

## Section 5. Social Sphere

### 5.1. The standard of living<sup>1</sup>

#### 5.1.1. The formation of money income

In 2014, the real money incomes of the population declined by 0.5% on the previous year, with most of the decline taking place in Q4. In 2015, real money incomes amounted to 95.4% of that index one year earlier.

Over the course of 2015, the average money income in nominal terms increased by 10.1%, to Rb 30,311 per capita. Although the year 2015 saw a rise in the growth rate of nominal money incomes relative to 2014, a 12.9% increase in consumer prices caused a sharp decline in the indicators of the standard of living in real terms. In 2015, the real disposable incomes of the population, real wages, and the real size of allotted pension amounted to 96.0%, 90.5% and 96.2% respectively, of their values in 2014 (*Table 1*).

*Table 1*

**Major socio-economic indicators of the standard of living**

	2010	2011	2012	2013	2014	2015
<b>Nominal income, Rb</b>						
Average money income	18,958	20,780	23,221	25,928	27,766	30,311
Average nominal charged wage for employees of organizations	20,952	23,369	26,629	29,792	32,495	33,925
Average size of allotted pension	7,476	8,203	9,041	9,918	10,786	11,983
<b>Real income, % of previous year</b>						
Real disposable money income	105.9	100.5	104.6	104.0	99.3	96.0
Real charged wage	105.2	102.8	108.4	104.8	101.2	90.5
Real size of allotted pension	134.8	101.2	104.9	102.8	100.9	96.2

*Source:* Rosstat.

When analyzing the changes in the main parameters of the standard of living, it should be borne in mind that the active social policy pursued by the State resulted in a 2.2-fold increase in the nominal size of pension in 2013 relative to 2009. In the period 2009-2013, there emerged an upward trend in the coefficient applied to the average size of allotted pension, the goal being to gradually raise it to the same level as the average wage, as a result of which the share of social payments in the incomes of the population was expected to increase. In 2015, the financial status of pensioners significantly worsened – the ratio between the average size of allotted pension and the minimum subsistence level amounted to 148.9%, thus falling to its record low since 2010.

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The downfall of real wages during the 2009 crisis was fully compensated in 2010. The implementation of measures designed to increase the average monthly charged wage was accompanied by an accelerated growth rate of wages in the budget sphere, as compared with the corresponding indices in the economy as a whole. In 2013, the average nominal wage in budget-funded institutions and organizations rose 2.0 times vs. 1.6 times in the economy as a whole (relative to 2009).

From the second half of 2013, the economy experienced a decline in the growth rate of the population's incomes, these phenomena being especially pronounced in the budget-funded sector. In 2015, the growth of incomes petered out into a 9.5% fall of real wages in the economy as a whole. Also, the dynamics of the standard of living parameters in 2015 was negatively affected by a 3.8% drop in the real size of allotted pension, relative to the previous year. The sharp fall in the real incomes of the population in 2015 resulted in a 7.9% contraction of the actual final consumption of households relative to 2014 (*Table 2*).

*Table 2*

**Indices of physical volume of actual final consumption of households, in comparable prices, as a percentage change to the previous year**

	2010	2011	2012	2013	2014	2015
Household final consumption expenditure	104.3	105.8	106.1	103.1	101.4	92.1
including, due to:						
household expenditure	105.5	106.8	107.4	103.7	101.7	89.9
state administration	98.5	101.4	102.5	101.4	100.4	98.2

Source: Rosstat.

The drop in the level of real incomes was accompanied by a number of structural changes which had first manifested themselves in Q4 2014 (*Table 3*). In 2015, remuneration for labor and social benefits accounted for 66.0% and 18.1% respectively of the money incomes of the population, while the share of incomes from property and entrepreneurial activity continued to decline. Bearing in mind that remuneration for labor exerts a determining influence on the level of incomes of the population, it should be assumed that the trend towards the decline in real wages will remain the main factor determining the social parameters of the standard of living of the population in 2016.

*Table 3*

**The structure of the money incomes of the population in 2010-2015, % of total**

	2010	2011	2012	2013	2014	2015
Total money income	100	100	100	100	100	100
Compensation for labor, including hidden wages	65.2	65.6	66.0	65.3	65.8	66.0
Incomes from entrepreneurial activity	8.9	8.9	8.6	8.6	8.4	7.3
Social benefits	17.7	18.3	18.3	18.6	18.0	18.1
Incomes from property	6.2	5.2	5.1	5.5	5.8	6.6
Other incomes	2.0	2.0	2.0	2.0	2.0	2.0

Source: Rosstat.

According to preliminary data, the level of income slightly reduced in 2015:

- the Gini coefficient declined to 0.412 from 0.419 a year earlier;
- the assets ratio declined to 15.5 times from 16.0 times in 2014 .

On the one hand, the drastic fall of the exchange rate of the ruble resulted in a relative gain of the owners of dollar-denominated assets and individuals with incomes denominated in foreign currencies. On the other hand, there was a growth of the share of wages in the incomes of the population, as well as a decline in wage differentiation among various categories of workers.

As wage differentiation is lower than the differentiation of incomes from property and entrepreneurial activity, the latter factor has led to a certain decline of the final indices of the wage difference in the population as a whole. Apparently, it is partly for this reason that the final income differentiation indices have remained practically unchanged over the course of the last five years (*Table 4*).

*Table 4*

**Distribution of the total volume of the population's money income, %**

	2011	2012	2013	2014	2015
Money income	100	100	100	100	100
Including by population quintile:					
first (with lowest income)	5.2	5.2	5.2	5.2	5.2
second	9.9	9.8	9.8	9.9	10.0
third	14.9	14.9	14.9	14.9	15.1
forth	22.6	22.5	22.5	22.6	22.6
fifth (with highest income)	47.4	47.6	47.6	47.4	47.0
Assets coefficient (income differentiation)	16.2	16.4	16.3	16.0	15.5
Gini coefficient (index of income concentration)	0.417	0.420	0.419	0.416	0.412

*Source:* Rosstat.

According to preliminary estimates, in 2015 the minimum per capita subsistence income level amounted to Rb 9,701, which represented a 20.5% rise on 2014. Much of the growth of the minimum per capita subsistence income level took place in H1 2015, while H2 saw a relative decline in its growth rate. The considerable increase of this index at the beginning of 2015 resulted in a rise in poverty rates. In the period January-September 2015, the share of the population with incomes below the subsistence level amounted to 14.1% of the total population, which represented a 1.5 pp. rise on the previous year (*Table 5*). On the whole, the percentage of the population living below the poverty line in 2015 amounted to 13% of the total population, similar to the percentage registered in 2009.

*Table 5*

**The number of population with money income below the minimum subsistence level, 2013-2015**

	Million persons	As percentage of total population
2013	15.4	10.8
Q1	19.7	13.8
Q2	17.3	12.1
Q3	17.3	12.1
Q4	12.2	8.5
2014	16.1	11.2
Q1	19.8	13.8
Q2	17.4	12.1
Q3	16.6	11.5
Q4	13.1	9.1
2015		
Q1	22.9	15.9
Q2	20.1	14.0
Q3	17.9	12.4
January-September	20.3	14.1

*Source:* Rosstat.

The Government of the Russian Federation's action plan to ensure socio-economic development in 2016 envisages a number of measures designed to decrease tensions in the labor market; the provision of assistance to pensioners (the indexation of pensions is to be carried out in H2 2016); an increase in the level of financial assistance to families with children, including through payments out of the Maternity Capital (Family) Grant Funds, an increase in the social

protection of families with children, and a continuation of the health and fitness programs for children from troubled families. Some measures are also planned in the sphere of healthcare and pharmaceutical supply.

5.1.2. The monetary expenses of the population

In 2015, the volume of the population’s money income amounted to Rb 53,202.9bn, which represented a 10.2% rise on 2014. The population spent Rb 37,903bn on goods and services, or 5.0% more than in the previous year. In 2015, the population’s savings amounted to Rb 9,384bn, which represented a 1.5-fold rise on 2014.

In 2015, the dynamics and structure of household expenditure was significantly affected by inflation. Consumer price inflation amounted to 12.9% in 2015. As a result of the influence exerted by various factors on the behavior of prices in individual sectors of the consumer market, the structure of inflation underwent significant changes due to a notable acceleration of growth in food products prices relative to the aggregate index of consumer prices for goods and services. In 2015, the consumer price index for food products amounted to 114.0%. The behavior of prices for non-food products was formed under the influence of the decline in the exchange rate of the ruble and the reduction in imports. The consumer price index for non-food products amounted to 113.7% vs. 08.1% in 2014. The transformation of price ratios determined a number of changes in consumer behavior (*Table 6*). The share of own income spent on goods and services remained relatively low: in 2015 it amounted to 71.3% vs. 75.3% a year earlier, including expenses on goods which amounted to 54.5% vs. 57.4% in 2014.

*Table 6*

**Household final consumption expenditure structure, %**

	Money income	Of these, expenditures on:						Growth (+), decline (-) in cash on hand	
		purchase of goods & services	including			sav-ings	including in deposits & securi-ties		purchase of forex
			purchase of goods	purchase of ser-vices	mandatory payment & contribu-tions				
<b>2014</b>									
Q1	100	82.2	61.5	17.9	12.2	0.3	-6.9	7.0	-1.7
Q2	100	73.2	55.5	15.5	11.7	9.9	5.0	4.6	0.6
Q3	100	75.7	57.6	15.6	11.7	7.3	2.7	4.5	0.8
Q4	100	72.0	56.0	14.0	11.9	8.5	1.0	7.1	0.5
<b>Full year</b>	<i>100</i>	<i>75.3</i>	<i>57.4</i>	<i>15.6</i>	<i>11.8</i>	<i>6.9</i>	<i>0.8</i>	<i>5.8</i>	<i>0.2</i>
<b>2015</b>									
Q1	100	78.3	59.3	16.7	11.1	12.9	2.2	4.0	-6.3
Q2	100	69.8	53.5	14.6	10.8	15.0	7.1	4.1	0.3
Q3	100	72.4	55.3	15.1	11.2	12.0	5.6	4.8	-0.4
Q4	100	66.6	51.3	13.3	11.7	16.0	10.0	3.9	1.9
<b>Full year</b>	<i>100</i>	<i>71.3</i>	<i>54.5</i>	<i>14.8</i>	<i>11.2</i>	<i>14.1</i>	<i>6.5</i>	<i>4.2</i>	<i>-0.8</i>

Source: Rosstat.

While the nominal incomes of the population grew at a relatively slow pace, the bulk of household expenditure was going to the purchase of food products and basic commodities. As a result, the share of food products, including beverages and tobacco products, in the structure of retail turnover increased to 48.6%, which represented a 1.86 pp. rise on the same period of 2008, while the share of non-food products dropped correspondingly. On the whole, over the course of 2015, turnover in the market for food products shrank by 9.2%, while that in the market for non-food products – by 10.7%. On the whole, the most prominent negative trend

was a notable decline in retail turnover in various segments of the market, relative to last year. At the end of the year, this trend clearly gained momentum.

One of the typical features of 2015 was the population's increased propensity to save as a precautionary measure in crisis conditions.

People were resorting to a variety of instruments in saving their income. While in 2014, 5.8% of the population's money income had been converted into foreign cash, in 2015 this index dropped to 4.2%, while saving in the form of bank deposits and securities increased to 6.5% of the population's money income index. In Q4 2015, the share of saving rose to 16.0% of money income, including saving in the form of bank deposits and securities (to 10%). The behavior of the personal saving index was strongly influenced by the interest rates on deposits in late 2014 – H1 2015. The total volume of individual bank deposits in Russia in late 2015 amounted to Rb 23,219.1bn, having risen by nearly a quarter on its year-end index for 2014. However, as the interest rates on deposits fall below the inflation rate, it is very likely that pensioners will remain the biggest group of individual clients still keeping their deposits with banks, as they have grown used to the negative interest rates in real terms offered by banking institutions.

Among the main consequences of the crisis we may point to shrinkage of the assortment of available commodities, dwindling supplies of many expensive items to the market, and the disappearance from the market of many of the previously active suppliers and producers. Demand shrinkage occurred not only in the relatively hi-tech segments of the consumer market (computers, electronics, telecommunications), but also in the more expensive segments of the food market oriented to higher-income social strata.

The volume of commercial services rendered to the population decreased by 2.1% on 2014. The deepest plunge was demonstrated by the volume of outbound tourism and recreational services, while that of education, spa and healthcare services declined at a more modest rate. The downward trend in retail turnover and the turnover of commercial services rendered to the population will prevail over H1 2016 and push domestic demand even further down.

The results of population surveys conducted by *Rosstat* in Q4 2015 point to a downward trend in consumer expectations. The consumer confidence index dropped on Q3 2015 by 2 pp., while its level reflects the collective consumer opinion on the overall situation in Russia's economy and individual material status. Social and political stability will depend on the success of government measures designed to support the most vulnerable population groups.

## **5.2. Migration processes in Russia<sup>1</sup>**

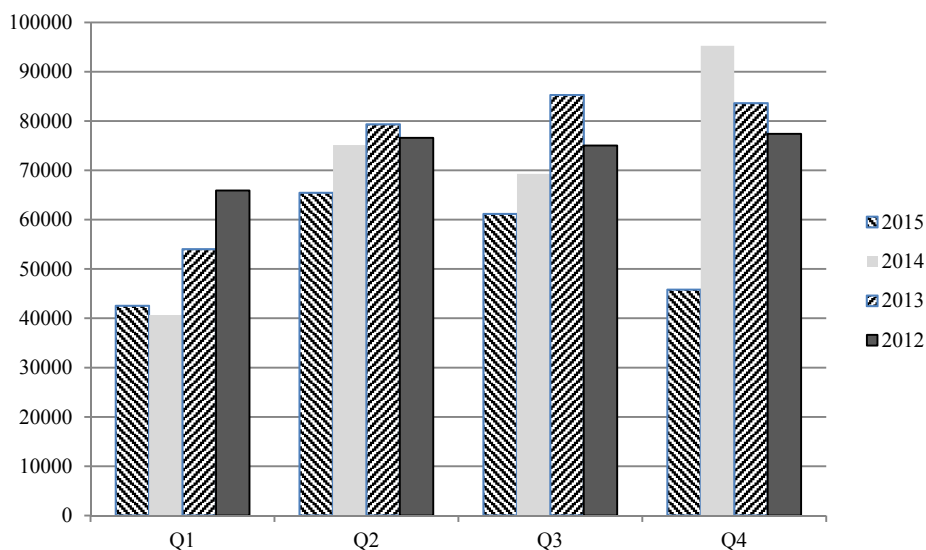
### **5.2.1. Long-term migration**

In January-November 2015 compared to the corresponding period of the previous year, Russia's positive migration balance moved down by around 20% and came to 214,900 persons. Negative migration balance resulted not so much from the contraction of the number of inflows as could be figured by the current Russia's economic situation as from the 15 percent growth of outflows. Monthly/quarterly registration posted positive balance of the number of inflows solely in Q1, later there was balance and in Q4 there was an obvious decrease. Evidently, by the end of the year previously planned and finally implemented resettlements into Russia as well as statistical lag were "eroded" by the ruble devaluation and general economic recession. In the course of the year, the outflows from Russia demonstrated steady downward trend against

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<sup>1</sup> Author of this section: Karachurina L. – NRU HSE.

the corresponding indices of 2014. As a result, Russia’s net migration starting with Q2 2015 was constantly less than compared to the same period of 2014. In November negative migration balance came to around 30 p.p. (*Fig. 1*).



*Fig. 1. Migration flow to Russia, Q1-Q4 2012–2015, persons.*

\*Q4 2015 – data for October and November.

Source: Rosstat.

Owing to the fact that the CIS member states still determine the picture of international migration into Russia, migration exchange precisely with these countries created the above-mentioned situation. A significant “division” in Russia’s migration relations with certain countries has taken place (*Table 7*). Noticeable increase in migration gains was related solely to Ukraine and was related to the acute crisis in that neighbor country which unfolded in 2014-2015.

No shift in migration exchange was registered with Moldova. All other CIS countries post decrease of net migration into Russia. It is especially true of the Central Asian republics. Migration exchange with Uzbekistan became negative altogether for Russia owing to more than 40% decrease of the number of inflow while the number of outflows from Russia remained unchanged. During entire post-Soviet period, such situation was not observed. Insofar as, there were no drastic changes in socio-economic and political situation in Uzbekistan, there are grounds to believe that decrease of the number of migrants from that country is a temporary phenomenon. It is determined by a delayed effect of a sharp growth of the number of inflows from Uzbekistan posted in 2012-2013 as well as issues related to issuance of biometric international passports in Uzbekistan, which were to be obtained by all citizens leaving for abroad prior to December 31, 2015.<sup>1</sup>

<sup>1</sup> Uzbekistan Foreign Ministry: old passports are valid through 2016, sticker is required solely for departure from ten countries. Uzbekistan Chronicles. <https://rpg15.wordpress.com/2014/12/05/мид-узбекистана-старые-паспорта-дейс/>

Table 7

**Inflow Migration to Russia from Foreign Countries, 2012–2015, thousand persons**

Country	2012*	2013*	2014*	2015**
International migration, total	294.9	295.9	270.0	214.9***
Including:				
Azerbaijan	18.1	17.3	12.3	9.6
Armenia	32.0	32.2	24.0	19.1
Belarus	10.2	3.7	6.7	4.5
Kazakhstan	36.7	40.2	40.8	31.5
Kirgizia	24.1	19.8	15.3	8.3
Moldova	18.6	20.6	17.5	15.8
Tajikistan	31.4	33.6	19.3	9.0
Turkmenistan	3.9	3.8	2.6	2.0
Uzbekistan	56.4	67.3	36.7	-21.6
Ukraine	37.0	36.4	84.9	130.8
All far abroad countries	26.5	21.0	9.9	5.9

\* less Crimea Federal Okrug.

\*\* January-November.

\*\*\* Migration growth of Crimea FO for January-November 2015 came to 32,000 persons.

Source: Rosstat.

On the whole, the level of predominance of one country (Ukraine) in Russia's positive migration balance represents a new phenomenon for modern Russia. If we exclude Ukraine from the total volume of Russia's net migration, then we will find out that in January-November 2015 Russia's population went up by merely 84,000 persons. Meanwhile, during the same period of 2014, it went up by 167,700 persons.

Situation with forced migration from Ukraine resulting from 2014 crisis has stabilized somewhat. For January-September 2015, the total number of those who asked for refugee status came to 1,079 persons including 245 persons from Ukraine and 249 persons from Syria. Those who asked for temporary asylum totaled 131,200 persons including 129,600 from Ukraine. Number of persons who got temporary asylum went up from 237,800 persons as of January 1, 2015 to 329,900 persons as of October 1, 2015. All this increment was due to immigrants from Ukraine. In the event the situation in Ukraine is stabilizing, Russia's net migration with this country will depend on whether there will be large-scale repatriation of Ukrainian nationals. However, at present we observe wait-and-see approach: the number of registered at the place of arrival in 2014-2015 failed to keep up at the same pace as the number of inflow migrants from Ukraine.<sup>1</sup>

Prior to August 1, 2015, migration from Ukraine was unfolding amid specially privileged regime of stay for its nationals on the territory of the Russian Federation. This regime allowed to stay in Russia indefinitely<sup>2</sup> without leaving the country (instead of 180 days for migrants from other CIS countries), obtaining new Migration Card and reapplication to the Federal Migration Service of Russia as it is required for other nationals of CIS countries. From August 1, 2015, the rights of the citizens of Ukraine regarding their stay in Russia were balanced with the rights of the citizens of other CIS countries. Prior to November 30, Ukrainian nationals had to apply to the Federal Migration Service in order to obtain papers for work in Russia. Privileges remain solely for the citizens who arrive in extreme order from southeastern regions of Ukraine.

<sup>1</sup> Head of the RF FMS Konstantin Romodanovsky noted the outflow of the citizens of Ukraine from Russia through border crosses located in Rostov region in October 2015. Ukrainian refugees are leaving Russia. Gazeta.ru, October 8, 2015. [http://www.gazeta.ru/social/news/2015/10/08/n\\_7748267.shtml](http://www.gazeta.ru/social/news/2015/10/08/n_7748267.shtml)

<sup>2</sup> To be more precise, Ukrainian nationals independently of their status had the right to stay in Russia up to 90 days and then this term could be extended every three months automatically.

Positive migration balance in exchange with the far abroad countries although declined but still retains positive thanks to the exchange with the Baltic States and mainly with Georgia, which ensures half of inflow. However as a whole, as it was before, the real picture of the migratory movements with the far abroad countries remains hidden. Emigration intentions of the Russian people and their realization, which could have gone up amid the economic crisis, still are not registered by statistics because the outflow takes place without deregistration.

Latest data on emigration intentions of Russian people registered by sociological centers are related to summer-autumn 2015. They are exceptionally uniform in their assessments. For example, regular survey of the emigration intentions of Russian people conducted by The Levada-Center in mid-September 2015 showed one of the lowest level of emigration readiness (11%<sup>1</sup>) during entire period of monitoring (since October 1990). Around the same number (13%) would rather move to permanent residence to another country according to the results obtained by VCIOM's survey. Along with this, similar "low" level of intentions the Levada-Center experts observed in April 2009, i.e. during in the midst of the previous financial crisis.<sup>2</sup> Sociologist and Director of the Levada-Center Lev Gudkov associates it with "the policy and upsurge of patriotism" as well as with the first reaction to the crisis: "People prefer to look around in the new conditions and only then decide to emigrate or not. Immediately following the crisis of 2009, the emigration wave of 2011-2014 followed (ready to stay amount varied between 69-77% and to emigrate – around 22%). The same picture we can observe in 2016-2017."<sup>3</sup> The Head of VCIOM Valery Fedorov explains the obtained results this way "many Russians 'have suffered from the sanctions, curtailment of ties with the West,' however, this is only 'one side of the coin', the majority of citizens understand that there is 'nowhere' to move, and that the 'West has a lot of their problems', including those related to migration."<sup>4</sup>

### 5.2.2. Novations in migration legislation

A whole number of amendments into the legislation on migration (first of all, in FZ "Concerning the Legal Status of Foreign Nationals in the Russian Federation") adopted in 2014, came into effect from 2015. Including:

- Starting from January 1, 2015, admission (and departure from) in Russia for the migrants coming from the states that remain outside the Eurasian Economic Union member states (Belorus, Kazakhstan and Armenia – from January 2015, Kirgizia – from August 2015) will be permitted solely for international passports holders;<sup>5</sup>
- Migrants from the visa-free regime countries who fail to indicate in their Migration Card upon arrival to Russia in the box 'Purpose of arrival' is 'Work' will not be able to obtain authorization documents for work in the country;<sup>6</sup>

<sup>1</sup> "West": perception and intention to emigrate. The Levada-Center. 13.10.2015. <http://www.levada.ru/2015/10/13/zapad-vospriyatie-i-stremlenie-emigrirovat/>

<sup>2</sup> The Crisis Forced Russians to Forget about the Emigration. The Levada-Center. 20.03.2015. <http://www.levada.ru/2015/03/20/krizis-vynudil-rossiyan-zabyt-ob-emigratsii/>

<sup>3</sup> The Crisis Forced Russians to Forget about the Emigration. The Levada-Center. 20.03.2015. <http://www.levada.ru/2015/03/20/krizis-vynudil-rossiyan-zabyt-ob-emigratsii/>

<sup>4</sup> Korchenkova N. Russian Are not Ready to Leave. *Kommersant*. July 13, 2015, <http://www.kommersant.ru/doc/2767127>

<sup>5</sup> The RF Foreign Ministry's commentary on crossing the state border of the Russian Federation by foreign nationals.

<sup>6</sup> Federal Law of 21.07.2014 № 230-FZ «On Introduction of Amendments in the Federal Law 'On Legal Status of Foreign Nationals in the Russian Federation'».



- The simplified procedure for acquiring Russian citizenship for foreign nationals permanently residing on the territory of Russia and certified as Russian speakers;<sup>1</sup>
- Foreign students who graduated from Russian colleges and Universities and with three years work record can apply for Russian citizenship through the simplified procedure. At the same time, in the past those citizens of the former USSR who have received secondary vocational education or higher education after July 1, 2002 in Russian educational organizations, were eligible for the simplified scheme in acquiring Russian citizenship. In particular, they had to wait for 9-12 months for their Russian citizenship and the work record, which is in the new amendment to the law, was not required. For these citizens the procedure for acquiring Russian citizenship became more complicated. However, the procedure is uniform for all foreign nationals including those from far abroad;
- The simplified scheme for acquiring Russian citizenship also applies to self-employed entrepreneurs with work record of no less than three years and annual income of no less than 10 million rubles proceeding from the sale of goods or services as well as for investors whose share in equity capital of a Russian legal entity constitutes no less than 10%.<sup>2</sup> At the same time, the types of activity list whereunder one can apply for the simplified procedure in acquiring Russian citizenship turned out to be extremely short. In particular, wholesale and retail commerce, automotive maintenance, hotel and catering business, advertising activities, real estate transactions, etc. were deleted from the list.<sup>3</sup>

Major legislative novations, which came into force in 2015, however, do not relate to the inflow procedure and acquiring Russian citizenship, but with the possibility for labor activity. From 2015, the visa-free migrants could be employed by legal entities without a work permit. Now, irrespective of the fact the migrants are employed by factories or organizations (legal entities) or employed by individuals, they have to purchase Work Patents.<sup>4</sup> Work patents are valid solely on the territory of those RF subjects which issued work patents and regions have the right to set fee for work patents (PIT<sup>5</sup>).

Transition to Work Patent regime for foreign labor migrants was viewed by the experts as a tool to simplify legalization and as an anticorruption measure. However, as it happens, its implementation was ill-designed whose consequences have been resolved in the course of realization of already adopted legal documents. A number of additional mechanisms and conditions were attached to its implementation. At the same time, requirements for the registration procedure at the place of stay remained and have even been made more complex.

Among the new mandatory requirements currently are not only voluntary medical insurance policy and a medical certificate stating absence of dangerous diseases but a proof of knowledge

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<sup>1</sup> Federal Law of 21.07.2014 № 230- FZ «On Introduction of Amendments in the Federal Law ‘On Legal Status of Foreign Nationals in the Russian Federation’».

<sup>2</sup> Federal Law of 23.06.2014 № 157- FZ «On Introduction of Amendments in the Federal Law ‘On Citizenship of the Russian Federation’».

<sup>3</sup> Regulation of the Government of the Russian Federation of September 30, 2014. № 994 «On Determination of the Types of Economic Activities where a Foreign National or a Stateless Person Who are Individual Entrepreneurs, as well as a Foreign National or Stateless Person Who are Investors are Granted the Right to Apply for the Citizenship of the Russian Federation in Accordance with a Simplified Procedure».

<sup>4</sup> Federal Law of November 24, 2014. № 357- FZ «On Introduction of Amendments into Federal Law ‘On Legal Status of Foreign Nationals in the Russian Federation’».

<sup>5</sup> According to the new migration legislation, monthly fee paid for the work permit is considered as a personal income tax and is changed as an advance payment.

of Russian language, History and Legal System.<sup>1</sup> Practically in all European countries, migrants face the need to purchase medical insurance policy and this measure is aimed at protecting regions' budgets from additional burden owing to rendering free medical services to migrants and simultaneously provide them with some social guarantees. The test on Russian language skills for migrants<sup>2</sup> who do not intend to stay for a long period and naturalization (permission for temporary stay, residence permit, or citizenship) seems to be an excessive requirement. Moreover, there are no conditions for the large-scale Russian language courses in the country. This requirement does not apply to: highly qualified specialists and their family members (when obtaining residence permit of work permit) as well as those who got "Matriculation certificate" or "Diploma" in the USSR prior to September 1, 1991; men and women of pension age (65 and 60 years) and people younger 18 years; members of the State program of voluntary migration of fellow nationals and their family members; students arriving to Russia intramural studies and intending to work part-time.<sup>3</sup>

In order to obtain a Work patent a foreign national must have a voluntary insurance policy for the term of his/her work, or his/her employer must submit a document, which will guarantee provision of medical services at his expense.

From January 1, 2015, employers have to make contributions in the amount of 1.8% of the foreign national's wages into the Fund of Social Insurance of the Russian Federation, which, in its turns, guarantees the right of a foreign national for receive a benefit for temporary incapacity to labor. At the same time, foreign national become eligible for the benefit when insurance contributions have been paid during six months prior to the insurance even, in other words a foreign national has to work in a company no less than six months.

### 5.2.3. External labor migration

According to the data of the central database of the FMS of the Russian Federation on registration of foreign nationals and stateless persons (CDB AFN), the number of foreign nationals staying in Russia contracted by around 10% as of December 2015 compared to the corresponding period of the last year. This number includes both foreign national with migration registration during the year and those staying in Russia. In absolute numbers, this means a reduction by over 1.1 million of foreign nationals' inflow and by 800 thousand registered foreign nationals.

Because of events in Ukraine, sharply increased the inflows number and registered in the FMS territorial offices participants and their family members of the State program of voluntary migration of fellow nationals (183,000 persons compared to 106 000 in 2014) who acquired Russian citizenship and residence permit.

Indicators of obtaining authorization documents for legal work activity have contracted more drastically (*Table 8*).

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<sup>1</sup> In addition, Migration Card with the purpose of entry is "Work", international passport, application, registration at the place of stay. Totaling 8 positions.

<sup>2</sup> Validity term for "federal certificate" – 5 years, "regional" - 1 year.

<sup>3</sup> Federal Law of April 20, 2014. № 74- FZ «On Introduction of Amendments into Federal Law 'On Legal Status of Foreign Nationals in the Russian Federation».

Table 8

**Authorization documents applications filed for foreign nationals’  
legal work in Russia**

Index	2015	2014	2015/2014, %
Work permit for foreign nationals*, thousand	217.0	1 328.1	16.3
Work permits for highly qualified specialists and qualified specialists, thousand	65.7	194.9	33.7
Patens**, thousand	1788.2	2386.6	74.9
<b>Total</b>	<b>2070.8</b>	<b>3909.7</b>	<b>52.7</b>

Sources: FMS of Russia, 1-RD form (part 2).

\* – from January 1, 2015, issued solely for visa required countries.

\*\* – From January 1, 2015, issued for foreign national from visa-free regime countries for employment both by individuals and legal entities.

Multiple contraction of the number of issued *work permits* is connected with the fact that migrants from visa-free regime countries are no longer required to obtain these documents. Another factor, which affected the number of obtained *Work patents*, was accession of Armenia and Kirgizstan to the Eurasian Economic Union. That exempt migrants from these countries, as it is true of nationals from Belarus and Kazakhstan, from obtaining Work patents (together with all other documents including proof of knowledge of Russian language, History and Legal System). The RF FMS data for 2015 reveals the number of labor agreements concluded with Armenia and Kirgizstan nationals who work on the Russian territory without work permits and Work patents amounted to 62.200 and 103.100, respectively. If we add these parameters to the number of issued Work patents and standard work permits, then the fall of issued work permits and Work patents will come to a bit over 40% in 2015 against 2014 parameters. However, data released by the FMS of Russia is based on the statistics of issued Work patents (and standard work permits) in units. At the same time, one migrant theoretically can apply for a Work patent 12 times during one calendar year. That is why, it is hardly possible to estimate by the number of issued authorization documents the real number of people who actually work under these authorization documents. From 1-RD form of the FMS of Russia it follows that the number of formalized by the foreign nationals Work patents in 2015 constituted 1,780 thousand units, and in 2014 – 2,379 thousand units, thus declining not by 40% (as per number of issued documents) but by 25%.

In any case, these changes cannot be written off solely for legislative novations. They can be linked either with a real drop in the number of labor migrants inflow to Russia or with their “withdraw into” the shadows or, which is more realistic, in the unknown proportion with both these factors.

If we analyze monthly dynamics of obtaining authorization documents (*Fig. 2*) then it becomes clear that the problems were getting more pressing gradually. The collapse with obtaining of Work patents observed in January and February of 2015 was partly offset in April. However, further on and contrary to traditional (non-crisis) trends, there was no summer migration peak, which was always due to seasonal work.

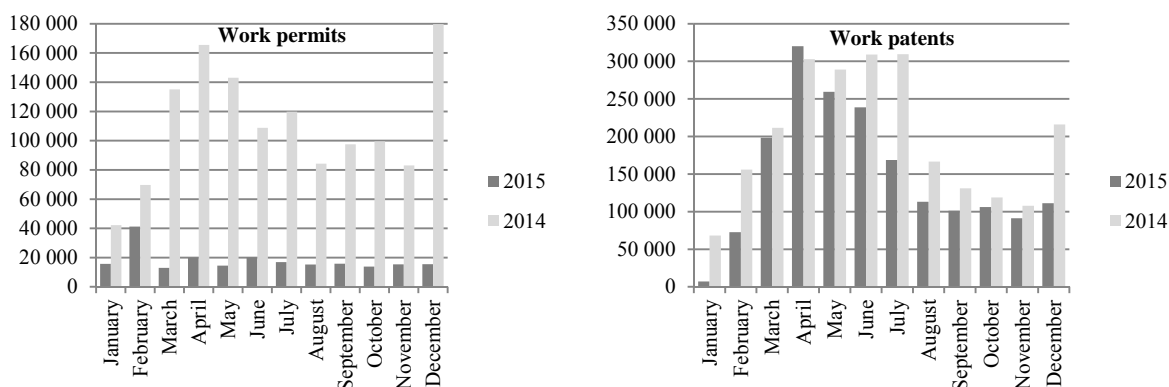


Fig. 2. Issue of work permits and Work patents for foreign labor migrants, Russia, January-December 2014–2015, units

Source: data released by the FMS of Russia.

Seemingly, replacement of nontransparent and corruption mechanism of work permit quotas allocation with Work patents should have led to an increase in the number of legalized foreign nationals. It should have happened by the second half of the year, when the system of obtaining Work patents should have been worked-out and become clear (precisely this way it happened in the past when, for example, Work patent was introduced for employment by individuals). However, so far these expectations have not come true. Possible reasons for the existing situation:

1. Economic recession, which reduced the extent of work places supply and requirement in legal foreign workers. Some benchmark for this is the registered in the employment agencies the required number of workers. By end-November 2015, it constituted 1,206.6 thousand against 1,697.7 thousand persons the year earlier;<sup>1</sup>

2. Ruble devaluation, depreciation of migrants’ wages and, consequently, reduction of attractiveness of Russia as a place for income;

3. Exiting problem with registration at the place of stay, which conditions obtaining a work patent;

4. General tightening of control over migration kick started in 2014;<sup>2</sup>

5. High price paid for a Work patent and accompanying expenses. Set monthly payment for Work patents greatly differed across regions and in itself was aimed at becoming a signal for migrants about their desirability (requirement) in regions:

- a number of RF subjects did not introduce regional coefficients and on their territory the price of work patent established by the Federal law was effective (to the tune of 1,568.4 Rb). As a rule, this was true of the regions, which were not popular with migrants (Ivanovo, Kostroma, Kurgan regions, Zabaikalsky Krai, Karachaevo-Cherkessk Republic, Karelia and other, total 34 regions);
- the price of work patent in other regions was in the range of Rb 2,038.92 in Orenburg region to Rb 7,056.2 in Sakha (Yakutiya) and Rb 8,000 in Sakhalin region;

<sup>1</sup> Presentation on socio-economic situation in Russia-2015. Moscow, Rosstat.

<sup>2</sup> Corresponding federal laws were adopted in 2013. See. Russian Economy in 2014. Trends and Outlooks. (Issue 36). V. Mau et al. Edited by Sergey Sinelnikov-Murylev, Alexander Radygin. Gaidar Institute for Economic Policy. Moscow, Gaidar Institute Publishers, 2015. Chapter 5.2. pp. 315-331.

- in Moscow and Moscow region work patent cost Rb 4,000 and in St. Petersburg and Leningrad region – Rb 3,000.

Separate issue and a new corruption mechanism became obtaining of regional or federal certificate of proof of knowledge of Russian language, history and legal system (federal certificate is more expensive but it is valid on the entire territory of the Russian Federation). According to experts in Moscow where Russian language text is very simple, the share of migrants failing to pass it comes to 18%. In other regions where the federal test is difficult solely between 7% and 15% of foreigners fail to pass it, which is explained by the corruption component.<sup>1</sup> Moreover, passing a test does not provide a migrant with knowledge of Russian language and even does not contribute to it.

According to experts' estimates, total lump sum for legalization in Moscow including payment for certificate, VMI, notes came to around Rb 20,000<sup>2</sup> (hereafter Rb 4,000 monthly) and in Primorsky Krai – around Rb 40,000.<sup>3</sup>

According to the migrants themselves, there is no benefit in the cost of work patent compared to the previously effective standard work permit. *“Labor migrants working in the capitol regions confirm that the standard work permit valid for a year together with preparation of documents with the help of intermediaries were several time cheaper. ‘It could be filed for Rb 30,000,’- said Uzbekistan national working in a Moscow firm. – ‘For obtaining standard work permit we took a blood test, received medical certificates but to file application by oneself was impossible. You come and they say there are no quotas. Firm also buys quotas and sells them. Currently cost of services for filing all documents application services together with monthly payment for work patent will total around Rb 68-70 thousand annually. Reckon twice as much as previously”.*<sup>4</sup>

Our findings<sup>5</sup> demonstrated that each procedure for issuing work patent to a certain degree placed a role of additional barrier for migrants' legalization. The need for some of them is questionable.

6. In the wake of the crisis, most likely, migrants face greater problems with filing labor agreements. Interview taken with representatives of non-commercial organizations dealing with provision of assistance to migrants in Moscow demonstrated the urgency of this barrier: *“to obtain a work patent does not mean that one works legally. In order to work legally one has to sign a labor contract. Employers never wanted to sign labor contracts and the same is true of today. The Moscow government does not want to motivate them to do it and does not want. Because Muscovites do not have signed labor contracts. 30% of Muscovites do not have signed contracts. And there are migrants to worry about. That is why the sword of Damocles is hanging over migrants. According to legislation: if during two months labor contract application was not filed, i.e. the employer has not submitted a notice on conclusion of written labor contract the work patent is revoked.”* Fake labor contracts, according to experts, as before are in high

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<sup>1</sup> Economic crisis – social dimension: information and analytical bulletin. RANEPa. Edited by Tatiana Maleva. 2015. № 3, p. 90.

<sup>2</sup> Labor Migration Situation in Russia: Costs Increase, Benefits Dwindle, Stocks Drop. Russian Migration Brief. March 2015. Issue 1. p.2.

<sup>3</sup> For guest migrant it is cheaper to live in Russia than work. Information agency REGNUM. March 3, 2015. <http://www.regnum.ru/news/society/1901202.html>

<sup>4</sup> Nikolskaya P. On work patent basis, «Kommersant-Vlast», April 20, 2015.

<sup>5</sup> Hereinafter – Project of HSE NRU Higher School of Economics «Analysis of Social Sphere of a Region by Method of Inclusive Observation», within which in autumn 2015 interview were taken from representatives of noncommercial organizations, which deal with migrants in Moscow.

demand, which is explained, on the one hand, by the unwillingness of major part of employers to officially formalize labor relations with migrant workers, and on the other hand, aspiration of migrant workers, at least, to formally observe requirements of the migration law;

7. Procedural problems, in particular, delayed and solely for certain regions (in particular, for Moscow<sup>1</sup>) administrative decision related to prolongation of work patents effectiveness, which were issued in 2014. In late 2014, foreign migrant held over two million effective work patents, which according to the decision taken in late December 2014 had to be reapplied in 2015. The majority of regions failed to cope with such inflow of applications;

8. Subjective reasons – foreign migrants wish to save on application of authorization documents and monthly payments and intention of employers to save on increased from 2015 payroll taxes of foreign migrants. For example, assessing expenses of cost and time spend on legalization and risks of illegal stay in life in Moscow representatives of noncommercial organizations expressed a belief that *“the fact that the share of legalization of foreign workers increased following adoption of the new legislation in 2007 was due to the fact that foreign migrants got a change to file work permits applications themselves. Previously they could do it solely via employers and the latter did not want to do it. This demonstrates the fact that foreign migrants to observe laws and work legally. Euphoria faded after that. When they introduced work patents, it was treated as a new surge for greater legality. However, now there is a new setback because migrants say that a work patent is Rb 4,000 for 12 months and to pay additionally for medicine, for the test and they threaten that without signed labor contract the work patent will be revoked. In addition, migrants think: “Go to blazers, I will work as long as I succeed.”*

All-Russia 25% reduction of the number of formalized work patents in 2015 against 2014 is differently represented across Russian regions.

Out of 30 RF regions,<sup>2</sup> which in 2015 formalized over 10 thousand work patents, 22 regions demonstrated negative dynamics in 2014 (*Fig. 3*), including 50% reduction was observed in Moscow region, 40% - in Moscow, 35% - in Tyumen region and Krasnoyarsk Krai. Simultaneously, St. Petersburg and Leningrad region, Kaluga, Volgograd regional and especially in Yamal-Nenets Autonomous Okrug and Khanty Mansi Autonomous Okrug registered significant increase of the number of issued work patents. These regions and especially Yamal-Nenets Autonomous Okrug and Khanty Mansi Autonomous Okrug boast of a significant share of legal labor migration due to their employment by large enterprises. Observed during the recent years high concentration of migrants in several Russian regions is retained: first ten regions ranked by the number of foreign migrants account for 68.8% of all issued work patents, in 2014 – 69.6% and first twenty regions – 81.6% and 81.1%, respectively. In the majority of regions the inflow on labor migrants from visa-free regime countries is insignificant. There are leaders among them: Lipetsk, Yaroslavl, Saratov and Omsk regions, Altai and Primorsk Krai. Inter alia, this fact characterizes social and economic situation in these regions.

Important watermark of the crisis is the number of issued work permits for highly qualified specialists and qualified specialists. In comparison with the previous year, this number shrank 3-fold and during the entire year, it remained unchanged.

<sup>1</sup> FZ № 56 of March 8, 2015. «On Introduction of Amendments in Article 13-2 of Federal Law «On Legal Status of Foreign Nationals in the Russian Federation and Certain Legal Acts of the Russian Federation».

<sup>2</sup> St. Petersburg and Leningrad region due to the fact that they share a single FMS territorial office are studied together.

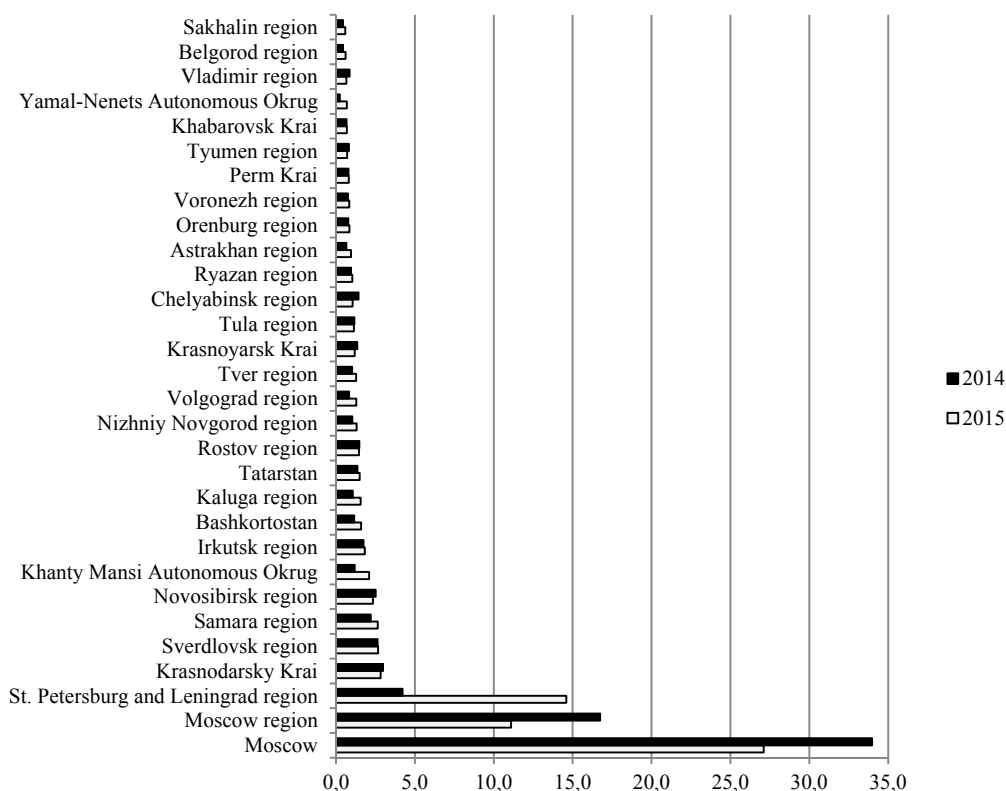


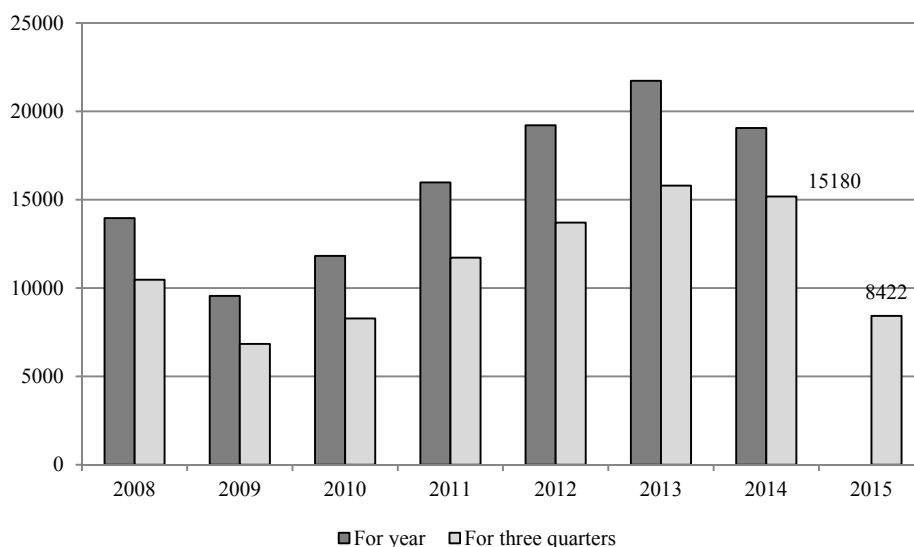
Fig. 3. Breakdown of RF regions across the number of issued work patents for visa-free foreign migrants, 2015-2014, % (RF=100%)

Source: data released by RF FMS.

However, the main indicator for the complexity of the current crisis comes from cross-border remittances made by individuals. Never since the onset of the regular statistical observations of the remittances dynamics (from 2006) their volume fell so drastically: according to the data for three quarters of 2015, they decreased nearly 2-fold against the same period of last year, although crisis alarms regarding remittances were already noticeable in 2014 (Fig. 4). Average amount of one transaction fell below \$200 in Q1 2014, insignificantly growing by Q2 and again fell by Q3 (\$229), which, starting with 2008, always was the ‘fattest.’ Change in the currency exchange rates and contraction of remittances took a toll on the economies of dependent on migrant workers’ remittances countries, first of all, Tajikistan, Kirgizstan and Moldova. According to the World Bank data, in 2012 remittances made by migrant workers to Tajikistan equal 52% of GDP, to Kirgizstan equal 31% of GDP and to Moldova equal 25% of GDP.<sup>1</sup> At the same time, remittances do not support budgets but households and, first of all, current household spending.<sup>2</sup>

<sup>1</sup> Migration and Development Brief. The World Bank. April 11, 2014, p. 4.

<sup>2</sup> According to the findings from questionnaire survey of individuals making remittances carried out by credit organizations through intermediary of the Central Bank of Russia in February 2014, around 68% of remittances are directed to current households’ expenses. The RF Central Bank. [http://www.cbr.ru/statistics/?Prtid=svs&ch=Par\\_17101#CheckedItem](http://www.cbr.ru/statistics/?Prtid=svs&ch=Par_17101#CheckedItem)



*Fig. 4. Cross-border remittances made by individuals from Russia to CIS member states, 2008–2015, USD million.*

*Source:* data released by the Central bank of Russia.

Comparing two crises: the crisis of 2009-2010 and the current one, it is necessary to note that the current recession has to a greater extent affected the migrant inflows: the number of legal foreign workforce in Russia in 2009 shrank by 8.3% against 2008. Solely from CIS member states migrant inflows shrank by 7.6%. In 2010, compared to 2009 it decreased by 26.2% and 24.2%, respectively.<sup>1</sup> During 2015, the fall constituted 47.3% for all categories of migrant workers.

On the whole, in 2015, indicators demonstrated by foreign labor migration in contrast to long-term migration stayed under the effect of crisis processes unfolding in Russian economy. Against this background, the only positive effect represent the sum generated by the sale of work patents Rb 34,061 million in 2015 against Rb 18,312 million in 2014.

#### 5.2.4. Internal migration

The scale of internal migration in Russia continue growing, although its increase in not big against January-November 2014 (by 2%). However, on the whole, the number of internal movements registered by statistics by the year-end again will exceed 4 million persons, i.e. will be twice as much as in 2000s. The reasons for continuing growth of migration activity of Russian people remain unclear. Crisis developments unfolding in the Russian economy, as a rule, do not prompt migration activity. For example, studies of potential mobility of unemployed and jobseekers during the previous crisis demonstrated low levels and did not grow with mounting

<sup>1</sup> Labor and Employment in Russia-2011. Moscow, Rosstat.



unemployment in 'native' settlements.<sup>1</sup> Rostrud projects aimed at providing incentives for moving from localities with significant levels of unemployment have virtually fallen through. High migration levels registered by current record could have been boosted by previous changes introduced into 2011 methodology and limited easing of the registration system at the place of arrival (compared to 2000s when sanitary standards of floor space required for the number of residents and registered, broad packet of documents were in place. People did not understand the difference between 'registration at the place of residence' and 'at the place of arrival' and grudgingly registered tenants at the place of arrival.<sup>2</sup> Moreover, the volume of housing construction, apparently, plays a certain role. This housing construction affects long-term migration. All this leads to growing number of registered migrants. As with long-term international migration, the internal migration so far does not react to the crisis economic developments.

Slightly fell the number of attractive for migration regions. However, their nucleus does not change year-on-year. They are Moscow and Moscow region, St. Petersburg and Leningrad region, Krasnodarsky Krai, Kaliningrad and Novosibirsk regions. From the 2015 list of attractive for migrants regions (14 regions including Sebastopol) were removed Sverdlovsk, Chelyabinsk and Belgorod regions. Moscow's in-migration increment in 2015 compared to the previous year went up by the same number Moscow region posted decrease of in-migration. Apparently, reasons for such volatility stem from the delayed regarding commissioning of new housing system of registration as well as from the recording system.

Practically all regions eastward of the Volga River register migration outflow. Stand-alone islands of migration happiness are solely Novosibirsk and Tyumen regions (without okrugs).

Despite a migration growth owing to international migration, 52 regions of the country registered migration loss during January-November 2015.

Thus, labor migration can be a certain barometer of the crisis economic situation. Long-term migration can never be such a barometer: neither international, not internal one. However, indicative functions of the labor migration are hampered by regular legislative and statistical novations. Crisis developments are better diagnosed by the dynamics of migratory transfers.

### **5.3. Challenges facing higher education in Russia<sup>3</sup>**

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

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<sup>1</sup> Expressed migration intentions posted 4.2% of respondents in 2008 and 4.4% in 2009. For further information please refer to Karachiruna L., Mkrтчian N. Potential of Spatial Mobility of Jobless in Russia. Sotsys. 2012. № 2. pp. 40-53.

<sup>2</sup> To note, that from 2011 those registered at the place of arrival for a period over 9 months fall in the statistics of long-term migration (independently of the fact if it is international or internal).

<sup>3</sup> Author of this section: Klyachko T. – RANEPА.

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.<sup>1</sup>

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.<sup>2</sup>

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.<sup>3</sup>

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

<sup>1</sup> *Inozemtsev V.* How to enhance higher education? To cut sharply education spending. <https://slon.ru/po sts/55592>.

<sup>2</sup> World in figures. 2007, 2014. M.: ZAO Olymp-Business.

<sup>3</sup> 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.

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).

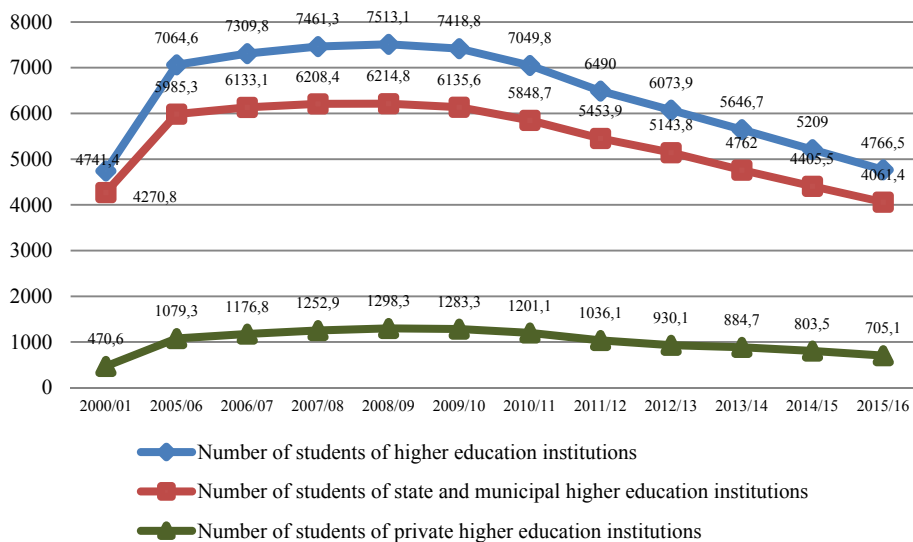


Fig. 5. Number of students of Russia’s higher education institutions in 2000/2001–2015/2016 academic years, thou. Persons

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).

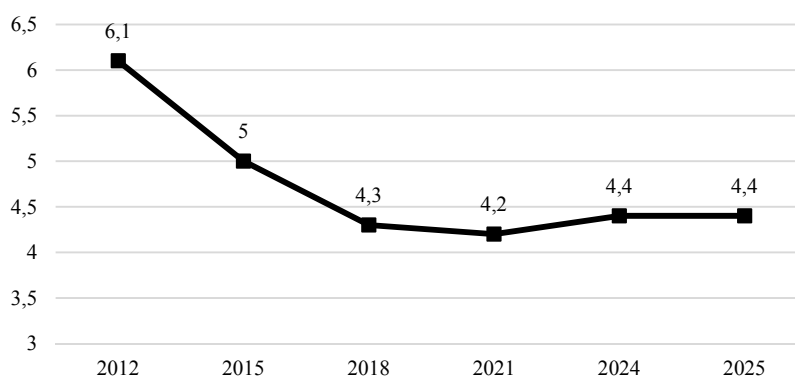
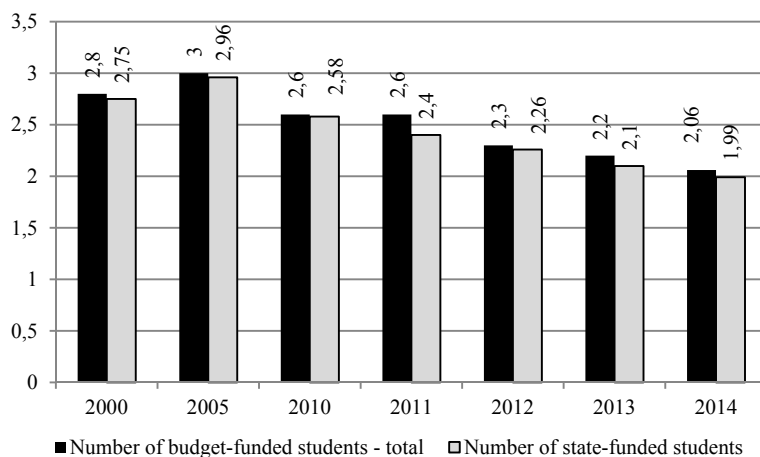


Fig. 6. Forecast for number of students of Russia’s higher education institutions until 2025, mln persons

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

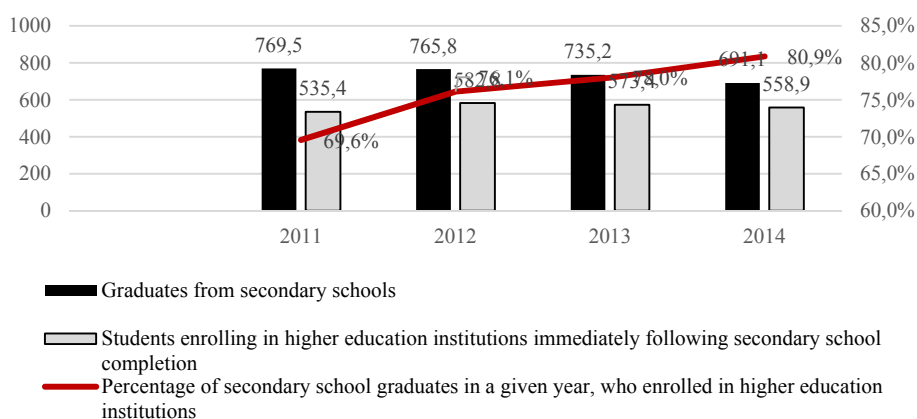
However, as early as 2014, the number of budget-funded students dropped below the lower threshold provided for by the Federal Law on Education in the Russian Federation No. 273-FZ of December 29, 2012, whereby there must be at least 800 budget-funded students per 10,000 of the population at the age of 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](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).

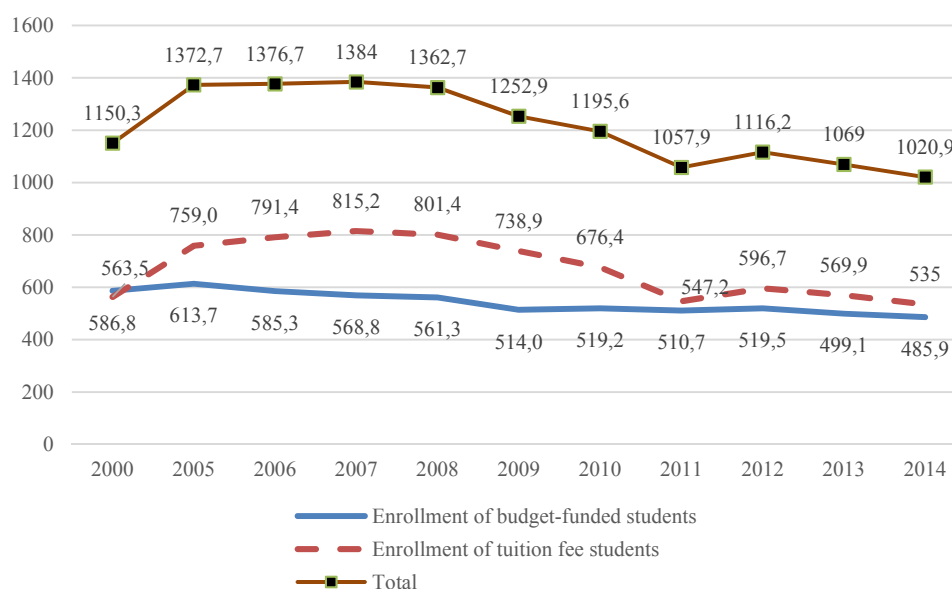


Fig. 9. Enrollment of budget-funded students and tuition fee students in Russia's higher education institutions, 2000–2014, thou. persons.

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).

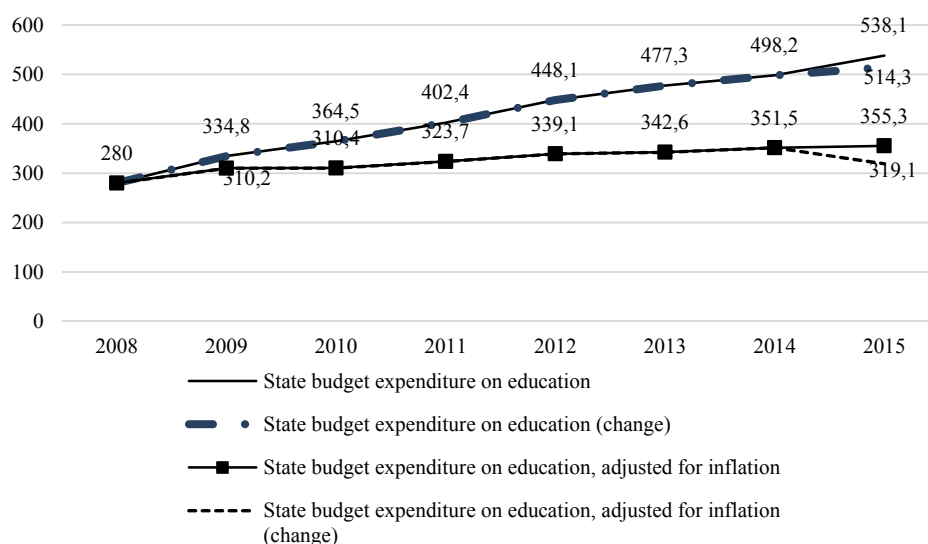
Finally, the quantitative parameters of the number of budget-funded students in 2015 were found to be much lower than those reported at the end of the Soviet era. With regard to tuition fee students, it should be admitted that higher education institutions depend largely on tuition fees despite a considerable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

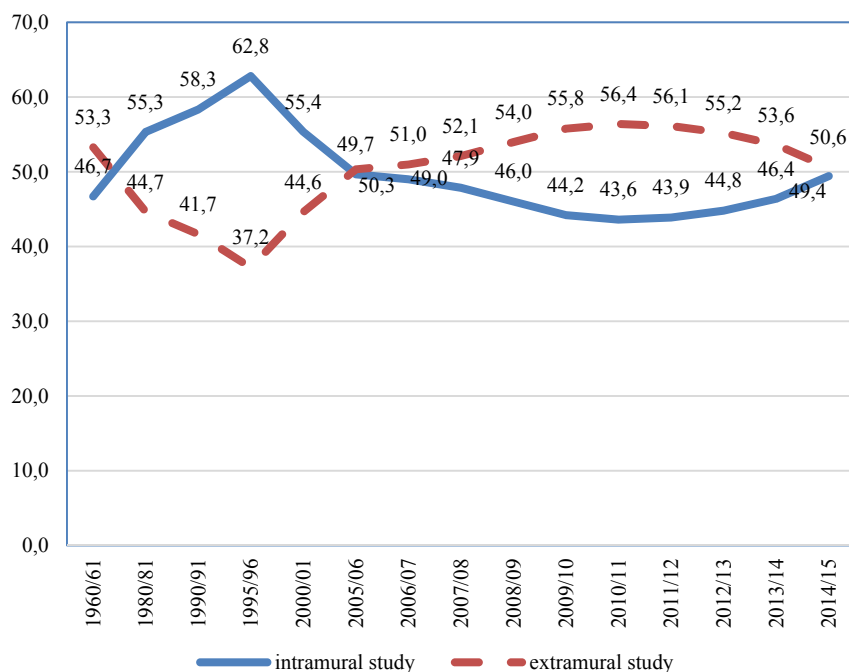


Fig. 11. Ratio of number of intramural students to extramural students of Russia's higher education institutions (the RSFSR until 1991), %

Source: Rosstat: [http://www.gks.ru/free doc/new site/population/obraz/vp- obr1.htm](http://www.gks.ru/free_doc/new_site/population/obraz/vp- obr1.htm).

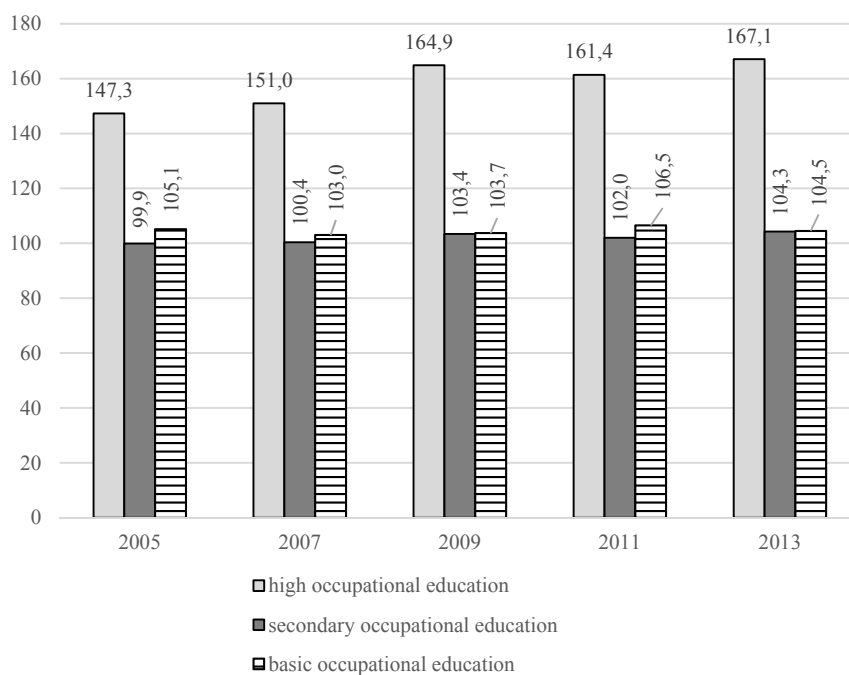
The presented data do not back up the common opinion that young men tend to enroll in higher education institutions because they want to dodge the military draft. Young adults at the age of 25 and beyond (e.g., about 1.7 million students in 2013<sup>1</sup>) combine education and work, and some obtain 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.<sup>2</sup> Average wages of workers with secondary vocational degrees were only 2–4% above average wages of workers with secondary education levels (see Fig. 12).

<sup>1</sup> The latest data available.

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



*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/wages/labour\\_costs/#](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/wages/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 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%.<sup>1</sup> 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*).

<sup>1</sup> 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](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1139918584312)



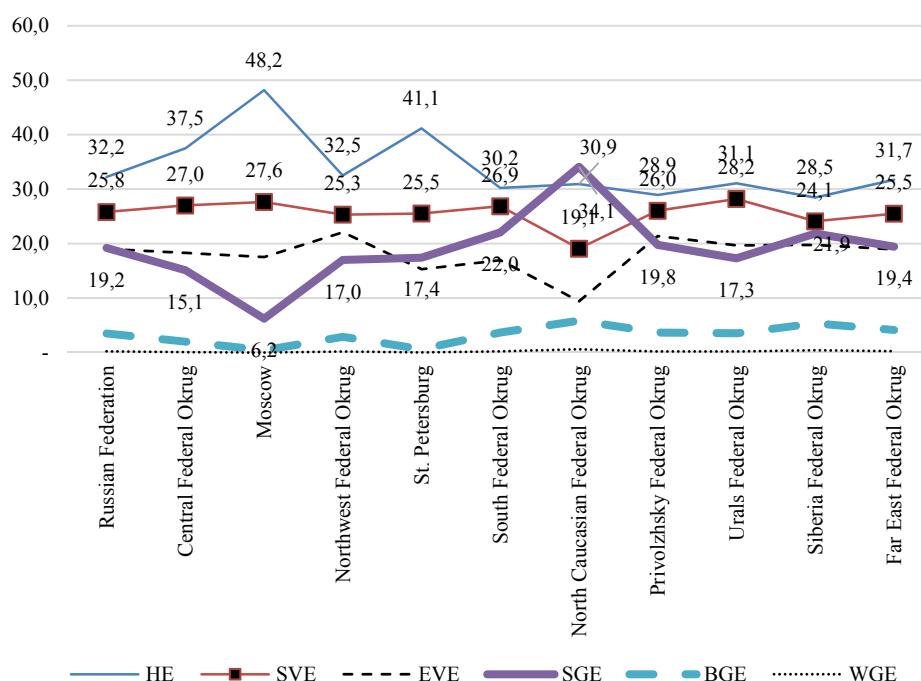


Fig. 13. Structure of employment by educational attainment in the Russian Federation, in federal okrugs, in Moscow and St. Petersburg, 2014, %

**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](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
<b>Higher vocational education</b>			
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
<b>Secondary vocational education</b>			
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.<sup>1</sup>

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*

**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
<b>Efficiently-run enterprises</b>			
Blue collar workers	64.1	33.3	2.6
Specialists	83.3	16.7	0.0
Managers	88.1	11.9	0.0
<b>Ailing enterprises</b>			
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%.

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

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
<b>Efficiently-run enterprises</b>			
Blue collar workers	69.2	30.8	0.0
Specialists	97.6	2.4	0.0
Managers	95.2	4.8	0.0
<b>Ailing enterprises</b>			
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.

## **5.4. The situation in the science and innovation sphere<sup>1</sup>**

### **5.4.1. Budget constraints**

In 2015, the budget allocations to civilian research and development (R&D) were cut by approximately 8% at current prices by comparison with the targets set in the basic version of

<sup>1</sup> Author of this section: Dezhina I. – Gaidar Institute for Economic Policy.

the *Law on the 2015 Federal Budget and 2016–2017 Budget Plan*<sup>1</sup> (Table 13). The reduction in the amount of budget funding is of critical importance for the science sector, because the federal budget has remained the principal source of funding for research and development, covering about 70% of the aggregate expenditures on R&D.

*Table 13*

**Changes in budget allocations to R&D in 2015, by core program, bn Rb**

Title	Law No 384-FZ*	Actual allocation**	Deviation, %
<i>State Program of the Russian Federation for the Development of Science and Technology in 2013–2020</i>	164.4	151.68	-7.7
<i>Federal Targeted Program Research and Development in the Priority Areas of Development of the Russian Scientific and Technological Complex for 2014–2020</i>	23.7	21.39	-9.7
<i>Subprogram Fundamental Scientific Research</i>	109.0	102.0	-6.4

\* Federal Law of 1 December 2014, No 384-FZ (amended as of July 13, 2015) on the 2015 Federal Budget and 2016–2017 Budget Plan.

\*\* Summary of the quarterly spending profiles of the federal budget as of October 1, 2015.

Source: RF Ministry of Finance.

Although fundamental research represents an expenditure category that has been cut in the least degree, the overall downward trend displayed by it has become obvious. While back in 2008 the allocations to fundamental research amounted to 25.7% of the aggregate expenditures on R&D, by 2013 their share had shrunk to 17.4%.<sup>2</sup> In 2015, the most substantial budget cut was made to the programs of the Russian Academy of Sciences (RAS), as the actual funding allocated to them amounts to only half of the initial planned target. At the same time, the amount of basic expenditure allocations to the Academy's subordinated institutions was reduced by only 5%<sup>3</sup>.

The plans for 2016 indicate that in spite of the increased funding allocated to some special expenditure items, the allocations to fundamental research will be subject to major cuts. This conclusion is vividly illustrated by available data on changes in the amount of budget funding earmarked for the foundations set up to support fundamental research (Table 14). The planned budget allocations to the following three entities – the Russian Science Foundation (RSF), the Russian Foundation for Basic Research (RFBR) and the Russian Humanitarian Science Foundation (RHSF) – are below the corresponding indices for 2015, even in absolute terms.

However, the situation faced by each of the foundations is by no means the same: thus, the RSF was able to offset the loss of budget funding by the gift of Rb 14.9bn received from OJSC *Rosneftgaz* to cover its research projects. In this connection, *Rosneftgaz* put forth no specific conditions as to how the funding should be spent (for example, that it should be earmarked for those projects that are of interest to the sponsor)<sup>4</sup>. Earlier, the RFBR had also received gifts of money from commercial companies, but on a much more modest scale and always to cover the costs of targeted contests, where projects were to be launched in those fields that were relevant for the sponsoring companies.

<sup>1</sup> Federal Law of December 1, 2014, No 384-FZ (amended as of July 13, 2015) on the 2015 Federal Budget and 2016–2017 Budget Plan.

<sup>2</sup> *UNESCO Science Report: towards 2030*. Paris: UNESCO, 2015, p. 347.

<sup>3</sup> A. Subbotin. *Program malfunction. The sequester disrupts scientific research plans*. *Poisk* (in Russian), No 43 2015, October 23, 2015 <http://www.poisknews.ru/theme/science-politic/16167/>

<sup>4</sup> N. Volchkova. *To begin and to continue. The RSF's grants will grow in size and in time*. *Poisk* (in Russian), No 46, November 13, 2015. See <http://www.poisknews.ru/theme/science-politic/16440/>

Table 14

**Budget allocations to science foundations, bn Rb**

Foundation	2015	2016 – law	2016 – draft	Draft to law, %
1	2	3	4	$5 = 4/3 \times 100$
Russian Science Foundation	17.2	18.8	15.5	90.1
Russian Foundation for Basic Research	12.2	14.0	11.0	90.2
Russian Humanitarian Science Foundation	2.0	2.3	1.8	90.0

Source: RF Ministry of Finance.

The *State Program of the Russian Federation for the Development of Science and Technology in 2013–2020* retains its central place among the budget-funded civilian R&D. The amount of expenditures on this program has shrunk by 12.5%, while that allocated to the Federal Targeted Program *Research and Development in the Priority Areas of Development of the Russian Scientific and Technological Complex for 2014–2020* (large-scale applied research) has remained practically unchanged. It is important to maintain the planned level of allocations to R&D in the framework of that program because it is mostly from this source that the creation of new technologies (for example, photonics, neurotechnology) is being funded.

At the same time, the cuts in budget expenditures on R&D at the macrolevel occurred approximately in the same proportion as the cuts on other items. Therefore, when taken as a share in GDP, the volume of funding allocated to the principal research and development fields has demonstrated no change either on the targets set in Federal Law No 384-FZ or on the previous year, and its indices are as follows<sup>1</sup>:

- basic research – 0.2% of GDP;
- applied research in the field of national economy – 0.2% of GDP;
- applied research in the field of national defense – 0.4% of GDP.

#### 5.4.2. New target indication in the field of research and development

In 2015, the *Strategy for Innovative Development of the Russian Federation Until 2020* was revised, and some relevant alterations were made in respect of its targets and the content of tasks to be accomplished. The *Strategy*, in its new version, has undergone significant alterations both with regard to the targets set therein, and the essential features of the planned measures.

*First*, it is suggested that the share of funding competitions in the field of research and development should be increased, while the principles governing the operation of the science funds be left unchanged. At present, it is expected that the work carried out in the framework of research projects funded by grants issued by the RFBR and the RHSF should be done in the researchers' spare time, on their days off and holidays, while the travel to conferences covered by conference participation grants should take place during their vacation periods. So, it appears feasible to increase the amount of funding allocated to grants alongside the introduction of new terms for spending these funds.

*Second*, it is intended to make it compulsory for the RFBR and the RSF to conduct more competitions that will require co-funding from private sources. Given the low business activity in the field of R&D, such a requirement will translate into pressure on scientific research organizations and higher educational establishments, but not into positive incentives for commercial companies. In addition, the government has already voiced its demand that the science

<sup>1</sup> In accordance with Annex 8 to the Explanatory Note attached to the draft of the *Federal Law on the 2016 Federal Budget*.

foundations should not only provide financing for fundamental and exploratory research project initiatives, but also to develop medium- and long-term programs along the lines of the current government programs – that is, to single out priority themes. This requirement is stipulated in the alterations to the Federal Law *On Science and State Scientific and Technological Policy*, introduced in July 2015.<sup>1</sup> So, the amount of funding allocated to fundamental research projects addressing the issues suggested by the scientist community is being reduced, and so the new progressive research fields that cannot be properly identified and recognized by the priority-setting government agencies may suffer from lack of funding.

The logic behind the government's actions can be perceived as a threat to the independence of the RFBR and the RHSF (and consequently to the allocations assigned to them in a separate line in the state budget, which can also be lost), when these two foundations will become subordinated to the RF Ministry of Education and Science. The Ministry has already released for public discussion the drafts of its decrees whereby alterations are to be introduced in the RFBR and the RHSF's charters<sup>2</sup>, in accordance with which 'some of the functions and powers of the Foundation's founder envisaged in the charter shall be executed by the Ministry of Education and Science of the Russian Federation'. To be more precise, 'some powers' include those of appointing and dismissal of the Foundation's director, approving the membership of the Foundation's Board, preparing and approving government assignments, and a number of other important regulatory and supervisory functions. If the governance functions should be divided in this way, the foundations will have to reorient their activities to the achievement of those goals that are important not from their own point of view, but from the point of view of the RF Ministry of Education and Science. Thus, only one foundation will remain independent – the RSF.

The alterations introduced into the *Strategy for Innovative Development of the Russian Federation Until 2020* with regard to the main R&D targets are also noteworthy. By comparison with the *Strategy's* previous version, most of these targets have been downgraded. Thus, it is planned that the expenditures on research and development should be increased to 1.77% of GDP by 2020, while earlier this target was already to be reached by 2015. The new target, while being low, is sufficiently realistic, if one is to consider the general movement pattern displayed by Russia's expenditures on R&D as a share in GDP over the past decade. At the same time, in the developed countries the R&D expenditure index varies from 2.6% to nearly 5% of GDP. So, the new low target implies that the gap between Russia and the developed countries will be widening, as far as the intensity of investment in R&D is concerned.

Another index describing the performance level in the sphere of scientific research – the share of publications by Russian authors in the total number of publications in international scientific journals indexed in the Web of Science database – was likewise moved to 2020. Initially, this index was to rise by 2015 to 2.44%. In the *Strategy* it is stated that as of 2014, it amounted to 2.05%.<sup>3</sup>

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<sup>1</sup> Federal Law *On Introducing Alterations to the Federal Law 'On Science and State Scientific and Technological Policy' in the Part of Improving the Financial Instruments and Mechanisms of Support of Scientific and Technological Activity in the Russian Federation*, No 270-FZ dated July 13, 2015. See <http://pravo.gov.ru/laws/acts/54/5055484510601047.html>

<sup>2</sup> A. Gorbatova. *Alterations will be made to the charters of the RFBR and RHSF*. August 20, 2015. See [http://www.strf.ru/material.aspx?CatalogId=221&d\\_no=103488#.Vm3FQb8yTOA](http://www.strf.ru/material.aspx?CatalogId=221&d_no=103488#.Vm3FQb8yTOA)

<sup>3</sup> Bibliometric experts note that this index may vary depending on the specific methodology applied in the calculations. As a result, according to data released by the National Training Foundation, the Web of Science citation index of the articles written by Russian authors had increased by 2014 to 2.28%, and that of Russian publications of any type – to 1.7%. As stated by Thomson Reuters, the overall citation index of Russian publications amounts

### 5.4.3. Science at higher educational establishments

The development of science-related activities at higher educational establishments remains one of the priorities of the government policy in the field of science. Much attention in this connection was paid to the universities participating in Project 5-100.<sup>1</sup> Their latest ranking in the world's top ratings were discussed, as well as the movement of their scientific research indices and the factors that can either speed up or slow down their development. The current estimates of the progress of scientific research at Russia's leading universities demonstrate that none of the 15 higher educational establishments that have received hefty chunks of budget resources specifically for that purpose were able to follow the letter of the Executive Order of the RF President (which requires that no less than five universities should by 2020 be ranked among the world's top hundred).<sup>2</sup> So, *de facto* this goal has been adjusted, and Russia's universities are now expected only to get into the top segments of by-subject rankings, which is achievable in view of the current trends. Thus, for example, the Times Higher Education (THE), two of Project 5-100 higher educational establishments – National Research Nuclear University MEPhI and Novosibirsk State University<sup>3</sup> were ranked among top 100 for 2015 in the field of physics. The other fields where Russia ranks above average in the world publication stream (and so its higher educational establishments specializing in these subject areas have the potential for getting ranked among top 100), are outer space exploration, Earth science, mathematics and chemistry<sup>4</sup>.

In part, the increasing number of publications assigned to higher educational establishments can be explained by the fact that their authors, who hold academic posts at those higher educational establishments as a second job, in addition to their research posts at the institutes belonging to the RAS system, have begun to state their university affiliation. As a result, the share of articles authored jointly with RAS research institutes in the total number of publications released by Project 5-100 universities has increased<sup>5</sup>. Some higher educational establishments developed special programs for boosting the citation index of their publications. A noteworthy

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to 1.73%. According to data released by the RF Ministry of Education and Science for 2014, the share of Russian publications over that year amounted to 2.17%. Source: *To improve the quality and increase the number of scientific products by Russian authors*. Presentation materials, Ural Federal University, October 6–7, 2015. See [http://urfu.ru/fileadmin/user\\_upload/common\\_files/events/Pismo\\_v\\_Instituty\\_Urfu\\_Seminar\\_po\\_naukometrii.pdf](http://urfu.ru/fileadmin/user_upload/common_files/events/Pismo_v_Instituty_Urfu_Seminar_po_naukometrii.pdf)

<sup>1</sup> Project 5-100 is aimed at boosting the competitive potential of Russia's leading universities among global research and education centers. Its goal is to maximize the competitive position of a group of leading Russian universities in the global research and education market. Source: <http://5top100.ru/>

<sup>2</sup> Executive Order of the RF President dated May 7, 2012, No 599 *On Measures on Implementation of National Policy in Education and Science*, see <http://5top100.ru/documents/regulations/671/>

<sup>3</sup> K. Bolokhova. *From general to specific: why are the by-subject ratings of higher educational establishments more attractive for Russia?* November 23, 2015. See [http://www.strf.ru/material.aspx?CatalogId=221&d\\_no=110329#.Vm2mf78yTOA](http://www.strf.ru/material.aspx?CatalogId=221&d_no=110329#.Vm2mf78yTOA)

<sup>4</sup> V. Ivanov, V. Markusova, L. Mindeli. *Money and its yield. Analysis of the cost-effectiveness of investment in Russia's higher school, with regard to publications*. Poisk (in Russian), No 22, May 29, 2015. See <http://www.poisknews.ru/theme/science-politic/14780/>

<sup>5</sup> The champion was the National Research University Higher School of Economics (NRU HSE) where, as demonstrated by data for 2014, the number of publication increased 8.8 times, and the number of articles co-authored by written by scientists working in the RAS system - 13 times on 2010, respectively. Source: V. Ivanov, V. Markusova, L. Mindeli. *Money and its yield. Analysis of the cost-effectiveness of investment in Russia's higher school, with regard to publications*. Poisk (in Russian), No 22, May 29, 2015. See <http://www.poisknews.ru/theme/science-politic/14780/>



example is the Hirsh citation index program launched by Tomsk Polytechnic University, nicknamed the *Hirsh Rocket*, which offers services that involve translation and publication of scientific articles in international journals<sup>1</sup>. A number of higher educational establishments began to pay for the publication of their articles in India's and China's journals, where the access was much easier<sup>2</sup>, and by doing so they managed to boost their international citation indexes. However, this effect proved to be temporary, because the databases run by the Web of Science and Scopus are subject to regular cleanups, when all 'trash' journals are removed from their data sets. Besides, the ranking criteria for scientific publication are also being regularly revised – as did QS in 2015<sup>3</sup>, when it began to reject articles signed by more than 10 names and introduced coefficients when counting the citation rates for each subject. The upshot was that eight of Project 5-100 higher educational establishments (that is, more than half) got downgraded in their QS ranking<sup>4</sup>. Thus, the incentives for getting a higher ranking boosted ingenuity in finding ways to improve formal citation indexes, but not a genuine interest in scientific research.

In this connection, the official have pointed out many times that getting the required ranking should not be a goal *per se*<sup>5</sup>, but only an indicator of a higher educational establishment's profile in the international landscape, and its quality market in the fields of science and education. Project 5-100 was officially recognized to be successful, and the funding allocated to it (which was initially geared to a three-year period (until 2015) was increased to last until 2020<sup>6</sup>. Meanwhile, the number of higher educational establishments competing for a higher ranking increased: after an additional contest in October, another 6 higher educational establishments were included in Project 5-100<sup>7</sup>.

Almost simultaneously, the report *5-100: The price of a failure* prepared by the social movement organization *Supervision in Education in Science*<sup>8</sup> was released, where it was concluded that the budget resources to the value of Rb 30bn that had already been spent yielded no relevant results, and that the project management system is inefficient and expensive. Indeed, over the three years while the project was being implemented, only two higher educational establishments were able to get ranked in the third hundred in one of the ratings (THE). To be fair to university researchers, it should be noted that the policy towards higher educational establishments has continued to be restrictive rather than conducive to increasing their visibility on an international level. We are speaking first of all of the human resources policies, when in order to boost their average salary indices<sup>9</sup> the administrations of higher educational establishments

<sup>1</sup> *Hirsh Rocket* (Hirsh citation index): *We can help you in getting your article published*. See <http://rh.tpu.ru/>

<sup>2</sup> *QS has run out of citations* // Kommersant, September 22, 2015. See <http://www.kommersant.ru/doc/2815455>

<sup>3</sup> QS World University Rankings is a global career and education network that highlights the world's top universities, set up by (QS) Quacquarelli Symonds Ltd, a UK consulting company.

<sup>4</sup> Ibid.

<sup>5</sup> See, for example, A. Chernykh. *Universities will be distributed among industries*. Kommersant, No 193, October 19, 2015 <http://kommersant.ru/doc/2836046>; K. Bolokhova. *From general to specific: why are the by-subject ratings of higher educational establishments more attractive for Russia?* November 23, 2015 [http://www.strf.ru/material.aspx?CatalogId=221&d\\_no=110329#.Vm2mf78yTOA](http://www.strf.ru/material.aspx?CatalogId=221&d_no=110329#.Vm2mf78yTOA)

<sup>6</sup> K. Bolokhova. *From general to specific: why are the by-subject ratings of higher educational establishments more attractive for Russia?* November 23, 2015 [http://www.strf.ru/material.aspx?CatalogId=221&d\\_no=110329#.Vm2mf78yTOA](http://www.strf.ru/material.aspx?CatalogId=221&d_no=110329#.Vm2mf78yTOA)

<sup>7</sup> *6 new higher educational establishments were selected for Project 5-100*. October 26, 2015. See <http://5top100.ru/news/20951/>

<sup>8</sup> Published on November 20, 2015, see <http://обрнадзор.рф/вдействи/5-100/>

<sup>9</sup> In accordance with Executive Order of the RF President No 599 *On Measures on Implementation of National Policy in Education and Science*, by 2018 the average salary level of the faculty members of higher educational

began to increase the academic workload of their staff.<sup>1</sup> Such an approach can hardly improve the incentives for scientific research growth in terms of volume and quality. Some problems have also occurred in Project 5-100 management system, where the rate of red tape in reporting is higher than in the projects funded by grants or under government contracts.

#### 5.4.4. The main directions of reform in the RAS

The ongoing reform in the Russian Academy of Sciences has continued to be the focus of public attention in the science sphere. When cleared of all the hullabaloo, it all boils down to this: a lot of ideas, programs and measures have been discussed, but few of the actually adopted decisions can be called truly reformatory - that is, reaching beyond the inventory and record-keeping issues. Among these, the following ones are the most noteworthy:

1) doubled amount of the special supplementary payments to Academicians and Corresponding Members of the RAS; the introduction of the title of Professor of the RAS;

2) rotation of the directors of research institutes in order to get younger people occupy major administrative posts in the field of academic science;

3) continuation, in an 'initiative mode', of the process of merger of institutes within the RAS system, and not only those with similar profiles, but also some of the institutes with different profiles, including those situated in different cities at a considerable distance from one another.

Among the innovations introduced in 2015, we may also note the palliative solution to the issue of division of functions between the RAS and the Federal Agency for Scientific Organizations (FASO) - the so-called 'rule of two keys', whereby the areas of responsibility for each of the two entities should be clearly outlined.

All the other initiatives are now undergoing the discussion phase, including (1) the system for assessing the performance of scientific research organizations, where the discussion hot-point was the principles to be applied in creating the reference groups for comparative assessment of organizations;<sup>2</sup> (2) the principles of drawing up government assignments for fundamental and exploratory research, including definition of the types of activities to be funded through a competitive process, and their relative proportions; (3) the program for creating a reserve of human resources for the FASO (training of efficient managers for scientific research organizations).

The progress of reform in the academic sector is estimated by scientists and experts to be on the whole more negative than positive. Thus, the academicians and the activists of the scientist community (for example, those who are members of the Council on Science under the RF Ministry of Education and Science) believe that negative consequences prevail.<sup>3</sup> At the same time,

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establishments should be twice above the average salary of the region where a given higher educational establishment is registered.

<sup>1</sup> By way of illustration, see the case of Moscow Institute of Physics and Technology (State University): A. Arutiunov, M. Balashov, R. Karasev, D. Tereshkin. *MIPT: Questions without answers*. Troitsky Variant - Science (Newspaper), No 193 of 8 December 2015, p. 5, see <http://trv-science.ru/2015/12/08/mipt-voprosy-bez-otvetov/>

<sup>2</sup> This discussion was underway throughout 2014. See *The State of Science and Innovation. Russian economy in 2014. Trends and outlooks* (Issue 36) – M.: Gaidar Institute, 2015, pp. 348–349.

<sup>3</sup> Thus, in particular, the Council on Science under the RF Ministry of Education and Science, at its meeting on October 29, 2015 stated that 'no positive changes have occurred so far in the institutes of the RAS, a surge in paperwork was noted'. Source: [http://sovet-po-nauke.ru/sites/sovet-po-nauke.ru/files/data/Presentation\\_A.R.Khokhlov\\_29\\_10\\_2015.pdf](http://sovet-po-nauke.ru/sites/sovet-po-nauke.ru/files/data/Presentation_A.R.Khokhlov_29_10_2015.pdf)

the officials responsible for the development of science in this country<sup>1</sup> estimate the reform to be positive. It should be noted that the critics of reform have used many arguments to support their negative viewpoint, while its proponents can offer practically nothing to counter those arguments.

For the scientist community on the whole, the major threat associated with the measures that are being implemented as part of reform is that they may bring about a dramatic shrinkage of the human resources potential involved in scientific research, the liquidation (by means of a merger) of some of the existing research institutes, and distortions in the structure of scientific research as a result of cuts in basic budget funding. On the positive side, as noted by some academicians, the ongoing processes resulted in the following major achievements:

- 1) the transfer of the function of managing the economic activities, properties and land from the RAS to the FASO in the situation of a perpetually changing normative-legal base and the high costs associated with the procedures of property right formalization and property registration;<sup>2</sup>
- 2) the appointment of younger people to the posts of heads of scientific research organizations (the Presidium of the RAS should coordinate the list of candidates for the posts of heads of scientific research organizations);<sup>3</sup>
- 3) the temporary character of the increased bureaucratic workload. It has increased because the initial phase of reform involves inventory checks; meanwhile, the scientists working in the well-run research institutes do not feel any additional workload.<sup>4</sup>

### *The decisions concerning human resources*

From 1 July 2015 onwards, the supplementary academic payments for the titles of Academician and Corresponding Member of the RAS were raised to Rb 100,000 and Rb 50,000 per month respectively.<sup>5</sup> The amounts of supplementary academic payments for the other state academies were also doubled. The government explained the increase in the size of supplementary payments by the planned increase of the expert responsibilities of the academicians.<sup>6</sup> Indeed, the range of these supplementary responsibilities had become so wide that the Presidium

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<sup>1</sup> Andrei Fursenko, Aide to President of Russia, saw some positive shifts in the development of Russian science after the launch of reform in the RAS (Fursenko sees positive shifts in the development of science after the reform in the RAS. TASS, August 26, 2015. See <http://tass.ru/nauka/2211616>; RF Minister of Education and Science Dmitry Livanov views as the positive outcome of the reform that science '...will increasingly move into universities' (Livanov: *Every higher educational establishment gets money to increase its salaries, but not every one of them uses it in the right way*. Business FM.RU, November 3, 2015. See <http://www.bfm.ru/news/307034>. However, at the same time the Livanov noted that so far, 'only the zero phase has been passed, the phase of alterations introduced into the order of subordination'.

<sup>2</sup> Academician Fortov: *About the reform of the Academy – without anger or bias*. The Independent Newspaper, February 10, 2016. See [http://www.ng.ru/science/2016-02-10/9\\_reform.html](http://www.ng.ru/science/2016-02-10/9_reform.html)

<sup>3</sup> Academician A. Aseev. *Reform of the RAS as a threat to national security*. REGNUM, December 8, 2015. See <http://regnum.ru/news/innovatio/2029988.html>; Academician Fortov: *About the reform of the Academy – without anger or bias*. The Independent Newspaper, February 10, 2016. See [http://www.ng.ru/science/2016-02-10/9\\_reform.html](http://www.ng.ru/science/2016-02-10/9_reform.html)

<sup>4</sup> Academician A. Kuleshov. *Science is degrading every year, every hour*. Gazeta.ru, December 9, 2015. See [http://www.gazeta.ru/science/2015/12/09\\_a\\_7943969.shtml](http://www.gazeta.ru/science/2015/12/09_a_7943969.shtml)

<sup>5</sup> Decree of the RF Government No 480 *On Introducing Alterations into Item 1 of Decree of the Government of the Russian Federation of 22 May 2008, No 386* dated May 19, 2015. See <http://government.ru/media/files/FW9S5mwJevWvkqKAdUAkc4zrpldwRYX.pdf>

<sup>6</sup> I. Dezhina. See *The State of Science and Innovation. Russian economy in 2014. Trends and outlooks* (Issue 36) – M.: Gaidar Institute, 2015, p. 355.

of the RAS also approved the introduction of a new academic title - that of Professor of the RAS. In this way, they hope that some new human resources can be attracted for performing expert estimations and other duties.<sup>1</sup> The title of Professor of the RAS is not associated with any money benefits, but its bearer must shoulder many responsibilities, including an active participation in the achievement of the goals set for the Academy, promotion and consolidation of the links between education and science, and popularization and promotion of scientific knowledge. It is intended that Professors of the RAS will be putting forth proposals concerning the choice of priorities, participate in the academic, expert and coordinating councils, and act as experts on behalf of the Academy. A Professor of the RAS may not be older than 50 years of age; he or she must have the degree of doctor of science or an academic degree awarded by a foreign state (the title Professor of the RAS may also be awarded to foreign scientists). The attractiveness of this title, in addition to it being prestigious, is that Professors of the RAS have a greater chance, by comparison with the rank-and-file scientists, to be promoted later on to the status of a Corresponding Member of the RAS or an Academician of the RAS.

In December 2015, the RAS Departments held their General Meeting, where 497 candidates for the title of Professor of the RAS were approved (out of a total of 656 submitted applications)<sup>2</sup>. The title of Professor of the RAS was granted by the academicians at their own discretion, the list of candidate was not made public, and there was no public discussion of it, and so this event compares rather unfavorably with the procedure of elections to Academy members (just to name one example). Such an approach caused some sharp criticism on the part of the scientist community, who made the conclusion that the very title of a Professor became devalued<sup>3</sup>.

Alongside this 'rejuvenation' of the RAS, the replacement of those directors of research organizations in the FASO system who had reached the age of 65–70 years took place. According to data released as of mid-2015, 48% of the directors were older than 65 years,<sup>4</sup> and so the scale of the forthcoming 'rotation' will be impressive. Last year, the process, once started, gave rise immediately to several scandalous situations. Thus, in particular, a 'sample group' of the newly appointed directors (its list is published at the FASO's website) were subjected to a 'quality test' on the basis of the Russian Map of Science. Although the Russian Map of Science has been criticized in many of its aspects, it is promoted by the RF Ministry of Education and Science as the most complete source of information on human resources in the science sphere, because it contains data on publications and citations, as well as on patents, completed R&D projects, and distribution of grants. The database is renewed on a regular basis. The selective screening of the new directors in accordance with the Map of Science demonstrated that many of them lack

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<sup>1</sup> Decree of the Presidium of the RAS *On introducing the title of Professor of the RAS and approving the Provision on the title of Professor of the RAS*, No 204 dated September 29, 2015. See <http://www.ras.ru/presidium/documents/directions.aspx?ID=adf67dc8-84b3-4350-b4be-7e1dce9b71ec>

<sup>2</sup> M. Aleksandrov. *Adding reinforcements. Professors of the RAS will add energy to the Academy*. Poisk, No 52, December 25, 2015. See <http://www.poisknews.ru/theme/science-politic/17007/>

<sup>3</sup> A. Moiseev. *Professors as a substitute for representatives?* *Troitsky Variant - Science (Newspaper)*, No 2, 2016, p. 12; A. Fradkov. *One step backwards, then bury your head in the sand*. *Troitsky Variant - Science (Newspaper)*, No 2, 2016, p. 12.

<sup>4</sup> Source: FASO. A. Mekhanik. *The management of science is impossible without well-defined procedures*. *Expert*, No 23, June 1, 2015. See <http://expert.ru/expert/2015/23/upravlenie-naukoj-nevozmozhno-bez-opredelennyih-protsedur/>

not only notable achievements in scientific research, but even proper degrees in science.<sup>1</sup> Such an outcome would have been easily explainable if the relevant decisions had been made exclusively by the FASO on the basis of only two criteria: 1) suitable age, 2) administrative (managerial) experience. However, the candidates were agreed upon with the Presidium of the RAS, and so this state of affairs can only be explained by the fact that the Presidium of the RAS is actually subordinated to the Federal Agency even in those spheres where the Academy does not simply offer advice, but coordinates the decision-making process.

The truth of such a conclusion is further supported by the evidence that the 'rule of two keys', in accordance with which the relevant functions are clearly divided between the RAS and the FASO, is effectively dysfunctional, and that the main 'governance' functions are consolidated to the FASO; in an event of a major conflict, it is resolved 'in a manual mode' at the government level. Indeed, in accordance with the RF Government's Decree approved in May 2015,<sup>2</sup> the RAS conducts independently the performance assessment of the scientific research organizations of the FASO and the expert estimations of the results of scientific research projects, while all the other functions are performed by the FASO; meanwhile, the RAS either coordinates the FASO's decisions (the development programs and scientific research plans for the scientific research organizations subordinated to the FASO), or puts forward proposals (government assignments to organizations). According to the CEOs of the RAS, the goal of proper delineation between the functions of the two entities have not been achieved, and a 'soft variant' has been implemented instead.<sup>3</sup> Another remarkable feature of the procedures applied in 'renewing' the 'director corps' is that, while the appointment procedures are more or less coordinated with the RAS, the dismissal of directors is solely the FASO's prerogative. And so their rotation, and consequently the choice of new cadres, depends on the FASO.

In addition to the replacement of directors, the FASO suggested that the performance of the administrative staff of the institutes could also be improved, and developed for that purpose a draft program for creating the reserve of human resources for scientific research organizations.<sup>4</sup> The reserve of human resources, according to the FASO, is to consist of three categories: operative reserve – the candidates for the posts of deputy directors or directors of institutes; perspective reserve – the specialists desiring to work as project directors; and development reserve – the researchers capable of commercializing the results of their research. The project continues to be discussed, and its critics believe that the FASO is going to retrain scientists to be employed as managers, which will be detrimental to science proper.<sup>5</sup> This project was also opposed by the members of the Science *Coordinating Council* under the FASO, who estimated it to be of little use, unpractical and costly,<sup>6</sup> and beneficial only for a few institutes and universities directly involved in the retraining programs. While all these observations are certainly true, it

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<sup>1</sup> E. Kalle. *Rejuvenating glee in the RAS: lower, lower and lower we direct the flight of our ...* REGNUM, October 16, 2015. See <http://regnum.ru/news/1992799.html>

<sup>2</sup> Decree of the RF Government *On Some Issues of the Activity of the Federal Agency for Scientific Organizations and the Federal State Institution 'Russian Academy of Sciences'*, No 522, dated May 29, 2015. See <http://pravo.gov.ru/proxy/ips/?docbody=&nd=102372866&rdk=&backlink=1>

<sup>3</sup> The opinion of President of the RAS V. E. Fortov. Source: Yu. Medvedev. *The keys to the RAS. Vladimir Fortov: the hardest part of the Academy's reform has not been started yet.* The Russian Newspaper, No 6790 (219), September 29, 2015. See <http://www.rg.ru/2015/09/29/fortov-site.html>

<sup>4</sup> See <http://fano.crowdexpert.ru/personnel-reserve>

<sup>5</sup> *The triad of the cadre reserve.* August 17, 2015. See [http://www.ng.ru/editorial/2015-08-17/2\\_red.html](http://www.ng.ru/editorial/2015-08-17/2_red.html)

<sup>6</sup> N. Volchkova. *For the sake of a report? Reform of the RAS is put on paper.* Poisk (in Russian), No 18, May 1, 2015. See <http://www.poisknews.ru/theme/science-politic/14414/>

should be noted that the governance culture practiced in the institutes formerly belonging to the RAS is far from being up-to-date. That is why they encounter problems associated with the increased bureaucratic load on their staff involved in scientific research, which means that the responsibilities of administrative departments are being shifted onto scientific research departments. It is by all means necessary to improve their managerial skills, but now is not the best time for setting such a goal, in view of the shortage of budget funding allocated to the most vital expenditure items of scientific research institutes.

### *Restructuring of the FASO's network of institutes*

In 2015, the FASO planned to establish 23 merged scientific and research centers; the decisions were finalized for 15 of these centers. Typically, this speedy reorganization took place in absence of any clear-cut criteria for placing each organization in one of the four specific categories (federal research centers, national research institutes, etc.)<sup>1</sup> The Presidium of the RAS, as well as the institutes that were being merged, quite often disapproved of their merger plans, which triggered several scandals, when the institutes revolted against the decisions made by the FASO. In some cases it was possible to prevent a merger;<sup>2</sup> this possibility arose, among other things, due to the fact that the relevant organizations were participating in major government projects, and so their restructuring could negatively affect the outcome of those projects of national importance. In this connection, the Presidium of the RAS suggested that the restructuring should proceed gradually, after its principles, criteria and procedures had been properly tested in the course of pilot projects.<sup>3</sup> However, the mergers occurred not on a systemic basis, but on the initiative of certain groups or individual scientific research organizations. Moreover, in some cases the institutes put forth the proposal of a merger as a 'preventive measure', not because they really wanted to improve their performance, but because they feared that later on they would be forced to merge against their will.

Simultaneously, the leader institutes were determined, later to be made responsible for major fields of research. The three main criteria for selecting these institutes were as follows: their compliance with the established priority directions of development in the field of science and technology; their high importance for achieving certain fundamental and/or socioeconomic goals; and the availability, for a given organization, of adequate human resources and an innovation potential.<sup>4</sup> In this connection, at the meeting of the *Presidential Council for Science and Education* held on January 21, 2016, a hot discussion took place with regard to the relative feasibility of the selection of such organizations.<sup>5</sup>

<sup>1</sup> For more details on the typology of these centers, see *The State of Science and Innovation. Russian economy in 2014. Trends and outlooks* (Issue 36) – M.: Gaidar Institute, 2015, pp. 351–352.

<sup>2</sup> N. Volchkova. *With a thought on the meaning. The RAS is against reform imitation*. Poisk (in Russian), No 49, December 4, 2015. See <http://www.poisknews.ru/theme/science-politic/16706/>; A. Mekhanik. *The ball is hosted by interests that are far from being true*. Expert, No 22, May 25–31, 2015; see <http://expert.ru/expert/2015/22/balom-pravyat-interesy-dalekie-ot-istiny/>

<sup>3</sup> N. Volchkova. *American mixed with German. The models applied in reforming the RAS*. Poisk (in Russian), No 17, April 24 2015. See <http://www.poisknews.ru/theme/science-politic/14333/>

<sup>4</sup> The *Science Coordinating Council* under the FASO approved the criteria for creating scientific centers, which should conduct a significant volume of fundamental and (or) applied studies and ensure the implementation of projects in the relevant areas of scientific and technological development of the Russian Federation. November 16, 2015. See [http://fano.gov.ru/ru/official/news/index.php?id\\_4=25585](http://fano.gov.ru/ru/official/news/index.php?id_4=25585)

<sup>5</sup> Meeting of the *Presidential Council for Science and Education*. January 21, 2016. See <http://krem-lin.ru/events/president/news/51190>

So far, we have obtained no ready estimates for making a conclusion as to whether the merger of institutes and the appointment of leader institutes among them is a good or bad undertaking. The experience of merging the institutes accumulated over the past two years has shown neither the obvious benefits nor serious harm produced by of such a change. However, we may rely on the successful experience of the implementation of the nuclear project and the outer space exploration programs in the USSR, when a number of competing research centers were set up in this country. There is also the precedent of incorporating research institutes into the National *Research Center Kurchatov Institute*, which did not improve the performance of that organization. Thus, when budget allocation indices are set against performance indices, it becomes evident that, for example, the productivity of Moscow State University, which is endowed with significantly lower budget allocations earmarked for research and development (Rb 2.68bn for 2016) by comparison with the National *Research Center Kurchatov Institute* (Rb 14.6bn),<sup>1</sup> is four times as high as that of the latter: in 2014, the citation index in the Web of Science of the articles authored by Moscow State University's scientists amounted to 7.26% of all publications by Russian authors, while the share of the NRC *Kurchatov Institute* was only 2.02%.<sup>2</sup> Moreover, the budget of the NRC *Kurchatov Institute* is 1.5 times larger than the entire budget of the RFBR (Rb 10.99bn for 2016), but the cost-effectiveness of the budget resources allocated to it (calculated on the basis of the citation index) is incomparably lower.

Beside the mergers, another painfully important issue for the FASO's institutes was that of budget funding. In 2015, the principles of funding based on government assignments were put forth by the RF Ministry of Education and Science in its draft order *On Approving the Methodological Recommendations for the Distribution of Subsidies Granted to the Federal State Institutions Involved in Government Work in the Sphere of Science (Scientific Research) and Science and Technology Activities*. The Board of Directors of the FASO institutes came to the conclusion that 'the subdivision of a government assignment, as suggested in the draft, into initiative-based (no less than 60%) and directive-based do not alter, in effect, the existing system of developing a government assignment, when it is drawn up by the institutions, in practical terms - by them for themselves'.<sup>3</sup> However, the suggested per cent ratio of different types of government assignments takes no account of the specificities of the actual research projects, and so it can do harm. Besides, a government assignment does not cover the cost of equipment and reagents.<sup>4</sup> And finally, the structure of resources to be allocated under a government assignment is geared to a fourfold increase of the salaries of leading researchers, and given the existing budget constraints, this will result in insufficient funding of the other scientists, and then, most probably, in personnel cuts. Therefore, the proposal put forth by the RF Ministry of Education and Science was met with active and diverse resistance<sup>5</sup>. Towards the year's end, an agreement had

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<sup>1</sup> Annex No 7 to *Federal Law on the 2016 Federal Budget* (The by-department structure of expenditure federal budget expenditure for 2016).

<sup>2</sup> Poliakov A. M., RF Ministry of Education and Science. *The publication activity of Russian scientists: current status, main trends and development goals*. Presentation at the Ural Federal University's seminar *Improvement of the quality and quantity of the scientific products by Russian authors*. October 6, 2015. See [http://elar.urfu.ru/bitstream/10995/33921/1/seminar\\_06.10.15\\_Polyakov.pdf](http://elar.urfu.ru/bitstream/10995/33921/1/seminar_06.10.15_Polyakov.pdf)

<sup>3</sup> See <http://fano.gov.ru/common/upload/library/2015/07/main/zakluchenie.docx>

<sup>4</sup> G. Georgiev. *What kills Russian science, and how to struggle against it? Part II. Troitsky Variant - Science (Newspaper)*, No 194, December 22, 2015, pp. 6-7, see <http://trv-science.ru/2015/12/22/chto-gubit-rossijskuyu-nauku-i-kak-s-etim-borotsya-2/>

<sup>5</sup> E. Onishchenko. *Dismissal vs. support*. *Troitsky Variant - Science (Newspaper)*, No 189, October 6, 2015, p.1, see <http://trv-science.ru/2015/10/06/uvolit-nelzya-podderzhat/>; P. Chebotarev. *On the new principles of funding*

been reached with regard to a number of alterations, but there still remained the possibility of personnel cuts in the future due to the unclear prospects of the government program of reform in the science sector. Among other things, so far the FASO has not officially presented any reform program.

Just as it had happened in 2014, the issue of mergers of the institutes and the principles of their subsequent funding was being dealt with separately from the performance assessment of scientific research organizations and higher educational establishments. The assessment methodology was still in the phase of coordination, one of its core issues being the choice of the correct approach to selecting the reference groups of institutes, for their subsequent comparison on a group level, and the identification of leaders and losers in each group. In the end, it was decided that the reference groups should be formed with due regard for both the areas of scientific research (approximately 40 scientific research areas were identified) and the specific profile of each organization (which could belong to one of the following three categories: generation of knowledge; development of technologies; or services in the sphere of science and technology). The pilot tests of this approach revealed that it can indeed be applied in estimating the performance of scientific research organizations, but much will depend on the quality of data submitted by them<sup>1</sup>. Besides, some additional issues arise in connection with the multi-profile structures, because it is difficult to estimate their performance on the basis of their comparison with other research organizations.

The ongoing reform in the academic complex has begun to manifest itself in the declining number of publications by the former academic institutes. Over the last two years, this index for the FASO's institutes dropped. At the same time, so far the institutes have been demonstrating the highest quality of human resources trained for scientific research in this country. According to *Dissernet*, no instances of fake dissertations have been detected in the RAS system, which is more than can be said of higher educational establishments and some of their rectors<sup>2</sup>. However, *Dissernet's* estimates refer to the 'pre-reform' period, while it cannot yet be predicted what the institutes will really be like after their merger, replacement of their old directors, and retraining of their staff.

And finally, in spite of the evidence that the RAS is gradually being pushed aside and can no longer manage the FASO's institutes, some academicians do not give up their hopes that the old system may be reestablished. This is confirmed by the repeatedly voiced proposal that the FASO should be subordinated to the RAS<sup>3</sup>. Indeed, some of these hopes have proved to be realistic: thus, for example, RF President Vladimir Putin, at the request of the President of the RAS, for the third time extended the moratorium (until January 2017) on deals involving property of the FASO's institutes.<sup>4</sup>

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*the institutes*. *Troitsky Variant - Science (Newspaper)*, No 189, October 6, 2015, pp. 1-3. <http://trv-science.ru/2015/10/06/o-novykh-principakh-finansirovaniya-institutov/>; N. Shatalova. *The time to explain. It is important for scientists to see the perspective*. *Poisk*, No 27-28, July 10, 2015, see <http://www.poisk-news.ru/theme/science-politic/15147/>

<sup>1</sup> *Innovations in Russia often remain on paper only*. November 30, 2015, see <http://www.opec.ru/1896521.html>

<sup>2</sup> A. Rostovtsev. *Negative selection*. *Troitsky Variant - Science (Newspaper)*, No 193, December 8, 2015, pp. 1-2. See <http://trv-science.ru/2015/12/08/otricatelnyj-otbor/>

<sup>3</sup> Academician A. Aseev. *Reform of the RAS as a threat to national security*. REGNUM, December 8, 2015, see <http://regnum.ru/news/innovatio/2029988.html>

<sup>4</sup> List of assignments, based on the results of the *Presidential Council for Science and Education's* meeting. February 11, 2016, Order Pr-260, Item 1g). See <http://kremlin.ru/acts/assignments/orders/by-date/11.02.2016>



#### 5.4.5. Trends in the technological innovation sphere

The core problem in the technological innovation sphere was the same as in the previous years: little interest in innovation on the part of the business community, and insufficient investment in research and development by companies. In Russia, similarly to the situation in the developed countries, the bulk of investment in R&D is made by big companies. However, these are, in the main, big state companies, and for five years in a row the RF Government has been attempting to 'force' them to invest in innovation through the 'innovative development programs for the companies with state stakes' (IDPs). In 2015, the intermediate results of applying this innovation policy tool were reported.

According to their formal indices, state companies had been successfully implementing their IDPs. Thus, for example, their annual expenditures on research and development over the program implementation period had climbed 2.1 times at current prices.<sup>1</sup> At the same time, the situation is highly polarized: 10 companies account for 80% of the aggregate growth of off-budget funding allocated to research and development.<sup>2</sup>

However, increased funding is by no means always a sure sign of more innovations being implemented. Thus, the resources may be invested instead in the upgrading of the existing technologies. And indeed, the majority of state companies invest in modernization, and only 34% of them invest in R&D projects that are new for the market<sup>3</sup> (*Fig. 14*).

Such results are quite logical: state companies, in fact, practically abstain from any assessment of priority technologies, technology monitoring, or long-run priority-setting. It is in this respect that Russian state companies differ from the big corporations in Europe, the USA and Japan, where more than 80% of them devise their special technology development plans. In Russia, state companies rely first of all on government orders, and so their planning horizon is short-run, they 'adjust' it to the government budget cycle.

State companies have remained, in many of their features, self-centered: their interaction with higher educational establishments in the science sphere is on the rise, but it is proceeding at a very slow pace, the reason (in the opinion of the companies) being the insufficient competence of higher educational establishments in dealing with research issues. Higher educational establishments are attractive primarily in their capacity as educators. As for the cooperation with small businesses, the most preferable form is the purchase of small-sized companies or stakes in their capital.<sup>4</sup> Big companies seldom involve them in their outsourcing programs.

So far, IDPs have not become a suitable tool for developing new technologies and creating value added chains. Therefore, on the basis of their performance assessment, the RF Ministry of Economic Development recommends that the companies should improve the procedures for elaborating and implementing their programs. The programs revised in accordance with the new regulation procedures must be submitted by April 2016<sup>5</sup>. Their main new features should be the elements of strategic planning, the top-down approach to priority setting (so that the

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<sup>1</sup> M. A. Gershman, T. S. Zinina, M. A. Romaniv et al. *Innovative development programs for companies with state stakes: intermediate results and priorities*. Ed. by L. M. Gokhberg, A. N. Klepach, P. B. Rudnik et al. National Research University Higher School of Economics (NRU HSE). M.: NRU HSE, 2015, p. 18.

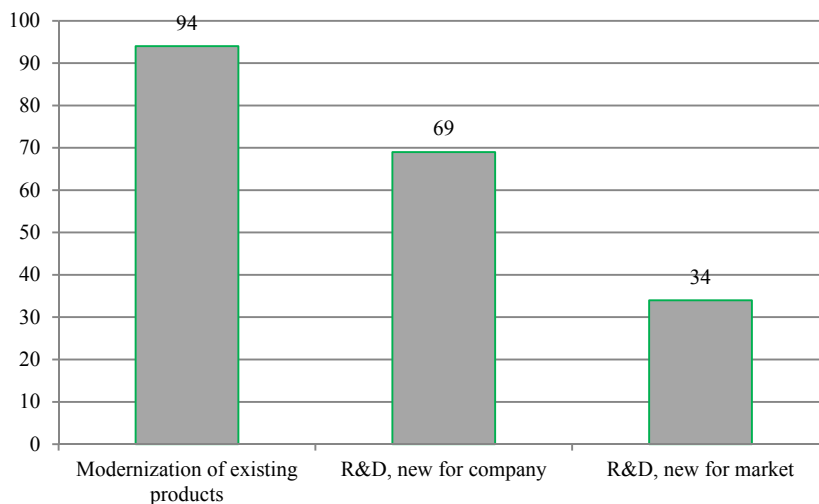
<sup>2</sup> Ibid, p. 22.

<sup>3</sup> Ibid, p. 12.

<sup>4</sup> Ibid, p. 91.

<sup>5</sup> A. Gorbatova. *Weightless innovations*. July 6, 2015, see [http://www.strf.ru/material.aspx?CatalogId=223&d\\_no=100667#.VnBdvb8yTOA](http://www.strf.ru/material.aspx?CatalogId=223&d_no=100667#.VnBdvb8yTOA)

priorities could be relevant for an entire company), and the assessment of the commercial potential of projects to the value in excess of Rb 1bn<sup>1</sup>. Thus, the planned improvements have to do with reporting procedures and some organizational and logistic issues, while the overall paradigm of 'enforced innovation' remains intact.



*Fig. 14.* The degree of involvement of state companies in various types of innovative activity, % of the number of respondents

Source: M. A. Gershman, T. S. Zinina, M. A. Romanov et al. *Innovative development programs for companies with state stakes: intermediate results and priorities*. Ed. by L. M. Gokhberg, A. N. Klepach, P. B. Rudnik et al. National Research University Higher School of Economics (NRU HSE). M.: NRU HSE, 2015, p. 12.

For all its importance, strategic planning is only indirectly linked to companies' interest in innovative activity. Under the government's pressure, companies may indeed learn how to better draw up their long-term plans, but it will hardly boost their motivation for investing in innovation. The problem encompasses a broader sphere of economic regulation of state companies, and so one-time targeted measures aimed at the innovation component of their activity yield only negligible results.

In contrast to big businesses, the medium-sized hi-tech ones are not involved in special government measures. Nevertheless, it is in this segment that a group of rapidly growing hi-tech companies is currently demonstrating impressive results in boosting their investment in R&D, their proceeds, and their hi-tech exports. The results of a study of such companies based on a sample of 75 entities, which were published in 2015, reveal that the companies were established in the main about 20 years ago - that is, on the basis of resources created in the Soviet period. Throughout the entire period of their development, 77% of the companies received various forms of government support (which vary from grants and loans to tax and duty-free exemptions). However, such support was of critical importance only for 17% of the companies.<sup>2</sup> Not

<sup>1</sup> T. Edovina. *Innovations look for a bigger share*. Kommersant, July 3, 2015, see <http://www.kommersant.ru/doc/2759787>

<sup>2</sup> D. Medovnikov, S. Rozmirovich, T Oganessian. *The candidates for champions: the peculiarities of rapidly growing Russian technological companies, their development strategies and the potential of the State for supporting the implementation of these strategies*. RVC, NRU HSE, PWC, SME Bank. – M., NRU HSE, 2015, p. 28.

unexpectedly, the companies highly estimated subsidies and the grants received from the Bortnik Fund, while the role of development institutions was considered to be of little importance (*Rusnano*, Skolkovo, the Russian Fund for Technological Development, Russian Venture Company (RVC)). Of little use was indirect regulation in the form of duty-free exemptions granted to the residents of Skolkovo and special economic zones.<sup>1</sup> In this connection, companies believe that the most serious obstacle to growth is not the inefficiency of government support, but the administrative barriers set up by the government. The development process suffers primarily from the lack of proper normative base for the use of new technologies, as well as the cumbersome procedures of government control over business activities.<sup>2</sup>

As far as value added chains are concerned, medium-sized companies are rather actively getting involved in such structures: nearly half of them collaborate with higher educational establishments in the field of R&D, and they heavily rely on contracts with state companies in their supplies of necessary products. However, state companies are also interested in getting government order, and so the circle closes: everybody expects money from the government. Thus, in particular, out of all the types of available government support, medium-sized companies prefer direct financial support (on preferential loans, R&D grants<sup>3</sup>), and only 15% of the respondent companies are interested in tax exemptions.

The survey demonstrates that the rapidly growing companies are not the startups that have unexpectedly rushed forward, but the steadily developing small businesses that have gradually been evolving into medium-sized ones. It is rather typical that in 2015, it became fashionable to launch startups<sup>4</sup> in absence of any system in Russia for their further support and monitoring. The launch of startups became a goal in itself for some development institutions, and so it does not translate into an increased input of small-sized innovative businesses into the national economy. So, according to experts, the government support of small-sized innovative businesses is still inadequate (*Fig. 15*)<sup>5</sup>.

One of the components of government support, which is important for the development of small business, startups including, is the existence of technology infrastructure (technoparks, incubators, special economic zones) and availability of venture capital. While Russia does display some development (while not always with successful results) with regard to the first parameter, venture funding in this country has nearly halted. This is the upshot of the new geopolitical situation on the one hand, and the lack of proper attention to the creation of venture funds on the part of the development institutions, on the other. In effect, after RVC had been reoriented to the National Technology Initiative, no new public-private venture funds were created. This is one of the reasons why Russia's venture market is shrinking.<sup>6</sup> Besides, according to data

<sup>1</sup> D. Medovnikov, S. Rozmirovich, T Oganessian. *The candidates for champions: the peculiarities of rapidly growing Russian technological companies, their development strategies and the potential of the State for supporting the implementation of these strategies*. RVC, NRU HSE, PWC, SME Bank. – M., NRU HSE, 2015, p. 28, p. 29.

<sup>2</sup> Ibid, p. 31.

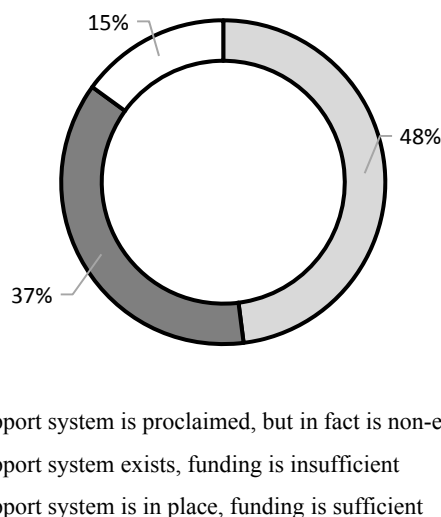
<sup>3</sup> Ibid, p. 30.

<sup>4</sup> B. V. Kanin. *Why startups are no longer needed by anyone*. RBC, November 9, 2015, p. 19, see <http://www.rbcdaily.ru/industry/562949998112082>

<sup>5</sup> The survey was conducted in May 2015 and involved 176 respondents from the business community (46%), government structures and development institutions (21%), the science and education spheres (12% each), and consultants (9%). Source: *Russia: a course towards innovations. Issue III*. M.: RVC, F&S, 2015, p. 100.

<sup>6</sup> According to data released by the Russian Venture Investment Association, over the first 9 months of 2015, the capitalization index of venture fund lost 8%, and the volume of investment in Russian companies shrank threefold on its previous year's index. Source: T. Edovina. *Venture investors are afraid of taking risks*. Kommersant, December 11, 2015, see <http://www.kommersant.ru/doc/2874219>

released by the OECD, all this occurs against the backdrop of Russia falling behind the developed countries in terms of its investment volume, which now is below 0.012% of GDP. For reference: in Israel this index amounts to 0.38%, in the USA to 0.28%, in Canada to approximately 0.1%.<sup>1</sup>



*Fig. 15.* The estimated role of government support of small and medium-sized technology companies, %

Source: Russia: a course towards innovations. Issue III. M.: RVC. M.: RVC, F&S, 2015, p. 65.

Technoparks, as one of the important infrastructure entities designed to support small-sized innovative businesses, has become once again the focus of increased attention due, among other things, to the emergence of big territorial infrastructure projects like *Innopolis* and the Technological Valley of Moscow State University. In UNESCO's Science Report released in 2015 it was noted that Russia had 88 technoparks, of which only 15 were truly functional.<sup>2</sup> A more detailed analysis of technoparks can be found in *Insider's Guide to Russian Hi-Tech Hubs*,<sup>3</sup> where some of the reasons of the deviation of Russian technoparks from world standards are explained. In Russian technoparks, only 27% of companies actually survive, while in foreign countries this index can be as high as 85–90%.<sup>4</sup> Experts believe that this happens because technoparks have poorly defined development goals, while the government has not created an efficient system for providing them with funding and other means of support.<sup>5</sup> As a result, the CEOs of technoparks derive their income in the main from leasing their premises (about 70% of their aggregate income), while the international norms require that at least half of a technopark's income should be generated by services rendered to companies.<sup>6</sup> And finally, Russian technoparks operate separately from venture funds, each type of infrastructure functioning independently. But in foreign countries they always cooperate.

<sup>1</sup> Source: *OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society*. OECD Publishing, Paris, 2015, p. 174.

<sup>2</sup> *UNESCO Science Report: towards 2030*. UNESCO, Paris, 2015, p. 359.

<sup>3</sup> *Insider's Guide to Russian Hi-Tech Hubs*. Russia Direct, No 9, June 2015.

<sup>4</sup> *Ibid*, p.6.

<sup>5</sup> *Ibid*, p.10.

<sup>6</sup> *Ibid*, p. 12.

However, there exist some exceptions. Thus, Novosibirsk Akadempark has become the biggest floor of its type in the region. Over the crisis years 2014–2015, the average growth rate of the proceeds of companies operating in that technopark was 25%.<sup>1</sup> Their success, most probably, builds upon the following three factors: a considerable share of private investment in the construction of Akadempark; a low share of government orders; and an original a model of doing business (technological services, the construction of special technological service centers inside the technopark).<sup>2</sup> In other words, success was achieved mostly by reliance on private businesses and a good understanding of their needs.

#### 5.4.6. New infrastructure projects

In 2015, two infrastructure projects – the Technological Valley of Moscow State University (MSU) and *Innopolis* (near Kazan) - were actively implemented.

*Innopolis* is an extension of the Skolkovo model, but it is implemented in the framework of one sector only – that of information technologies (IT). The features that make it similar to Skolkovo are as follows: the construction of urban infrastructure; the establishment of a new university jointly with a US higher educational establishment (Carnegie Mellon University); and the support of innovative companies based on a territorial principle. *Innopolis* evolved from a technology development special economic zone. Since 2013, a total of Rb 12.1bn was spent on its creation, and the state share in total investment amounted to 97.5%.<sup>3</sup> In June 2015, *Innopolis* was unveiled. That project was remarkable by its very rapid rate of construction work, the large number of students enrolled in the first year (400, which is twice as many as those enrolled in the Skolkovo Institute of Science and Technology – *SkolTech*); all this was achieved on the basis of a relatively modest amount of budget investment (the cost of the other projects - Skolkovo and the Technological Valley of Moscow State University - is much higher).

The project's goal is to attract 60,000 specialists in the field of IT to fill the new jobs created in the town. Seven years ago, a more modest idea – that of attracting 10,000 software developers to Dubna - ended in a failure. Meanwhile, it should be borne in mind that Dubna has a better infrastructure than *Innopolis*, and so, for such an ambitious project to succeed, it is being implemented in a 'manual mode', under the protection of the President of the Republic of Tatarstan and the RF Minister of Telecom and Mass Media.<sup>4</sup> For the time being, these factors may ensure an inflow of off-budget funding by 'involving' private companies in investing in the project. However, the effect will be only temporary, because no incentives for private initiative have been created. Nevertheless, the project may still give rise to a precedent of a successful construction of a new town with a Western type university.

The 'manual management mode' is also typical of the Technological Valley project launched by Moscow State University. It was first announced in 2013, to be completed in 2018. In accordance with its charter documents, the project is aimed at providing young researchers with well-paid jobs - by creating, among other things, a number of new laboratories, as well as

<sup>1</sup> In 2015, Akadempark became the most productive enterprise in Novosibirsk Oblast. 26 January 2016, see <http://sib.fm/news/2016/01/26/akadempark-samy-proizvoditelnym-v-novosibirskoj-oblasti>

<sup>2</sup> For further details concerning the technological service centers, see *The meeting point of ideas and money*. 29 October 2014, <http://sib.fm/interviews/2014/10/29/mesto-vstrechi-idej-i-deneg>

<sup>3</sup> И.И. Королёв. *The RF Ministry of Telecom and Mass Media established fictitious targets for Innopolis, so as not to repay any money*. November 20, 2015, see [http://www.cnews.ru/news/top/2015-11-20\\_minkomsvyazi\\_ustanovilo\\_innopolisu\\_fiktivnyye](http://www.cnews.ru/news/top/2015-11-20_minkomsvyazi_ustanovilo_innopolisu_fiktivnyye)

<sup>4</sup> A.A. Shchukin. *An IT town in an open field*. Expert, No 29, July 13, 2015, see <http://expert.ru/expert/2015/29/it-gorod-v-chistom-pole/>

launching joint research projects with industrial companies. Besides, it is intended to erect scientific research facilities and residential buildings in the vicinity of Moscow State University. An important role in this project, including in the procedure of selection of suitable laboratories and research centers to be established in the Technological Valley, is to be played by NPO *Innopraktika*,<sup>1</sup> which functions as an intermediary between young researchers and big businesses that might be interested in participating in the Technological Valley project. In 2015, in cooperation with *Innopraktika*, 16 interdisciplinary laboratories focused on applied research were opened.<sup>2</sup>

The volume of funding to be allocated to the construction of the Valley is not specified, and it varies in different sources from Rb 110bn to nearly Rb 150bn.<sup>3</sup> In this connection, approximately 65% of the funding is to be earmarked for the development and construction of Moscow State University's laboratories. It is also expected that a number of Russia's biggest companies will take an active part in providing the necessary funding and help Moscow State University to replenish the target capital fund. A similar scheme was already applied in the early phase of the *Skoltech* project (Skolkovo Institute of Science and Technology), but later on the government decided that it was not feasible to compel businesses to act as sponsors. In the new project, history repeats itself, but this time the outcome may be different because it was RF President Vladimir Putin himself who addressed the business community with the request to help Moscow State University.<sup>4</sup>

#### 5.4.7. The national technology initiative

The year 2015 was marked by the emergence of a new 'big project' – the National Technology Initiative (NTI). The term *national technology initiative* was for the first time used by President Vladimir Putin in his Message to the Federal Assembly in December 2014, when he announced the launch of the NTI and explained that this initiative was to help in defining the development priorities and goals for the next 10–15-year period.<sup>5</sup> An ambitious goal was set: to elaborate a mechanism capable of coordinating the global goals of Russia's economic development, the technology priorities created by those goals, and the mechanisms to be applied in their implementation.

In the first phase, at the year's beginning, many different organizations were busily elaborating the notion of the NTI, its content and its component. The Agency for Strategic Initiatives (ASI), the RF Ministry of Education and Science, and the RF Government Expert Council suggested their own visions of the NTI.

In the draft of *The Fundamentals of the National Technology Initiative* elaborated by the Russian Academy of Sciences, the main focus is placed on the task of ensuring Russia's parity on a global scale with the countries that are leaders in world technological progress; this parity would be impossible to achieve without developing fundamental science: '...the contemporary

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<sup>1</sup> A lot of speculations and gossip are centered on *Innopraktika* because, according to Reuters and RBC, it is headed by the RF President's daughter Ekaterina Tikhonova. However, this information has neither been officially confirmed nor disproved.

<sup>2</sup> V. Koriagin. *Why MSU is gaining in the world ratings of best higher educational establishments*. October 21, 2015, see <http://lenta.ru/articles/2015/10/21/msugetshigh/>

<sup>3</sup> R. Badanin, A. Voronina, F. Rustamova, E. Osetinskaya. *The valley of knowledge*. RBC Daily, January 29, 2015, see <http://rbcdaily.ru/economy/562949993816447>

<sup>4</sup> T. Melikian. *The gold Sparrow Hills. Putin suggested that the billionaires should provide solidarity help to MSU*. Lenta.ru, May 28 2015, see <http://lenta.ru/articles/2015/05/28/mgutext/>

<sup>5</sup> *Annual Presidential Address to the Federal Assembly*. December 4, 2014, see <http://www.kremlin.ru/news/47173>

status of fundamental science determines the situation in business in the long run.<sup>1</sup> On this basis, substantiation was provided for the goals of import substitution, reindustrialization, and improvement of the methodology applied in setting the science and technology priorities. The draft prepared by the Russian Academy of Sciences determines seven priorities for science and technology development, represented either by entire industries or by more narrow specific technologies and industries – power engineering, national defense and national security, pharmaceuticals, medical technologies, food industry, information technologies, nanomaterials, and new chemical substances<sup>2</sup>.

The Government Expert Council viewed the NTI as a comprehensive program aimed at ensuring Russia's global competitive capacity in its dealing with the developed countries in the most promising sectors of the world economy and specific segments of world markets<sup>3</sup>. The concepts of the NTI put forth by the Government Expert Council and the Russian Academy of Sciences are alike in many of their aspects; they are largely based on the modifications of approaches that have been traditional for Russia's policy in the sphere of science and technology.

From the viewpoint of the Agency for Strategic Initiatives (ASI), the NTI implies first of all the formation of new, network-based consumer markets: 'the selection will be done with due regard for the basic trends in world development, on the basis of priority network technologies centered around man as the end consumer.'<sup>4</sup> It was expected that, in 10–20 years, the volume of these markets should be in excess of \$ 100bn, and Russia would have a chance to win a respectable position in that sphere.<sup>5</sup> The approach applied by the ASI was subsequently applied in developing the roadmaps for the NTI.

In order to precisely identify the markets, a detailed study was launched, which was focused on four interrelated parameters: 'markets', 'technologies', 'infrastructure' and 'institutions'. By May 2015, 9 'markets of the future' had been determined. These are subdivided into three groups – those associated with national security and the provision of necessary resources (food, energy and security markets); the development of the transport system (automobile transport, air transport and sea/river transport); the markets where technologies are currently being upgraded on a revolutionary scale (digital health markets, new financial markets, and neurocommunications markets).<sup>6</sup> A similar approach with a pre-determined set of priority directions had been applied in 2009, when President Dmitry Medvedev announced the choice of 5 'strategic vectors' of the country's modernization,<sup>7</sup> which later on were used as the basis for the Skolkovo project and the clusters created in its framework. In the case of the NTI, the choice of specifically these 9 markets was based on two major criteria – the prospects for development in the global context and the presence, in this country, of companies (or people) prepared to become leaders and assume the responsibility for the development of relevant sectors and entry onto new markets. Consequently, the NTI will be considered to have been implemented in the event of emergence

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<sup>1</sup> *The fundamental principles of the National Technology Initiative*. Russian Academy of Sciences, Information and Analytical Center. Version as of May 22, 2015, p. 7.

<sup>2</sup> *Ibid.*, p. 8.

<sup>3</sup> *Draft of the Concept of developing and implementing the National Technology Initiative*. RF Government Expert Council. March 16, 2015.

<sup>4</sup> See <http://asi.ru/nti/>

<sup>5</sup> *Dmitry Peskov: we are to expect a fundamental restructuring of all the core industries*. Kommersant, April 1, 2015, see <http://www.kommersant.ru/doc/2698958>

<sup>6</sup> *National Technology Initiative: 'uncomfortable' questions and honest answers*. Foresight Fleet materials, May 12–16, 2015. ASI, RVC, Fund for Assistance to Small Innovative Enterprises in Science and Technology, p. 5.

<sup>7</sup> Dmitry Medvedev. *Go Russia!* September 10, 2009, see <http://kremlin.ru/events/president/news/5413>

of Russian companies capable of becoming leaders on the global technology markets in 2025–2035.

In October, 4 roadmaps were approved: the development of automobile transport, air transport and sea/river transport (to be supervised by the RF Ministry of Industry and Trade), and the development of neurocommunications (the responsibility of the RF Ministry of Education and Science). This is a speedy process, and the first results are expected to appear as early as 2016.<sup>1</sup>

The idea behind the NTI has several new and positive aspects. First, this is the switchover to personal responsibility; second, it means an emphasis on horizontal links; third, this is an open system – the discussion of promising markets can be continued in 2016.

The intermediate result achieved in 2015 was essentially the choice of new technology priorities, including multi-functional technologies, which are important for the simultaneous development of several targeted markets of the future. The system of priority directions has come to closely resemble the structure of initiatives that are being implemented by the developed countries, which in itself can already be regarded as a step forward. Indeed, in 2015 the issue of priorities was the focus of special attention; thus, in particular, this was the theme of one of the meetings of the *Presidential Council for Science and Education*.<sup>2</sup> It was a manifestation of a certain 'crisis' in the existing approaches to setting priorities, which had changed little since 1996 (the year when the list of priority development directions in the sphere of science and technology was approved at the federal level).

At the same time, the accepted approach to developing and implementing the NTI makes its success dependent on some rather unpredictable parameters, in particular the following ones:

- 1) correct forecasts of future developments, which means the opportunities and abilities to select appropriate experts;
- 2) opportunities for identifying truly charismatic leaders;
- 3) possibilities for launching the implementation mechanisms and the movement towards the targeted market niches.

The NTI may trigger restructuring of the activity of the development institutions, and not only that of RVC, which has become the project's headquarters.<sup>3</sup> In the Annual *Presidential Address to the Federal Assembly* in December 2015 it was noted that the development institutions should be oriented to technology modernization, and for this end their structures and the mechanisms that they employ should be optimized, because 'Unfortunately, many of them, to put it bluntly, have turned into dumping grounds for bad debts.'<sup>4</sup> However, the first step along this way was not optimization, but the announcement of the creation of yet another structure – the Technological Development Agency (NPO). It is intended that the new Agency should operate in the interests of companies and organize centralized transfer of foreign technologies into Russia (by means of concluding licensing agreements, establishing joint ventures), as well as provide legal and consulting support.<sup>5</sup> Among other things, the Technological

<sup>1</sup> *On the National Technology Initiative*. Meeting of the *Presidential Council for Economic Modernization and Innovative Development*. October 16, 2015, see <http://government.ru/news/20118/>

<sup>2</sup> Meeting of the *Presidential Council for Science and Education*. June 24, 2015, see <http://kremlin.ru/events/president/news/49755>

<sup>3</sup> See <https://www.rusventure.ru/ru/nti/>

<sup>4</sup> *Annual Presidential Address to the Federal Assembly*. December 3, 2015, see <http://www.kremlin.ru/events/president/transcripts/messages/50864>

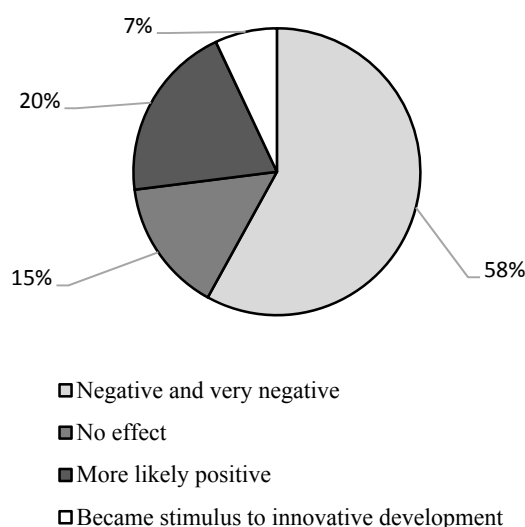
<sup>5</sup> *Transfer of technologies – import substitution without detriment to quality for the consumer*. Head of Business Russia Alexey Repik – about the Agency for Technological Development. *Kommersant*, January 27, 2016, see



Development Agency must look for technologies that can be relevant for the implementation of the NTI and Russia's entry onto new network markets. Thus, the launch of the NTI will influence the 'innovation ecosystem' by means of adjusting and supplementing the system of government instruments employed in promoting Russia's technological development.

#### 5.4.8. The effects of economic sanctions

In 2015, the economic sanctions and the response to them across the country visibly influenced the sphere of science and innovations. The poll conducted in May 2015 among 176 experts who represented both the business and the academic communities revealed that the majority of respondents believed that the new geopolitical situation had an adverse effect on innovative development (*Fig. 16*).



*Fig. 16.* The estimated effects of the geopolitical situation on the innovative activity in Russia

*Source:* A course towards innovations. Issue III. M.: RVC, F&S, 2015, p. 15.

The links between the introduction of economic sanctions against Russia and the changes that became visible in Russia's science sector due to the emergence of the new external conditions are by no means direct and clear. In addition to economic changes, the overall atmosphere in the sphere of science is undergoing transformation. To a certain degree, the marker of the onset of changes was the *Law on Undesirable Foreign Organizations*<sup>1</sup> (introduced in May 2015). Coupled with the already existing Law of the Russian Federation *On Foreign Agents*, it launched the process of serious transformations in the system of non-governmental support of science through not-for-profit foundations.

<http://www.kommersant.ru/doc/2902055>; *On the Technological Development Agency*. Meeting of the Presidential Council for Economic Modernization and Innovative Development. February 5, 2016, see <http://m.government.ru/news/21674/>

<sup>1</sup> Federal Law 'On Introducing Alterations to Some Legislative Acts of the Russian Federation', No 129-FZ dated May 23, 2015, see <http://publication.pravo.gov.ru/Document/View/0001201505230001?index=0&rangeSize=1>

In accordance with the *Law on Undesirable Foreign Organizations*, the fact of an organization being recognized as such means a ban on its activity in Russia. This status is assigned to those organizations whose activity is deemed to be threatening the fundamental principles of Russia's constitutional order, defense potential and security. Often the undesirable organizations are those that provide funding to NPO (non-commercial organization), the latter then being recognized to be 'foreign agents'<sup>1</sup>.

***The direct consequences of economic sanctions***

The direct effects of economic sanctions began to be manifest at an early stage in the form of rising costs and declining competitive capacity of the research projects in Russia. They began to suffer from shortage of foreign equipment and reagents, which had been purchased in the main in those countries that participated in the sanctions, while the cost of that equipment and reagents plunged due to the sharp decline of the ruble's exchange rate against the world's major currencies. Many foreign companies, including those based in the EU, began to refuse to supply equipment<sup>2</sup> and materials for scientific research to Russia for fear that they might be used in military projects.<sup>3</sup>

After the sanctions had been introduced, even the IT sector began to experience difficulties, although it is considered to be one of Russia's best-developed and successful sectors. Thus it became obvious that the reliance on foreign software in this country is very high (*Table 15*).

*Table 15*

**The share of foreign software products in the RF, %**

Product	Share, %
Office applications	100
Visualization systems	93
Operating systems for computers	93
Databases	86
Operating systems for servers	75
Collaborative software	68
Geoinformation software	45
Engineering software	34

Source: Yu. Voronina. *One's own soft is closer*. The Russian Business Newspaper, 2014, No 46, p. 4.

The initiatives of universities and scientific research organization in restricting the foreign travel of their staff in the framework of scientific research projects and tracing their publications abroad may also be treated as a form of response to the external pressure, and its purpose is not limited to identifying those individuals who are entitled to a supplementary payment for a publication in a highly ranked journal. Special security departments for supervising foreign connections began to be reestablished at universities and research institutes.<sup>4</sup> In this connection it should be emphasized that no formal orders to this effect have been issued at the federal level, and words like 'internationalization of science' can still be found in official documents and heard in official speeches.

<sup>1</sup> G. Peremitin. *Putin signed the Law on Undesirable Foreign Organizations*. See <http://top.rbc.ru/politics/23/05/2015/55609f719a794774b30bd2a7> 23.05.2015 г.

<sup>2</sup> *Sanctions have reached Russian science*. See <http://укроп.org/sanctionsи-дошли-и-до-Russian -science/>, August 14, 2015.

<sup>3</sup> For example, spare parts for laser systems.

<sup>4</sup> E. Gerden. *Russia faces international scientific blockage*. See <http://www.rsc.org/chemistryworld/2015/08/russia-faces-international-scientific-blockade>, August 13, 2015.

### *Indirect consequences*

The indirect consequences of the introduction of sanctions was the growing aversion to the activity of the representative offices of those foreign organization providing support in education and science whose countries of origin participated in the sanctions against Russia, or to those Russian entities that were associated in one or other way with the support and promotion of 'foreign' ideas and views.

The upshot of all this was that Russia's science sphere, which could never boast of a large number of non-governmental foundations working there, began to lose those organizations that for many years had been implementing their science support and training programs - in natural as well as in social sciences. The most notorious move was the entry into the list of 'foreign agents', in May 2015, of the *Dynasty* Foundation (a Russian charity). The reason was that the assets of its founder Dmitry Zimin, which were the source of funding for Russian science projects, were kept abroad. *Dynasty* was accused of political activities because of its support of the Liberal Mission Foundation headed by Yevgeny Yasin.<sup>1</sup> Thus, according to the RF Ministry of Justice's logic, Zimin's Foundation deserved to be assigned the status of a 'foreign agent' for its support of political activities from foreign resources.

Many Russian research organization and scientists, the international community, as well as the Council on Science under the RF Ministry of Education and Science, tried to support *Dynasty* and get it removed from the list<sup>2</sup>. However, all protests were in vain, and in July 2015 the board of *Dynasty* Foundation approved the decision of its liquidation<sup>3</sup>.

The two less publicized events, which followed the same logic and resulted in the same consequences, are the closure of the Russian office of the MacArthur Foundation and the two charities established by George Soros – the Open Society Foundation and the Assistance Foundation.<sup>4</sup> In July 2015, these foundations were put on the 'patriotic stop-list'<sup>5</sup> drawn up by the Federation Council as candidates for the status of 'undesirable organizations'.<sup>6</sup>

The CEOs of the MacArthur Foundation decided to withdraw from Russia.<sup>7</sup> The Foundation had launched its first programs in Russia in 1992; it provided support both to individual researchers in the field of social science and to Russian universities. Its biggest initiative in Russia's science sphere was the Program on *Basic Research and Higher Education*, on which it spent a total of \$ 32m over the period 1998–2009. The program was implemented and financed

<sup>1</sup> B. Grozovskiy, N. Epple, P. Aptekar. *Dmitry Zimin and Yevgeny Yasin as a threat to Russian security*. *Vedomosti*, No 3838, May 26, 2015, see <http://www.vedomosti.ru/opinion/articles/2015/05/26/593621-dmitrii-zimin-i-evgenii-yasin-kak-ugroza-rossiiskoi-bezopasnosti>

<sup>2</sup> A. Khokhlov. *The disaster is happening before our own eyes*. [http://www.gazeta.ru/science/2015/05/28\\_a\\_6736753.shtml](http://www.gazeta.ru/science/2015/05/28_a_6736753.shtml) 28.05.2015; L. Tagaeva, E. Antonova, F. Rustamova. *The decline of Dynasty*. *RBC*, No 88, May 26, 2015, pp. 10-11 (See <http://rbcdaily.ru/industry/562949995305596>)

<sup>3</sup> *The Dynasty Foundation makes the decision of its liquidation*. See <http://newsru.com/russia/08jul2015/dynasty.html>, July 8, 2015.

<sup>4</sup> *The Open Society Foundation and the Assistance Foundation were recognized to be undesirable in Russia*. *Interfax*, November 30, 2015, see <http://www.interfax.ru/russia/482304>

<sup>5</sup> *The Federation Council made public the 'patriotic stop-list' of 12 foreign NPOs*. See <http://www.interfax.ru/russia/452158> 07.07.2015 г.

<sup>6</sup> A. Bratersky. *The 'undesirable' George Soros*. See [http://www.gazeta.ru/politics/2015/08/12\\_a\\_7683475.shtml](http://www.gazeta.ru/politics/2015/08/12_a_7683475.shtml) August 12, 2015.

<sup>7</sup> E. Mukhametdinova. *The first of the organizations entered in the 'patriotic stop-list' leaves Russia. The closure of its Russian office was announced by the US MacArthur Foundation*. *Vedomosti* (in Russian), July 23, 2015. See <http://www.vedomosti.ru/politics/articles/2015/07/23/601800-iz-rossii-ushla-pervaya-iz-organizatsii-vnesennih-v-patrioticheskii-stop-list>

jointly with the RF Ministry of Education and Science. In its framework, 20 education and research centers (ERC) were established at Russian universities; they specialized in natural sciences. The ERC model was officially recognized to be efficient, and so the centers became to a certain extent the prototype of the ERC yet to be created, the activity of Russian universities and scientific research organization in that direction being funded by the resources allocated to the federal targeted program *Scientific and educational human resources for innovative Russia in 2009–2013*.

In December 2015, one more organization was closed, which had been an active partner of the RF Ministry of Education and Science in promoting the research and innovation activity of Russian higher educational establishments – the US Russia Foundation for Economic Advancement (USRF). The next day after it had been placed on the list of undesirable organizations, the Foundation announced that it was to discontinue its operation in Russia and to close its Moscow office<sup>1</sup>.

The closure of foreign foundations is a reasonable act on the part of their management, because once an organization is assigned the status of a 'foreign agent', it can effectively do little. Thus, in actual practice this means a ban on collaboration with budgetary institutions, while the bulk of entities operating in the fields of science and education are budgetary institutions. A similar situation is faced by 'undesirable organizations', because it becomes very risky to receive any grants from them.

The reasons why certain foundations that for many years had been supporting education and science, whose activity had been positively estimated by Russian authorities, were suddenly deemed to be 'undesirables' and foreign agents, are purely political and have nothing to do with their support of science. This peculiar response to the economic sanctions will have a negative impact on the situation in Russian science not only on an economic, but also on a psychological plane, as it will alter the atmosphere inside the academic community.

### ***International cooperation and the sanctions***

In face of the rising tension between Russia and the countries that are world leaders in innovation, we are still hearing official rhetoric in support of international cooperation in the field of science. Moreover, it is constantly emphasized that science is international, and that international cooperation in scientific research is the foundation of growth. Thus, Project 5-100 encourages higher educational establishments to publish their works abroad and to participate in international events, as well as to invite foreign specialists. This is indeed important, as Russian publications have low citation indexes, and in this aspect Russia differs from many other countries, even the developing ones. Over the period 2004–2015, only 6% of the Russian articles with high citation indexes were written by Russian authors on their own, while all the rest were co-authored with their foreign colleagues<sup>2</sup>.

However, the priorities are gradually changing. On a national scale, the BRICS group is playing an increasingly important role, and on a personal level, new hopes are associated with the developing cooperation with the Russian expat diaspora.

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<sup>1</sup> *Address to the partners and recipients of benefits from the USRF*. December 8, 2015. See [http://www.usrf.ru/news\\_feed/general\\_rus/news\\_article\\_1449567272.html](http://www.usrf.ru/news_feed/general_rus/news_article_1449567272.html)

<sup>2</sup> According to data presented by P. Kasianov, Thomson Reuters. Source: K. K. Bolokhova. *Scientists and organizations with high citation indexes were awarded at VUZPROMEXPO-2015*. December 4, 2015, see [http://www.strf.ru/material.aspx?CatalogId=222&d\\_no=110553#.Vm2wAb8yTOA](http://www.strf.ru/material.aspx?CatalogId=222&d_no=110553#.Vm2wAb8yTOA)

An analysis of scientific research activity indices across the BRICS group shows that so far, the links between its member countries in the field of scientific research have been weak. Moreover, the BRICS members tend to cooperate not between themselves, but with those countries that are world leaders in scientific research<sup>1</sup>. The achievements of the BRICS proper are not very impressive.

The diaspora is actively collaborating with Russia, getting involved, among other things, in the creation of modern laboratories at higher educational establishments funded in the framework of Project 5-100.<sup>2</sup> The recent poll of 150 representatives of the Russian academic diaspora abroad demonstrates that those among its members who are closely interacting with Russia are loyal and tend to promote cooperation while staying away from political issues, including the economic sanctions.<sup>3</sup>

The diaspora to a certain degree represents a 'soft force' in the situation of imposed economic sanctions and the generally unfavorable geopolitical climate. Its more active representatives are ready to teach, participate in research projects (including those funded by international grants), as well as to train Russian postgraduates. Approximately 2/3 of the respondents suggest some new mechanisms of cooperation or improvement of the existing government initiatives. It is difficult to group all the ideas as a number of 'typical blocs'. However, there are two types of activity that can be readily participated by many representatives of the Russian diaspora. These are international exchange programs (training programs) that can have various formats (including postgraduate and undergraduate training programs and travel by foreign scientists), as well as joint postgraduate and undergraduate training programs. It should be noted that some of these proposals can be immediately implemented by research institutes or higher educational establishments, without developing special federal or regional program for that purpose. In this connection, it would have been feasible for universities and scientific research organizations to grant open access to more information, because foreign scientists are experiencing difficulties in finding on the websites of Russian organizations any well-structured information concerning the existing opportunities for cooperation.

At the same time, the attitude of the Russian public to the expat diaspora activists is controversial. Thus, a poll of those higher educational establishments that collaborate with Russian-speaking foreign scientists indicates that the key problems are as follows: foreign scientists 'cost dear' (they have to be paid a lot of money); they spend little time in Russia; and they do not understand Russian realities. In the academic community, there exists a rather widespread opinion that the qualifications of the diaspora representatives are by no means always so high as to enable them to rapidly upgrade that of the Russian researchers.<sup>4</sup> Nevertheless, the cooperation

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<sup>1</sup> I. Dezhina. *BRICS countries possible areas for scientific cooperation*. World Economy and International Relations, 2015, No 9, pp. 14-23.

<sup>2</sup> Russian expat scientists in the USA, Europe and Asia plan to create six laboratories on the basis of Tomsk Polytechnic University. See <http://news.tpu.ru/news/2015/05/05/23341/> May 22, 2015. At St. Petersburg Polytechnic University, the first multidisciplinary RASA (Russian-speaking Academic Science Association) Research center in Russia was established, see <http://www.sdelanounas.ru/blogs/53229>

<sup>3</sup> The survey took place in February-March 2015, it consisted in a poll among Russian expat scientists working abroad followed by interviews via Skype with a selected sample group of respondents. Source: I. Dezhina. *Russian scientific diaspora: experience, motivation and prospects for cooperation with Russia*. Sociology of Science and Technology, 2016, No 1 (soon to be published).

<sup>4</sup> See, for example, the interview with Academician A. Aseev: A. Mekhanik. *The ball is hosted by interests that are far from being true*. Expert, May 25, 2015; see <http://expert.ru/expert/2015/22/balom-pravyat-interesy-dalekie-ot-istiny/>

was already established long ago, the universities participating in the poll had a history of 'working with the diaspora' that was on the average twice as long as that of the government cooperation programs.<sup>1</sup> At the same time, it is the representatives of the academic diaspora that can help strengthen the ties with the international academic community.

In this connection, it appears feasible to place a greater emphasis on network collaboration with Russian laboratories created in recent years with the participation of the diaspora representatives. Russia has already acquired a 'critical mass' of such structures, and network projects can further improve their performance, while simultaneously promote and expand the contacts with Russian-speaking expat scientists. Besides, the training project Global Education<sup>2</sup> launched in 2015 can also rely on the expat potential, in particular by involving the university laboratories headed by Russian expat scientists in training Russian specialists in that program's framework.

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The strategic position of the science sphere has altered: we see a transition from the former ambitious goals to those of moderate growth. The key indices of expenditures on R&D and the scientific research targets that were to be achieved by 2015 are now set for 2020. This happened, among other things, due to the shrinkage of budget allocations to science and the uncertainty with regard to the future growth of investment of the business sector in research and development.

The reform in the academic sector proceeds at a slow pace, the coordination procedures between the government departments are tricky, and there are no clearly defined medium-term restructuring plans. The 'civilian science' component represented in this segment by the activity of the Council on Science under the RF Ministry of Education and Science and the Science *Coordinating Council* under the FASO<sup>3</sup> helped to smooth the controversies and to properly coordinate the standpoints. Nevertheless, the obvious positive results of reform in that sector are yet to be achieved. Higher educational establishments are no alternative for the Academy, although they rapidly increase the formal indices of their performance with regard to scientific research. So far, the potential of universities in the R&D sector has remained insufficient, the testimony of which is the higher quality of the Academy's research and the poorly developed cooperation of higher educational establishments with industry.

The most notable development in the innovation sphere was the change in ideology, when the slogan *from science to market* was replaced by another one – *from markets of the future to their technology and scientific projections into today*. The upshot of this change is the National

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<sup>1</sup> I. Dezhina. *Answers to open questions*. November 13, 2015 <http://sk.ru/news/b/articles/archive/2015/11/13/otvety-na-otkrytye-voprosy.aspx>

<sup>2</sup> In the framework of this program, the RF Ministry of Education and Science pays for the training of Russian students at the best foreign universities, on condition that after graduation they must return to Russia to work in scientific research organizations, higher educational establishments and commercial companies. Priority is given to the technical, medical, and IT fields, as well as to chemistry and power engineering. Source: <http://educationglobal.ru/ns/overview/>

<sup>3</sup> The Science Coordinating Council was established on November 25, 2014 in accordance with order of the FASO Order *On the Science Coordinating Council under the Federal Agency for Scientific Organizations*, No 1087 of November 25, 2014 (see <http://fano.gov.ru/common/upload/library/2014/11/main/prikaz1087.pdf>), and some of its members also sit in the Council on Science of the RF Ministry of Education and Science.

Technology Initiative. The reliance on the potential development of new technologies in a situation where the science sector is weakened by reform is very risky. That is why the Technological Development Agency is being created, which will be assigned the task of purchasing new technologies abroad. In fact, this will mean a switchover to an imitation development model in the field of innovation. Indeed, at present Russia can hardly hope for successful domestic R&D projects and prompt implementation of their products, and so it is reasonable to transfer foreign technologies in order to achieve the goals set in the framework of the NTI. At the same time, within such a pattern, businesses must be highly interested in innovations. In theory, one may rely on the successful rapidly growing medium-sized technology companies. If the production paradigm is also altered (by switching over to new industrial technologies in a broad sense), they may become the foundation for technological development. However, when viewed on a broader scale, the business sector is still underactive – not because of the weakness of the development institutions, but largely due to the existence of administrative and economic barriers created by the government.