

## Innovative stagnation of industrial enterprises of Russia: state and perspectives of development vector

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### Abstract

Intention of Russian government to implement breakthrough to economy of hi-tech product cannot be put into practice without study of position of enterprises concerning their current readiness for introduction of innovations. Upgrading can serve as pulse for implementation of the advanced production lines and for creation of own products and processes.

Key words: STOCK CAPITAL, INVESTMENTS, INNOVATIONS, MINERAL AND RAW COMPLEX, UPGRADING, INDUSTRY, STAGNATION, EXPORT, ECOLOGICAL SAFETY, ECONOMIC GROWTH

The market economy of Russia goes through process of transition from raw orientation to post-industrial one, from ineffective sale of hydrocarbons and other resources to knowledge-based and service economy. The characteristic "lost decade" is often announced by authoritative economists during stagnation and recession: it is important to analyze a present raw policy. [5]

The purpose of implemented reforms is assumed to avoid this dependence and deeper integration into global market space. Raw orientation of Russia affects significantly the economic development of country; huge oil and gas reserves do not stimulate production of labor-intensive products because the state is not interested in development of other branches due to having one but extremely profitable. The subject is studied in large number of papers connected by common subject of "resource curse".

It is obvious that in the world with permanently growing competition those industrial enterprises, which keep pace with scientific and technical progress,

high technologies, namely, introduce innovations systemically in production, stand a good chance of development and extension of position in the market. [9] In numerous foreign researches, it was proved that from 20 to 60% of GDP growth of the developed countries took place due to innovations and results were carried into labor productivity [10, 14, 15]. For fund raising, the industrial enterprises can use both Russian and foreign stock market. [11]

Nominal wages in industry vary depending on labor productivity. The average monthly salary in mining in August, 2015 was 62 493 rub., for comparing in processing industry - 31 306 rub., and in production and distribution of the electric power, gas and water - 36 226 rub. Certainly, in Russian industry, working conditions are quite rough; according to researches, 33.3% of all workers labor under conditions which are not correspond to health standards of modern working conditions.

Important task of Russian and world industrial politics is ecological safety of the planet. For this pur-

pose, in due time we have entered the Kyoto Protocol and participated actively the conference on climate in Paris in December, 2015. [12]

Data on investments into basic stock of Russian industry are provided in Table 1. The mining industry

is in the lead more often. Taking into account that the number of the enterprises are several times less than in processing one, more advantageous situation becomes more obvious.

**Table 1.** Investments into basic stock, bill. rub.

Branch	2007	2008	2009	2010	2011	2013	2014
Mining	929,8	1173,7	1111,8	1264,0	1534,3	2004,0	2172,1
Processing productions	986,4	1317,8	1135,7	1207,6	1418,7	1945,3	2019,0
Production and distribution of electric power, gas and water	465,7	617,0	684,1	818,8	1016,5	1187,6	1173,8

Source: Russian Federation Federal State Statistics Service

Data on cost effectiveness of the sold goods and services of the enterprises in the Russian industry are provided in Table 2. The highest rates are in mining industry while the worst rates in recent years are in processing industry and in production and distribution

of electric power, gas and water in 2013. Under conditions of deterioration in world state of business, the expectations of the Russian economy can be placed only to the mining enterprises.

**Table 2.** Cost effectiveness of the sold goods, production (operations, services), %

Branch	2005	2007	2008	2009	2010	2011	2013
Mining	35,6	30,5	25,4	28,8	31,9	31,4	22,1
Processing productions	15,3	18,3	17,1	13,4	14,8	13,2	8,8
Production and distribution of electric power, gas and water	5,3	5,2	4,9	6,8	7,1	6,4	4,4

Source: Russian Federation Federal State Statistics Service

In Table 3, the data on Return on Total Assets can be seen. The highest return is in mining industry.

**Table 3.** Return on Total Assets, %

Branch	2005	2007	2008	2009	2010	2011	2013
Mining	12,9	11,4	10,5	8,8	11,6	14,2	11,3
Processing productions	11,9	14,8	8,6	6,1	8,2	8,4	4,5
Production and distribution of electric power, gas and water	2,7	3,5	2,3	2,2	4,6	1,1	0,7

Source: Russian Federation Federal State Statistics Service

Wear of fixed assets is provided in Table 4. Unlike the previous tables, outsider is mining industry, at that since 2005 the situation almost has not been changed. Some economists expect that improvement of investment environment will lead to growth of direct foreign investments, that growth of highly qualified labor power from abroad will be observed, it will be simpler for domestic enterprises to obtain additional capital, effective management systems, machi-

inery and technology from the world market of innovations. Actually, the Russian enterprises do not use the considerable potential of American, European and Asian financial markets. [4] It is necessary to make additional joint efforts by both the state and private sector in this direction.

**Table 4.** Level of wear of fixed assets (at the end of year), %

Branch	2005	2007	2008	2009	2010	2012	2013
Mining	51,7	50,0	45,6	45,9	51,1	51,2	53,2
Processing productions	44,1	41,7	41,0	41,1	46,1	46,8	46,8
Production and distribution of electric power, gas and water	48,6	45,5	40,1	41,7	51,1	47,8	47,6

Source: Russian Federation Federal State Statistics Service

Failures in dynamics of scientific and technical development of Russian industry in the last decade of the last century do not respond to new challenges of the existing model of economic development of the countries aimed at innovative breakthrough; consequently, rise of the quantitative and qualitative disproportions takes place. Similar tendencies are observed in national economic system in general, as well as in mining industry.

In 2011, only 280 industrial enterprises of the country included research-and-development and design-and-engineering subdivisions. Only 6,8% of mining enterprises implemented innovative activity. This is very low level, this index is higher even in processing industry, namely, 11,6%. Only 9,4% of all the industrial enterprises of Russia implement innovative activities in the field of technologies (in 2000 - 10,6%). As a comparison, in the developed countries industry these values absolutely differ: in Germany - 69,7%, in Canada - 65,0%, in Great Britain - 43,7%, and even in economy of Spain experiencing hard time - 37,0%. [6] It can be stated that Russian industry is in innovative stagnatory trap except military-industrial complex.

Specific weight of the enterprises implementing organizational innovations in reference year was only 5,0% (2000 - 22,1%) of total number of industrial production enterprises. During the period under consideration, in the large industrial enterprises the sharp lowering of indices is observed, while in small industrial enterprises the reverse tendencies are observed; in 2000, the index of innovative activity was 1,3%, in present time it is 4,9%. This is extremely modest; and consequently, in scientific community the hypothesis that the Russian economy is unreceptive to innovations emerges. Let us notice that so far it is only a hypothesis, but the number of its supporters is growing. [7]

Investments in low-technology branches are oriented to the “process technological innovations” by 80% providing enhancement of technological process. These innovations almost do not affect the growth of product quality (raw materials and results

of its primary processing), they affect only its prime cost or growth of production volume; due to new technologies and methods of production they reduce resource intensity, product yield from the mass of raw materials, energy capacity, production volume (production and processing) and other technological indices. Reduction of prime cost determines profit markup saving the raw materials price at the level necessary for achievement of export attraction; and growth of productivity provides growth of gross output of produced and processed raw materials. [2]

Dependence of mining enterprises on an environment makes the enterprises work under the conditions of uncertainty; necessary application of innovative development should rely on consideration of mining industry risks connected to reliability of geological exploration. [8] We consider that the large industrial enterprises should cooperate with the small and medium ones more closely. [13]

Guarantee of successful activity of both economy in general and any enterprise is the most productive use of the available innovative potential (all available material and knowledge assets), by implementation of the innovative processes determining steady dynamics of enterprise development. For example, metallurgical complex providing the country with metal and the main constructional materials historically takes the leading place in economy. The metallurgy share in GDP is about 5%, in industrial production - over 17%, in export - about 14%. The branch uses about 30% of the electric power, 25% of natural gas, up to 10% of oil and oil products from the common industrial level, its share in railways freight traffic is about 20%. However, there is rather low level of product diversification of all main subindustries of ferrous and nonferrous metallurgy, that is generally one of system weaknesses of the Soviet metallurgy; therefore, now the foreign trade balance in metallurgy generally corresponds to determination of raw model: domestic metal-producers export production of low processing, namely workpieces, ferroalloys, scrap, ingots and pigs of non-ferrous metals while metal-customers import qualitative products with neces-

sary characteristics. [2]

Although process of updating of fixed productive assets is going on, according to experts its rates are absolutely insufficient. Wear of fixed assets of Russian industry at the end of 2014 is more than 50% that affect production. To solve this problem is rather difficult, as updating of the equipment requires big expenditure and temporary reduction of amounts of profit, and not each owner is ready for such long-term investment. Reality of domestic entrepreneurship is desire of “fast” money that, in fact, is hangover of the 90th years when the stage of primary accumulation of the outlet was considered as norm. Thus, long-term projects with low rate of return are not popular today.

Problem is also general technological backwardness of production; in 2012, more than 16% of steel were produced in obsolete open-hearth furnaces, about 30% of steel workpieces were produced by means of Soviet rolling aggregates and this situation almost does not change for the better.

In fact, today competitiveness of domestic steel products reposes on cheap raw materials, available energy resources and low costs for labor power. Certainly, this is too unreliable benefit which can be lost at any time; for example, if the market is entered by producers from the countries with much cheaper labor power (Southern Asia, Africa, Brazil, etc.).

Certainly, there is also a problem with structure of production. The share of production of steel high-added value products is only 7%, the rest is low- and intermediate-added value ones. In other words, today we export bars and workpieces which in other countries subsequently turn into products with high additional cost.

The metallurgy belongs to those industries of economy where process innovations predominate. That is such innovative technologies which provide first of all decrease in material costs in production and product competitiveness. So all the measures, namely legislative, fiscal, tariff, organizational and managerial, production and technological, etc. should be directed, first of all, to decrease in resource intensity of production and technological base and improvement of quality of final products.

Moreover, Russian metallurgists invest huge money in upgrading, that is in technology of energy saving, utilization of secondary sources of heat and labor efficiency improvement. At the present moment, benefit from investments is not big. There is even a contradiction between innovation and stability. A number of researchers consider that for solving of such contradictions, it is necessary to perform innovative breakthrough in the short-term or

medium-term periods, and to carry out radical (fundamental) ones in the long-term period depending on enterprise lifecycle and products. [3]

There are a lot of factors affecting costs of the metallurgical enterprises in whatever part of the world they are. Generally, it is a combination of two factors: cost of resources and coefficient of their use. By the cost of resources, Russia has an advantage of western economies.

The last two years, the price of iron ore and coal in Russia is scarcely different from world. If our gas prices reach world level, steel production in Russia will be significantly more expensive than foreign one. For example, after recent increase in gas price in Ukraine, cost value of steel production is higher than in Italy or France.

The labor productivity in America and Europe is several times higher than in Russia. It almost levels wages differential. In a year this benefit will sputter out if our enterprises do not introduce technology for significant increase of labor productivity. But anyway, the low cost of labor compensation will not be benefit any more in the term of the next five years.

According to a number of experts, innovations directed to increase in volumes of production but not to increase in processing or new types of processing as such, will appear after a while when new technologies will become ordinary. There will appear new crises of product quality, share in the market will decrease, and therefore, new capital investments in innovation will become necessary. Considering that at this moment the situation in the enterprise is critical, it will be complex challenge to make a raise of means for an innovating. [2]

Innovations are condition for enterprises viability. In the Russian Federation, exogenous demand for innovations exists in respect of small number of innovations due to state orders and foreign investors. Endogenous demand for innovations is extremely small in comparison with exogenous one. Under conditions of extreme deficit of own current assets, high cost of loan resources, “disinvestment” and non-payments demand for innovations in Russia became highly-elastic by price remaining inelastic by income of buyers of innovations [1]. The majority of mining enterprises of country have reached a limit of technical and economic growth on the basis of technology of the 3rd and 4th technological modes. Without development of basic innovations and also innovations of the 5th and 6th technological modes, it is impossible to increase the offer of product innovations and to raise competitiveness of industrial enterprises of country.

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