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Boosting Productivity in Russia: Skills, Education and Innovation

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BOOSTING PRODUCTIVITY IN RUSSIA: SKILLS, EDUCATION AND INNOVATION

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By Lilas Demmou and Andreas Wörgötter

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ABSTRACT/RÉSUMÉ

Boosting Productivity in Russia: Skills, Education and Innovation

The labour market in Russia is very flexible. Firms adjust to economic shocks through wage cuts, working hour reductions and minimisation of non-wage labour costs. Workers react by changing jobs. This results in a high and stable overall employment rate, but also high wage inequality, informality and labour turnover, which limits incentives for firms to invest in human capital and productivity improvements.

While educational attainment is very high, the education system needs to be strengthened to respond to the needs of a skill-based economy. School-employer cooperation is low and opportunities for higher education are unequally distributed. Adequate funding for education institutions is not assured everywhere while inefficiencies persist.

Private spending on innovation is very low and Russia underperforms in terms of scientific outputs and patents. Support for low-tech innovation and technology adoption, especially among SMEs is narrow because of a bias towards large and high-tech projects, which however are only loosely related to Russian manufacturing capacity. Reform of the public R&D sector is incomplete, notably with respect to strengthening funding on a competitive basis.

This Working Paper relates to the *2014 Economic Survey of the Russian Federation* www.oecd.org/eco/surveys/economic-survey-russian-federation.htm.

JEL classification: flexibility, labour turnover, human capital, skills matching, active labour market policies, unemployment benefits, lifelong learning, collective bargaining, trade unions, education, PISA, VET, inequality, innovation

Keywords: J21, J24, J31, J50, I2, J60, O3

* * * * *

Stimuler la productivité en Russie: les compétences, l'éducation et l'innovation

Le marché du travail en Russie est très flexible. Les entreprises s'ajustent face aux chocs économiques grâce à une réduction des salaires, des heures de travail, et des coûts non salariaux. Les travailleurs réagissent en changeant d'emploi. Il en résulte un taux d'emploi global élevé et stable, mais également un niveau élevé des inégalités salariales, de l'emploi informel et du taux de rotation de la main d'œuvre, ce qui limite les incitations pour les entreprises à investir dans le capital humain et l'amélioration de la productivité.

Bien que le niveau de scolarisation soit très élevé, le système d'éducation doit être renforcé pour répondre aux besoins d'une économie fondée sur les compétences. La coopération entre les entreprises et le système éducatif est faible et les opportunités d'accès à l'éducation supérieure sont inégalement réparties. Un financement adéquat des établissements d'enseignement n'est pas assuré sur l'ensemble du territoire alors que des zones d'inefficacités persistent.

Les dépenses privées consacrées à l'innovation sont très faibles et les performances de la Russie en termes de production scientifiques et de brevets sont insatisfaisantes. Le soutien aux innovations à faible contenu technologique et à l'adoption des technologies, en particulier dans les PME, est faible en raison d'un biais en faveur des grands projets et des projets high-tech, qui ne sont cependant que faiblement liés aux capacités de production manufacturière russe. La réforme du secteur public de la R&D est incomplète, notamment en ce qui concerne le rôle joué par les financements accordés sur des principes de compétitivité.

Ce Document de travail se rapporte à l'*Étude économique de l'OCDE 2014 sur la Fédération de Russie* www.oecd.org/fr/eco/etudes/etude-economique-russie.htm.

Classification JEL : flexibilité, rotation de la main d'œuvre, capital humain, adéquation des compétences, politiques actives du marché du travail, prestations chômage, formation continue, convention collective, syndicats, éducation, PISA, enseignement et formation professionnelle, inégalité, innovation

Mots clés: J21, J24, J31, J50, I2, J60, O3

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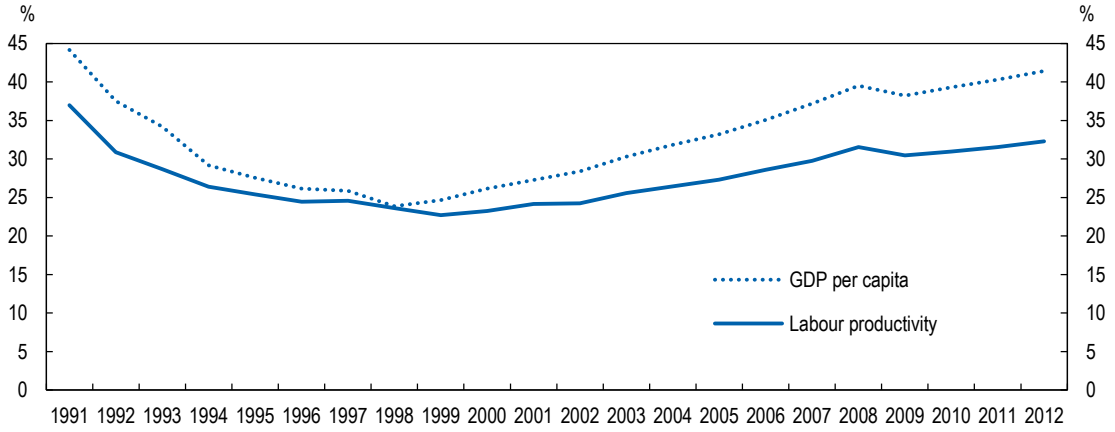
BOOSTING PRODUCTIVITY IN RUSSIA: SKILLS, EDUCATION AND INNOVATION

By Lilas Demmou and Andreas Wörgötter[1]

Despite sustained productivity growth over the last decade, the gap in GDP per capita of Russia relative to OECD countries remains high and is mainly driven by a productivity gap (Figure 1). The recent growth slowdown made it clear to most observers and policy makers that rapid economic growth before the crisis was largely dependent on rising energy prices. Moreover, pre-crisis productivity growth was lower than previously thought: while several studies estimated average multi-factor productivity growth at about 5% a year since mid-1990s (Jorgenson and Vu, 2011), recent estimates based on better capital stock statistics suggest that it was only about 2¼ per cent (Timmer and Voskoboynikov, 2013). Achieving higher sustainable growth in the future and reducing the income gap requires stronger and continuous productivity improvements that imply a larger role for energy savings, innovation and human capital as well as the adoption of best-practice technologies and business processes.

Figure 1. GDP per capita and labour productivity

As a share of upper half of OECD countries[1]



Note: Labour productivity is measured by GDP per hour worked.

1. Simple average of the top 17 OECD countries in terms of GDP per capita and GDP per hour worked (in constant 2005 PPPs).

Source: OECD estimates.

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1. Lilas Demmou is Economist and Andreas Wörgötter Head of Division in the Economics Department of the OECD. This paper was originally produced for the *2013 OECD Economic Survey of the Russian Federation* and published in January 2014 (OECD, 2014). The authors would like to thank the Russian authorities, as well as Andrew Dean, Bob Ford, Tatiana Lysenko, Felix Zimmerman, Pascal Mariana, Ann Vourch and members of the EDRC for helpful comments and suggestions. The authors are also grateful to Simon Commander, Vladimir Gimpelson, Hartmut Lehman, Ekaterina Kalugina, Natalia Kyui and Larisa Smirnykh for their comments and discussions. The paper benefited from contributions by Artur Radziwill and Maria Godunova, in particular for the innovation part. Yana Vaziakova provided research assistance throughout the process. Many thanks are also due to Corinne Chanteloup for statistical research and Josiane Gutierrez for secretarial assistance.

The large share of unproductive firms is an obstacle for moving towards skills led growth

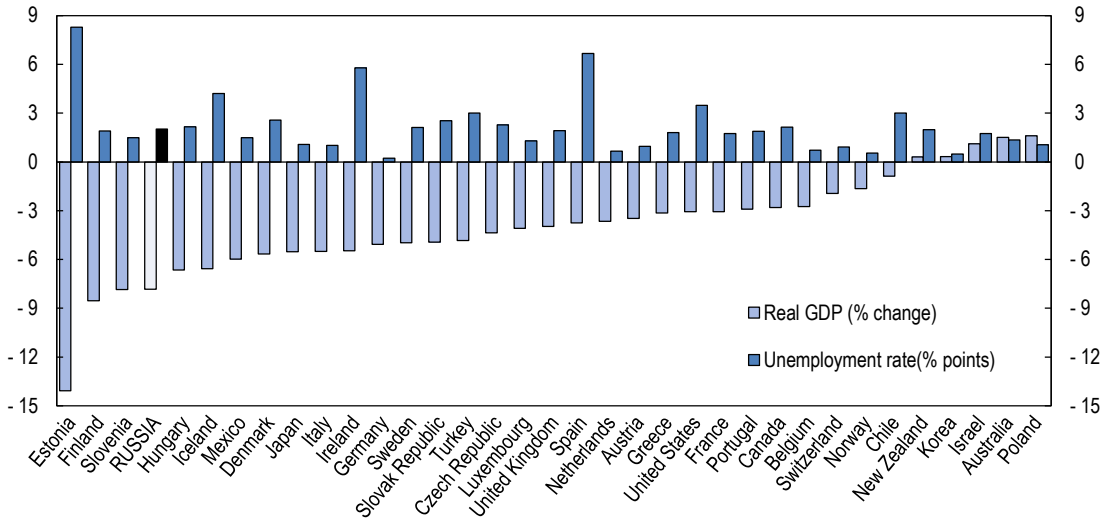
Institutional arrangements on the Russian labour market allow low productivity firms to survive and give little incentive to upgrade the quality of jobs. This results in a slow pace of restructuring, a high proportion of low-paid jobs and significant skills mismatches. A major challenge for Russia is to move from this institutional trap to arrangements that will favour human capital-led growth (Kapelyushnikov, 2000).

Shock adjustments take place through wages, working hours and the use of atypical contracts

The Russian labour market performs relatively well overall, with the employment rate at 69% in 2012 compared with 65% on average in OECD countries and the unemployment rate at 5.5% compared with 8% in the OECD. While the crisis hit hard, with a decline in GDP of 8% in Russia in 2009 compared with less than 4% in OECD countries, the impact on the labour market was relatively mild, with an increase in the unemployment rate of 2 percentage points, which is similar to what happened in OECD countries on average (Figure 2). In other words the Okun coefficient in the crisis was only half of the OECD average (OECD, 2012a). Since then, the situation in the labour market has recovered more fully than in most OECD countries and both employment and unemployment rates are at their historically best levels. Again in terms of the Okun coefficient this means that the Russian labour market exhibits a similar pattern to Germany.

Figure 2. Employment is relatively stable over the economic cycle

Changes in real GDP and unemployment rate during the crisis (2008-09)



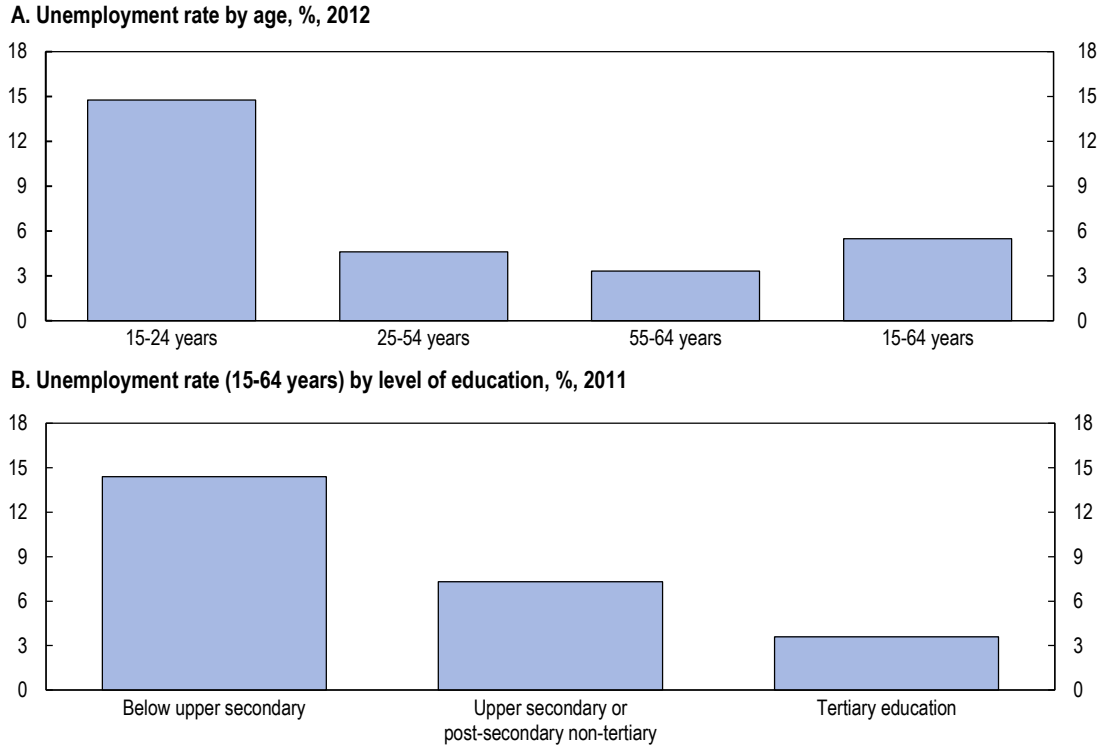
Source: OECD, *Economic Outlook database* No. 93, *OECD Short-term Labour Force Statistics database* and Rosstat.

Despite these overall good results, some specific categories are at higher risk of unemployment. This is the case for youths and the less-educated, with unemployment rates above 15% and 20% in 2012, respectively (Figure 3). These numbers are broadly in line with outcomes in OECD countries, where the average unemployment rates for youths and the unskilled are both around 16%.

The overall stability of employment in Russia's labour market relies mainly on the possibility to adjust wages in response to economic shocks (Kapelyushnikov et al., 2012). In 2009, as a result of the financial crisis, real GDP declined by 8% and real wages by 4% (Figure 4). Wage flexibility relies on several mechanisms. First, in the wage setting system about 40% of wages depend on firm performance,

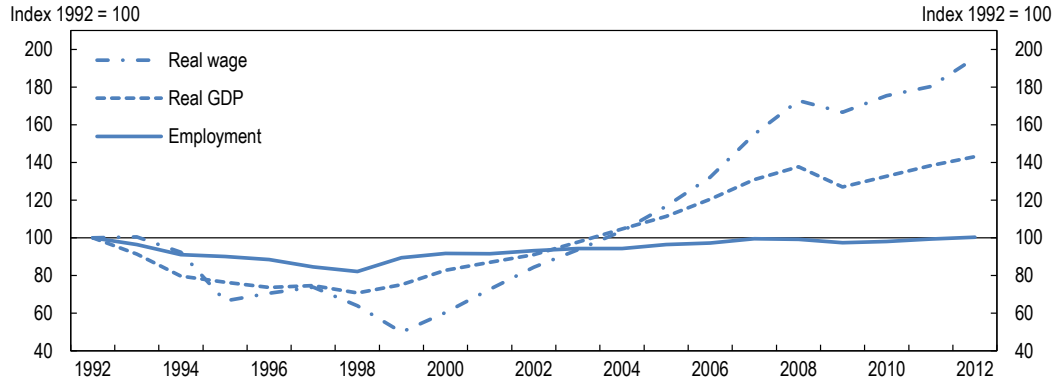
allowing firms to cut wages in case of economic difficulties to a greater extent than in many other countries. For instance, in the United States, which is considered one of the most flexible economies, the median share of performance pay in total earnings was estimated at less than 4% (Lemieux et al., 2009), resulting in stable real wages despite GDP decline. Other mechanisms involved in real wage adjustment include the use of informal payments, estimated to be around 50% of the official wage (Gimpelson and Kapeliushnikov, 2011).

Figure 3. Unemployment rate by age and education



Source: *OECD Labour Force Statistics database* and OECD (2013), *Education at a glance 2013: OECD Indicators*, Table A5.4a.

Figure 4. GDP, employment and wages



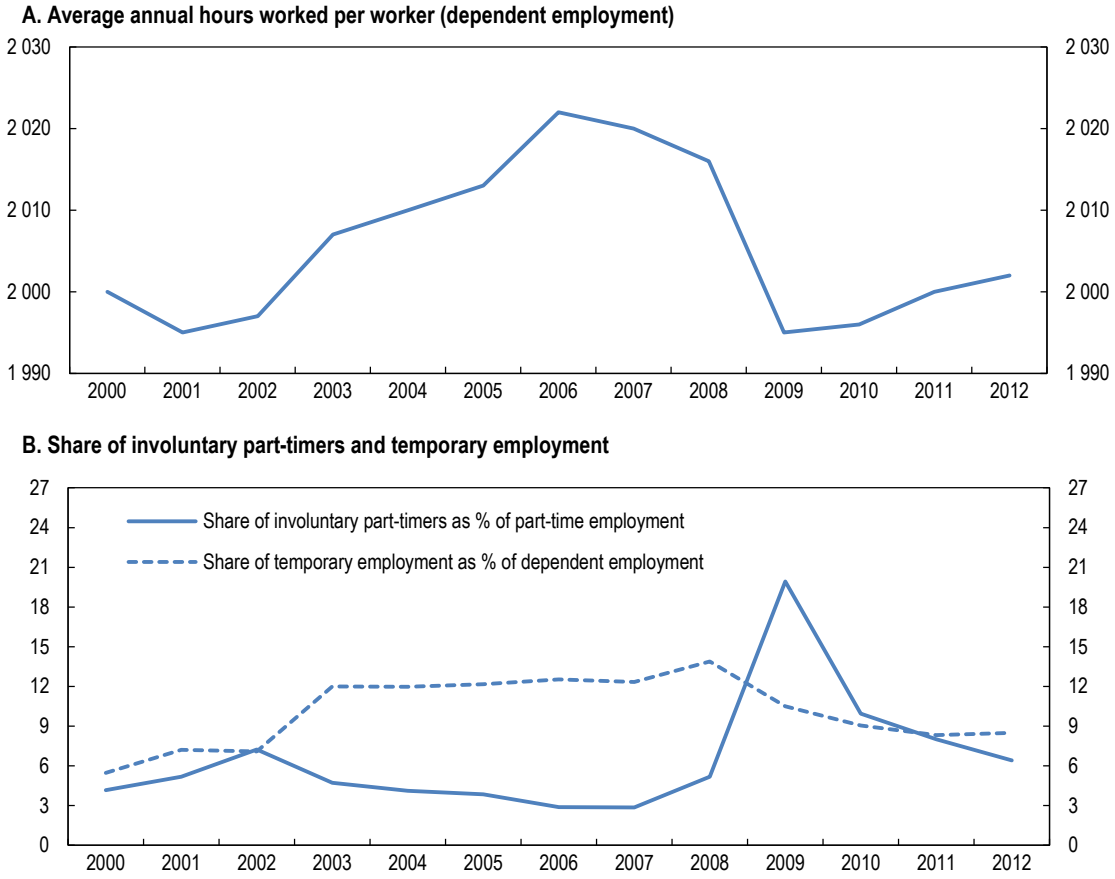
Source: Rosstat.

Cuts in working hours and the use of non-standard labour contracts provide firms with additional flexibility in terms of non-wage and hiring-and-firing costs and were widely used during the last crisis (Figure 5):

- 20% of employees experienced involuntary part time work in 2009, up from 5% in 2008, but this came back to 6.4% in 2012. As a result, during the recovery period employment gains were lower than GDP growth.

- Temporary employment contracts were also increasingly used during the boom period to meet firms' needs and reached 14% before 2009. While their share in total employment has since declined, they remain more widespread among less-educated men and low productivity enterprises (Smirnykh and Wörgötter, 2013; Karabchuk, 2012).

Figure 5. Working hours cuts and incidence of involuntary part time



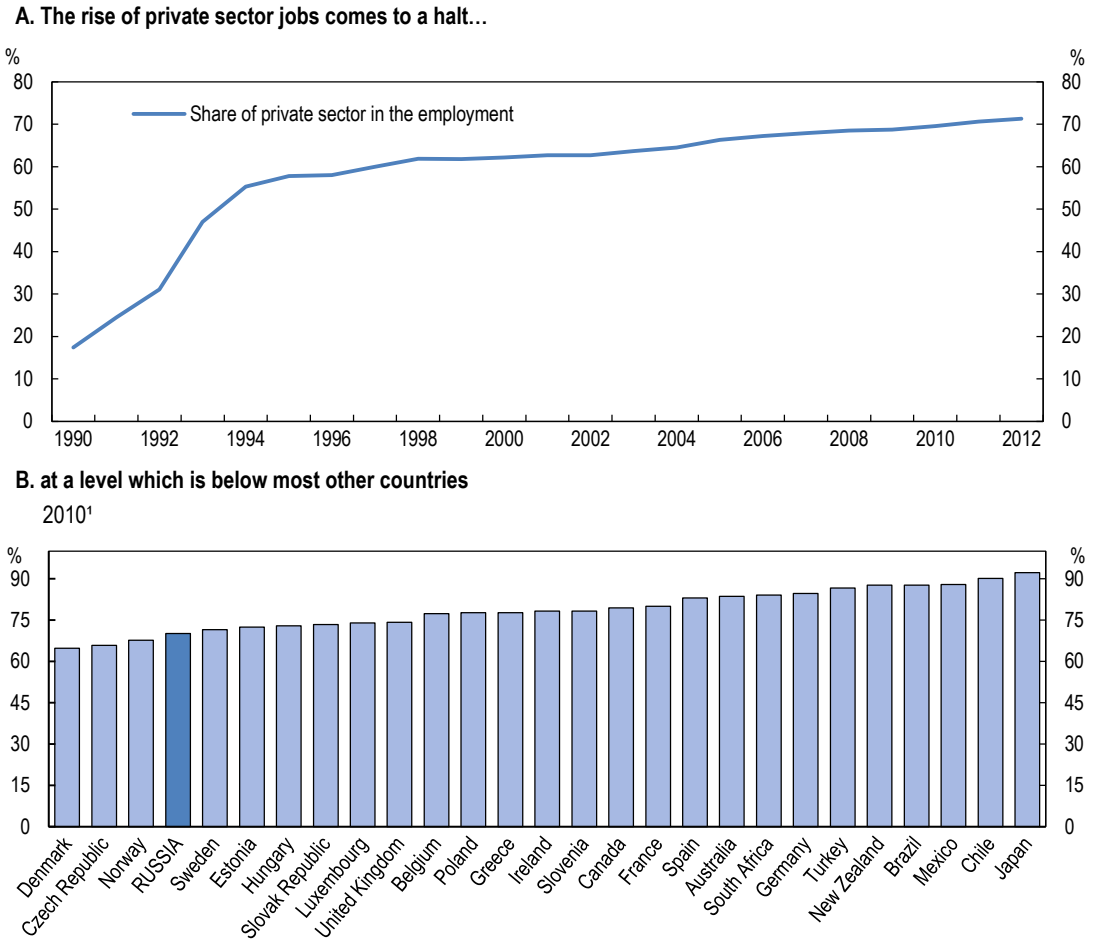
Source: *OECD Labour Force Statistics database*.

A high number of low-quality jobs

The incomplete transition of Russia toward a market-based economy has resulted in the survival of low-quality jobs inherited from the Soviet period, notably in municipalities and less efficient state owned enterprises (SOEs). While the employment share of SOEs was more than halved between 1992 and 2004, the pace of change has slowed down since then, and the share of the private sector in employment is still low compared with other countries (Figure 6). Productivity dispersion among firms is high and rising, as

the unfavourable business climate stifles competition from new entrants and permits inefficient incumbents to continue to operate (Bukowski and Earle, 2014). This suggests that the remaining scope for further restructuring is large, indicating a considerable potential for productivity improvement.

Figure 6. The share of employment in the private sector



Note: Mixed firms are included in the private sector.

1. 2009 for Brazil and Russia.

Source: *Rosstat and ILO, ILOSTAT and LABORSTAT online databases*.

Many new jobs are also of poor quality, as job creation happens mostly in low productivity, non-corporate and informal sectors of the economy (Figure 7):

- Between 2002 and 2011, employment increased strongly in services (1.2% per year on average) and construction (2.3%), while employment in the manufacturing sector, where the annual productivity growth rate was the highest, declined strongly (4.7%).

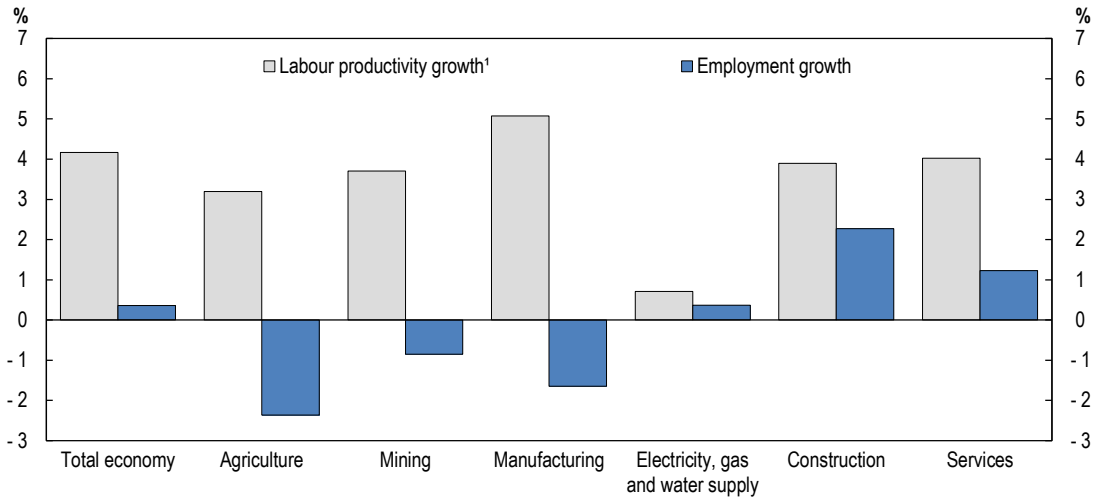
- While corporate employment remained stable during the 2000s and accounts for around half of non-farm employment, employment in the non-corporate sector (own-account workers; individual entrepreneurs, small farmers and their employees) increased. But workers in the non-corporate

sector are generally not entitled to employment benefit, are less protected because of weak enforcement of the labour code and have fewer opportunities for training (OECD, 2011).

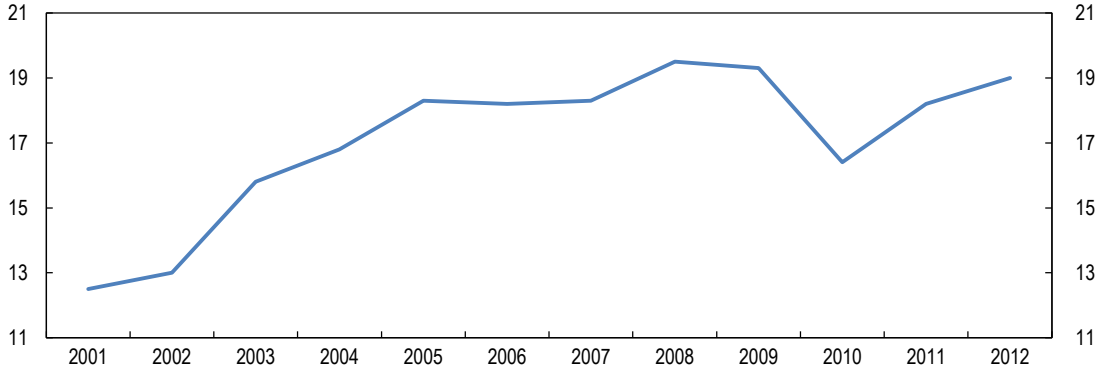
- According to recent estimates, between 7% and 20% of dependent employment is informal and, between half and three quarter of self-employed have no registered activities or are not covered by contracts (Lehmann and Zaiceva, 2013). This comes with several problems, including negative fiscal effects and cost advantages for firms avoiding labour regulation. Informality is also associated with weak incentives to invest in human capital and a risk of labour market segmentation (Box 1).

Figure 7. New jobs are mainly created in low productive sectors and the non-corporate sector

A. Labour productivity and employment growth by sector, annual percentage change 2002-2012



B. Employment in the non-corporate sector as a percentage of total employment



1. Labour productivity is defined by gross value added per person.

2. The non-corporate sector corresponds to the Rosstat definition of the informal sector.

Source: OECD calculations based on Rosstat and *Ministry of Economic Development data*.

Box 1. The labour market is segmented

Informality is associated with a risk of segmentation of the labour market. Almost 28% of individuals who had quit a job in the informal sector found a new job in the same sector, against 83% in the formal sector. This persistence mainly affects the most vulnerable groups of workers, such as the low-skilled and long-term unemployed, implying that public support should be targeted at those individuals before and after they fall into informality. On the other hand, the boundaries between the formal and informal sector are not clear-cut, as 10-15% of all formal sector employees have a second job in the informal sector.

Table 1. Persistency effect in the informal sector

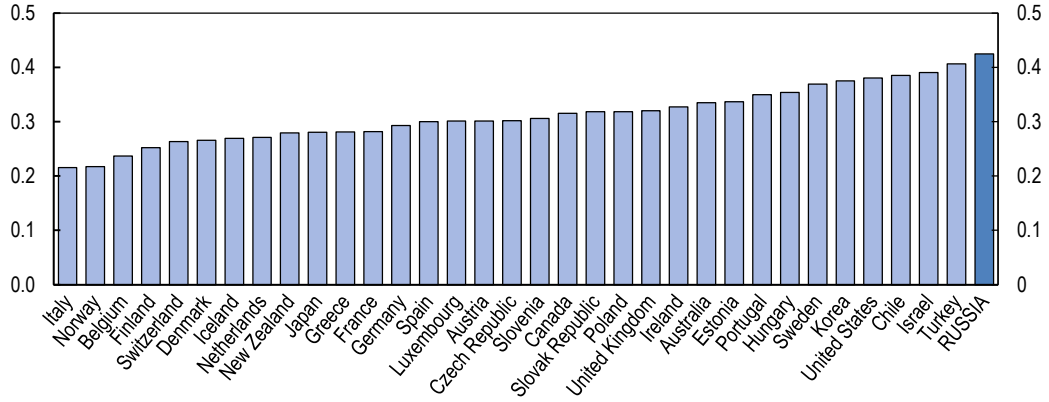
Type of job separation over 2003-08	Type of job destination in 2009		
	Non-employed	Formal jobs	Informal jobs
Displacement from formal jobs	8.7	83	8.2
Displacement from informal jobs	12.5	75	12.5
Voluntary quit from formal jobs	5	86.6	8.4
Voluntary quit from informal jobs	5.5	66.6	27.7

Source: Lehmann et al., 2013; Lehmann et al., 2011a ; Kapelyushnikov et al., 2012.

The rise in low-quality and low-wage jobs contributes to increasing wage inequality. The Gini coefficient is estimated at 0.42 in 2011 which is significantly higher than in most OECD countries (Figure 8). The share of employees with labour remuneration lower than the subsistence level is 14% in 2013 after peaking at 18% in 2005. At the same time, the share of the poor in the population remains very high, with one third of all employees having less than two-third of the median wage, compared with 14% in OECD countries as a whole (Denisova, 2012).

Figure 8. Wage inequality is high

Gini coefficient, 2011[1]



1. 2009 for France, 2010 for Belgium, Estonia, Germany, Italy, Luxembourg, Netherlands, Slovenia, Switzerland and Turkey.

Source: OECD calculation based on the *OECD Earnings Distribution database*; Denisova (2012).

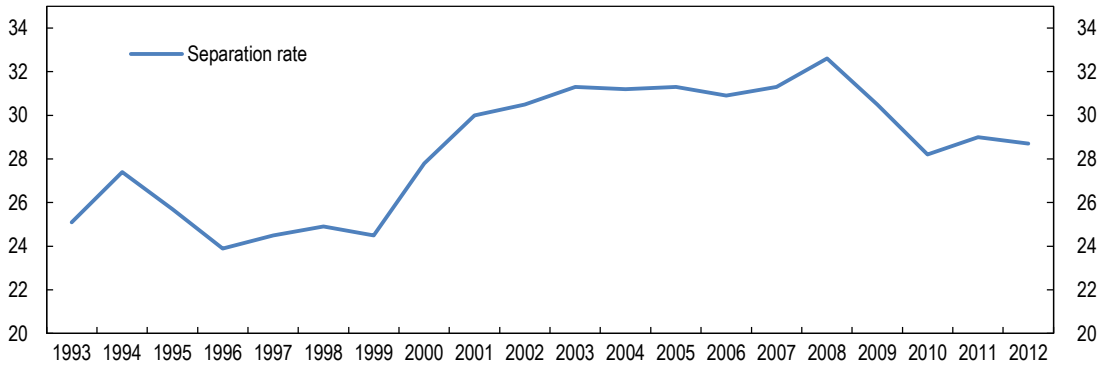
Excessive labour turnover has a negative impact on skills

Low wages and poor working conditions reduce incentives to stay in a job, leading to high turnover, with about 30% of workers leaving their jobs every year since 2000 (Figure 9). Separation and hiring rates

are particularly high in less productive firms, which survive thanks to low wages. Conversely, higher wage employment is associated with lower labour turnover and less risk of informality (Lehmann et al., 2011b; Gimpelson and Lippodt, 2001).

Figure 9. Work turnover is high and characterised by high quit rates

Worker turnover, % of average employment

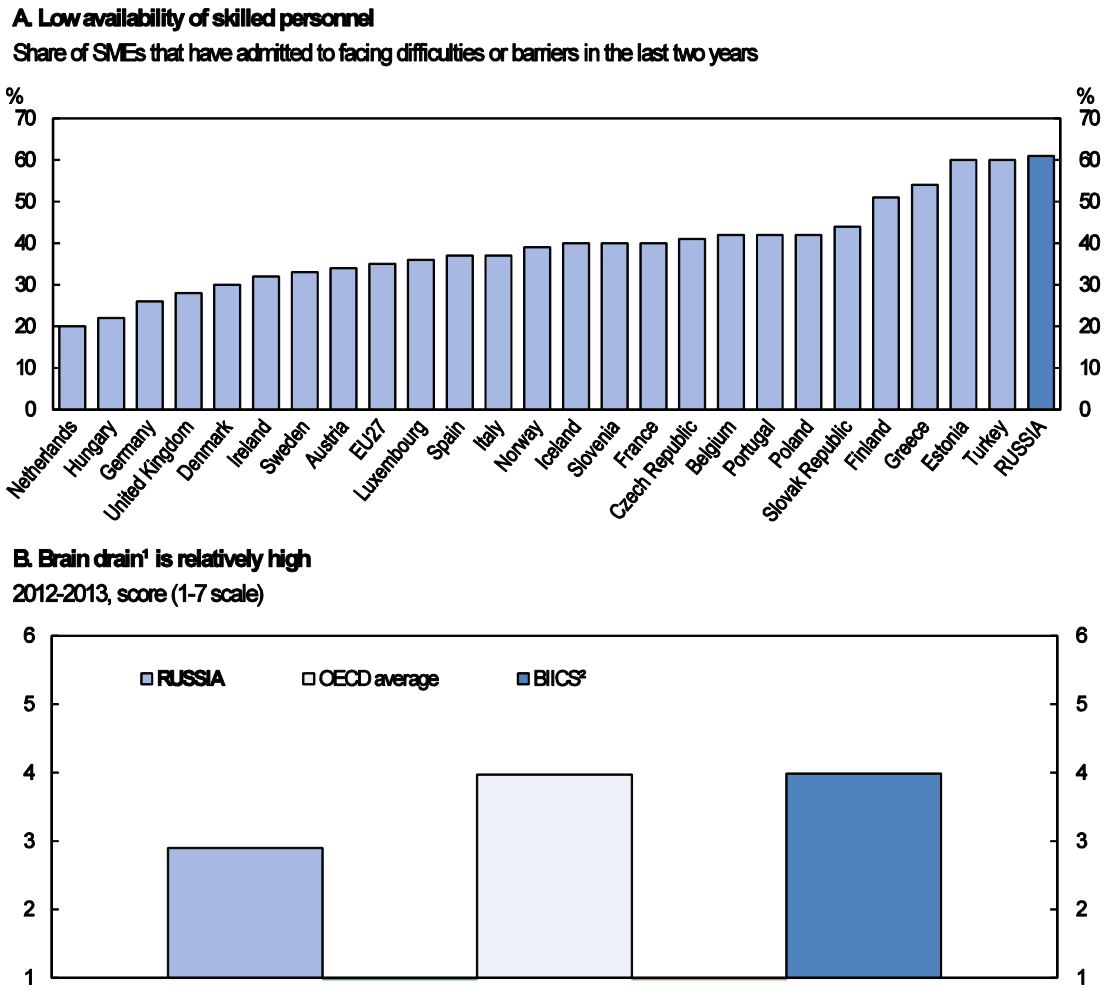


Note: Excluding small businesses.

Source: *Statistical Yearbook 1997, 2000*; and Rosstat.

Too-high a level of labour turnover reduces incentives to invest in human capital (Wasmer, 2002). This seems to be the case in Russia, where firms face difficulties in hiring skilled workers (Commander and Denisova, 2012). According to the last EBRD-World Bank survey of Russian firms, 45% of expanding firms think that skill shortages are a constraint on growth and this share is even higher among SMEs (EBRD, 2012). A relatively low capacity to attract and retain talent adds to the problem via brain drain phenomena (Figure 10). A skills mismatch is also demonstrated by the high proportion of highly educated people in low skilled occupations in Russia (Kyui, 2010; Gimpelson et al., 2009b; Denisova and Kartseva, 2008). Labour market and education policies could help lead to a better mix of skills supplied in the labour market and should be complemented by improvements to broader framework conditions to boost the demand for skills (Box 2).

Figure 10. Skill shortage is a strong barrier to growth



1. Simple average of two quality indicators "Country capacity to retain talent" and "Country capacity to attract talent". The responses are to the question "Does your country retain talented people? [1 = the best and brightest leave to pursue opportunities in other countries; 7 = the best and brightest stay and pursue opportunities in the country] and "Does your country attract talented people from abroad? [1 = not at all; 7 = attracts the best and brightest from around the world]".

2. Simple average of Brazil, India, Indonesia, China and South Africa.

Source: *Flash EUROBAROMETER 196 "Observatory of European SMEs": Russian SME Survey 2009-2010*, Bauman Innovation/ Strategy Partners, OPORA RUSSIA and World Economic Forum, *Executive Opinion Survey, The Global Competitiveness Report 2013-14*.

Box 2. The weak demand for skills is a problem

While skill shortages may be mainly explained by an inadequate supply of workers, demand for skills is also a problem:

- The lack of workers is reported as the main reason for skill shortages by more than two third of respondents in the World Bank Survey of Large and Medium Enterprises but the low level of wages ranks as the second reason (forty one percent of respondents).

- On-the-job training is low with less than 15% of workers engaged in lifelong learning activities, compared to 70% in Sweden for instance (OECD, 2013). This suggests that Russian workers assume that firms have in fact relatively little interest in acquiring skills.

- Brain drain is further evidence of the low capacity to retain or attract talented people. Brain drain is significantly higher than in OECD countries and similar to other BRIICS (Brazil, India, Indonesia, China and South Africa). Moreover, the problem is increasing for Russia while it is declining for other BRIICS countries (EBRD, 2012). Russia had the world's third largest number of emigrants in 2010, 80% being highly skilled, whereas most of immigrants were low skilled or unskilled (ILO, 2011).

Table 2. Low wages and skills shortage explain understaffing of firms

Main Reasons reported by firms to explain understaffing (% of firms)	
High hiring costs	2
Lack of workers with needed skills in the local labour market	72
High competition for workers in local market	23
Expected decline in demand for output	5
High Labour turnover	30
Adverse working conditions	18
Low wages compared to other firms	41
Other reasons	8

Note: Figures do not add to 100% because respondents could select 3 key reasons.

Source: *Russia LME Survey*, 2005.

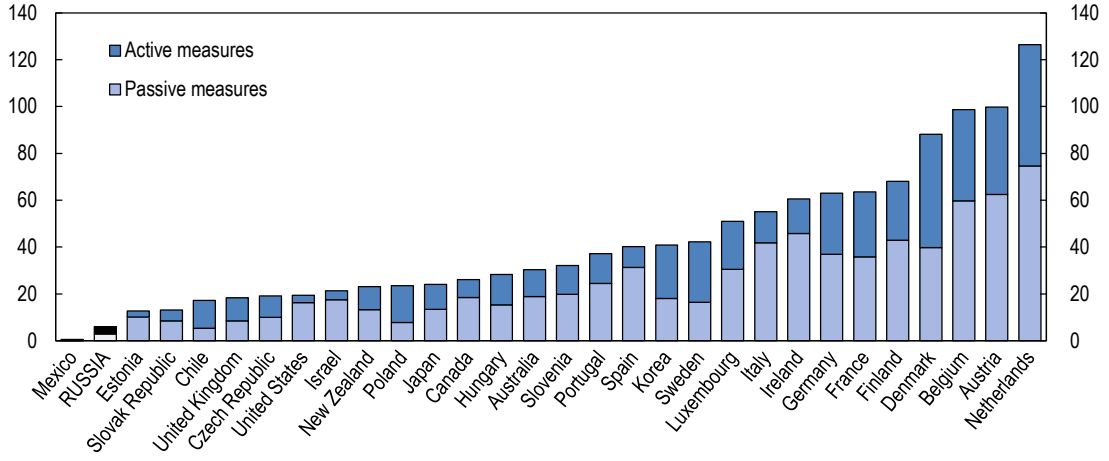
Source: Tan et al., 2007; OECD, 2013; ILO, 2011.

Strengthening active labour market policies

Moving towards human capital-led growth will imply a substantial need for structural change, including the reallocation of labour resources. This calls for continued monitoring of labour market changes and more active policies to promote job search and new skill acquisition. But spending on labour market policies in general and on ALMPs in particular are weak, with only 0.15% of GDP devoted to active labour market policies (ALMPs) in 2010 (Figure 11). The authorities should therefore consider activation policies as a priority and scale up the level of spending in that area (OECD, 2006).

Figure 11. Expenditures on labour market policies

Public expenditure on labour market policies per unemployed (% of GDP per capita), 2010[1]

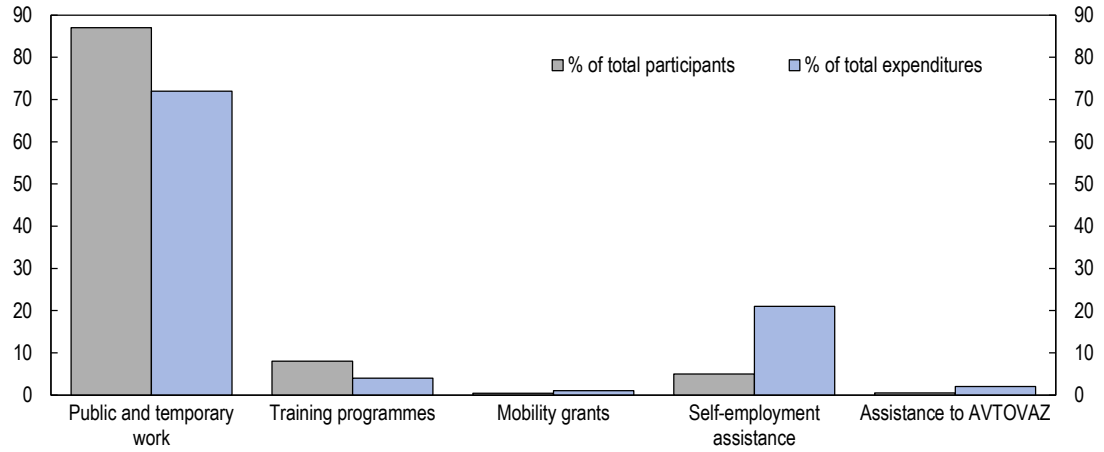


1. 2009 for the United Kingdom and Russia.

Source: Russian authorities; *OECD Public expenditure and participant stocks on LMP database*; *OECD Economic Outlook database*; and *OECD Annual national accounts database*.

The public and temporary work programmes that were largely implemented during the crisis reduced tensions in the labour market but do not favour labour reallocation and skill improvements (Figure 12). Despite some welcome changes, with a three-fold decline in public works since 2009, there is still a need to reorient further spending toward measures such as job search support and training. Job search is usually immediately effective and very cost-efficient. While recent studies prove the positive long-term effects of training, positive effects are visible in transition economies even in the short term (Box 3; Lehmann and Kluve, 2008). But despite recent efforts to strengthen training for employees, in the form of certification of vocational qualifications for job seekers and specific retraining programmes for the inactive, only 13% of the registered unemployed were engaged in training programmes over 2010-12, compared to 8% in 2009. The authorities should therefore consider extending support in this area. International experience suggests that successful programmes are *i)* market-oriented with workplace training; *ii)* targeted at specific needs; *iii)* intensive and small-scale, with high cost by head, rather than with a large coverage and low intensity; and *iv)* provide some formal certification (Martin and Grubb, 2001; Poppe et al., 2003; BIS WP, 2007).

Figure 12. Distribution of spending and participants among programmes during the crisis, 2009



Note: AVTOVAZ is the largest automobile company in Russia.
Source: *OECD Reviews of Labour Market and Social Policies, Russian Federation*, Box 2.2.

Box 3. Efficiency of training: some lessons from the literature

OECD countries

- Micro studies show that training may decrease labour market performance of individuals in the short-term (or have only a very low positive effect) because the unemployed person in training is devoting less time to job search (OECD, 2004, 2005; and Card et al., 2010). However, positive outcomes appear when looking at a time period longer than one year and at post-unemployment earnings (Meager, 2009).

- At the macro level, training reduces unemployment and increases employment (Boone and van Ours, 2004). There is also evidence that training can have positive effects even in the short term when considering overall employment of women and seniors. Youth employment is more sensitive to subsidy schemes (Bouis et al., 2012).

Russia

- Retraining programmes have been found to have insignificant effects on average in the Central and Ural Federal Districts. But positive effects are found for older workers, individuals with only general secondary education and the disabled (Benus et al., 2005).

- Training is found to have a significant positive effect on employment probabilities in the Rostov-on-Don region for blue collar participants but this effect disappears after one year. No significant impact was found for white collar participants (Nivorozhkin, 2005; Nivorozhkin and Nivorozhkin, 2006).

Other transition countries

- *Hungary*: while public works and wage subsidies have been found to have negative effects on employment probabilities, retraining increases employment rates, especially for those who had contributed directly to the costs of training (O'Leary, 2001).

- *Poland*: *i)* training programmes have been found to have positive effects while public work programmes negatively impact re-employment probabilities (stigmatisation effects) (Kluve et al., 1999; Puhani, 1998); *ii)* the impact of training on employment is positive and estimated at 14% (Kluve, Lehmann and Schmidt, 2008).

- *Romania*: *i)* retraining measures raise re-employment probabilities and wages (Benus et al., 2005); *ii)* training, retraining and other programmes such as job brokerage, self-employment assistance increase re-employment probabilities and average earning (Rodriguez-Planas and Benus, 2006).

The current focus of labour market policies on selected groups (the disabled, women on long maternity leave and seniors) is appropriate given their higher risk of inactivity. Notably, current efforts to increase senior participation in the labour market, by suppressing early-retirement schemes, reducing barriers to employment, and fighting age discrimination, go in the right direction. Efforts targeted at youth could also be strengthened given their relatively high unemployment rate. While this situation calls for specific reforms in the education system, international experience, notably in Denmark, Germany and the United Kingdom, suggests that specific and well-designed activation policies for youth, including workplace programmes, are useful complements (Jensen et al., 2003; Dorsett, 2006; Ehlert et al., 2011).

Labour market policies should also be adapted to local needs given the strong heterogeneity of employment performance across regions. The regionalisation introduced in January 2012, which has delegated active labour market policies and their funding to regions, gives opportunities for such adaptation. However, the authorities should ensure that this transfer of responsibility will not result in an inequality for unemployed and workers because of differences in financial and specific capabilities among regions (Akhmedov et al., 2003). The authorities should especially make sure that the additional federal transfers provided to the 15 regions with the highest levels of unemployment are adequate. This could be achieved by monitoring closely the outcomes of services provided by public employment offices. The authorities should also continue targeting support at the unemployed and employees at risk of dismissals in mono-industrial cities, in particular through support to regional mobility and the requalification of workers.

To design efficient programmes and monitor performance, the authorities should develop a robust methodology for cost-benefit analysis and evaluation. Cost-efficiency, the substitution in employment between unemployed engaged in programmes and other workers and success in targeting those with a higher risk of inactivity need to be continuously assessed (O'Leary, 2001), while building on the rich experience of OECD and other transition countries.

Increasing support to the unemployed and the efficiency of the public employment offices

Unemployment benefits are very low in Russia, amounting to 5-30% of the average wage (Box 4). This is often complemented by social welfare payments from the federal budget. While a low level of income support for the unemployed contributes to high job search intensity and hence to a low unemployment rate, it also forces the unemployed who are financially constrained to accept the first job offer and hence might increase skills mismatches and add to high turnover (Amable and Gatti, 2004). Increasing the level of benefits would allow the unemployed to devote more resources to job search and thereby contribute to better skill matching. Furthermore, international experience suggests that a better safety net in the form of more adequate unemployment benefits supports the transition from the informal to formal economy (OECD, 2004b). The commission recently set up to work on the potential ways of reforming unemployment benefits suggests bringing the maximum level of benefit to 100% of the minimum subsistence level. This might be insufficient and the authorities should consider being more generous.

Box 4. Main characteristics of unemployment benefit schemes

The current system of unemployment benefits

- Benefits are calculated as a proportion of the average wage earned in the preceding three months if the individual had at least a full time job during 26 weeks out of the last 12 months: 75% during the first three months, 60% the four months after and then 45%. However, the maximum level of benefits is only RUB 4 900 a month, i.e. less than 30% the average wage.

- Individuals who are not eligible for a standard benefit (those who worked less than 26 weeks, those who are unemployed for more than 1 year, those who are seeking a job for the first time) can receive the minimum benefit which is fixed at RUB 850 (8% the average wage).

- The duration does not exceed 12 cumulative months during a period of 18 months, and 6 months for those entering the labour market for the first time and the long-term unemployed.

- Benefits can be interrupted for three months if two “suitable” job offers are refused.

- All registered unemployed are entitled to the minimum level of unemployment benefits.

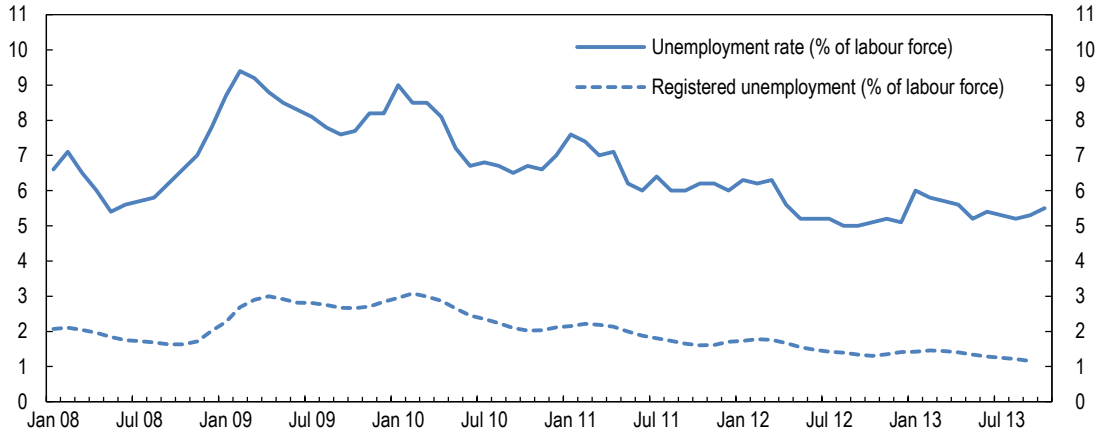
The state programme of the Russian Federation "Promoting employment" commits the authorities to improve social support to the unemployed by 2014, while strengthening activation policies. It is expected that the maximum unemployment benefit will be increased to 100% of the minimum subsistence level in 2014 while lowering the duration and the coverage of the benefit, notably by reducing the possibility to extend the unemployment benefits.

Source: Ministry of Labour.

The unemployment benefit coverage is very high in the current system, with every registered unemployed being eligible for the minimum level of benefits. However, the ratio of registered unemployment to the total number of unemployed is currently very low (Figure 13). This can change after the increase in the level of benefits. This change should be therefore accompanied by stronger activation of the recipients. The Hartz reforms in Germany could provide useful guidance, as the authorities successfully achieved the merging of social and unemployed support schemes, allowing the activation of a large number of those without work (OECD, 2012a).

The quality of services provided by public employment offices (PEOs) needs also to be addressed. PEOs tends to attract less attractive candidates and vacancies *i)* half of registered unemployed in employment services are individuals with low employability (long term unemployed, unemployed without work experience or after a long career break); and *ii)* most available jobs offer low wages. Intermediation between employers and workers should be improved. This could be achieved by reducing the workload of officers, which appears high when compared with OECD countries: each local staff has to support 230 registered jobseekers on average which is much more than in other countries such as Germany and France (Hespel et al., 2011; OECD, 2012a). Another direction for improvement is to develop online databases, automatic registration and a job search engine, as Estonia has recently done (OECD, 2012b).

Figure 13. Incentives to register in public employment offices are weak



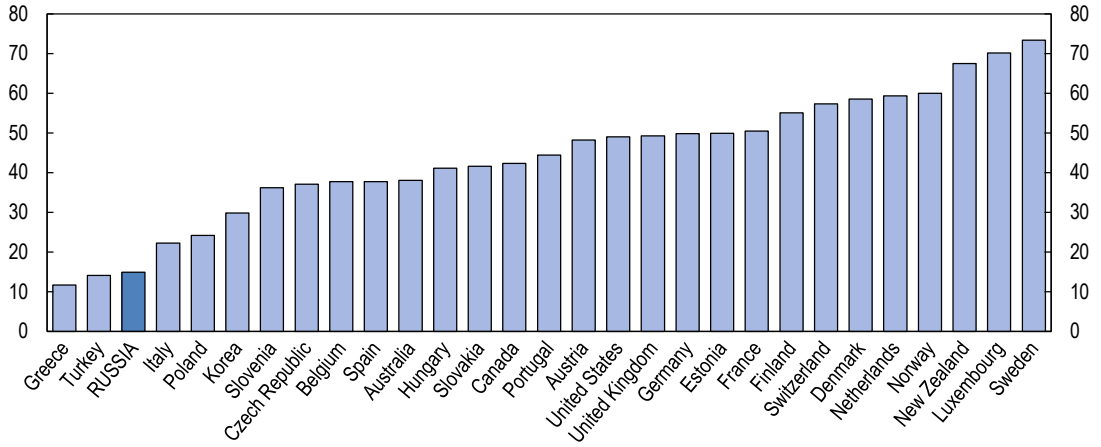
Source: Rosstat.

Developing lifelong learning to increase opportunities for all

Lifelong learning (LLL) could contribute more strongly to improving and matching skills and facilitate the adoption of new technologies (OECD, 2005b). While training is found to increase firm-level productivity by about 22% (Tan et al., 2007), the rate of participation in LLL in Russia is one of the lowest among European countries (Figure 14). Spending is also relatively low and employer expenditure has not changed much since 1995, amounting to 0.3% of the payroll in 2007 compared, for instance, to 1.5% in France.

Figure 14. Few workers are engaged in lifelong learning

Participation in lifelong learning[1], 25-64 year-olds, % of total respondents, 2011[2]



1. Lifelong learning refers to formal and non-formal education.

2. 2006 for Finland and New Zealand. 2007 for Australia and Turkey. 2008 for Canada. 2009 for Switzerland. 2012 for Russia.

Source: OECD (2012), *Education at a glance 2012*, Table C6.6; Eurostat, *Adult Education Survey database*; and Ministry of Education and Science of the Russian Federation.

Several market failures prevent firms from investing in LLL: *i)* the lack of intensive technological innovation which reduces the need to train workers; *ii)* the deficit in the provision of educational

programmes; *iii)* the high cost of training, especially for small enterprises; *iv)* the high turnover of workers, implying higher risk of poaching; and *v)* lack of information about the reward from training in terms of productivity and wages (Ok and Tergeist, 2003; Bassanini et al., 2005).

Mechanisms should therefore be developed to provide incentives for firms to engage in LLL. Measures already taken to recognise spending on education as a tax-deductible cost and to provide targeted grants go into the right direction (Box 5). There are also federal programmes that provide financial support for lifelong learning in specific specialities, such as engineers and executive seniors. For instance an internship programme for engineers involves 500 companies in 8 regions and aims at training 5 000 engineers per year over the period 2012-14. Federal support is organised through an equal co-financing between the firm and the Ministry of education and is directed at firms that win a competition process. While such a scheme is efficient at targeting the up-skilling of specific specialities, its small scale makes it inadequate for ensuring a broad upgrading of labour force skills. The authorities could consider developing broader instruments, such as vouchers and training funds. The development of vouchers could increase the quality of courses and the matching of supply with firm needs by enhancing competition among providers of educational services. Training funds are efficient when firms are closely involved in their management, when they are organised by sector activity, and when specific support is provided to SMEs and low skilled workers (Müller and Behringer, 2012). The development of in-house training programmes also calls for a wider spread of public and private partnerships and for a strengthening of the capacity of educational institutions to provide training experts.

Another way to stimulate engagement in LLL is to establish mechanisms for recognising non-formal education, which is currently underdeveloped in Russia. Efforts in that direction, notably the possibility for the unemployed to engage in training and certification of skills, should be continued. However this programme is very small: less than 2 000 job seekers underwent professional training in 2012 to obtain documents certifying their professional qualification and 4 300 are expected to be engaged in such activities in 2013. Also, the programme is targeted at regions with a difficult labour market situation, such as North Caucasus, and should be adopted nationally. There is also a need to disseminate information on the rewards from LLL in terms of productivity and wages, as well as on the availability and cost of services from different providers.

Box 5. Main legislative schemes supporting lifelong learning

The Federal Law of January 2009 modified legislation to provide fiscal incentives for training:

- Costs of training of employees are tax-deductible under corporate income tax.
- Individual spending on education are tax-deductible under personal income tax.
- Federal Laws, in 2007 and 2012, organised the support to small and medium sized enterprises in the field of training, retraining and skills development.
- Small business may be partly reimbursed for expenditures related to the training of managers and employees. Criteria for support depend on specific local conditions.
- Subsidies are also targeted to support education programmes for innovative companies.

Source: Ministry of Education.

While international studies suggest that LLL improves the labour market outcomes of participants, even for low qualified workers, the latter tend to engage less in LLL (Table 3). This may be related to the fact that a lack of general education prevents them from acquiring the skills specific to the firm, while investment in general skills is less profitable for firms given the higher risk for poaching (Ok and Tergeist,

2003). Public support targeted at low-skilled individuals could help them in acquiring those general skills and could hence stimulate subsequent private investment in training.

Table 3. Workers engaged in training by qualification

Survey realised in 2012 (As a percentage of the number of enterprises that have organised training staff)

Leaders at various levels	57
Highly qualified specialists	66
Employees, officers, technical performers	41
Skilled workers	71
General workers	16

Source: HSE (2012), *Monitoring of educational markets and organizations* (ISSEK HSE).

The engagement of SMEs in lifelong learning is also weak, which may reflect financial and organisational constraints or a lack of customised training (OECD, 2012e). In that context, the development of training vouchers targeted at workers in SMEs would increase the attractiveness of lifelong learning and boost competition among providers to serve the specific needs of small firms.

Rebalancing flexibility and income security by strengthening collective bargaining

Encouraging longer term labour relationships between workers and employers could stimulate investment in human capital and skills matching (Venn, 2009; Belot et al., 2007; Wasmer, 2002). This could be achieved by strengthening the role of trade unions while still allowing firms to adjust their workforce when necessary. Collective bargaining plays an important role in ensuring the improvement of working conditions, stable employment and the access to training for all categories of workers (Keogh, 2009). Whereas trade unions were mere segments of state bureaucracy under the soviet system, their contributions to social dialogue and the management of human resources are important in a market economy. Freedom to express collective interests is also an important building block of the civil society (Hayter, 2011) and effective enforcement of workers' rights and binding agreements is part of the rule of law.

Unions in Russia appear strong at first glance, with a 50% membership and 42% collective wage bargaining coverage. However, in practice collective agreements mostly provide general recommendations but no binding constraints on firms (Lehman et al., 2011b; Cazes and Nesporova, 2004; Venn, 2009). Since 2010 Russia has ratified eight ILO Conventions, reflecting the willingness of the authorities to move closer to international best practices in that area. However, the limited effective content of collective agreements largely reflects the weakness of trade unions and restrictions regarding the right to strike (OECD, 2011; Box 6). The Russian authorities should widen the scope for negotiating collective bargaining at the enterprise level and ensure enforcement by following the recommendations made by experts in the context of the OECD review on labour market and the ILO Commissions on Freedom of Association and Collective Bargaining (OECD, 2011b; ILO, 2013), in particular by strengthening the bargaining power of workers at the enterprise level and their right to strike.

Box 6. Bargaining power of workers at the firm level is weak

Provisions ensuring the rights for collective bargaining, freedom of association and strike are provided by the law. However, in practice there are some limitations, related in particular to the enforcement and complexity of the legislation.

Collective bargaining

- At the workplace level, about half of employees are not covered by collective agreements because they work in small firms and outsourced activities. Union requests to negotiate collective agreements are often ignored in small firms.
- Small and new independent unions have difficulties to access to collective bargaining, which are generally negotiated by majority unions, limiting their possibilities for development.

Freedom of association

- Registration rules for non-commercial organizations including unions are complex and costly (if unions use the services of special companies for dealing with registration).
- There are cases of suspected anti-union persecution (physical attack of leaders; arbitrary detention; censured leaflet) and they are currently under examination by the ILO.
- While legislation prohibits anti-union acts, they are not always strongly enforced (applications of penalties are rare, the fine is often not sufficiently dissuasive, the number of labour inspectorates is low and going to Court is difficult).

Right to strike

- The possibility to conduct a strike is limited to collective labour disputes, implying, for instance, that strikes involving issues not included in workplace collective bargaining are not recognized.
- Most strikes are considered technically illegal because of the complexity of procedures. Participating workers can be punished by disciplinary sanctions and union property can be confiscated by Court decision.

Source: OECD (2011); ILO (2013a); ILO (2013b); ILO (2013c); Lyutov (2009); ITUC (2012).

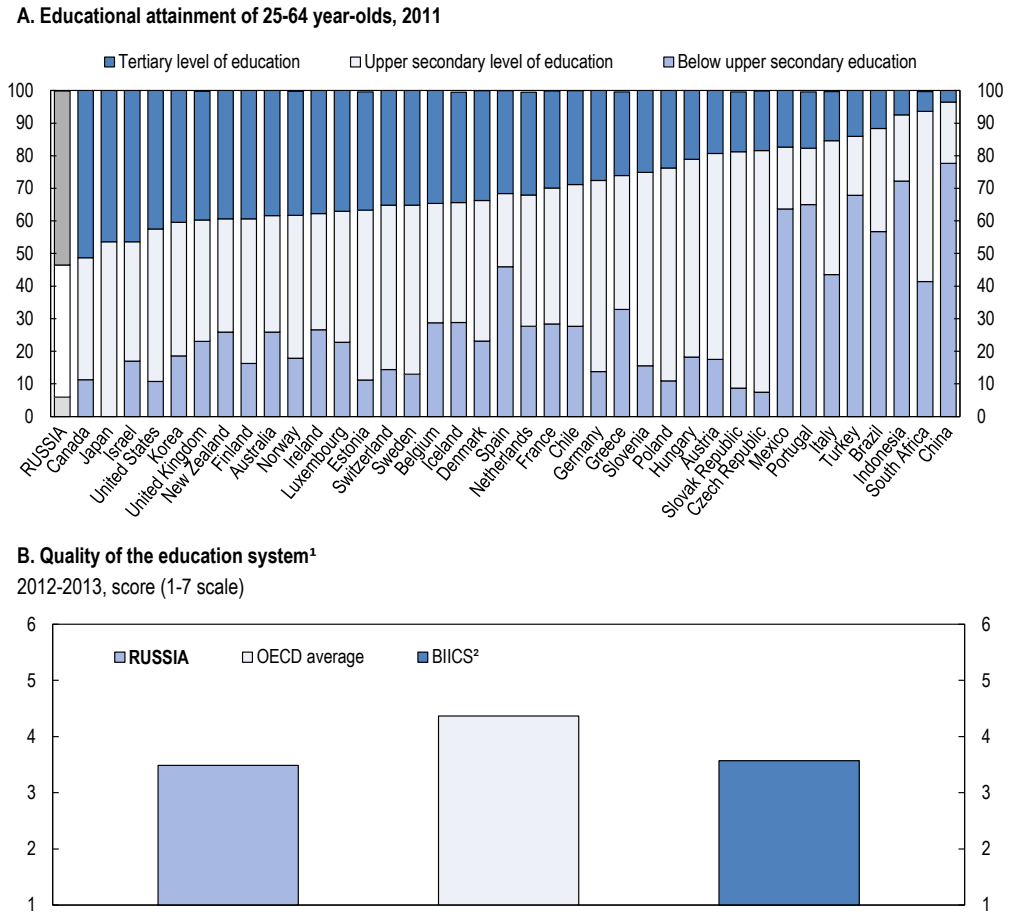
Box 7. Main recommendations to improve labour market performance

- Strengthen active labour market policies by increasing spending on training programmes, especially targeted at youth (in-work programmes); reducing the caseload per employment office employee; developing intermediation IT tools; developing monitoring and ex-post evaluation studies; and ensuring the equality of support to the unemployed across regions.
- Provide stronger temporary income support to the unemployed by increasing the level of benefits while reinforcing job search requirements for all registered unemployed, including those entitled to minimum benefits.
- Strengthen life-long learning by developing financial incentives for firms and workers (through levies and training vouchers); providing specific incentives for training to the low educated and for small firms; promoting mechanisms for recognising non formal education; and disseminate information on rewards from lifelong learning.
- Widen the scope for negotiating collective agreements at the enterprise level by enforcing collective agreements, strengthening bargaining power of workers and extending the right to strike.

Strengthening the quality of the education system

Russia has achieved outstanding results in terms of enrolment, with 51% of the labour force educated at the tertiary level (OECD, 2013). But the quality of education is at least as important for economic growth as years of schooling (OECD, 2010; Amini and Commander, 2011). Russia is not performing as well in that respect. For example, employers surveyed by the World Economic Forum rank the quality of the Russian education system at 78th out of 140 countries. This is significantly lower than the OECD average and slightly inferior to other emerging economies (Figure 15). The ability to apply knowledge in a technology-rich environment seems also to be a relative weakness among adults according to the preliminary results of the inaugural 2013 Survey of Adult Skills (PIAAC). While Russians perform better than the OECD average in terms of literacy and similar to the OECD in terms of numeracy, they lag behind in terms of the ability to use ICT tools efficiently and effectively to solve the types of problem that arise in their everyday lives as workers, consumers and citizens (OECD, 2013b). Improving the quality of education is therefore crucial. In particular, the authorities need to ensure formal qualifications reflect a genuine acquisition of the relevant skills (OECD, 2012e). Intensive reforms of the system have already been decided in the context of the new law on education implemented in September 2013 (Annex A1), and the new federal programmes for education (Box 8). However, some challenges remain to match skills supplied by the education system with the needs of a modern economy, to improve equity in the distribution of learning opportunities among students, to assure an appropriate level of spending and to enhance the efficiency of the educational network.

Figure 15. Tertiary attainment is high but quality of education needs to be improved



Note: For panel A: for Japan, no distinction available between upper secondary education and upper secondary education. Population aged 25 years and older for China, Indonesia and South Africa. 2010 for China and 2009 for Indonesia.

1. The responses are to the question "How well does the educational system in your country meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well]".

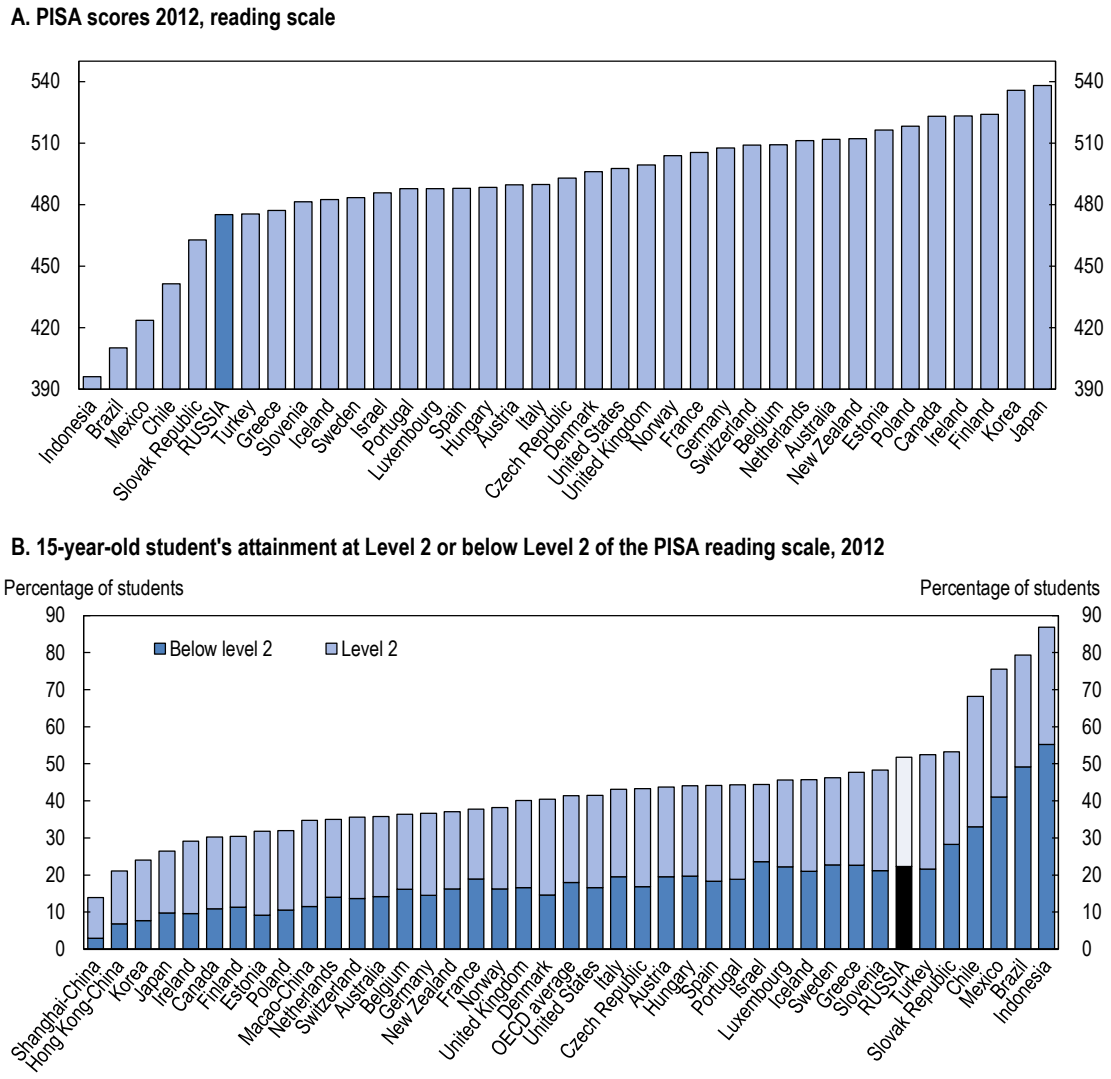
2. Simple average of Brazil, India, Indonesia, China and South Africa.

Source: OECD (2013), *Education at a glance 2013*, Table A1.1a; and World Economic Forum, Executive Opinion Survey, *The Global Competitiveness Report 2013-14*.

Ensuring appropriate educational standards in secondary education

Results of international tests on educational performance are mixed. Russia belongs to the group of leading countries for PIRLS test (Progress in International Reading Literacy Study), and TIMMS test (Trends in International Mathematics and Science Study) which reflects good academic learning outcomes. However, Russia's performance in PISA is weaker than most OECD countries, pointing to quality issues in education when it comes to apply knowledge in unfamiliar situations. PISA score is similar to that of other emerging countries such as Brazil, India and China, but unlike in those countries it has not improved since mid-1990 (Amini and Commander, 2012). Russia also has a relatively high percentage of low performers, i.e. students who do not reach the baseline proficiency in reading so that they lack the essential skills needed to participate effectively and productively in society: 30% of boys and 15% of girls belong to that category, compared to 24% and 12% in OECD on average (Figure 16).

Figure 16. A significant number of students do not master basic skills



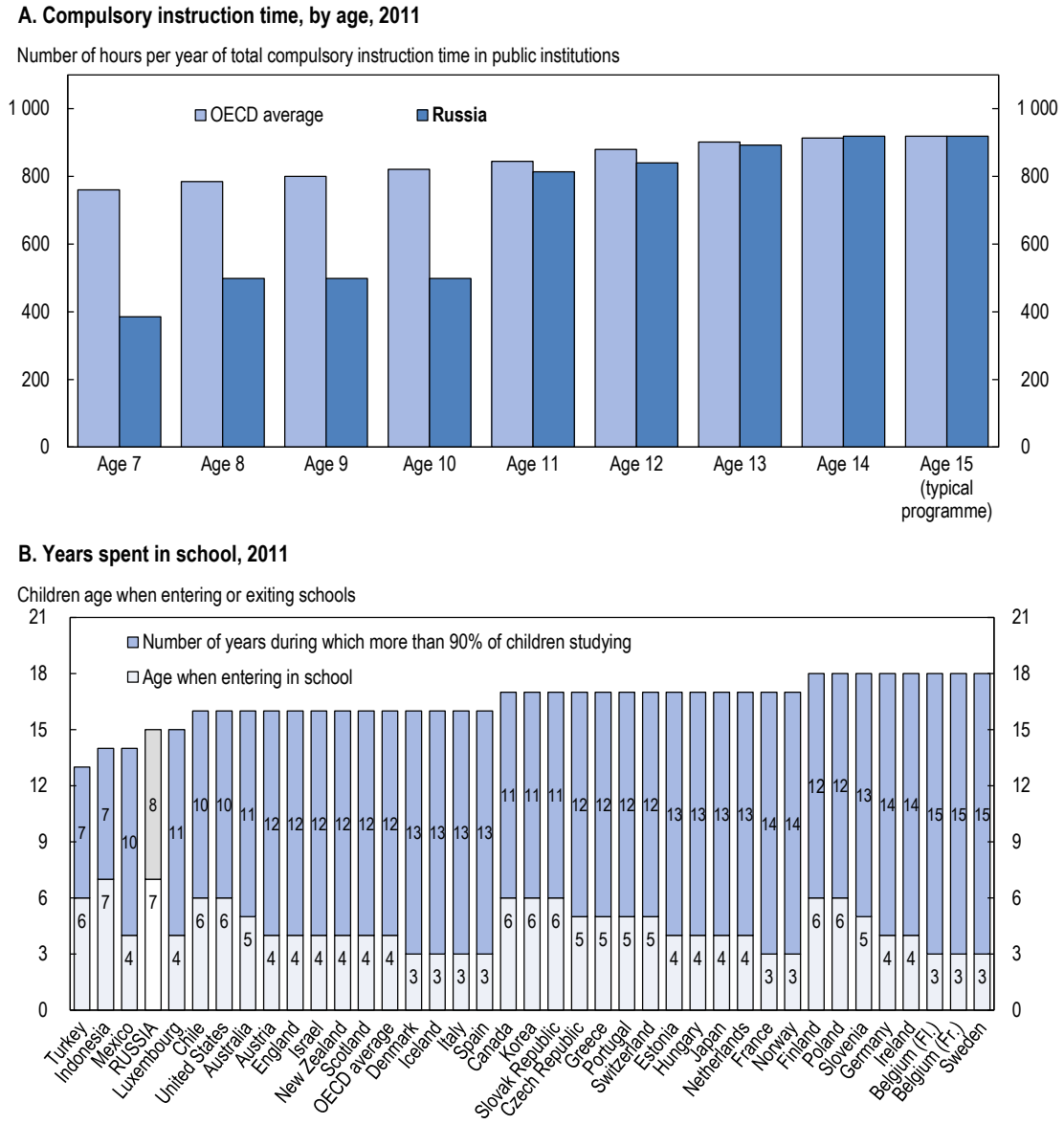
Source: OECD (2013), *PISA 2012 Results: What Students Know and Can Do* (Vol. I), Tables I.A, I.4.1a and I.4.2a.

Low performance on the PISA suggests that the current curriculum and methods of teaching in Russia are not effective in generating the ability to apply knowledge to new situations, which is needed in a skill based economy (Khavenson and Tyumeneva, 2012). Improving this ability can be developed by strengthening methods such as problem-based learning methods, and individual and group project work (Sasova, 2011; OECD, 2012c). New federal state education standards for primary and secondary education (initiated in 2009 and approved in May 2012) move in this direction, but the authorities should monitor results closely, with possible course corrections.

The low quality level of education may also be related to the overall duration of studies, which appears relatively short. In many countries education begins at the age of 4 years while it is 7 years in Russia, implying that the number of years during which over 90% of the population are enrolled is 8 years against 12 on average in OECD countries. The average time spent on learning is also lower than OECD countries, especially at primary and lower secondary education (Figure 17). The new law on education that

strengthens the access to pre-primary education should contribute to reducing the gap and better preparing children for further education (OECD, 2011b).

Figure 17. Time spent on learning is low



Source: OECD (2013), *Education at a glance 2013*, Table D1.3.

The low level of teachers' wages in Russia makes it difficult to attract good candidates into teaching and may reduce teacher motivation. Their average wages amounted to 64% of GDP per capita against 123% in the OECD on average in 2009. Beyond the current government commitment to raise teachers' wages at least to the regional average in 2013, a more flexible mechanism of teacher remuneration tied to performance might increase motivation. The Ministry of Education recommends that teachers receive 70% of the salary as a fixed based wage and 30% depending on teaching quality, but this new wage setting system is so far applied only in few regions. There is no direct evidence that a performance-based pay system impacts on student performance when considering OECD countries on average. However, such a

system delivers positive results in countries where teachers' salaries are low, which suggests that there is scope for implementing it on a larger scale in Russia. However, it is difficult to evaluate the impact of an individual teacher on students' results and a system based on the evaluation of good practices could be more effective than a system based on evaluating student outcomes. Also, it is difficult to measure the impact of individual teachers within the school environment and an alternative would be to reward the performance of groups of teachers, for instance a grade-level team (OECD, 2012f).

Box 8. Main federal programmes to modernise the Russian education system

Priority National Project "Education"

This programme covers different sets of actions including training in universities for people who have completed three years in the army; improving school meals; providing state support to talented youth (concerns 5 350 youth in all regions of Russia); supporting the best teachers notably by the introduction of bonuses; supporting the best institutions that implemented innovative educational programmes; creation of federal universities.

"Our New School"

This programme aims at ensuring the transition of the system to the new educational standards; improving the quality of teaching; providing specific support to gifted students; improving school infrastructure and strengthening the autonomy of schools.

"Modernisation of the regional system of general education"

Several federal transfers are aimed at increasing teachers' wages to the regional average; replenishing resources of school libraries, purchasing vehicles for the transportation of students; purchasing equipment for school cafeterias; training and retraining managers and teachers; supporting distance learning students.

The effectiveness of federal transfers is monitored through a system of value performance indicators (e.g. ratio of average teacher wage in the region to average wages in the economy) and in case of non-compliance the subsidy is reduced.

Source: Ministry of Education.

Strengthening the matching of vocational education system with labour market needs

Vocational education has been organised until recently around three levels of study: initial, secondary and tertiary. The new law on education modifies this organisation by merging the initial level with other educational institutions. This should improve the vocational education system, as the initial level of education was found to provide insufficient skills due to early specialisation. However, labour market outcomes for graduates from secondary vocational education are also weak (Table 4). Also, the proportion of graduates from vocational education who continue higher education is high. While providing opportunities to students for continuing studies is welcome, the small number of entrants into the labour market may also reflect the relatively low value of vocational education diploma (Kochetov, 2012). At the same time, national surveys point to the fact that employers prefer to hire university graduates even for jobs that do not require higher education, such as sales persons and receptionists (see in particular the Research Survey "Social Navigation" from the Higher School of Economics).

Table 4. Labour market outcomes of graduates

	Employment rates		Unemployment rates	
	Total	Graduates of 2011	Total	Graduates of 2011
Higher professional education	86.2	82.1	6.1	9.1
Secondary vocational education	78.7	72.2	9.3	14.1
Initial vocational education	78.0	73.8	10.6	13.0

Source: Ministry of Education, *Survey 2012*.

The current vocational education system, partly inherited from the Soviet period, lacks an emphasis on core transferable skills and mainly trains people for narrowly specialised jobs. As a result, many firms have to retrain newly employed youths (Survey from Centre for Human Resources, RANEPA). International experience suggests that adopting professional standards could contribute to improving the quality of vocational education by ensuring overall consistency in the mix and level of competences acquired (OECD, 2010b). In that context, revising the system of specialisation in vocational education on the basis of updated professional standards could contribute to generating more relevant skills. While this process is ongoing, an OECD Review of vocational education could help reform that area.

A stronger involvement of the social partners is also important (OECD, 2010b). Vocational institutions, notably at the secondary level, already have the possibility to raise funds from the private sector, to manage those funds independently, and to determine one third of the curricula in coordination with business stakeholders. However, in practice cooperation with firms is weak. Eighty per cent of surveyed firms did not cooperate with a vocational school in 2012 and sixty per cent did not plan to increase this cooperation (Table 5). The authorities should encourage school governing boards and strengthen the role of employers in setting priorities in accordance with local labour market needs. This could be complemented by establishing councils at the federal and regional levels which would survey employers' needs, monitor performance of graduates, benchmark schools and identify best practices.

A dual system of vocational education, with at least 25% of time spent in firms, is currently being considered by the authorities. It would strengthen the cooperation between vocational schools and firms, and contribute to a better school-to-work transition. A federal programme already exists which aims at encouraging firms to offer apprenticeship places by providing compensation to employers. It has been implemented in 15 problem regions for a small number of students in 2012. Russia could be inspired in that area by German, Danish and Swiss experiences that manage to find a balance between the incentives given to employers, the control of the quality of training and the student's contribution to the output of the firm (Westergaard-Nielsen and Rasmussen, 1999; Dionisius et al., 2009).

Table 5. Cooperation between firms and secondary vocational education

Panel A. Existing relationships between companies and vocational schools

Last year did your company cooperate with vocational schools to attract graduates? (% of the total number of surveyed companies)	
Concluded direct contracts for training employees	6
Participated in "open doors day" and career fairs in secondary specialised colleges	7
Organised competition for students and coached best students	1
Organised training and practices at the company	15
Organised regular training sessions and courses in technical colleges for employees	1
Participated in the development of professional standards	0
Participated in the financing, industrial workshops	2
Financed additional scholarship	1
Other	1
Did not cooperate with the technical colleges	79

Panel B. Willingness to increase cooperation with vocational training institutions

Would you like to expand\begin cooperation with vocational training institutions at different levels, in order to attract their graduates to work? (% of the total number of surveyed companies)	
Want to start/expand cooperation with universities	23
Want to start/expand cooperation with secondary vocational education institutions	24
Want to start/expand cooperation with primary vocational education institutions	23
Do not want to start/expand cooperation with any vocational education institutions	59

Source: HSE (2012), *Monitoring the economics of education*.

Vocational education institutions are in urgent need of investment, as their under-financing has resulted in the general obsolescence of the system, and hence its low attractiveness for students (Nokolaev and Chugunov, 2012). A recently implemented regional modernisation programme, is trying to address those challenges through grants from the federal budget and partnerships with the private sector, which contributes two thirds of the budget. While this goes in the right direction, the programme supports only less than 5% of schools.

Improving the governance of higher education

To improve the matching of higher education with local labour market needs, the new law on education allows universities to establish academic departments providing practical learning in close cooperation with employers. Governance in higher education institutions plays also a key role in shaping the right mix of skills. It is organised on the principle of "unity of command and self-governance" meaning that each educational institution is theoretically independent in the implementation of educational, scientific, administrative, financial and economic activity. Since 1999, each university has had the possibility of establishing governing boards, and since 2010 of determining half of the courses in cooperation with the business sector. However, university rectors are currently appointed at the federal level and the executive power of the governing board in the academic and budget areas remains limited. The decisional power of the board should be reinforced, notably by giving it some at least advisory role for the election of the head of the institution. Cooperation with employers should further expanded.

The allocation of free study places among fields of study and among universities is currently determined at the central level (Box 9). The government prioritises certain specialisations (such as science, engineering and high-tech) by increasing the number of free study places in those fields. As students apply for free places by field, this practice has maintained demand for traditional fields of study. However, graduates in those fields have in practice lower salary and career opportunities in comparison with service industries. In particular careers, such as an economist, a manager and a lawyer present a higher return on education (Filatova et al., 2012; Kochetov, 2012; Carnoy et al., 2012). While the role of region has been strengthened since 2013, universities should also be given more power in allocating free student places to avoid creating career traps. Universities have indeed a better ability to adjust to students' choices, which have been proven to be sensitive to labour market signals such as expected wages (Rosen and Ryoo, 2004).

The system of "target admission" contributes to improving the matching in the labour market by giving students who have a job offer the right for a free study place in a related field of education. Target admissions amount to 15% of the total number of free student places and can even reach 50% in specific educational fields such as transport and health. The new law on education reformed this system by introducing a tripartite contract (between the university, the employer and the student) that establishes some legal commitment for the student, notably the obligation to reimburse the cost of studies in the case of dropout. The authorities could consider expanding this system if it proves efficient in favouring the access to qualified jobs.

Box 9. Criteria of allocation of free study places in higher education institutions

- The quota of free student places in higher education is determined by the Ministry of Education. By the law, the number of free-study places has to be at least equal to seventeen per thousand people.
- Allocation of free places by university and by field within each university is based on the proposal of a commission involving federal executive bodies, regional executive authorities, employers and non-governmental organisations. In practice free places are based largely on their historical number.
- Students are allocated to free places (and universities) according to their score on entrance exams. Until 2001, each university managed its own exam and this system generated corruption. From 2001, the government initiated a national examination in each subject, the Universal State Examination (USE), which was fully adopted as entry criteria by universities in 2009. Universities can complement this national test by a specific test.

Source: Froumin and Kuzminov, 2012; Ministry of Education.

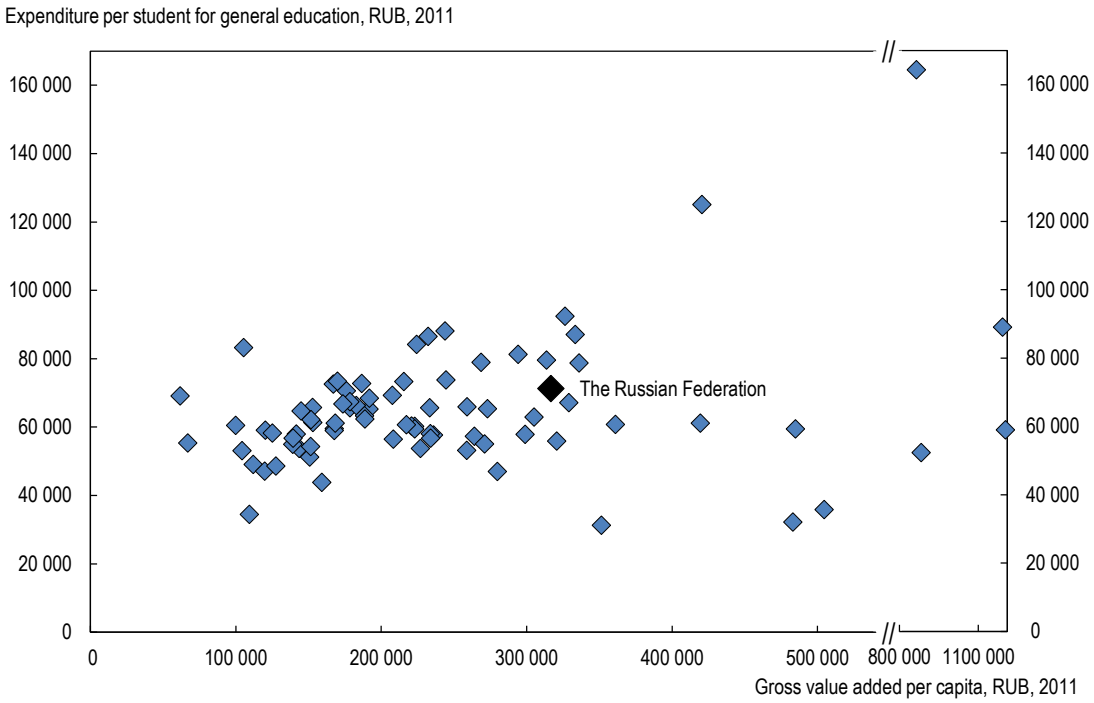
The Russian decision to sign the Bologna Declaration in 2003 has resulted in a progressive reshaping of higher education diplomas towards a two-tier system of bachelor and masters programmes. Eighty percent of students are currently enrolled in bachelors programmes (Filatova et al., 2012). This new educational model should increase the mobility of students and teachers, strengthen the cooperation with higher education institutions in OECD countries, and thereby contribute to the diffusion of best practice in terms of governance. It should also improve skills matching, as the Bologna process is intended to orient education toward the acquisition of the key skills required in the labour market. It is too early to assess its efficiency, as the large cohort graduating from the bachelor programmes will begin to enter the labour market only in 2013 and 2014.

Reducing inequality of opportunity at regional, school and individual levels

While the Soviet education system was highly centralised at the start of the transition, responsibility has been increasingly transferred to regions and municipalities. This positive development has, however,

been accompanied by a greater heterogeneity in spending across regions (Amini and Commander, 2011). This partly reflects differences in the costs of education (especially when considering those in remote schools), but it is also linked to regional financing capacities. For instance, expenditures per student in general education can vary fivefold across regions. Overall, public expenditure on general education as a share of gross regional product per capita ranges from 0.3% to 13.6% (Figure 18). The authorities should therefore ensure that adequate resources reach schools and students in all regions and try to prevent education quality differences, in particular by strengthening federal transfers (OECD, 2012d).

Figure 18. Regional disparities in spending



Source: Rosstat and Ministry of Education.

The share of university students paying fees has increased in the last two decades and reached 61.5% in 2011. While this has helped to fund the expansion of enrolment, underdeveloped financial aid mechanisms imply a risk of rising inequalities. Low income students go mainly to second or third tier universities, or evening/correspondence courses (Klyachko, 2013). This is related to the fact that: *i)* tuition fees are higher in the most prestigious institutions; and *ii)* the allocation of free study places is based only on academic performance which favours candidates with stronger socio-economic background. The authorities could therefore consider reducing the proportion of students benefiting from free places based only on academic performance. Moreover, half of full time students work (including 16% with a permanent job), which is likely to have adverse effects on their academic performance (Table 6).

Table 6. Share of working students

Question: "Did you work on a fee basis for the last 12 months?"

	Students full-time students	Students correspondence courses
Yes, I had a permanent job	16.3	74.2
Yes, I had a temporary contract	17.8	10.2
Yes, I had one-off earnings on irregular basis	18.3	4.9
No, I did not work	47.6	10.7

Source: HSE (2012), *Monitoring the economics of education*; Ministry of Education.

The authorities should strengthen support to disadvantaged students, notably by expanding student loans, which are currently almost non-existent despite formal implementation in 2009. International experience suggests that student loans with repayment contingent on income are effective both in favouring equality of access to higher education and raising funds for university (OECD, 2012c).

Family background has a significant impact on educational performance in Russia (Amini and Commander, 2012), even though it is weaker than in the OECD and the variation in student performance and school performance is also lower (OECD, 2013). However, low socio-economic background students perform less well than elsewhere: only one among five in Russia, as opposed to one in three in a typical average OECD country, performs in the top quarter of all students (OECD, 2013). In that context, specific support should be targeted at low income households given the rise in educational expenditures for this group: over the 2004-10 period, expenditures for education increased 2.5 fold for the poorest income decile against 2 fold for the richest income decile group (Abankina et al., 2012a).

Education is free in Russia until the end of secondary education as far as mandatory core subjects are concerned. However, equality of opportunities in general primary and secondary institutions may be undermined by the possibility for parents to pay for optional courses for their children (in specific subjects such foreign languages or theatre, but also in additional courses in core subjects). This system encourages the involvement of parents in school management (mainly through the creation of school councils) contributing to better education outcomes. But such system is also associated with higher risk of disparities in the access to quality education. There is some evidence of dualism between schools financed by richer parents that provide additional training courses in specialized and core subjects, and schools with poorer parents where only the compulsory subjects are taught (Andrushchak et al., 2010). Using additional resources to pay teachers reinforces this dualism, as better resourced schools have the possibility to attract more qualified teachers. As a result, initial socio-economic inequalities are likely to be transformed into inequalities of opportunity in working life. Insofar as the authorities should provide similar opportunities of learning for all students in public schools, they should reconsider this system of paid courses.

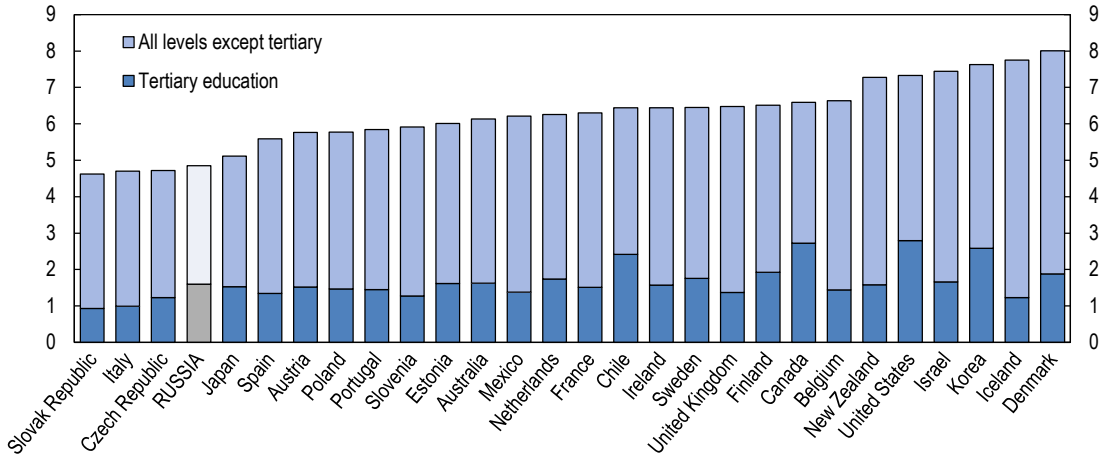
Scaling up spending while continuing strengthening efficiency

Spending on education should be viewed as a priority in Russia. Expenditure on educational institutions amounts to 5.5% of GDP in 2009, which is below the OECD average of 6.3%. The gap comes from lower spending on primary, secondary and non-tertiary post-secondary education: 2.4% of GDP against 4% (Figure 19). Also, the falling number of students and the reduced willingness of parents to pay for education make further rapid expansion of funding less likely than in the past (Filatova et al., 2012). The authorities should therefore increase the level of public spending toward levels observed in OECD countries, while continuing to improve the efficiency of the educational system. Notably, the authorities should continue the restructuring of the educational network, with weak institutions being merged or reformed, especially given the observed demographic decline. This restructuring is needed at all levels, as

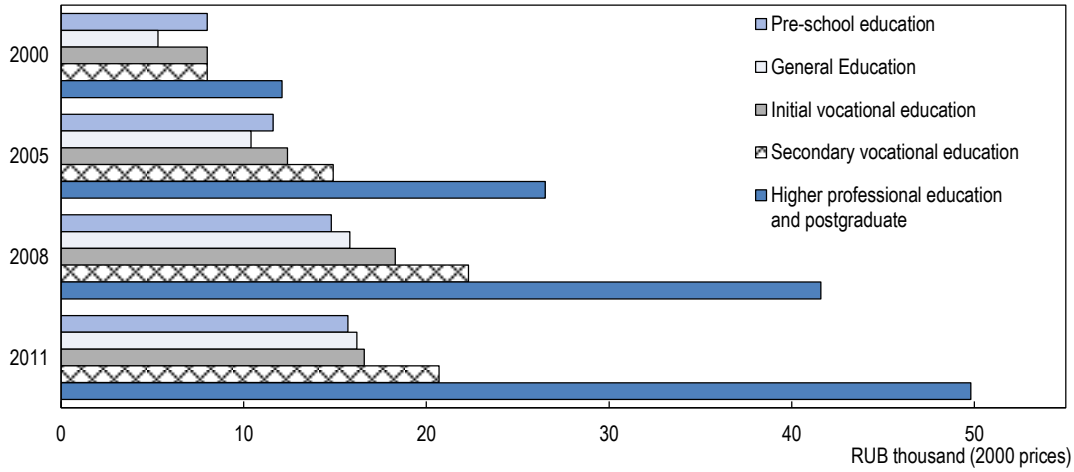
the declining number of secondary education graduates has begun to lead to a reduction in the number of university students since 2011 (Abankina et al., 2012b).

Figure 19. Spending in education remains relatively low in international comparison

A. Expenditure on educational institutions, % of GDP, 2010



B. Puplic expenditure on education per one student by level of education



Source: OECD (2013), *Education at a glance 2013*, Table B2.3; and Ministry of education.

Box 10. Main recommendations to improve the quality of the education system

- Increase the overall education funding, while continuing to restructure the network of education institutions and monitoring closely the effects of the new education law on the relative performance of Russian students. Link teachers' remuneration with their performance.
- Continue updating professional standards for vocational education. Strengthen the co-operation with business and trade unions through the systematic implementation of school governing boards. Encourage firms providing internships while controlling the quality of training,
- Give more decision-making power to university governing boards. Allow universities to determine the allocation of free study places among field of studies. Implement income contingent loans for fee-paying university students.
- Ensure that adequate resources reach schools and students in all regions and prevent education quality differences, in particular by strengthening federal transfers. Consider suppressing school fees for optional courses in non-tertiary education.

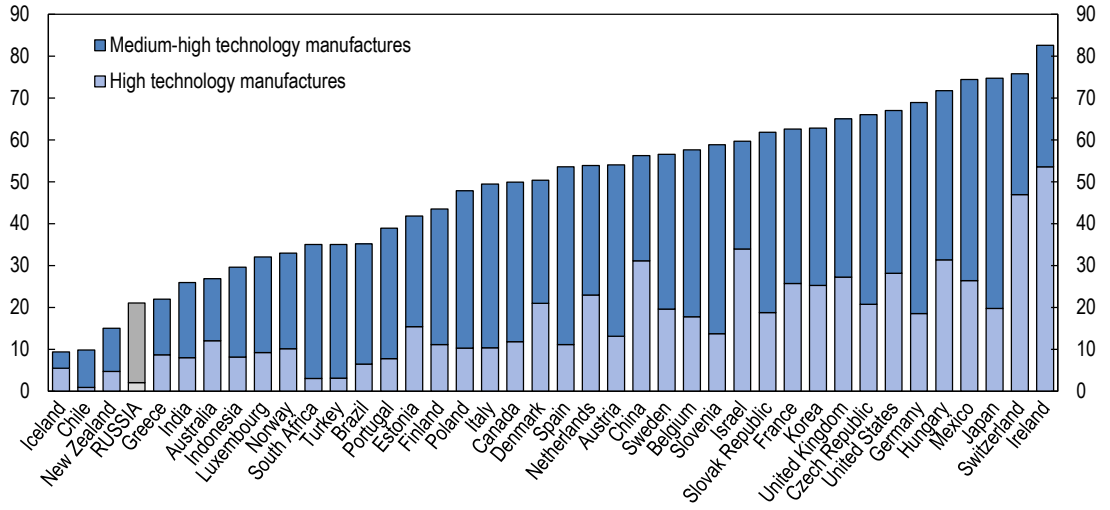
Russia has an unused innovation potential

Russia has an important innovation potential, with high tertiary education rates, a large science base inherited from the Soviet Union, strong positions in some science and technology fields and a government that recognizes the importance of innovation. But despite these favourable preconditions, the economy lags behind OECD countries on most measures of innovativeness:

- Russia has less than one fifth of high and medium high technology products in manufacturing exports, which is much lower than the level in most OECD countries (Figure 20). This can be partially explained by the predominance of raw materials in Russian exports, though innovations are also essential to sustain oil and gas output (Ahrend and Tompson, 2006) and this industry is becoming increasingly high-tech. Hence, the development of hydrocarbon resources would also benefit from increasing of innovativeness.
- Manufacturing firms are less likely to engage in innovation activities than their OECD counterparts, with innovative activity of any kind reported by only 10% of firms, compared with 60% in the best performing OECD countries (Figure 21).
- Gross expenditure on R&D, at just above 1% of GDP, is only one-half the median OECD country level (Figure 22). Moreover, the business contribution to R&D expenditures is particularly small, amounting to only 0.3% of GDP, compared to more than 2% in leading OECD economies.

Figure 20. High and medium-high technologies in manufacturing exports

Shares in total manufacturing exports, %, 2011

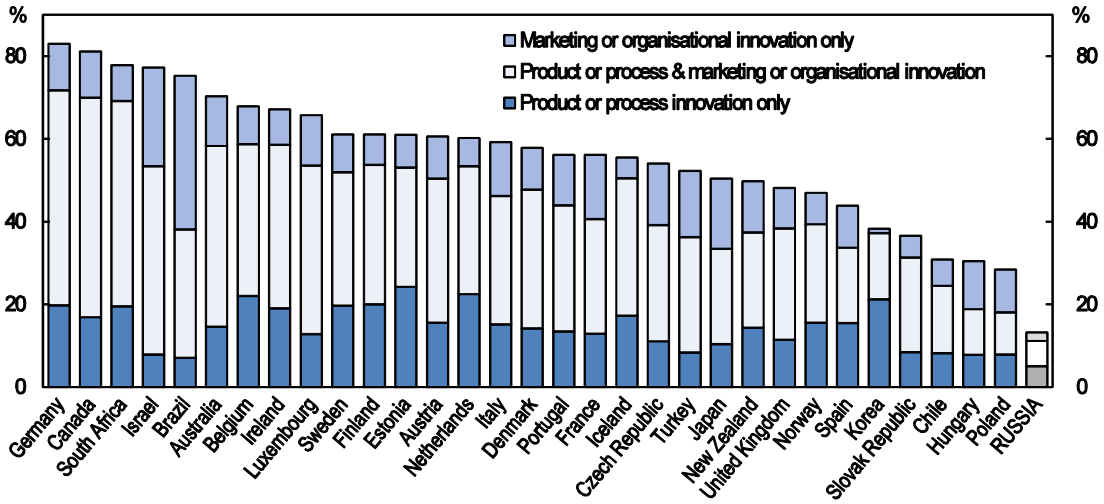


Note: 2010 for Spain.

Source: *OECD STAN Bilateral Trade database by Industry and End-use category*.

Figure 21. Innovation in the manufacturing sector by category

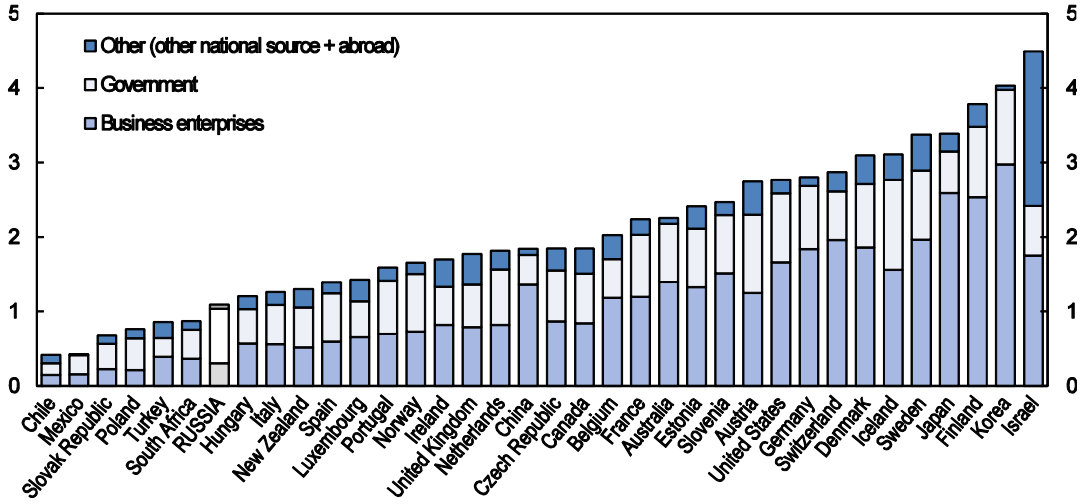
2008-10, as a percentage of all manufacturing firms



Source: OECD (2013), *OECD Science, Technology and Industry Scoreboard 2013*, Figure 5.1.2.

Figure 22. R&D expenditure (GERD) by source of financing

Percentage of GDP, 2011 or latest year available[1]



1. 2010 for Canada, Chile, France, Germany, Italy, Portugal, Spain; 2009 for Belgium, Iceland, Israel, Netherlands, South Africa; 2008 for Australia, Switzerland.

Source: *OECD Main Science and Technology Indicators database*.

Framework conditions are essential

Among the main impediments to innovation, are the framework conditions discussed in detail in Chapter 1, including barriers to competition and entrepreneurship, high corruption, and poor law enforcement (including intellectual property law). Evidence about the importance of good framework conditions for R&D activity is abundant and most innovation policy initiatives are likely to prove inefficient in their absence (Jaumotte and Pain, 2005; OECD, 2006). In this regard, competition is a key driver of innovation and productivity growth (Baumol, 2002). Indeed, available data suggest that Russian firms operating in a more competitive environment spend substantially more on R&D, while monopolistic firms innovate the least (Goldberg, 2006). Improving the business climate, with a special stress on stimulating competition, is therefore a crucial step towards increasing innovation in Russia. The supply of appropriate skills is also essential for innovation, with related challenges in this area discussed in earlier sections of this chapter. The impact of specific innovation policies crucially depends not only on the implementation capacities of designated bodies, but also on the overall quality of public governance.

The innovation policy is becoming more balanced

Two-thirds of overall R&D expenditure is financed by government in Russia compared with one third in most OECD countries. This reflects low spending by business on innovation, since the level of government spending as a share of GDP is close to the OECD average. Moreover, Russia's innovation policy remains unusually focused on direct support of publicly owned organisations, which perform almost 75% of all R&D (HSE, 2010), including a large share of government funds going to publicly owned branch research institutes and design bureaus (OECD, 2011d; Gershman, 2013). In this setting, the role of private sector institutions is weak, while best experience from OECD countries suggests that there is complementarity between business and public research (WB, 2010; OECD, 2011d). However, business is placed more at the centre of innovative policies in the "Innovative Russia 2020" strategy adopted in 2011 (Box 11), including through promoting innovation at state-owned enterprises, creating innovation clusters and technology platforms, and involving business more systematically in innovation policy planning.

The effectiveness of this new toolkit is hampered by a lack of continuity of innovation support programmes as new initiatives are often launched before the lessons are learnt from previous programmes. While the system of key performance indicators is being increasingly introduced, excessive attention is still paid to monitoring inputs rather than outputs, and short- rather than long-term outcomes (Kuzyk and Simachev, 2012). These shortcomings are aggravated by problems in the interaction between federal, regional and local level policies. Greater policy coordination, a more systematic evaluation process based on standardised evaluation methodologies and an incremental change approach would thus serve to strengthen the quality of policy making. The increasing role of foresight studies in designing innovation policies at federal regional and corporate levels is an important recent development (Meissner et al., 2013; Sokolov and Chulok, 2012).

Box 11. Innovative Russia 2020

The strategy "Innovative Russia 2020" was accepted in 2011 as a strategy to improve innovativeness of Russia economy.

- The strategy sets ambitious objectives to increase R&D expenditures to 2.5-3% of GDP (from the current 1.3%), with over 50% covered by private sector (from the current 33%), to increase share of innovative products in total Russian volume of production to reach at least 25-35% (from current 12.4%), and several other more specific targets.

- As part of the strategy implementation, total domestic expenditures for education should increase from 4.8% to 7% of GDP, with public expenditures going up from 4 to 6% of GDP.

- Government funding of fundamental research will be raised from EUR 0.5 bn in 2010 to EUR 3.9 bn in 2020, funding to applied research and IPR commercialisation will grow from EUR 0.7 bn to EUR 3.6 bn, and funding to innovation infrastructure development will be increased from EUR 0.5 bn to EUR 1.5 bn.

The first report about the results of this strategy was published in April 2013 (RVC, 2013). Expert surveys point to improving environment and infrastructure for innovations, but low demand for innovation from the real sector remains the most important barrier for the commercialisation of R&D, followed by administrative burdens and the quality of R&D results.

Existing support for business innovation is geared towards large businesses, and in particular SOEs, with more than 80% of business investment in innovation in Russia currently carried out by large SOEs. However, the current strategy to stimulate innovation in those firms is heavily biased towards top-down and command and control measures. The flagship "Innovation Enforcement Initiative" was started in 2011. It involves 60 large SOEs which account for over 25% of Russian GDP and one third of industrial production. Participating enterprises are obliged to adopt and implement programmes of innovative development based on technological audits and increase innovation spending oriented at improving labour productivity, energy efficiency and high-technology. Stronger cooperation with higher education institutions, scientific institutes and SMEs is also targeted.

A survey conducted in 2012 among two thirds of participating SOEs showed that they have considerably increased innovation spending, although half of the funds were spent on acquiring new machinery and equipment (Gershman, 2013). According to current estimates, the increase will amount to 0.4% of GDP between 2010 and 2013. It is too early to assess the efficiency of such spending, but there might be instances of imitating innovation by shifting existing expenditures from one innovation activity heading to another, or meeting innovation commitments without a real impact on business activity. A strict monitoring of programme results based on well-defined key performance indicators is therefore essential. But while this policy might eventually prove effective, it is a second-best policy, motivated by the deficient competition environment in which SOEs operate. The policy should thus be viewed as a complement and

not a substitute to setting market-based incentives through exposing enterprises to competition and properly regulating natural monopolies, as practised in most OECD countries, and as discussed in Chapter 1.

SMEs make an important contribution to the innovation system in leading OECD economies, contributing more than quarter of R&D expenditure (OECD, 2011c), but in Russia this share is less than 2%, and in 2010 only 1.6% of SMEs spent money on innovation (OECD, 2013c). The Global Entrepreneurship Monitor (GEM) survey showed that in 2011 70% of early stage and 80% of established entrepreneurs in Russia recognised that the novelty content of their activity was low (Xavier et al., 2013). The proportion of employment in high technology activities also remains small. According to the surveys, the main barrier to innovation in SMEs is the lack of financial resources within the company (more than 60% of respondents chose this option) and the lack of availability of external financing (50% of respondents).

The promotion of SME innovation is a government priority and several instruments are being implemented (Box 12). However, the funds allocated to innovation in SME sectors are still relatively small as compared to the size of other government R&D spending. For the period 2011-13, the government is providing RUB 60 billion or only 0.1% of GDP for all SME support programmes, of which around 10% is directed at supporting innovative SMEs and 10% is allocated to creating and developing support infrastructure, such as business incubator zones, industrial estates and technological parks. Of particular importance is the "Innovation Lift" programme that brings together several institutions to set up a system of financial and non-financial support throughout the innovation cycle: from the concept to production phase. In a positive step, funds allocated to supporting innovation at SMEs will increase further in 2014-16, both through direct support and investment in infrastructure.

Another problem is that support is excessively concentrated on grants. While this instrument may be efficient at stimulating start-ups and resolving some specific market failures holding back innovation, it may be less effective in allocating higher amounts of public funding given the difficulties in picking future winners. Grants should therefore be more widely complemented by horizontal tools, such as effective tax credits, which in turn should be more targeted than currently at SMEs, to avoid the risk of supporting market incumbents, which would have a limited impact on innovation and productivity. Promoting the use of R&D tax credits by SMEs could be achieved by simplifying the existing scheme (EBRD, 2012) and by promoting a more effective form of tax credit, for instance through the exoneration of payroll taxes for researchers involved in R&D activities in SMEs, as done in France (Hallépée and Houlou-Garcia, 2013). The coverage of the current tax credit scheme is also narrower than in other countries, as it excludes traditional industries and mainly focuses on advanced technologies (EBRD, 2012).

Box 12. Innovation support for SMEs

- 31 Innovation technology centres in 19 regions.
- Over 100 technology transfer centres and 34 technology platforms approved by the state.
- Cluster centres (25), design and prototype centres (6), centres of collective usage (30).
- At least 80 techno parks in 35 regions.
- Fund for Promotion of Development of Small Businesses in the Scientific and Technological Sphere.
- Foundation for Assistance to Small Innovative Enterprises (FASIE).
- Skolkovo Foundation.
- Plans for 55 Centres of Creativity in higher education institutions, equipped with 3-D scanners/ printers, laser cutters, to train people on the their use and promote innovation activity.
- Mechanisms for promoting innovation cooperation between SOEs and SMEs.

Source: OECD (2013), *Ministry of Education and Science, Ministry of Economic Development*.

Policies are focused on high-tech

Businesses applying for grants have to undergo a technical audit and an expert evaluation, after which they obtain the status of "innovative business". Current business support is also limited mostly to technology-driven innovations and puts little or no emphasis on process, organisation and marketing innovations. This is at odds with the importance of innovations in low-technology and service sectors, particularly in regions where low-technology industries dominate (OECD, 2013b). Even a doubling of Russia's share of high-tech industry by 2020 would not make it the major engine of economic development (McKinsey, 2009). Hence, support for high-tech projects should be increasingly complemented by broader policies supporting medium- and low-tech innovation. There seems to be a general need for more tailored and targeted advice, for example on entering a market with an innovative product or on finding business partners abroad as well as for educating entrepreneurs in general (OECD, 2011d).

The emphasis on high-technology is also visible in the support for clusters and incubators. In 2012, 25 territorial clusters were selected on competitive basis to receive additional federal support in fields such as pharmaceuticals, ICT, nuclear technology, new materials supercomputers and biotechnology. The Ministry of Economic Development is supporting the creation of a network of regional and municipal business incubators. In 2012 there were 104 state-supported business incubators, hosting 1 554 small enterprises with 7 860 workers and annual turnover of RUB 7.4 billion. In theory, these initiatives are linked to regional development goals and fostering cluster development. But regions without an academic and scientific infrastructure originating from the Soviet Union are strongly disadvantaged. The question also remains whether such science-based cluster development is always based on genuine regional strengths and advantages, or whether it follows federal support directives and trends.

Skolkovo is a particularly ambitious project (Box 13). It is still too early to assess its real economic impact, but it clearly has a potential to become an important hub in the innovation system for fast-growing high-tech industries. At the same time, the project illustrates several concerns that need to be tackled by policy makers:

- Skolkovo attracts disproportional share of attention and funding partly because is designed for hi-tech businesses. Its high visibility should not overshadow a need of supporting more

broad-based innovation in low and medium technology sectors that are also of great importance for Russia.

- Skolkovo is an isolated project that aims to stimulate innovations, partly by reducing entrepreneurship and innovation barriers for a small group of selected firms. This should not lead to complacency in removing such barriers more systematically for all firms across the country.

- A large scale project involving substantial public funds and directed at rather intangible results is often associated with an increased risk and waste. As recent events have shown Skolkovo is not an exception, hence special attention should be paid to governance issues.

Box 13. Skolkovo

To stimulate business innovation Russian government established in 2010 Skolkovo - an innovation centre with special privileges to its future residents:

- Direct public financial support.
- Tax incentives for companies: ten-year exemption from profit, land and property taxes, lower rate for compulsory insurance (14% instead of 34%), customs privileges, etc.
- Simplified technical regulations, procedure for transferring land, conditions for interaction with the government and ministries.
- Availability of the services of new R&D centres for the five "technological priorities": power industry, information technologies, telecommunication, biotechnologies and nuclear technologies.
- Establishment of special departments of RosPatent that will register and protect IPR more speedily.
- Attraction of foreign scientists and entrepreneurs by securing for them free arrival in Russia and movement throughout the territory of the country.

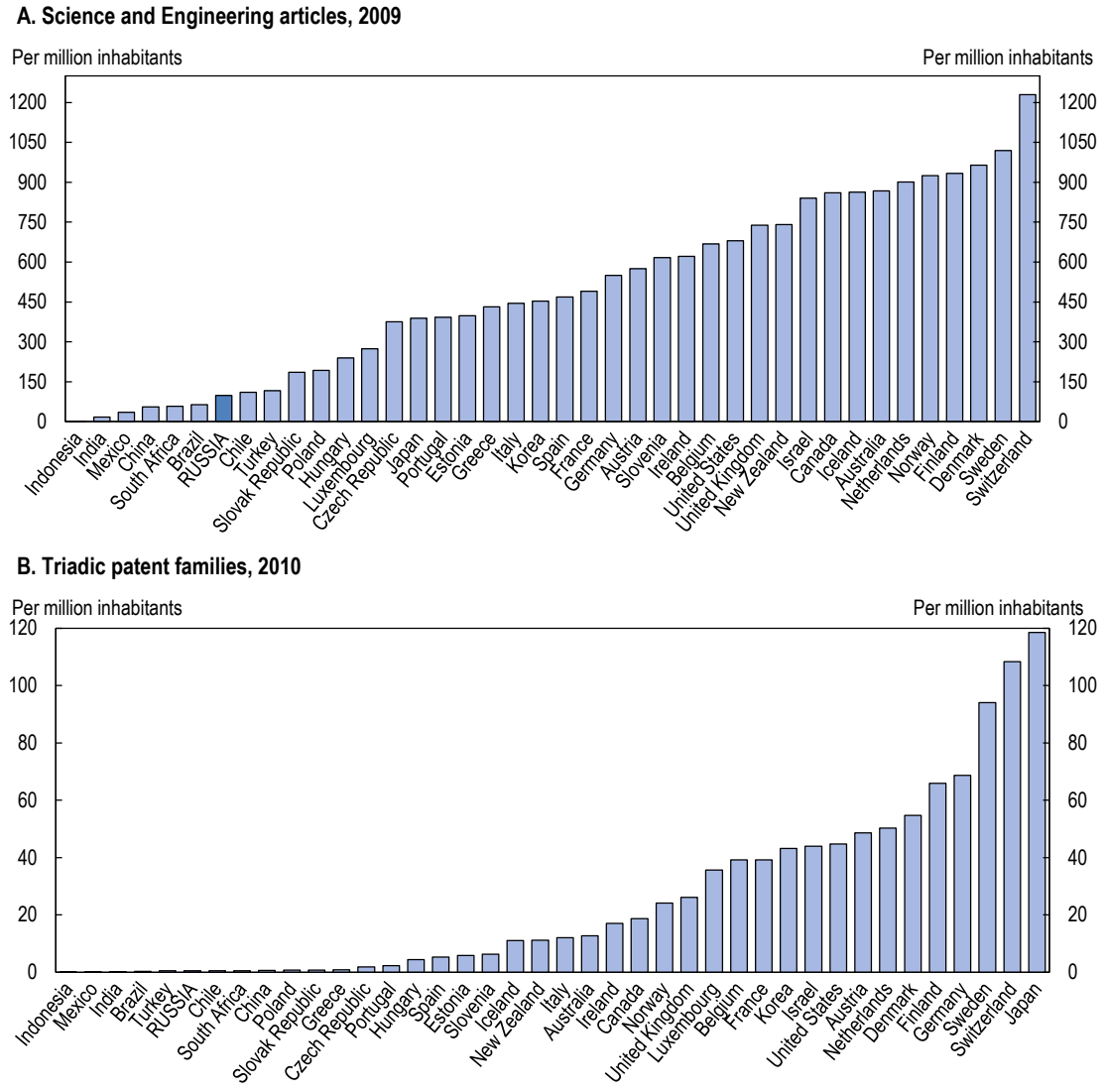
Skolkovo is a very ambitious project. It received public funding of RUB 34 billion in 2010 (or 0.05% of GDP which is comparable to annual research budget of all Russian universities) and 50 to 60 billion in 2012-13. In turn, it granted RUB 3 billion of subsidies to its 750 resident companies, which so far applied for more than 100 patents.

So far, 34 technology platforms have been created. They seem to be broader-based in terms of stakeholders and objectives, even as they seek to promote development in rather narrow specialised fields. These platforms are trying to unite the interests and views of government, business, the science community and consumers and they aim not only to develop strategic research programmes and government policy to support innovation, but also educational standards.

Reforming public research sector

While the weak appetite for innovation among Russian firms is the most acute challenge, the supply side is also a problem. Russia performs worse than most OECD countries in terms of number of scientific articles published in peer-reviewed journals, despite its reputation for scientific and technological sophistication. Russia also lags behind in patenting: the ratio of patents to population is many times lower than the OECD average (Figure 23) and has continued to decrease in recent years. An unusually high share of total R&D spending is absorbed by public research institutes, mostly inherited from the Soviet Union, the problem of a "knowledge supply gap" seems to be closely linked to the unfinished process of reform of this sector.

Figure 23. Scientific output indicators



Note: Article counts from set of journals covered by Science Citation Index (SCI) and Social Sciences Citation Index (SSCI).

Source: National Science Foundation's National Centre for Science and Engineering Statistics, *Science and Engineering Indicators 2012*, Appendix Table 5-27; World Bank, *WDI online database*; and OECD (2012), *OECD Factbook 2013*.

Branch research institutes and design organisations still perform around 50% of total R&D and remain the weakest point of Russian knowledge infrastructure (OECD, 2011d). Despite intensive restructuring and downsizing, the majority of the remaining institutes are state-owned and dependant on government funding, and most of them are largely disconnected from both firms and universities (OECD, 2011d). This sector should therefore be restructured further, for instance by encouraging their merger with production-oriented enterprises and by forcing the further closure of non-performing institutes, not least by increasing a share of competitive funding in this sector. As long as core funding is systematically renewed on a yearly basis with insufficient consideration for performance, public resources and research talents will remain misallocated.

The Russian Academy of Science (RAS) is the single largest research institution. It accounts for 14% of total R&D spending, performs more than half of basic research in the country, and employs half of

Russia's Doctors of Science. The performance of RAS is, however, very mixed, with islands of excellence operating next to research of inferior quality. This situation is linked to the Academy's insufficiently reformed and non-transparent structure, with its several often poorly governed specialised institutes. The share of competitive performance-based funding stood at only 12% in 2011, and while the government planned to increase it to 25%, it fell further to 10 % in 2012. The remaining block public funding is based on historical patterns, using the current head-count and is not linked to performance. As a result, headcount is kept high, while only half of the employees are actually engaged in research, which is well below OECD country practices (OECD, 2011d). In turn, salaries tend to be too low to retain and especially to attract top researchers contributing to the brain drain problem discussed above. Moreover, the mechanisms for the distribution of competitive funds is non-transparent and does not properly reflect actual performance (Russkaya Gazeta, 2012). The government should therefore further promote competitive and performance-based funding while increasing transparency. Institutes that do not do well on performance-based assessments should be forced to reform or close down. While the recently proposed and highly controversial reform addresses some inefficiencies (by integrating RAS with other specialised academies and reducing burden of non-research tasks), it does not address these fundamental problems.

Box 14. Main federal programmes to promote research and innovation at the universities

Development of Co-operation between Russian universities and enterprises

- This federal programme provides subsidies for manufacturing enterprises for a period from 1 to 3 years for financing projects in high-tech production carried out jointly with universities. Recipients are determined according to a competition process that selects the most innovative projects. Each project should be at least 50% co-financed by enterprise. The total budget for 2010-12 is RUB 19 billion.

Development of innovation infrastructure in Russian universities

- This programme aims at supporting the development of innovation infrastructure, including business incubators, technology parks, engineering centres, transfer centres, certification. The budget amount to RUB 8 billion for 2010-12. As a result of the competition process, 56 schools have already been selected.

Attracting leading scientists to Russian universities

- Government allocates a budget in the form of grants to attract leading scientists. The primary goals of scientific research conducted by leading scientists in Russian universities is to create top-quality laboratories, produce world-class research, train highly qualified specialists, and transfer know-how to the economy. The total funding for 77 projects in 2010-12 amounted to RUB 8.3 billion and resulted in 42 laboratories being created. This funding will be extended to other research institutions (scientific institutions of the state academies of sciences and public research centres) until 2016.

Source: Ministry of Education.

Universities in most countries act as major centres of research and an important channel for transferring knowledge to firms. This has not been the case in Russia, due to the historical role played by RAS and its branch institutes, respectively. Only half of universities are currently conducting research activity and universities (and other higher education institutions) account for only 7% of total R&D spending, the corresponding share of 0.07% of GDP being well below the OECD average of 0.4%. This gap between science and education has affected the quality of teaching, and among other effects it reduces the supply of skilled researchers (Gokhberg and Roud, 2012). Some attempts to strengthen research activity in the universities have been initiated in recent years by the creation of National Research Universities, which benefit from additional financing and more autonomy. They are aimed at generating knowledge and are expected to compete at the world level in terms of academic performance, based on the

explicit objective to have five Russians universities among the top hundred of world leading universities. Their role is also to ensure an effective transfer of technology to the economy. These goals are also supported by a set of federal programmes (Box 14). Such a policy direction is in line with OECD best practices, but its effectiveness and the cost efficiency of supporting programmes need to be carefully evaluated. The authorities could also strengthen the incentives for firms to fund research in universities, while removing existing barriers to commercialisation of knowledge, such as regulations which complicate taking out patents and establishing start-up companies (Nokolaev and Chugunov, 2012).

Box 15. Recommendations for strengthening innovation

- Continue with broad-based support for innovation and for the adoption of new technologies, in particular to improve energy efficiency.
- Finalise the reform of the public R&D sector; in particular by shifting more research from the reformed Academy of Science to universities, increasing the share of competitive grant funding and streamlining state-owned research institutes.
- Develop appropriate monitoring strategies and evaluate innovation policies more systematically.

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Annex A1.

Main characteristics of the new Law on education

Law on Education in the Russian Federation N 273-FZ was signed by Russian President Vladimir Putin on 31 December 2012. This Law replaced two other laws adopted in 1992 and 1996 - the Law on Education and Law on Higher and Post-Graduate Professional Education. The New Law on Education stipulates norms for all levels of education, including pre-school education. The Law took effect 1 September 2013, except where stipulated otherwise. Main provisions of this Law include:

Pre-school and Primary Education

- Pre-school education is now part of the general education system. It can be delivered in kindergartens, schools, but also at home.
- Higher role is given to parents by allowing them to choose learning subjects.
- Average wages of teachers cannot be below the average wage in the region.
- Parents registering their children to the closest school in the living area have a priority.
- Selection of children to enter in schools with specialised subjects can only be done after the primary level of education.
- The possibility to close a school in a village takes into account the official position of the local assembly.

Secondary Education

- Initial vocational education became part of vocational education in the form of training programmes for skilled workers.
- Secondary vocational education now provides two types of educational programmes - training of skilled workers and training for middle managers.
- Vocational education institutions have the right to determine programmes and to select students.

Higher Education

- The Uniform State Exam (USE) results which determine the entrance to universities will be valid for 5 years (against 2 years before).
- Higher education institutions, including private ones, will be monitored by the Education Ministry in the context of restructuring of higher education institutions network.
- The minimum number of state-subsidised places is fixed by the law at 800 students per 10 000 people aged 18 to 30 living in the Russian Federation.

- Universities are organised in a two-tier system of Bachelors and Masters. Colleges deliver only bachelor degrees and institutes diplomas for bachelors and specialists.

- Academies deliver only additional education and prepare post-graduates and doctoral candidates.

- Post-graduate education is considered as the third level of higher education aimed at training highly qualified personnel.

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