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The review provides a detailed analysis of main trends in Russia's economy in 2015. The paper contains 6 big sections that highlight single aspects of Russia's economic development: the socio-political context; the monetary and credit spheres; financial sphere; the real sector; social sphere; institutional challenges. The paper employs a huge mass of statistical data that forms the basis of original computation and numerous charts.

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Challenges facing higher education in Russia in 2015¹

The following public's common perception of higher education continues to be prevalent in Russia: the quality of higher education keeps deteriorating; higher education fails to meet the requirements of the labor market; higher education graduates do not work in jobs strictly or closely related to their degrees or major; there is an oversupply of students in the country; there is need to train specialists with secondary vocational education and blue collar workers that are in shortage.

This is enough to list, because the issue is plain to see: the quality of education continues to deteriorate, employers are dissatisfied with the level of training of young specialists who have to be trained up to the required level, the structure of personnel training is neither quantitatively nor qualitatively consistent with the structure of Russia's economy, the labor market is in demand for graduates with secondary vocational education.

State budget expenditure for education should be curtailed because Russia's system of higher education fails to perform the functions vested therein. However, note that today some analysts use this argument which was previously adduced only by Russia's Ministry of Finance.²

Previously, the consideration of Russia's education issues, especially the quality thereof, used to lead to the exact opposite conclusion, that is, both budget spending and wages of teaching staff at higher education institutions should be increased with the introduction of "effective contracts" set forth in the Strategy-2020 and Executive Order of the President No. 597 of May 7, 2012.

It became apparent, especially in 2015, that with new conditions facing the higher education system (and the education system as a whole), it would be difficult to develop and finance higher education without understanding the prevalent public's perception thereof.

5.3.1. Dynamics of number of students of Russia's higher education institutions

Today, universities in many countries enroll 70–90% of birth cohort as compared to less than 15% in the 1930s and 25–30% in the 1970s/1980s.

Yet at the same time, countries may differ largely in economic conditions and the role of higher education in fulfilling their socio-economic objectives. For example, U.S. universities enroll 82% of birth cohort, 94% in Finland, 96% in South Korea, while higher education institutions enroll 91% of birth cohort in Greece which faces absolutely different socio-economic conditions compared with the foregoing states. However, there is a common uptrend towards growth of the percentage of birth cohort enrolling in universities.

In China the percentage increased from 16 to 26% over eight years (2006 to 2013), and the total number of students of higher education institutions rose above 30 million. India's universities enroll as little as 15% of birth cohort (a growth of 3% over eight years), yet this is more than 20 million persons. China and India's student body of local universities and universities abroad comprise 50 million persons in aggregate, surpassing the total number of students across the entire Europe, including foreign students of European universities.³

¹ Author of this section: Klyachko T. – RANEPА.

² *Inozemtsev V.* How to enhance higher education? To cut sharply education spending. <https://slon.ru/po sts/55592>.

³ World in figures. 2007, 2014. M.: ZAO Olymp-Business.

In late 1927, Russia (the Russian Soviet Federated Socialistic Republic (RSFSR)) had 90 higher education institutions comprising a total of 114,200 students. As early as 1940, the number of higher education institutions increased to 481, comprising 478,100 students, a 4-fold growth over 13-year period. The RSFSR reached 1.5 million students in the 1960s, above 3 million in the 1980s, then the number decreased slightly to 2.8 million by 1990.¹

The Federal Law on Higher and Postgraduate Vocational Education of 1996 set the lower threshold of 170 budget-funded students per 10,000 of Russia’s population (which then was equal to 2.5 million) because the number of budget-funded students was declining. Student bodies began to grow fast in 1995. Even the crisis of 1998 was not a headwind for the growth: in 2000, 965 Russia’s higher education institutions (of which state institutions made up 607) comprised as much as 4.7 million students, including 2.6 million budget-funded students, that is, less than in the RSFSR in 1990. The student body reached a peak of 7.5 million in 2008 which was marked as the year of the “great turn”. Since then the number of students began to decline drastically as a result of demographic changes. In 2015, Russia’s higher education institutions comprised less than 4.8 million students, of which budget-funded students made up as little as 1.9 million (see Fig. 5).

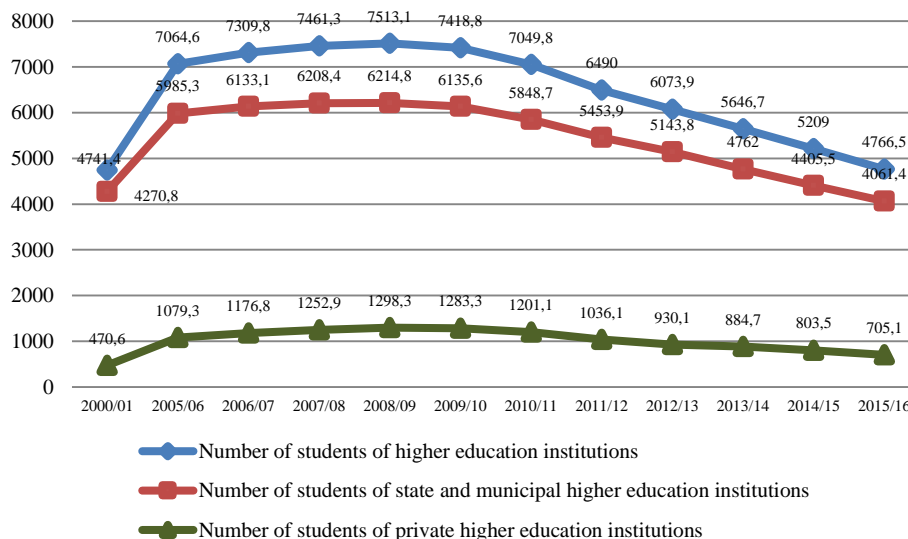


Fig. 5. Number of students of Russia’s higher education institutions in 2000/2001–2015/2016 academic years, thou. Persons

Source: Rosstat, <http://www.gks.ru/free doc/new site/population/obraz/vp- obr1.htm>.

It was the rapid growth in the number of students that in the late 1990s and in the 2000s gave rise to the perception that there is an “oversupply” of higher education in Russia.

However, the student body will continue to fall to 4.1–4.2 million until 2021. The trend will then reverse to a small growth up to 4.4–4.5 million. Hence, Russia’s higher education institutions are expected in 2025 (under the best-case scenario) to comprise less students than in 2000 (see Fig. 6).

¹ Rosstat: <http://www.gks.ru/free doc/new site/population/obraz/vp- obr1.htm>. Although this information is publicly available, the people in Russia are either unaware of this information or they are not interested in it.

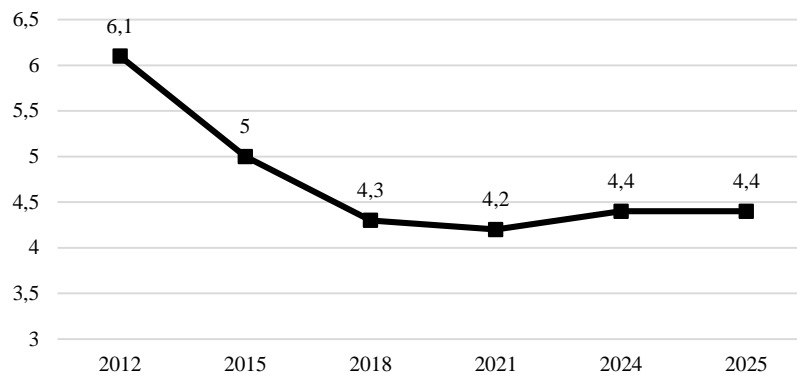


Fig. 6. Forecast for number of students of Russia's higher education institutions until 2025, mln persons

Source: RANEP Center for Continuing Education Economics' own calculations based on Rosstat's demographic forecast.

However, as early as 2014, the number of budget-funded students dropped below the lower threshold provided for by the Federal Law on Education in the Russian Federation No. 273-FZ of December 29, 2012, whereby there must be at least 800 budget-funded students per 10,000 of the population at the age of 17–30 (2.08 million persons during the foregoing year). Note that there were less than 2.0 million state-funded students in 2014 (see *Fig. 7*).

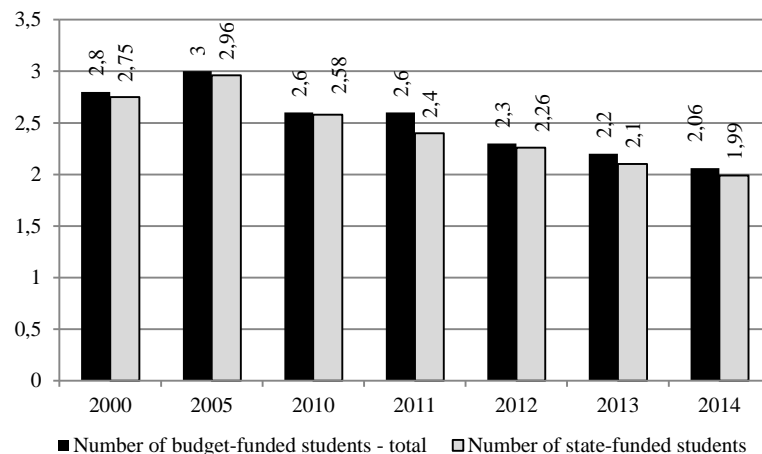


Fig. 7. Number of budget-funded students of Russia's higher education institutions, 2011–2015, mln persons.

Source: Russian statistical yearbook 2015, Table 7.53. http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1135087342078

Since 2005, the number of budget-funded students of Russia's higher education institutions decreased by 31.3% while the number of state-funded students dropped by 32.8%. Note that Russia's higher education institutions year by year enrolled an increasingly higher percentage of graduates from secondary (complete) general education schools (see *Fig. 8*).

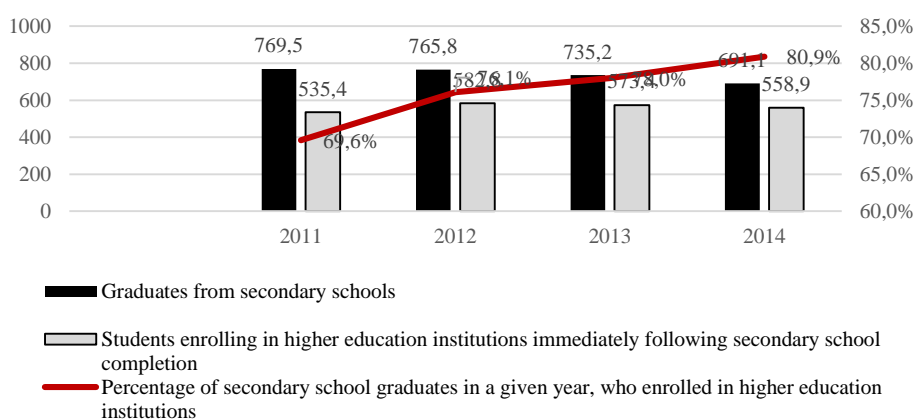


Fig. 8. Graduation from secondary schools and enrollment in higher education institutions in 2011–2014 (thou. persons., left-hand scale), percentage of secondary school graduates in a given year, who enrolled in higher education institutions (% , right-hand scale)

Source: calculated on the basis of Rosstat’s data.

Note that the enrolment of budget-funded students was steady enough for a long period of time, but then it started to decline. The decline was driven by a policy aimed at increasing budget expenditure for funded study places, rather than by demographic reasons (see *Fig. 9*).

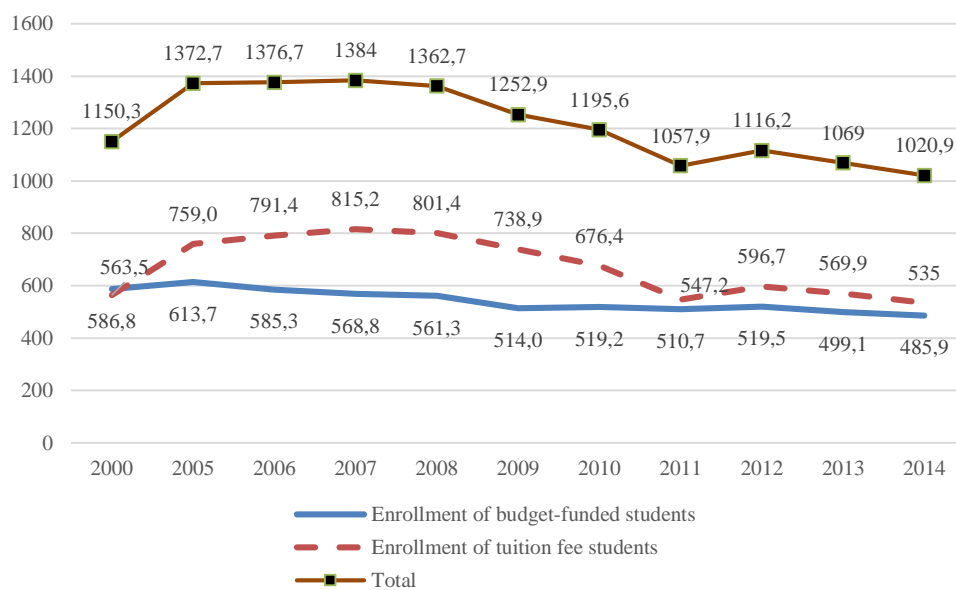


Fig. 9. Enrollment of budget-funded students and tuition fee students in Russia’s higher education institutions, 2000–2014, thou. persons.

Source: Rosstat, higher education institutions enrollment annual data.

According to Rosstat, 504,000 state-funded students were enrolled in 2015, because, as shown above, in 2014 the number of budget-funded students of Russia’s higher education institutions reached the lower threshold which could have been breached by decreasing further

the number of budget-funded study places. However, a way of bypassing this legislative provision through cut scores at unified state examinations was found. In other words, the state budget will cover the enrollment of budget-funded students in higher education institutions according to the admission quotas approved by the Ministry of Education and Science, yet the number of applicants with a score above the cut score may happen to be smaller than the number of allocated budget-funded study places. Hence the legislative provision will be observed and less budget funds will be spent. A situation in which the number of secondary school graduates passing the unified state examinations with a score above the cut (scores) score may happen to be bigger than the number of allocated budget-funded study places is not considered because cut scores can always be made fit as required. Apparently, this approach will open new channels for corruption and will facilitate more tutoring and teaching to the unified state examinations in secondary schools (and it will fuel the recently weakened criticism of the state unified exams as such).

Finally, the quantitative parameters of the number of budget-funded students in 2015 were found to be much lower than those reported at the end of the Soviet era. With regard to tuition fee students, it should be admitted that higher education institutions depend largely on tuition fees despite a considerable increase in budget expenditure for higher education.

5.3.2. Quality of higher education

No wonder a sharp swing to general higher education tends to create a perception that the overall higher educational attainment is deteriorating. Perhaps other countries were exposed to similar shocks as they switched from elementary four-year education to seven- or eight-year education. This is history now, a routine, and it is hard to believe someone saying seven (eight) year education is wrong or in oversupply, especially if there is no data available to prove that the quality of education is deteriorating. One may just as well refer to the data for unified state examinations to argue that high-performing secondary school graduates prefer socio-economic sciences and humanities, whereas others tend to go to technical and natural science higher education institutions. However, this argument has limits, too, because high performers also enroll in institutions such as the Moscow Institute of Physics and Technology, the Moscow Engineering Physics Institute, the Bauman State Technical University, the St. Petersburg Polytechnic University, Department of Physics of the Moscow State University, and it is inappropriate to compare scores in social science with scores in, say, physics at the unified state examinations.

Much has changed in the perception of high-quality education since the past century. For example, it is now acknowledged that the U.S. higher education – like vocational education – begins with the master degree.

In the 1990s/2000s, budget expenditure for higher education was very small (Rb 30bn, which equals \$1bn at the exchange rate of 2000). Although it increased in recent years (see *Fig. 10*), the growth will unlikely result forthwith in a higher quality of higher education. Budget expenditure for higher education was for the first time curtailed in 2015, when the state budget was updated. The 2015 higher education expenditure was worth \$17.1bn according to the exchange rate of 2013 (about 30 rubles per US dollar), whereas the amount would decrease to \$7.9bn according to the current RUB/USD exchange rate.

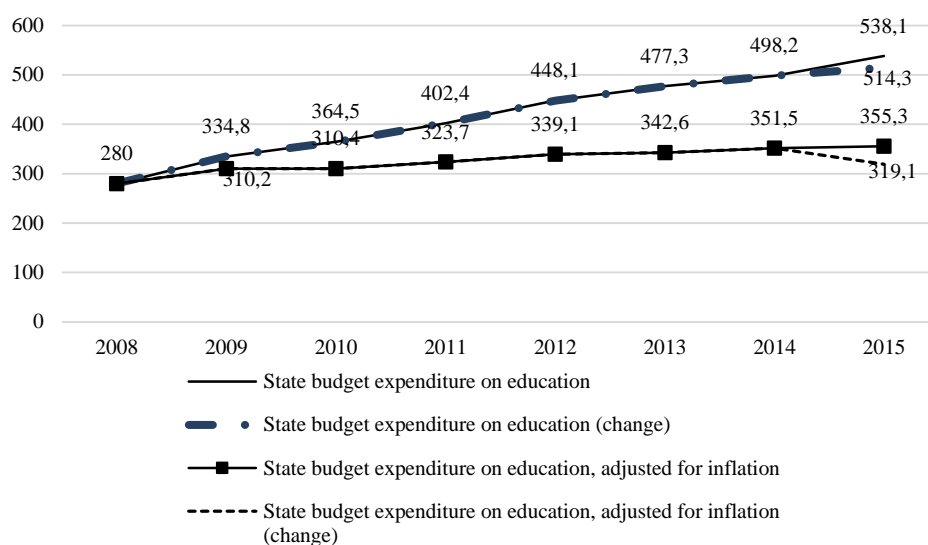


Fig. 10. State budget education expenditure in nominal terms and adjusted for inflation, bln rubles

Sources: Russia's Ministry of Finance and Federal Treasury.

Another quality aspect of higher education pertains to the fact that extramural students account for the bulk of Russia's students since 2000, but things have recently changed. However, extramural, intra/extramural and external students accounted for 50.6% of the total number of students in 2015, while intramural students made up slightly more than 49.4% (see Fig. 11).

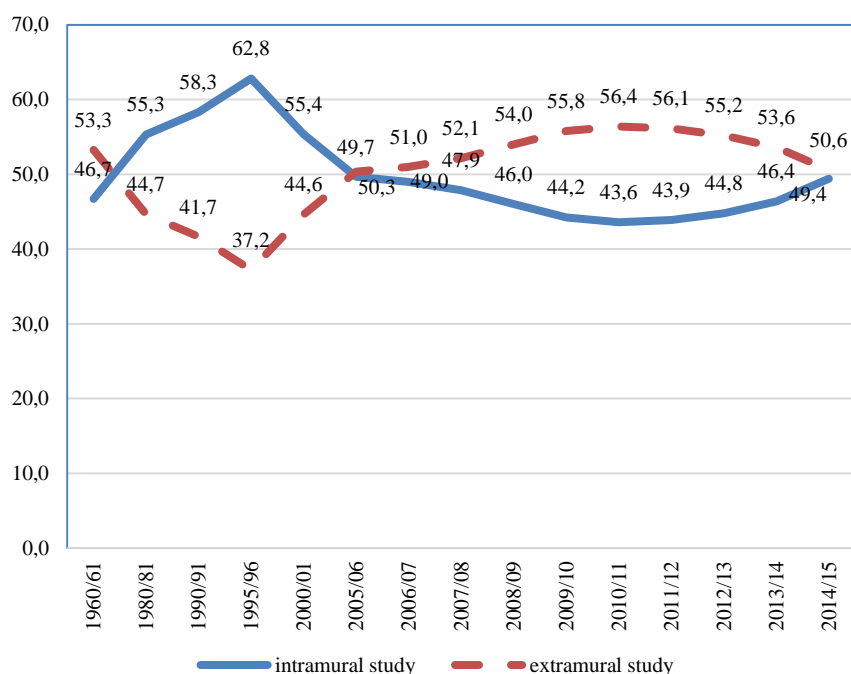


Fig. 11. Ratio of number of intramural students to extramural students of Russia's higher education institutions (the RSFSR until 1991), %

Source: Rosstat: <http://www.gks.ru/free doc/new site/population/obraz/vp- obr1.htm>.

The presented data do not back up the common opinion that young men tend to enroll in higher education institutions because they want to dodge the military draft. Young adults at the age of 25 and beyond (e.g., about 1.7 million students in 2013¹) combine education and work, and some obtain a second higher education degree (extramural study is based mostly on tuition fees, and a second higher education is always based on tuition fees).

5.3.3. Employers' need for employees with secondary vocational education

Until recently, the Russian economy exhibited an extremely positive attitude towards workers with higher education degrees, whose average wages in 2013 were roughly 1.67 times the average wages of workers who had no vocational education.² Average wages of workers with secondary vocational degrees were only 2–4% above average wages of workers with secondary education levels (see Fig. 12).

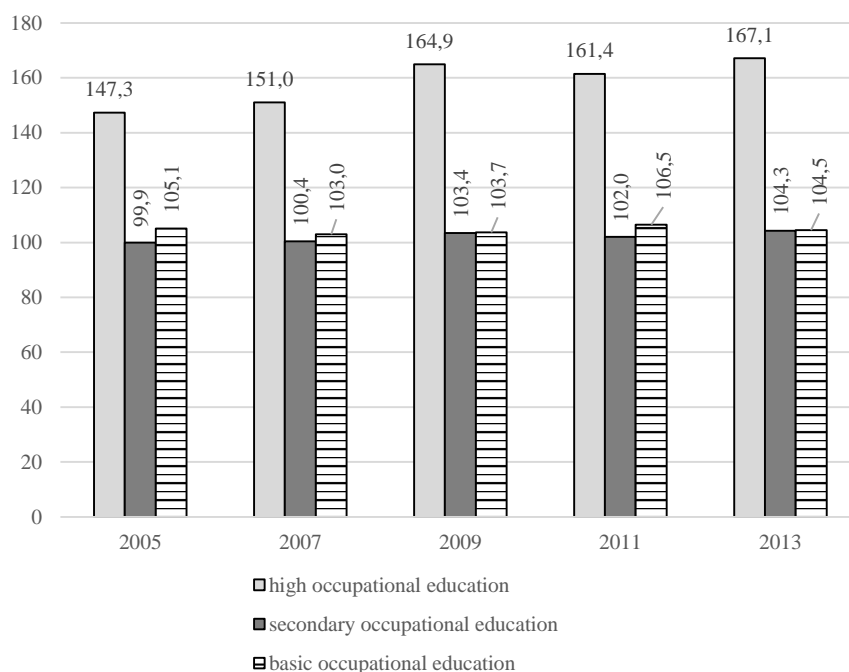


Fig. 12. Premium for education in the Russian Federation, 2005–2013, %

Note. Premium for education is the ratio of wages of workers with a certain level of vocational education to wages of workers with secondary (complete) general education.

Source: Rosstat: http://www.gks.ru/wps/wcm/connect/rosstat main/rosstat/ru/statistics/w_ages/labour costs/#

This wage ratio explains in part why some (about 35%) of the students graduated in recent years from secondary technical schools and secondary vocational schools enrolled in higher education institutions immediately following secondary school completion, without entering

¹ The latest data available.

² The data for 2013, no data have yet been released for 2015, Rosstat performs this survey once every two years.

the labor market, and why others (about 35%) did the same within five years after secondary school completion. Also, employers who argue they run short of specialists with secondary vocational education did not, for some reason, rise wages of such workers, and a wage rise economically would imply an undersupply of such workers.

In 2014, there were 32.2% of employees with higher education degrees in Russia and 54% in the United States (complete and incomplete higher education). Including workers with tertiary levels, that is, secondary vocational and higher education credentials, the share of such workers in Russia would be 58.1%.¹ This is what possibly leads to a confusion when arguing that Russia is ranked 1st for the share of employees with higher education degrees.

There were 50% of workers with higher education degrees and 76.9% with tertiary education in Moscow and 44.6 and 67.4%, respectively, in St. Petersburg. This complies with the employment structure of big cities in advanced countries. Unfortunately, Russia has only two of such cities (see Fig. 13).

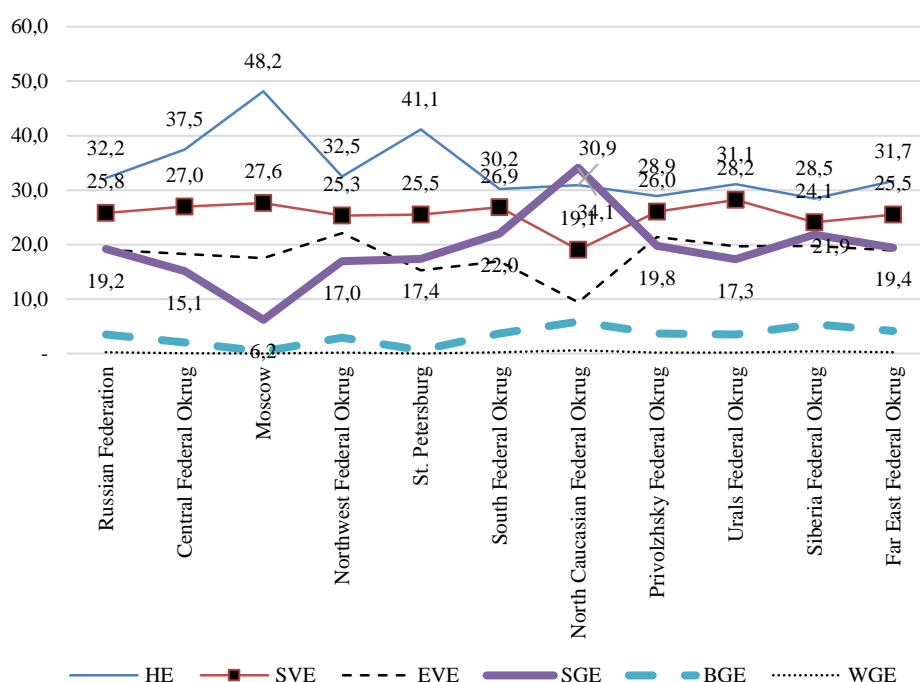


Fig. 13. Structure of employment by educational attainment in the Russian Federation, in federal okrugs, in Moscow and St. Petersburg, 2014, %

Note: HE stands for higher education, SVE denotes secondary vocational education, EVE is elementary vocational education, SGE stands for secondary (complete) general education, BGE denotes basic general education, WGE means w/o general education.

Source: Economic activity of Russia's population in 2015, Attachment, Table 1.9. http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1139918584312

¹ Economic activity of Russia's population in 2015, Attachment, Table 1.9. http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1139918584312

5.3.4. Higher education graduates working in jobs related to their degrees

In 2013 (there is no Rosstat's data available for a period beyond 2013), 95% of higher education graduates in the field of medicine (2010–2012), 66.5% of graduates in the field of pedagogy (more than in the Soviet era), 84.5% of graduates in the field of aerospace engineering, 83.5% of graduates in the field of informatics and computer engineering had jobs strictly or closely related to their degrees. The average share of graduates that worked in jobs related to their degree was more than 65%. Graduates in the field of service sector (of which 50.6% has jobs related to their degree) and in the field of reproduction and processing of forest resources (45.6%) faced the worst situation.

A much lesser percentage of graduates from secondary vocational institutions worked in jobs related to their degree: 40.2% of graduates in the field of agriculture and fishing, 28.2% of graduates in the field of geodesic and land surveying, 31.8% of graduates in the field of chemical and biological engineering, 34.1% of graduates in the field of reproduction and processing of forest resources. The average percentage of secondary vocational graduates working in jobs related to their degrees was roughly 54.6% (see *Table 9*).

Table 9

Job and degree (major) match for graduates (from vocational education institutions in 2010–2012) in 2013

Degree (major)	Total graduates, thou. persons	Including job and degree (major) match	
		related	not related
Higher vocational education			
Physics and mathematics	45	68.8	31.2
Natural science	40	59.9	40.1
Humanities	468	69.3	30.7
Social science	29	56.1	43.9
Education and pedagogy	414	66.5	33.5
Healthcare	138	95.0	5.0
Culture and arts	60	80.9	19.1
Economics and management	1100	68.8	31.2
Information security	17	84.5	15.5
Service sector	36	50.6	49.4
Agriculture and fishing	67	52.7	47.3
Geodesic and land surveying	14	78.1	21.9
Power generation, energy and electrical engineering	86	75.0	25.0
Metallurgy, machine engineering and materials processing	70	65.7	34.3
Aerospace engineering	26	84.4	15.6
Weapons and weapon systems	8	73.2	26.8
Marine engineering	12	78.6	21.4
Means of transport	75	65.3	34.7
Professional and optical equipment engineering	13	53.1	46.9
Electronics, radiotechnics and communications	42	73.7	26.3
Automatic control and systems engineering	14	66.7	33.3
Informatics and computer engineering	148	83.5	16.5
Reproduction and processing of forest resources	15	45.6	54.4
Technology of food products and consumer goods	43	61.1	38.9
Construction and architecture	120	70.7	29.3
Health and safety, environmental engineering and protection	27	70.0	30.0
Chemical and biological engineering	19	66.8	33.2
Geology, exploration and exploitation of mineral resources	43	77.3	22.7
Secondary vocational education			
Natural science	1	37.2	62.8
Humanities	86	52.1	47.9

Social science	4	66.5	33.5
Education and pedagogy	103	69.3	30.7
Healthcare	160	87.9	12.1
Culture and arts	30	62.5	37.5
Economics and management	285	55.8	44.2
Service sector	39	65.3	34.7
Agriculture and fishing	53	40.2	59.8
Geodesic and land surveying	9	28.2	71.8
Geology, exploration and exploitation of mineral resources	25	63.5	36.5
Power generation, energy and electrical engineering	63	56.1	43.9
Metallurgy, machine engineering and materials processing	54	48.2	51.8
Aerospace engineering	7	56.8	43.2
Marine engineering	12	55.8	44.2
Means of transport	138	56.7	43.3
Professional and optical equipment engineering	4	38.0	62.0
Electronics, radiotechnics and communications	21	60.7	39.3
Automatic control and systems engineering	10	41.1	58.9
Informatics and computer engineering	64	53.5	46.5
Chemical and biological engineering	7	31.8	68.2
Reproduction and processing of forest resources	14	34.1	65.9
Technology of food products and consumer goods	44	49.3	50.7
Construction and architecture	59	50.6	49.4
Health and safety, environmental engineering and protection	8	62.1	37.9
Information security	0.5	69.4	30.6

Source: Economic activity of Russia's population in 2014, Tables 2–44. <http://www.gks.ru/bgd/regl/b1461/Main.htm> /

One may assume that if higher education graduates did not work in middle manager jobs, such jobs would be occupied by secondary vocational graduates. However, as noted above, employers would rather hire the former, paying them much more than to the latter.

5.3.5. Employers' qualitative assessment of employees' basic job skills

In the mid-2015, the RANEP Center for Continuing Education Economics carried out a survey of employers' qualitative assessment of the level of skills training of workers of various categories. The survey covered enterprises of Russia's priority industries.¹

An average level of requirements to the workers of surveyed enterprises is presented in *Table 10*.

Table 10

Level of job skills requirements, 2015, % by row

Staff level	Level of job skills requirements		
	High	Medium	Low
Blue collar workers	49.0	43.8	7.3
Specialists	80.0	20.0	0.0
Managers	85.0	15.0	0.0

Table 10 shows that the highest level of job skills requirements is applied to managers (as a rule, these are workers with higher education degrees), whereas blue collar workers must meet the lowest level. In addition, economically efficient enterprises differ visibly from ailing enterprises in the level of job skills requirements (see *Table 11*).

Table 11

¹ The survey covered enterprises (firms, organizations) operating in the ICT, energy, transport and communications sectors.

**Level of job skills requirements at efficiently-run enterprises
and ailing enterprises, 2015, % by row**

Staff level	Level of job skills requirements		
	High	Medium	Low
Efficiently-run enterprises			
Blue collar workers	64.1	33.3	2.6
Specialists	83.3	16.7	0.0
Managers	88.1	11.9	0.0
Ailing enterprises			
Blue collar workers	38.6	50.9	10.5
Specialists	77.6	22.4	0.0
Managers	82.8	17.2	0.0

Hence efficiently-run enterprises and ailing enterprises differ first of all in the requirements to blue collar workers, which are much stricter at efficiently-run enterprises, however there is a smaller difference between them in the requirements to specialists and managers, yet the foregoing categories of workers must meet higher requirements at efficiently-run enterprises.

A comparative analysis of the assessments of the level of basic skills training of workers of economically efficient enterprises and ailing enterprises (see *Table 12*) reveals very pronounced differences: efficiently-run enterprises' assessment of their specialists and managers neared 100%, and that of blue collar workers was close to 70%.

Table 12

**Level of basic skills training at efficiently-run enterprises
and ailing enterprises, 2015, % by row**

Staff level	Level of training (expertise)		
	High	Medium	Low
Efficiently-run enterprises			
Blue collar workers	69.2	30.8	0.0
Specialists	97.6	2.4	0.0
Managers	95.2	4.8	0.0
Ailing enterprises			
Blue collar workers	52.6	42.1	5.3
Specialists	72.4	25.9	1.7
Managers	78.9	19.3	1.8

The assessment of basic skills training of the workers of ailing enterprises was much lower than that of efficiently-run enterprises, except that of managers and specialists, which was close to 80% for managers and more than 70% for specialists.

The bulk of economically ailing enterprises made a good assessment of the quality of basic skills training of their management staff, which, in our view, is an indication that they attribute economic failures of their enterprises mostly to external conditions rather than to a lack of education attainment.

* * *

Thus in recent years in Russia, the number of budget-funded students of higher education institutions decreased as compared with the number recorded in the Soviet era, the bulk of higher education graduates worked in jobs related to their degrees, employers prefer hiring

workers with higher education credentials, although they argue they need workers with secondary vocational degrees. Employers at modern/efficiently-run enterprises are satisfied with the basic skills level of their employees, whereas there is a lack of high skill workers at ailing enterprises. Given the fact that there is more ailing enterprises than efficiently-run enterprises in Russia, it is easy to spot the source of the prevalent perception of the quality of personnel training. Additionally, back in the Soviet era, enterprises were dissatisfied with the level of training of young specialists, too, which now seems to be almost forgotten. And there is still no way around in-house and advanced training. Russia's higher education faces numerous problems which have nothing to do with considerable budget expenditure for higher education institutions.