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Assessment of Blocked Financial Assets in Order to Develop Measures to Support Investors

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ABSTRACT

The rights of Russian investors owning foreign financial assets were violated as a result of the introduction of foreign sanctions, which blocked these securities for an indefinite period. This problem is widely discussed both in the professional environment and at the state level, and a search is underway for ways to solve the current situation. The **purpose** of this paper is to propose specific tools for working with blocked financial assets — assessing their value, profitability of formed portfolios, taking into account risk. The authors have developed a model for assessing blocked foreign securities, taking into account sanctions risk, while this risk is considered a type of credit risk. As a result of implementing the model, the fair value of blocked assets is determined, which can be used to determine the value of portfolios containing blocked securities; when creating special insurance and credit products aimed at protecting the rights and income of investors, as well as when the regulator develops recommendations for assessing blocked assets for further work with them.

Keywords: valuation of financial assets; protection of investors' rights; sanctions; blocked assets; foreign financial assets; investors' risks; mutual insurance; investor support

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INTRODUCTION

After the introduction of international sanctions and restrictive measures by foreign regulators, Russian depositories faced an unprecedented necessity to block their clients' assets. The result is a situation where neither owners nor managers of companies have the ability to dispose, receive coupons or dividends on securities.

Due to the large volume of blocked assets and the resulting restrictions, this problem and possible solutions are being actively discussed in the Bank of Russia and the Russian Ministry of Finance. For example, according to the statement by the First Deputy Chairman of the Bank of Russia, V.V. Chistyukhin, a scheme is currently being developed to create a pool of holders of blocked foreign securities for their buyback, and not at a discount, but at a premium.[1] It was initially assumed that this would be possible using funds from previously established special accounts of type "C", opened by non-residents.[2] It can be assumed that implementing such a method will require an assessment of blocked foreign securities.

In August 2023, Finance Minister A.G. Siluanov announced that the Government of the Russian Federation and the Bank of Russia had prepared a draft decree on the commencement of the exchange of blocked assets of Russian and foreign investors. According to him, currently the assets of more than 3.5 million Russian citizens are blocked, totaling 1.5 trillion rubles. At the same time, the total amount of funds in special accounts of type "C", which include blocked income of non-residents from securities, was over 280 billion rubles at the beginning of November 2022. By the end of the first quarter of 2023, 0.7 trillion rubles had been transferred from this type of accounts from the National Russian Depository to the Deposit Insurance Agency.[3]

Despite the imposed restrictions, a professional securities market participant has a number of obligations to their clients, particularly of a regulatory nature. Funds and trust management strategies require re-evaluation and calculation of net asset value. Currently, there are also offers from brokerage and management companies for the sale and purchase of previously blocked foreign securities. In this regard, there is a need to develop models for assessing securities that are blocked in special sections of depository accounts, as existing models are largely based on the assumption of an efficiently functioning market and free arbitrage, while the sanctions regime undermines these assumptions. The investment community, according to the authors, is in a situation where the regulator should clearly define the approaches to assessing such assets in order to uphold the rights of both investors and professional participants. In this regard, it seems necessary and timely for the Bank of Russia to create recommendations for the assessment of blocked financial assets.

In September 2023, a Decree was signed by the President of the Russian Federation regarding the establishment of a mechanism for the exchange of blocked financial assets between Russian and foreign investors.[4] It

[1] TASS. (June 20, 2023). The Central Bank is working on a scheme for investors to exit blocked securities with a premium. URL: https://tass.ru/ekonomika/18065739?ysclid=lluxit92k0809871949 (accessed on 18.10.2023).

[2] Bank of Russia. (November 21, 2022). The decision of the Board of Directors of the Bank of Russia to establish a "C" account regime for conducting settlements and executing transactions (operations) that are subject to the procedure for fulfilling obligations as stipulated by the Decree of the President of the Russian Federation from 5 March 2022, No. 95 "On the temporary procedure for fulfilling obligations to certain foreign creditors". URL: https://cbr.ru/about_br/dir/rsd_2022–11–21_31–4–1/ (accessed on 18.10.2023).

[3] Interfax. (August 22, 2023). The government and the central bank plan to start exchanging frozen assets of investors. URL: https://www.interfax.ru/business/917365 (accessed on 18.10.2023).

[4] Decree of the President of the Russian Federation from 9 September 2023, No. 665 "On the temporary procedure for the fulfillment of state debt obligations of the Russian Federation, expressed in government securities with a nominal value indicated in foreign currency, and other obligations on foreign securities to residents and foreign creditors". URL: http://publication.pravo.gov.ru/document/0001202309090001?ysclid=loa4juoe5h112646849 (accessed on 18.10.2023).

is proposed to use special accounts of type "I" into which the Ministry of Finance of Russia will transfer payments for Russian eurobonds in rubles. After this, requests will be sent to European depositories for the transfer of equivalent amounts in foreign currency in favor of foreign investors. The funds obtained can be used to make payments to Russian investors in compensation for blocked foreign assets. With the successful implementation of this mechanism, Russian investors will be able to receive payments on securities issued by foreign entities, which are currently unavailable. This justifies the need for assessment tools for such assets, which underscores the relevance of the research topic.

In continuation of the issue regarding blocked assets, in November 2023, a Decree was signed by the President of the Russian Federation, according to which part of the blocked foreign assets may be exchanged for frozen assets of Russian investors held abroad.[5] However, this decree has a number of restrictions, such as a limit on the total initial value of foreign securities being transferred, owned by a single resident, not exceeding 100 thous. rubles, and, crucially, the requirement for the consent of the foreign state to carry out the transaction.

PREREQUISITES FOR ASSET VALUATION MODELS AND INPUTS

Despite the importance of the topic, there is currently a noticeable lack of research on working with blocked assets. Most of the works focus on the impact of sanctions on the economy, countermeasures, mechanisms of state regulation, and the development of possible tools for protecting the rights of investors affected by asset freezes [6–10], or the influence on specific sectors of the economy and pricing [11, 12]. A number of studies focus on analyzing the impact of sanctions and macroeconomic indicators on the financial market, not only the Russian one but also the European and global markets [13–15]. This includes the effects on stock prices, the assessment of returns and risks of securities and stock indices, as well as potential mechanisms for investors to manage blocked assets [16–18]. At this moment, there are no applied studies assessing the value of specific blocked assets. Research focused on the impact of sanctions on the economy and investment activity during earlier periods (anti-Russian sanctions from 2014 to 2022) is also primarily aimed at assessing changes in exchange rates, consequences for specific sectors, and other macroeconomic indicators [19–25]. In addition, the current sanctions differ significantly from those imposed earlier and require further study and the development of practical tools for assessing financial assets, access to which has been restricted for investors.

The classical method in financial theory for determining the value of an instrument that generates future cash flows is based on discounting those flows. However, in the case of blocked assets, there are several restrictions:

- The planning horizon is unknown, which significantly complicates the ability to forecast, for example, dividend payments;
- There is a difficulty in determining the discount rate and the possibility of reflecting in it the probability of sanctions being lifted.

Market participants currently use either a price of zero or the last known price before the asset was blocked to evaluate blocked assets. The existing asset valuation standards do not account for the possibility that ownership of an asset is not lost, but that it is temporarily impossible to manage it. In this regard, the development of methods for assessing the fair value of such assets is relevant.

The proposed method allows for overcoming these limitations. The model is based on the

[5] Decree of the President of the Russian Federation from 8 November 2023, No. 844 "On additional temporary economic measures related to the circulation of foreign securities", 2023. URL: http://publication.pravo.gov.ru/document/0001202311080023?ysclid=lpoqmd3l8t667799701 (accessed on 18.10.2023).

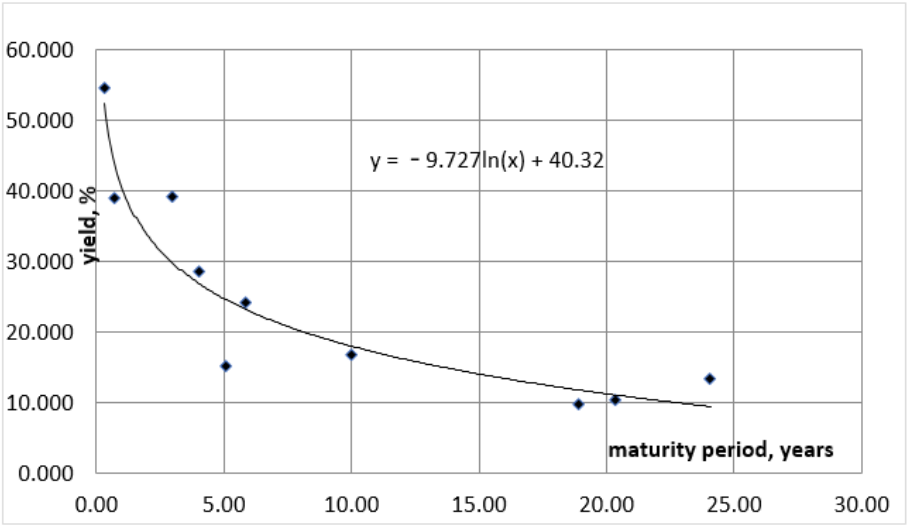

Fig. 1. **Russian Eurobond Curve as of 09.23.2023**

Source: Compiled by the authors based on data from the cbonds.ru

assumption that after some time (within 10 years), sanctions against the Russian stock market and investors will be lifted or significantly eased, or tools will be developed to mitigate their effects. In particular, the assets will be unblocked by Russian depositories, and their owners will be able to receive dividends, coupons, sell them, etc. Accordingly, such assets will be able to generate cash flows for the investor in the future, which means their value cannot be zero. Thus, the inability to generate any cash flow in the present does not rule out the possibility of such an opportunity in the future.

Let's turn our attention to the market of Russian eurobonds. As of September 2023, it has an unprecedented downward shape (the so-called skew curve shape) (*Fig. 1*).

The most intriguing part of the curve is the steep decline in returns, dropping sharply from 50–60% per year to 15–20% over a 10-year horizon. It is precisely in this area that the most interesting market interpretations of sanction risks occur. For comparison, over the next 10 years (on a 10–20 year horizon), the yield loses about 7%.

In addition to the sovereign eurobond curve, a specific benchmark will be needed to distinguish the risk premium for sanctions from the yields of Russian eurobonds. The closest pre-sanction Russian equivalent in terms of economic structure, GDP per capita, and the size of credit spreads can be considered Kazakhstan. In this regard, it seems possible to use the credit default swap curve of Kazakhstan in the calculation model.

IMPLEMENTATION OF THE MODEL

Any point on the curve of Russian eurobonds has a yield that can be represented as three components:

$$RF_{yield} = US_{yield} + CDS_{Kazakh} + PR_{sanct}, \quad (1)$$

where US_{yield} — base rate (US treasuries), CDS_{Kazakh} — credit risk premium, PR_{sanct} — sanctions premium for the Russian Federation. The premium for sanctions is essentially an assessment of country risk.

From formula (1) follows:

$$RF_{yield} - US_{yield} - CDS_{Kazakh} = PR_{sanct}. \quad (2)$$

Calculation of indicators for the 10-year point presented in *Table 1*.

According to formula (2) we get PR_{sanct} = = 12.5%.

Table 1

Calculated Values of the Model for the 10-Year Point of the Russian Eurobond Curve

Indicator	Value of the indicator, %
Cost of a 10-year CDS for Kazakhstan DS_{Kazakh}	1.9
10-year yield US_{yield}	3.7
Yield of 10-year Russian Eurobonds RF_{yield}	18.1

Source: Calculated by the authors based on data from the cbonds.ru

In the model, sanction risk is considered a type of credit risk. The analogy follows from the binomial nature of outcomes:

- In the case of credit risk, the issuer either defaults or continues to service the debt;
- In the case of sanction risk, either there is a change in sanction conditions, or the sanctions continue.

In addition to the two default drivers: the economic ability of the issuer to repay the debt and its willingness to do so, under current conditions, we can speak of a third driver: the technical impossibility of servicing the debt due to imposed sanctions. It is precisely the third indicator that blocks the fulfillment of many obligations by Russian issuers and even by the Russian Federation itself. It is quite possible for a situation to arise where the issuer has all the capabilities and intentions to fulfill its obligations in full, but lacks the technical means to do it. However, for the investor, the essence remains unchanged: a default for any of these reasons makes no difference in terms of the investor's losses.

If the sanctions are not lifted, foreign investors cannot expect any return on their investments, so in this case, the rate of return is zero.

Blocked securities are traded on the same market as traditional bonds, also carry risk premiums, and compete for investors' capital. There is no separate market or segment specifically for sanctioned assets, which must be taken into account when developing valuation models and working with blocked securities.

In this regard, the authors suggest using the following assumptions for building the model:

1. Given the absence of arbitrage opportunities and knowledge about the timing of the removal of imposed restrictions, it seems justified to use risk-neutral default probabilities [26], which reflect both investors' assessment of default probability and their risk preferences.

2. The key uncertainty of the model in question is the timing of the lifting of sanctions. To address this uncertainty and its potential consideration, it is suggested to introduce the concept of credit-equivalent probabilities of sanctions removal by analogy with risk-neutral default probabilities. Such a title reflects the fact that blocked assets are traded in a market where almost all other assets are quoted through credit risk. The authors consider credit risk and credit premium as a common denominator for all bonds (high-quality, pre-default, structured, locked, and any others), allowing investors to compare their risk/return ratios and to build their investment portfolios.

3. Credit-equivalent probabilities of sanctions lifting are not real probabilities of lifting them (and so are risk-neutral default probabilities). Value data — are calculated for the purpose of creating tools for assessing blocked securities.

We model a situation where asset blocking is comparable to placing securities in some low quality depository with high probability

Table 2

Calculated Unconditional Probabilities of Lifting Anti-Russian Sanctions

Period	Unconditional probabilities of lifting sanctions, %
1	76
2	62
3	47
4	41
5	36
6	34
7	33
8	32
9	30
10	29

Source: Calculated by the authors using the default intensity model [27].

Table 3

Marginal Probabilities of Lifting Sanctions

Period	Marginal probability of lifting sanctions, %
1	76
2	–15
3	–15
4	–6
5	–5
6	–2
7	–1
8	–1
9	–1
10	–1

Source: Calculated by the authors.

of bankruptcy. Accordingly, the assets will be returned to the investor only in case the depositary does not go bankrupt. The investor is exposed to credit risk and receives its assets with equal probability of not going bankrupt for the given depositor. At the same time, let's assume that the depository holds bonds offering yields equivalent to those of Russian eurobonds (*Fig. 1*). The probability that the depository will not go bankrupt will be referred to as the credit-equivalent probabilities of lifting sanctions in the model discussed below.

According to the default intensity model [27], it is sufficient to know the size of the spread and the recovery rate of the loan in the event of default to calculate the probability of default. Both of these quantities are known at this stage:

$$\text{Probability of default due to sanctions} = 1-\exp(-12.5\times 10) = 71\% \quad (3)$$

Therefore, the probability of lifting the sanctions is 100% — 71% = 29%. Within the framework of the model, we assume that the lifting of sanctions coincides with the unblocking of assets within Russia.

Similar probabilities can be calculated for the other points on the curve of Russian eurobonds (*Fig. 1*). The probabilities of lifting sanctions against the Russian financial market in the next 10 years are presented in *Table 2*.

As a result of the calculations carried out, a hypothetical probability curve for the lifting of sanctions has been obtained, which at first glance appears paradoxical. For example, it turns out that the probability of lifting sanctions in 10 years is 29%, while in 1 year

Table 4

Cost of Hedging An Investor's Portfolio

Period	Cost of hedging, %
1	–4
2	–17
3	–17
4	–16
5	–16
6	–15
7	–15
8	–15
9	–15
10	–15

Source: Calculated by the authors.

it will be 76%. Although it is generally logical to assume that the relationship should be the opposite: the probability of sanctions being lifted in the near future is relatively low, over time this probability may increase, which is typical for the real world. However, this is not so straightforward for the credit-equivalent conditions being considered.

Let's consider the marginal probabilities of lifting sanctions (*Table 3*), which are equal to the difference between the implied probabilities at neighboring points.

CALCULATION OF THE MODEL FOR THE EVALUATION OF BLOCKED ASSETS

For example, an investor wants to buy a blocked security and hold it for the next 10 years. Let's assume this is a stock of Apple Inc., and its current market price on the NASDAQ is 150 dollar per share.

What discount from the market price is reasonable to request from such an investor?

First and foremost, it is necessary to eliminate market risk by forming a portfolio consisting of the following positions:

- A long position in blocked Apple shares;
- A short position in Apple traded on NASDAQ.

In a short position, the investor will pay the dividend of Apple stock to their broker, who will then pass this dividend on to the investor with a long position, from whom the broker borrowed the stock in a repo.

According to the Capital Asset Pricing Model (CAPM) by Sharpe and Lintner [23, 24],

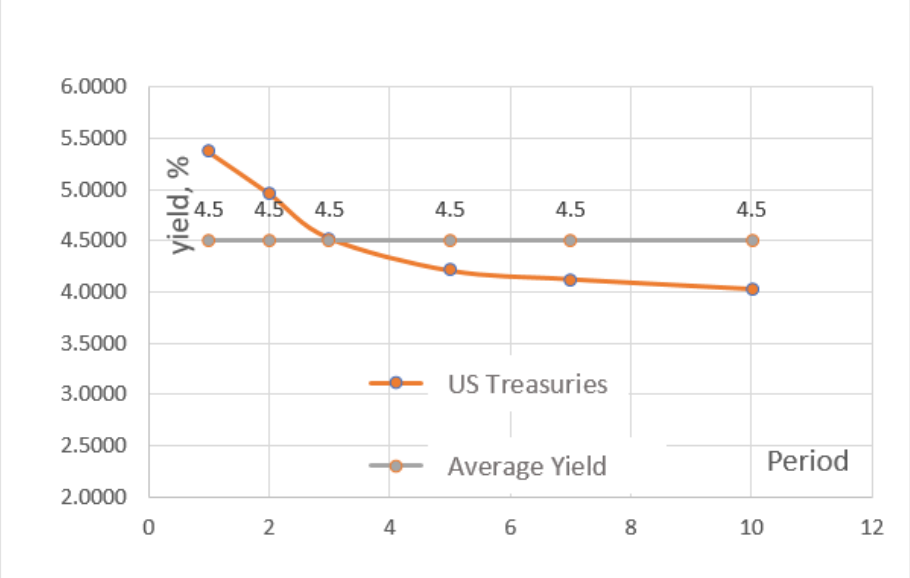

Fig. 2. **Average Yield on US Treasuries Over 1–10 Years**

Source: Calculated by the authors based on data from the cbonds.ru

Table 5

Discounted Value of the Hedge

Period	Discounted Value of the Hedge, %
1	–3.83
2	–15.57
3	–14.90
4	–13.42
5	–12.84
6	–11.52
7	–11.02
8	–10.55
9	–10.09
10	–9.66

Source: Calculated by the authors.

Table 6

Current Value from the Yield of Owning a Hedged Portfolio

Period	Current Cost of Owning a Hedged Portfolio Over a 10-Year Horizon, %
1	96.17
2	81.2
3	69.1
4	59.83
5	52.15
6	46.14
7	41.06
8	36.73
9	33.02
10	29.83

Source: Calculated by the authors.

the expected return on Apple stock, given its level of market risk, will be 15% per annum. This will be the cost of the short position for the investor.

As soon as the stock is unblocked, the investor starts receiving the same 15% annual return from their long position. Since the unblocking process is probabilistic, one can speak of the expected (probability-weighted) return for an investor from a long position in blocked shares. At the same time, the probabilities used to calculate the weighted expected return will be marginal (values are given in *Table 3*).

Thus, under the proposed model, the investor has the following financial result:

1. Pays 15% annually with a probability of 100%.

2. Gets 15% annual bonus if you unlock shares in the relevant period.

For example, in 1 year the investor will pay 15% annual and get profit

$$15\% \times 0.76 = 11\% \ \ per\ annum. \qquad (4)$$

The overall yield of the investor's portfolio for both positions in year 1 is equal to:

$$-15\% + 11\% = -4\% \ per\ annum. \qquad (5)$$

Let's introduce the concept of the cost of hedging into the model — his is the cost of holding a hedged portfolio consisting of a long position in blocked Apple shares and a short position in traded Apple shares, in each considered year (as a percentage per annum for the investor). Applying the same logic as in (5), we obtain results for each year (*Table 4*).

Thus, in the total number of actions performed:

- The portfolio is hedged and is risk-free;
- The costs of owning the portfolio are known;

• There is an opportunity to discount the expected returns on the portfolio at the risk-free rate.

Since the portfolio in question consists of Am erican securities and the American market is being considered, the yield on US Treasuries for a period of 1 to 10 years can be used as the risk-free rate. Their average yield over a horizon of 1–10 years is 4.5%, and it is suggested to consider it as risk-free (*Fig. 2*).

We discount the expected returns from *Table 4* at a risk-free rate of 4.5%, and the results are presented in *Table 5*.

Next, it is possible to calculate how much the investor will pay over 10 years in terms of the current price level (Present Value), with the results presented in *Table 6*. For example, for the point of 2 years:

$$(1-3,83\%)\times(1-15,75\%)=81,20\%. \quad (6)$$

Thus, the investor will pay 1–29.83% = = 70.17%. This will be the fair discount required by the investor for the locked shares of Apple.

As a result, according to the proposed model, we find that the fair price of the evaluated blocked asset is 42.45 dollars, while the market price is 150 dollars.

POSSIBLE PRACTICAL APPLICATION OF THE RESULTS. MEASURES TO SUPPORT INVESTORS

The analysis of the structure of mutual funds showed that a large portion of them consists of equity funds. Market experts note that, based on the results of desk audits of management companies of mutual investment funds conducted by the Bank of Russia, the issue of protecting the rights and interests of shareholders in such funds with blocked assets is the most pressing concern for the regulator. The calculated price of the blocked asset obtained from the presented model can be used as an estimate of the security's value within the framework of a trust management strategy or a mutual investment fund to determine the net asset value. This is more reasonable than using a zero price or the last closing price before asset blocking, and will also help protect the rights of shareholders.

As mentioned earlier, professional appraisers do not have approved methods for valuing blocked assets and also use the last known price at the time of closure before the blocking, or a zero price. There are precedents where an appraiser, in search of such a price, turns to a very niche market, for example, a market created by a specific broker solely for their individual clients. The authors are confident that all these methods suffer from subjectivity and may violate the rights of both investors and professional participants in the securities market.

At the same time, the introduction of amendments to the existing Federal Standard for assessment "Assessment Process (FSO III)",[6] which expand and clarify the list of valuation assumptions regarding the object of valuation by allowing the use of developed models for valuing blocked assets, could enhance the toolkit available to appraisers.

In addition, the obtained price can be used to calculate the insurance value and determine the insurance amount when insuring the financial risks of the investor-owner of the blocked asset. Currently, insurance for financial risks of investors operating in the stock market is virtually nonexistent in the Russian market. For a long time, the possibility of insuring the risks of individual investment account holders was discussed,[7] but this bill was rejected due to a

[6] The Federal Standard for assessment "Assessment Process (FSO III)" was approved by the Order of the Ministry of Economic Development of the Russian Federation on the approval of federal standards for assessment and on amendments to certain orders of the Ministry of Economic Development of Russia regarding federal standards for assessment No. 200 from 14 April 14 2022. URL: https://docs.cntd.ru/document/350260562?ysclid=lsky96nxhc303418874 (accessed on 18.10.2023).

[7] Bill No. 76910–7 of the Federal Law "On the Insurance of Investments of Individuals in Investment Accounts". 2017. URL: https://sozd.duma.gov.ru/bill/76910–7?ysclid=lpkblnh1nt78328965 (accessed on 18.10.2023).

lack of support from the Bank of Russia and professional market participants. Overall, the discussion in such initiatives revolves around insurance in case of bankruptcy of a professional market participant who manages the funds of individual clients. Other risks are usually excluded from insurance coverage due to the complexity of their forecasting and quantitative assessment. The proposed option will cover sanction risks, such as the blocking of foreign assets or significant changes in foreign legislation that lead to losses for the securities owner.

Insuring investors against financial risks may not be profitable for traditional insurers, which makes it reasonable to consider such protection based on the principle of mutual insurance through self-regulating organizations of investors. The legal basis can be found in Article 17 "Compensatory and Other Funds of Self-Regulatory Organizations" and Article 18 "Protection of the Rights and Legal Interests of Individual Investors by Their Public Associations" of the Federal Law "On the Protection of Rights and Legal Interests of Investors in the Securities Market".[8] According to Russian legislation, self-regulatory organizations in the financial market, as well as self-regulatory organizations for individual investors, have the right to create compensation and other funds for the purpose of reimbursing damages incurred by the participants of these organizations. The creation of such compensation funds and mutual insurance for investors will have a generally positive effect on the development of the stock market, contributing to its attractiveness and the attraction of investment funds.

In the development of opportunities for working with blocked assets, it seems feasible to create a preferential lending program for investors with low interest rates secured by these assets. These loans can also be targeted with a specified list of objects for the allocation of borrowed funds. The implementation of this measure is not possible without support from the government and will require additional legislative regulation; at the same time, it will contribute to supporting investment activity and economic development.

CONCLUSION

The obtained model allows for the assessment of the value of currently blocked foreign assets for Russian investors. The model is based on the assumption that during the considered 10-year period, the sanctions regime may change, and there will be an opportunity to manage the assets. At the same time, if the sanctions are not lifted, the financial outcome for the asset owner is equivalent to a default, which provides grounds to use a default intensity model for assessing profitability. As a result, marginal probabilities of sanction cancellation and the weighted expected return of the asset in question have been obtained. When hedging a portfolio, there is an opportunity to discount expected returns at the risk-free rate and determine the fair price of the locked asset, which is likely to differ significantly from the market price.

Given the increasing geopolitical tension in various regions of the world and the popularity of imposing sanctions in financial markets as a mechanism for potential economic and political pressure, one cannot rule out the possibility that the situation currently unfolding in the Russian stock market could occur in other countries as well. In this regard, it seems relevant to create and develop tools for assessing financial assets that have been subjected to international economic sanctions.

The proposed insurance mechanism for the realization of legislative risks and the imposition of sanctions by foreign states

[8] Federal Law "On the Protection of Rights and Legal Interests of Investors in the Securities Market" from 5 March 1999, No. 46 (in the latest edition). URL: http://pravo.gov.ru/proxy/ips/?docbody=&nd=102058488&intelsearch=46-%F4%E 7&ysclid=lpot1cyw2o51724200 (accessed on 18.10.2023).

against the foreign assets of Russian investors is based on the principles of mutual insurance and can be organized through self-regulatory organizations of financial market participants. This will require additional legislative regulation and will contribute to enhancing the level of protection for the rights of private investors. Similarly, the proposed process of preferential lending to investors against blocked assets will require corresponding legislative changes and support from government authorities. Thus, most measures of support and protection of investors' rights are only possible with active interaction among investors, professional participants in the financial market, the Bank of Russia, the Ministry of Finance of Russia, and the Government of the Russian Federation.

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