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## RUSSIA'S ECONOMIC DEVELOPMENT

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## Forecasting the Russian Economy for 2010–2012

By Pekka Sutela, Helsinki

### Abstract

After an exceptionally deep recession, the Russian economy has returned to growth.<sup>1</sup> The Bank of Finland expects that this expansion will, as previously forecast in March 2010, remain robust. Also Russia's imports are expected to grow quickly. Most likely, the growth rates of both aggregate production and imports will slow over the forecast period, but GDP growth is projected to remain at almost five per cent and import growth at more than ten per cent. Thus, while quick in international comparison, future growth will not reach the speed seen in the long growth spurt of 2000–8 that preceded the crisis. The level of Russia's aggregate production will reach the pre-crisis peak of 2008 in mid-2011. As always, there are uncertainties to this forecast.

### The Impact of the 2008 Crisis on Russia

In a previous paper, I emphasized the uncertainties in trying to forecast how Russia will fare in the Great Recession that began in Autumn 2008 and reached Russia almost immediately (Sutela 2009). At the time, the Bank of Finland forecast for 2009 was among the most pessimistic, expecting Russia's GDP to shrink by two per cent and imports to fall 13 per cent. In fact, the situation turned out to be much worse. GDP dropped by nearly eight per cent and imports plunged by a whopping 27 per cent. Given the relatively modest decline expected, it was only natural to forecast that the recovery in 2010 would also be slow, with GDP rebounding by one per cent and imports by two per cent. We now know that improvement in 2010 will be much faster, but from a lower base than had been expected in early 2009. One has to ask why such forecasting errors occurred, at the same time noting that the Bank of Finland's mistakes were by no means among the worst. In March 2009 the GDP forecasts covered by the Consensus Economics forecast varied from plus two to minus four per cent.

The crisis reached Russia through three paths. First, the oil price peaked at almost 150 US dollars per barrel in summer 2008, and some generally respected analysts expected the price to soon climb to the 200 dollar level. In fact, the price dove to less than 50 dollars by the end of 2008, but then recovered to 70–80 dollars, where it has remained since. Given the price formulae generally used in European natural gas imports, it was understood that the gas price would follow this trend with an average lag of 6–9 months. With an anticipated slowdown in the global economy, Russia faced a double whammy: Not only were hydrocarbons the key income item in Russia's budget and export revenue, but metal prices were expected to follow the downward trend. What is worse, Russian export volumes were expected to drop.

This was especially true for steel, which is the crucial commodity in business-cycle-sensitive activities, like car manufacturing and construction. European steel demand was halved almost overnight, which hit both Russia and especially Ukraine hard.

Second, export prices and some volumes were bound to fall. Expectations of this imminent decline had a quick impact on Russia. In fact, however, the expectations were overly dark. Though the oil price decline was steep, prices remained at their lowest levels for a shorter period than originally thought. This was due to another unexpected fact. The Great Recession almost did not affect the GDP growth rate of the large emerging economies of Asia. In China, GDP growth may well have stalled by the end of 2008, but the regime quickly launched a government-led expansion. Such a response was possible because China had accumulated huge cash reserves and clearly had more-or-less ready blueprints on how to react. Even before the crisis struck, Chinese leaders already had an understanding that in order to maintain robust growth, China's economy had to be re-oriented towards domestic demand, particularly consumption. Emphasizing the home market would help to remedy the global imbalances that were at the root of the Great Recession. Scholars will continue to debate whether the imbalances were due to excessive US demand for finance, brought about by general overconsumption and new financial instruments in the housing sector, or were caused by excess finance available from China and other surplus-generating countries, or whether the crisis was due to the failure of the international financial system and particularly the US Federal Reserve to manage the global financial flows. Available evidence points—as it usually does—to a combination of factors. Interest rates had been extremely low and finance easily available, which clearly points the finger at excess supplies of finance by the surplus-generating countries. At the same time it is difficult to deny that market structure and supervision left much to be desired. Whether the situation will change in the future

<sup>1</sup> This article is largely based on the Bank of Finland forecast for Russia in 2010–2012, released on 29 September 2010. Any errors in additional facts and interpretation are the sole responsibility of the author.

depends on a wide variety of technical and political factors. Presently, there are fewer calls for closer supervision as observers begin to grapple with the awesome technical complexity of the problem.

Finance is the third route through which the crisis hit Russia. Within Russia, a dual financial system had developed, with the large, generally creditworthy, export companies having easy access to international money markets, while domestic banks and financial institutions remained underdeveloped due to the widespread lack of trust and good customers. The Russian state was practically free of debt. Aggregate private debt also was low. Official currency reserves, among them the reserve funds accumulated since 2003, covered all foreign debt, putting Russia in an exceptional situation. On one hand, the little debt that existed was short-term and concentrated among a small number of Russian entities. That situation was understood, but most players failed to recognize the extent to which the counterparty finance of interbank markets came from abroad. In an approaching crisis, creditors have to concentrate on securing their home bases. When the global finance flows duly turned away from Russia, interbank markets, crucial to any economy, froze up, and the economy came to a sudden stop. Widely used forecasting models did not anticipate this impact and that failure caused many of the analytical errors seen worldwide.

### Russia's Response

On a general level, Russia was prepared for a crisis somewhat like the one that occurred (Sutela 2010). Russian market players had no trust in international economic arrangements. Like most other resource dependent countries, Russia had accumulated major reserves to be used both for fiscal revenue stabilization and general fiscal adjustment in case of need. Though some money was set aside for the pension system, Russia's funds were basically intended for a rainy day, not for maintaining post-hydrocarbon living standards, like in Norway. Now the proponents of such policies, especially Prime Minister Vladimir Putin and Finance Minister Aleksei Kudrin, deem their past decisions well vindicated. Still the opportunity cost of fiscal conservatism, like the roads that could have been built but were not, remains.

Russian decision-makers made the crisis steeper through conscious policy choices whose goal was systemic stability. One example was the step-wise devaluation of the ruble in late 2008, a policy that Putin personally pushed, according to insider accounts. Currency reserves declined by a third, but households, companies and banks were given time to switch their ruble holdings into foreign currency at exchange rates known to be advantageous. Official reserves were partially privatized,

but IMF analysts claim that the policy averted a banking crisis. The second key decision was to concentrate fiscal stimulus into large enterprises, including efforts to maintain one-company towns. Policy-makers recognized that this plan was economically inefficient since many of the large companies that received aid will never become competitive. But Russia's politicians thought it inevitable in order to preserve social and political stability. At the same time pensions were increased by a fourth on average in 2009 and almost by a half in 2010. As a consequence, Russian household incomes increased during the Great Recession, a situation unique in global comparison. One third of voters are of pension age, and they are among the most politically active groups. Even though pensions remain relatively low, they will impose significant spending pressure on future budgets, given that Russia mostly has a pay-as-you-go pension system financed from the budget. The future pension burden poses major fiscal challenges, as the pension system is already now basically bankrupt. Moreover, the number of young workers is shrinking—due to Russia's overall demographic problems—at the same time as life expectancy is increasing with incomes.

Existing data suggests that Russia has gone through an exceptionally sharp inventory adjustment. Statistics are unreliable here however. How large were the inventories pre-crisis, how steeply were they cut, and to what extent they have already been rebuilt to desired levels? Such seemingly technical issues are key to estimating how durable the upturn that was evident by mid-2009 actually is.

### Recovery

Russia is being dragged away from the Great Recession by the same factors that took it into it. Export prices recovered, and so did many export volumes. The world economy is satiated with liquid finance now looking for profitable employment and again accepting a larger degree of emerging market risk. The economy has returned to a consumption-based growth path. Imports have truly surged. Of course, potential growth post-crisis will be slightly lower than before the crisis, but that is due to demography, not any immediate policy variable. Russian authorities judge that they have weathered the crisis well, and complacency is returning. In fact, they made no major mistakes.

Still uncertainties abound. Things may still go wrong in the international economy. The character of the inventory cycle is a question mark, and issues of fiscal sustainability loom. An import surge is putting pressure on the balance of payments and the ruble. Current excess capacities will soon be in use again. Future growth requires greater investment than before. As was evident even

before the crisis, Russia must face two key issues: ensuring that its workers are employed in a diverse range of globally-competitive jobs and maintaining export capacity through greater domestic energy efficiency, as oil and gas production volumes will not grow much in the future. Russia's president and prime minister agree on the need to address these issues. Where disagreement arises is in defining the degree to which these challenges can be met in the absence of meaningful political democratization. Even here the differences are shades of grey and are internalized by most decision makers and advisors, rather than leading to conflict between individuals.

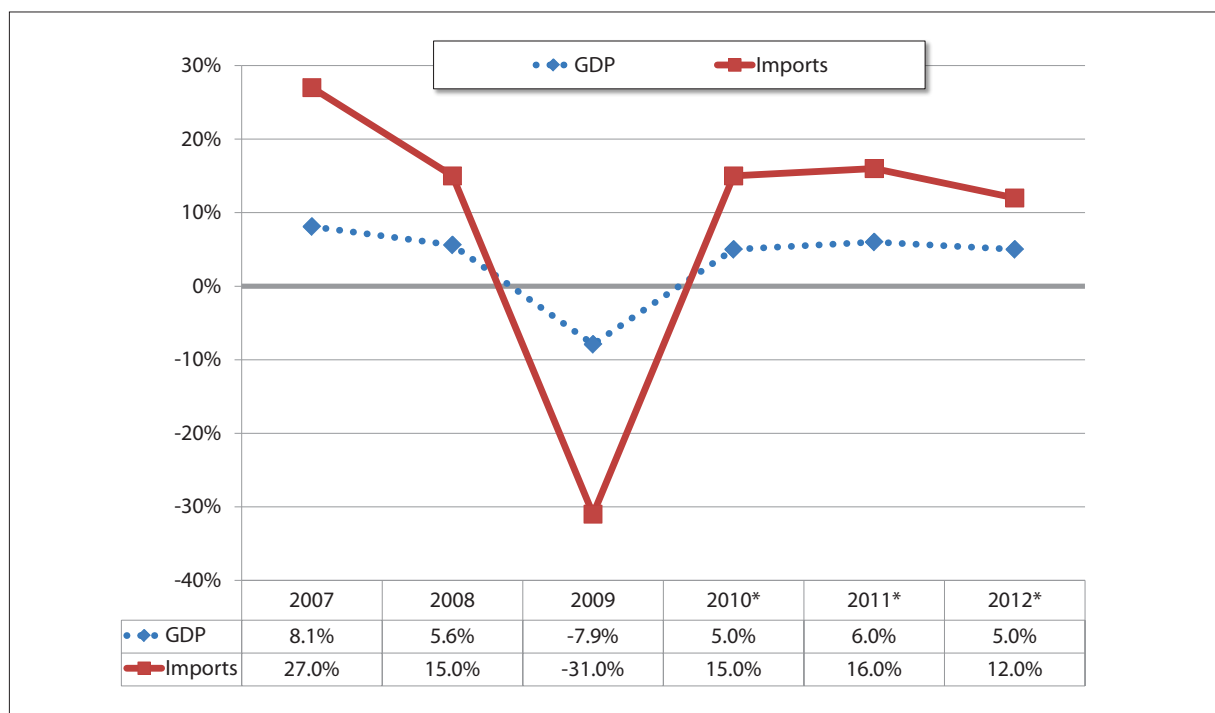
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*Recommended Reading:*

- BOFIT Russia Desk: BOFIT Forecast for Russia 2010–2012, 29 September 2010, [http://www.bof.fi/bofit\\_en/seuranta/ennuste/2010/brf210.htm](http://www.bof.fi/bofit_en/seuranta/ennuste/2010/brf210.htm)
- Sutela, Pekka: Die wunderbare Schwierigkeit des Prognostizierens. [German language; "The Wonderful Difficulty of Prognostication"], Russland-Analysen No. 182, 8 May 2009, <http://www.laender-analysen.de/russland/pdf/Russlandanalysen182.pdf>.
- Sutela, Pekka: Russia's Response to the Global Financial Crisis. Carnegie Policy Outlook, July 29, 2010, [http://carnegieendowment.org/files/russia\\_crisis.pdf](http://carnegieendowment.org/files/russia_crisis.pdf).

**Figure 1: Russia's Economic Development in 2007–2009 and the September 2010 Bank of Finland Forecast for 2010–2012, %**



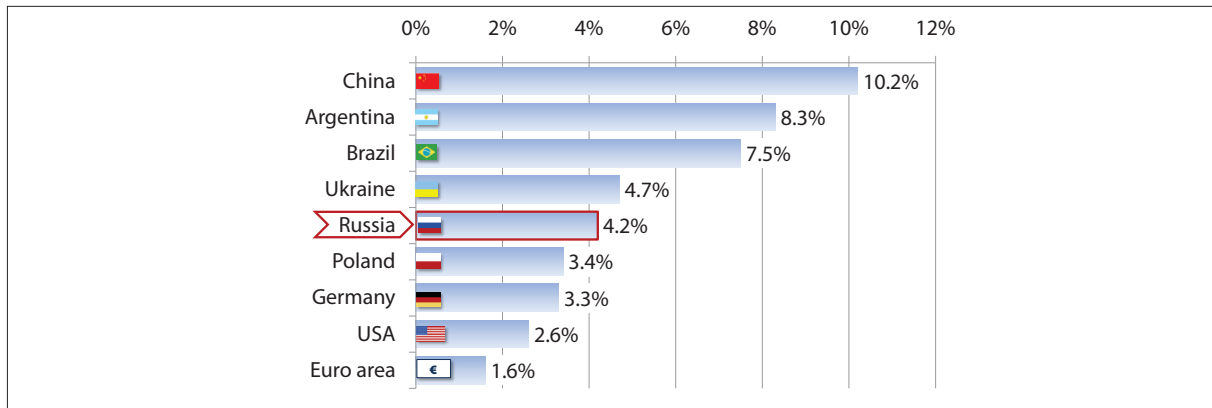
\* forecast

Source: BOFIT Russia Desk: BOFIT Forecast for Russia 2010–2012, 29 September 2010, [http://www.bof.fi/bofit\\_en/seuranta/ennuste/2010/brf210.htm](http://www.bof.fi/bofit_en/seuranta/ennuste/2010/brf210.htm)

## STATISTICS

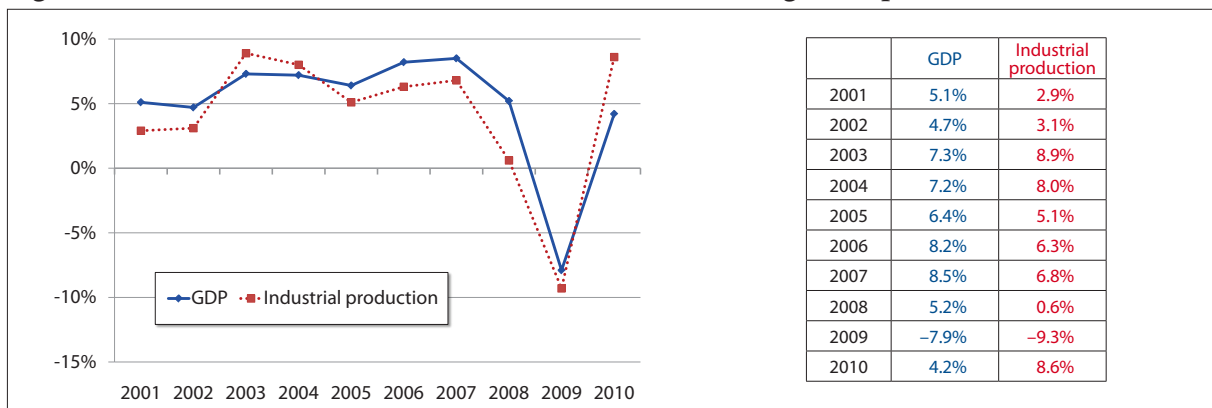
## Current Economic And Financial Indicators

Figure 1: GDP Forecasts for 2010 (% Increase on Previous Year)



Source: *The Economist*, <http://www.economist.com/markets/indicators/>, 18 November 2010

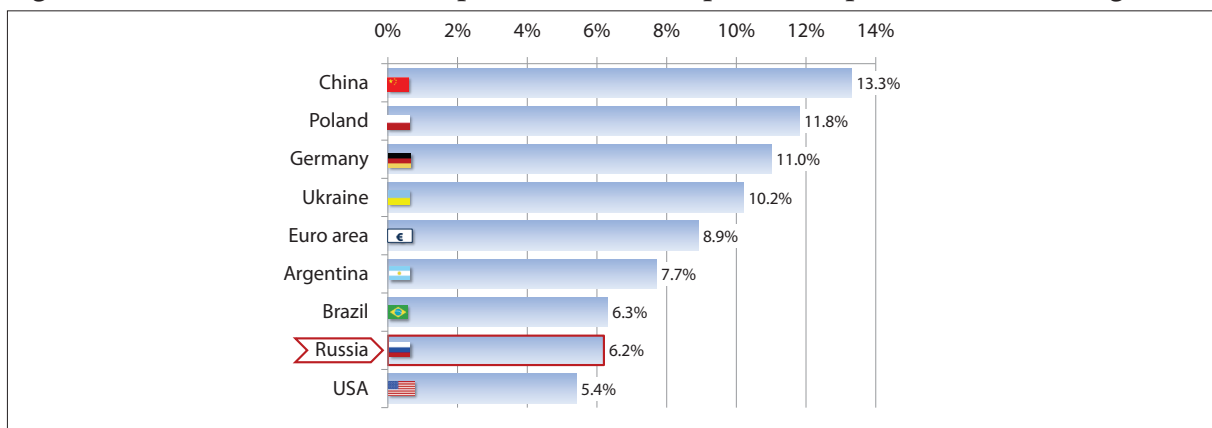
Figure 2: GDP And Industrial Production 2001–2010 (Change Compared to Previous Year, %)



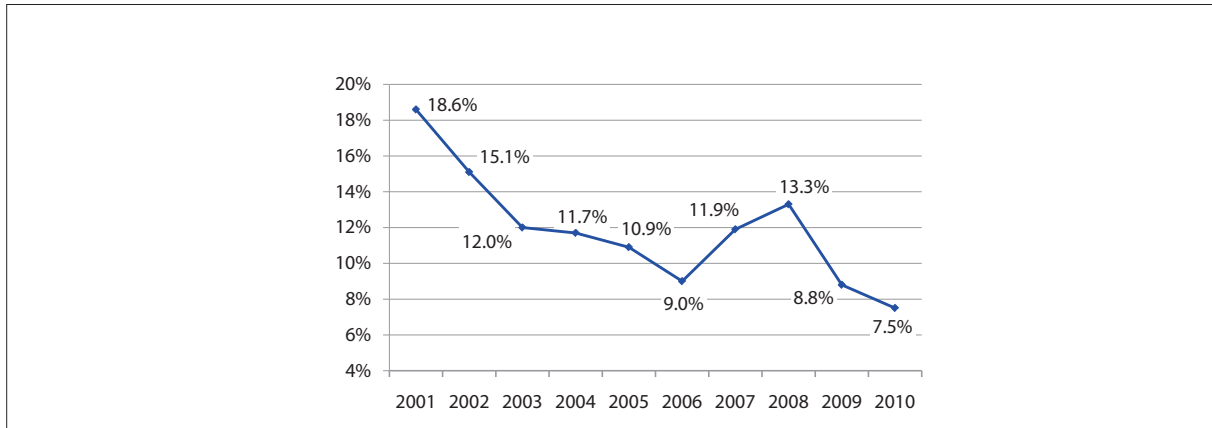
NB.: The GDP figures for 2010 cover the period from January to June and the figures for industrial production the period from January to October.

Source: Bank of Finland Institute for Economies in Transition, BOFIT Russia Statistics, [http://www.boffi/bofit\\_en/seuranta/venajatilastot/](http://www.boffi/bofit_en/seuranta/venajatilastot/)

Figure 3: Industrial Production (September 2010 Compared to September 2009, Change in %)

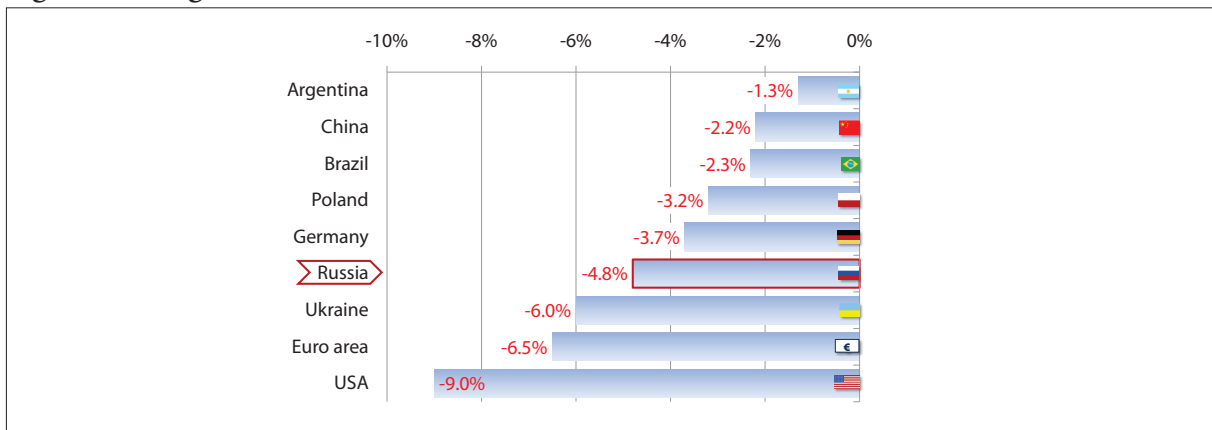


Source: *The Economist*, <http://www.economist.com/markets/indicators/>

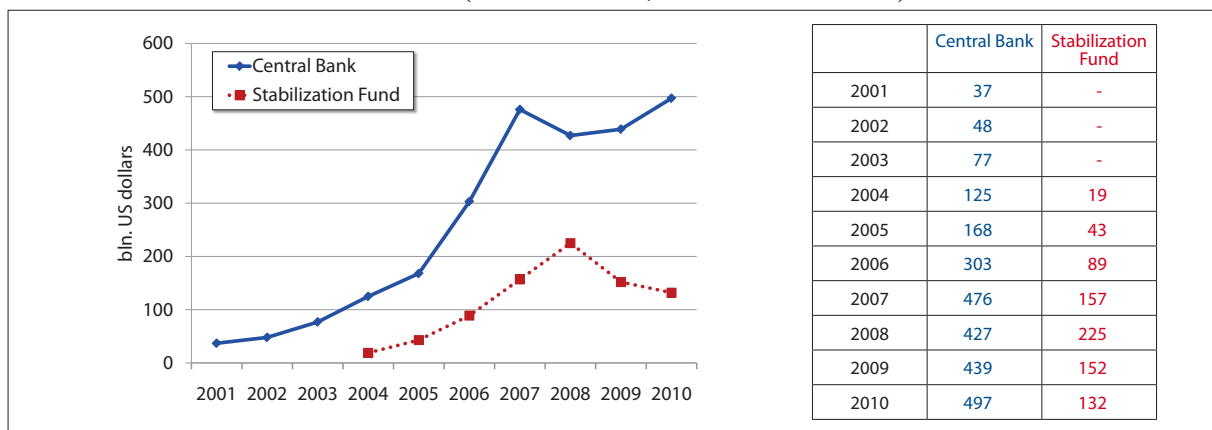
**Figure 4: Inflation Rate 2001–2010 (End of Period)**

NB: The figure for 2010 is as of October.

Source: Bank of Finland Institute for Economies in Transition, BOFIT Russia Statistics, [http://www.bofi.fi/bofit\\_en/seuranta/venajatilastot/](http://www.bofi.fi/bofit_en/seuranta/venajatilastot/)

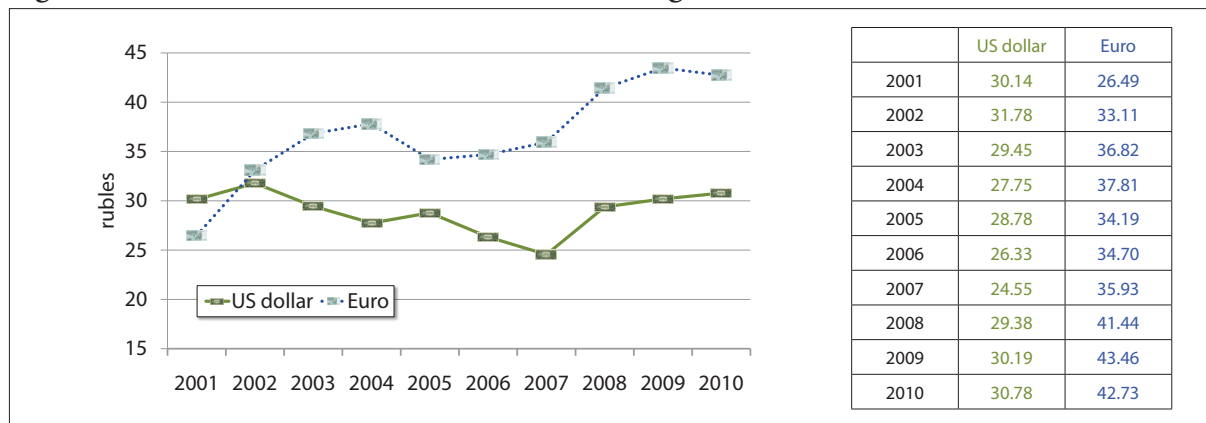
**Figure 5: Budget Balance As % of GDP (Estimate For 2010)**

Source: *The Economist*, <http://www.economist.com/markets/indicators/>, 4 November 2010

**Figure 6: Foreign Currency Reserves of the Russian Central Bank And Assets of the State Stabilization Fund 2001–2010 (End of Period, in Bln. US Dollars)**

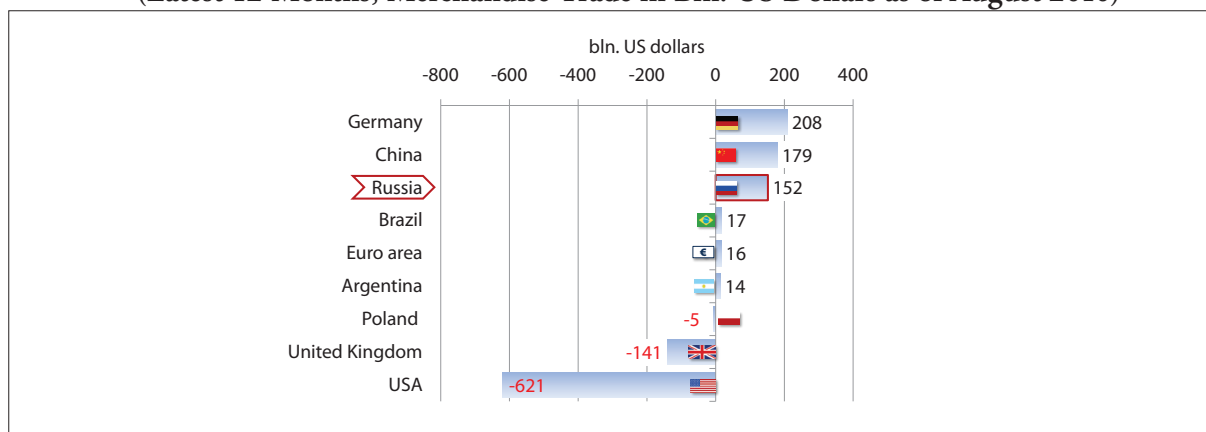
NB: Figures for 2010 are as of October; the Stabilization Fund was split in 2008 into Reserve Fund and National Wealth Fund; the foreign currency reserves of the Central Bank include the gold reserves.

Source: Bank of Finland Institute for Economies in Transition, BOFIT Russia Statistics, [http://www.bofi.fi/bofit\\_en/seuranta/venajatilastot/](http://www.bofi.fi/bofit_en/seuranta/venajatilastot/)

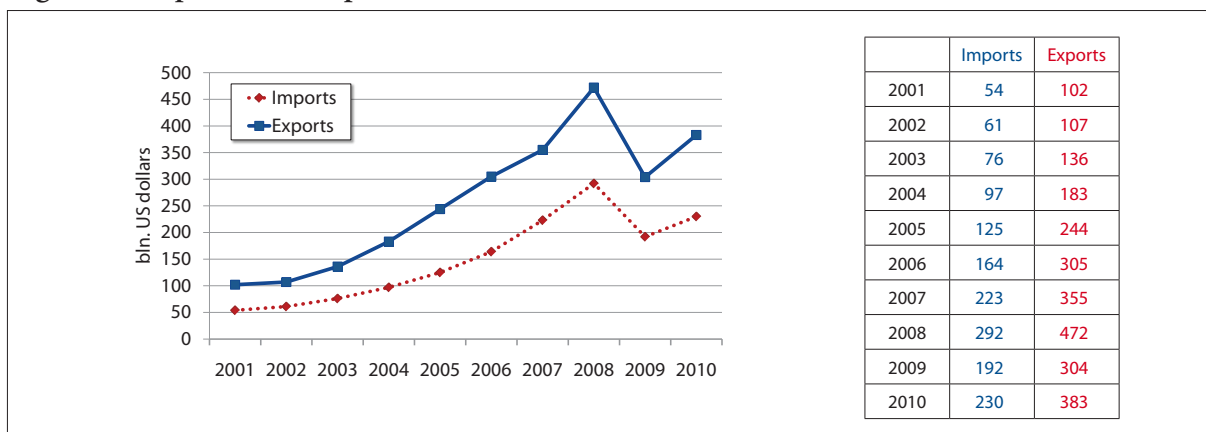
**Figure 7: Ruble/US Dollar and Ruble/Euro Exchange Rates 2001–2010 (End of Period)**

NB: Figures for 2010 are as of October

Source: Bank of Finland Institute for Economies in Transition, BOFIT Russia Statistics, [http://www.boffi/bofit\\_en/seuranta/venajatilastot/](http://www.boffi/bofit_en/seuranta/venajatilastot/)

**Figure 8: Trade Balance**  
(Latest 12 Months, Merchandise Trade in Bln. US Dollars as of August 2010)

Source: *The Economist*, <http://www.economist.com/markets/indicators/>

**Figure 9: Imports And Exports 2001–2010 (in Bln. US Dollars)**

NB: Value for 2010: estimate based on the figures for January to September.

Source: Bank of Finland Institute for Economies in Transition, BOFIT Russia Statistics, [http://www.boffi/bofit\\_en/seuranta/venajatilastot/](http://www.boffi/bofit_en/seuranta/venajatilastot/)



## ANALYSIS

## The Innovative Potential of the Russian Economy

By Julian Cooper, Birmingham

### Abstract

Since President Medvedev launched his modernisation drive with his article, “Forward Russia!”, the topic of innovation has come to the forefront of Russian policy discussion and is now focused to a large extent on one specific project, the development of the Skolkovo “innovation center”. The goal of building this “town of the future” has to some extent served to draw attention away from the more general issue, the overall state of Russia’s potential for research and innovation. The realization of a single project with the explicit goal of creating “a favorable environment for the concentration of intellectual capital able to generate innovations” is unlikely to have much impact on the innovation potential of the wider economy and society, as many have observed.<sup>1</sup> This article provides an overview of the current state of the Russian research and development (R&D) system and its potential to foster innovation. It ends with some reflections on the modernisation project and Skolkovo’s role within it.

### The Soviet R&D Legacy

As of 2010, it is debatable whether Russia possesses a National Innovation System (NIS) in the normally understood sense of a coherent set of inter-related institutions promoting innovation as a natural outcome of their day-to-day functioning. Institutions and practices in the sphere of R&D still retain many features of the former Soviet system and it is not possible to understand the present-day situation without briefly first exploring the Soviet legacy.

Features of the Soviet R&D system included the organizational separation of research from production, the dominant role not only in basic research but also in much applied work of the USSR Academy of Sciences, which played a central role in the overall science policy of the country, and the relatively modest role in R&D of the higher educational sector.<sup>2</sup> In the business sector, all enterprises were state owned and most R&D was undertaken by specialised applied research institutes, generally organizationally separate from the enterprises, which themselves undertook little research. The Soviet R&D system was heavily militarized and successive attempts to transfer technology from the military sector to the civilian economy met with little success. The USSR had a very substantial R&D system in terms of the number of people employed and reported spending on research as a share of economic output at levels high

by international standards, although later reassessment moderated these claims.<sup>3</sup>

In the USSR the innovation process was always understood, implicitly by government officials and often explicitly by economists, as a linear process, i.e. new products and processes are developed on the basis of ideas and inventions originating in basic and applied research, after which they are “introduced” into the sphere of production and then diffused more widely. Only in the very final years did some analysts become aware of the work of the late Chris Freeman and other Western science policy specialists who challenged the linear model and argued for a richer understanding involving feedback relationships.

### The Current System: State Dominance

Research undertaken by Russian and Western economists and science policy specialists reveals that, notwithstanding reform measures, the Russian R&D system still retains many Soviet characteristics.<sup>4</sup> There is still organizational fragmentation, with the majority of R&D organizations being remote from the business sector. Within the latter, company R&D facilities tend to be weakly developed, even in some large corporations. The Russian Academy of Sciences, largely unreformed, still occupies a dominant position. Almost three-quarters of all research organizations remain in state ownership and employ 78 per cent of R&D personnel; 14 per

1 <http://www.i-gorod.com/future>, accessed 25 October 2010. This is the website of the Fund for the Development of the Innovation Center “Skolkovo”. It is worth noting that the English version of the mission of the center, on the same website, reads “to create a special environment that will concentrate intellectual resources and encourage free creativity and scientific inquiry.”

2 See Zaleski, E.; Kozłowski, J.P.; Wienert, H.; Davies, R.W.; Berry, M.J.; and Amann, R. (1969), *Science Policy in the USSR*, OECD, Paris.

3 Note, the Center for Science Research and Statistics, Moscow, has reassessed Russia’s 1990 R&D spending using OECD methods and arrived at a figure of just over 2 per cent of GDP.

4 See Dezhina, I.G. and Saltykov, B.G. (2005), “The National Innovation System in the Making and the Development of Small Business in Russia”, *Studies on Russian Economic Development*, 16, 2:184–190; Radosevic, Slavo (2003), “Patterns of preservation, restructuring and survival: science and technology policy in Russia in the post-Soviet Era”, *Research Policy*, vol. 32, pp.1105–1124.



cent are fully private and employ less than 10 per cent of personnel.<sup>5</sup> Foreign participation is modest: barely 1.5 per cent of research organizations are foreign owned or joint ventures with foreign companies and they employ only 2 per cent of all personnel.

Relating to this dominance of state property, R&D still tends to be undertaken by very large research institutes with only a minor role for small organizations. Thus, in 2008, less than 4 per cent of all research organizations employed one thousand people or more, but they employed 53 per cent of all R&D personnel and accounted for 44 per cent of total R&D performed by expenditure.

In financing R&D, budget spending predominates, with only a modest contribution from the private sector. In this respect Russia differs markedly from most OECD member countries. Thus in 2008 65 per cent of R&D funding was from government sources, compared with 29 per cent from business, but in the USA the proportions were reversed: government 27 per cent, business 68 per cent.<sup>6</sup> Grant funding on a competitive basis plays a very modest role. A positive initiative of the early 1990s was the creation of the Russian Foundation for Fundamental Research (RFFI) and the Russian Foundation for Research in the Humanities (RGNF). However, the volume of funding allocated by these bodies accounts for less than two per cent of all R&D expenditure. State dominance and budget funding can be explained in part by the fact that the Russian R&D system is still oriented heavily to military needs. Over half of all scientists still work in the defence industry, notwithstanding its sharp contraction in scale since the collapse of the USSR, and some 35–40 per cent of expenditure on R&D is for military purposes, admittedly down from the approximately 70 per cent level of Soviet times.

In the USSR the higher education system played a limited role in R&D, with many university staff not undertaking research. In recent times the government has been actively seeking to enhance the research contribution of universities, but there is a long way to go. In total funding of R&D the higher education sector accounts for a mere 6–7 per cent, almost the same as the share as in the USSR, and only 12 per cent of all teaching staff are categorized as researchers. Of the total number of universities and other higher educational establishments, almost half of do not participate in research activity.

A major problem of the R&D system is the demographics of research personnel. In 1990 Russia had more than 1,225,000 researchers; by 2008 the number had fallen to 376,000, a striking contraction which shows little sign of coming to an end. To make matters worse, there is an unfavorable age distribution. Over half of all researchers are over the age of fifty and one quarter over the male retirement age of sixty. In the Academy of Sciences the average age of researchers is exceptionally high and thirty per cent are over the male retirement age. However, one positive development of recent years has been an increase in the share of researchers under the age of thirty: 10.6 per cent of all researchers in 2000, but 17.8 per cent in 2008, including almost 20 per cent in the higher education sector. Of the total number of researchers, 42 per cent are women, but of doctors of science only 22 per cent. Russian science is dominated by elderly male scientists and relations of authority and patronage are prevalent. Cultural factors help to explain why talented young scientists, like the two recent Nobel prize winners, Konstantin Novoselov and Andre Geim, often prefer to work abroad. In the words of Geim, Russia has “neither the facilities nor the conditions” and there was an unacceptable “level of bureaucracy, corruption and idiocracy.”<sup>7</sup>

### Explaining Limited Innovation

Why is innovation so limited? Part of the answer may be the institutional and attitudinal legacies from the planned economy, but there are other more immediate causal factors. The structure of the Russian economy, dominated by resource-based sectors, is not conducive to vibrant innovation as the demand for new technologies and goods is not strong, and is focused on a limited range of activities. To make matters worse, as underlined by international rankings, such as that of the World Economic Forum, the Russian economy exhibits only weak competition, for which the structure of the economy is clearly a determining factor.<sup>8</sup> There is an unhelpful circularity: Russia needs a more diversified economy and for this needs change and innovation, as the leadership appreciates, but a precondition for innovation is the existence of a more competitive and diversified economy.

### The Role of Skolkovo

How can the development of Skolkovo help to change this unsatisfactory situation? It will be a privileged island

5 Data on the scale and structure of the R&D system from, Center for Science Research and Statistics, *Nauka v Rossii v tsifrakh: 2009*, Moscow.

6 UNESCO data: <http://stats.uis.unesco.org>, accessed 25 October 2010.

7 Amos, Howard (2010), “Nobel Winners Tell Why Russia Lacks Allure”, *The Moscow Times*, 21 October.

8 In the 2010–11 Global Competitiveness Index of the World Economic Forum, Russia is ranked 63rd of the 139 countries covered, behind such emerging economies as Turkey, Brazil, India, Indonesia and China.

of innovative activity working to its own rules, overseen, during its formative years at least, by the President and his modernizing supporters. The hope appears to be that it will provide examples of best practices, which will then be diffused more widely so that over time the innovative capability of the economy more widely will be enhanced. But this is not the first time that “cities of the future” have been created in Russia in the hope that they will secure accelerated scientific and technological development. Examples include the closed cities of the nuclear industry, such as Arzamas, which focused research talent to develop the atomic bomb, the “science cities” such as Dubna, Troitsk and Obninsk in the Moscow region, Akademgorodok in Novosibirsk, and Zelenograd near Moscow, the home base of Soviet microelectronics. It is hardly surprising that some of the existing science cities show little enthusiasm for Skolkovo, fearing, not without justice, that they will be deprived of resources and status.<sup>9</sup> But these centers, privileged in their early development, had only a modest impact on the wider economy and society. And over time, inevitably, they aged and lost their dynamism, which is probably why they were sidelined when Medvedev decided to develop a new innovation center. But Skolkovo can be seen in another way, as simply a *symbol* of modernity, a bid by the Medvedev-Putin tandem to put Russia in the ranks of truly modern, innovative, countries. It is telling that the Skolkovo Fund website has a graphic illustrating “technopolises” of the world, located in the USA, UK, Finland, France, Japan and Korea. The message is clear, with Skolkovo, Russia will join this elite group.

The opportunity costs of Skolkovo are already becoming apparent. In the draft budget for 2011 Skolkovo will receive 15 billion roubles, a significant sum, equal to almost half the total funding that will be allocated to

the Russian Academy of Sciences. The RFFI, RFGN, and the so-called “Bortnik fund” to support the R&D activities of small enterprises, generally regarded as an effective institution, will see their funding reduced in real terms.

### Looking Ahead

So, what is the way forward? The eminent Finnish Russia expert, Pekka Sutela, is surely right: it is not innovation that should be the current priority, but imitation.<sup>10</sup> One could also add investment, above all private, as state investment is ineffective. In comparison to most emerging economies showing healthy growth, the share of GDP devoted to investment is relatively low in Russia and financial intermediation is underdeveloped. There is plenty of scope for the modernisation of the industrial base by importing existing technologies or promoting foreign direct investment. This will permit the manufacture of more modern, higher quality, competitive goods. The experience of other emerging economies indicates that this will promote competition, which will drive change and boost the demand for innovation. In time this will help to diversify the economy, but there are also real possibilities of going up the value chain in resource-based sectors, a potential comparative advantage of resource-rich Russia. Meanwhile, the R&D system can be modernized, the university capability strengthened, the small business sector fostered, and the essential framework conditions adopted to form over time a genuine National Innovation System. In Russia, not for the first time, we see an attempt with Skolkovo to take a leap forward, to narrow a developmental gap by “extraordinary” means. But, as with earlier attempts, success is likely to be elusive and the costs may prove high.

#### *About the Author:*

Julian Cooper is Professor of Economic Studies at the Centre for Russian and East European Studies, University of Birmingham, UK. He is also Co-Director of the Centre for East European Language Based Area Studies, an English university network based on SSEES-UCL, Birmingham and Oxford.

9 In the draft federal budget for 2011 allocations to support existing “*naukogrady*” have been cut by 22 per cent compared with the 2010 level.

10 Sutela, Pekka (2008), “The four i-words—a fifth one”, Bank of Finland Institute for Economics in Transition, *Focus/Opinion*, no.1. The Skolkovo project itself can be regarded as an example of imitation, indicating that in principle this path is not ruled out.

## STATISTICS

## Research And Development in Russia

Figure 1: Gross Domestic Expenditure On R&amp;D (As % of GDP) And Number of Researchers (Thsd.) (1990–2009)

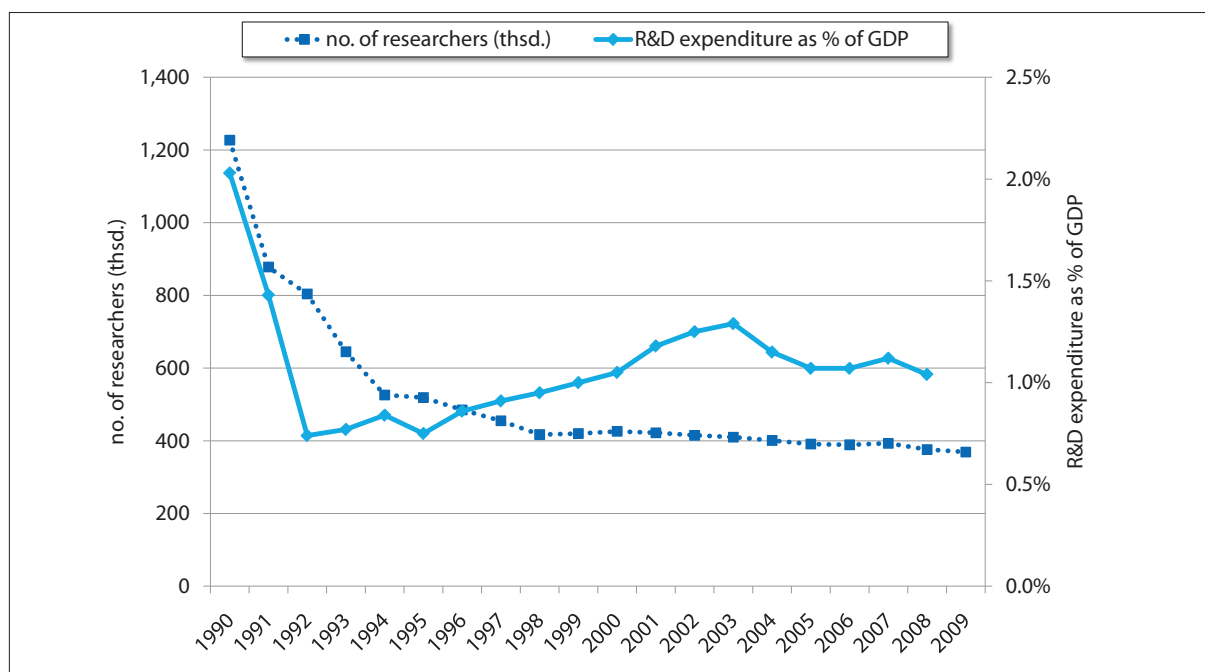


Figure 2: Researchers By Field of Science, 2008

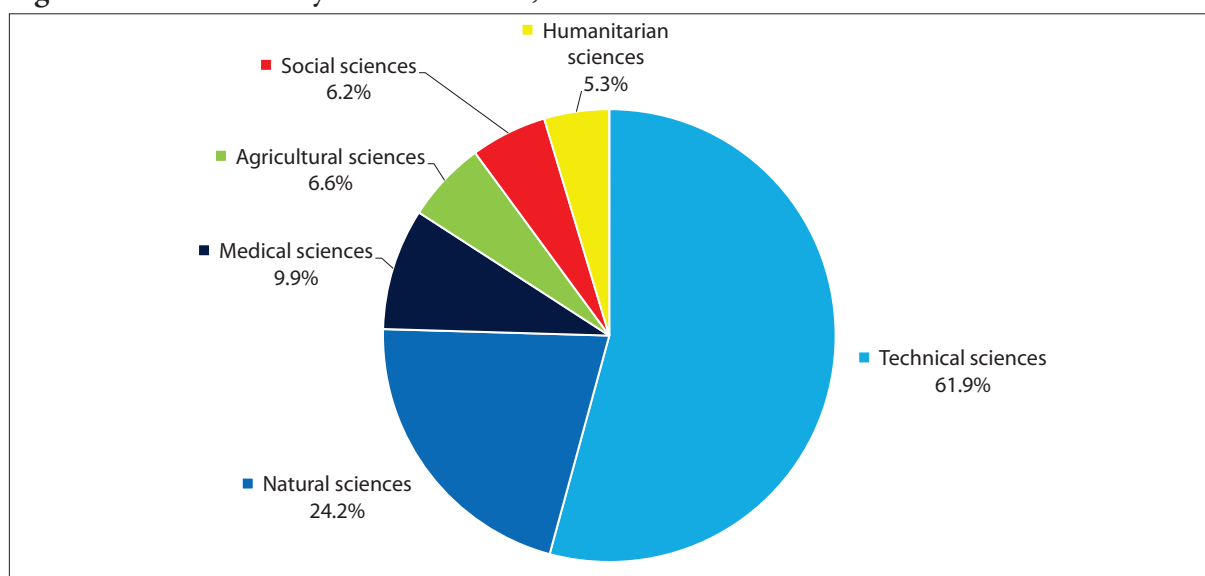
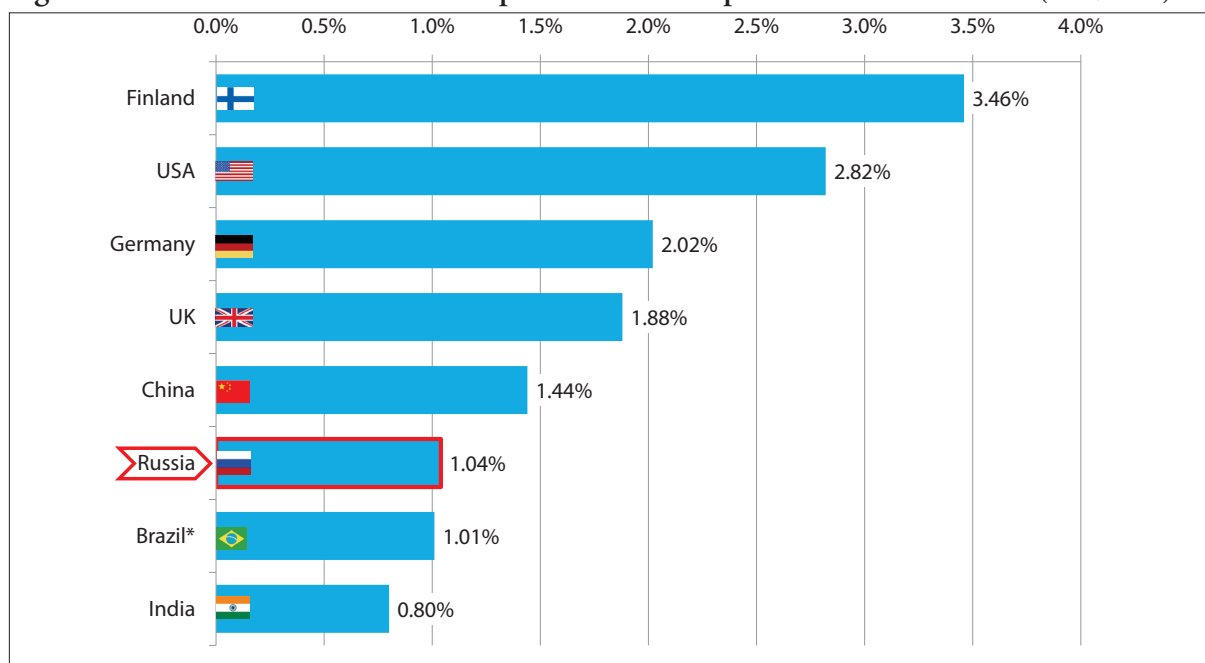
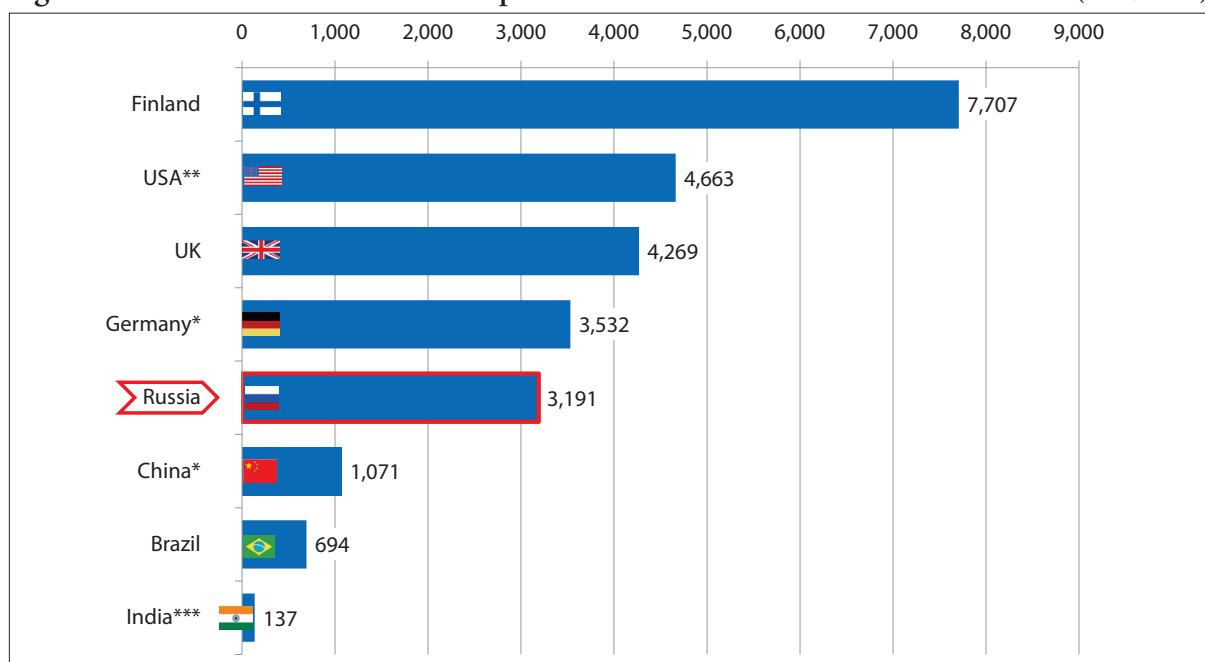


Figure 3: Russia in International Comparison: R&amp;D Expenditure As % of GDP (2005–07)



\* 2007

Figure 4: Russia in International Comparison: Researchers Per Million Inhabitants (2005–07)



\* 2007 \*\* 2006 \*\*\* 2005

Sources for Figures 1–4 on pp. 11–12: compiled by the author drawing on data from: Russian Federal Statistical Service (<http://www.fsgs.ru>), Centre for Science Research and Statistics, Moscow (<http://www.csrs.ru>), OECD, Main Science and Technology Indicators: accessed via Economic and Social Data Service (<http://www.esds.ac.uk>), UNESCO Institute for Statistics (<http://stats.uis.unesco.org>)

## ABOUT THE RUSSIAN ANALYTICAL DIGEST

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In the area of post-socialist societies, extensive research projects have been conducted in recent years with emphasis on political decision-making processes, economic culture and the integration of post-socialist countries into EU governance. One of the core missions of the institute is the dissemination of academic knowledge to the interested public. This includes regular email services with nearly 20,000 subscribers in politics, economics and the media.

With a collection of publications on Eastern Europe unique in Germany, the Research Centre is also a contact point for researchers as well as the interested public. The Research Centre has approximately 300 periodicals from Russia alone, which are available in the institute's library. News reports as well as academic literature is systematically processed and analyzed in data bases.

#### The Center for Security Studies (CSS) at ETH Zurich

The Center for Security Studies (CSS) at ETH Zurich is a Swiss academic center of competence that specializes in research, teaching, and information services in the fields of international and Swiss security studies. The CSS also acts as a consultant to various political bodies and the general public. The CSS is engaged in research projects with a number of Swiss and international partners. The Center's research focus is on new risks, European and transatlantic security, strategy and doctrine, area studies, state failure and state building, and Swiss foreign and security policy.

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#### Resource Security Institute

The Resource Security Institute (RSI) is a non-profit organization devoted to improving understanding about global energy security, particularly as it relates to Eurasia. We do this through collaborating on the publication of electronic newsletters, articles, books and public presentations.

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