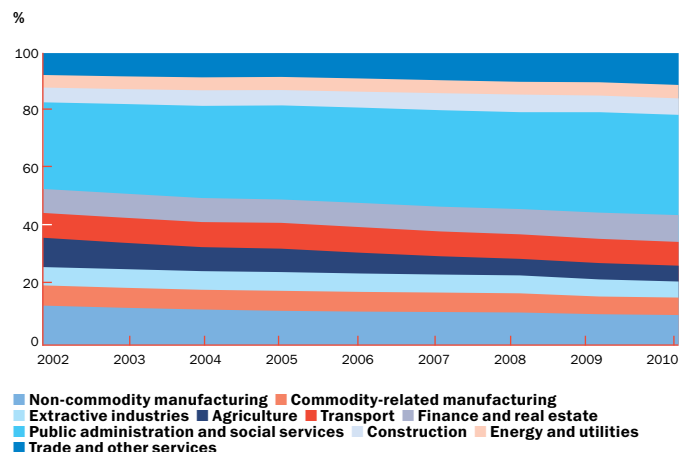
Chart 2.6
Employment in non-commodity manufacturing
as a percentage of total employment



Sources: Rosstat and authors' calculations.

Note: “Non-commodity manufacturing” comprises textiles and leather, shoes, food, electronics, machinery and equipment, and vehicle manufacturing.

Chart 2.7
Breakdown of employment by sector



Source: Rosstat.

Note: “Commodity-related manufacturing” comprises wood and paper, chemicals and plastics, petrochemicals, metals and minerals. “Non-commodity manufacturing” comprises all remaining manufacturing industries.

Chart 2.7). The number of regions in which more than 10 per cent of the workforce are employed in higher-value-added services (especially trade) has trebled over the past decade.

Apart from this trend, specialisation patterns have proved largely resilient (although there have been some promising attempts at developing specific innovative sectors in certain regions; see Box 2.2 and Chapter 7). Econometric analysis suggests that growth in inward foreign direct investment (FDI) has been associated with increases in product diversity at the regional level (see Chart 2.8),⁴ despite the fact that foreign investors have tended to target regions that were already less narrowly specialised. This relationship is not particularly strong however.

Should regional economies be more diversified? As the previous chapter argued, cross-country analysis suggests that greater economic diversification tends to be associated with improvements in economic performance. But while there is a strong case for Russia diversifying at the national level, it is difficult to say with any certainty what the right level of diversification is at the regional level. Indeed, the location of production at the subnational level tends to be influenced by geography and resource endowments, which lead, in turn, to the formation of clusters and the concentration of employment.⁵ In other words, the diversification of a country's economy may rely on it having a diverse range of specialised regions, rather than intra-regional diversification.

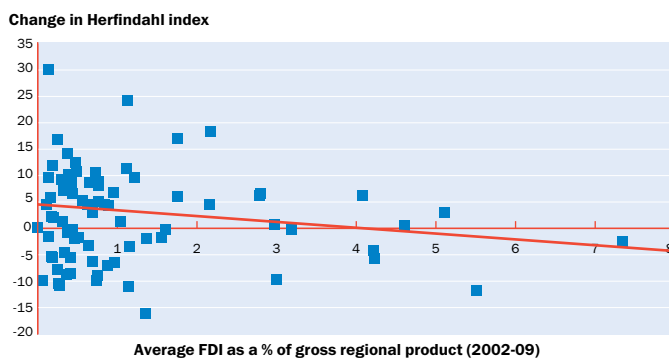
In fact, there appears to be a strongly positive relationship between specialisation and growth in Russian regions, as can be seen from Chart 2.9, which plots the average real growth observed in Russia's various regions over the period 2002-10

against those regions' average employment concentration (as measured by the Herfindahl index) over the same period. Regions that are more specialised have, on average, tended to enjoy higher rates of growth. It is also possible to demonstrate a link – albeit a weaker one – between the pace of specialisation (as measured by changes in the Herfindahl index between 2002 and 2010) and economic growth. In other words, stronger growth is associated with greater concentration of employment.⁶ This may suggest that, rather than aiming to achieve economic diversification within each individual region, Russia's diversification strategy may want to focus on establishing new non-commodity-related production and export capacity in regions that are particularly well-suited to the chosen areas of activity. This could apply, in particular, to regions that are already fairly diversified – or indeed specialised in non-commodity-related areas of activity.

10%

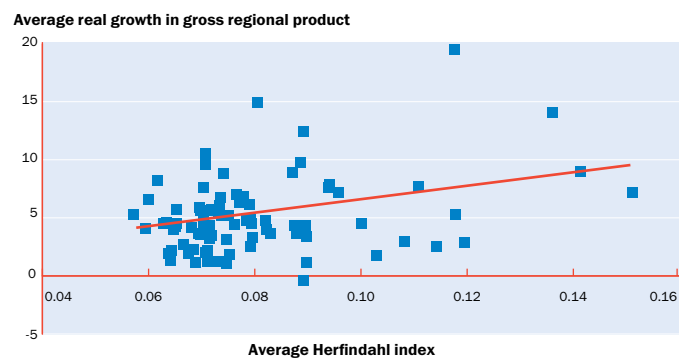
approximate percentage of workforce employed in manufacturing sectors not directly related to oil, gas or other natural resources in average region

Chart 2.8
FDI and regional diversification



Sources: Rosstat and authors' calculations.
Note: Fitted line is for a quadratic specification.

Chart 2.9
Regional specialisation and growth: 2002-10



Sources: Rosstat and authors' calculations.

⁴ Also reported in Volchkova (2011).
⁵ See, for example, Overman et al. (2001).

⁶ This holds if one controls separately for the share of employment in extractive industries (in other words, the relationship is not driven purely by strong growth in commodity-rich regions). The correlation between an abundance of natural resources and average regional growth is positive, but relatively low (0.12).

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03:

Entry, exit and growth of firms

Shifts towards new products and sectors occur through the entry and growth of new, innovative firms. Russia does not currently perform well in this respect. It has low entry rates, its small and medium-sized firms make a small contribution to output relative to comparator countries in the Organisation for Economic Co-operation and Development, and the percentage of firms that export is very small relative to those countries. These problems reflect limited competition in product markets, high administrative barriers to entry, high fixed costs of exporting and other weaknesses in the business environment, including corruption and a lack of relevant skills. These weaknesses have a disproportionate impact on innovative firms.

KEY FACTS:

3% of Russian firms exported in 2008-09, compared with 15-17% in France

160th Russia's ranking – out of 183 countries – in the cross-border category of the 2012 Doing Business Report

17% of total employment in mining and manufacturing is concentrated in one-company towns

Entry, exit and growth of firms

1. Introduction

Changes in a country's economic structure and shifts towards new products and sectors predominantly occur through the entry of new, innovative firms, the growth of successful companies, and the exit of older, less successful firms. Free market entry and conditions that enable small firms to operate are essential for the development of new ideas, particularly in sectors not related to natural resources. Firm exit is key as regards transferring scarce resources to more productive uses and thereby achieving, over time, structural shifts in the economy. Flexibility in terms of firm entry and exit and reductions in the cost of doing business can also help the economy to adapt to changes in relative prices stemming from the volatility of commodity revenues.

Unfortunately, Russia's business environment does not currently appear to be particularly conducive to the entry, exit and growth of firms. The playing field is often tilted against small and medium-sized enterprises (SMEs), favouring the large firms that dominate their markets. In most parts of the manufacturing sector, the level of competition is lower than the average for countries in the Organisation for Economic Co-operation and Development (OECD). The percentage of firms that export to other countries – an important source of growth and innovation for companies – is much smaller than in western countries, and there is evidence that this is linked to administrative and tax-related obstacles. Finally, although there has been some

improvement in the last four years, weaknesses in the business environment persist, particularly in areas such as access to skills and corruption. New evidence from the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the EBRD and the World Bank shows that innovative firms feel disproportionately affected by these obstacles, as well as by customs and trade regulations. This is consistent with other evidence indicating the difficulties faced by exporters in non-commodity sectors in Russia.

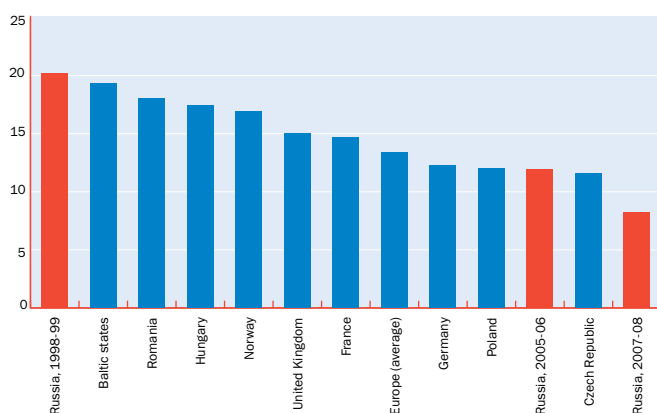
This chapter presents information regarding firm entry and exit in Russia, competitive conditions, the role of SMEs and the level of export activity. We also present some initial evidence linking Russia's weakness in this area to difficulties encountered by firms in terms of the business environment. The final section summarises the main (national-level) results of the latest round of the BEEPS survey (which was conducted in 2011-12) and compares them with previous rounds. Regional-level results for this survey are presented in the next chapter.

2. The entry and contribution of SMEs

Firm entry rates in Russia have fallen over the last decade and are now relatively low. While entry rates were level with or above OECD benchmarks in the second half of the 1990s – in line with other European transition countries – they dropped sharply in the mid-2000s and have continued to decline.¹ By 2007-08 they stood at less than half of the level observed in 1998-99 (see Chart 3.1). Within Russia, entry rates vary significantly from region to region and appear to be correlated with the quality of regional institutions, as proxied by the Expert Rating Agency's index of investment risk and an index of political and economic openness (see Chart 3.2).²

Chart 3.1
Entry rates

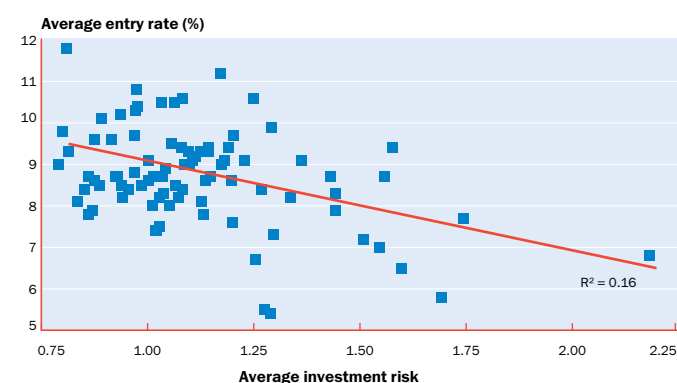
New firms as a % of total firms



Sources: Klapper et al. (2006) and Bruno et al. (2011).

Note: Based on 1998-99 data, unless otherwise indicated. "New firms" are companies in their first or second year in business.

Chart 3.2
Russian regions: firm entry and institutional environment (1996-2008)



Sources: Bruno et al. (2011), Expert Rating Agency and authors' calculations.

Note: Higher levels of investment risk correspond to a more difficult business environment.

¹Bruno et al. (2008).

²See also Bruno et al. (2011).

3%
of Russian firms
exported in 2008-09,
compared with 15-17%
in France

Among other things, the correlation between firm entry and measures of the quality of the business environment reflects administrative barriers that increase the cost of entry and growth for firms. In 2009 the Centre for Economic and Financial Research (CEFIR) conducted its most recent assessment (the seventh in total) looking at the administrative barriers faced by small businesses, finding that 53 per cent of licences obtained by firms were in fact illegitimate (that is to say, they were not legally required). An average licence cost around US\$ 350 and required 10 man-days of input to obtain.³ Even so, most firms considered it cheaper and easier simply to obtain the licence, rather than arguing that it was not, in fact, strictly necessary. Russia also scores relatively poorly as regards other common measures of the business environment, such as the World Bank's Doing Business ranking. Russia was ranked 120th out of 183 countries in the 2012 Doing Business report, its position having remained broadly unchanged over the last decade.

Obstacles to firms' operations and significant effective barriers to entry have a disproportionate impact on smaller firms. Consistent with this, the Russian economy is characterised by small contributions to output, investment and employment by SMEs. Indeed, those contributions are around half the size of those typically observed in European Union (EU) member states (see Charts 3.3 and 3.4). The small contribution made by medium-sized enterprises (that is to say, firms employing between 100 and 249 people) to overall economic activity is particularly striking. This may reflect difficulties faced by small firms when seeking to expand their businesses, as well as firms' reluctance to grow and become more "visible" for fear that they will face a much larger formal (and informal) regulatory burden in the form of checks, inspections, licensing requirements, tax compliance and so on.⁴

Another indication of very large companies' dominance of the economy is the fact that in 2008 Russia's listed firms had the highest average capitalisation of all stock markets surveyed by Standard & Poor's. In other words, the Russian stock market comprises a relatively small number (less than 350) of very large firms, with the extractive industries being over-represented.

Chart 3.3
SMEs' contribution to turnover, employment and investment

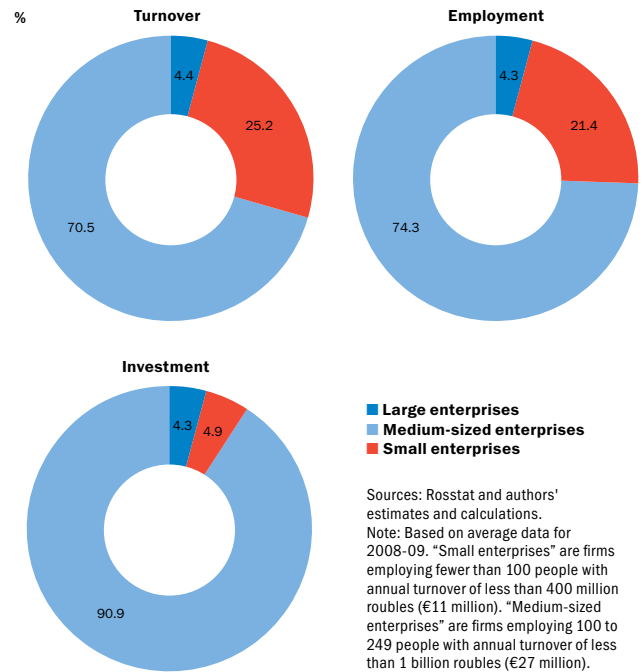
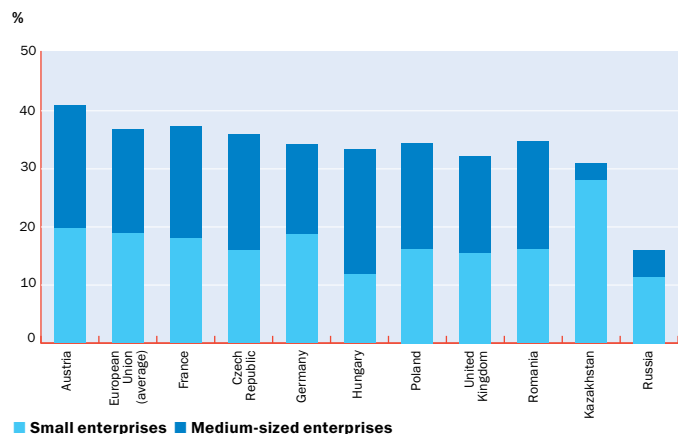


Chart 3.4
SMEs' contribution to gross domestic product in selected countries



Sources: European Commission, Kazstat, Rosstat, and authors' estimates and calculations.
 Note: Based on 2007 data for the EU and 2008 data for Kazakhstan and Russia. Definitions of SMEs may vary in some respects. SMEs have a maximum of 249 employees in EU countries and Russia.

³See also Yakovlev and Zhuravskaya (2011).

⁴See Centre for Economic and Financial Research (2002) for a further discussion of this phenomenon – the "glass ceiling".

3. Competition in product markets

Consistent with low entry rates and small contributions to output by SMEs, competition in product markets appears to be relatively weak in higher-value-added industries. The causality in this context could run in both directions. Low levels of competition could be a result of high barriers to (and low rates of) firm entry and growth. Conversely, weak competition policies could have allowed markets to be dominated by powerful incumbents, potentially hindering the entry and growth of new players in these markets.

Chart 3.5 shows mark-up (Lerner) indices for a range of industries in Russia and compares them with averages for OECD countries.⁵ After declining in the early 2000s, mark-ups began increasing again towards the end of the decade. More generally, since the 1990s there has been a marked trend towards the consolidation of ownership in most industries, leading to market structures with less effective competition. Russia's independent competition authority was created relatively recently, in 2004, and the revised Competition Law was passed only in 2006. As a result, the enforcement of competition has remained weak throughout Russia's transition (although this is gradually improving).

In addition to being conducive to healthy firm entry and exit, a sufficiently high level of competition is crucial for diversification by giving firms the right incentives to innovate. Strong competition can also help to make industrial policy more effective, as subsidies or other incentives in a particular sector can promote competition in that sector and thus foster knowledge spillovers and innovation. This is unlikely to be achieved by earmarking subsidies for specific incumbent firms in an environment characterised by weak competition. On the other hand, too much competition could, in principle, discourage innovation, as firms become unable to reap the benefits of their efforts. Empirical analysis for Russia finds an inverted U-shaped relationship between competition and innovation, suggesting that innovation-enhancing effects of subsidies are strictly conditional on there being strong competition.⁶

Analysis also suggests that Russian business groups tend to redistribute capital internally, moving it from stronger to weaker firms.⁷ This may, at an individual level, be reasonable behaviour in a weak institutional environment or in the presence of market failures, where business groups are concerned primarily with defending their assets from possible takeovers. However, such reallocation of capital away from better-performing firms may not be socially optimal. This redistribution may also be due to significant concentration of employment, with individual firms accounting for a large percentage of local labour markets, which often manifests itself in the (extreme) form of one-company towns (see Box 3.1). In turn, such concentration of employment complicates the exit process, particularly for large firms, and locks in valuable resources.

4. Barriers to exporting

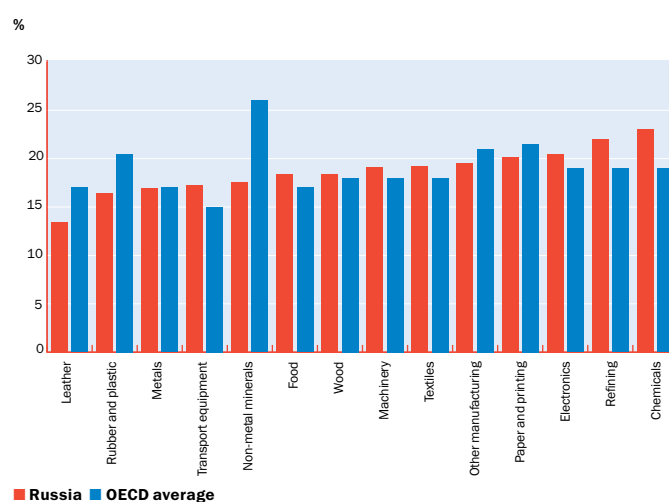
One way in which successful firms grow (particularly when domestic markets are hard to penetrate because of barriers

to entry or the power of incumbents) is by exporting abroad. Research also shows that exporting firms are often a driver of growth and diversification, and that innovation and exporting tend to go hand in hand.⁸ This is because innovation helps to make products competitive at international level, while exporting helps to spread the high fixed costs of innovation over a much larger customer base.

Firm-level data, combined with data from Russian Customs on individual cross-border transactions, show that the number of Russian firms exporting is fairly small, partly reflecting the undiversified export profile discussed in the previous chapter. Although Russia does have some successful exporters in non-commodity sectors (see Box 3.2 for an example of such a firm), these are relatively small in number. In 2008-09 just 3 per cent of Russian firms exported, compared with 15 to 17 per cent in the United States and France.⁹ This difference is made all the more striking by the fact that those Russian firms that do export enjoy larger export premia (that is to say, extra returns relative to non-exporters) than their counterparts in those two comparator countries.¹⁰ These premia should, in principle, provide clear incentives for other firms to seek to develop exports, unless there are barriers and market distortions that constrain their ability to do so.

Most Russian exporters serve just one foreign market, and the percentage of Russian exporters that sell to more than one foreign market is much smaller than in France or the United States. Perhaps unsurprisingly, Russian exporters that serve between 3 and 50 markets tend to have better productivity indicators than firms that export to only one or two markets.¹¹

Chart 3.5
Average mark-ups by industry



Sources: UNIDO, Bureau Van Dijk and authors' calculations.

Note: Higher index values correspond to lower levels of competition. Based on manufacturing firms employing 15 people or more.

⁵Aghion et al. (2011).

⁷Estrin et al. (2009).

⁸EBRD (2010).

⁹This section is based on a background paper by Volchkova (2011).

¹⁰Eaton et al. (2004, 2008), Melitz (2006) and Volchkova (2011).

¹¹Somewhat unexpectedly, productivity is lower for firms exporting to more than 50 destinations, perhaps reflecting the fact that many of these are large commodity-related firms.

Furthermore, increases in Russia's penetration of foreign markets can be attributed mainly to growth in exports per firm, rather than an increase in the number of firms selling to a particular destination, suggesting that the intensive margin is relatively strong, while the extensive margin is relatively weak (compared with countries such as France).

These findings are consistent with the higher fixed cost of exporting in Russia. Indeed, the ratio of the fixed cost of exporting to the fixed cost of production is estimated to be several times the size of that seen in advanced economies such as the United States and France. It is also considerably higher than those seen in a number of emerging markets with similar income per capita (such as Chile)¹² and is similar to that observed in Columbia.

One way to reduce the cost of exporting is to allow firms to claim value added tax (VAT) refunds for goods exported. As VAT is a consumption tax levied at the point of consumption, exporters should not charge Russian VAT and should be able to claim back VAT on inputs. Russian legislation generally provides for such "zero-rating" of exports, in line with international practice. However, the process by which VAT is refunded remains a major issue, with anecdotal evidence suggesting that firms may be reluctant to persevere with the claiming of VAT refunds for fear of retaliation by the local tax authorities in the form of additional tax inspections.¹³ Various customs procedures add to the fixed cost of exporting. Indeed, in the cross-border trading category of the 2012 Doing Business report, Russia was ranked 160th out of 183 countries owing to the large number of customs procedures and the high effective compliance costs. There is scope for the further streamlining of customs regulations and procedures, as well as improvements in implementation in the various regions as regards both customs procedures and the processing of VAT refunds.

Similar trends can be observed at the regional level, reflecting decisions by individual firms in a given region. Data from surveys carried out in 20 Russian regions between 2001 and 2006 looking at administrative barriers for small businesses suggest that the severity of the perceived tax burden in a region is inversely correlated with the diversity of that region's exports in terms of products. In other words, exporting activity is materially affected by Russia's tax policy and the administration of tax affairs, with the principal channel likely to be the discretion that

the tax authorities have with respect to VAT refunds. Evidence from cross-country analysis also suggests that higher trade costs and barriers preventing entry to the domestic market tend to be associated with less diversified export baskets.¹⁴

5. Business environment: new survey evidence

In order to undertake a broader assessment of the quality of the business environment which goes beyond narrow regulatory issues such as licensing requirements or regulations governing the registration of firms, the EBRD and the World Bank have been conducting their BEEPS survey in all countries in emerging Europe and Central Asia since 1999. The last survey to be conducted in all countries was the fourth round, which was carried out in 2008-09. That survey covered more than 1,200 firms in Russia's manufacturing and service sectors (with respondents in all federal districts), making it possible, for the first time, to conduct a limited analysis of regional differences within Russia. The fifth round of the survey, which was conducted in 2011-12, extended the coverage in Russia to more than 4,000 firms, including representative samples for 37 of Russia's 83 regions (again, with respondents in all federal districts).¹⁵ At this point, the results of the fifth round of the BEEPS survey are available only for Russia, as the survey is still in the process of being carried out for the other countries.

In those surveys, respondents (who are all directors, owners or senior managers of firms) evaluate various elements of the public infrastructure and business environment in terms of how much they are regarded as a constraint on the firm's operations. For example, access to land could be regarded (on a five-point scale) as "no obstacle", a "minor obstacle", a "moderate obstacle", a "major obstacle" or a "severe obstacle" to a firm's operations. The questionnaire covers more than 15 different aspects of the business environment, as well as including numerous questions about firms' performance indicators.

The results of the first three survey rounds suggest that the business environment in Russia was perceived to improve significantly between 1999 and 2002, before improving further (albeit only slightly)¹⁶ between 2002 and 2005. However, the results of the 2008-09 round then point to a perceived deterioration in the business environment as of 2005 (see Chart 3.6). That appears to have been followed by a marked improvement between 2009 and 2012, but this recent improvement is likely to relate in part to changes in the way in which questions were asked. It will not be possible to assess the extent of this "noise" effect until fifth-round results become available for other countries.¹⁷ Even so, sustained improvements have been observed only in the areas of tax administration and political instability. In other areas (such as access to electricity, the availability of skills and corruption), the results of the latest survey suggest that the situation in 2012 is at best unchanged compared with 2005.

Looking at individual aspects, firms tend to feel most constrained by tax rates, something that is common to many countries. Despite all other types of obstacle being regarded

160th

Russia's ranking – out of 183 countries – in the cross-border category of the 2012 Doing Business Report

¹²See Volchkova (2011). The ratio of the fixed cost of exporting to the fixed cost of production is estimated on the basis of export shares and employment concentration observed in individual industries using an extension of the model employed by Melitz (2003).

¹³Volchkova (2011).

¹⁴Allen and Shepherd (2007).

¹⁵This survey was generously supported by the EBRD Special Shareholder Fund and Vnesheconombank and was conducted in collaboration with CEFIR and Russia's Ministry of Economic Development.

¹⁶The earlier rounds of the survey (conducted in 1999, 2002 and 2005) recorded answers on a four-point scale ("none", "minor", "moderate" or "major"). These scores were then multiplied by 4/3 to make them comparable to the scores on the five-point scale.

¹⁷For the first time, respondents were asked how their costs or sales would change (in percentage terms) if a certain aspect of the business environment (such as the electricity supply) ceased to be an obstacle to doing business. This innovation appears, in many cases, to have influenced respondents' interpretation of questions regarding obstacles in the business environment.

as less of an obstacle owing to methodological changes, tax rates were actually regarded as more of an obstacle in 2011-12 compared with 2009 (see Chart 3.7). This was probably a reflection of the sharp increase seen in the social security contributions paid by SMEs, which rose from 14 to 34 per cent of their wage bill in 2011, before being reduced to 30 per cent.

Aside from tax rates, the inadequate skills of the workforce and corruption are perceived to be the most binding constraints when it comes to doing business (see Chart 3.8).¹⁸ These were reported as major or very severe obstacles by more than one-quarter of all firms in 2011-12. Complaints about electricity, which declined during the early 2000s, have since increased again, perhaps reflecting high connection costs. (Consistent with this, Russia was ranked last, 183rd, in terms of the ease of getting an electricity connection in the World Bank's 2012 Doing Business report.) Despite a perceived improvement since 2009, electricity remains much more of a constraint in 2012 than it was in 2005, according to the survey.¹⁹ A similar pattern can be observed for access to land, with Russia ranked 178th out of 183 countries in the related construction permit category in the 2012 Doing Business survey.

The BEEPS data also show that firms that innovate feel even more constrained by the various aspects of the business environment than an average firm and that innovative firms appear to be constrained in a somewhat different manner. Around one-quarter of firms report that they introduced a new product or service during the past three years. On average, those firms perceive all aspects of the business environment to be a greater constraint to doing business than firms that did not undertake innovation. This is because innovative firms have greater demand for public goods and services such as good

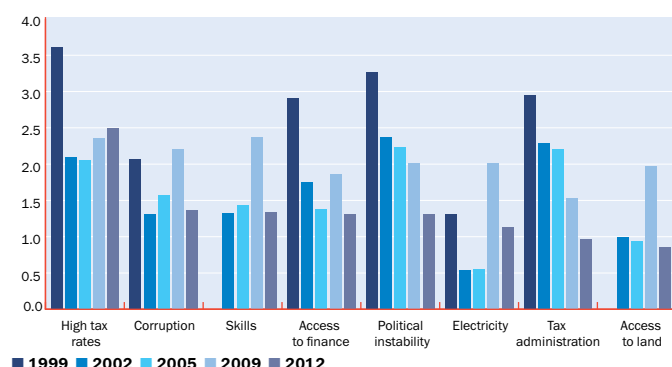
infrastructure and sound regulation. But causality also runs in the other direction, as a difficult business environment makes it more difficult for firms to innovate. In particular, we cannot see the firms that failed to innovate because of the constraints imposed by the business environment. For this reason, the true differences in terms of innovative firms' "greater demand" for a sound business environment are, if anything, understated when measured by differences in firms' perception of the various obstacles to doing business.

Chart 3.9 shows the spread, for the various aspects of the business environment, between the average degree of constraint perceived by innovating firms and the average degree of constraint perceived by other firms. The order of the various elements corresponds to their overall severity as perceived by innovating firms, and we can see that the key constraints are broadly the same, with corruption, skills, access to finance and access to electricity at the top. However, in terms of the additional concerns of innovating firms over and above other firms, three aspects of the business environment stand out: corruption; customs and trade regulations; and skills.

The result for customs and trade regulations is particularly noteworthy. On average, Russian firms do not perceive customs and trade regulations to be a key obstacle, but this is because only a minority of firms (less than 10 per cent of respondents in the BEEPS survey) import inputs or export products.²⁰ However, innovating firms have a much greater implicit demand for high-quality customs and trade regulations, as many of them seek to export their products and need to import various inputs.

Overall, the survey suggests that the business environment remains difficult and firms are significantly constrained by high

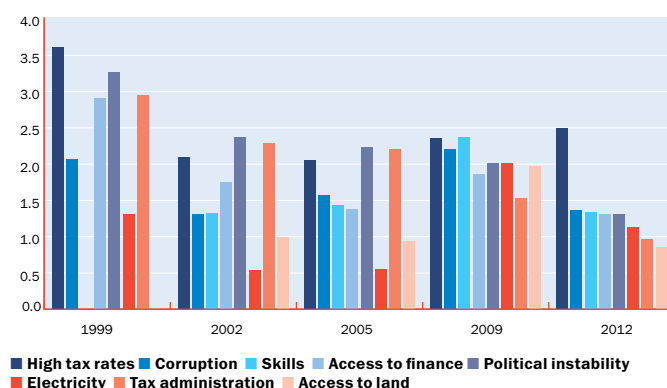
Chart 3.6
Severity of selected constraints on business:
1999-2012



Sources: BEEPS survey and authors' calculations.

Note: Data are averages calculated on the basis of a five-point scale, where "0" means that there is no obstacle and "4" means that there is a severe obstacle. Thus, higher values correspond to a more difficult business environment. Skills and access to land were not included in the 1999 survey.

Chart 3.7
Selected obstacles to doing business



Sources: BEEPS survey and authors' calculations.

Note: Data are averages calculated on the basis of a five-point scale, where "0" means that there is no obstacle and "4" means that there is a severe obstacle. Thus, higher values correspond to a more difficult business environment. Skills and access to land were not included in the 1999 survey.

¹⁸As with other charts in this section, Chart 3.8 uses the "raw" response data provided by firms. An alternative approach (outlined in Box 4.1 in the next chapter) would be to first rank obstacles for each individual firm by subtracting from each score the average score awarded by that firm across all obstacles, thereby normalising those scores. This approach would have the advantage of eliminating differences in firms' propensity to complain. This could then be taken one stage further by adjusting scores for firm-level characteristics such as size or industry. Applying these more sophisticated methodologies would not significantly alter the ranking of business environment constraints shown in Chart 3.8.

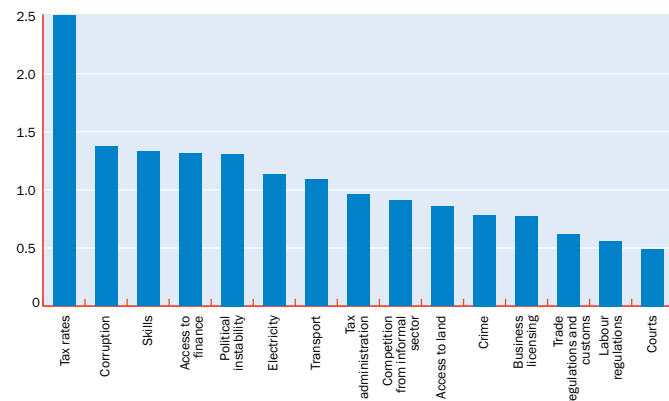
¹⁹See World Bank (2012) for a detailed discussion of issues relating to access to electricity and the different procedures and requirements in place in the various regions.

²⁰Similarly, courts are likely to be regarded as the least binding constraint, not necessarily because they are viewed as being of high quality, but because only a small minority of firms have to deal with courts in the first place.

levels of corruption, a shortage of skills (an issue explored in greater depth in Chapters 5 and 6), access to infrastructure and various regulatory issues. Innovating firms appear to be more constrained by the business environment than average firms, with skills, difficult customs procedures and corruption proving particularly problematic. We return to these issues in Chapters 6, 7 and 8.

Chart 3.8
Business environment constraints in 2012

Average severity of constraints

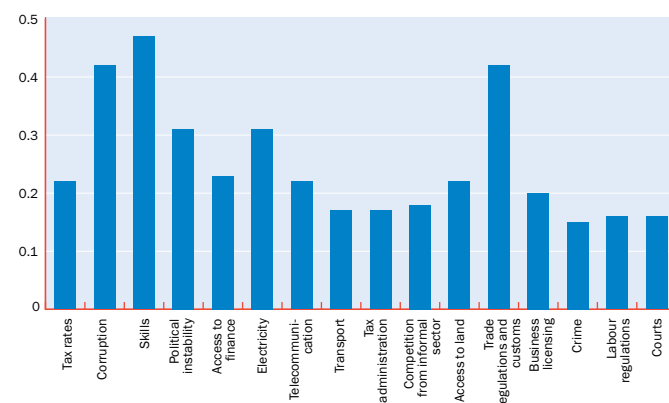


Sources: BEEPS survey and authors' calculations.

Note: Data are averages calculated on the basis of a five-point scale, where "0" means that there is no obstacle and "4" means that there is a severe obstacle. Thus, higher values correspond to a more difficult business environment.

Chart 3.9
Differences between innovating and non-innovating firms' perception of the business environment

Difference in average perception of obstacles



Sources: BEEPS survey and authors' calculations.

Note: Obstacles are listed in descending order of severity as perceived by innovating firms.

6. Policy implications

Improvements to Russia's business environment (particularly measures to facilitate export activity and firm entry and exit) should be at the heart of Russia's diversification strategy. Such measures will provide assistance through various channels: by allowing a larger number of innovative firms to enter the market; by increasing productivity and facilitating the growth of existing firms; and by allowing non-commodity sectors to respond in a more flexible manner to volatility caused by the price of natural resources. Progress in this area will require policy efforts on several fronts.

First, in order to yield maximum results, such efforts need to be comprehensive, relaxing as many constraints on firm growth as possible simultaneously. Recognising this, the Russian government and the Agency for Strategic Initiatives began in 2012 to develop road maps aimed at improving the business environment in 21 different areas on the basis of input from experts, businesses, civil society and online crowd-sourcing. Road maps relating to export promotion and customs were among the first to be drafted. These contain specific benchmarks (targeting, for example, a gradual reduction in the number of clearance and reporting procedures required), as well as an indicative timeline for implementation. Such road maps are a promising development, provided that they can be effectively implemented across all the various regions (an issue to which we return in the next chapter).

Second, there needs to be a concerted effort to reduce the regulatory burden and provide services aimed specifically at start-ups and small firms. For example, on the regulatory side, legislation on licensing and certification could be further streamlined. At the same time, small firms could be given specific support in terms of access to miscellaneous business services (such as accounting services and legal advice) within business incubators and business parks. Assistance for start-ups is discussed further in Chapter 7 in the context of innovation policy.

Third, similar efforts could be made with respect to exporters. There needs to be far greater urgency as regards the reform of customs procedures in order to reduce both delays and the scope for corrupt payments. As regards the very important issue of the streamlining of procedures for exporters' tax refunds, a positive step was taken in 2011, when legislation was adopted obliging the tax service to refund VAT within 12 working days of the end of a tax audit. The key question is how this is enforced.

Lastly, the overall competitive environment needs strengthening. This could be done by further improving the enforcement of competition law and increasing the transparency of procurement and tendering by public companies and large private-sector firms. In addition, measures are currently being discussed that would provide foreign investors with better access to some of the "strategic" sectors of the economy. This might gradually lead to greater transparency and market discipline.

Box 3.1

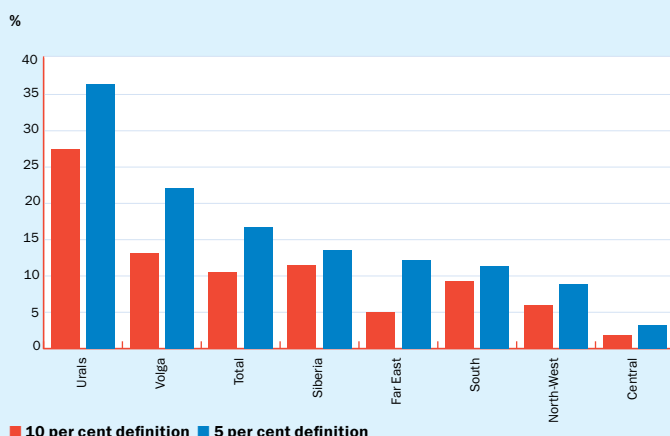
One-company towns: characteristics and restructuring needs

One-company towns – towns where a single company accounts for a significant share of total employment and shapes people’s livelihoods – are a global phenomenon. However, they were particularly common in the Soviet Union. This reflected the combination of a vast land mass, a relatively low population density and significant deposits of various natural resources, often located in areas with extremely inhospitable climates. In part, it also reflected central planners’ preference for economies of scale and low input prices (that is to say, low energy prices). Lastly, a significant number of large industrial enterprises were uprooted and moved eastwards during the Second World War. Many then remained in their new locations – locations chosen precisely on account of their poor accessibility – once the war had ended.

Deciding what constitutes a one-company town is inevitably subjective, but for the purpose of analysis, a formal judgement needs to be made. Prominent examples of one-company towns and “back of an envelope” estimates suggest an employment threshold of around 5 to 10 per cent of a town’s population.²¹

Looking at the Orbis dataset, which contains details of Russian manufacturing and mining firms, there are more than 850 firms which account for more than 5 per cent of employment in the town where they are located and almost 400 that account for more than 10 per cent. Together, these one-company towns account for more than 17 per cent of total employment in mining and manufacturing. They are particularly prevalent in Russia’s industrial heartland – the Urals – where they employ one-third of all manufacturing and mining workers (See Chart 3.1.1).

Chart 3.1.1

Share of firms in one-company towns in employment by federal district

Sources: Rosstat, Orbis and authors' calculations.

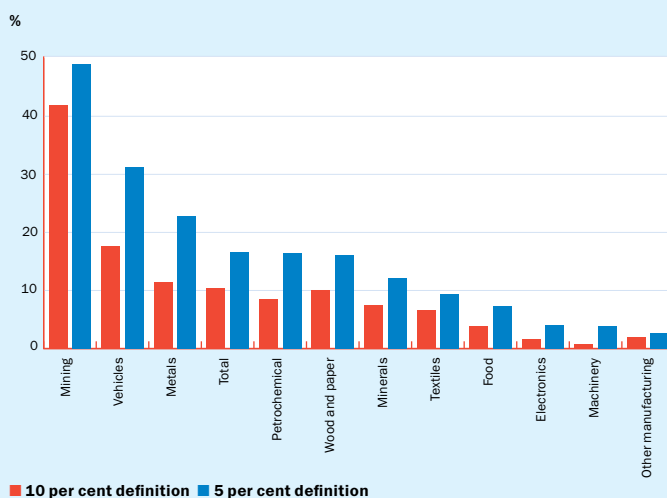
Note: Manufacturing and mining companies only. Firms in one-company towns are defined as enterprises employing more than 5 per cent (or 10 per cent) of the local population.

In terms of the industry breakdown, it is no surprise to see that mining comes first, with roughly half of all employment in that sector concentrated in one-company towns. However, one-company towns also account for 31 per cent of employment in vehicle manufacturing, 23 per cent of employment in metals, 17 per cent of employment in petrochemicals, and 15 per cent of employment in wood processing and paper manufacturing (see Chart 3.1.2). Even in light industry, a significant share of employment is accounted for by one-company towns (up to 10 per cent in the textile sector).

A comparison of firms’ production functions reveals that firms in one-company towns tend to be characterised by significantly lower marginal products of labour and significantly higher marginal products of capital, suggesting substantial hoarding of labour. In addition, productivity differentials appear, if anything, to have been widening over time, and overall productivity is substantially lower in such firms. Those firms were also found to be more indebted (and thus financially vulnerable) than comparable enterprises located elsewhere, although the estimated differences in the level of indebtedness were not as large as those in the marginal products of capital and labour.

These results suggest that employment concentration (including the extreme case of one-company towns) is a specific and significant impediment to diversification in Russia. While many firms in one-company towns appear inefficient, downsizing or closing down such enterprises may have considerable social costs, at least in the short run. A well-known example is Pikalyovo, a town in the Leningrad Region, where employees of three local enterprises blocked a major road in June 2009 demanding that wage arrears be cleared and job security ensured. At the same time, evidence of the successful restructuring of such enterprises remains very limited to date, perhaps as much a reflection of technological and geographical challenges as weak incentives to improve competitiveness.

Chart 3.1.2

Share of firms in one-company towns in employment by sector²¹See Commander et al. (2011) for a discussion of this issue.

Support for areas where employment is concentrated, drawing on revenues from natural resources, may lead to some degree of stability in terms of employment and the easing of social tensions. At the same time, it would defeat the objectives of diversification and growth to permanently subsidise weak and unproductive firms, many of which are located in the natural resource sector. Thus, transfer policies need to be complemented by policies designed to support the restructuring of firms and the reallocation of labour, such as better policies fostering firm entry (which could absorb some of the labour currently employed in firms in one-company towns), as well as policies supporting retraining and other measures aimed at improving the performance of the labour market.

Box 3.2

Export case study: a Yekaterinburg-based cosmetics company

Kalina is one of the leading cosmetics companies in Russia. It offers a wide range of skin and haircare products, as well as decorative cosmetics and oral hygiene products, mostly targeting the middle-income market segment.

From the start, Kalina placed strong emphasis on international links as part of its growth strategy. The company was the successor to "Uralskie Samotsvety" ("Urals Gems"), a large cosmetics plant built in Yekaterinburg in 1942 and privatised in 1992. In 1996 it was acquired by a local businessman, who brought in a new management team and embarked on an ambitious operational restructuring programme. As part of that programme, the company made a number of acquisitions in Russia and other countries in the Commonwealth of Independent States (CIS) between 1999 and 2001, and its sales increased from US\$ 15 million in 1996 to US\$ 131 million in 2001.

In 2000 an EBRD-sponsored private equity fund became a minority shareholder in Kalina. In 2004 the company listed its shares on the Moscow Stock Exchange (MICEX) and Standard & Poor's named it one of the 30 most transparent companies in Russia. In 2005 it acquired Dr. Scheller, a German cosmetics firm, and further expanded its exports. The company has made active use of external financing, including two loans from the EBRD, in order to fund modernisation programmes and technological upgrades to production facilities.

By 2010 Kalina's annual turnover was more than US\$ 380 million, with a market share ranging from 15 to 40 per cent across the various segments. Exports (primarily to Azerbaijan, Belarus, Kazakhstan, Moldova and Ukraine) totalled US\$ 25 million. This made Kalina one of the top 30 non-commodity exporters in Russia according to business media group Kommersant, with the company accounting for almost 20 per cent of Russia's cosmetics exports.²² More broadly, sales in the CIS and the Baltic states account for up to 40 per cent of the company's revenues.

The company is constantly innovating. In 2010 it launched 296 new branded products, followed by 224 more in 2011. In 2011 Kalina sold Dr. Scheller and was itself acquired by Unilever, a major multinational company.

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²² Kommersant (2011).



04:

Improving the business environment in Russia's regions

Russia's regions vary significantly in terms of the quality of the business environment. This partly reflects differences in regulation at the regional and municipal level and partly reflects differences in the effectiveness of the implementation of federal reforms. Neighbouring regions often have very different profiles in terms of the aspects of the business environment that most constrain firms' growth. Consequently, regional priorities can be expected to differ when it comes to creating a more favourable business climate. Research shows that the federal efforts to improve the business environment will depend in part on the transparency of regional government.

KEY FACTS:

37 Russian regions covered in the BEEPS Survey, 2011-12

4,000+ manufacturing and service sector firms surveyed in BEEPS

20% share of GDP spent by regional and local governments

Improving the business environment in Russia's regions

1. Regional variation in the business environment: survey-based evidence

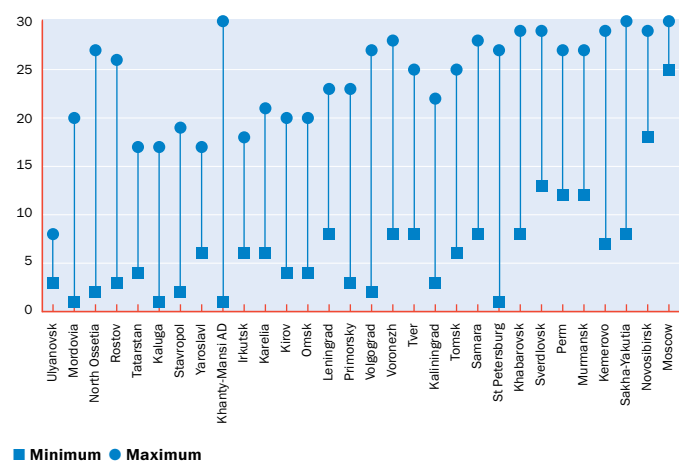
The previous chapter highlighted the key role played by the quality of the business environment as regards diversification, in terms of both underlying regulations and their implementation as experienced by a typical firm in the economy. While we often think of the business environment as being a characteristic of a given country (as reflected, for example, in that country's Doing Business ranking), many aspects of the business environment depend not only on the regional or local implementation of national regulations, but also, in many cases, on regulations established (and, of course, implemented) at the regional or local level. Thus, the business environment can be expected to vary significantly within a country. For example, it is usually local bureaucrats who handle construction permits and issues relating to access to land, often in accordance with city-specific or region-specific procedures. Furthermore, regional and municipal governments account for approximately half of consolidated government spending in Russia – equivalent to around 20 per cent of gross domestic product (GDP). They have primary responsibility for key public services, including social and health services, primary and secondary education, and a substantial proportion of higher education. Moreover, business permits and licences are governed, in part, by federal legislation, but are usually administered by regional authorities.

Other areas (such as tax administration, law and order, customs, supervision of financial institutions and competition policy) are governed by federal regulations and overseen by federal agencies. However, even these regulations are enforced in a fairly decentralised manner, which may ultimately lead to regional variation in terms of the quality of the business environment. For example, Russia's competition authority, the Federal Anti-Monopoly Service (FAS), has an office in each of Russia's 83 regions and employs around four times as many people in the regional offices as it does in its central office in Moscow. Employees in the various regions are recruited and paid centrally, but have substantial autonomy when it comes to decision-making. Indeed, most individual cases are handled by the regional offices. Moreover, the central headquarters cannot overturn the decisions of the regional offices, except in cases relating to the imposition of administrative fines. Other decisions by regional offices can only be overturned in court. Given this set-up, the FAS invests substantial resources in the training of regional employees and the establishment of performance-related incentives. Other federal agencies have similar set-ups, with units in each region.

Recognising this, assessments of the business environment have placed increasing emphasis on regional variation. In 2009 the World Bank conducted its first Doing Business study at the subnational level, surveying 10 cities in Russia. In 2012 the Doing Business Subnational survey was then extended to cover 30 Russian cities. The survey covers the four areas where region-specific regulations and practices matter most: starting a business; dealing with construction permits; registering property; and gaining access to electricity. (The last of those was not included in the 2009 survey.)

These surveys document major differences between regions in terms of the ease of doing business.¹ Remarkably, with the exception of Ulyanovsk, a medium-sized manufacturing and university town on the banks of the Volga, which is the top performer in the survey, no city scores well in all four categories. In fact, almost every region features among the top performers in one area, while being ranked poorly in other areas (see Chart 4.1). For example, it may be relatively easy to conduct business in Saransk in Mordovia, in Vladikavkaz in North Ossetia, or in the Rostov Region, but it appears to be fairly difficult to start a business there. All 10 cities covered in both 2009 and 2012 have made some progress in terms of handling construction permits and registering property, for example by making available in one place all the information required by businesses attempting to register property. This can be attributed, in part, to the implementation of changes to federal legislation. Moreover, seven of those cities have

Chart 4.1
Variation in regional performance
for four Doing Business indicators



■ Minimum ● Maximum

Source: World Bank (2012).

Note: The order of the regions is based on their ranking in the Doing Business report, with a triangle and a square identifying the maximum and minimum rankings across the four areas (starting a business, construction, registering property and electricity). Rankings are based on regulations in the regions' administrative capitals, except in the case of the Khanty-Mansi Autonomous District (Surgut) and the Leningrad Region (Vyborg).

¹ World Bank (2012).

² This survey was generously supported by the EBRD Shareholder Special Fund and Vnesheconombank and was conducted in collaboration with the Centre for Economic and Financial Research (CEFIR) and Russia's Ministry of Economic Development.

abolished between two and four procedures that needed to be followed when starting a business, while the time required to set up a firm has fallen by more than 12 days in Petrozavodsk in Karelia, in Kazan in Tatarstan, and in St Petersburg.

Using a different methodology – based on the surveying of businesses in numerous towns in each region, in addition to the regional capitals – the latest round of the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the EBRD and the World Bank provides a broad platform for analysis of the business environment in Russia's various regions. The fifth round of that survey, which was conducted in 2011-12, covered more than 4,000 manufacturing and service sector firms in Russia, with respondents in all federal districts. For the first time, the survey included representative samples for 37 of Russia's 83 regions.² Some national-level results were presented in the previous chapter.

One difficulty when it comes to assessing business environments in different regions lies in the fact that respondents to the survey may have different standards when defining, for example, a "major obstacle" constraining their business. To put it more crudely, firms may differ in terms of their propensity to complain. In order to address this difficulty, the analysis below uses the relative perceived severity of constraints as a measure of the quality of various components of the business environment (see also Box 4.1).³ For example, if a firm complains less about business licences than it does about all other factors, business licensing will be given a low score, even if the firm regarded it as a "major obstacle", since other constraints were perceived to be even more severe.

Furthermore, the characteristics of individual firms responding to the survey may affect their demand for certain public goods and have an impact on the level of quality that they expect from the business environment. For example, firms that export their products are likely to regard customs and export regulations as more of a constraint on their growth than enterprises that are active only in the domestic market. Similarly, fast-growing innovative firms may regard skills as a bigger problem than stagnant firms producing a standard product. Hence, a region with a large number of fast-growing firms may complain more about a lack of skills than a more backward region, despite the former actually having a better supply of skills. To correct for this effect, the (relative) severity scores are first regressed on a variety of firm-level characteristics (including size, industry and export activity), as well as individual characteristics of the manager who responded to the survey (such as gender, tenure and position within the firm). The residuals of these regressions are then used to represent the quality of the business environment. They reflect the business environment as perceived by a nationally representative firm – a privately owned manufacturing firm with around 20 employees which sells in the domestic market and is led by a male chief executive officer who has been with the firm for around six years.

As this type of analysis is based on the relative constraints perceived by each firm, it cannot determine whether one region is better than another as regards access to land, transportation and so on. What it can do is indicate that access to land, for example, is regarded by a representative firm as being much more of a constraint in region X than in region Y, while in region Y firms complain most about tax administration. In this case, improving tax administration will be a policy priority in region Y, but its quality cannot be compared directly with that seen in region X. Likewise, improving access to land for firms in region X could be associated with larger gains than tackling this issue in region Y.

The 2012 BEEPS survey reveals substantial inter-regional variation in terms of the quality of the business environment. The differences are particularly large in the areas of competition from the informal sector, access to physical infrastructure, access to land and tax administration.⁴ Table 4.1 reports the three most binding constraints as perceived by representative firms in each of the 37 regions. The regional profiles that emerge are all highly individual. In fact, no region replicates the top three constraints observed, on average, for the country as a whole (namely corruption, access to finance and skills).⁵ In some regions, firms complain about elements of the business environment that do not, on average, rank highly as constraints in the country as a whole. (These are located on the right-hand side of the table, as constraints go from left to right in descending order of importance.) For instance, in the Primorsky Region access to land is the most binding constraint, while it only features in the top three in two other regions (the Krasnoyarsk Region and St Petersburg). Here, the results are consistent with those of the 2008-09 survey, where access to land was among the top constraints in the Primorsky and Krasnoyarsk Regions, suggesting a persistent problem in terms of the business environment.⁶ In areas such as St Petersburg, the Leningrad Region and the Moscow Region, which have recently attracted relatively large amounts of foreign direct investment (FDI), widespread concerns about access to land may, in part, reflect more binding constraints in terms of physical supply.

By the same token, trade regulations and customs are one of the key concerns of firms in the enclave of Kaliningrad, but not in other regions. The only elements of the business environment that do not appear to be among the most binding constraints in any region are crime, business licences and permits, and the work of the courts. The fact that business licensing is not one of the key constraints is a positive sign, suggesting that de-licensing reforms initiated more than a decade ago are bearing fruit. The fact that courts are not regarded as a constraint is perhaps unsurprising, given that only a small percentage of firms in any given region have to go to court to settle disputes.

²This approach was developed by Carlin et al. (2010). For the application of this method to Russia's regions, see Isakova and Plekhanov (2011).

³The statistical significance of inter-regional variation was assessed using F-tests on regional fixed effects when regressing the relative severity of constraints on various firm-level characteristics (as discussed above).

⁴Tax rates are omitted from this table, as the provision of good infrastructure or law and order may require high levels of taxation. Consequently, scores for tax rates are not meaningful on their own and can only be interpreted in relation to scores for other types of obstacle. Political instability and labour regulations are also omitted from this table, as they are determined mainly at the national level.

⁵See Isakova and Plekhanov (2011) for a more detailed discussion of the regional results of the 2008-09 BEEPS survey.

2. Regional business environment profiles

The survey suggests that neighbouring regions often have very different profiles in terms of their business environments. For example, in the Primorsky Region, where the Far Eastern seaport of Vladivostok is located, firms perceive corruption, competition from the informal sector and access to land to be the most important obstacles to doing business. Furthermore, firms in that area appear, on average, to complain more about customs regulations and business licensing than firms in the rest of Russia (see Chart 4.2). In conclusion, firms operating in the Primorsky Region feel most constrained by various regulatory issues and, related to that, the issue of

corruption. By contrast, infrastructure-related constraints (such as electricity, transportation and telecommunications) appear to be much less of a constraint than at the level of Russia as a whole (with the corresponding bars lying below the line in Chart 4.2).⁷ This represents progress relative to the situation a few years ago, thanks to very significant investment in infrastructure ahead of the meeting of the Asia-Pacific Economic Cooperation (APEC) forum in Vladivostok in September 2012. These projects were financed predominantly by means of the federal budget and involved the upgrading of roads linking Vladivostok with other cities, city roads, airports, ports and other key infrastructure.

Table 4.1
Top three constraints by region

Federal district	Region	Corruption	Access to finance	Workforce skills	Transport	Electricity	Informal sector	Tax administration	Telecoms	Access to land	Business licensing	Crime	Trade regulations and customs	Courts
	Russia													
Central	Belgorod Region													
	Kaluga Region													
	Kursk Region													
	Lipetsk Region													
	Moscow													
	Moscow Region													
	Smolensk Region													
	Tver Region													
	Voronezh Region													
Far East	Yaroslavl Region													
	Khabarovsk Region													
	Primorsky Region													
North Caucasus	Sakha-Yakutia													
	Stavropol Region													
North-West	Kaliningrad Region													
	Leningrad Region													
	Murmansk Region													
Siberia	St Petersburg													
	Irkutsk Region													
	Kemerovo Region													
	Krasnoyarsk Region													
	Novosibirsk Region													
	Omsk Region													
South	Tomsk Region													
	Krasnodar Region													
	Rostov Region													
Urals	Volgograd Region													
	Chelyabinsk Region													
Volga	Sverdlovsk Region													
	Bashkortostan													
	Kirov Region													
	Mordovia													
	Nizhny Novgorod Region													
	Perm Region													
	Samara Region													
Tatarstan														
Ulyanovsk Region														

■ Highest score ■ Second-highest score ■ Third-highest score

Sources: BEEPS survey and authors' calculations.

⁷Tax rates, political instability and labour regulations are differentiated in Charts 4.2 to 4.5 because these scores are either hard to interpret (see footnote 5 on tax rates, for example) or concern areas that are mostly outside the control of the regions.

By contrast, in the neighbouring Khabarovsk Region, various aspects of infrastructure appear to constrain local businesses most: transportation, access to electricity and telecommunications. Indeed, this is the only region covered by the BEEPS survey where the three infrastructure components appear to be the three most binding constraints, echoing a general view that poor infrastructure is holding back the development of Russia's Far East (Vladivostok post-APEC being an exception in this respect).

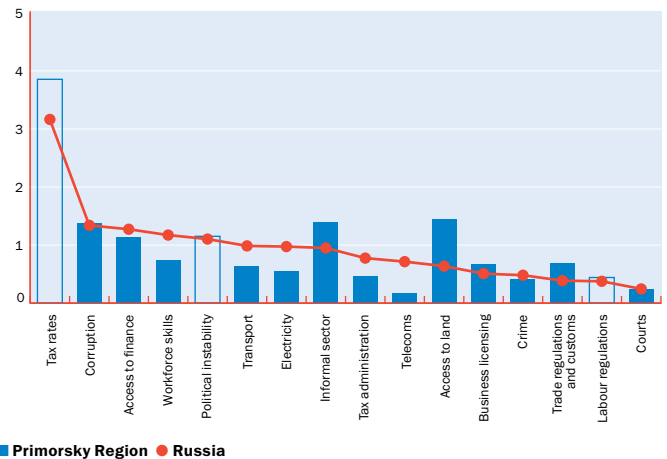
This does not imply that the situation with regard, for example, to business licensing is objectively better in the Khabarovsk Region than in the Primorsky Region. Nor does it imply that the work of customs in the Primorsky Region is objectively worse than in Russia as a whole. However, it does suggest that, given other constraints that businesses face and given the specifics of the local economy, improving infrastructure in the Khabarovsk Region and improving access to land in the Primorsky Region could be regarded as policy priorities that are likely to yield substantial benefits in terms of the growth of firms in these regions, regardless of whether the situation in these areas is objectively superior or inferior to those in most other regions.

Likewise, transport infrastructure is perceived to be a major constraint in the Leningrad Region (see Chart 4.4). This should not be viewed as an objective assessment of the quality of infrastructure in the area around St Petersburg, as the region scores fairly well on objective measures such as road density. The results simply indicate that most surveyed firms in the Leningrad Region tend to consider that a lack of transport infrastructure is one of the problems that most constrain their growth. In the light of this, addressing transport bottlenecks in this region is likely to yield more significant benefits in terms of the growth of businesses than efforts to upgrade transport networks in other regions. These findings appear plausible, given that Russia's second-largest city did not have a ring road until a few years ago. The expected completion of the Western Diameter and upgrades to major roads leading north of the city towards the Finnish border may further alleviate transport-related constraints on firms' operations.

In regions around Moscow (such as the Tver Region), workforce skills are among the most binding constraints (see Chart 4.5). This largely reflects the proximity of these regions to Moscow and the impact that this megalopolis has on local labour markets and is not necessarily a reflection of the objective quality of human capital in these regions. One important exception is the Kaluga Region, where (despite rapid growth) skills do not appear to be more of a constraint than elsewhere in Russia. This may, in part, reflect efforts made by local authorities to attract and retain skilled labour and encourage training programmes in cooperation with private-sector enterprises (particularly in the region's automotive cluster), as well as efforts to provide better social services. Ultimately, all of these examples highlight the fact that the business environment is an important public good and the provision of public goods should respond to changes in demand for them, which are often region-specific.

Chart 4.2
Business environment profile for the Primorsky Region

Average relative constraint scores



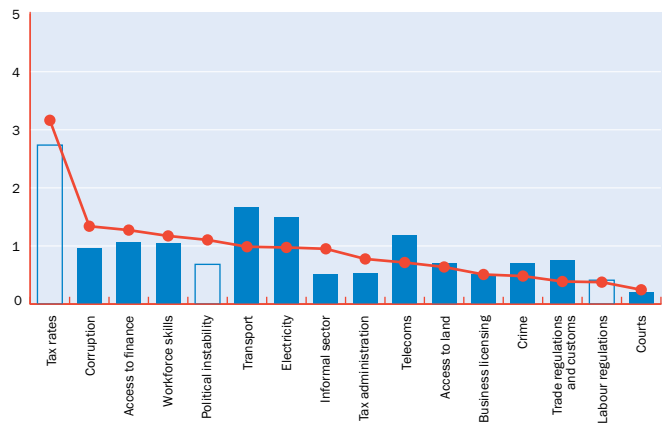
■ Primorsky Region ● Russia

Source: BEEPS survey and authors' calculations.

Note: Higher values correspond to a more difficult business environment. Estimated for a hypothetical "average" firm.

Chart 4.3
Business environment profile for the Khabarovsk Region

Average relative constraint scores



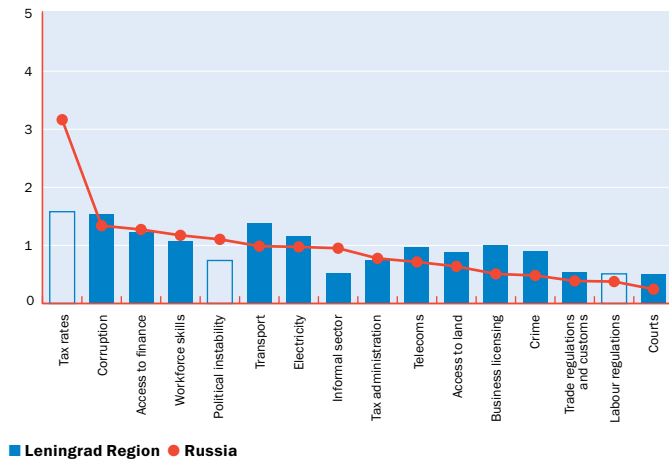
■ Khabarovsk Region ● Russia

Source: BEEPS survey and authors' calculations.

Note: Higher values correspond to a more difficult business environment. Estimated for a hypothetical "average" firm.

Chart 4.4
Business environment profile for the Leningrad Region

Average relative constraint scores



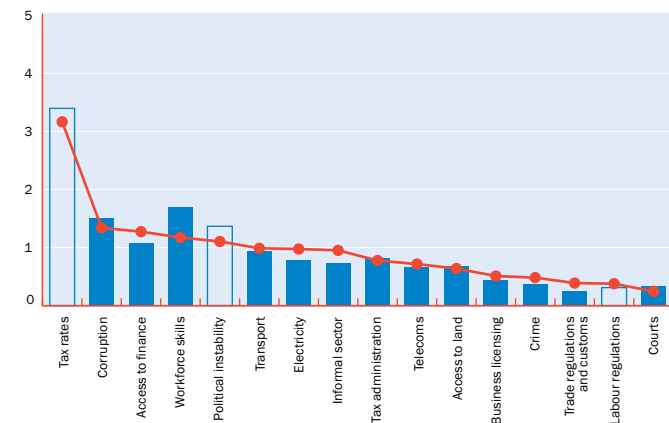
■ Leningrad Region ● Russia

Source: BEEPS survey and authors' calculations.

Note: Higher values correspond to a more difficult business environment. Estimated for a hypothetical "average" firm.

Chart 4.5
Business environment profile for the Tver Region

Average relative constraint scores



■ Tver Region ● Russia

Source: BEEPS survey and authors' calculations.

Note: Higher values correspond to a more difficult business environment. Estimated for a hypothetical "average" firm.

3. Differences in attitudes to corruption

As corruption appears to be the most important country-wide constraint on doing business in Russia once tax rates are excluded, regional variation in perceptions of corruption deserve special attention. In the examples above, corruption is perceived to be less of a constraint in relative terms (that is to say, relative to other aspects of the business environment) in the Khabarovsk Region, while in St Petersburg, for example, firms complain much more about corruption than they do in Russia as a whole.

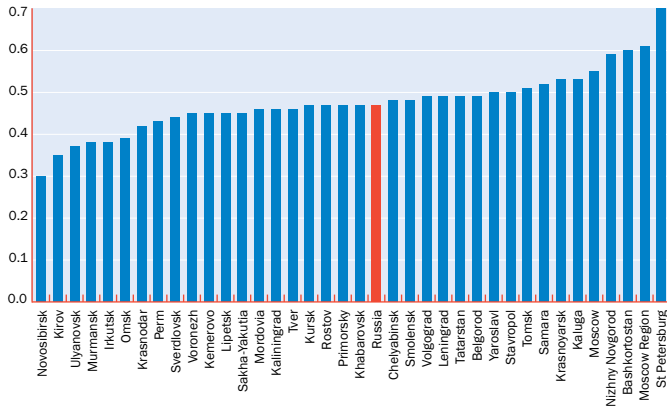
Do these responses reflect differences in the level of corruption in different regions relative to other problems that firms face? Responses to questions regarding firms' perception of corruption are always difficult to interpret, largely because in societies where corruption is pervasive, some people see it as a major obstacle, while others see it as a practical solution to problems stemming from overly complex regulations which are costly – and sometimes virtually impossible – to comply with (the "greasing the wheels" interpretation). Thus, firms may not regard corruption as an obstacle, despite it being pervasive.

The fifth round of the BEEPS survey provides an interesting way of looking at this issue from a regional perspective. All respondents were asked to evaluate four different hypothetical situations in four different towns. They were asked how much of an obstacle corruption was in each of the towns. The questions employed the standard five-point scale, where "0" indicates no obstacle, while "4" indicates a severe obstacle.

In one town ("town 4"), it is very difficult to obtain a permit without informal payments, but when a payment is made, success is guaranteed. Tellingly, more than 40 per cent of respondents did not view corruption as much of an obstacle in this town, rating it as "no obstacle", a "minor obstacle" or a "moderate obstacle". In another town ("town 3"), the situation is similar, except that even making an informal payment does not guarantee success. Even with respect to this town, almost one-third of respondents did not perceive corruption to be a major or severe constraint. However, perhaps unsurprisingly, firms tended, on average, to prefer the town with a clear link between payment and success. Based on these answers, firms were regarded as seeing corruption as a "solution" if: (i) they did not see it as a major or severe obstacle in town 4; and (ii) they saw it as more of an obstacle in town 3 (where success was uncertain) than in town 4 (where success was certain).

In another town ("town 2"), bribes are never taken and rules are followed, although obtaining a permit may take a reasonably long time. Remarkably, one-quarter of respondents saw civil servants' respect for the law as a major or severe constraint on business in that town. In "town 1", the situation is similar, but informal payments could facilitate or speed up the award of a permit, resulting in a two-speed system: one for those who pay up; and another for those who do not. Given those scenarios, respondents were classified as viewing corruption as a "problem" if: (i) they did not view bureaucrats' adherence to the law in the non-corrupt town as a major or severe obstacle; (ii) they did not regard the situations in town 4 (where corrupt payments were

Chart 4.6
Firms' attitudes to corruption



Sources: BEEPS survey and authors' calculations.
Note: Regional averages on a scale of 0 to 1, where "0" indicates that corruption is seen as a solution, while "1" indicates that corruption is seen as a problem.

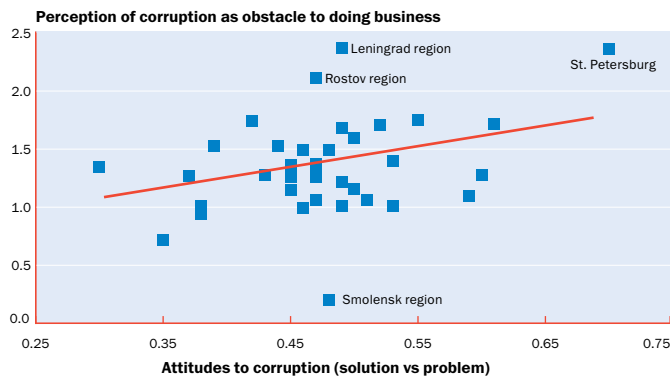
guaranteed to be successful) and town 1 (where there was a two-speed system) more favourably than the situation in town 2; and (iii) they preferred the law-abiding town 2 to town 1's two-speed system and town 4's guarantee of success for corrupt payments. Because all three conditions needed to be satisfied at the same time, firms that met these conditions took an unambiguously negative view of corruption.

All in all, 14 per cent of firms tended to view corruption as a problem on the basis of this definition (with their attitude to corruption coded as "1"), while 19 per cent tended to view it as a solution (with their attitude coded as "0"). The rest did not express a strong view or viewed corruption as both a problem and a solution, depending on the situation (with their attitude coded as "½"). On the basis of this coding, Chart 4.6 plots the average attitude to corruption in each region and in Russia as a whole.

On average, businesses tend, in most regions, to view corruption as a solution, rather than a problem, at least in the hypothetical situations described above. Indeed, there are a few regions – the Novosibirsk, Kirov, Ulyanovsk, Murmansk, Irkutsk and Omsk Regions – where that is the dominant view. There is concern that, in this situation, both the poor institutions that feed corruption and corrupt behaviour itself may become further entrenched. A representative firm could encourage corruption as a solution to a poor regulatory environment, which would, in turn, result in poor regulation and associated rent-seeking becoming more persistent. This would reassure firms that corruption was an appropriate solution to their problems.

Interestingly, regions (such as St Petersburg and the Moscow Region) where corruption is viewed predominantly as a problem in these hypothetical cases also tend to be the ones where firms view corruption as a much more serious obstacle to their operations relative to other constraints (see Chart 4.7). Corruption may appear to be more of a problem in these regions, but it may also be less entrenched and easier to address by means of gradual improvements in regulation and greater transparency in government.

Chart 4.7
Firms' attitudes to corruption and perceptions of corruption



Source: BEEPS survey and authors' calculations.
Note: Attitudes to corruption are on a scale of 0 to 1, where "0" indicates that corruption is seen as a solution, while "1" indicates that corruption is seen as a problem. Corruption as an obstacle is reported on a scale of 0 to 4, where "0" indicates that it is not an obstacle and "4" indicates that it is a severe obstacle.

4. Uneven implementation of liberalisation reforms at regional level

The results of the BEEPS survey point to priority areas for the reform of the business environment in each region. This prompts the question of how local resistance to reforms can be overcome, particularly when reforms are expensive and not necessarily in the interests of local officials and politicians (in areas such as corruption or tax administration, for example). One answer is for reforms to take place as a result of a "shock" to the local political system, such as the election of an exceptionally reform-minded leader or a scandal that galvanises public opinion. Another possibility is for reforms to be initiated (and, if necessary, co-funded) by authorities at the federal level as part of general efforts to promote deregulation. These could lead to systematic improvements in the regional business environment, so long as these are implemented at the local level. This prompts a further, critical question: under



adhere, and region-specific benchmarks aimed at improving the business environment in specific areas.

Lastly, it is essential to ensure that national reforms are implemented effectively at the regional level. The enforcement of such reforms could be facilitated by setting up feedback mechanisms whereby the abuse of rules such as licensing requirements could be reported without fear of retaliation by regional and municipal authorities. Further steps could also be taken to promote transparent governance in the regions and ensure that local populations are better informed about regional policies and their implementation. In addition, programmes could be developed to improve civil servants' awareness of the laws and regulations in place, particularly with respect to permit requirements and procedures. These could be modelled, in part, on training programmes for regional staff run by the FAS, Russia's competition authority.

Box 4.1

The relative severity of constraints in the business environment

One difficulty when interpreting firm-level scores collected in the BEEPS survey lies in the fact that these may reflect differences in the sensitivity with which firms report constraints on their business, rather than actual differences in these constraints. To address this problem, one can code the severity of constraints in terms of deviations from the average severity of all constraints reported by a particular firm:¹²

$$R_{ij} = \frac{s_{ij} - \bar{s}_j}{\bar{s}_j}$$

where i denotes an obstacle; j denotes a firm; s is the absolute severity reported for an obstacle (on a scale of 0 to 4); and \bar{s} is the average severity of all obstacles reported by firm j .

For example, suppose a firm reports access to land as a major obstacle (3), access to electricity as a minor obstacle (1), and all other obstacles as moderate (2). In this case, the average severity of all obstacles evaluated by this firm is 2. The relative severity of access to land is 0.5; for electricity, it is -0.5; and for all other aspects of the business environment, it is 0. Suppose another firm ranks all obstacles as severe (4), with the exception of access to land, which is considered a major obstacle (3). In this case, the relative score for access to land is negative at -0.23.

Both firms consider access to land to be a major constraint. However, the first firm implicitly sees it as the largest constraint on its activities (so addressing it could presumably be associated with larger gains in terms of sales or profits), while the second firm sees it as the smallest of the constraints that it faces (so addressing it will presumably be associated with limited gains, unless other constraints are also relaxed). From a policy perspective, if most firms in a given region were of type 1, improving access to land would be a clear priority. However, if most firms were of type 2, policy-makers should perhaps focus on other issues for the time being. Relative scores help to make this distinction clearer.

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¹²This approach was suggested by Carlin et al. (2010).



05:

The management dimension

Diversifying the Russian economy requires substantial improvements in productivity in non-resource sectors. This, in turn, requires modern approaches to management. Survey evidence suggests that Russian firms tend, on average, to lag behind firms in advanced economies and transition economies outside the CIS as regards all main aspects of management quality. In addition, the distribution of the quality of management across Russian firms is unusually flat, with relatively large numbers of both well-managed and poorly managed firms. Policies aimed at strengthening competition, providing specialist management training, facilitating the entry of multinational firms and developing capital markets could all help to improve the quality of management.

KEY FACTS:

85%

increase in profit margins associated with transition country improving quality of management

2,097

manufacturing firms covered in MOI surveys of 2008-09 and 2010

0

No Russian business school in list of 100 top MBA programmes compiled by Financial Times

The management dimension

1. Introduction

The diversification of the Russian economy will require substantial improvements in productivity. Part of this improvement could arise as a result of better management. This aspect has, until now, been neglected in Russia's diversification debate, despite the fact that it is widely accepted that management is a crucial factor in explaining company performance. Indeed, recent evidence suggests that management skills are essential for introducing new technologies and working practices in firms and that better management leads to improvements in overall economic performance.¹ Better management skills are also associated with increases both in research and development (R&D) activities and in new products. This has been found in large cross-country samples including both advanced and developing countries and is particularly true of transition countries. For example, a transition country improving, in terms of the quality of management, from the lower to the upper quartile of a sample has been associated with a 9 per cent increase in operating revenues, a 20 per cent increase in returns on assets, a 45 per cent increase in EBITDA (earnings before interest, tax, depreciation and amortisation) margins and an 85 per cent increase in profit margins.²

2. Management skills in Russia: survey evidence

A recent cross-country survey of management practices shows that Russia lags some way behind many advanced economies and emerging markets in terms of management skills. On average, the management scores of Russian companies are much lower than those of their counterparts in Germany and other European Union (EU) countries, as well as being somewhat worse than those of firms in China and India and a number of other transition economies (albeit Russian companies are ranked ahead of their counterparts in Kazakhstan and Uzbekistan; see Chart 5.1).³

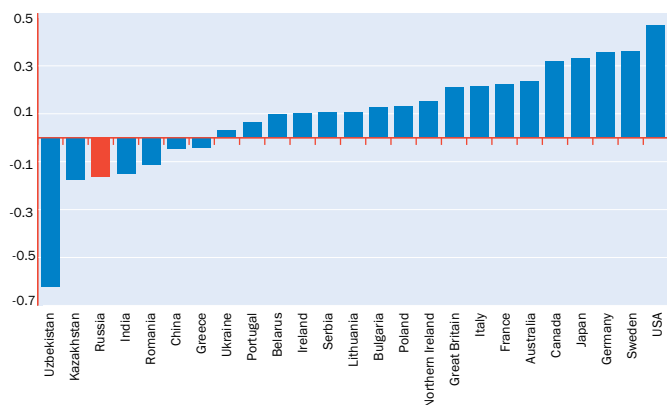
The MOI survey on which this ranking is based was conducted by the EBRD in 2008-09 and covered around 2,000 manufacturing firms employing 50 to 5,000 people (for details of the survey, see Box 5.1). In order to get a better sense of regional variation, the survey was then extended in 2010 to include 97 firms in Russia's Far East, which had not been covered by the 2009 survey (see Box 5.2). In the survey, senior managers in those firms were presented with a detailed questionnaire regarding management practices. Their answers were used to compile an index indicating the quality of management practices, focusing on four key areas: operational management, target-setting, monitoring and incentive management. Russia's scores were below average in all four areas (see Chart 5.2).

Interestingly, management skills appeared, on average, to be substantially worse in higher-value-added industries (see Chart 5.3). In addition, the distribution of management scores across Russian firms was unusually spread out, pointing to a large number of companies with management practices that were significantly below average and, at the same time, a relatively large number of fairly well-managed companies (see Chart 5.4, which compares the distribution of management scores in Russia and Germany).⁴

3. Factors determining the quality of management

Recent studies have identified a number of factors that tend to improve the average quality of management in an economy. One of the key factors is competition. Competition puts pressure on individual firms to improve management practices (for example by imitating those of their most successful competitors), as well as driving badly managed firms out of business. Strong competition also tends to be associated with more limited variation in the distribution of firms' scores, with few very badly managed firms (as these do not survive) and few firms that are managed much better than the others (as best practices are disseminated more widely across the industry). Indeed, there is a strongly positive correlation between the management scores of Russian firms taking part in the survey and the (self-reported) number of competitors that firms face in their key target markets. In particular, the quality of management is significantly higher in firms that have at least two major competitors. In addition, firms that compete nationally (as opposed to those that compete only in their own regional or sub-national markets) tend to have higher management scores. This effect is particularly strong in

Chart 5.1
Average management scores



Source: MOI survey and Bloom and Van Reenen (2010).

¹Bloom and Van Reenen (2007, 2010).

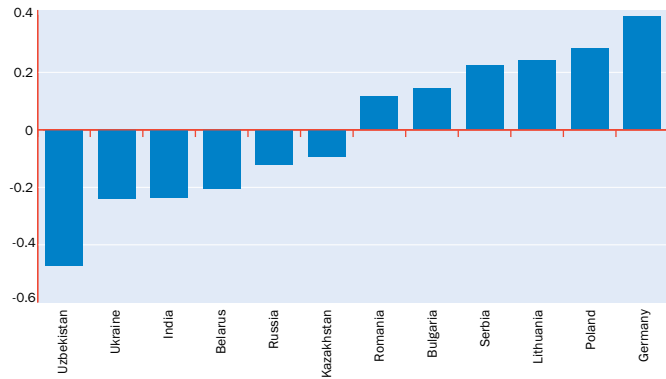
²Bloom et al. (2011).

³Management scores for countries other than EBRD countries of operations, Germany and India are based on Bloom and Van Reenen (2007, 2010). Although there are some methodological differences between their surveys and the EBRD's Management, Organisation and Innovation (MOI) survey, they are broadly similar. In particular, some firms in Germany and Poland participated in both surveys, achieving similar management scores. Scores from surveys in countries not covered by the MOI survey were benchmarked to these firms.

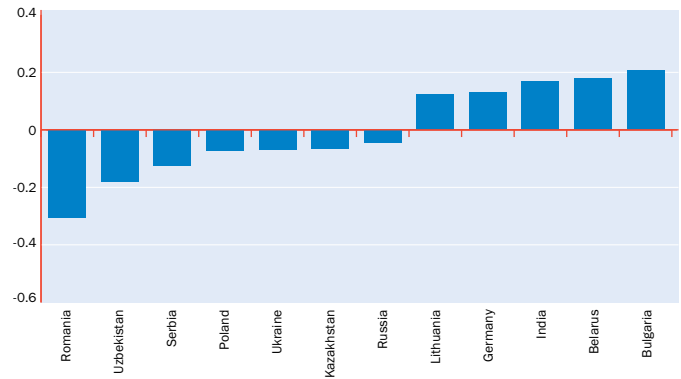
⁴Berglof and Plekhanov (2010).

Chart 5.2
Average management scores by component for selected countries

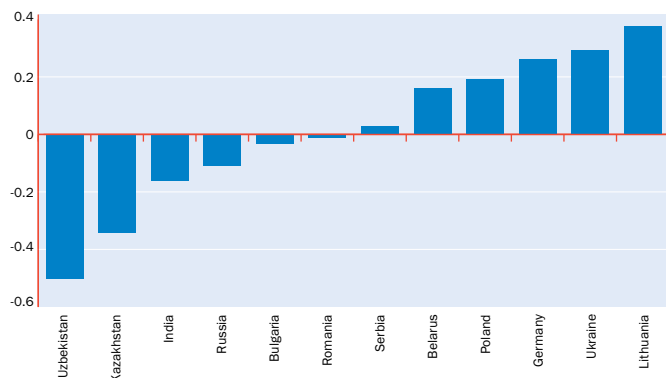
Operations management scores



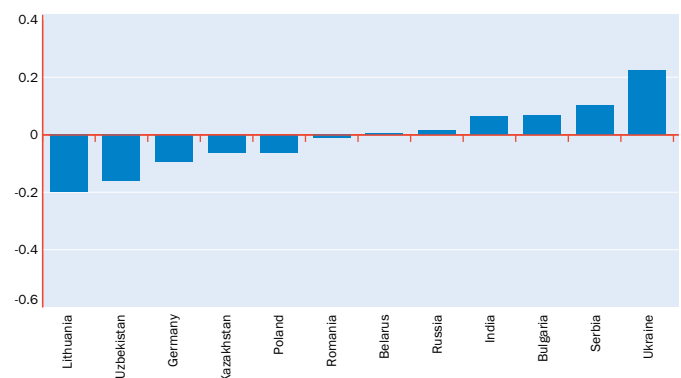
Monitoring management scores



Targets management scores



Incentives management scores



Source: Bloom and Van Reenen (2007) and MOI survey.

the Far East, where transportation costs to the rest of Russia are substantially higher, so an additional cost advantage may be needed in order for a firm to successfully access the larger national market. Cross-country evidence suggests that exports – the targeting of international markets – are also associated with improvements in the quality of management (albeit this cannot be verified for the Russian sample, as not enough firms there export). This is also broadly consistent with the finding that productivity levels in various countries converge particularly rapidly in certain tradeable industries.⁵ It seems plausible that management practices would play a role in such convergence.

Another important factor is the presence of multinational firms in the market. The presence of multinationals tends to facilitate the dissemination of management skills and practices, as well as strengthening competition. The survey suggests that local subsidiaries of multinational firms are, on average, significantly better managed than other companies. And as for firms that are not themselves multinationals, the survey reveals a strongly positive correlation between the quality of management and

firms reporting that they compete with multinational firms in their main target market. The positive effect of competing with multinationals is much stronger than the effect of competing with imports in the key domestic market.

Lastly, firms' ownership structure also plays a role. In particular, state-owned firms tend to have weaker management practices, both in Russia and globally (albeit in Russia, it is sometimes hard to distinguish between the effect of state ownership and the effect of operating in an industry where state ownership is particularly common). At the same time, there appears to be no significant difference, in terms of the quality of management, between firms that have been privatised and those that have always belonged to the private sector. There is also evidence that family-owned firms passed down from generation to generation tend to have weaker management practices (although this is not true of first-generation family firms, which are typically established and run by entrepreneurs). The succession problem for family-based businesses – familiar to many countries – clearly has a strong management dimension.

⁵Rodrik (2011).

Box 5.1

Measuring the quality of management

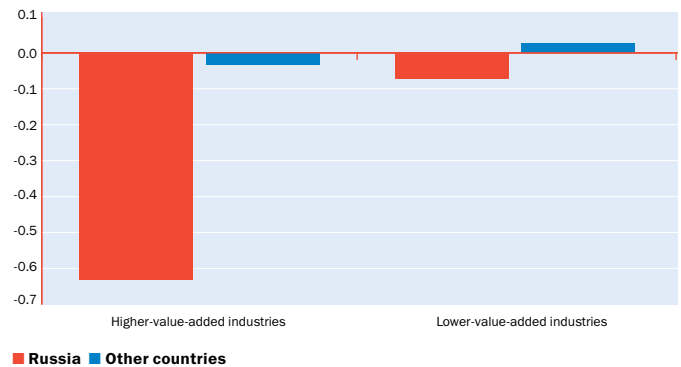
The quality of management is, as a concept, inherently difficult to formalise. Following the methodology developed by Bloom and Van Reenen (2007), the MOI survey approached the task of quantifying the quality of management by looking at four separate aspects: operations, monitoring, targets and incentives.⁶ A score was calculated for each of these areas on the basis of scores for individual management practices, which were evaluated on the basis of the answers provided to the questions in the survey. The survey targeted manufacturing companies with at least 50 employees and was conducted by means of face-to-face interviews.

In the case of monitoring, for instance, the survey included seven questions corresponding to the following seven key practices. First, respondents were asked how many production indicators were monitored. The answers were given a score ranging from one (if the answer was “none”) to three (if more than two indicators were monitored). The frequency with which performance indicators were monitored was also awarded a score, ranging from one (“yearly”) to six (“hourly”). The frequency with which performance indicators were shown to managers was awarded a score ranging from one (“never”) to eight (“hourly”), while the frequency with which those indicators were shown to workers was also evaluated using the same scale. In addition, a score of three was given to firms with performance indicators displayed on boards in multiple locations, a score of two was given to firms displaying such indicators in a single location, and a score of one was given to firms where indicators were not publicly displayed. Managers were then asked how often they reviewed such performance indicators, with a score of three being awarded if they did so continuously, a score of two being awarded if this was done periodically, and a score of one being given if they rarely reviewed them. Lastly, a score of two was given if performance indicators were used to compare different teams of employees or different shifts, and a score of one was awarded if not.

A management Z-score for a particular practice in a particular firm was then calculated as a normalised deviation – based on the answer to a given question (as coded above) – from the average score for that practice across all firms in a broad cross-country sample. Z-scores for individual practices were then averaged to obtain a Z-score for each of the four management components, which were, in turn, averaged to obtain an aggregate estimate of the overall quality of management in a given firm.

Chart 5.3

Average management scores in higher- and lower-value-added industries

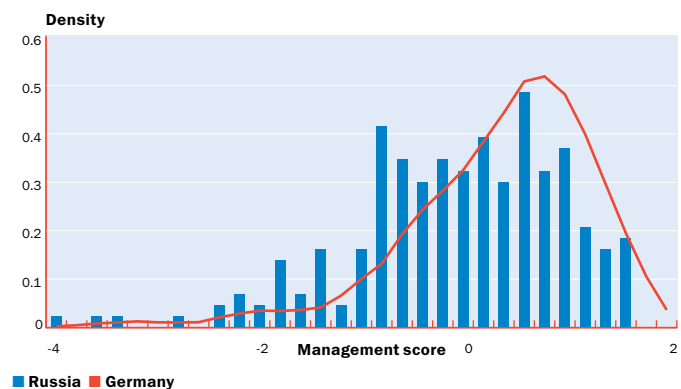


Source: MOI survey.

Note: Average management scores (as plotted here) can also be interpreted as deviations from the average for the sample as a whole.

Chart 5.4

Distribution of firm-level management scores



Source: MOI survey.

Note: Russian data do not include the Far East. The density is calculated by dividing the relative frequency (the number of values in each class divided by the number of observations in the set) by the width of the class.

What factors are likely to account for the relatively low average quality of management practices in Russia? Lower levels of competition in many sectors and administrative barriers to firm entry and exit certainly play a role. Chapter 3 has already shown that lower levels of competition are reflected in higher Lerner indices (that is to say, higher mark-ups) relative to countries that are members of the Organisation for Economic Co-operation and Development (OECD).⁷ The limited presence of multinationals is also highly relevant. In addition, in many instances performance incentives for firms may remain relatively weak – not only because of the lack of competition, but also owing to explicit

⁶Bloom et al. (2011).⁷Friebel and Schweiger (2012) provide some further evidence of a link between competition and management practices in Russia.

or implicit subsidies that support poorly managed firms. Furthermore, the fact that incentive arrangements within firms are often insufficiently strong may, to a certain extent, be a sign of path-dependency, as a relatively small proportion of managers have received high-quality management training. No Russian business school currently appears in the list of the top 100 MBA (Masters in Business Administration) programmes compiled by the *Financial Times*.

4. Policy implications

Management remains a weakness in Russia and is one of the factors holding back productivity. At the same time, the poor quality of management practices will affect the pace and effectiveness of the adoption of new processes and products. Without that ability to adapt and improve, it is hard to see how Russia can successfully diversify. There are, however, a number of policy options available with a view to improving the quality of management in Russia.

First, specialist management training needs to be provided more widely. This is currently envisaged within the framework of the Skolkovo project, but needs to be made available more widely across the country.

Second, policies aimed at strengthening competition – particularly policies facilitating the entry of multinational firms – will be essential. Multinationals clearly bring with them strong managerial skills, the influence of which can, over time, spread to local firms, notably those linked to multinationals by means of supply chains and other arrangements. Some of the changes that need to be made in this respect have already been set out in Chapters 3 and 4. In addition, improvements also need to be made, as a matter of urgency, to the design of migration rules covering highly skilled foreign professionals who could potentially be employed by such companies (an issue discussed in greater detail in Chapter 6).

Third, policies aimed at the development of capital markets can strengthen incentives for companies to list and issue exchange-traded debt instruments, thereby subjecting themselves to greater scrutiny by shareholders and creditors. This should, in due course, exert more effective pressure on management regarding performance and corporate governance.

Lastly, cross-country evidence suggests that there is a positive nexus between management, productivity and the type of market in which a firm operates. Being positioned in export markets is consistently associated with improved management and productivity. However, as this report documents, the number of Russian exporters remains small, effectively shutting off access to a powerful source of improvement. While increasing the competitiveness of Russian exports other than natural resources is an aim in itself – as one element of the broad diversification goal that Russia has set itself – the analysis in this chapter indicates that there may be a feedback loop through which participation in export markets can boost both management practices and productivity, thereby further supporting competitiveness and growth outside the natural resource sector.

Box 5.2

Management practices in Russia's Far East

To get a greater sense of the regional picture as regards management, the EBRD conducted a follow-up survey looking at 97 firms in the Far East between February and April 2010. The survey covered the Primorsky Region, the Khabarovsk Region, Sakhalin, the Amur Region and the Jewish Autonomous Region.

The average management score in the Far East was slightly better than in the rest of Russia, although the difference was not statistically significant. This was driven largely by significant differences in incentive management and, to some extent, monitoring, while the scores for operational management and target-setting were very close to the Russian average.⁸ This could potentially be explained by the severe shortage of skilled labour in the Far East, a result of significant outward migration from these regions and a rapid decline in population during the 1990s and 2000s. These demographic developments may have put pressure on employers to better incentivise employees, while not necessarily affecting operational management.

Another factor which proved to have a much stronger impact on firms in the Far East was the size of the target market. While firms targeting the whole of the Russian market are typically managed somewhat better than those targeting only their local regional market, this differential proved to be particularly strong in the Far East. This is likely to be due to the transport costs and logistical challenges of selling to the rest of Russia. In order to sell to the whole of the domestic market, firms in the Far East need to have an extra competitive advantage, and part of that may come from better management practices.

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⁸ Friebel and Schweiger (2012).



06:

Skills and migration

Diversification into new areas of activity often requires new capabilities or skills. By international standards, Russia's performance in terms of skills and education appears mixed, and despite various attempted reforms, the education system remains largely focused on inputs, rather than outcomes. Survey evidence also reveals a significant mismatch between the skills demanded by the market and the skills provided by the education system. In the short term, migration policies could be used more actively to address specific skills gaps, while in the longer term, the Russian economy would benefit from moves towards greater diversity in the supply of education.

KEY FACTS:

33%

of respondents to Life in Transition Survey (2010) reported that unofficial payments were required to receive public education

45%

of expanding firms thought skill shortages placed constraints on growth

3-5%

share of Russian students achieving top grades in PISA compared with 13 to 25 per cent in top performer countries

Skills and migration

1. Introduction¹

The view continues to be widely held that Russia has a relative abundance of skills and a high-quality education system, at least compared with other leading emerging markets. On closer examination, this assumption is not entirely warranted. Not only has the country's legacy in terms of education and skills been less positive than is typically imagined, but the consequences of policies pursued over the past 20 years have contributed to the erosion of any advantages gained. More generally, economies with relatively undiversified and unsophisticated product mixes – such as Russia – appear to have under-performed in terms of their educational outcomes. This suggests that there is a feedback loop between (i) the product and trade mix and (ii) the level of investment and returns on investment as regards the core skills and abilities generated through education.

These failings have serious implications for Russia's ability to grow and diversify.² Not only does a good education system support and enhance innovation, but a higher average level of education aids the successful imitation and faster adaptation of existing modern technologies. Imitation and adaptation will be particularly important for a country (such as Russia) which lags substantially in terms of productivity compared with leading economies. Data for 50 countries over the period 1960-2000 show that countries with better education systems have significantly higher annual growth rates in terms of gross domestic product (GDP) per capita. This appears to reflect not only the fact that faster-growing countries may devote greater resources to education and the impact that better institutions have on both economic growth and the quality of education, but also – predominantly – the effect that education has on growth. An increase of one standard deviation in educational test scores leads to an increase of 1.3 to 2 percentage points in the annual growth rate of GDP. Consequently, were students' education to improve by just half of that amount over a period of 20 years, this would, on average, increase GDP by around 5 per cent over that period, and by as much as 36 per cent over a 75-year period.³

Aside from affecting productivity and growth directly, skill profiles are a significant factor determining the ability to diversify. This is because diversification necessarily requires the accumulation of new capabilities or skills. This will be particularly important if diversification involves moving into economic activities that do not rely on the sets of inputs and knowledge typically employed in current activities. Central to this is inevitably the quality of education, as without appropriate human capital it will be difficult – if not impossible – for an economy to shift into new areas of activity. One way of considering this problem is to think of the skills present in an economy as being summarised in the products and services that the economy generates. Where a country is reliant on natural resources, this tends to imply that the skills required for those activities are relatively specialised

and cannot, therefore, easily be transferred to new activities. For example, the skills required by the oil or gas industry will be very different from those required by a knowledge-intensive activity, such as the software industry.

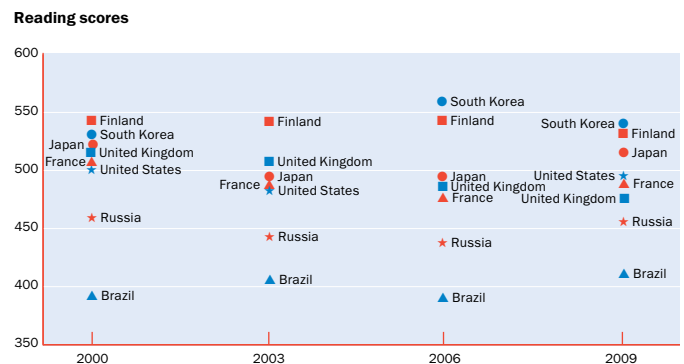
In the case of Russia, this skills problem may, in part, have been mitigated by the fact that, prior to 1992, the economy was significantly more diversified than at present, so skills and education were less narrowly focused. However, much of that diversified structure subsequently collapsed, as it was uncompetitive. Moreover, many of those skills – and the educational system behind those skills – proved to be fairly specific and non-transferable. This can be seen in the effective collapse of much of Russia's vocational education system over the past 20 years.

2. Russian education in context

The Russian education system, despite many changes, is still coloured by the legacy of the previous system and the incomplete reforms initiated since 1992. The Soviet system certainly achieved very strong enrolment results. These have subsequently declined. Between 2003 and 2008 alone, gross enrolment rates fell from 92 to 86 per cent for secondary education and from 122 to 98 per cent for primary education.⁴ Spending on education has also fluctuated significantly. It fell below 3 per cent of GDP in the 1990s, before rising to just over 4 per cent by 2008-09. Despite the sharp rises seen in the price of natural resources and associated revenues, public spending on education appears to have risen only gradually.

The legacy of the previous system also included a highly centralised system of control – including control of curricula, personnel, management and financing. One feature of the changes introduced since 1992 has been the greater devolution of power by the federal government to authorities at lower

Chart 6.1
Average PISA scores for selected countries:
analytical reading



Source: OECD PISA data.

Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

¹This chapter draws extensively on findings that are reported in greater detail in background papers prepared for this report by Amini and Commander (2012) and Commander and Denisova (2012).

²Benhabib and Spiegel (1994), drawing on seminal work by Nelson and Phelps (1966).

³Hanushek and Woessmann (2008). The long-term effects are based on simulations. See also Glaeser et al. (2004), who show that years of schooling have a robust effect on growth over a longer time period.

⁴Based on the World Bank's World Development Indicators. The gross enrolment ratio can exceed 100 per cent owing to the inclusion of over-aged and under-aged students on account of early or late school entrance and the repetition of school years.

levels. This has not necessarily been a positive development. Financial constraints have been significant and have also varied widely across jurisdictions. There has, de facto, been a creeping introduction of fees, with schools and teachers commonly imposing fees and levies, while some schools have also launched revenue-earning schemes of a non-educational nature. These have proved persistent. According to the Life in Transition Survey (LiTS) conducted by the EBRD and the World Bank in 2006, 39 per cent of respondents in Russia reported that unofficial payments were required in order to receive public education. This fell to 33 per cent in the 2010 survey, but remained well above the 8 per cent seen on average in advanced countries in Europe and the 19 per cent seen in Poland. Likewise, 20 per cent of respondents were personally required to pay for services that should be free in public schools (compared with 1 per cent of respondents in Sweden, 3 per cent in France and 4 per cent in Poland).

Russia has also seen the emergence of special institutions (such as gymnasia, lycées and colleges) that exist outside the basic public system. The shift towards greater decentralisation has been accompanied by great heterogeneity in terms of spending and decision-making across regions and municipalities. For example, in 2001 more than 35 per cent of oblasts or regions spent between 500 and 1,000 roubles per student, while just over 10 per cent of regions spent more than 1,500 roubles.

Although there is considerable debate regarding the policies that should be pursued, there is relatively broad agreement that Russia's education system has placed only limited emphasis on educational outcomes, giving priority instead to standardised measures of inputs. These have, in turn, been compromised by varying budgetary resources across regions. Antiquated curricula and low standards in terms of pedagogy and management have been highlighted. This has led to some promotion of policies

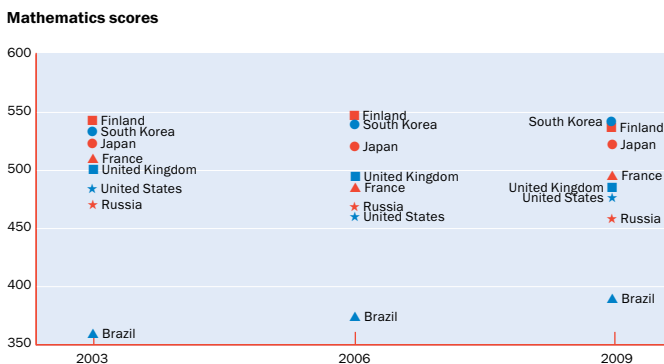
designed to achieve new standards, the overhaul of curricula and teaching methods, more and better assessment of students and greater emphasis on learning outcomes, as well as increased autonomy for schools.⁵

2.1 Russia's educational scores in relative terms

We are now able to measure the evolution of Russia's education system and skills and compare them with those of other countries, thanks to several datasets that attempt to measure the quality of education over time.⁶ In particular, the PISA (Programme for International Student Assessment) dataset compiled by the Organisation for Economic Co-operation and Development (OECD) constitutes an explicit attempt to measure the skills needed to function in a modern economy, rather than being concerned only with the formal curriculum. PISA is a standardised international assessment of 15-year-old students' performance in reading, mathematics and science which is carried out in all OECD countries, as well as a growing number of non-OECD countries (including Russia). Four assessment rounds have now been carried out (in 2000, 2003, 2006 and 2009), and Russia has been included in each round. Students are chosen at random in schools in each country⁷ and given a reading, mathematics and science test. In addition, information on the students – such as details of their family background, attitudes towards schooling and learning strategies – is collected. Moreover, each assessment round sees information collected from school principals on school resources (for instance, the number of teachers in the school).

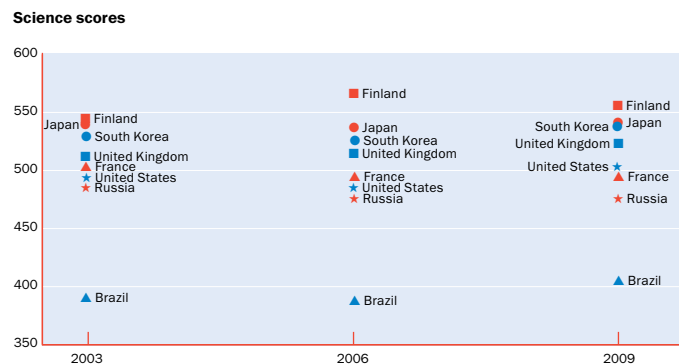
Charts 6.1, 6.2 and 6.3 show PISA scores for reading, mathematics and science for a selection of countries, including Russia, that have been involved in all assessment rounds. For mathematics, Russia consistently scores higher than Brazil – as well as other emerging markets covered by PISA. Its score is

Chart 6.2
Average PISA scores for selected countries: mathematics



Source: OECD PISA data.
Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

Chart 6.3
Average PISA scores for selected countries: science



Source: OECD PISA data.
Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

⁵See, for example, Canning (2004).

⁶Aside from PISA data, these include data from the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS).

⁷See the description in Anderson et al. (2010). The primary sampling unit is the school.

roughly comparable to that of the United States in all rounds, but is significantly lower than those of Asian countries such as Japan or South Korea, as well as leading European countries such as Finland. In 2009 the ratio of the top countries – South Korea and Hong Kong – to Russia was around 1:1.18 for mathematics. In 2000 Russia was ranked 25th out of 35 countries for mathematics, and this was stable through to 2009.⁸ For both reading and science, Russia's scores tend to be weaker than those of most European countries (including other transition countries), as well as those of Asian countries, although they remain superior to those of emerging markets such as Brazil. For reading and science, the ratio of the top countries to Russia was 1:1.17 and 1:1.14 respectively in 2009. For reading and science, Russia was ranked 29th or 30th out of 35 in both 2000 and 2009. By 2009, Russia's mean reading score was significantly lower than the OECD average, being roughly equivalent to those of Chile and Turkey.

Given the policy objectives of diversifying the economy and raising productivity, one further aspect is also troubling. Charts 6.4, 6.5 and 6.6 provide evidence from PISA concerning the distribution of the upper part of countries' scores. This indicator may be particularly relevant when considering the ability of an economy to innovate and/or adopt new technology. Those charts show that in 2009 the percentage of Russian students achieving top grades – defined as Level 5 or above – ranged between 3 and 5 per cent for reading, mathematics and science. By contrast, in the leading countries, 13 to 25 per cent of students achieved Level 5 or above.⁹ In mathematics, for example, around 5 per cent of students achieved top grades in Russia in 2009, compared with 20 to 25 per cent in Japan, South Korea and Finland. Moreover, that represented a sharp decline, with around 10 per cent of Russian students having achieved such grades in 2000. There has been no improvement in the percentage of

students achieving top grades for reading, while no clear trend can be observed for science. In conclusion, the percentage of Russian students achieving top grades is relatively low, with declines observed in the case of mathematics and little or no improvement in the other disciplines over the past decade. Russia's educational scores remain superior to those of many emerging markets with comparable income levels, but are substantially lower than those of leading countries. The evidence suggests that the country has, over time, experienced a declining comparative advantage in the area of education.

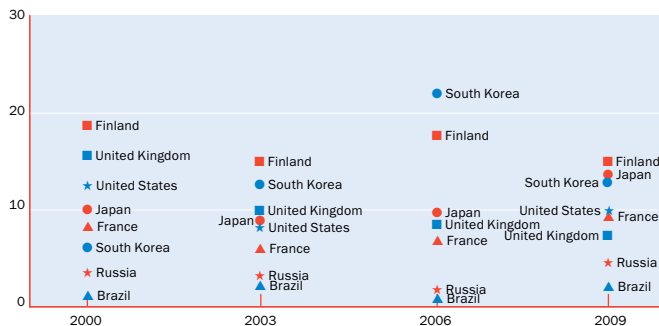
38th

Russia's ranking –
out of 65 countries
surveyed in PISA

|||||

Chart 6.4
Percentage share of top performers
in selected countries: analytical reading

% of students achieving Level 5 or above

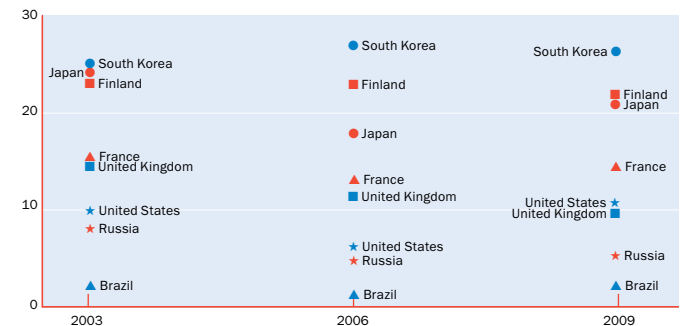


Source: OECD PISA data.

Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

Chart 6.5
Percentage share of top performers
in selected countries: mathematics

% of students achieving Level 5 or above



Source: OECD PISA data.

Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

⁸This compares Russia with countries included in all assessment rounds. By 2009, the total number of countries involved in the PISA survey had risen to 57.

⁹PISA uses a five/six-level performance scale (depending on the subject and assessment year), with Level 1 representing the lowest level of proficiency in a subject and Level 5 (or Level 6) being the highest. Top performers are defined as those attaining Level 5 or above. For each level, PISA defines specific skills needed in order to qualify.

2.2 Skills

Evidence from surveys suggests that Russian firms have problems finding workers with the appropriate skill profiles. The 2009 round of the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the EBRD and the World Bank found that just over 45 per cent of expanding firms thought that skill shortages placed constraints on growth.¹⁰ Other evidence indicates that firms find it difficult to hire managers and professionals. However, the most acute shortages appear to concern skilled manual workers, and these shortages have increased since the 1990s.¹¹ Even within broader disciplines such as engineering, students' training is often too narrowly focused and not fully in line with the needs of employers.¹² And while this appears to be the situation for existing firms, it seems likely that any entrants in new, diversified areas of activity may, if anything, face even stronger constraints.

Overall, there appears to be a mismatch between the skills demanded by the market and the skills provided by the education system. However, such mismatches are very difficult to quantify and there is little evidence regarding the precise nature and size of the skills gap in Russia. To provide a more precise measurement of that gap as part of this project, we have, for the first time, looked at the perceived supply of various skills to Russian firms. We have also looked at whether skills constraints and gaps are addressed through migration.¹³ For that purpose, a survey of the leading recruitment firms in Russia was launched at the end of 2010. Face-to-face interviews were conducted in 270 recruitment firms in 23 locations across Russia, including Moscow and St Petersburg. In an attempt to see whether skills gaps were more significant for innovative activities, we also conducted a small experiment involving firms in three fields: energy-conserving LED lighting, engineering services for the electricity sector, and internet technology aimed

at social networking and marketing.¹⁴ The aim was to see whether innovative activities faced more binding constraints when trying to hire.

The results of this survey are unequivocal. The picture is one of widespread skills gaps across all types of labour. While there was a fairly high degree of variation in terms of the number of days taken to fill a vacancy in different regions or oblasts, a clear pattern emerged. Not only does it take firms much longer to fill vacancies for skilled personnel (just under 40 days for managers, compared with 14-18 days for clerks and qualified workers), but this was particularly the case for relatively innovative activities. In innovative areas of activity, the recruitment of managers or high-level professionals in major Russian cities took, on average, three to five times longer than the recruitment of other workers. Even in Moscow, recruiting a manager or high-level professional in these innovative areas of activity took three to four times longer, and the gap was greater still in the Urals, Siberia and the Far East.

Moreover, looking at the sorts of skill that were lacking for each type of potential recruit (for example, managers or high-level professionals), it was noticeable that recruitment firms reported a widespread absence of essential skills. For example, a lack of problem-solving and management skills was by far the most commonly cited limitation for managers, while what high-level professionals most commonly lacked was problem-solving and practical skills. The consequences of these problems with skills and the filling of vacancies included firms deciding to postpone the launch of new products and/or the modernisation of plants.

In short, this new evidence points not only to widespread skill shortages (even when employers pay wages that are high relative to the skill-specific average in a given region), but also to clear constraints on the availability of personnel for firms wishing to embark on new or relatively innovative activities. These limitations will continue to act as a major brake on diversification if there are no changes to policy.

Chart 6.6
Percentage share of top performers
in selected countries: science



Source: OECD PISA data.

Note: UK data for 2003 is based on surveys with low-response level and is not always included in the PISA reports.

3. Migration

One of the options for a country seeking to address skill shortages is allowing the migration of workers from abroad. Indeed, most advanced economies actively seek to attract highly skilled labour to their countries, using, in particular, visa channels and/or points systems to select eligible migrants. For example, the United States has used a visa programme to attract migrants working in specific industries, notably the software sector. Countries such as Australia and Canada operate migrant selection criteria that favour skilled individuals. Points are accumulated using formulae that take into account characteristics such as the person's education, occupation, language ability and age. This broad approach – with or without the explicit award of points – has, in recent years, increasingly been adopted by countries eager to compete in the international market for talent.

Russia is somewhat different in this respect. While migrants account for around 8.5 per cent of the total population, which

¹⁰This is in fact common to most countries of the former Soviet Union, which had a similar starting point in terms of their education systems. See EBRD (2010).

¹¹Sondergaard and Murthi (2012).

¹²Dobryakova and Froumin (2010).

¹³Results are reported in detail in Commander and Denisova (2012). We decided to focus on recruitment firms, as companies tend to rely on such firms to fill vacancies that are specialised and/or difficult to fill, as well as when facing unusual hiring requirements (for example, in innovative sectors).

¹⁴In the experiment, recruitment firms answered questions about finding candidates for hypothetical openings in these sectors based on their experience and the available pool of candidates.

is relatively high compared with other emerging markets, many of these migrants are relatively unskilled workers from other states of the former Soviet Union. Certainly, the active attraction of talent to the country as an instrument of general – let alone migration – policy has been absent. Indeed, an assessment of Russia's migration policy framework in 2008, along with those of 27 other countries, both advanced and emerging, indicated that Russia's migration policy was generally very restrictive, particularly for highly skilled workers.¹⁵ Moreover, the legacy of internal controls on migration has by no means disappeared. Various incarnations of the propiska system – a system to control internal migration and residency going all the way back to the Russian empire – still persist, notably in the capital city. Evidence from our survey of recruitment firms also clearly indicated a policy regime that is generally restrictive. For high-level professionals, as well as skilled workers, the predominant view was that migration could, in principle, help to address shortages and that the simplification of procedures would make an important contribution to that process. However, respondents also indicated that one of the barriers to hiring migrants for skilled work was language skills, as knowledge of Russian was viewed as essential. Indeed, the language barrier will probably ensure that migration from outside Russia's immediate vicinity remains relatively limited. However, the combination of a relatively

restrictive policy regime and linguistic and other attitudinal constraints ensures that relatively few migrants enter the country, at least for professional work.

To understand the scale and composition of legal migration to Russia, it is possible to look at applications to the Federal Employment Service (FES) for permission to hire a migrant. These applications reflect prior discussions between employers and the employment service and thus effectively document all approved migrants. Moreover, although this information does not cover unauthorised migrants, of whom there are likely to be a fair number, it does cover the bulk of skilled migrants, for whom securing permission from the FES is important. For the purposes of this report, we analysed successful applications in 23 of Russia's major regions or oblasts, which were also covered by our survey of recruitment firms. These regions accounted for nearly 890,000 migrants – 77 per cent of the Russian total – of which more than 250,000 applications were accounted for by Moscow. In the interests of convenience, Table 6.1 aggregates the data by federal district. The information also allows a breakdown by occupation and sector. While migrants generally accounted for a limited share of employment, in some locations – notably St Petersburg, Moscow and the Far East – they made up 5 to 9 per cent of total employment. However, as regards migrants' skill levels, more than 80 per cent of requests were for unskilled

Table 6.1
Distribution of migrant workers by region in 2010

Area (Federal District or Federal City)	Profession								
	Managers and lawyers	High level professionals	Technicians and associate professionals	Clerks	Service sector	Skilled agricultural	Craft and related trade	Plant and machine operators	Unskilled
Urals	9,637	1,690	4,269	49	3,237	3,934	26,982	8,635	35,096
	<i>0.23</i>	<i>0.04</i>	<i>0.10</i>	<i>0.00</i>	<i>0.08</i>	<i>0.09</i>	<i>0.63</i>	<i>0.20</i>	<i>0.82</i>
North-West	621	185	136	2	70	50	9,911	1,836	295
	<i>0.19</i>	<i>0.06</i>	<i>0.04</i>	<i>0.00</i>	<i>0.02</i>	<i>0.02</i>	<i>2.99</i>	<i>0.55</i>	<i>0.09</i>
South	3,703	1,656	1,490	39	1,337	14,323	28,498	4,215	13,596
	<i>0.11</i>	<i>0.05</i>	<i>0.04</i>	<i>0.00</i>	<i>0.04</i>	<i>0.42</i>	<i>0.83</i>	<i>0.12</i>	<i>0.40</i>
Siberia	1,629	1,660	2,232	102	3,905	7,485	48,797	10,405	18,291
	<i>0.04</i>	<i>0.04</i>	<i>0.05</i>	<i>0.00</i>	<i>0.09</i>	<i>0.18</i>	<i>1.14</i>	<i>0.24</i>	<i>0.43</i>
Moscow	55,385	19,388	11,173	621	13,107	161	65,698	23,938	61,459
	<i>1.08</i>	<i>0.38</i>	<i>0.22</i>	<i>0.01</i>	<i>0.26</i>	<i>0.00</i>	<i>1.29</i>	<i>0.47</i>	<i>1.20</i>
Volga	2,433	1,376	1,941	19	1,993	8,145	27,111	4,468	12,908
	<i>0.05</i>	<i>0.03</i>	<i>0.04</i>	<i>0.00</i>	<i>0.04</i>	<i>0.15</i>	<i>0.51</i>	<i>0.08</i>	<i>0.24</i>
Far East	2,591	2,176	4,522	43	3,014	5,227	28,910	5,068	8,341
	<i>0.23</i>	<i>0.19</i>	<i>0.40</i>	<i>0.00</i>	<i>0.27</i>	<i>0.46</i>	<i>2.54</i>	<i>0.45</i>	<i>0.73</i>
St. Petersburg	10,885	3,580	4,991	393	16,138	273	55,356	21,879	76,219
	<i>0.54</i>	<i>0.18</i>	<i>0.25</i>	<i>0.02</i>	<i>0.80</i>	<i>0.01</i>	<i>2.75</i>	<i>1.09</i>	<i>3.78</i>
Central	2,130	1,600	1,371	122	1,305	4,551	22,614	7,349	18,390
	<i>0.14</i>	<i>0.10</i>	<i>0.09</i>	<i>0.01</i>	<i>0.08</i>	<i>0.29</i>	<i>1.45</i>	<i>0.47</i>	<i>1.18</i>

Source: Rosstat, survey data and authors' calculations.

Note: Numbers in italics are in per cent of the total employment in a given region.

¹⁵See Economist Intelligence Unit (2008), where Russia was ranked 42nd out of 61 countries, despite scoring relatively highly in terms of its need for migrants.

Second, there is scope for greater experimentation with the management and funding of schools throughout Russia. This is different from the piecemeal decentralisation – largely with schools continuing to be controlled and financed by the state – that has occurred over the past 20 years. The question of the role that government can play in helping to develop new capabilities is key. Indeed, a common characteristic of countries – such as India or China – that have been able to move into new, higher-value products and services has been strong, sustained investment in human capital, with much of that investment being made by the public sector. Increasingly, however, governments have adopted permissive strategies allowing the entry of private providers of education and training. In India, for example, the rise of the software sector was initially attributed to government-led investment in higher education and, in particular, emphasis on building a strong tertiary sector focusing on the natural sciences and management.¹⁷ However, the government's subsequent willingness to allow private providers of training and educational services to enter the market for the acquisition and upgrading of skills also played an important role.

In the areas of primary and secondary education, recent experimentation with different institutional formats for the management of schools in countries such as Sweden and the United Kingdom offers interesting models that could potentially be applied, at least initially, in certain parts of Russia. The thing that these approaches have in common is their willingness to tolerate greater diversity in the supply of education, often with the state continuing to provide financing and overseeing the curriculum. In the United Kingdom, for example, a central aim of the new academy programme is to elicit resources from and participation by constituencies that have hitherto been neglected by the public-sector education system. These include companies, individuals, parents and interested parties at the local level, as well as the teachers and public-sector officials who have been the main players in the system until now. Mixing decentralisation with a shift towards greater diversity in terms of the management and control of the education system does not necessarily imply privatisation, merely a move away from a purely public-sector operation. Although the results of these initiatives – whether in Sweden, the United Kingdom or the United States, with its Charter Schools – are by no means conclusive (not least because these are relatively recent initiatives), some of the early findings do suggest that these sorts of innovation can be helpful and, indeed, relevant for a country such as Russia. Indeed, the great diversity of Russia in terms of culture and, at times, language suggests that related policies in the fields of decentralisation, empowerment and diversification of supply will be highly relevant. Transparency through public participation and feedback mechanisms – not least feedback from potential future employers – is also essential.

In some regions, there is already evidence that certain steps are being taken along these roads. In Kaluga, for example, where an automotive cluster has been formed, investors have found massive deficiencies in terms of training owing to the

poor state of the vocational training system. To try to ensure an adequate supply of workers for their operations, large foreign companies investing in the region have joined up with the regional government to set up dedicated training centres and programmes. These have largely been state-funded, but there has also been some support by the firms in question. More generally, complementary measures – such as tax incentives encouraging workers and firms to take up training opportunities – can also be helpful in such situations. These have generally proved to be more fruitful than attempts to set up publicly managed training programmes. Building on good local initiatives, what is now needed is a far wider programme of educational renewal along the lines suggested above that targets not only vocational education, but primary and secondary education more generally across Russia.

Third, aside from tackling persistent and hard-to-shift obstacles relating to students' family backgrounds, there are a number of important policy options that are likely to help improve students' education. Some involve the provision of additional resources (not least to even out some of the regional imbalances indicated above), potentially facilitating lower student-teacher ratios, as well as greater autonomy for schools. Other desirable changes include improvements in curricula – which appear to be positively correlated with educational scores¹⁸ – as well as concerted efforts to improve the quality of teacher training and instruction. Variation in scores across locations (and probably across regions) is also substantial. Students in larger urban centres perform markedly better than those in smaller settlements, again suggesting that there is scope for policy-driven improvements aimed at reducing this significant spatial variation in educational outcomes.

Fourth, another issue of concern relates to equal access to education. A student's background appears to be a key factor in educational performance in Russia and other transition countries, much more so than school resources or institutional arrangements.¹⁹ Besides fostering inequality, this highlights the need for policy reforms to help secure funding and improve access to education (including pre-primary education) for children

20%
of respondents to Life
in Transition Survey
(2010) were required
to pay for services
that should be free
in public schools

¹⁷The most commonly cited examples are the creation of the Indian Institutes of Technology and Management in the 1950s and 1960s.

¹⁸These findings are drawn from a background paper for this report; see Amini and Commander (2012).

¹⁹Amini and Commander (2012); Ammermueller, Heijke and Woessmann (2005).

from less well-off families. Furthermore, poorer regions need to be assisted by means of financial transfers from central government. The sustainability and fairness of the financing of education can be improved through the use of funding formulae based on expenditure per student. This can help to combat poverty by focusing public educational resources on the poor.²⁰

Fifth, the available evidence indicates that a significant part of Russia's educational infrastructure, comprising school buildings and other facilities, requires renewal and further investment. Although recent initiatives in countries such as the United Kingdom have involved investment in schools infrastructure by private sponsors or companies, sometimes as part of public-private partnership (PPP) arrangements, these are unlikely to be a good option for Russia at the present time. This is because PPP-based funding needs a highly transparent and contractually enforceable framework. This is not present in Russia, which would probably result in any such initiatives being open to abuse, whether through the diversion of resources or the accumulation of excessive debt by schools or local education authorities. Consequently, it would be better, at this stage, for investment in educational infrastructure to remain in public hands, with stronger oversight wherever possible (including oversight by the management and boards of individual schools).

Lastly, migration policy could be used more actively to address specific skills gaps in the short and medium term. In particular, migration restrictions could be further reduced for highly skilled professions where labour is in short supply, in line with the approach adopted by a number of emerging market and advanced economies. Reducing remaining restrictions on internal labour mobility – the legacy of the propiska system – would also help to better match job-seekers' skills to available vacancies. The success of migration policies will ultimately depend not only on laws and their implementation, but also on the extent to which locations where skilled labour is needed are attractive for migrants and highly skilled Russians alike. Many factors can help to make Russian cities more attractive, including a higher quality of education, health care, infrastructure and public services, as well as a better overall institutional environment, as discussed in Chapters 3 and 4.

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²⁰World Bank (2000).



07:

Innovation in Russia

By most measures, Russia lags behind advanced economies – as well as some emerging market economies, such as China – when it comes to innovation. This is particularly true of private companies. Russia is held back by its poor protection of intellectual property rights, the limited availability of finance in certain sectors, the limited complementary investment in information and communication technology, its skills gaps, and the low efficiency of public research and development (R&D) activity. For innovation policies to succeed, stronger links need to be established between public R&D and market demand, incentives for private R&D need to be strengthened, and the protection of intellectual property rights needs to be improved.

KEY FACTS:

1% of Russia's national income is spent on R&D, well below average for OECD countries

75% of R&D is conducted by public institutions

600 start-ups were created by 150 institutions (mostly universities) at the end of 2010 due to new legislation

Innovation in Russia

1. Introduction

Russia continues to score relatively poorly in terms of innovation in most international rankings of economies. In 2011, for example, the World Economic Forum ranked Russia 71st out of 142 countries with respect to innovation.¹ While the country was ranked higher in terms of innovative potential, actual outcomes were a long way below potential. As a consequence, the country stood significantly lower than other leading emerging markets in the rankings. These measures (as well as other indicators) suggest that a considerable gulf continues to separate the country's policy objectives – which are notionally designed to make technology and innovation the centrepieces of Russia's diversification and modernisation programme – and realities on the ground.

There is, of course, widespread agreement that the way that economies achieve productivity growth is through innovation. Most emerging markets (including Russia) can be expected to innovate more through imitation than through the commercialisation of cutting-edge inventions. This has certainly been the dominant experience in Asia, where such activity has been centred on large firms benefiting from economies of scale, limited competition and firm entry, and access to long-term financing from banks. Indeed, most available evidence shows that larger firms and incumbent firms are better at innovating through imitation than smaller firms and new entrants. Innovation models centred on invention either at or close to the technological frontier are, in contrast, associated with higher entry rates and greater competitive pressures, with innovation less concentrated in large firms. They are probably also associated with different financing patterns.

In Russia, however, the assumption that the imitation model will apply, with large incumbent firms dominating the sector, is belied by certain features of the Soviet legacy. It is certainly true that the Soviet era saw cutting-edge innovation in some sectors, but this activity has tended to wane over the last couple of decades. Moreover, the production landscape has been dominated by a need to restructure or close many of the larger and less competitive firms, particularly in manufacturing. In this context, Russian innovation is – by contrast with much of East Asia – less likely to emerge in large firms with market power. However, as we shall see, the Russian government's policy approach to innovation has been somewhat schizophrenic. On the one hand, it has implicitly favoured the imitation model by favouring large conglomerates and national champions with preferential access to financing (as well as political patronage). And on the other hand, it has also tried to set the stage for the emergence and proliferation of cutting-edge innovators, particularly small firms operating in competitive markets, whether domestic or foreign. The results to date have been correspondingly mixed.

Although Russia has provided a relatively stable economic environment over the past decade, there is broad agreement that the economy has largely failed to innovate and increase productivity. Furthermore, there is also a fair degree of consensus regarding the factors inhibiting greater innovation in Russia. These include poor protection of property rights, the fact that financing is hard to secure (particularly for smaller companies), poor economic institutions, limited complementary investment (in the field of information and communication technology [ICT], for example),² an education system that lags behind those of other countries, and inefficient public research and development (R&D) activity, with limited spillovers to the rest of the economy.

There are, however, widely differing views concerning the means of rectifying these failings. To date, the dominant approach espoused by government has been the favouring of publicly driven and financed top-down initiatives. The state has played an activist role as regards funding, the provision of information and the clustering of activity. This raises the obvious question of whether Russia's relatively low innovation rates can be attributed mainly to major market failures, requiring significant public intervention and funding, or whether other factors also play an important role.

This chapter addresses these issues. It starts by looking at where Russia currently stands in terms of innovation, before turning to the key question of what explains these indicators and rankings, including the role of public policy. It then looks directly at the types of policy that could help Russia to remedy its current low levels of innovation. The focus of this chapter is on innovative capacity (particularly the supply of innovation), infrastructure and information/coordination. The challenges in terms of human capital have already been addressed in Chapter 6, while Chapter 8 looks in detail at the specific issue of how to finance innovation.

2. Russian innovation from a comparative perspective

Russia currently spends around 1 per cent of its national income on R&D. This is significantly below the average for countries belonging to the Organisation for Economic Co-operation and Development (OECD), let alone the levels seen in certain European and Asian economies, as well as Israel. This reflects the country's income level, as well as its current output structure and the R&D-intensity of economic activity. It also reflects the government's preferences in terms of spending.

Why are R&D-intensive activities underdeveloped in Russia? A large body of cross-country evidence shows that innovation is determined by three related factors.

The first concerns the political and economic institutions that account for much of the business environment. Charts 7.1 and 7.2 provide data for a large number of countries, relating measures of economic institutions (taken from the Heritage Foundation) and measures of political systems (taken from Polity IV) to a common measure of innovation: R&D expenditure.⁴ These show that better economic institutions and higher levels of democracy tend to be associated with increases in R&D.⁵

¹ World Economic Forum (2011).

² While mobile telephones are widely used, other ICT-related indicators (such as access to and use of PCs and the internet) continue to show far more limited use.

³ Israel spends nearly 5 per cent of its gross domestic product (GDP) on R&D, while Finland, Japan, South Korea, Sweden and Switzerland spend between 3.0 and 3.5 per cent of GDP.

⁴ Of course, R&D and innovation are not the same thing. However, R&D expenditure is widely used for this purpose, as it can be measured relatively easily and is available for a large number of countries.

⁵ Note that these scatter graphs exclude low-income countries, where R&D expenditure is generally either minuscule or absent entirely.

Second, innovation depends on the supply of finance, inputs and knowledge, as well as the market structure. A strong education system capable of producing both innovative talent and an adequately trained supportive labour force is essential. Experience also indicates that innovation is closely linked to scientific knowledge and that much of this knowledge tends to be generated in publicly financed entities, whether universities or specific research institutions. Moreover, the evidence points unequivocally to the key role played by private companies. Successful, innovative economies also tend to be associated with greater turnover of firms, as new firms enter and failing companies exit.⁶

Third, innovation ultimately relies on demand for the products or services generated. This link tends to be more highly developed when sources of invention – such as universities – have good channels linking them to potential users or entities that are able to commercialise their products or services. However, this

fundamental market discipline is often neglected by governments seeking to sponsor innovation.

In addition to R&D spending as a percentage of GDP, commonly used measures of an economy’s innovative ability include the number of researchers, the number of patents that are lodged, the ratio of applications to patents granted and innovation counts. Charts 7.3 to 7.7 provide information on these indicators, as well as providing details of the percentage of exports accounted for by ICT goods and services, an indicator of the extent to which Russia has shifted into higher-technology activities.

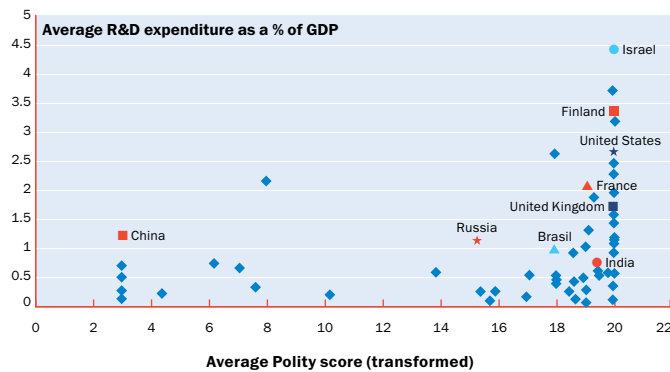
The charts, in which Russia is compared with other leading emerging markets (as well as Israel, a country noted for its innovation), show mixed results. In terms of ICT goods and services as a percentage of exports, Russia lies well below the leading countries (China in the case of goods, and India and Israel in the case of software). As far as patents are concerned, Russia enjoyed a boom in applications in the early 1990s (presumably reflecting a stock of innovation accumulated during the Soviet period, which had not previously been commercialised), followed by a decline. Over the last decade patent applications have been stable at around 25,000 a year, which is far less than in China, but more than in other emerging markets and (tiny) Israel. The success rate for patents – as measured by the ratio of patents granted to applications submitted – is similar to the mean for the sample at around 60 per cent.

At around 1 per cent of GDP, Russia’s R&D expenditure is significantly lower than that of Israel, but not markedly different from that seen in other emerging markets. However, most of that spending is carried out by publicly funded or directed institutions. Indeed, nearly 75 per cent of all R&D is currently conducted by public organisations (such as research institutes in specific industries), with the bulk of funding coming from the federal

1%

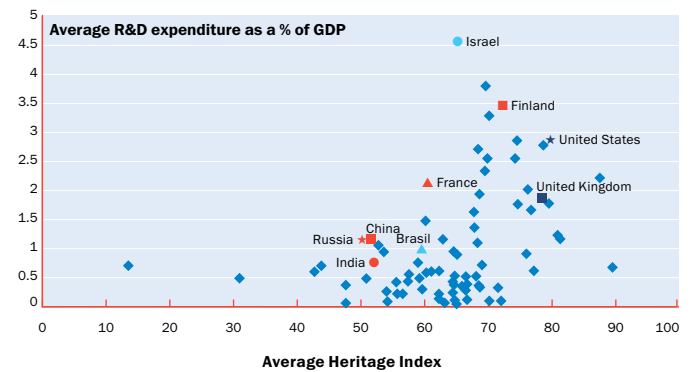
of Russia’s national income is spent on R&D

Chart 7.1 Political institutions and innovation: 2000-10



Source: World Development Indicators and Polity IV.

Chart 7.2 Economic institutions and innovation: 2000-10



Source: World Development Indicators and Freedom House.

⁶This forms the core of much of modern growth theory; see, for example, Aghion and Howitt (1998).

⁷See, for example, Canning (2004).

⁸Aside from PISA data, these include data from the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS).

⁹See the description in Anderson et al. (2010). The primary sampling unit is the school.

budget.⁷ In other words, R&D in the business sector is, in fact, mostly funded and conducted by government agencies that are organisationally separate from the companies themselves. Company-level spending on R&D accounts for less than 9 per cent of expenditure, resulting in weak company-led innovation. This is despite the company landscape still being dominated by large firms, which generally account for the largest share of R&D (accounting for more than 70 per cent of R&D in OECD countries, for example).

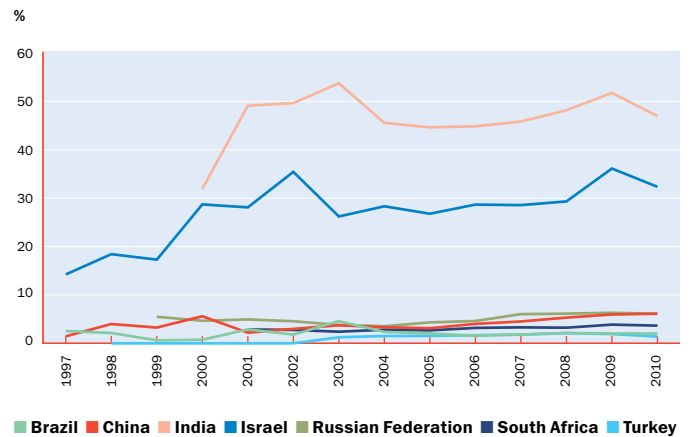
The fact that, in Russia, relatively little R&D is conducted in these companies can be traced not only to historical organisational factors, but also to weak incentives to invest in innovation. Neither does it appear to be the case that large firms provide a market for innovation originating in small and medium-sized enterprises (SMEs) or innovation stemming from outside the country. One recent estimate suggests that innovative SMEs – defined as those with significant potential in the fields of science and technology – account for no more than 2 per cent of the overall SME sector.⁸ The government’s focus on stimulating high-technology sectors may also have deflected attention away from the need to increase innovation levels in existing companies.

It remains difficult to gain a detailed picture of innovation carried out at company level, as reliable time series data are not available. The fifth round of the Business Environment and Economic Performance Survey (BEEPS), which was conducted by the EBRD and the World Bank in 2011-12, found that roughly one-fifth of the manufacturing firms sampled carried out some form of R&D, although the actual content of that spending was not indicated. The survey also shows that in the three-year period from 2008 to 2011 almost 40 per cent of firms introduced a new product.

75%

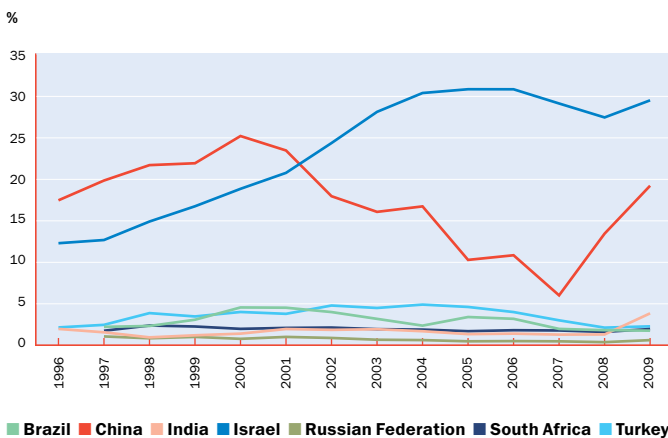
of R&D is currently conducted by public institutions

Chart 7.4 Exports of ICT services as a percentage of total exports of services



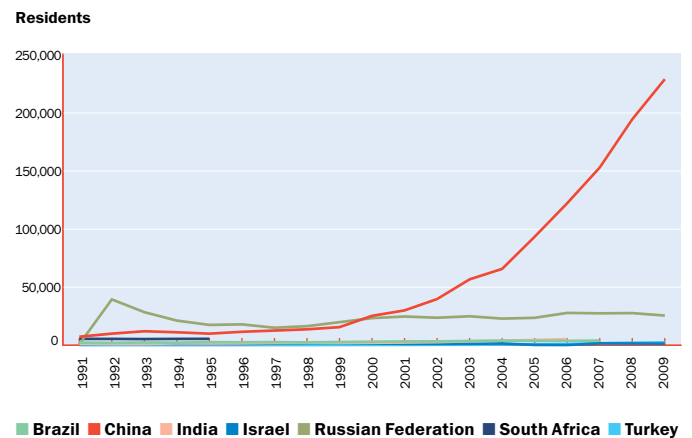
Source: World Development Indicators.

Chart 7.3 Exports of ICT goods as a percentage of total goods exports



Source: World Development Indicators.

Chart 7.5 Patent applications by residents



Source: World Development Indicators.

⁷ See Dezhina (2011), who calculates that federal funding accounted for more than 66 per cent of public R&D by 2009, with that share rising. That compares with 16 per cent in Japan, 28 per cent in the United States and 38 per cent in France.

⁸ See OECD (2011), p. 29. That report argues that SMEs account for around 12 per cent of both GDP and employment, suggesting that innovative SMEs account for a tiny percentage of output.

Table 7.1 explores the relationship between firms' productivity (measured in terms of sales per employee), the introduction of new products and spending on R&D. This exercise controls for the size of the firm (measured by the number of employees), the number of competitors and the industrial sector. The table indicates that introducing a new product is, in all cases, associated with increased sales, even when controlling for firm size, the number of competitors and whether the firm is an exporter (which is itself strongly associated with higher productivity levels).

This does not necessarily imply a causal relationship – it could just reflect the fact that successful firms tend both to enjoy

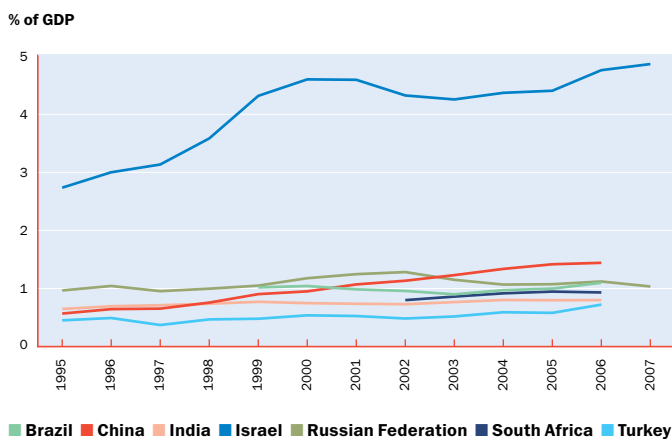
higher productivity levels and to introduce new products – but it does suggest that innovation and increased sales go hand in hand. Conducting some form of R&D is not, however, strongly associated with companies' performance. Evidence from the BEEPS survey also showed that innovating firms expected significantly stronger sales growth in the future. In fact, innovation appears to be the only robust predictor of firms' expectations as regards growth.

Although Chart 7.7 shows a very large pool of researchers relative to other countries, this legacy of the Soviet system is also notable for its ageing population and the relatively small inflow of young researchers in recent years. Furthermore, simply using quantitative indicators looking at numbers of scientists or researchers is inadequate. One alternative is to try to measure relative specialisation, looking at a country's share in publications in a given field – for example, mathematics – relative to that country's overall share in the world's scientific publications. This exercise shows that Russia has specialised strongly in chemistry and research concerning the Earth and space, as well as in physics and, to a lesser extent, mathematics.⁹

Interestingly, these are fields in which the United States has specialised less – indicating some possible complementarity¹⁰ – but areas in which other leading emerging markets, notably India and China, have also developed some specialisation. Taking this further and looking at the impact of individual publications,¹¹ the picture changes somewhat. In all fields, the impact of Russian publications is fairly limited compared with the United States, India, China and Brazil, suggesting issues relating to the quality of Russia's scientific research. That said, there are exceptions to this, including successful attempts to create new private research universities in specific fields (see Boxes 7.1 and 7.3).

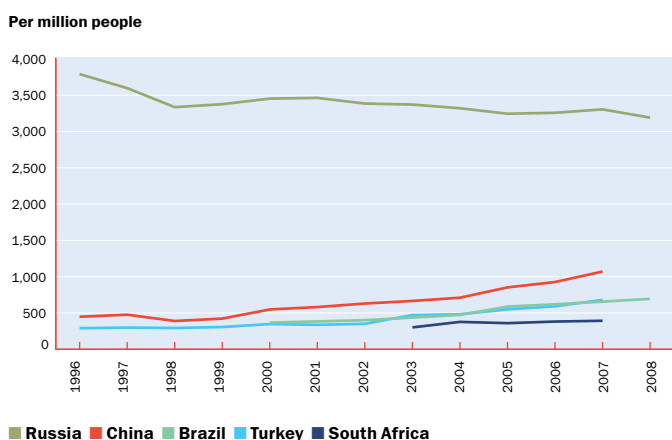
All in all, Russia's ability to innovate has been fairly limited, despite some positive features of the Soviet legacy. Particularly troubling has been the weakness of company-level innovation. This is consistent with evidence presented in other chapters pointing to problems in the business environment and relatively low turnover rates for firms. Public-sector institutions have continued to account for the majority of R&D, and this has ensured relatively weak links between R&D spending and the application of that research. Companies have increasingly acquired new technology through the importing of foreign capital goods, but even there acquisition levels remain low. R&D conducted by foreigners (R&D conducted by multinationals, for example) also accounts for a very small share, despite attempts to attract foreign investors by setting up special economic zones (SEZs) for technology (in Dubna and Zelenograd, for example). Furthermore, given that foreign firms have played a major role in innovation in other transition economies through local R&D operations and co-invention, this relative absence probably comes at considerable cost to Russia.¹² The new Skolkovo initiative, which aims to establish an "innovation city" near Moscow, is the most recent attempt to address this problem. We now turn to the main strategic and policy issues relating to innovation in Russia.

Chart 7.6
R&D expenditure as a percentage of GDP



Source: World Development Indicators.

Chart 7.7
R&D researchers per million residents



Source: World Development Indicators.

⁹These indicators are calculated by Athreye and Prevezer (2008) and include data up to 2004.

¹⁰This may, of course, be attributable in part to some offshoring of R&D, and there is some limited evidence suggesting that this may have been a significant explanatory factor for Russia.

¹¹Athreye and Prevezer (2008) calculated the average impact of publications on the basis of the number of times that journals containing scientific papers were cited, but this did not generally include Russian-language publications.

¹²The World Bank (2011) presents some evidence on the way in which foreign firms have contributed to innovation.

3. Role of the public sector in innovation

As noted above, public institutions and spending dominate R&D in Russia, accounting for nearly 75 per cent of all R&D. This is very different from the situation observed in advanced economies and differs considerably from that seen in many other emerging markets. R&D is dominated by the three components of the publicly funded system, namely: (i) the government sector, in which the academies of science account for the majority of such activity; (ii) higher education, including universities; and (iii) the significant number of industry-specific R&D organisations. While the various academies were historically the leading research entities in Russia, several decades of limited and/or erratic funding, combined with organisational failings, have led to a widespread deterioration in the quality of research, accompanied by the emigration of some leading researchers. Historically, only limited research has been conducted in universities. The

government has recently introduced a number of policy changes aimed at encouraging more research through the creation of “research university” status, which is linked to additional funding. In addition to granting that special status and financing to Moscow State University and St Petersburg State University, the federal government has also put resources, both directly and indirectly, into two business schools – Skolkovo in Moscow and the Graduate School of Management in St Petersburg. It is too early to tell whether these recent initiatives have been successful. Neither business school has, as yet, been able to gain a place in international rankings for business schools. In 2009 Russia’s Education Ministry agreed a process for the evaluation of R&D organisations, but this will probably not be implemented before end-2012.

The major funding organisations for basic research are the Russian Foundation for Basic Research, which concentrates on natural sciences, and the Russian Foundation for the Humanities, which concentrates on social sciences. These award grants on a competitive basis. They are broadly modelled on the National Science Foundation in the United States. Their budgets are fixed by law at 7 per cent of total federal spending on science. While their procedures are regarded as largely transparent, the total volume of spending remains relatively small, as does the average grant size. In the case of the natural sciences, the average grant is less than US\$ 9,000, with grants capped at around US\$ 18,000. Aside from the low level of funding, available evidence suggests that Russian R&D spending is overly concentrated in public institutions with weak track records. Moreover, because such funding has historically been provided to established institutions, as well as being cost-based and often tied to employment levels in those institutions, there have been perverse incentives for efficiency.¹⁵ Consequently, many of these government and industry-level organisations are effectively unreformed, unproductive and immaterial to the creation of high-quality R&D. In conclusion, the public funding of basic research has failed to really act as a catalyst.

Table 7.1
Performance, expectations and product innovation:
evidence from the 2011-12 BEEPS survey

	Sales per worker as dependent variable					
Introduction of new product	0.37***	0.32***	0.32***	0.33***	0.26**	0.21*
	0.08	0.08	0.09	0.11	0.11	0.11
Log of employment			0	-0.06	-0.10**	-0.11**
			0.04	0.05	0.05	0.05
Number of competitors				0.01**	0.01**	0.01**
				0	0	0
Exporter					0.65***	0.61***
					0.14	0.15
Spending on R&D (yes or no)						0.19
						0.13
Industry fixed effects	NO	YES	YES	YES	YES	YES
Number of observations	1,017	1,017	1,017	658	657	655
R squared	0.02	0.07	0.07	0.07	0.1	0.1

	Expectation of increase in sales as dependent variable					
Introduction of new product	5.77***	5.54***	5.81***	6.42***	6.29***	5.22***
	1.04	1.06	1.09	1.36	1.37	1.39
Log of employment			-0.59	-0.46	-0.55	-0.76
			0.39	0.5	0.52	0.52
Number of competitors			0.03	0.05	0.03	0.03
					0.05	0.05
Exporter					1.35	0.34
					1.75	1.87
Spending on R&D (yes or no)						6.16
						1.9
Industry fixed effects	NO	YES	YES	YES	YES	YES
Number of observations	1,102	1,102	1,096	711	709	702
R squared	0.03	0.05	0.05	0.06	0.06	0.08

Source: BEEPS survey and authors’ calculations.

4. Reforming Russia’s research arrangements

A key element in the fostering of more effective R&D will be the improvement of incentives for innovators, notably with regard to their ability to appropriate the returns from innovation and invention. There are two parts to this. The first concerns legal enforcement. If intellectual property rights are poorly enforced – as is presently the case in Russia – it is hardly surprising that innovation remains subdued. Even in China, where R&D spending has grown substantially, evidence suggests that there have been relatively limited returns and smaller-than-expected spillovers from foreign direct investment (FDI). These outcomes can be traced, among other factors, to the weak protection of intellectual property rights. Russia joining the World Trade Organization (WTO) in 2012 may foster improvements in enforcement. The second part concerns the channels and institutional arrangements through which innovators are able to achieve returns. This section concentrates on this element, notably with regard to the

¹⁴For example, the global rankings compiled by the Financial Times for business schools’ MBA (Masters of Business Administration) programmes have a number of institutions from emerging markets in their top 20 (such as Hong Kong’s UST, China’s CEIBS, and India’s IIM and ISB), but no Russian school has even made it into the top 100.

¹⁵Gianella and Tompson (2007).

attract research institutions (including a new technical university), as well as start-ups and established companies, with a focus on five designated areas: energy efficiency; information technology; telecommunications; biotechnology; and nuclear technology. Incentives for firms to establish themselves in that area include tax exemptions and tax relief, simplified technical and regulatory rules (including simplified dealings with government ministries), and a liberalised immigration regime allowing the attraction of foreign talent. The federal government has allocated around US\$ 3 billion to this project for the period 2010-14.

Policies to foster clustering can make considerable sense. But experience also shows that success depends very much on the strength of the institutional and regulatory framework, as well as the incentives offered to companies. Reviews of international experience also suggest that innovation enclaves are less likely to lead to success than clusters that are reasonably well integrated into the wider economy. In this respect, China's experience highlights the role of such clusters in attracting FDI and increasing exports. Some of these features are replicated in certain regions of Russia (such as Kaluga, where activity is centred on the automotive sector), but this approach is rather different from the "beacon model" exemplified by a project such as the Skolkovo initiative.

6. Innovating through industrial policy

As with the Skolkovo project, the Russian government has selected a number of broad areas that are to benefit from "vertical" or "targeted" industrial policies, namely: information technology; nano-systems; medical, space and nuclear technology; and energy efficiency. These priority areas currently account for around 35 per cent of public funding. In addition (as discussed in greater detail in the next chapter), financing arrangements – notably the Rusnano initiative – have been established in order to fund ventures in these priority areas.

While experience with industrial policy across the globe has consistently emphasised the importance of appropriate "horizontal" or "framework" policies, evidence regarding the efficacy of vertical policies is far more ambiguous.²³ Arguments in favour of activist vertical policies have had to rely on sustained market failures and/or strategic cooperation between the public and private sectors, with the public sector potentially acting as a coordinator and improving the flow of information to private companies.²⁴ This can occur through a variety of channels, including advisory and business services, the promotion of trade and the establishment of long-term relationships between government and companies. One successful example is Canada's Investor Assistance Programme, which provides prospective entrepreneurs with robust assessments of the likely viability of – and returns on – potential projects. Furthermore, private producers commonly need fairly specific inputs (as regards legislation, accreditation and infrastructure, for example), which the public sector may be best placed to provide. Indeed, evidence with respect to technical regulations, national standards and certification in Russia indicates that there is currently a lack of

Box 7.2

A case study in innovation: a Moscow-based pharmaceutical company

PX is an interesting success story – an innovative pharmaceutical company that has experienced rapid growth in recent years, thanks to a combination of a unique scientific background, successful commercialisation and a focus on high-quality management.

PX is one of very few Russian companies which have been able to develop their own branded medicines, register their products and commercialise them. Indeed, the company has become a successful market player, with its own R&D, production and sales capacities. Founded in 1996 by highly regarded Russian scientists, the company has a strong line in influenza vaccines and other medicines in the fields of immunology and viral diseases. Partly owing to large government purchases of vaccines for certain sections of the population, the company's turnover increased roughly sevenfold between 2007 and 2010. Following a €50 million investment programme, the company now operates a state-of-the-art plant on the outskirts of Moscow.

The basic scientific research that led to the establishment of PX was carried out in the Soviet era, but was not effectively taken to the market until the late 1990s. Since then, the company has placed considerable emphasis on further R&D. Of its total workforce of nearly 500 employees, around 60 work exclusively on R&D. Despite the fact that the teaching of science in Russian universities is perceived to have deteriorated, leading to considerable difficulties with the recruitment of high-quality young scientists, the company manages to hire and retain the best experts in the field – perhaps because employees are motivated not only by monetary compensation, but also by the innovative nature of their work, and perhaps because opportunities outside the company are fairly limited.

The company has also been successful in managing its growth thus far – an important challenge for many innovative small firms. As the start-up became a medium-sized manufacturer, it gradually improved its management practices and governance, adopting International Financial Reporting Standards (IFRSs), hiring professional managers and establishing a board of directors.

²³ EBRD (2008).

²⁴ As argued by Hausmann and Klinger (2008) and Rodrik (2008).

Box 7.3 Skolkovo

Skolkovo Innovation City is a high-technology business area being built in Skolkovo, one mile outside the Moscow Ring Road. Announced by President Medvedev in early 2010, it aims to become an innovation hub supporting the development and commercialisation of advanced technologies and helping to accelerate Russia's transformation from a resource-intensive to an innovation-based economy. The innovation centre will be financed primarily by means of Russia's federal budget. The Russian government spent around US\$ 300 million on the project in 2011 and is expected to invest around US\$ 4 billion by 2013, not including indirect support through tax breaks for companies. The innovation city will span roughly 400 hectares, house a permanent population of 21,000 and employ 31,000 people, including commuters from Moscow and the surrounding regions.

The vision for Skolkovo is centred on five "clusters" specialising in IT, energy, nuclear technologies, biomedicines and space technologies. Skolkovo's innovation ecosystem will encompass the Skolkovo Institute of Science and Technology (SkTech), a new graduate research university established in partnership with the Massachusetts Institute of Technology (MIT), 40 corporate R&D centres, business incubators, private seed and venture funds, and a technological park housing up to 1,000 start-ups. In addition, Open University Skolkovo (OpUS), launched in 2011, is expected to act as a source of prospective candidates for SkTech's Masters and PhD programmes, as well as interns for Skolkovo's partner companies.

Resident companies will enjoy numerous privileges in terms of tax incentives (exemption from profit, land and property taxes for 10 years, a reduced rate for compulsory insurance, and benefits as regards customs duty), simplified regulations and a streamlined visa regime. The Patent Service and various government ministries will also set up offices on-site to make regulatory compliance and the protection of intellectual property easier. To encourage more start-ups to participate, the Skolkovo Foundation (the main agency responsible for the Skolkovo project) will provide start-ups with initial grants. In order to receive these grants, tax breaks and other benefits, firms must first apply for "resident status", with applications being reviewed by experts in the relevant fields.

More than 500 companies have been granted resident status so far, with more than 100 receiving grants from the Skolkovo Foundation. Around half of these have also attracted standard venture capital, mostly from Russian firms.

adequate consultation between government and the private sector regarding technical regulation, as well as an excessive number of products requiring certification.²⁵

The assumption underlying all of these types of intervention is that government is primarily there to assist – rather than direct – private firms in finding opportunities for innovation and diversification. In Russia, however, the coordination argument has been deployed in order to stimulate entry into new areas of activity where considerable fixed costs – including absent capabilities – are believed to exist. Thus far, the Russian approach seems directive in the sense that areas of activity have already been selected and accorded precedence, not least in terms of funding (see also Chapter 8). This risks repeating the countless selection failures that have littered the history of vertical industrial policy.

7. Tax treatment

Experience in OECD countries indicates that tax credits for R&D can play a positive role in increasing R&D activity, although the evidence is less clear-cut with respect to innovative output. Tax credits tend to be more effective when companies are already under competitive pressure to innovate. However, it is only relatively recently – since 2009 – that the Russian government has tried to use its tax regime to stimulate investment in innovation. Some forms of R&D spending are now given preferential treatment as regards tax, including the ability to write off spending. However, permissible expenditure has been limited to 32 "advanced" technologies and does not cover R&D in more traditional industries. Furthermore, the way in which innovation is treated for tax purposes has not always been consistent with other tax rules and regulations, so ambiguities in Russia's tax law have resulted in varying interpretations and thus a degree of arbitrariness in the application of such legislation. This seems to have led companies to avoid taking up tax benefits owing to the potential for disputes over interpretation.²⁶

Consequently, complaints by companies concern not only the lack of clarity in the drafting of tax rules, but also the relatively narrow range of R&D spending that benefits from such favourable tax treatment. In addition, legislation amending tax law has been drafted in ways that tend to lead to the unequal treatment of parties and, in particular, favour larger firms. One proposal would be to significantly extend the range of eligible R&D expenditure, thereby covering a larger number of industries. Other complementary measures that could be considered include lowering payroll taxes for personnel involved in R&D activity, as well as exemptions from land tax for organisations involved in R&D. More generally, there may be a case for tapering the introduction of taxes for start-ups in particular sectors.

8. Policy implications

Innovation in Russia has continued to lag behind other countries and there are, as yet, limited signs that this is about to change. To its credit, the Russian government has recognised the scale of the problem. This has been accompanied by a range of policy

²⁵Dezhina (2011).

²⁶See the discussion of this issue in Dezhina (2011).

64

Technology parks
existed in 2011

initiatives targeting the key drivers of innovation. In particular, innovation policy has focused on improving the standard of publicly funded research, as well as investing in infrastructure (notably through technology parks, SEZs and other mechanisms promoting clustering). The Skolkovo project is the most recent and high-profile of these initiatives. While most of these attempts to improve the climate for innovation are in keeping with practices elsewhere, some specific features of Russia's initiatives stand out.

First, the supply of high-quality research by public-sector institutions remains very limited and it is difficult to imagine any rapid improvement in this area, not least because of the incentives for younger talent to migrate and the significant difficulties that research institutions – as well as companies – face in hiring skilled personnel from abroad. These problems are further exacerbated by the insularity that pervades Russian institutions and attitudes.

Second, little attention has been paid to linking research to the market and customer demand. Indeed, for research conducted by public institutions, the incentives and vehicles facilitating this matching have been largely absent. The legal framework has begun to move in the right direction, but recent changes are yet to bear fruit.

Third, despite the fact that evidence from a wide range of countries points to the importance of company-led innovation, incentives for private companies to invest in R&D remain limited, whether in terms of tax treatment or in terms of the quality of the business environment more generally. Thus far, incentives for clustering have also proven to be of very limited benefit.

Fourth, while considerable progress has been made in terms of establishing a legislative framework that ensures adequate legal protection for intellectual property rights – notably the intellectual property rights clause in the Civil Code, which came into force in January 2008 – pervasive limitations remain in terms of enforcement. An intellectual property rights court has yet to be set up and become operational.

Fifth, the government's overall approach to the issue of innovation continues to have a pronounced dirigiste or top-down feel, with priority given to directing and funding innovation in predetermined sectors and technologies. Furthermore, it is not always clear whether these privileged sectors have been selected on the basis of a robust analysis of Russia's

likely dynamic advantages, rather than on an aspirational and conjectural basis. Recently, greater attention has been paid to providing a supportive environment allowing innovation to occur more spontaneously and allowing invention to thrive, but policy changes in these areas have been only partial and are yet to yield results.

Sixth, an economy's ability to innovate will always be determined by the set of skills available to that economy. As previous chapters have indicated, these skills are fundamentally shaped by the education and training system, the quality of which has deteriorated in Russia. The availability of high-quality management also plays a role, and Russia's immigration policy has limited the scope for using foreign personnel to fill skills gaps.

Lastly, experience in other transition countries shows very clearly that foreign companies are major players in investment in innovation, often in collaboration with local companies. This has largely been absent in Russia, to the country's detriment.

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08:

Financing innovation

Innovation requires finance during all phases of the cycle – from the birth of ideas and companies to the commercialisation of those ideas and their subsequent growth and development. Access to finance by Russian firms (including small and medium-sized companies) has improved in recent years, and a number of government-supported initiatives have been launched. However, financing for innovative firms is not yet available during all necessary phases of the cycle. State-led initiatives providing finance for innovative firms need to be balanced with private-sector co-financing, and improvements in the provision of specialist financing need to be accompanied by improvements in the overall business environment, which will strengthen demand for such funding.

KEY FACTS:

70% by 2010 the market capitalisation of listed companies in Russia stood at nearly 70 per cent of GDP

0.001% in 2010 the total value of venture capital investment in emerging Europe and Central Asia was only around 0.001% of the region's GDP

11% of respondents to the 2010 Life in Transition Survey (LiTS) tried setting up a business

Financing innovation

1. Introduction

The previous chapter discussed some of the instruments that can be used to stimulate innovation. It also showed that recent Russian policy in the area of innovation has tried to combine three main elements, namely (i) improvements in publicly funded research, (ii) enhanced incentives for large firms to invest in innovation, and (iii) a concerted attempt by government to create funding channels and other infrastructure in order to support the emergence of high-growth, high-productivity firms.

While these are not conflicting goals, this suggests that policy-makers believe that the country should be aiming not just at the imitation or adaptation of technology, but also at the development of cutting-edge technology with the aid of funding and other support for research and development (R&D). Yet if the move to such technology is to be successful, it is likely to require a business environment that differs greatly from that described in previous chapters. In particular, evidence from a wide range of other countries underscores not only the role that R&D plays in this respect, but also the complementary role that firm entry and exit plays in driving innovation. Furthermore, empirical findings suggest that the level of financial development will have a strong impact on the entry of small firms, as well as the subsequent growth of entrants.¹ Other research using evidence from Europe suggests that higher levels of venture capital funding can, in particular, be associated with increased firm entry, notably in industries with high levels of R&D.² However, the question of whether a lack of access to finance has been the main factor inhibiting the entry and growth of entrepreneurial firms in Russia has been difficult to answer in any conclusive manner. Indeed, some evidence points to other factors – mostly relating to the quality of the institutional environment – being the most important in terms of holding back the proliferation of entrepreneurial and innovative activity.

This chapter sifts through available evidence on the financing of the corporate sector, particularly with respect to innovative activity, while also critically examining Russia's current public policy as regards the provision of finance for innovation, not least its strong reliance on government-led and funded institutions.

2. Constraints on the funding of innovation

Under-investment in innovation can result from a combination of market failures, information gaps and other constraints. In particular, R&D – the most common summary measure of innovation – has properties that make it different from other forms of investment. These include the intangible nature of assets and the extent of specialisation. A further broad difference concerns risks or uncertainty with respect to prospective returns. This uncertainty tends to be greatest with new ventures or start-ups. As a consequence, R&D-intensive firms are less likely to use debt financing, even if they have access to it. Indeed, debt and

equity financing are likely to be more costly for R&D than for other investment.³ Furthermore, small and start-up ventures in R&D-intensive areas of activity tend to face higher capital costs than larger firms and firms in less R&D-intensive areas.

This has often led to policy initiatives and proposals aimed at closing the gap between private and social benefits through intervention (for example by means of tax incentives) to reduce the cost of capital for R&D.⁴ The most widely applied incentives have been tax credits, which have, in some instances, targeted small firms. Tax credits can take a variety of forms. They can, for example, go directly to companies as front-loaded investment credits or be provided to financial institutions to offset any losses from investing in small and medium-sized enterprises (SMEs). As such, they have proven to be a fairly flexible policy instrument, albeit one that has relied on robust institutional infrastructure and integrity in the tax assessment and collection system. Where this is lacking, tax credits may simply provide incentives for tax avoidance, rather than investment. They also have other obvious limitations, notably the fact that they will not be of much use to start-ups, which generally lack profits against which they can receive tax credits. This also suggests that, particularly if the objective is to stimulate the entry of new, innovative companies, grants (rather than loans) may be more appropriate, as these may be more suitable for risky activities with uncertain initial cash flows.⁵

Whether or not larger firms face a financing gap for innovation is less clear: while such firms predominantly use internal funds for R&D (as opposed to borrowing or using external equity financing), this could be driven by several factors. And there may still be a case for public support, even if larger firms are not actually cut off from innovation financing, given the positive spillovers and externalities associated with R&D.⁶ Aside from tax credits, public intervention has seen the provision of matching funds – Israel's Office of the Chief Scientist (OCS) and Matching Grants Programme with its annual budget of more than US\$ 300 million is one such example – and the setting-up of funding vehicles, such as publicly owned or invested venture capital funds, as well as funds of funds. Matching funds have been used fairly extensively in recent years, with the aim of stimulating risk-sharing with companies and the forging of closer links between sources of innovation – such as universities – and those who take innovative research to markets. However, such programmes depend both on independent and monitorable selection procedures and on the presence of a body of innovative activity to support. While this is certainly present in many advanced economies, the supply of innovation – whether actual or potential – is less evident in the case of Russia, as we have seen.

Banks have generally proved ineffectual when it comes to the provision of venture capital. This is a result of legal limitations on equity holdings and, more generally, the fact that they lack the skills needed to vet and manage risky, poorly collateralised projects. Incentive arrangements in banks may also play a part. By contrast, venture firms tend to invest heavily in information-gathering aimed at reducing the information asymmetry

¹ Aghion et al. (2007).

² Popov and Roosenboom (2009).

³ Hall and Lerner (2009).

⁴ Evidence on whether subsidies lead to incremental R&D investment and output (as measured by patents, for example) is fairly inconclusive. There is significant variation in outcomes across countries and modes of intervention.

⁵ Some grant programmes have been set up to replicate positive cash flows through subsequent royalty payments when a project becomes successful. This obviously requires close monitoring and an ability to enforce contracts, something that is lacking in many emerging markets, including Russia. See World Bank (2011).

⁶ A point made by Hall (2005).

between entrepreneurs and investors, while also providing active monitoring and advice and releasing capital in a carefully staggered manner subject to specific conditions being met. Consequently, when monitoring and information-gathering are very important, as is the case with most early-stage firms with intangible assets, venture capital is increasingly seen as an appropriate funding vehicle. Evidence also suggests that venture capital tends to be drawn to high-technology and high-growth sectors of an economy, such as information technology, life sciences and new energy technologies.⁷

For the United States, there is evidence that venture funding has had a positive impact on innovation, with innovative companies having a higher probability of receiving venture capital funding.⁸ Venture capital firms appear to select more innovative companies and help them to take products or services to market faster. This effect is particularly strong for industries where the time to market is especially important.⁹ Evidence also indicates that government policies can play a major role in determining the flow of resources to venture capital – for example, through changes to the regulation of public pension funds or capital gains tax. There is also evidence (from, among others, Israel, South Korea and Tapei China) that governments investing in privately managed funds can help to grow a local venture capital industry.¹⁰ This objective has sometimes been complemented by governments co-investing with private institutions in exchange for mandated lending targets for particular types of company (such as SMEs). Approaches involving public co-investment may be particularly appropriate for emerging markets, where both investment risks and potential returns on investment are perceived to be higher.¹¹

However, venture capital has some obvious limitations. These include a focus on a limited number of sectors (for example,

high-technology sectors), as well as the fact that only a minority of venture capital funds provide seed-stage financing (that is to say, investment of less than €1 million). As a result, most start-ups have had to rely on “angel investors” (wealthy individuals investing their own funds) and other sources in order to secure funding. Perhaps most importantly, venture capital has generally been dependent on the existence of a clear exit route, principally through initial public offerings (IPOs). Thus, a deep market for the equity of small and new firms has proven essential in allowing an effective exit. This option has, until now, remained fairly limited in most emerging markets, including Russia, owing to the small size and insufficient liquidity of their equity markets. This has materially affected the development of venture capital funding, not least by effectively restricting the exit route to trade sales.¹² We will now look in greater detail at the situation in Russia, focusing on its experience with the financing of innovative activity.

3. Russia's financing landscape

As with most other transition economies, financial markets in Russia have seen rapid growth, both in terms of credit to the private sector and in terms of the size of equity markets. Stock market capitalisation relative to gross domestic product (GDP) has increased very rapidly from a low base around 2000. Chart 8.1 shows that by 2010, the market capitalisation of listed companies in Russia had fallen back from its 2007 peak to stand at nearly 70 per cent of GDP – comparable to much of Europe, albeit somewhat lower than the United Kingdom and the two main Asian comparators. Having stood at around 10 per cent of GDP in 2000, credit to the private sector currently stands at more than 40 per cent of GDP (see Chart 8.2). The dominant state-owned bank – Sberbank – accounts for around half of the deposit base, although a number of other banks now have a country-wide

Chart 8.1
Market capitalisation in Russia and other emerging markets: 2000-10

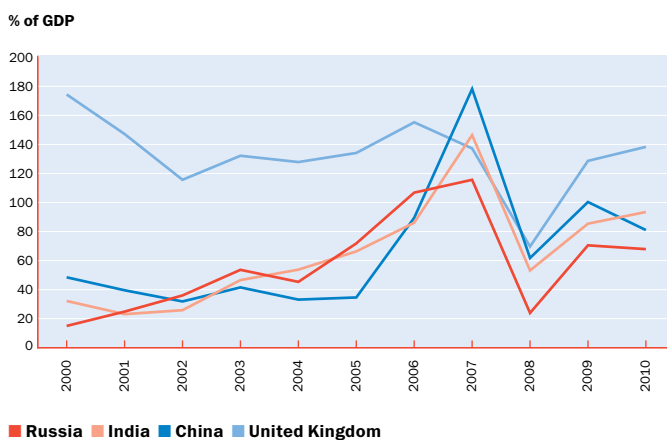
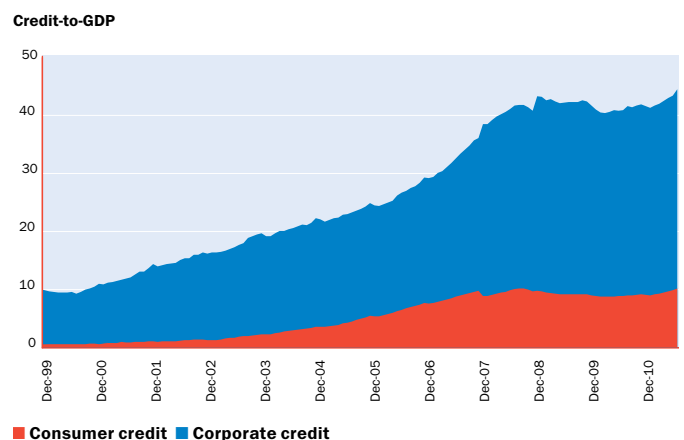


Chart 8.2
Credit as a percentage of GDP in Russia



⁷Hellman and Puri (2000).

⁸Lerner (2009); Hellman and Puri (2002).

⁹Da Rin et al. (2011).

¹⁰A point made by Lerner (2009).

¹¹An argument also made by the World Bank (2011).

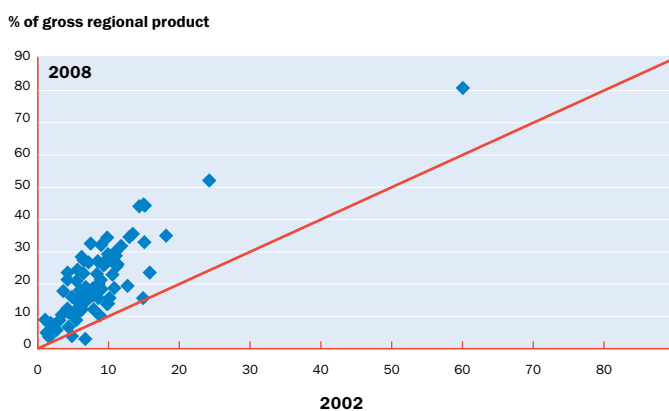
¹²EBRD (2007).

branch network and there are a large number of small regional banks in the market. Credit to companies has actually trebled in the past decade, most of which (more than 80 per cent) has been denominated in the local currency. However, most of that credit is extended to larger companies, with around one-quarter of domestic private credit being extended to SMEs. Furthermore, while the rate of growth has been rapid, the total volume of credit remains relatively small compared with countries belonging to the Organisation for Economic Co-operation and Development (OECD). Unfortunately, there is no breakdown by type of lending, so there is no information available regarding the percentage of lending targeting R&D and other indicators of innovation.

Aggregate data may hide significant variation within a country, particularly in a country as large and diverse as Russia. Indeed, many regions remain chronically under-banked. Chart 8.3 provides two snapshots (for 2002 and 2008, respectively) of corporate credit as a percentage of GDP at regional level. Aside from indicating the almost universal growth in credit across Russia's regions (as almost all points are above the 45-degree line), the very significant variation across regions stands out: Moscow has a credit ratio of more than 80 per cent of gross regional product (GRP), while some other regions have ratios of less than 4 per cent.¹³

Data on the maturity structure made available by the Central Bank of Russia suggest that medium- and long-term loans account for a significant percentage of bank lending to the corporate sector: more than 60 per cent of rouble-denominated lending has a maturity of more than one year, and more than one-third has a maturity of more than three years. This has also been the case with foreign currency-denominated lending.

Chart 8.3
Corporate credit in 2002 and 2008, broken down by region



Source: Central Bank of Russia, Rosstat and authors' calculations.
Note: Based on location of bank branches.

3.1 Composition of lending

Unlike many other transition economies, Russian banks' funding of companies remained resilient following the 2008-09 crisis, partly reflecting the lack of an inflow-driven credit bubble prior to 2008, and partly reflecting the role played by state-owned banks in maintaining credit to the private sector in the wake of the crisis. This benefited larger companies in particular, which tend, in any case, to have easier access to bank finance. However, survey evidence suggests that credit constraints for SMEs have been weakening over time (whether in terms of coverage or in terms of the scale of lending)¹⁴ and that many SMEs were able to maintain (or regain) access to finance following the crisis.

The EBRD's 2005 Banking Environment and Performance Survey (BEPS) sheds light on the composition of lending prior to the crisis in terms of the size of recipients. Using data for 220 banks in 20 countries, including 27 banks in Russia, the survey showed that larger banks tended to lend more to large firms, including state-owned enterprises, while smaller, domestically owned banks tended to have larger exposures to SMEs. The same was observed in Russia. At the same time, SMEs made up almost 45 per cent of total bank loans. More than 21 per cent of outstanding loans by Russian banks were extended to companies with fewer than 50 employees, and this was slightly higher for domestic banks. A further 23 per cent of outstanding lending was to firms with 50 to 249 employees.

While the BEPS survey has not yet been repeated following the crisis, preliminary data from the 2011-12 Business Environment and Enterprise Performance Survey (BEEPS), which covered more than 4,000 Russian firms, mostly SMEs, suggest that access to finance is not currently a major obstacle for SMEs in Russia. In that survey, only 23 per cent of firms listed lack of access to finance as a "major" or "very severe" obstacle, and less than 6 per cent reported that a loan application had been denied.

Additional evidence – derived from the Life in Transition Survey (LITS) by the EBRD and the World Bank in 2010, which covered 1,500 individuals – sheds light on several associated aspects: whether individuals have ever tried to set up a business, their success or otherwise, and their access to finance. That survey showed that 11 per cent of respondents had tried to set up a business. Of those, around half were unsuccessful. Among those who failed (78 people), a lack of financing was cited as the main reason for not setting up the business. However, of the 40 per cent who attempted to borrow in order to set up their business, nearly 75 per cent managed to secure funding, with around one-third securing funding from a bank or microfinance institution and a similar number borrowing from friends or family. In short, the evidence suggests that access to organised finance has been improving for businesses of all sizes and has not necessarily been the main impediment to businesses' establishment or growth.

While access to bank finance per se may not be the primary impediment constraining small firms and would-be entrepreneurs in Russia, the evidence also suggests that SMEs do tend to face much higher borrowing costs. According to official data

¹³Isakova and Plekhanov (2011).

¹⁴Pissarides et al. (2003).

Venture capital investment has also remained highly limited in Russia, as in other emerging markets (see Box 8.1). Worldwide, the largest locus for venture capital (relative to GDP) is Israel, followed by North America and Australasia. Indeed, in terms of the share of total venture capital, North America and Australasia account for more than half of all venture capital used for seed and start-up funding.¹⁷ This regional concentration appears to be closely linked to the depth of equity markets and the ability to launch IPOs.

The view that non-bank entities have a major role to play in financing innovative projects and help to foster the development of a more vibrant entrepreneurial economy has been adopted by the Russian government, which has set up a number of funding vehicles, such as Rusnano (see Box 8.2) and the Russian Venture Company (RVC), a fund of funds. This approach has explicitly favoured the creation and funding of government-owned or dominated non-bank vehicles. In the

case of RVC, up to 75 per cent of funding is supposed to be provided by that entity, with the rest being contributed by private investors.¹⁸ To date, 12 RVC--backed funds have been established, with total capitalisation of around US\$ 900 million, of which RVC's share is around 60 per cent. Some investment has been carried out through funds with no significant outside participation. For example, RVC has a 99 per cent share in the RVC Seed Fund, an investee fund established in 2009 which targets seed-stage investment.

A further initiative set up in 2011 is the Direct Investment Fund, which has US\$ 10 billion of capital provided by the government and is managed by a subsidiary of the state-owned development bank Vnesheconombank (VEB). Its aim is to co-invest with foreign investors, who will take a minority stake in large projects. This requirement appears, in principle, to be a good way of trying to ensure that funded projects have strong commercial potential. It also suggests that the government's

Box 8.2 Rusnano: a description

In 2007 the Russian government set up Rusnano with an initial investment of 130 billion roubles (then in excess of US\$ 5 billion). Subsequently, Rusnano has raised a further 33 billion roubles by selling seven-year bonds backed by government guarantees, as well as securing 10 billion roubles in long-term bank loans, again guaranteed by the government. As regards its portfolio, just over 100 projects had been approved by end-2010, the bulk being in manufacturing. Eight projects were aimed at establishing Russian and/or international venture capital funds, while four projects aimed to establish nanotechnology centres. Rusnano also seeks to raise human resource potential for innovative activity in the nanotechnology sector through training and professional development. It also aims to stimulate demand for innovation by establishing formal links between product manufacturers in the nanotechnology industry and the main market participants, their suppliers and customers. Recently, the explicitly commercial side of the fund has been separated from these other supportive activities.

The projects approved and financed by Rusnano fall within a few main sectors: manufacturing, infrastructure, educational programmes and joint ventures. In manufacturing, most recent projects are

reported to have been in high-technology sectors such as nanomaterials, nanomedicine and nanophotonics. In the area of infrastructure, the main idea is to create nanotechnology centres, with projects being established to date in Kazan, Zelenograd, Ulyanovsk, Troitsk, Tomsk, Novosibirsk and Yekaterinburg. In the field of education, Rusnano has been involved in 38 educational programmes focusing on advanced training and professional development. Eight venture capital investment funds were also created between 2008 and 2010. Of the nearly 63 billion roubles in these funds, co-financing by Rusnano accounts for just under 50 per cent. In addition, a regional fund for the development of innovative projects was established in 2010 in cooperation with the government of Perm Krai. The fund aims to raise 2 billion roubles, with Rusnano and Perm Krai each providing 750 million roubles and the rest coming from private investors. The aim is for at least three-quarters of all funds invested to be in projects with nanotechnology applications in the region. Three further venture capital funds have been launched since 2010, with Rusnano investing a total of nearly 7 billion roubles in those funds.

Rusnano was also involved in the creation of a pan-European venture capital fund in 2010 in partnership with the UniCredit Group. The

EuroTech Transfer Fund is to invest in projects involving the transfer of primarily European technology to Russia and the commercialisation of that technology. Projects with a focus on import substitution are a priority. The fund has resources totalling 15 billion roubles, of which Rusnano has contributed 50 per cent.

100+

the number of
approved Rusnano
projects



¹⁸ The ceiling for RVC's contribution is reduced to 50 per cent for biological and pharmaceutical funds.

approach to the co-financing of innovation has evolved on the basis of its experience with earlier initiatives.

Commonly cited examples justifying such intervention are the Small Business Investment Company (SBIC) and Small Business Innovation Research (SBIR) programmes in the United States,¹⁹ as well as Israel's Yozma Programme.²⁰ The last of those, in particular, is widely viewed as one of the most successful examples of intervention, with a design that has allowed in foreign partners and created appropriate incentives, while also leaving the state as a largely passive partner – one that ultimately exited the initiative, having kick-started a local private venture industry.²¹ However, if we look at other countries, experience with government funding in support of innovation has been very mixed. The overview of such experience provided by Lerner (2009) highlights numerous cases in which government intervention has been unrealistic and/or over-engineered, as well as having adverse effects on private venture funding and activity. Indeed, a common thread running through many of these episodes has been an inappropriate balance between funding and other factors (including complementary services) which are essential to the stimulation of entrepreneurship and innovation. A further common feature of many government-supported ventures has been a reluctance to conform to international standards, let alone appreciate the importance of international linkages and markets.²²

A recent study using both North American and Asian data suggests that the manner in which the government intervenes can have an impact.²³ In particular, governments can attempt to operate fully-owned venture capital funds or try to provide resources through other, less direct channels. The study shows that government-owned venture funds have performed worse than government-supported entities. Why this is the case is not entirely clear, but it is possible that government ownership has impeded cooperation with private venture funds, not least as a result of the eschewing of minority holdings. Furthermore, government-owned funds may be less adept in this domain, owing to the greater complexity of their objectives and/or political interference. Certainly, government-owned funds tend to have objectives other than maximising profits through the venture capital business model, such as investing in the local economy, stimulating local employment and creating local technological hubs and networks. Indeed, all of these objectives appear to be present in Russia. Interestingly, a relatively modest amount of government funding appears to have improved performance in recipient firms relative to instances where funding was derived solely from private venture capital. This probably suggests a healthy dynamic in which government support remains disciplined by the market, while co-existing with private funding. Furthermore, part of the reason why some government-supported programmes have had a positive impact is the fact that they have been able to signal to private investors the quality of a project and/or firm. This signalling has triggered additional resources. In these instances, government support has acted as a catalyst.

An obvious associated issue concerns the question of whether

publicly owned funds complement or act as a substitute for private venture capital. Evidence from other countries suggests that public resources can indeed help to increase private involvement and thus complement private venture capital.²⁴ In Russia, however, the evidence to date suggests that growth in resources provided to publicly funded entities has not been associated with any growth in private venture capital. Indeed, the evidence points to a decline in private venture capital activity, suggesting instead that some crowding-out may have occurred. This has been a complaint from some of the private operators still in the market.

Lastly, there has also been some use of dedicated not-for-profit agencies in the provision of lending for science-based entrepreneurship. In particular, the Foundation for the Promotion of Small Enterprises in Science and Technology (FASIE) has a budget equivalent to 1.5 per cent of the total public R&D budget. Those resources have been used for various forms of intervention, ranging from direct financial support for start-ups to the provision of information and other support services to small innovative companies. Indeed, one of FASIE's major programmes targeting start-ups is explicitly modelled on the abovementioned SBIR programme in the United States.²⁵ This has funded more than 7,500 projects to date. Although the survival rate appears to have been fairly low at around 5 per cent, the number of clearly successful projects suggests that such intervention has generally yielded fairly positive results.

7,500

projects have been funded to date by the Foundation for the Promotion of Small Enterprises in Science and Technology (FASIE)

¹⁹ Lerner (2009).

²⁰ Interestingly, this took two attempts; Israel's first attempt was a failure.

²¹ Khavul (2005); World Bank (2011).

²² Chapter 9 of Lerner (2009) summarises the main lessons and pitfalls.

²³ Brander et al. (2010).

²⁴ Brander et al. (2010).

²⁵ The OECD (2011) provides a more detailed description of FASIE and its constituent elements.

4. Policy implications

Innovation typically occurs in incumbent firms and through the entry of new firms. However, as the previous chapter indicated, relatively few incumbent Russian companies manage to innovate successfully and firm entry and exit is restricted, so productivity growth has been very limited. In the case of firm entry, part of this can be attributed to the lack of a supportive financing chain or financing infrastructure, as well as other barriers in the business environment.

First, it is clear that innovation requires finance during all phases of the cycle – from the birth of ideas and companies to the commercialisation of those ideas and their subsequent growth and development. Despite recent initiatives, financing is not yet available through the chain in Russia. Available evidence suggests that incumbent Russian firms have increasingly had access to organised credit, principally through bank finance. The net of available funding for SMEs has also widened. However, start-ups in innovative sectors with little or no collateral cannot rely on this. And for the reasons discussed above, external funding for R&D can still be highly problematic.

Second, in order to address these limitations, small grants to researchers – as discussed in the previous chapter – can be complemented by grants to entrepreneurs. In some cases, the two will overlap. However, the latter is of central importance because it is entrepreneurs that test innovative ideas or products and subject them to the discipline of the market. Experience suggests that taking an idea to market depends not just on the quality of the innovation, but also on the business model and the strategy adopted. Thus, small grants at an early stage can be particularly beneficial if they provide entrepreneurs with access to business support services and advice. This may occur through a mixture of external consultants and/or links to networks comprising other entrepreneurs. The constraint in Russia, as in many emerging markets, is the fact that this supporting infrastructure is limited and/or skewed mainly towards the provision of physical infrastructure.²⁶ Furthermore, achieving the right administrative arrangements for a grant programme will be essential. Rather than trying to organise it through a government agency or ministry, a better solution would be to establish an independent authority with governance shared between the government (as the initial provider of funds) and private-sector representatives from both local and international businesses. It is obviously essential that the process followed in allocating grants be transparent, expeditious and subject to oversight and subsequent evaluation.

Third, although the Russian government's recent focus on supporting venture funding is welcome, evidence from other countries strongly suggests that venture capital has to be accompanied by financing and other support for entrepreneurs and inventors at the earliest possible stage of the innovation cycle. Furthermore, successful instances of government involvement with venture finance have been seen where governments have taken minority stakes in privately managed

funds, rather than attempting to launch or ensure majority ownership of investment funds.

Fourth, the evidence presented throughout this report also suggests that, for existing companies, access to finance may not always be the primary constraint on innovation; government policy and other factors may impose greater constraints.²⁷ Even so, funding for early-stage companies or initiatives is largely – if not entirely – lacking in Russia. Early-stage investing, as practised in some advanced economies, involves angel investors, spin-offs and spillovers from multinational firms and remains largely absent in Russia. Addressing these deficiencies will depend, above all, on confidence on the part of potential innovators that funding will be available throughout the cycle, as well as on innovators' ability to reliably derive rents from their innovation. Patent protection and the ability to enforce contracts play a central role in this regard. In neither case is the situation in Russia particularly supportive. Similarly, for potential investors to enter and engage in early-stage financing requires adequate investor protection and an ability to reap returns over a number of years. The same deficiencies in the business environment have materially affected the willingness of investors to enter the market.

Fifth, a cornerstone of innovation policy in Russia has been the decision to give public agencies a strong direct role in the allocation of funding. Rusnano and other initiatives such as RVC are the most obvious examples in this regard. These initiatives will need to be managed carefully in order to avoid the many risks associated with government involvement in venture funding. These include a lack of transparency, the introduction of multiple objectives, weak governance and the risk that the priority sectors chosen by the government may not, ultimately, be the sectors where national comparative advantages develop most naturally. (To its credit, Rusnano has recently worked to address these risks by strengthening its governance, seeking foreign co-investment and taking a very broad view of what qualifies as nanotechnology.) Furthermore, in line with other countries' experience of government finance, the profile of the companies that these funds actually support may potentially be skewed more towards relatively mature, low-risk activity, rather than truly innovative activity. Hence, this type of government support might be perfectly consistent with commercial viability, without necessarily addressing the perceived innovation shortfall.

Sixth, there has been a broad and protracted debate about the merits or otherwise of governments using industrial policy, including the use of government-supported finance.²⁸ As we have seen above, there are indeed instances in which government finance has proven to be a successful catalyst supporting innovation and, in particular, the growth of a venture capital industry. But for every Israel, there are countless examples of countries that have tried and failed to use and manage public resources in the service of innovation and/or diversification. Thus, while it is clear that a theoretical – and even a practical – case can be made for public intervention, this has to be

²⁶ The World Bank (2011) offers a comprehensive discussion of these issues.

²⁷ See, for example, the discussion in GEM (2010). However, while financing is cited as a significant factor constraining the development of entrepreneurship, government policy and the political situation are cited as significantly more important limitations (see Figure 30 of the report, which is based on the views of experts).

²⁸ For the flavour of recent discussions, see, among others, EBRD (2008), Rodrik (2008) and World Bank (2008).

weighed against the large body of experience in this field. That experience has been mixed at best – and at worst, disastrous. With the present arrangements, the Russian government has effectively decided that market and/or coordination failures have warranted the use of “vertical” policies that target particular types of activity or sector. Yet much of this report has also shown that factors associated with the business and investment environment, as well as the extent of competition, are some of the key impediments to firms investing (including investment in innovation) and are certainly not facilitating the entry of new and dynamic firms operating in high-productivity sectors. All available evidence continues to show that entrepreneurial activity remains highly limited. While there have been a number of attempts to focus policy on “horizontal” or “framework” issues, such reforms have so far proved difficult to implement and/or sustain, as discussed in previous chapters.

Seventh, a further issue concerns the impact of public policies on private funding and investment. At this stage, it is not possible to see with any accuracy whether recent policies have led to additional investment in R&D or crowded out private investment and funding. Given the scale of the resources allocated to Rusnano, it is unlikely that no crowding-out has occurred. However, this experiment with public venture funding is a relatively recent development and has not been set up in a way that lends itself to evaluation. Designing and carrying out a rigorous evaluation of publicly funded venture funds’ activities should be a key priority for the future. Moreover, the ultimate goal should be to make initiatives such as Rusnano and RVC commercially viable without any public funding. The government could signal this intention by committing itself to selling a majority stake in Rusnano to private investors in the medium term.

Lastly, Russia is continuing to miss out on one of the most powerful sources of innovation owing to the relatively limited presence of multinational companies in its economy. Experience elsewhere shows that multinational firms can play an important role in supporting and financing innovation. This ranges from the spinning-off of ventures to the provision of key services to new entrants and sectors. These effects continue to be largely absent in Russia. The recently created Direct Investment Fund is an attempt to use a public funding vehicle specifically to promote foreign investment in Russia. It is still too early to assess the effectiveness of this initiative.

23%

of firms in BEEPS survey view access to finance as major or very severe obstacle



all available evidence continues to show that entrepreneurial activity remains highly limited



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