

## Problem of an Innovation-Based Economy Formation in Russia

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### ABSTRACT

The paper proves urgency and need to reorient the Russian economy on an innovation-based path of development. In particular, it shows the relationship between the presence of innovation and the ability to maintain the society's high social standards. The study shows that the developed stage of CKD assembly of imported products is an inevitable stage of the economy's development, but it cannot be regarded as its innovative sector. The world experience of formation of an innovative economy has been analyzed. Paramount influence of the human capital and the demand for innovation on success in the competitive environment has been revealed. The algorithm of a new machine has been formulated, on the basis of an inseparable connection between levels of development of society, science, technology and technique. Necessary conditions for the formation of an innovative economy in Russia have been formulated. A critical assessment of public policies, to a considerable degree intended for the actual support of foreign innovations' promotion into the Russian market to the detriment of domestic developments has been given. The unnatural policy is explained by the desire for further expansion of access for Russian exporters in the European energy market. The absence of natural selection of engineering and economics specialists by the level of their qualification has been noted. It is the main problem of the degradation of the higher education system and the accumulation of a critical mass of human capital necessary for the development of the innovative economy.

**JEL Classification:** E24, A10, C58, G39.

**Keywords:** Innovations, demand, human capital, algorithm of technical progress.

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## 1. INTRODUCTION

The Russian economy is extremely dependent on the state of the world market due to its orientation (in the global division of labor) to resources or simple first stage products (metals, fertilizers, primary synthesis products) trade. Moreover, in this regard our traditional geopolitical rivals have had a powerful tool of economic pressure, sometimes developed into a political blackmail.

The anti-dumping investigation has begun in the EU regarding Russian (and Chinese) steel producers, which threatens their products with introducing high protective tariffs and with being actually expelled from the European market. Combined with the low prices for energy resources it aggravates instability in the economy and finance.

Strategically, a flawed specialization of economy allowed realizing neither the challenge of ensuring its sustainable growth nor the challenge of creating 25 million high-paying jobs. The consequences are a demographic problem, “brain drain” and stagnation of civil society formation process because of the plight of small businesses and public institutions related to them.

The high competition level in the global labor market leaves no chance for a successful combination of competitiveness of the ordinary products with a high level of remuneration for their producers. With due engineering support, the vast majority of consumer goods (including steel and engineering output) could be produced equally well in rich Sweden as well as in India or anywhere in Southeast Asia.

The only exception is unique innovation-intensive output that can be offered to potential customers at a monopolistically high price. Therefore, to ensure high social standards for the population and national security (in the broad sense of the word), Russian economy should be reoriented to prioritize expansion in its innovative sector.

## 2. STATEMENT OF THE PROBLEM

The basis for the development of the innovative economy is the flow of innovations, practical implementation of which results in production and export of high-tech products with very high added value and a monopolistically high price. The highest stage of this development is the shift to the export of the technologies themselves. That is, the main income in the innovation economy is provided by the intelligence of scientists and engineers, and not the sphere of material production and capital concentration (Igolnikova et. al., 2015).

In this connection the very concept of “labor productivity”, which economists use to compare the degree of development of the economies of different countries, transforms. Thus it is widely assumed that labor productivity in Russia is several times less than the labor productivity in the European Union and North America. However, this does not mean that a Russian worker on the AvtoVAZ’ assembly line spins several times fewer nuts per shift than his German counterpart. It’s just that the market price of the final product of German automotive company is manifold higher than that of the Russian one. The reason of this is to be found not so much in a better wrench (and certainly not in the overwhelming advantage of conscientiousness, qualifications and intellectual merits of a German worker – who, in fact, may well be

of a Turkish, Polish or Bosnian origin) as in technical excellence of produced car, its unrivaled consumer qualities. Moreover, much of the equipment of both the Russian and German companies can be produced by one and the same firm.

Thereby, deployment of assembly plants of various foreign companies in Russia will not mean a full transition to an innovation-based economy (Ozherelyev, Ozherelyeva & Shvetsova, 2015). The fact is that, firstly, as a rule, the extremely low degree of production localization is realized. Secondly, even with a considerably high level of this indicator, the developer company reserves for itself the production of most innovation-intensive units and parts, delivering them to the assembly in Russia at a monopolistically high price.

Thus, while providing the motor production of the “Volkswagen” company in Kaluga, a German investor monopolized the delivery of crankshafts and other most technologically complex and innovation-intensive parts to the assembly. This resulted in full control over the Russian company and the “financial pump” for the removal of most of the added value in favor of the innovator.

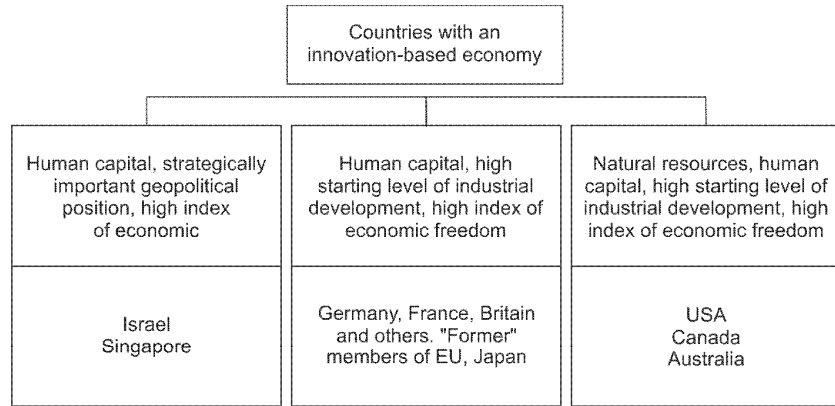
It should be kept in mind that the Russian economy is suffering not only from a disproportionately high level of the final output added value withdrawal, by the foreign innovators. Production can be stopped anytime. In December 2015 production of washing machines in Leningrad Oblast was stopped completely when, due to the worsening geopolitical situation, the supply of parts from the Turkish branches of a well-known German firm was stopped. In early 2015 a GM car assembly plant halt in Vsevolozhsk caused even more negative consequences.

Thus, only the transition to the innovation-based economy, capable to independently develop and produce products with high added value, can provide economic security of the country and stable prosperity for the Russian citizens. This need is well understood at all levels of the Russian government’s system, but the ways of its realization have still not been determined even in the most general terms. Moreover, we can state with regret that real actions of the state apparatus and the management of the most important subjects of the Russian business actively impede this trend of economic development.

### **3. FOREIGN EXPERIENCE ANALYSIS**

In order to evaluate Russia’s chances of transition to innovation-based development, let us turn to the experience of advanced countries. The transition of each of them to an innovation-based economy has its own national peculiarities, but most generally algorithms and prerequisites of this transformation can be classified into three groups (Figure 1).

It should be noted that in the majority of cases a stimulus to the transformation of the economy towards innovative development is the absence of natural competitive advantages, that is, the possibility to benefit from the resource rent for a long period of time (Kharitonova & Shadoba, 2016). This is the case of Singapore and Israel, countries which hardly possess any significant natural resources, and also the case of the European Union countries, high level of life in which, moreover, does not allow them to compete with developing countries in the cost of output of the majority of ordinary goods and services. All that is left to them is only to attribute to their products the nature of exclusive items in order to charge a high monopoly price for them. This explains tough and uncompromising European and American struggle for strict observance of copyright.



**Figure 1: The prerequisites of transition to an innovation-intensive economy**

As to countries with good natural resources, the stimulus for the innovative economy is the huge discrepancy between their resource rent volume and the material needs of their growing population. For example, in the US, with its utterly ideal natural conditions for the agriculture, only about 2% of the population are employed in the industry (Matyushkina, 2016; 3). The same is true for the mining industry. It plays a very significant role in the country's economy, but it cannot provide for a high standard of living for all the rapidly growing population. It is possible to live on the resource rent, dividing it among all members of society, for quite a long time, but that's life on the poverty level, with the growing backlog from the advanced economies both in terms of developmental and living standards. Actually, this is the essence of modern Russia's systemic crisis. We were far too long seeing resources trade as the main source of the people's welfare.

As a result, we found ourselves deeply scientifically and technologically dependent on more developed countries. The imports of oil-and-gas equipment reach 60% of the industry's total demands, and software supply comes up to 90%. Production of hydrocarbons on the shelf is only 20% provided by domestic equipment (Dmitriev, 2016).

The current situation in agriculture is no less alarming. Direct food dependency has transformed into dependency on imported machinery, seeds, protection means, etc. (Glebova, 2015). Perhaps, partly, for this reason, the economic effect of the ruble devaluation, which took place in agriculture in 2014, was fully offset by outrunning growth of the means of production prices in the following year.

Thus, the presence of rich natural resources is not a sufficient reason for the abandonment of innovative economic development (Ozherelyev & Ozherelyeva, 2013). More than that, the resource rent provides a good financial basis for the launch of an innovative economy, which at the initial stage requires a lot of investment, with a significant payback period. This was the case in Finland, where the exports of the country's forest resources created a financial base for the modern economy head-start.

It should be noted that even Israel and Singapore had some resources at the initial stage of development. For the latter, it was an advantageous location at the intersection of the major sea routes from Europe, South Asia and Africa to the Far East. In addition, an important resource was the capital of Chinese financiers who left mainland China after the civil war.

Israel became an important strategic ally of the USA in the Middle East, which provided it with significant amounts of financial assistance. In addition, the Jewish capital from all over the world was invested into this religious-ideological project, and immigrants from Europe provided for sufficient intellectual capital.

#### 4. THE HYPOTHESIS OF THE STUDY

In order to clearly understand the full volume and optimum combination of necessary and sufficient conditions for the development of innovation-based economy, it is advisable to consider an algorithm of technical progress as a complex process of interaction between society, economy, technology and equipment, as the final element of the innovation process (Figure 2) (Matyushkina & Mikhaleva, 2012; Nikitina, Shadoba, Mishina, Gurzhiy, 2016). The development of science (in all its forms) creates prerequisites for innovations, from the formation of social need (demand) in the event of a technical object to the finished consumer product, as well as technology and technical equipment needed to produce it. It should be kept in mind that the creation of innovation (machine) includes a number of steps that cannot be excluded. However, success is not predetermined by lone geniuses' heuristic insights, but, rather, by systematic work on interesting scientific ideas aimed at meeting the future needs of society (potential demand) of companies and R&D teams.

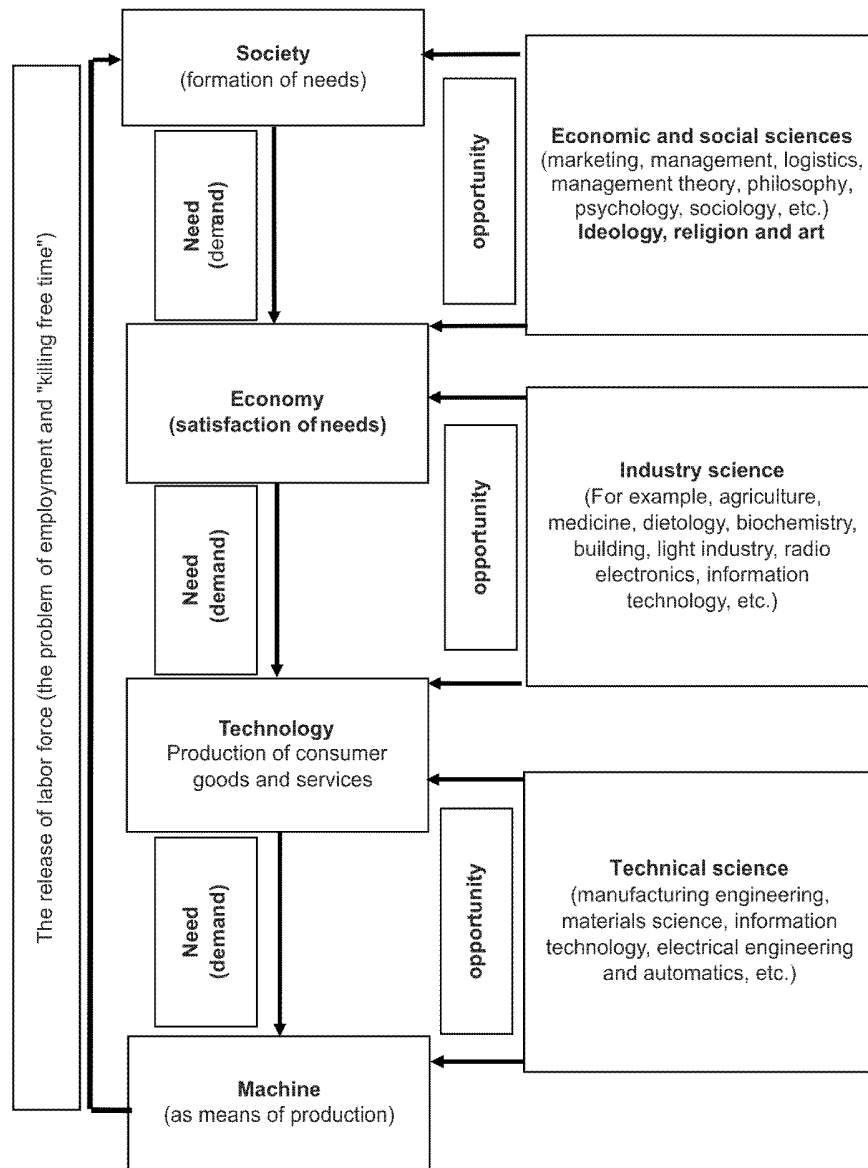


Figure 2: The interaction and dialectical unity of opportunities and needs in the process of building machines

Thus, the science creates the opportunities for innovative development, but they are implemented only if there is an effective demand on the part of the society via economy.

## **5. DISCUSSION OF THE PRODUCTIVITY OF INNOVATION POLICY IN RUSSIA**

From this point of view, the present Russian economy situation is not conducive to the promotion of domestic scientific ideas. This is stipulated by a number of negative trends in the management of innovation processes (and the economy in general) from the state.

Firstly, there are attempts to “skip” the necessary stage of the natural innovative process through the acquisition of foreign assets. Such actions are carried out by many domestic enterprises in metallurgy and mechanical engineering. As a rule, this fails advancement in the innovation plan. Moreover, foreign assets are often hopelessly unprofitable.

However, where there is really advanced technology, the Russian investors are not allowed to participate in the process of acquiring companies. In this regard, attempts to acquire “Opel” controlling stake shares in Germany and steel plants in Luxembourg are characteristic examples. European (and the US) governments rigidly suppress even a hypothetical possibility of the competitive innovative economy in Russia. This phenomenon can be described as scientific and technological imperialism, which provides a market of innovation-intensive products and science and technology dominance in the world only for the European (and American) economies.

Secondly, the Russian government policy (and natural monopolies) provide for promotion of hydrocarbons and other resources to the EU market at any price, which contributes to our scientific and technological leeway. We do not have actual information about the nuances of the negotiation process, but the very number of coincidences alarm.

Thus, the building of the pipeline “Nord Stream” in Germany was followed by the purchase of “Sapsan” high-speed rolling stock. At the same time, a similar domestic development was in the stage of production testing. Of course, for some parameters, it is inferior to German technology, but the ultimate refinement of the machine is only possible in the process of production and operation. Even the “grants” of the world of mechanical engineering often withdraw millions of previously released cars for an upgrade. It is normal practice, the inevitable price to pay for progress on the path of innovative development.

A similar situation exists while attempting to build the “South Stream”. Austria stipulates its participation in the project, apparently, to the acquisition of her Russian aircraft for local airlines. Meanwhile, a domestic analog (notional mark “Technoavia Rysachok”) was also on the stage of readiness for testing. Moreover, Gazprom had to buy all the pipes in Germany and charter pipe-laying machines in Italy. In our opinion, this is too high a price for products promotion, as it condemns the domestic science and design potential for complete degradation.

Do we have this potential? We have conscientious and qualified enough engineers. With regard to the so-called idea hamsters, they appear randomly, but only where there are certain prerequisites. N. Tesla was born on the backward outskirts of Austria-Hungary, which is why he was able to realize himself only in the United States, having prior to that received, however, profound technical education in Graz, Austria. Most likely, the intellectual level of technical universities of Austria-Hungary was not inferior to American



counterparts, but the scale and dynamism of the US economy gave rise to such a demand for innovations that only this allowed the genius inventor to realize his talent to a maximum.

It means that geniuses appear wherever and whenever, but they realize their potential only if there are clearly defined public needs and appropriate technological level of the economy. We need a certain intellectual environment where there are at least a few people with whom you can discuss new scientific ideas and intensive search for ways of its technical realization using the method of “brainstorm.”

For example, once Nokia, the Finnish company, became the leader of the world’s innovations in cellular communications. Perhaps brilliant engineers, who had grown up on the basis of decades functioned electrical industries, had shown their talents there. In order to maintain production in a competitive state for more than a hundred years, high-level professionals accustomed to non-stereotypical thinking are needed.

Unfortunately, natural selection of engineers and managers by professional qualities has not become a mass phenomenon in the Russian economy (Ozherelyev, 2015; Ozherelyev, 2013). Moreover, even higher economic management-level managers often show an outright incompetence. Thus, while Americans were developing the technology of shale gas and oil extraction, our “experts” assured that they have nothing to come of it. Now we are faced with the American liquefied gas on the European market, traditional for us, and the oil prices have collapsed. And the strangest thing is that now there seem to be no one responsible for such unprofessional “forecasting”, judging by the fact that in many TV programs there appear the same characters, whose predictions failed and put the national economy in a difficult situation.

The absence of natural selection of specialists in the Russian economy can be explained by the fact that the implementation of SCD assembly does not require the engineers of N. Tesla or V. Shukhov level; for the conscientious execution of the plans developed by multinational corporations’ economists of N. Kondratyev’s level are not needed. This puts our high school in a difficult position. Students do not have any desire to acquire knowledge and creative skills, because when they come to production plant where they start their career, young professionals are not given an important task of finding a possible technological breakthrough, which would provide for their brilliant career. Therefore, many students think that it is acceptable for them to “buy” ready-made term papers and dissertations, because when they start work they will anyway be supervised by random people of dubious qualifications, inexplicably trapped on top of the management pyramid. In this respect suffice it to mention the appointment of Vladimir Leontiev, a political commentator, a member of Gazprom board. Humiliatingly low wages of teachers leaves no stimuli for the selection of the most talented graduates eligible for postgraduate courses. A post-graduate student has always been a “workhorse” of science. But, most importantly, the first signs of genius might appear in the postgraduate environment.

The vicious style of innovation management fully manifested itself in the reaction of managers when the supply of equipment for Russian shelf oil production was banned. This would mean an “hour of triumph” for domestic engineers. However, instead, Russian oil executives connected all their hopes to Chinese developers, who have promised to develop sanction equipment analogs in several years.

## **6. CONCLUSION**

Thus, support of Skolkovo and other such science cities as well as of the very limited number of technical universities is a necessary insufficient condition for the transition to an innovation-based economy in

Russia. We need a radical break-up of the psychology of strategic sectors of the economy managers, with the reorientation of their hopes in improving technology in the domestic scientific potential. It should be kept in mind that innovation is exactly the same market commodity as a car or an airplane, so it would be strange to expect proposals from science without the presence of solvent demand, formulated in the form of specific programs, grants, tenders, and investments.

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