STIMULATION OF INNOVATIVE ACTIVITY OF ENTERPRISES BY MEASURES OF INDUSTRIAL POLICY

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Abstract:
Innovative activity of enterprises is a key factor of national competitiveness. In this regard, one of the important goals of state regulation of the economy is to increase the share of innovatively active enterprises. The article reveals the directions of improvement of industrial policy to increase the share of innovative enterprises.
The study is based on formal and dialectical logic principles. The author have used a systematic approach to the analysis of economic phenomena and processes, applied the methods of analysis and synthesis, institutional analysis methods. The status and prospects of innovative development of world and Russian economy was analyzed. Institutional features that influence the development of this activity have been identified. The main problems of innovative development have been identified. We describe the institutional preconditions for the development of this sector.
The research provided a forecast of the index of industrial production in 2016, and 2017, and forecast the ranking of countries in terms of GDP calculated at purchasing power parity (PPP) in constant prices of 2014, expressed in US dollars. The prediction results confirmed the author's hypothesis about the need for the development of industrial production in the long term to stimulate the economic growth and achieve competitive advantages.

Key words: innovation, Russian economy, state regulation of economy, industrial policy

JEL classification: L52

INTRODUCTION

Most clearly this economic law is manifested in the sphere of industrial production.
It should be noted the significant contribution to the study of problems of development of the industry by scholars such as J. To. Galbraith [1], A. Marshall [2], J. Hobson [3], W. S. Jevons [4], That K. Henry [5], Levi [6], D. Kendrick [7]. Summarizing the results of their research can be concluded that the existence of different, sometimes contradictory concepts of industrial, post-industrial, informational, service, etc. the economy does not deny the systemic nature of industry in the economic development of the state. A significant contribution to the development of theoretical and practical aspects of regional industrial development of Russia, the theoretical foundations of the development and implementation of state industrial policy, improvement of management systems of industrial enterprises introduced Vertakova Yu [8, 9], V. Plotnikov [10], I. Resina [11], Yu Tradescape [12] and other Researchers have noted that in the period dosection restrictions almost half of Russian enterprises cooperated with foreign countries, indicating the high level of integration of the country's industry in the global economy. However, changing macroeconomic factors of development of industry in Russia is creatingthe need for harmonization of Russian and international institutional environment of doing business, the development of industry [13].

Socio-economic development is closely linked with the development of technology and innovations (Bell, 1999, Clark, 1940, Lucas, 1988, Sakaya, 1991, Shrivastava and al., 2016, Szirmai and al., 2013, Tregenna, 2011, and many other). For the successful functioning of society, it must be based on an economic foundation. At the same time this material basis is continuously developing under the influence of scientific and technological progress. The used technologies and innovations are constantly being improved. In this regard, innovation and high technologies are of particular importance. Their development and diffusion can not only change the face of industry, but also the quality and standard of living of people. Under the influence of the diffusion of technologies, the international division of labor is changing, new "poles" of economic growth and influence are emerging in the world. In this connection, a more detailed study of the technological and innovation factors of economic growth and socio-economic development is required.

ECONOMIC AND INNOVATIVE DEVELOPMENT IN THE WORLD

At present, the world is on the verge of a new technological and innovation revolution. Those countries that will become technological leaders will be competitive in the future economy. Technological development and living standards are closely related. As shown in Table 2, the countries-innovative leaders (Top-10) are in the Top-25 countries in terms of living standards [14].

Table 1: Leading countries of economic and innovative development

Country Name	Global Innovation Index 2017 rankings	Rank of GDP per capita, PPP (current international $), 2016
Switzerland	1	8
Sweden	2	17
Netherlands	3	14
United States	4	11
United Kingdom	5	23
Denmark	6	16
Singapore	7	4
Finland	8	22
Germany	9	18
Ireland	10	7

Source: Compiled by the author on The World Bank (http://databank.worldbank.org) and Global Innovation Index (https://www.globalinnovationindex.org) data.

In connection with the foregoing, it is understandable that attention given by the governments of various countries to stimulating the development of a high-tech sector of the economy. At the same time, the state and prospects of the development of the high-tech sector of the economy is largely determined by national institutional features. Further the author will consider these questions on an example of the Russian economy.

Rank change for the OECD countries in the global innovation rating (Top 20) are on the figure 1.

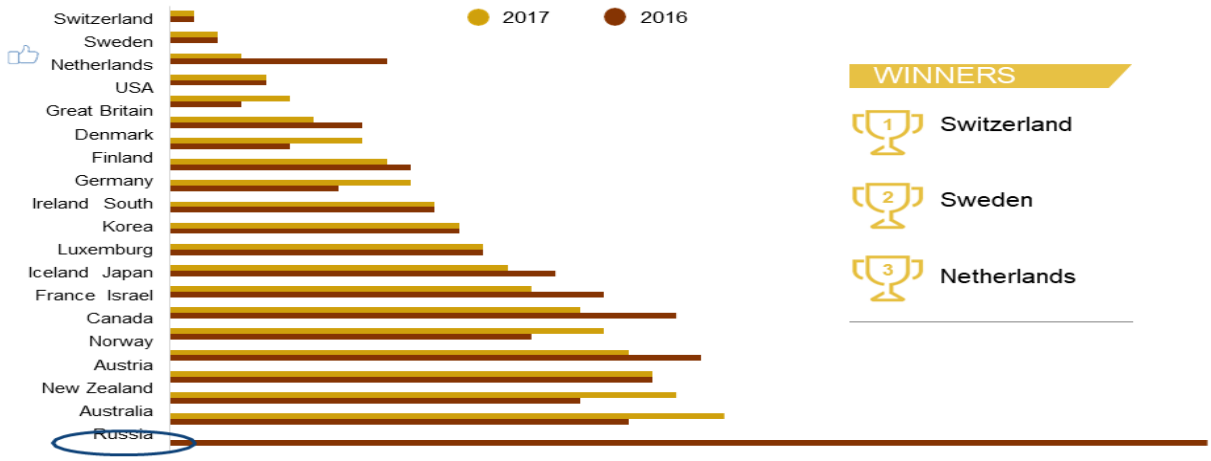

Fig. 1. Rank change for the OECD countries in the global innovation rating (Top 20)
Source: The World Bank and Global Innovation Index

Movement in the TOP 10 of the Global Innovation Index (GII) are on the figure 2.

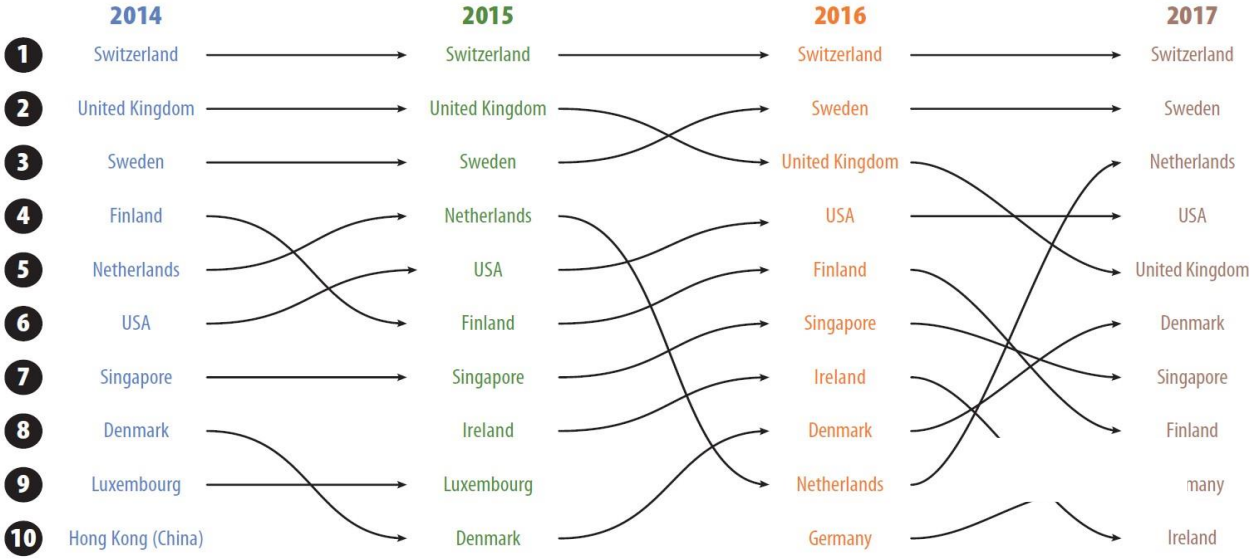

Fig. 2. Movement in the TOP 10 of the GII
Source: The World Bank and Global Innovation Index

INNOVATIVE DEVELOPMENT OF RUSSIA

We analyzed the indicator of innovative activity among Russian organizations in mentioned above industries. This indicator is calculated by dividing the number of organizations that make all types of innovations on the total number of organizations. The analysis of innovative activity of industrial organizations of the Russian Federation in 2009-2011 years showed a slight increase from 9.3% to 10.4%. In 2012 and 2014 years, we found a negative tendency decline to 9,9%. The indicator of innovative-active organizations of Russian industry is considerably inferior indicators of leading foreign countries, where the level of innovative activity is 60-80 percent (in Germany it is 80%, in Japan - 70%, in Luxembourg - 65%) [15]. It proves the apathy of innovative processes in the Russian economy.

The Table 3 presents the indicators of the innovative activity in examined industries and economic activities. This Table shows that innovative activity of the mining and quarrying industries was much lower than in the industry as a whole. From 2009 to 2011, we found a slight increase in innovative activity from 7.2 to 8.4 percent. This is a positive tendency. However, since 2012 there has been a negative tendency. And in 2014 this indicator has decreased almost to the level of 2009 and amounted to 7,5 percent.

The analysis has shown that innovative activity among organizations engaged in the mining of fuel and energy minerals was little more than the overall indicator for industry.

As a result of our study, we found that the greatest innovation activity and effectiveness is observed in the manufacturing industry. Also manufacturing organizations take the largest share in the total number of industrial organizations (62%). Volume of shipped production in the manufacturing industry occupies the largest share in the total volume (57%). The most of innovative development manufacturing industry are: chemical production, manufacturing of coke and petroleum products, metallurgical industry, manufacturing of machinery and equipment, manufacturing of electrical and optical equipment, manufacturing of transport and equipment. However, their contribution to the innovative development of the state can vary significantly [15].

Table 3: The innovative activity in industrial manufacturing by economic activities in Russia, %

Indicators	2011	2012	2013	2014	2015	2016
Total	10,4	10,3	10,1	9,9	9,3	8,4
Mining and quarrying	8,4	8,2	7,6	7,5	6,9	7,4
– mining fuel and energy mineral resources	11,3	10,0	8,6	8,5	7,6	7,7
– mining mineral resources except fuel energy	4,5	5,8	6,3	5,9	5,6	7,0
Manufacturing industries	13,3	13,4	13,3	13,6	13,3	13,3
– manufacturing of food products	11,8	11,9	11,0	12,5	12,2	12,2
– textile and clothing manufacturing	8,2	8,6	8,5	10,0	11,2	13,1
– production of leather, leather products and footwear	8,0	6,8	11,5	12,6	12,1	8,5
– processing of wood and of products of wood	5,5	6,0	6,8	7,4	8,6	7,1
– pulp and paper industry; publishing and polygraph	3,5	3,4	3,7	3,0	2,8	3,1
– manufacturing of coke and petroleum products	31,7	31,7	29,0	25,7	21,6	22,2
– chemical manufacturing	23,6	22,8	25,0	23,1	24,9	25,0
– manufacturing of rubber and plastic products	12,1	12,0	11,7	12,4	11,9	12,1
– manufacturing of other non-metallic mineral products	9,7	10,3	10,0	9,3	9,3	9,7
– metallurgical manufacturing and metal products	15,4	15,6	14,8	14,7	14,1	13,4
– manufacturing of machinery and equipment	17,7	16,7	15,9	15,9	13,9	14,3
– manufacturing of electrical and optical equipment	26,5	27,9	26,9	28,3	27,4	25,9
– manufacturing of transport and equipment	21,4	21,8	21,5	21,2	18,2	19,0
– other manufacturings	17,3	15,5	15,3	15,8	17,7	16,6
Manufacturing and distribution of electricity, gas and water	5,6	5,6	5,3	5,1	4,9	4,8

Source: authors' calculations using Rosstat data (http://www.gks.ru)

Therefore, in our study we apply the methodological principles of the matrix Boston Consulting Group (BCG matrix) and identify the sectors which will lead to maximum effect from innovation (Vertakova Yu., Grechenyuk O., Grechenyuk A.) [15].

There are the industries, the development of which is most effective in the form of growth of innovation activity organizations of Russian industry. These are manufacturing of electrical and optical equipment, chemical production, manufacturing of transport and equipment and manufacturing of coke and petroleum products. However, the greatest contribution to the increase of innovation activity will be from the manufacturing of electrical and optical equipment. The

manufacturing of machinery and equipment and metallurgical industry and manufacturing of fabricated metal products can also have a positive impact on the overall innovation activity, but it would require a very large financial investments.

We studied the dynamics of the Russian GDP from 2011-2016 (table 4).

Table 4: Growth rates of GDP of Russia, %

	2011	2012	2013	2014	2015	2016
GDP	4,3	3,7	1,8	0,7	-2,8	-0,2

Source: Rosstat

Share of products of high-tech and knowledge-intensive industries in gross domestic product of the Russian Federation, %, are in table 5.

Table 5: Share of products of high-tech and knowledge-intensive industries in gross domestic product of the Russian Federation, %

2011	2012	2013	2014	2015	2016
19,7	20,3	21,1	21,8	21,3	21,6

Source: Rosstat

As a result of the study we concluded, that innovation activity of Russian organizations is not high. At the same time the share of products of high-tech and knowledge-intensive industries in gross domestic product of the Russian Federation considerably exceeds growth rate of GDP. These facts testify to high growth rate of high technology productions in the long term.

FORECAST OF SOCIAL AND ECONOMIC DEVELOPMENT OF THE RUSSIAN FEDERATION

The innovative process has stalled. Today, when the global environment is the basic export goods of Russia is unfavorable, a transition to the production and use of its products can be considered the most important task in Russia's economy, which entered into force Federal law of the Russian Federation dated 31 December 2014 No. 488-FZ "On industrial policy in the Russian Federation".

The Ministry of Economic Development of the Russian Federation has made the Forecast of social and economic development of the Russian Federation for 2015 and on planning period of 2016-2017 [18] in which it is noted that on development of industrial production significant effect will be had a foreign policy situation and entered concerning the Russian economy of sanctions from the USA and the European Union. At the same time the low level of processes of technological updating and insufficient competitiveness of a domestic production on internal and foreign markets remains the basic reason of the contained growth of the industry of the Russian Federation.

In the medium term, the development of the industrial complex will be determined mainly by the dynamics of domestic demand. At this rate of growth will be due to the implementation of complex system of measures aimed at improving the competitiveness of domestic producers and import substitution in sectors of the economy.

Table 6: Indexes of industrial production in 2013 - 2017, %, Russia

Name	2013	2014	2015		2016		2017		2017 to 2013, %	
			forecast							
			1	2	1	2	1	2	1	2
Industry - all	100,4	101,7	101,6	102,8	101,7	102,9	102,1	103,1	107,3	110,9
Mining	101,1	100,6	100,2	100,4	100,3	100,6	100,4	100,7	101,4	102,3

Name	2013	2014	2015 forecast		2016 forecast		2017 forecast		2017 to 2013, %	
			1	2	1	2	1	2	1	2
The processing productions	100,5	102,6	102,3	103,9	102,3	104,0	102,8	104,2	110,4	115,4
Production and distribution of the electric power, gas and water	97,5	99,4	100,6	101,3	100,9	101,4	101,2	101,6	102,1	103,7

Source:http://economy.gov.ru/

Summarizing the reasoning is legitimate to conclude that today's problems can be solved, and the capacity can be used due to the methodology of accelerated industrial development.

The international auditing company PricewaterhouseCoopers (PwC) presented the results of a new global Outlook for the world economy in 2015 and economic growth of leading countries by 2050 [19]. According to the data given in the report, the center of gravity of the global economy moves towards countries with emerging economies. The study presents long-term forecasts of potential GDP growth up to 2050 for 32 of the largest countries in the world, which accounted for 84% of global GDP. The authors concluded that over the next 35 years the world economy will continue the realignment of powers – the industrialized countries of North America, Western Europe and Japan hold the leading positions.

Table 7 shows the ranking of countries according to GDP according to the forecast of PwC.

Table 7: Predicted ranking of countries in terms of GDP calculated at purchasing power parity (PPP), in constant prices of 2014, expressed in US dollars

	2014		2030		2050	
Place at PPP	Country	Country Forecast GDP at PPP, US $ in 2014 prices	Country	Country Forecast GDP at PPP, US $ in 2014 prices	Country	Country Forecast GDP at PPP, US $ in 2014 prices
1	China	17 632	China	36 112	China	61 079
2	United States of America	17 416	United States of America	25 451	India	42 205
3	India	7 277	India	17 138	United States of America	41 384
4	Japon	4 788	Japon	6 006	Indonesia	12 210
5	Germany	3 621	Indonesia	5 486	Brasil	9 164
6	Russia	3 559	Brasil	4 996	Mexico	8 014
7	Brasil	3 073	Russia	4 854	Japan	7 914
8	France	2 587	Germany	4 590	Russia	7 575
9	Indonesia	2 554	Mexico	3 985	Nigeria	7 345
10	UK	2 435	UK	3 586	Germany	6 338

Source: http://gtmarket.ru/news/2015/02/11/7089

Presented forecast figures GDP at market exchange rates without adjustment of relative prices. By this calculation, China will overtake the US in around 2028, while India clearly takes the third place in the ranking of the largest economies in the world in 2050, slightly behind the US.

According to forecasts of the Russian Academy of Sciences the structure of forming of GDP will change. If till 2014 the Russian economy was created generally due to production and non-

productive services, then by 2035 their share in GDP will decrease. At the same time the share of average and high technology productions will grow almost four times

According to the Scenario of innovative development of economy of Russia prepared by the Ministry of Economic Development of the Russian Federation, the share of high-tech and knowledge-intensive industries in GDP will increase to 12% by 2020 [18].

Table 8: Achievement of some target parameters of development of Russia

	2011	2015	2018	2020
High-productive workplaces, million workplaces	17,9	20,8	23,8	26,3
Gross accumulating of fixed capital, % of GDP	21,4	25	29	32
High-technology knowledge-intensive sector, % of GDP	7,7	9,4	10,9	12,0

Source: Ministry of Economic Development of the Russian Federation (http://economy.gov.ru/minec/activity)

Within implementation of the National Technological Initiative (NTI) it is supposed to create conditions for global technological leadership of the domestic companies on global and the new national markets which will determine development of the Russian and world economy on the horizon of 2030-2035.

CONCLUSION

On the basis of this study we have provided a few General recommendations:

• Given the economic problems in combination with institutional weaknesses, it can be assumed that to increase the pace of industrial growth will be difficult.

• You must thoroughly analyze the strengths and weaknesses of the institutional system as countries with developing market economy are very different from each other from the point of view of institutional development. There may be large differences in the level of institutional development among the economic sectors of a country.

• Developed markets countries in North America and Europe will continue to play a very significant role in the global economy in the coming decades, even if their average growth rate will be around 2%.

Innovation and technological development are key factors for achieving high rates of economic growth. The significance of these factors will increase in the future. Technological leadership is the main factor for achieving competitiveness at the international, national, regional and sectoral levels. In this regard, special attention in corporate strategies and state economic policy should be given to stimulating high-tech developments and productions.

Analysis of data from national and international statistics, as well as government documents, showed that Russia occupies a modest position in technological and innovative development. The balance of exports and imports in this direction is unsatisfactory. It tends to deteriorate. The measures taken to stimulate high-tech industries have proved ineffective. This is due to the low efficiency of market mechanisms of self-regulation in the considered area.

To overcome the emerging import dependence of Russia in the sphere of high technology and reduce the technological gap, a revision of the national economic policy is necessary. Drawing on the experience of the Soviet Union, developed countries and new technological leaders from Asian countries, the author recommends that the approaches to state policy in the sphere of high technologies be reconsidered. This policy should become active. The state in Russia should "return" to the economy and intervene more actively in market processes using available institutional capacities. Changes should touch on industrial, fiscal, monetary, innovation, educational,

information and other areas of economic regulation.
The main directions of improvement of industrial policy to increase the share of innovative enterprises: implementation of an active industrial policy, tax and customs benefits for innovative enterprises, expansion of the practice of public procurement of innovative goods and services, training of specialists for innovative sectors of the economy in the state system of professional education, improvement of the system of state strategic and indicative planning in the innovative and high-tech sphere.

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