

INNOVATION DEVELOPMENT

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Innovation Approaches to the Formation of Investment Policy Tools from the Perspective of a Neo-Industrial Economic Development Paradigm*



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Abstract. The current macro-environment of the Russian economy formed under the influence of its raw-materials export model does not facilitate investment activity or intensify investment in the country, which ultimately hinders the re-industrialization of the productive forces and establishes the technological and economic gap between Russia and world's developed economies. Such a situation clearly indicates the need for a transition to a new economic paradigm, the implementation of which will ensure accelerated modernization of the economy based on innovative content of investment. We are talking about the neo-industrial paradigm of modern development developed by the Russian economic school in 2007–2014. In

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this regard, the purpose for the study is to develop the theory and methodology of formation of investment of a new – innovative – type, adequate to the neo-industrial economic paradigm; to identify the factors deterring innovative accumulation of investment in modern Russia; to develop proposals aimed at stimulating investment and innovation activity of business entities of the national economy given the subordination of the country's resource and economic potential to the future neo-industrial development. The research framework is based on an integrative approach which requires analysis of historical, political, legal, economic, and other prerequisites for the development of socio-economic systems of different levels and is crucial for the analysis of the transformation of categories in the process of a paradigm shift. According to the methodological approach, the authors position the category of "investment" as one of the key categories of the hereditary (genetic) core of the neo-industrial economic paradigm; and introduce the term "innovative type of investment". Such an approach to studying investment differs from their interpretation in traditional neoclassical, Keynesian and institutional frameworks. The main priorities of innovative content of investment are: active development of the human component of intellectual capital; generation of innovative technical and technological resources; establishment of effective innovation systems; an integrated, generalizing criterion of "gross accumulation rate" which in relation to the Russian economy amid capital-intensive and innovative investment should not be lower than 28–30% of GDP. The article analyzes the performance and intensity of innovative processes development in the economy of the Republic of Mordovia – one of the leaders in improving the rank in the ranking of innovative development of regions of the Russian Federation for 2008–2015. The methodological framework of such analysis is represented by a macro-model of innovative systems proposed by D.H.C. Chen and C.J. Fuhrman, adapted to the Russian economy with the use of the method of model-oriented structuring by Glisin F. and Kalyuzhnyi V. We clustered constituent entities of the Russian Federation according to the index value of "the region's knowledge economy". We formulate offers to intensify investment activity in Russia and transform its investment policy taking into account the stimulation of innovative content of investment.

Key words: neo-industrial economic paradigm, investment, innovative content of investment, de-industrialization, investment policy, "knowledge economy" index.

1. Introduction

An unexpected yet universally recognized global financial and economic crisis of 2008–2009 focused the attention of scholars and practitioners on the search of mechanisms to overcome it with regard to the changing economic conditions, and recalled the previously relevant concept of paradigm shift put forward in the 1960–s by an American historian and philosopher T.S. Kuhn [10]. According to the concept, a "paradigm is a widely recognized scientific achievements

which for a certain time provide the society with a model of problem statement and their solutions" [11, p. 120].

It should be noted that the current paradigm (liberal, market) predominant in the world economic science, which was formed back in the 18–20th centuries, no longer meets modern needs of economic and social progress. In this regard, it is appropriate to recall the statement by M. Porter who in 1990 in his book "The Competitive Advantage of Nations", wrote: "...the world is increasingly convinced that the

current paradigm of economic success... no longer meets modern requirements” [15, p. 38].

Nowadays, both in the scientific community and at the level of governments of leading world countries [9; 19], there is a gradual rejection of the post-industrial economic paradigm with its emphasis on the shift from production of goods to expanding services [1; 20; 25]; from neoliberal ideas about equal importance of all forms of activities in the context of globalization and absolute efficiency of market self-regulation [26]. In economic science there is a trend of paradigm shift towards the concept of neo-industrialization, whose supporters (A.A. Amosov, A.V. Buzgalin, S.D. Bodrunov, S.Yu. Glaz'ev, S.S. Gubanov, R.S. Grinberg, A.E. Karlik, A.I. Kotov, S.V. Kuznetsov, V.I. Kushlin, V.I. Mayevsky, V.T. Ryazanov, etc.) justify its subordination to objective laws and leading trends of the modern stage of social development [5].

A recognized founder of such a paradigm is Professor S.S. Gubanov, who set forth his fundamental program of neo-industrialization in the monograph named “Breakthrough of the Power. Russia’s Neo-industrialization and Vertical Integration” (2012) and a series of articles. Neo-industrialization is referred to as “a historically logical process of development of productive forces, ...based on the technotronic triad: aggregate employee – electronic computing machine – automated means of production... The quality measure of neo-industrialization is progressive changes in the nature of labor and structure of employment accompanied by the declining share of manual labor and increasing share of mental labor; establishment of mental labor

as mass and dominant; labor saving...The social consequence is embodied in the forming foundations of a new society, which prioritizes human reproduction and quality of life, rather than profit” [6, pp. 31–32].

The key role in implementing the neo-industrial formula of the national economy development belongs to the policy of accumulation and innovation-based expanded reproduction [5]. At the same time, it is known that the complexity of the adjustment mechanism of the reproduction process manifests itself in the category “investment”. Despite high prevalence, its definition is ambiguous in the literature being a controversial scientific issue.

Based on criteria features it is possible to present the following classification of definitions of the latter:

1. Investment as a resource, which implies the consideration of production factors and conditions of reproduction (S. Fischer, R. Barre, G.M. Keynes), or as relations concerning the provision of production with economic resources (O. Donichev, R. Samuseva).

2. Study of investment in static – as resources (C.R. McConnell, S.L. Brue) or in dynamics – as a process, act of creating (E. Hansen, V. Daskovskii, V. Kiselev).

3. Investment (in the broad sense) as allocation of funds to any assets which produce results (J.F. Sinki, W. Sharpe, G. Alexander, D. Bailey); in the narrow sense – material resources for production support (M.A. Chepurin, E.A. Kiseleva).

Based on systematization and generalization of the most known definitions of the category

“investment”, we can conclude that this definition includes the whole complex of conditions for the implementation of reproduction, uncertainty, risk, multivariance of choice. This is, in our opinion, the reason to consider investment as one of the key categories of the genetic (inherited) core of the paradigm (industrial, neo-industrial, or post-industrial) reflecting the new quality of economic and institutional conditions and factors in social reproduction and economic growth, as well as the role of a human in the modern world.

During the process of economic paradigm shift of Russia’s development, the issue raised by some researchers (V.I. Kushlin, E.B. Linchuk, V.K. Senchagov, K.I. Pletnev) about the necessity of forming investment of a new quality, adequate to the idea of neo-industrialization – high-tech and knowledge-intensive – seems timely and important [17, p. 204]. In addition, economic science and economic practice currently need constructive suggestions to overcome the current investment policy inadequate to the requirements of system innovative modernization of the national economy of Russia [21, p. 156].

2. Research methodology

The research is based on the integrative approach which requires analysis of historical, political, legal, economic and other prerequisites for the development of socio-economic systems of different levels and is crucial for analyzing the transformation of categories in the process of a paradigm shift. According to this methodological approach, the authors define “investments” as one of the key categories of hereditary (genetic) core of the neo-industrial economic paradigm and

introduce the term “innovative investment”. Such an approach to studying investment differs from its interpretation in the traditional neoclassical, Keynesian and institutional concepts.

Moreover, the article presents the *author’s technique of assessing the efficiency of the regional innovation system*. Its methodological framework is based on the macro-economic model of innovation systems proposed by Chen D.H.C. and Dahlman C. J. [22]. It was adapted to the Russian economy with the use of the method of model-target structuring by F. Glisin and V. Kalyuzhnyi [3]. This technique made it possible to conduct a comprehensive analysis of innovation processes in a specific Russian constituent entity – the Republic of Mordovia – with the help of a large number of indicators with different dimensions based on the resulting indices. At the same time, to perform the clustering of Russia’s constituent entities according to the KEI value the method of k-means was used.

3. Research results

According to the concept of neo-industrialization proposed by the Russian economic school, the modern stage of socio-economic development is characterized by entering into a new – neo-industrial – era “... historically higher, where the composition of combined labor forces of the society is dominated by highly skilled intellectual workers and science acts as a direct productive force” [2, p. 13]. Such a society is characterized by genuine “knowledge economy” with knowledge and innovation being the main source of development, and intellectual capital – the underlying factor in social production.

Figure 1. Decomposition of intellectual capital

Intellectual capital	<i>Human capital</i> – the active part of human potential	Knowledge; skills; creativity; culture; moral values; intellectual activity
	<i>Organizational capital</i> – provides fuller realization and development of human capital in an organizational environment	Technology; processes; inventions; organizational structure; organizational culture etc.
	<i>Consumer (client) capital</i> – quantity and quality of constant clientele of an economic structure	Information about customers; customer relations; customer loyalty; trademark; brand etc.

The accumulated knowledge on intellectual capital made it possible for scientists to define common approaches to its structure and forms of its manifestation by the end of the 20th century (Fig. 1).

It should be noted that intellectual capital has a lot in common with physical capital: both are the result of investment of resources (money, material resources, knowledge, qualifications, etc.) in production of goods and services; bring profit to their owner; are a maintained and sustained resource [13, p. 308]. From this viewpoint, investment should be considered as one of the key categories of the genetic (inherited) core of the neo-industrial economic paradigm [24].

It is clear that today attention should be focused on a qualitatively new – innovative – type of investment, adequate to the criteria of the neo-industrial paradigm. Such investment, in our view, represent long-term investment in the development of intellectual capital and innovative sectors of the national economy, providing for the re-industrialization and creation of science-intensive, high-tech and digital productive forces, growing labor productivity, effective use and strengthening of human potential.

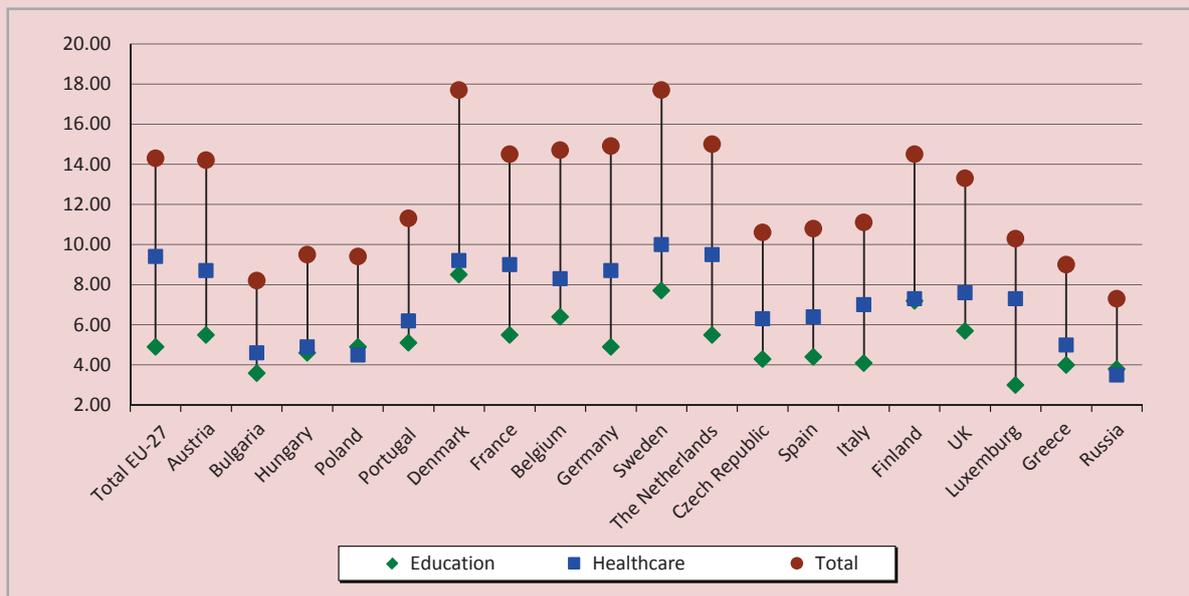
In the context of the concept of neo-industrialization, it seems possible to identify the following priorities for innovative content of investments, reflecting the leading trends of the modern stage of socio-economic development:

- human capital development;
- formation of high-tech investment resources in order to effectively implement and strengthen human resources;
- creation of dynamic and effective innovation systems (national and regional), which are sometimes referred to as the “triple helix” [4, p. 50] implying a mechanism of close cooperation between government, business and science (research institutions) in the scientific-technological sphere.

The main priority of the innovative content of investments is, undoubtedly, the human component of intellectual capital. It is the human component that, being one of the forms of labor resource development, has the ability to create new knowledge and transform it into new scientific and technological solutions with practical value and hence intensify the innovative processes in the economy.

Human capital development is impossible without mobilization of public and private

Figure 2. Share of expenditures on education and health in GDP in selected EU countries and in Russia in 2011–2015, %



Compiled from: Rossiya i strany mira. 2016: stat. sb. [Russia and world countries.2016: statistics book]. Rosstat. Moscow, 2016. 379 p.

resources. According to the UN Development Programme, only in the first decade of the 2000-s, accumulated investment in human (or human capital) amounted to 64% of total wealth, compared top 16% of physical capital. In many developed economies this share reaches 80%. For reference: in Russia the situation is different: 72% is the share of the materials sector and only 14% – human capital [13, p. 314]. *Figure 2* presents data illustrating the high level of aggregate expenditures on education and health in selected EU countries.

It seems obvious that effective transformation of new scientific knowledge into innovation and its successful transformation into a qualitatively new product, including investment resources, growth of components of creative labor in the economic system,

solving the problem of resource efficiency with reference to best international practices, etc. is impossible today without creation of an appropriate technological investment resource and a high-tech complex (HTC) in the national economy.

In this context it seems appropriate to draw attention to the opinion of J. Stiglitz and his co-authors that the current period is characterized by “a new intellectual consensus” where the value of industrial policy is recognized by politicians and academics on different poles of the ideological spectrum [18; 27, p. 2].

In this regard, we share the position of famous Russian scientists (S.Yu. Glaz’ev, N.A. Novitskii, V.K. Senchagov, etc.) concerning the fact that the most important prerequisite for innovative content of investment is attainment of rational (threshold)

criteria for secure innovative and investment activities and creating a favorable macro-environment for the latter [21, p. 157]. Experts in economic security distinguish the following criteria [21, pp. 162–163, 281]:

- the share of gross accumulated investment in GDP (above 25% of GDP; taking into account the development of knowledge-intensive industries and introduction of nanotechnology in the Russian economy – up to 28–30%);

- ratio (excess) of investment and GDP growth rates (taking into account the momentum and the growing capital intensity of innovation in the Russian economy to produce 1% of GDP growth it is necessary to provide 2–3% of additional investment growth;

- excess of investment in renewal of fixed assets over the reimbursement of their disposal in relation to the initial cost (not less than 50%);

- ratio of economic viability and the level of interest rates, which implies the excess of the former over interest rates, which, in turn, should exceed the level of deposit rates, and the latter must be above inflation to provide real return on deposits.

It is regrettable that the current investment policy in Russia is poorly focused on these criteria; the state of technological investment resource and the country's innovation system does not correspond to the level of its human potential development. For reference: in 2015, the value of Russia's HDI amounted to 0.798; according to this indicator, Russia ranked 50th among 188 countries with high HDI.

At the same time, analysis has revealed a noticeable developmental delay in the Russian economy from industrialized countries in indicators such as gross capital formations rate (*Fig. 3*). In Russia, under the influence of the transformational recession of the 1990-s and radical changes in the investment pattern

Figure 3. Performance of the share of gross capital formation in Russia's GDP in 1995–2015, %



Source: compiled from: Rossiya v tsifrakh. 2016: krat. stat. sb. [Russia in figures. 2016: brief statistics digest]. Rosstat. Moscow, 2016. 543 p.

Table 1. Key indicators of condition and renewal of fixed assets (FA) in the Russian economy in 1970–2015

Indicator	Years							
	1970	1980	1990	1995	2000	2005	2010	2015
FA renewal rate	10.2	8.2	5.8	1.6	1.4	3.0	3.7	3.9
FA disposal rate	1.7	1.5	1.8	1.5	1.0	1.1	0.8	0.8
FA depreciation rate, %	25.7	36.2	35.6	38.6	39.4	43.5	47.1	50.5

Source: compiled from: Rossiya v tsifrakh. 2016: krat. stat. sb. [Russia in figures. 2016: brief statistics digest]. Rosstat. Moscow, 2016. 543 p.

related to the transition from financing of investment in fixed capital from the state budget towards investment mainly through own funds. The structure of GDP has also undergone fundamental changes: the share of accumulated gross investments in GDP decreased from 38.7% in 1990 to 19.5% by the beginning of 2015 in the sum of disposition, which corresponds to the level of the 1960–1970-s. Although GDP growth observed in Russia in the period between the crises of 1998 and 2009 achieved mainly due to the favorable external economic environment and improving utilization and use of pre-existing productive facilities increased the rate of gross fixed capital formation in GDP from 14.9% in 1998 to 18.9% in 2009, this value was lower than in the G–7 countries actively implementing industrial and technological modernization [14, pp. 42–43].

The current values of the indicator under review, especially given the strong depreciation of fixed assets, are clearly insufficient to overcome the autonomous recession and perform re-industrialization. It is worth recalling that advanced countries which restructured their economies had for a long time maintained a high level of investment in fixed capital. For example, in post-war Japan, it reached 30%; in China in 2010 – 47.7%; in India – 35.7%; in Vietnam – 37.9% of GDP¹.

¹ Rossiya i strany mira. 2013: stat. sb. [Russia and world countries.2016: statistics book]. Rosstat. Moscow, 2013. P. 86.

While maintaining a low share of gross fixed capital formation, there is no chance of bridging the economic and technological gap of Russia with developed and new industrialized countries. Long-term under-investment in the Russian economy has a negative impact on the condition of facilities and resources of Russia’s national economy and determines the need to intensify investment activity to replace fixed assets (*Tab. 1*).

Developed economies annually update 12.5% of fixed assets in use [7, p. 43], while in Russia this share is only 3.9%, which is clearly insufficient to overcome the upward trend of fixed assets depreciation observed over a long period. The average value of this indicator (at year end) increased from 39.3% in 2000 to 50.5% in 2015² and reached its critical value of this indicator of investment security.

Based on the economic challenge of neo-industrial transformation of productive forces of known investment security indicators, the values of FA disposal rate at 1.1 and 0.8 resulting from the current state of depreciation fund do not contribute to the replacement of deteriorated machinery and equipment, innovative workplace modernization and increase in labor productivity.

At these values of FA disposal rate it becomes impossible to reduce the average age

² Rossiya i strany mira. 2013: stat. sb. [Russia and world countries.2016: statistics book]. Rosstat. Moscow, 2013. 543 p.

of equipment. Although official Russian statistics somehow record it, the average age of fixed production assets exceeds 13 years³.

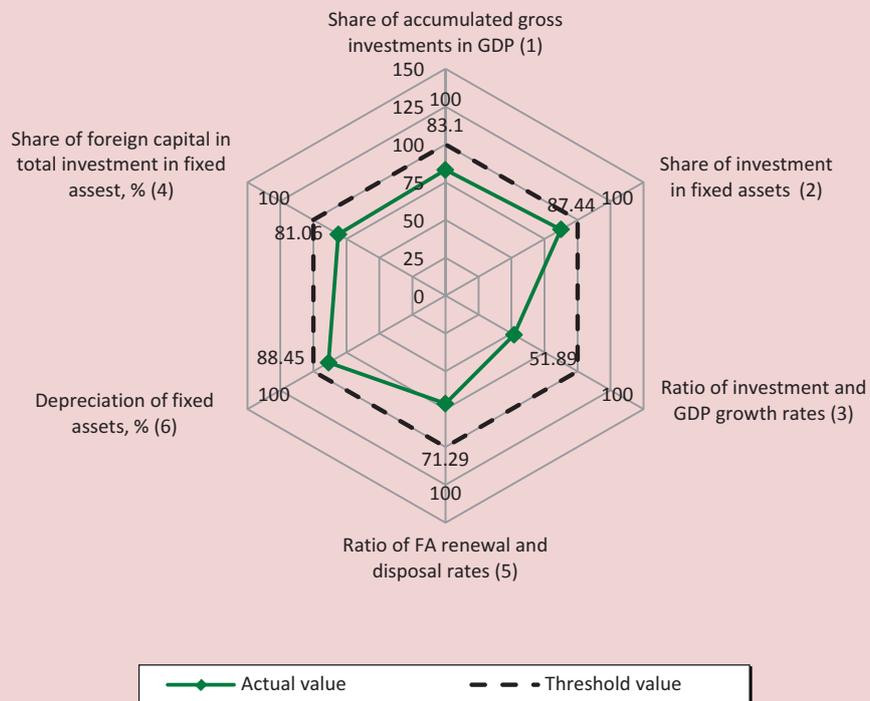
However, it is known that limiting the useful life of equipment by 8–10 years is due to the increasing costs of its maintenance, which is accompanied by declining profitability and competitiveness of products, falling demand [8, p. 12].

Thus, the long-standing problem of investment accumulation to replace deteriorated fixed capital assets, which emerged amid the commodity export model of the national economy determines the need to operate excess deteriorated equipment and, ultimately, confirms the validity of the conclusion about the contradiction between the

existing human potential and renewable fixed assets in the Russian economy.

The need to revitalize and intensify investment activity in the Russian economy to improve its condition and overcome autonomous recession is also confirmed by the results of our indicative analysis of investment security. To visualize the results we used a radar chart containing standardized indicators of Russia’s investment security in 2015 (Fig. 4). Indicators such as “FA renewal and disposal rates”, “Ratio of investment and GDP growth rates” are of greatest concern, which confirms the conclusion about low ability of the Russian economy to de-industrialize productive forces under the current development model.

Figure 4. Assessment of severity of the crisis in investment in Russia (authors’ calculations)



³ Investitsii v Rossii. 2015: stat. sb. [Investment in Russia. 2015: statistics digest]. Rosstat. Moscow, 2015. 190 p.

Thus, the current situation in investment in Russia does not promote the development of facilities and resources and human potential, has restraining influence on the performance and intensity of innovation processes in the economy of the country and its regions, and consequently, on the innovative content of investment. In this context we consider it necessary to dwell on the results of our analysis of the regional innovation system performance in the Republic of Mordovia, a recognized leader in improving the position in the ranking of innovative development among Russian regions in 2008–2015 [16].

Such characteristic of the region is not accidental. According to official statistics, during 2012–2016, industrial output in the Republic of Mordovia rose 1.2 times; 93.0% of industrial products in the region is produced in newly established companies or companies upgraded over the past 10 years. The share of innovative products in total industrial output in the Republic of Mordovia amounted to 28.3% in 2016. The region has created a modern innovation infrastructure.

However, this positive image is presented in a slightly different way if we analyze the performance of the regional innovation system reflecting, among other things, the investment and innovation activity from the position of the above indicators of economic security.

The methodological framework of such analysis is represented by a macro-model of the innovation system (MMIS) [22] consisting of four functional blocks of indicators (financial and economic, scientific and innovational, informational and communication, and educational). The information framework for the research includes data from the Federal

State Statistics Service of Russia. Based on official statistics, we determine the values of MMIS; minimum (x_{min}) and maximum (x_{max}) values of each indicator. According to the formula of linear scaling, the dimensionless x_i -th index is calculated [3, pp. 21–22]:

$$x_i = \frac{x_i - x_{min_i}}{x_{max_i} - x_{min_i}} . \tag{1}$$

Under this definition the resulting relative indices x_i are always in the interval from 0 to 1. The average range of indicators is determined by $x_i = 0.5$. The higher the excess of x_i over the average value, the more developed are the innovation processes in the region, and, conversely, when $x_i < 0$ the performance of innovation processes is not satisfactory.

The dimensionless and identical scale of measurement of relative indicators x_i helps aggregate them. The resulting discounted indicator (index) characterizing the efficiency of MMIS indicators within each of the four blocks can be determined using the arithmetic mean.

The efficiency of the innovation system of the region as a whole can be evaluated based on the region’s Knowledge Economy Index (*KEI*) which can be calculated as the arithmetic mean of indices of MMIS functional blocks:

$$Y_i = \frac{\sum_i^4 x_i}{4} . \tag{2}$$

Based on the presented methodology we calculated *KEI* for the Republic of Mordovia, the value of which in 2015 amounted to 0.322 against 0.329 in 2011 under the influence of autonomous recession in the Russian economy. *Table 2* indicates that a significant share of indicators characterizing the level of

Table 2. Effectiveness of the innovation system in the Republic of Mordovia in 2011–2015

Indicators	KEI		KEI rank	
	2011	2015	2011	2015
1. Indicators of the financial and economic block				
GRP per capita	0.080	0.070	60	66
ROI of sold goods from manufacturing industries	0.436	0.538	69	60
ROI of sold goods from electricity, gas and water supply sector	0.699	0.800	50	46
Ration of shipped goods from mining and manufacturing sectors	0.335	0.758	5	2
Labor productivity	0.024	0.036	69	69
Consumer economic security	0.239	0.326	12	17
Purchasing power of legal entities	0.298	0.315	61	54
Labor resource management efficiency	0.500	0.688	70	69
2. Indicators of the scientific and innovational block				
Academic qualifications of researchers	0.123	0.129	71	67
Share of domestic operating equipment costs	0.577	0.028	4	69
Quality of inventive activity	0.491	0.624	5	27
Efficiency of researchers' inventive activity	0.146	0.117	21	31
Efficiency of research institutions	0.018	0.025	38	47
Innovation activity of research institutions	0.354	0.645	19	9
ROI of innovation technology	0.061	0.487	47	7
Cost effectiveness of innovation technology	0.127	0.155	9	16
3. Indicators of the informational and communication block				
Number of PCs per 100 employees	0.244	0.156	49	64
Costs of ICT per capita	0.076	0.011	57	77
Share of institutions using PCs	0.365	0.531	77	67
Share of institutions using specialized software for scientific research	0.098	0.036	62	74
Share of institutions using specialized software for management of automated production or hardware	0.379	0.259	59	56
Share of institutions using specialized software for meeting administrative or economic goals	0.098	0.540	62	11
4. Indicators of the educational block				
Increase in the level of education	0.509	0.631	35	25
Ratio of the total number of specialists with primary and secondary vocational education and specialists with higher education	0.302	0.159	37	49
Number of specialists who graduated from higher educational institutions	0.425	0.033	33	48
Share of students in educational institutions per 10,000 people	0.514	0.532	20	14

innovation system development in the Republic of Mordovia is below the maximum critical value (0.5) (average value between maximum and minimum values for Russian regions).

The most problematic are indicators of the 1st (economic and financial) block “GRP per capita” and “labor productivity”. Low values of the indicator “expenditures on ICT per capita” ultimately resulted in corresponding values of indicators “use of PCs in organizations” and “use of specialized software for meeting administrative, management and other economic goals”.

In addition, the clustering of constituent entities of the Russian Federation (based on the method of *k*-means) by the criterion “KEI value” established: first, there is a significant gap between federal cities and the rest of constituent entities; second, low innovation activity in most regions in 2011–2015 remains (Tab. 3).

According to the results of clustering, the Republic of Mordovia was included in the third

cluster, the largest group by number (37) of regions. The distinctive feature of this cluster is low productivity of region’s member entities; relatively low levels of consumer economic security and academic qualifications of researchers with a high share of domestic operating equipment costs and efficiency of researchers’ inventive activity.

4. Suggestions

With regard to the current situation in Russia, it is impossible to overcome autonomous recession in the country, prevent the degradation of facilities and resources and low efficiency of the national innovation system without radical transformation of the state investment policy and stimulation of investment activity of economic entities. The central element of the investment policy should be the establishment of modernized industrial production in all vital economic sectors and areas. Simultaneously, strategic objective of the country’s development as a scientific, technological, and socio-economic

Table 3. Clustering of constituent entities of the Russian Federation by KEI (based on k-means), 2014

Cluster no.	RF constituent entities
K1 (KEI=0.502)	Moscow, Saint Petersburg, Irkutsk Oblast, Tomsk Oblast, Khabarovsk Krai, Magadan Oblast
K2 (KEI=0.342)	Moscow Oblast, Republic of Karelia, Komi Republic, Arkhangelsk Oblast, Leningrad Oblast, Murmansk Oblast, Krasnodar Krai, Republic of Tatarstan, Perm Krai, Orenburg Oblast, Sverdlovsk Oblast, Tyumen Oblast, Republic of Altai, Republic of Khakassia, Krasnoyarsk Krai, Kemerovo Oblast, Republic of Sakha (Yakutia), Kamchatka Krai, Sakhalin Oblast, Chukotka Autonomous Okrug
K3 (KEI=0.320)	Belgorod Oblast, Bryansk Oblast, Vladimir Oblast, Voronezh Oblast, Ivanovo Oblast, Kaluga Oblast, Kostroma Oblast, Kursk Oblast, Lipetsk Oblast, Oryol Oblast, Omsk Oblast, Ryazan Oblast, Smolensk Oblast, Tver Oblast, Tula Oblast, Yaroslavl Oblast, Vologda Oblast, Kaliningrad Oblast, Novgorod Oblast, Pskov Oblast, Rostov Oblast, Republic of Dagestan, Kabardino-Balkaria, Stavropol Krai, Republic of Bashkortostan, Mari El Republic, <i>Republic of Mordovia</i> , Udmurt republic, Kirov Oblast, Nizhny Novgorod Oblast, Penza Oblast, Samara Oblast, Saratov Oblast, Ulyanovsk Oblast, Kurgan Oblast, Chelyabinsk Oblast
K4 (KEI=0.285)	Tambov Oblast, Republic of Adygea, Republic of Kalmykia, Astrakhan Oblast, Volgograd Oblast, Karachay-Cherkess Republic, Republic of North Ossetia-Alania, Republic of Buryatia, Republic of Tyva, Altai Krai, Novosibirsk Oblast, Primorsky Krai, Amur Oblast, Jewish Autonomous Oblast
K5 (KEI=0.251)	Republic of Ingushetia, Chechen Republic, Zabaykalsky Krai

leader should be achieved. To achieve this goal, it is necessary to meet the following basic conditions:

1. Dynamic and large-scale improvement of a comprehensive indicator of the economic and investment security such as the share of accumulated gross investments in GDP. As noted above, this is due to the current predominance of capital-intensive (energy) industries in the country's economy, on the one hand, and the development prospects of knowledge-intensive industries (including machine building) and implementation of nano-technology, on the other hand. Amid rising capital intensity of production it seems feasible to increase the share of capital formation in GDP spent on investment from the current 20.3% to 28–30%, channeling them through the Russian Development Bank for target investment in innovation and venture business lending [21, p. 162].

To increase the share of capital formation in GDP it is also necessary to establish a reliable mechanism of transformation of funds accumulated by the population into investment by guaranteeing full return of deposits in case of any defaults, and charges higher interest when investing in securities crediting investment projects of Russia's real sector development.

2. Creation of a favorable macro-environment for radical transformation of the investment policy of Russian enterprises towards the recovery of fixed assets in use and conduct R&D in breakthrough technology in increasing technical and technological production levels. This primarily involves optimizing and reducing the tax burden on commodity producers. For Russian enterprises producing tangible products and goods, the real

tax burden is 40% against 25–30%, for example, in the US, Canada, Switzerland, Japan, which constrains investment activity in the country. The income tax rate is 20%. However, in foreign countries, income tax rate is differentiated and depends on the corporation's income. In the US, there is no VAT for business (in Russia it comprises 18%) and no property tax (in Russia – 2.2%), purchased equipment worth up to 2 million dollars a year is written off as costs; social contributions amount to 13.3% (in Russia – 30%) [23].

Special attention in this context should be given to the depreciation policy (use of amortization for the purpose intended – renovation and development). The increasing physical deterioration of equipment and technology, the exhaustion of the depreciation fund, compensated for by virtual renewal of fixed assets – through accounting procedures for their revaluation, rather than physical, – lead to the reduction in working capital and their forced replacement by costly borrowed resources, causing artificial investment hunger.

An important condition to resist devastating inflation and restore the reproduction process would be the now missing medium- and long-term credit line of business investment demand at moderate rates, following the well-known macro-financial ratio of economic profitability, interest rates and inflation.

3. Increased use of venture capital performing the function of a special investment resource in social reproduction aimed at strengthening the scientific, technical and innovation activities.

4. The stimulation of investment and innovation activity of existing and newly established state-owned corporations in order

for prior HTC development as a key source of innovative technical and technological resources in investment activities. It should be noted that Russia's current HTC requires not just update of its technological framework: it requires building a permanently updated interaction of its production sector with fundamental and applied science [12].

5. Establishment of a system of investment risk insurance. We are talking about risks which inevitably emerging in investment in economic activities in the process of capitalization and financial deleveraging caused by the necessity of capital accumulation and reproduction.

6. The creation of an industrial loan fund in the form of a state extra-budgetary fund to ensure the state order in priority sectors of the manufacturing industry. Such a fund should be created both at the federal level and in the form of territorial divisions; it should operate on the principles of subordination and coordination, transparency, control and target use of funds.

The sources of this fund could be: natural resource rent, country's international reserves, temporarily surplus funds from extra-budgetary funds and state corporations, loans from

Bank of Russia, investment resources of Vnesheconombank, Sberbank of Russia, Vneshtorgbank, etc.

5. Conclusion

Summarizing the abovementioned, we consider it necessary to note that the increment of scientific knowledge of the study is the following:

1) theoretical substantiation of the scientific idea about the need of studying the nature of investment as one of the key categories of hereditary core of the economic paradigm (industrial, post-industrial, neo-industrial);

2) theoretical justification of criteria of innovative content of investment taking into account the goals, objectives and driving forces of the neo-industrial paradigm of modern socio-economic development, as well as their achievement;

3) assessment of performance and intensity of innovation processes in the economy of the Republic of Mordovia (leader in improving the position in the ranking of innovative development among Russian regions) based on the author's technique of monitoring the efficiency of the regional innovation system.

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