

## What Capitalism Does Russia Need?: Methodological Guidelines of the “New Industrialization”



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**Abstract.** Modernization of the Russian economy should be carried out taking into consideration global trends and contradictions of the country’s socio-economic development. The first trend is predetermined by the transition to the sixth technological mode: the creation and development of bio-, genetic and nanotechnology, quantum computers and new composite materials. Countries that missed the stage of preparation for the beginning of a new Kondratieff wave (the growth potential is laid in the first 15–20 years of the beginning of the cycle), will at best enter the stage of catching-up development. The second trend is defined by global competition for human capital and consists in the outflow of talented Russian youth to the West. Russia should develop a concept for the preservation and enhancement of human capital, which will create natural barriers against the loss of intellectual capital. The undervalued “live labor” forms the basis of strategic contradictions of Russia’s socio-economic development between the declared policy of innovative development of the economy and a weak demand for innovation on the part of private enterprises. Cheap labor does not encourage the business to upgrade production technology, it increases the “gap” between the incomes of the “rich” and the “poor”. Increasing social inequality increases the level of corruption. The paper analyzes existing approaches to the modernization of the Russian economy. The author supports the thesis that in the long term certain conditions should be created for a “technological breakthrough” based on the innovation-driven recovery of the sectors of

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industrial economy, reaching leading positions in the global production of quantum computers and increasing the export of information technology, transfer of innovative developments of the military-industrial complex in civil industries and a more comprehensive use of competitive advantages, which Russia still retains from the viewpoint of innovation development – human capital (creation of natural barriers against the “brain drain”). It is necessary to increase the share of state ownership and increase its management efficiency in industries that are critical for overcoming the de-industrialization of the Russian economy and achieving a “breakthrough” in the sixth technological mode. The increase in the cost of “live labor” and, as a consequence, the creation of conditions for expanded reproduction of labor force should be the imperative of a “new industrialization”. Attracting investment (including foreign investment) and assessing its quality should be considered in the context of the created (or not created) opportunities aimed to increase the value of “live labor” and the number of domestic technologies of the sixth technological mode.

**Key words:** trends and contradictions, liberal concept of modernization, “new industrialization”.

When elaborating a strategy for modernization of the Russian economy it is necessary to consider two interrelated global trends.

The first trend is predetermined by the start of a revolution in the technologically advanced countries, the revolution in the field of creation and development of new medical, bio, genetic- and nanotechnology, composite materials and quantum computers. The rising half of the next Kondratieff cycle will begin after 2018, and the potential for growth is developed in the first 15–20 years of the new wave. Historical experience shows that if a country skips the latent period, i.e. the preparation phase of the wave, then it skips the cycle itself, in the best case entering the mode of catching-up development [14, p. 30].

Having analyzed relevant historical data, A.G. Klepach and G.O. Kuranov point out

that major scientific discoveries were made by young scientists about 30 years of age, and mostly those who had been fond of science at the age of 12–14. The formation of “mosaic consciousness” [2, p. 74], the foundations of which are laid in secondary school, when the ability to think and create is replaced by the ability to answer the list of prepared questions leads to the conclusion that “if education reform is delayed for another five years (and now it is not moving in the direction of creative thinking), then to the 2020s and even to the 2030s Russia will not raise a generation of young scientists capable to achieve real scientific and technological breakthrough” [14, p. 30].

The second trend is defined by global competition for human capital, which becomes a major factor in the strategic objectives of any country [18, p. 10].

In our opinion, this trend must be considered through the prism of events in Ukraine<sup>1</sup>: besides the obvious (geopolitical and economic) goals that the U.S. pursued (and is now pursuing as well), there is, as we see, an implicit goal arising out of a global competition for human capital and associated with the exhaustion of U.S. resources of the fifth technological mode. Creating technologies of the sixth mode requires new ideas and people capable of generating these ideas. And Russia is the country that possesses the necessary human resource.

*Destabilization, deterioration of the economic situation in our country against the background of dubious reforms in the sphere of education and science should become the conditions for the outflow of talented youth to the West.* The opposition to the implementation of this objective must be provided by a strategy for using human capital in Russia, and this strategy must be elaborated within the framework of the concept for modernization of the Russian economy.

It is obvious that the new economic policy of Russia should be based upon the understanding of these trends, and explicit and implicit goals of our Western “partners”.

<sup>1</sup> We consider possible the scenario of development of events in Ukraine, according to which the economy will be brought to a complete collapse; the country will not receive loans from the West to the extent necessary and it will be thrown to the mercy of fate, or rather, to the mercy of Russia. It is obvious that Russia will not leave its brotherly people. And, instead of implementing projects on modernization of its economy, Russia will be forced to provide economic support in the face of very limited material and financial resources.

The strategy for modernization of the Russian economy should facilitate the resolution of a system-wide contradiction at the present stage of Russia’s socio-economic development: it is the contradiction between the innovation development policy of the Russian economy declared at the state level and the weak demand for innovation on the part of industrial enterprises. It is known that if the entrepreneur is planning to use some new technology and equipment, then the costs of its use should be lower than labor costs. If cheap labor is available, then the expenses on technological renovation of production make no economic sense [4, p. 42]. **Therefore, it is the undervalued “live labor” that is a natural obstacle for the innovation development of the Russian economy.**

It seems significant that the possibilities of increasing productivity through better utilization of employed workers has been exhausted. Researchers N.V. Orlova and S.K. Egiev point out that Russia ranked second in the world (after South Korea) according to the number of workhours per capita (985 hours per year) [19, p. 75]. Thus, the researchers conclude that low labor productivity is associated with the quality of investment rather than the quality of human capital.

Sufficiently high labor costs (expensive labor force) abroad initiated the development of a concept for workplace innovation as a resource for enhancing productivity [33]. It has been found that innovation in the workplace increase not only individual



productivity and performance efficiency of organizational activities [34], but also the level of effectiveness of the organization as a whole [31; 32].

An unresolved (not sufficiently smoothed) contradiction between “labor” and “capital” initiates an increase in social differentiation in Russia. According to some estimates, over the past two years, the gap between the incomes of 10% of the “poor” and 10% of the “rich” has increased and now exceeds 44 times, which is 10 times higher than the acceptable global standard of the International Labor Organization (ILO) [11].

Aggravating inequality increases the level of corruption (that depends on an ever-increasing status of participants of corruption schemes and on the size of a “reward” for services rendered). A comparative analysis of 129 countries shows [36] that income inequality increases the level of corruption through material and normative mechanisms. The rich have both greater motivation and more opportunities to engage in corruption, whereas the poor are more vulnerable to extortion.

The purpose of the present paper is to substantiate the methodological guidelines for modernization of the Russian economy, which should take into consideration global trends and contribute to the smoothing of contradictions.

#### **Modernization of the Russian economy: the liberal view**

In the article by A. Kudrin and E. Gurvich headlined “A new model of Russian economic

growth” 15 most important tasks are set out that have to be addressed in order to build a “model for promoting growth”. We consider the three tasks as systemically important. The first one is the radical reduction of the non-market sector that includes “public and quasi-public companies that are mainly guided by non-market motivation” [16, p. 29].

The second task, according to A. Kudrin and E. Gurvich, consists in carrying out further reforms in the public sector (getting rid of excess employment; increase in labor supply; prevention of faster wage increase compared to labor productivity growth).

The third task is to restore investor confidence in the macroeconomic stability of the Russian economy, and to the politics of institutional change. For example, it is noted that “it is important to maintain the trends that have been formed previously, particularly the borrowing of advanced technology. This path is recognized as the most effective way to increase productivity in the countries whose level of development is similar to that of our country” [16, p. 32].

Let us analyze these positions.

As for the role of the government in the economy, the position is quite clear: it is necessary to minimize the participation of the state in the economy, since the very “genetics” of public companies implies that budget allocations will always be spent inefficiently. It should be noted that the objective of reducing the state presence in the economy was formulated in the Concept for medium-term programs of development of Russia’s

economy “Economics of growth” in the framework of the Stolypin club [15].

A. Kudrin and E. Gurvich in their work give references to the works of foreign researchers [29] that prove that performance indicators of the enterprises of state and municipal form of ownership are much worse than those of private enterprises; we consider these references not quite correct: the following example is provided: a World Bank Study of 79 thousand Russian enterprises for the period of 2003–2008.

One can also present findings of other international studies in which it is noted that the nature of relationship between the size of the public sector and the efficiency of innovation and modernization of the country is not clearly defined [35]. On the one hand, the studies carried out in the EU have shown that the economic situation in the countries with a smaller share of the public sector (public expenditure are less than 40% of GDP) is better than in the countries with a high (50%) and medium (40...50%) share of the public sector. On the other hand, innovation in the public sector is directly associated with economic prosperity: research and development in the public sector has a significant impact on the development of new products and processes and thus, indirectly contributes to economic growth and productivity [35, p. 21]. In this case, state-owned R&D is important in the support and stimulation of innovation in private firms [35, p. 32]. It is noted that in the public sector

better results can be achieved at the expense of growing scale of production (economies of scale) [28, p. 24].

In order to improve the efficiency of the public sector a task is set out to rationalize public expenditure on R&D, strengthen cooperation between universities and industry (encouraging the establishment of science parks, promoting university patenting) [35, p. 6], which is relevant for Russia.

Proposals to reduce the state’s share in the economy do not rely on the results of the analysis of profitability of Russian state-owned enterprises in recent years. The Bulletin of the analytical center under the Government of the Russian Federation [7] provides evidence of performance effectiveness of state companies: their share of revenue in the total revenue of the top 100 companies in recent years was increasing continuously: from 47% in 2009 to 51% in 2014. Moreover, the number of state-owned companies in the top 100 companies dropped from 31 to 28 for the same period. Overall, 28 companies with state participation in 2014 accounted for 67% of the revenues of all companies from the Expert RA top-100 ranking in the sectors under consideration, where state-owned companies were presented.

We agree with V.I. Rossinskii, who points out that “global economic experience clearly shows that in modern conditions the efficiency of the economy depends less on the form of ownership and more on the quality of management” [24, p. 61].



As for state-owned companies the emphasis should be placed on improving the quality of corporate governance, which ensures efficient cooperation between shareholders, the board of directors and senior management of the company. The problems of state corporate governance, in our opinion, are determined by the fact that the shareholders and the board of directors (mostly state representatives<sup>2</sup>) do not provide adequate control over the top management of state corporations. For example, in our opinion, this is connected with the lack of public information on the incomes of top managers of Russian state-owned companies. In recent years in other countries, the openness of strategic solutions, partnership with representatives of society and public opinion are considered important strategic elements [30] for determining the company's performance efficiency.

According to the results of research on the influence of the board of directors (BOD) on the financial performance of Russian companies it has been found that "contrary to the agent theory that advocates the maximum number of independent directors within BOD, for Russian companies it is important that BOD have executive directors, who would possess unique knowledge about the specifics of the company's functioning: "the share of executive directors in the composition

<sup>2</sup> For example, nine out of the twelve members of the Board of Directors of JSC Russian Railways, who were elected in 2016, are representatives of the Russian Government.

of the Board" has a positive effect on the efficiency of the company" [10, p. 143]. Here the key characteristics affecting the efficiency of the company is the experience of the board of directors in this particular industry. Based on the foregoing, it is important to analyze the composition of the boards of directors of public companies (and introduce adjustments if necessary) for the purpose of increasing performance efficiency of the boards and companies in general.

In the framework of discussions about the degree of effectiveness of public or private business it is appropriate to recall a 2001 interview with Anatoly Chubais, which was not widely known and, therefore, did not cause relevant public feedback at the time [8].

"And we knew that every plant sold was a nail in the coffin of communism. Whether it was sold at a high or low price, whether it was given away free of charge or with extra payment – all this was a minor matter, it actually was... Privatization in Russia until 1997 was not an economic process at all. It aimed to solve the problems of an altogether different scale, which few understood then and even less so in the West. Privatization solved the main task of abolishing communism. We did solve this problem. We did it thoroughly", A. Chubais said in the interview.

Thus, the privatization of the early 1990, and, later, mortgaging auctions served as the basis for the transfer of state property into private hands and did not solve the problem

of increasing the efficiency of production.

And the crisis of the late 1990s a striking confirmation to this. We agree with V.I. Rossinskii, “at the beginning of privatization, first of all, it is necessary to determine the limit of privatization, i.e. to highlight the part in the structure of productive forces that is in the public domain. The task is not very complex, because in this case we are speaking about productions that require the efforts of the whole society through long-term scientific research programs, training of qualified personnel and huge capital investments, i.e. the establishment and maintenance of such industries, which, in essence, are not feasible in the framework of private capital. This is evidenced by world experience” [24, p. 62].

The issue concerning ownership in Russia (and its “moral legitimacy”) is not fully resolved, because at the time this boundary was not established (such a task was not intended to be implemented in principle). It is necessary to develop mechanisms which, consistently with international law, will make it impossible (or pointless) to make any claims like those of Yukos investors against the Russian Federation.

To solve the second problem, A. Kudrin and E. Gurvich propose the following measures:

- withdrawal of wage increase in the public sector, if this increase is not linked to the growth of productivity;
- optimizing the number of employees in the public sector;

- shifting from fighting unemployment (the extent of which is unlikely to be significant) to the struggle for competitiveness;
- increasing mobility and expanding the retraining of the workforce;
- improving migration management mechanisms in the interests of attracting the workers that the market needs;
- gradually raising the retirement age.

Researcher V.M. Serov in his study [26] proves that the simple reproduction of labor requires that each family should have on average 2.2 children. The minimum wage of a skilled worker should not be below 2.1 subsistence minimums, provided that both parents work. If the wage is below 2.1 subsistence minimums, the population (workers) will decline, and productive capital will not be able to function, it would be of no use.

If the state wants to have a healthy and well-educated generation of workers (and to achieve that, one of the parents must be on childcare leave over a long period of time) then the minimum wage should be equal to 4.2 subsistence minimums [26, p. 90]. We recall that we are talking about simple rather than expanded reproduction of labor force.

By restraining the growth of wages in the budget sector, the state restrains this growth in all sectors of the economy. This creates a vicious circle: 80% of the population spends 80% of their income on food, the remaining 20% do not allow making any major



purchases, i.e., the policy of containment of labor remuneration growth hinders the development of the consumer market and the economy in general [22, p.10].

In relation to labor productivity growth, we have already noted above that Russia ranks second in the world (after South Korea) according to the number of workhours per capita (985 hours per year) [19, p. 75]. Analysis of the wages of one of the largest categories of state employees – secondary school teachers – suggests that wage growth is ensured mainly by extensive methods (increasing the number of hours worked), i.e., the load of an average school teacher is substantially higher than the standard work rate for a teacher (18 hours).

Optimization measures applied to those employed in the public sector (essentially, reduction measures) are in a certain way contrary to the measure that provides for the expansion of retraining the workforce and that is offered by A. Kudrin and E. Gurvich. For example, the number of full-time faculty of state and municipal universities was continuously reducing – from 319.0 thousand in the 2011/12 academic year up to 255.8 thousand people in the 2015/16 academic year: 2012/13 academic year – 312.8 thousand people; 2013/14 – 288.2 thousand people; 2014/15 – 271.5 thousand people<sup>3</sup>.

<sup>3</sup> *Rossiya v tsifrakh. 2016: krat. stat. sb.* [Russia in figures. 2016: a concise statistics collection]. Moscow, 2016. P. 148.

In accordance with the indicator “the number of students in tertiary education programs per faculty member” in the state program “Development of education” for 2013–2020, which by 2020 is expected to increase up to 13 people [21], it is possible that the number of teaching personnel in state universities will reduce to 184.9 thousand people by 2020, of which 150.5 thousand people will work full-time and 34.4 thousand people – at 0.5 and 0.25 of the rate [23, p. 184]. A reduction in the number of teaching personnel at state universities against the background of increased teaching load will in the long term have a negative impact on the quality of education. In this regard, it is doubtful that it would be possible to implement the concept of life-long learning, which is declared in the state program “Development of education” for 2013–2020.

The solution to the third problem – restoring investors’ confidence in the macroeconomic stability of the Russian economy, and in the politics of institutional change – must be considered in the context of suggestions made by A. Kudrin at a closed meeting of the Presidium of the Economic Council held on May 25, 2016. According to A. Kudrin, the country needs, even if it will have to play a supporting role, to be embedded in international production chains. Otherwise it is impossible to fulfill a key condition to stimulate the Russian economy, which consists in attracting foreign

investments [17]. Of course, in order to “integrate into international production chains” on the sidelines, one can only borrow the technology. And in this sense, it is pointless to think about a “breakthrough” toward the sixth technological mode. In the 21st century Russia can not afford to slide back to the catching-up development.

The position of A. Kudrin and E. Gurvich is fundamentally different from what Vladimir Putin said in his Address to the Federal Assembly on December 01, 2016 [20]: “Colleagues, to move up to a higher development level in the economy and social sector **we need our own advanced research and scientific solutions** (*emphasis added*. E.R.). We must focus on the sectors where a powerful technological potential is accumulating for the future, that is, digital and other cross-cutting technologies that now determine all spheres of life. The countries that generate such technologies will get a lasting advantage and an opportunity to generate huge technological revenues. Those who fail to do this will be placed in a dependent and disadvantaged position. Cross-cutting technologies are technologies that can be applied in all sectors, such as digital, quantum, robotic, neural and other technologies”.

As for attracting foreign investments that are considered almost the only cure-all solution for GDP growth [18; 27], we should answer the question: what kind of investment is it and what is their quality? Rosstat data

lacks information on income by type of foreign investments after 2013<sup>4</sup>. The proportion of foreign direct investment in the Russian economy is small. The largest share in the structure of foreign investment was made by trade loans and other loans. This kind of “investments” is a disguised form of “capital flight” from Russia.

Kudrin’s position arises out of the neglect of the systemic contradiction of the present stage of Russia’s socio-economic development, which we formulated in the introduction: it is the contradiction between the policy of innovative development of the Russian economy declared at the state level and the weak demand for innovation on the part of industrial enterprises.

The transition from extensive economic model that implies increased exploitation by increasing the duration and intensity of labor, to intensive (innovative) development model must become a new imperative of economic policy. In this sense, we believe it is important that the government is willing to “share” inventions, patents and know-how with the business. About three thousand results of intellectual activity in all industrial sectors have undergone preparations for the transfer [6].

<sup>4</sup> The Rosstat collection “Russia in Figures” (2016) on p. 458 gives the following figures of the volume of direct foreign investment in Russian economy (mln US dollars): 2011 – 55,984; 2012 – 50,588; 2013 – 69,219; 2014 – 22,891. Based on these data, direct investment in 2014 decreased in three times compared to 2013. These data are contrary to the values given in the collection “Russia in Figures” (2014) on p. 468: foreign direct investment in 2011 amounted to 18,415 mln US dollars, in 2012 – 18,666 mln US dollars, in 2013 – 26,118 mln US dollars.



In our opinion, innovation is the “litmus test” that helps draw “dividing lines” between national-oriented and comprador capital. Where the search, design and implementation of innovation are carried out, where the development strategy is implemented, there is no place for speculative capital, there the business links its interests to the interests of employees and the country as a whole. Implementing innovation modernization strategy of the Russian economy will inevitably raise the issue of modernization of the banking sector, which should start functioning in new economic conditions – the search and financing of the projects contributing to the creation of products with high added value. Prior to the introduction of the sanctions, the majority of Russian banks implemented routine financial speculations: they took cheap loans in the West, which financed Russian industrial enterprises (of course, interest rates on the loans were much higher than those in the West). To some extent, the reason for this phenomenon lies in the current monetary policy (at least until recently it was so)<sup>5</sup>.

#### **Methodological landmarks of the “new industrialization”: what capitalism does Russia need?**

Development and implementation of a new model of economic growth – the concept of re-industrialization [3; 4; 5], “new

industrialization” [25], neo-industrialization [9] – is due to the need to address threats to food, pharmaceutical and medical security, threats of the slowdown in economic growth due to the de-industrialization of the Russian economy, and threats to the reproduction of human capital. It seems to us that the concept of “new industrialization” most accurately reflects the goals and scope of reforms that need to be implemented in the Russian economy.

The development of the concept of “new industrialization” requires comprehensive study of the American experience of the times of the Great Depression, the experience of the People’s Republic of China and domestic experience in the modern history of Russia (the crisis of 1998).

The Primakov–Maslyukov Government created the conditions for normalization of the macroeconomic environment for producers, and introduced measures to protect the domestic market. To some extent, the success of this government was due to idle production capacities and unemployed labor force, however it ensured the growth of investment in GDP from 12 to 16.5% [25, p. 21]. In 1999 there was a growth of investments in fixed capital, which amounted to 670,439 million rubles, of which 297,278 million rubles (44.3% of total investments) were invested in manufacturing industries<sup>6</sup>.

<sup>5</sup> There emerges a change in the existing trend. For example, beginning from 2017, farmers will be able to take loans at 5% per annum.

<sup>6</sup> *Rossiiskii statisticheskii ezhegodnik. 2003: stat. sb.* [Russian statistical yearbook. 2003: statistics collection]. Moscow, 2003. P. 595.

Investments in fixed assets in 1998 amounted to 407,086 million rubles, of which 165,092 million rubles were invested in manufacturing industries (40.6% of total investment). Thus, there was not just an increase in investment activity but a change in the ratio of investment in manufacturing sectors to investment in industries that provide market and non-market services. At the same time the volume of foreign investment in industry in 1999 increased compared to 1998, against the background of general decline in the volume of foreign investments. The volume of foreign investments in 1998 was 11,773 million US dollars; 4,698 million US dollars (39.9% of the total amount of foreign investments) was invested in industry. In 1999, the volume of foreign investments fell to 9,560 million US dollars; 4,876 million US dollars (51.0% of the total volume of foreign investments) was invested in industry<sup>7</sup>.

In modern conditions, the pressure of the sanctions creates conditions for import substitution, including a deep localization of production. But we still believe that “the best import substitution is the production of domestic products competitive both on the internal and foreign markets. Export capacity means the ability to compete, and compete with import as well. Such import substitution may be eligible for governmental support” [18, p.19].

Statements by E.M. Primakov at the meeting of the Mercury Club in January 2014

<sup>7</sup> *Ibidem*. P. 604.

can be taken as the main methodological landmarks for the implementation of the concept of “new industrialization” [1].

The first thesis concerns the role of the state in building a new economy.

“Can we be sure that in modern Russia the market mechanism itself and without state participation is already able to provide growth and balance of the economy, and the low level of competition is sufficient to achieve technological progress? Definitely not. Of course, this does not mean eternal dominance of the state in the economy. But it is necessary in certain historical periods, and I believe that currently we are living in such a period. In addition, our neo-liberals take no notice of the lessons of the 2008–2009 crisis. It is known that the United States and the European Union increased the influence of the state on the economy during the crisis. This trend is maintained now”.

The second thesis deals with the very essence of “new industrialization”:

“... The neo-liberals, in fact, ignore the need to restore Russia’s industries, primarily mechanical engineering, that were ruined in the 1990s. Abandoning re-industrialization is frequently regarded by them as a prerequisite for Russia’s entry into the post-industrial stage. Meanwhile, the transition in the post-industrial economy in today’s world does not imply moving away from traditional industries that, in addition, provide people with jobs. Of course, we are talking about providing them with modern equipment...”



Post-industrial society is more than just high-tech and the services sector. For instance, the post-industrial United States now restore the industries that were previously shifted to developing countries. I agree with the conclusion made by Valentina Matviyenko, Chairman of the Federation Council: “The country that aspires for leadership and ensures its own safety cannot focus only on 2–3 high-tech industries. Therefore, we are facing a greatest challenge – to take a worthy place in the new technological mode and, at the same time, to restore the industries of the old system on an innovation basis”.

S.D. Bodrunov formulated “the developing economy paradigm”, which is implemented in the framework of re-industrialization strategy. It is defined as the “restoration of the role and place of industry in the economy of the country as its basic component on the basis of a new technological mode by solving a set of economic, organizational and other tasks” [5, p. 8]. Particular attention should be paid to the complex of raw materials as a source of financial security for future re-industrialization, the processing aspect in this complex should be promoted. S.D. Bodrunov, R.S. Grinberg, and D.E. Sorokin point out that the problem lies not in the exaggerated magnitude of the commodity sector, but in the underdevelopment of processing industries [4, p. 21].

S.S. Gubanov’s point of view is similar, it indicates that in order to do away with de-industrialization “it is necessary to link the mining industry with processing complexes, especially, with engineering. Their business connection is based on a vertically integrated property, and their form is cross-sector chains of production of end products with a high multiplier of value added” [9, p. 39].

“New industrialization” must be transformed into the program for the implementation of main directions of an emerging revolution associated with the development of bio-, nano- and genetic technology, creation of quantum computers and new composite materials, i.e. all that is the basis of a new (sixth) technological mode. The problem is how this strategic goal, as the main link in the current policy, could be addressed “immediately”, without restoring the industrial economy [25, p. 19]. We agree with V.T. Ryazanov, who points out that “to try to “jump” into the sixth technological order, bypassing the fifth mode that is not developed in Russia and ignoring the degradation of the sphere of production means to build a policy based on illusions and utopian projects” [25, p. 19].

We consider the remark about the sixth technological mode to be critical. A different point of view on this issue was expressed by E. Kabolov, who noted that the structure of the Russian economy is currently far from a

post-industrial model<sup>8</sup>. In his view, Russia's entry in the 6th technological mode within the next 10 years requires "skipping" the 5th technological mode [12].

V.T. Ryazanov's viewpoint concerning a utopian nature of "skipping" a technological order is based on the fact that the majority of the innovations of the new mode are formed in the phase of the **dominance** of the previous mode. The fifth technological mode, defined usually as an information and communication technology mode, does not dominate the Russian economy. However, the level and results of fundamental research of Russian scientists in the Russian Academy of Sciences give reason to say that Russia is among the advanced countries in building computers that work on completely different physical principles (quantum) [13]. The positive dynamics in the development of advanced information technologies is evidenced by the increasing volume of their exports, which in 2015 amounted to 7 billion US dollars (defense industry – 14.5 billion, agricultural products – 16.2 billion) [20]. In this sense, becoming a leader in the production of quantum computers and increasing exports of information technology, Russia will be able to "skip" a technological order.

<sup>8</sup> In Russia the share of technology of the fifth order is approximately 10% (in the military-industrial complex and the aerospace industry), the share of the fourth order is over 50%, the third – about 30%. In the US, for example, the share of the fifth technological order is 60%, fourth – 20%. And about 5% falls on the sixth technological order.

It seems to us that it is possible for Russia to shift to the sixth technological mode within the next 10 years on the basis of innovative development of the military-industrial complex and technology transfer to civilian industries, if the country makes full use of human capital, a competitive advantage that Russian still possesses. Accordingly, it is necessary to develop a strategy to use this competitive advantage.

In order to create conditions for a more rapid development of the innovations of the sixth technological mode it is necessary to unite efforts with leading countries in the field of software and information management (India), and electronics and computer memory (China).

In his Address to the Federal Assembly on December 01, 2016 [20], Russian President Vladimir Putin proposed "launching a large-scale system-wide program to develop an economy of a new technological generation, the so-called digital economy. We will rely on Russian companies and Russian scientific, research and engineering centers to implement this program. Russia's national and technological independence, in fact, our future depend on this. We need to conduct an inventory to remove managerial, legal and any other barriers that hinder the advance of our business to existing and emerging high-tech markets. We must allocate sufficient financial resources for these projects, including by setting this task to the refurbished VEB (Bank for Development). We will need



skilled personnel, engineers and workers, who will be ready to fulfil next-generation tasks. This is why we are cooperating with businesses to create an up-to-date system of secondary vocational education and college and vocational school teacher training based on advanced international standards”.

The fundamental question is: can the Russian economy in the conditions of multiculturalism implement the tasks set by the President of the Russian Federation? We share the view of S.S. Gubanov, who indicates that only the stage of capitalism that is not below the state corporate stage can meet the requirements of the new industrial revolution [9, p. 36]: “It is quite clear that a vertically integrated form of ownership should dominate, that multinational corporations should be the main link in reproduction, that value added (rather than profit) should be the target function of reproduction, that there should be a macroeconomic type of planning, consistent with the form of ownership”.

**This goal can be achieved with the help of strategic nationalization of commanding heights of the economy.** We agree with S.S. Gubanov that nationalization is not needed for the sake of nationalization itself. It is required in order to create a vertically integrated structure (of ownership) that will increase domestic production of the products with high value added on the basis of a strong and inseparable connection between production and industrial processing of raw materials and primary resources.

The increasing role of the state in the economy is due to the fact that state-owned enterprises should set the standards for the reproduction of labor force (from the level of the minimum wage to various aspects of social security of employees). The institutional framework for such standards should be based on the implementation of the proposal associated with the **transition to the hourly system for regulation of labor productivity and wages**, which involves the development of planning standards for hourly productivity of machines, jobs and employees. We view this proposal as systemically important in creating favorable conditions for expanded reproduction of the labor force.

Strategic nationalization of the commanding heights of the economy involves improving the quality of corporate governance in state-owned enterprises and fighting corruption at all levels. In the current socio-economic and political conditions, corruption should be seen as a threat to national security with all its consequences<sup>9</sup>.

The volume of the present paper does not allow us to reveal the role of education and science in finding solutions to the issues of modernization of the Russian economy. Let us point out a most important aspect that sets the guidelines for further research. For example, with regard to higher and secondary

<sup>9</sup> Considering corruption as a threat to national security is due to the fact that corruption not just undermines the implementation of the principle of social justice, but, more importantly, it discredits power in general.

vocational education, the basic contradiction of socio-economic development, which we have formulated, determines the **contradiction** between the formation and the financing of an order for (primarily) technological areas of training that are in demand in the economy and funded by the government and the practical absence of participation of the business community in this process. In other words, staffing requirements of private enterprises are financed at the expense of taxpayers. In essence, this contradiction can be formulated as a contradiction between the social character of knowledge production and the private form of appropriation of the result (knowledge). In conditions of increasing the share of the government in the economy, the formation and financing of state order for personnel training seems reasonable and logical.

The lesser the participation of the state in certain industries, the greater should be the participation of private enterprises in personnel training. This includes the development of mechanisms for public-private partnership, establishment of target indicators of co-financing in the strategic perspective, direct participation of business in solving national problems (including through the establishment of endowment funds, etc.). Private enterprise must establish a kind of “sinking fund for human capital”, which will be a source of funding of own staffing requirements. **Lack of desire or inability to invest in staff training should be the basis for**

**the transfer of a part of or the entire property in favor of someone capable of implementing such investments.** Accordingly, a legal mechanism should be developed for regulating these procedures taking into account international experience.

### Conclusion

We think that the contribution of the present study to the development of theoretical science consists in the justification of the following thesis: it is possible to provide intensive (innovative) development of the Russian economy only if there is a philosophical and sociological understanding of objective reality, identification of contradictions in socio-economic development, and ways to solve (smooth) them. On this basis, any decisions should be viewed through the prism of the extent to which they contribute to the elimination (smoothing) of a major contradiction in Russia’s socio-economic development. This approach should be used in the development of the ways to upgrade education and science as the intellectual foundations of “breakthrough” toward the sixth technological mode.

The main conclusions of the study are as follows.

- Implementing the concept of “new industrialization” implies an increase in the share of state ownership and an increase in its management efficiency in industries that are critical for overcoming the deindustrialization of the Russian economy and “breakthrough” toward the sixth technological mode: creation



of vertically integrated structures in the chain “production of raw materials – industrial processing”, which will ensure the increase of domestic production of products with high value added.

- Increasing the value of “live” work and, as a consequence, creation of conditions for expanded reproduction of labor force should become an imperative of innovative modernization of the Russian economy.

- Russia’s “breakthrough” toward the sixth technological mode is possible to achieve if the country becomes a world leader in the production of quantum computers, increases exports of information technology, transfer of innovative developments of the military-industrial complex to civilian industries along with the most complete use of its competitive advantage such as human capital (creation of natural barriers against the “brain drain”).

- It is necessary to ensure participation of private enterprise in the provision of the modernizing economy with finances and personnel. Private enterprises should establish a kind of “sinking fund for human capital”, which will be a source of funding own staffing needs. Failure to invest in personnel training should become the basis for the transfer of the share or the whole property (based on a legal mechanism) in favor of someone capable of implementing such investments.

- Attracting investments (including foreign investments) and assessing their quality should be considered in the context of opportunities that are created (or not created) in order to increase the value of “live” labor and the number of domestic technologies of the sixth technological mode.

The above is the answer to the question: what capitalism does Russia need?

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