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The Role of the Energy Sector in Ensuring Financial Security of Russia

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ABSTRACT

Against the background of large-scale globalization processes, accelerated with the development of information technology, and the fragmentation of the world economy caused by growing geopolitical tensions and sanctions confrontations, interest in solving problems of ensuring national security has increased. Particular attention was paid to such components of national security as the financial security and energy security of the country, which is explained by the high importance of the financial sector and the energy industry in ensuring the stable functioning of the national economy. The interest of the Russian researchers in solving these problems is also due to the fact that most of the most severe anti-Russian sanctions were introduced against these sectors of the economy. The relevance of the challenges has stimulated the emergence of many studies in the field of development of assessment methods and ways to ensure financial and energy security, but these studies were carried out without an in-depth analysis of the phenomenon of interdependence of financial and energy security, whereas at present, achieving one state cannot be achieved without achieving the other. The **purpose** of this study is to theoretically understand and describe how to integrate financial and energy security, which will enable us to develop strategic solutions for the country's financial system while considering the energy sector's role in ensuring its sustainability and uninterrupted operation. The **scientific novelty** of this research is the development of a theory that explains how the national financial system functions by highlighting the interdependence between financial and energy security. The **result** of the study is methodological recommendations for ensuring national financial security in the context of the development of the energy industry.

Keywords: financial security; energy security; financial market; financial capital; economic systems

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INTRODUCTION

In recent decades, there has been an acceleration of globalization and technological development, which has led to a sharp increase in the complexity of local and global socio-economic systems, as well as an expansion of the boundaries of interaction between different sectors of the economy [1–5]. All of this was happening against the backdrop of growing geopolitical tensions, which have manifested in recent days as a sanction's standoff. The increasing importance of the financial sector in ensuring stable long-term economic and social development of the country leads to an increase in the number of factors determining the level of financial security [6, 7] and the complexity of methods for ensuring the country's financial security [8].

Many scientific papers have been written on the topic of expanding the semantic content of the concept of financial security [9–12]. A number of authors have analyzed the impact of financial security threats on the level of energy security in different countries. For example, using South Korea as an example, the authors of one article showed that the development of a national financial system can enhance national energy security in the face of growing uncertainty in the global energy market [13]. Another author, who conducted a similar analysis for several provinces in China, reached the same conclusion [14]. The role of the energy sector in enhancing the resilience of the national financial market and the financial system as a whole has been practically unstudied, while for Russia, with its energy sector dominance in the national

economy and sanctions restricting access to international financial markets, analyzing the consequences of integrating the phenomena of energy and financial security is becoming increasingly relevant.

FINANCIAL AND ENERGY SECURITY: THE PHENOMENON OF INTERDEPENDENCE

National financial security, in general, represents the state of the financial system in which it effectively and reliably performs its functions of distributing and redistributing financial resources within the country. There are quite a few different approaches that allow for a more specific definition of financial security [15–18]. In this paper, financial security is understood as “the stable and efficient performance by the national financial market of its functions in organizing the unimpeded movement of capital, carried out at an acceptable level of transaction costs, contributing to the effective development of the national economy and ensuring the protection of the country’s economic interests at the international level” [19]. The choice of an approach that emphasizes the role of the financial market in ensuring financial security is due to the characteristic interpenetration of the financial and real sectors in the modern economy. In his study of the characteristics of national financial market functioning, V.V. Ivanov notes that the structure and efficiency of financial market functioning, shaped by the peculiarities of the real sector of the economy’s development, influence the development of the real sector of the economy through the financing of its needs [20]. Considering this, in order to ensure national financial security, it is necessary to develop a new approach to its assessment, according to which a country’s financial security would be determined taking into account the existing interconnections between the real economy and the financial market.

To assess the degree of effectiveness with which the Russian financial market performs its macroeconomic functions and to clarify the specifics of its interaction with the real sector of the economy, it is necessary to have a clear understanding:

- about the sources of resources for the financial system as a whole and the financial market in particular as the main mechanism for capital redistribution in the economy;
- about the actor-network structure of the country’s financial market and the institutional mechanisms of its functioning;
- about global trends shaping the current geopolitical agenda.

Sources of Resources for the Financial System as a Whole and the Financial Market in Particular, as the Main Mechanism for Capital Redistribution in the Economy

In modern conditions, any major national economy is deeply integrated into the global economic space, which means, among other things, the presence of intensive trade relations accompanied by the flow of currency between countries. Under these conditions, the national financial system (which can be metaphorically represented as a hub providing a “platform” and tools for organizing the flow of financial resources within the economy) effectively performs its functions only when it is infused with financial resources from foreign trade activities. For many years in Russia, the energy sector has been the most important source of foreign currency, allowing the financial market to function effectively [21, 22]. According to the Central Bank of the Russian Federation, in 2023, the total share of natural gas, LNG, oil, and petroleum products in the export structure was 49%.¹ This feature of the Russian economy, which determines the significance of the energy sector for ensuring the security of the national financial market’s functioning, is one of the key factors for the existence of the phenomenon of the interdependence of financial and energy security.

Energy security has traditionally been understood by domestic scientists as the sufficient and uninterrupted availability of economically accessible energy resources. Energy security was defined as the alignment

¹ Website of the Central Bank of the Russian Federation. URL: https://www.cbr.ru/statistics/macro_itm/svs/export_energy/ (accessed on 18.06.2024).

of the energy sector's production capacity development with the needs of the national economy for energy resources, with this alignment extending not only to the volume of electricity produced but also to the quality of the energy resources supplied. This understanding of energy security prevailed in the Soviet Union until the mid-1960s, when the energy sector was viewed solely as a source of energy resources for the country's economy. However, starting in 1965, the USSR began rapidly increasing its exports of oil and petroleum products, and the energy sector became not only a source of energy resources but also a significant source of foreign currency. From 1965 to 1975, the volume of exported oil and oil products doubled — from 75.7 million tons to 150.5 million tons, while the share of Soviet oil and oil products in global oil consumption was around 5% in 1965 and 5.6% in 1975. Over the next 5 years, the volume of oil and oil product exports increased by another 32 million tons, reaching 182.5 million tons in 1980. The increasing role of oil and oil product exports in the development of the USSR's economy was due not only to the growth in the volume of energy resource production and exports, but also to the sharp rise in oil prices on global energy markets in 1973, when the world energy crisis occurred. Thus, between 1965 and 1975, the price of oil on the world market rose from 22.08 dollars/ton to 92.46 dollars/ton, which led to an increase in Soviet export revenues from 1.11 billion dollars in 1965 to 3.74 billion dollars in 1975 and 15.74 billion dollars in 1980 [23]. It was during this period that the Soviet economy became dependent on hydrocarbon exports.

After the collapse of the Soviet Union, the energy sector became the main driver of Russia's economic recovery and active growth in the early 2000s. During this period, the role of the energy sector was determined not so much by meeting domestic energy demand, as significant production capacity reserves created during the Soviet era significantly exceeded the growing needs of the national economy for energy, but rather by generating significant

revenue from foreign trade activities. This circumstance is reflected in the expansion of the semantic content of the concept of energy security, which, among other things, has come to include national energy companies' access to international energy markets and their production and resource capabilities to meet the energy demand of foreign partners.

During this period, due to the overlap of some functions performed by the financial system and the national energy sector in terms of accumulating and distributing foreign exchange earnings from foreign trade activities, as well as protecting the country's interests at the international level, there has been an intersection of the concepts of financial security and energy security (*Table 1*).

Interestingly, in addition to a number of aspects concerning ensuring the effective functioning of the economy as a whole, the meanings of the phenomena under consideration also intersect with regard to the main function of the financial market, which concerns the accumulation and redistribution of financial resources, indicating the special role of the energy sector in ensuring the country's financial security. Indeed, the sharp decline in energy sector companies' revenues from foreign trade activities, occurring, for example, against the backdrop of unfavorable price dynamics in global energy markets or restrictions on access to them, generates a negative impulse that spreads throughout all sectors of the country's economy. In the short- and medium-term, a decrease in the country's foreign exchange earnings leads to a reduction in supply in the country's foreign exchange market, which manifests as a fall in the national currency's exchange rate and rising inflation. In the long term, a decrease in foreign currency earnings could lead to a decline in the investment attractiveness of energy companies and the economy as a whole, reducing the resource base of the national financial market and decreasing its effectiveness in performing its functions.

Thus, since the early 2000s, the sustainable development of major energy companies has become a critically important condition for

Table 1

Intersection of Semantic Contents of the Financial Security and Energy Security

Financial security	Accumulation and redistribution of financial resources in the economy		Energy security
	Sustainable and safe functioning of individual elements of the national financial system	Fulfilling the national economy's demand for energy resources	
	Ensuring the level of transaction costs necessary for the smooth flow of capital within the economy	The availability of production and resource capabilities to meet the energy demand from foreign partners	
	Transforming savings into investments to provide the economy with long-term domestic financial resources	Access to international energy markets	
	Ensuring the growth and development of the national economy		
	Ensuring the protection of the country's economic interests at the international level		
	Formation of key institutional mechanisms for the functioning of the national economy		
	Increasing the adaptability and resilience of the national economy		

Source: Compiled by the authors.

achieving the efficiency of the national financial system, and ensuring energy security has become a necessary factor in ensuring financial security.

The Actor-Network Structure of the Country's Financial Market and the Institutional Mechanisms of its Functioning

The energy sector affects a country's financial stability. It not only brings foreign currency into the economy but also shapes the functioning of the financial market.

According to field theory, any socio-economic system has a structure consisting of the following elements (actors): dominant players, dominated players, and transitional players [24]. Transient players are the most fluid, weak, unstable, and least significant part of any system. These players enter the market trying to survive, achieve their goals, and quickly exit the market for various reasons. Dominated players are a significant part of the system. They have been working in the market for a long time, have significant production, financial, and administrative resources, and hold a significant and stable

market share. However, unlike dominant players, dominated players follow established institutional rules. They cannot determine the normative level of transaction costs in the system, set the dynamics of price changes and/or volatility, etc. Dominant players, on the other hand, determine market dynamics by setting customer interaction standards, shaping prices (within certain limits), and so on. The dominant position of such players is determined by the resources they possess, as well as their political and social capital. It is evident that the concentration of a large share of dominant players in a single sector of the economy exacerbates the internal strategic contradictions of the actors, which are determined by the dynamics of their hierarchical interactions. Meanwhile, the stability of the dominant players is primarily what the sustainability of the system as a whole depends on. If dominant players experience organizational, financial, or production problems due to the realization of systematic or unsystematic risks, these problems spread throughout the entire system in the

form of a decrease in its absolute performance indicators, an increase in asset price volatility, and an increase in transaction costs.

It can be confidently said that energy sector companies are the dominant players in the Russian financial market. As of March 2024, the share of companies in the fuel and energy sector in the structure of the Moscow Exchange Index was 49.28%, with 6 out of the ten companies with the largest capitalization belonging to the oil and gas sector.² Unlike the Russian financial market, the global financial market is more diversified. According to the MSCI World Index³, the global financial market is dominated by high-tech companies, which account for 23% of the total market capitalization, and financial sector companies (15% of the total market capitalization). The market capitalization of energy sector companies accounts for only 5% of the total market capitalization of financial markets in 23 developed countries, including the US.

Since energy companies make up a significant portion of the capitalization of the Russian financial market, various problems faced by these companies are immediately reflected in the dynamics of the value of financial instruments issued by them. The level of price volatility for financial instruments is one of the characteristics of the degree of security of a national financial system. The higher the volatility, the greater the uncertainty about the future, which means a higher required rate of return, higher collateral requirements, lower investment activity in the real sector of the economy, and so on. A significant increase in volatility, especially occurring against the backdrop of a contraction in financial market capacity, is a clear signal indicating a decline in the country's financial security. This is because the financial market, being an important element of the national financial system, ceases to effectively perform its function of accumulating and distributing

financial capital. Potential investors are less willing to invest their money in financial instruments because the increase in volatility corresponds to an increase in riskiness, which in turn raises investors' expectations for returns on investments.

The stress experienced by dominant players (energy companies) is initially transmitted to financial markets and then to the entire financial system. The mechanism by which stress spreads from companies through the financial market to the financial system as a whole is as follows: the realization of energy security threats against the backdrop of declining economic efficiency of dominant companies worsens their development prospects, which inevitably leads to a decrease in their intrinsic value, and subsequently, their market value. This in turn leads to a decrease in the average market yield of financial instruments, which is determined by both the yield of financial instruments and changes in their market prices. Since any negative information about dominant companies in one of the leading market segments leads to an increase in investor pessimism, the level of irrationality in the investment decision-making process also increases. Investors are starting to demand unreasonably high returns on financial assets from companies in other sectors and are making more pessimistic economic forecasts, which leads to a decrease in investment activity across the entire financial market, undermining the process of financial capital accumulation and its transformation into industrial capital.

Given the concentration of a large number of dominant players in a single sector of the economy, we can speak not only of structural imbalances in financial markets and the economy as a whole, but also of the presence of special institutional mechanisms that support these dominant players. A prime example is the situation that developed in the US financial market in the early 2000s, when the phrase "too big to fail" became applicable to a number of financial institutions (JPMorgan Chase & Co., Citigroup, Goldman Sachs, Barclays), meaning that in the event of the bankruptcy of such giants, not only the US financial system, but the

² Moscow Exchange. URL: <https://www.moex.com/ru/factsheet> (accessed on 28.06.2024).

³ Morgan Stanley Capital International World Index. URL: <https://www.msci.com/documents/10199/178e6643-6ae6-47b9-82be-e1fc565ededb> (accessed on 17.06.2024).

entire global financial system could experience a profound crisis. That's why during the 2008 financial crisis, the US government allocated huge sums of money to prevent several banks from going bankrupt [25]. Another example: in Russia, after sanctions were imposed in 2014, several major energy sector companies received financial assistance from the state to support the economy during the initial decline in the ruble's exchange rate and the drop in oil prices. Despite the collapse of the national currency due to the misuse of the funds received, these companies continue to operate and hold leading positions in the industry and the country's economy.

As shown above, the sustainable development of energy companies has become a critical condition for achieving the efficiency of the national financial system's functioning. In other words, ensuring energy security has become a necessary factor in ensuring financial security. However, the opposite is also true: the high capital intensity of the energy sector means that a balanced and sufficient pace of energy development can only be achieved if the financial system fulfills its functions of providing energy companies with access to long-term capital. In other words, energy security can only be ensured if the country's financial market functions effectively, which means a stable and sufficient process of transforming financial capital into industrial capital for the development of the national energy system. Thus, one of the most important conditions for ensuring both financial and energy security for a country is the simultaneous effective and balanced development of both the financial system and the energy sector.

Global Trends Shaping the Current Geopolitical Agenda

The development of complex socio-economic systems is determined by the tension caused not only by the growing internal contradictions but also by the pressure of external circumstances, which include international economic integration, increasing geopolitical tension, the digitalization of the economy and energy, the transformation of the ideas that form the basis of the current concept of socio-economic

development, and others. Currently, one of the global trends that sets the framework for the long-term development of energy systems is the system of ideas and views of the sustainable development paradigm. These ideas, by influencing the development of formal institutions that define the interaction of participants in the global energy sector, contribute to the implementation of the fourth energy transition.

The current (fourth) energy transition, characterized by a radical increase in environmental requirements for traditional energy facilities and an increase in the share of renewable energy sources in countries' energy balances, has significantly impacted the process of integrating financial and energy security phenomena at the global level, creating dual pressure on a country's financial system [26]. Firstly, the pool of financial resources is limited. In the case of free circulation of financial capital, financial resource flows are directed to the most efficient sectors of the economy. However, forcibly increasing funding for renewable energy facilities reduces the resource base for other sectors of the economy, thereby decreasing the efficiency of resource allocation, which leads to a slowdown in economic growth, a decrease in the size of industrial and financial capital, and, as a result, a reduction in the inflow of new capital into the financial market.

Secondly, countries with developed traditional energy sectors, focused on exporting hydrocarbon resources, are losing their investment attractiveness. The concept of sustainable development is influencing not only the process of developing government programs and development strategies but also the process of managerial decision-making through the inclusion of ESG criteria in the methods of investment assessment of individual projects and companies [27, 28]. According to the traditional approach to investment decision-making, in the process of selecting an investment object, the initial pool of available investment options is limited by the return on investment criterion, and further project selection is carried out in accordance with established efficiency

parameters, the main one being the net present value. According to the new approach, the initial pool of available investment options should be limited through the use of an environmental acceptability criterion, and the basic parameters for project implementation efficiency are socially and environmentally oriented parameters that assess the project's impact on reducing greenhouse gas emissions, the level of energy poverty, and others.

Society's adherence to the principles of the sustainable development paradigm has not only influenced the development of management decision-making methods but has also led to a moral transition, which, according to J. Gusfield's definition [29], means a shift in the understanding of what is socially normal and abnormal, i.e., deviant. The view of socially acceptable company activities that formed during the Industrial Revolution and the rapid development of capitalism assumed that the goal of any private enterprise lies in making a profit while adhering to business ethics standards. Business ethics encompassed a set of such informal institutional requirements for businessmen, managers, and investors, including compliance with all laws (including paying taxes), timely repayment of all debts, honest behavior with counterparties and employees. If company managers were distorting reporting information, using insider information for personal gain, evading taxes, etc., they were condemned by public opinion, and such activities were considered unacceptable (deviant) behavior that harmed society.

In the process of the sustainable development paradigm's formation, there was a shift from traditional business ethics to the ethics of socially responsible behavior [30]. Now all members of society and organizations, including big business, must contribute to the implementation of the principles of the new paradigm of socio-economic development. This representation places a moral obligation on energy companies to combat inequality and poverty, provide opportunities for local communities to preserve their cultural heritage, disseminate technologies that reduce the human

footprint, and more. If a company does not actively participate in promoting the principles of sustainable development and does not incur additional costs for actions considered socially responsible, it will be stigmatized as an outsider, or in other words, a deviant. Public punishment for a company with such deviant behavior will be expressed in the form of society (possibly not all of it, but a part) refusing to purchase goods and services produced by that company, which will lead to a decrease in its economic efficiency.

For example, *Table 2* shows the absolute and relative costs of socially responsible activities for a number of large energy companies. It should be noted that in published reports, the costs of socially responsible activities are generally defined as "environmental protection costs", "green investments", "carbon footprint reduction costs", and so on. However, most often such events fall under the category of Sustainability Activities or Environmental, Social, and Governance (ESG), which means events that align with the principles and ethics of the sustainable development concept.

The process of establishing a new paradigm of socio-economic development has not left financial markets untouched. The implementation of the UN's developed principles of responsible investment has led to the use of "green" financial instruments, issued to finance environmentally friendly, energy-efficient, and low-carbon investment projects, becoming a popular way to stimulate investment in the development of a sustainable economy and energy in a number of countries. However, the conditions for their issuance, the additional obligations imposed on issuers, and the financial support provided by the government to issuers in some cases lead to their use also having a distorting effect on the free movement of capital in the economy.

When the energy sector plays a leading role in the national economy, production activity is poorly diversified, and many manufacturing firms operate with a low "margin of safety" (have a high break-even point), then the negative processes caused by the realization of energy security threats lead to a cascading

Table 2

Costs of Energy Companies on Socially Responsible Activities

Company	Characteristics of ESG cost
Rosneft	In 2020, Rosneft allocated 42 billion rubles to green investments*, which is 5.25% of total capital expenditures and 0.73% of revenue In 2021, Rosneft allocated 55 billion rubles to green investments, which is 5.2% of total capital expenditures and 0.625% of revenue In 2022, the company allocated 57 billion rubles to green investments, which accounted for 5.2% of total capital expenditures and 0.63% of revenue
Gazprom	In 2020, environmental protection expenditures amounted to 49.1 billion rubles, which was 3.29% of capital investments and 0.77% of revenue In 2021, environmental protection expenditures amounted to 97.5 billion rubles, which was 5% of capital investments and 0.95% of revenue In 2022, 89.1 billion rubles were allocated, which was 3.13% of capital investments and 0.76% of revenue
Saudi Aramco	Between 2010 and 2020, the company did not publish information about its ESG spending in its reports In 2021, the company announced that it had invested 15.5 billion dollars in the "GreenSaif" project, aimed at improving the environment, during 2021. This represents 23.48% of capital expenditures and 4.32% of revenue In 2022, the company allocated 1.5 billion dollars to ESG initiatives, which accounts for 1.7% of capital expenditures and 0.74% of revenue
ExxonMobil	In 2020, ESG spending reached 4.5 billion dollars, representing 21.03% of capital expenditures and 2.48% of revenue In 2021, ESG spending reached 4.6 billion dollars, representing 28.75% of capital expenditures and 1.63% of revenue In 2022, ESG spending reached 5.7 billion dollars, representing 25.11% of capital expenditures and 1.38% of revenue
Shell Global**	In 2020, ESG spending reached 4 billion dollars, representing 24.24% of capital expenditures and 2.22% of revenue In 2021, ESG spending reached 2.4 billion dollars, representing 12.63% of capital expenditures and 0.88% of revenue In 2022, ESG spending reached 4.3 billion dollars, representing 16.67% of capital expenditures and 1.12% of revenue

Source: Information on costs was collected by the authors from reports published on the official websites of companies.

Note: * What is understood by "green investments" was not presented in any of the company's reports; the company does not disclose the structure of its ESG spending; ** Shell has been disclosing data on socially responsible spending since 1997. Furthermore, between 2005 and 2014, the company presented this report in all major world languages, including Russian.

effect, expressed in a fall in aggregate demand and business activity. Considering the network structure of markets and the interconnectedness of the financial and real sectors, financial security should be viewed, among other things, as the ability of the financial market to localize crisis phenomena arising in the economy due to the realization of certain threats to energy security, prevent their spread through intersystem connections to other sectors of the

real economy, and mitigate their negative impact on the quality of life of the population due to a decrease in both real disposable income and the rate of economic growth.

ENSURING NATIONAL FINANCIAL SECURITY IN THE CONTEXT OF ENERGY SECTOR DEVELOPMENT

The functioning of the modern state's economic system is based on the constant process of

transforming financial capital into industrial capital and back. Financial capital refers to monetary resources and their equivalents circulating within a country's financial system. Production capital represents the entire set of tangible and intangible assets that directly or indirectly participate in the production process. A country's financial security is determined, among other things, by the volume of available financial capital and its sufficiency to meet the needs of the economy, while energy security is determined by the intensity of the transformation of financial capital into industrial capital, as well as the comparative efficiency of energy companies. The comparative economic efficiency of energy companies determines whether the transformed financial capital will go into the energy sector or other sectors of the economy.

The intensity of the transformation of financial capital into industrial capital is a key process that actually determines not only the sustainable development of a particular sector of the economy, but also, to some extent, the level of financial security. The fact is that under certain circumstances (including an imbalance in economic parameters), financial capital can "settle" within a country's financial system, leading to the formation and growth of financial bubbles. Financial bubbles represent an excess of financial capital, leading to excessive overvaluation of financial assets, and ultimately to a financial market crash and an economic crisis.

To reveal the economic essence of the relationship between financial and energy security, it is necessary to analyze the economic parameters that determine the dynamics of change in financial capital and the intensity of its transformation into industrial capital. In this study, we limit our analysis to the natural processes that determine the dynamics of the financial and industrial sectors' development, without considering the volitional influence in the form of sanctions and other forceful disruptions of financial and economic processes. At the same time, understanding how the system works in a normal state will further enable the

development of mechanisms to overcome the negative consequences of financial sanctions, contributing to the achievement of financial and economic security.

The following parameters can be identified as determining the accumulation and movement of capital in an economic system: the average market return on financial capital (RFC); the average market return on industrial capital (RIC); the average market return on industrial capital in the energy sector (RICE); and the GDP growth rate (RGDP).

The rate of return on financial capital (RFC) determines the attractiveness of the financial market as an investment object. Therefore, the intensity of financial capital accumulation in the financial system is largely determined by the average market yield of financial capital. The main parameters determining the intensity of the transformation of financial capital into industrial capital are the average market return on industrial capital (RIC) and the ratio of the average market returns on financial and industrial capital. RIC determines the investment attractiveness of the real sector of the economy as a whole. And the ratio of RFC to RIC determines how intensively financial capital will be transformed into industrial capital.

In the context of this study, it is necessary to introduce another parameter, namely the ratio of RICE to RIC. This parameter can characterize the investment attractiveness of the energy sector: a sufficiently high attractiveness will ensure investments in energy facilities, further growth of the fuel and energy complex's production potential, and, as a result, the generation of foreign currency flows.

The process of transforming financial and industrial capital is presented in *Figure*.

For clarity, the stage of transforming financial capital into industrial capital and the stage of distributing industrial capital across economic sectors are artificially separated. In reality, these two processes occur simultaneously. For the financial sector to grow steadily, which means an increase in available financial capital, the RFC must be above a certain minimum level, determined by factors such as the inflation

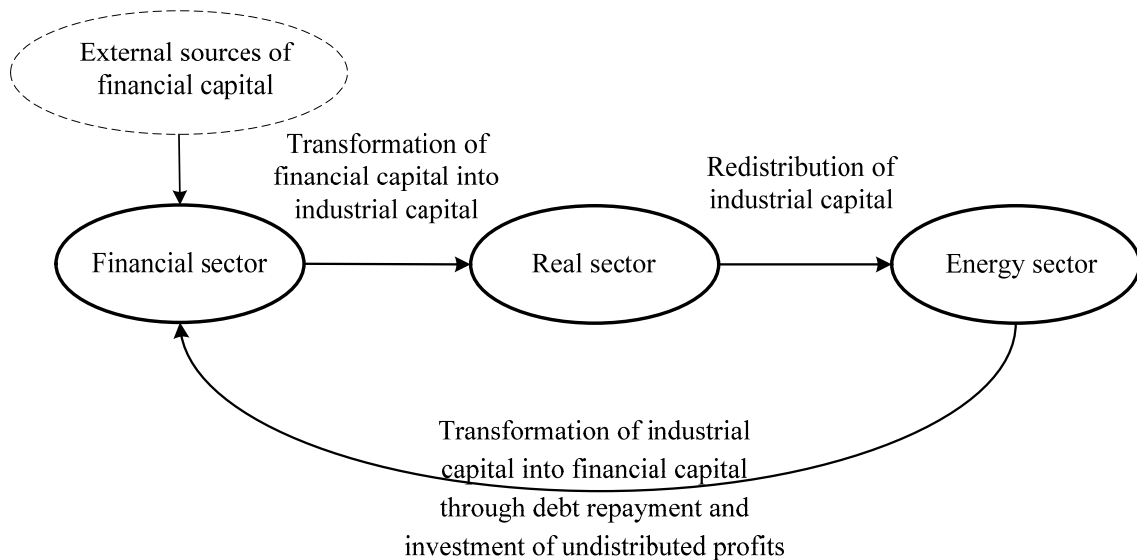


Fig. Transformation of Financial and Industrial Capital

Source: Compiled by the authors.

rate in the economy, the availability of free cash among investors, investor confidence in government institutions, the likelihood of a recession in the economy, and so on.

To ensure a stable flow of investment into the energy sector during the transformation of financial capital into industrial capital, the following ratio of the allocated parameters must be maintained:

$$i < RFC < RIC < RICE.$$

With this ratio of the parameters under consideration, the circulation of capital in the economy will create favorable conditions for both the accumulation of financial capital and the implementation of real investments in energy facilities. The process of financing the energy sector can be carried out not only through investments but also by attracting borrowed capital. However, in this case, just as with investments, loan capital will form more quickly the higher the rate of return for energy companies.

The yield on financial capital and the yield on industrial capital in the energy sector have different characteristics stemming from the different operational features of the energy industry and the financial market. As is known from the theory of managerial decision-making,

investors make decisions not based on the current value of a particular economic variable, but on the forecast of its change. Therefore, the forecasting horizon and the reliability of the forecast play an important role in decisions about capital flows.

In general, the decisions made by investors in the financial market are based on the use of a shorter forecasting horizon in the analysis, due to the high volatility of financial instrument prices, the high liquidity of assets in the financial market, and so on. Regarding industry (and especially energy), the forecast is made for the long-term. Since the average construction and operation period of energy facilities significantly exceeds the 3-year period, which is the boundary between medium-term and long-term investments for the financial market, and due to the low liquidity of industrial capital, decisions on directing direct investments are made based on long-term forecasts (5 years or more). Thus, the simplified approach described above should be made more complex by considering the stability of indicators when solving real-world problems of developing strategies for the energy sector and the financial sector. Since the return on financial capital can be more volatile than the return on industrial capital in the energy sector, it is necessary to take into account that it is advisable to calculate RFC as the average

expected return on financial assets over the next, say, 3 years, while RICE should be considered as the average expected return over the next 10 years. At the same time, the reliability of the forecast and the increase in the required average return can be taken into account using a standard discounting procedure:

$$RFC = \left(\sum_{k=1}^n \frac{RFC_k}{(1+r)^k} \right) / n,$$

$$RIC = \left(\sum_{l=1}^t \frac{RIC_l}{(1+r)^l} \right) / t,$$

$$RICE = \left(\sum_{l=1}^t \frac{RICE_l}{(1+r)^l} \right) / t.$$

Under these conditions, financial and energy security can be achieved not just by fulfilling the inequality above, but also by maintaining this ratio of the average market returns on financial capital, the average market returns on industrial capital, and the average market returns on industrial capital in the energy sector over a prolonged period. In the financial market, this means the government should stimulate the development of efficient financial institutions that reduce the volatility of financial instrument yields. However, in the energy sector, this requirement can currently only be met through the implementation of a targeted state policy to promote national energy companies in the global energy market.

CONCLUSION

The financial system can effectively perform its functions only when there is an increase in the capitalization of the entire financial system, sufficient to meet the developing economy's demand for capital, accompanied by the stable and free movement of capital within the economic system, implying a continuous process of transforming financial capital into industrial

capital and back. A lack of resources flowing into the financial market increases the capital deficit in the economy, thereby hindering economic growth and, in extreme cases, leading to crisis phenomena. The uneven flow of capital, where the inflow of resources into the financial system significantly exceeds the volume of financial capital transformation into industrial capital, leads to the formation of financial bubbles, the collapse of financial markets, and economic crisis. Excessive conversion of financial capital into industrial capital can lead to a decrease in the liquidity of the financial system, where suddenly arising capital needs (e.g., in the event of negative developments in global financial markets) will not be met due to insufficient liquid funds. Thus, financial security can only be achieved by ensuring the sustainability and balance of the process of accumulating financial capital and its transformation into industrial capital.

Achieving a stable, sufficient, and balanced flow of capital into the economy through the financial system is impossible in Russia without ensuring the effective and safe functioning of the energy sector, given its significance in the structure of the national economy and in the country's foreign trade activities. The energy sector is not just a source of resources for the financial system, but also one of its key players, fulfilling the function of consuming and increasing financial capital. The study showed that the main parameters determining the dynamics of capital movement are the average market return on financial capital, the average market return on industrial capital, the average market return on industrial capital in the energy sector, and GDP growth rates. Only a balanced ratio of these parameters can ensure an increase in the country's financial security in the context of the development of the national energy sector.

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