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# Public debt from the viewpoint of national security and sovereignty

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**Abstract.** The paper examines public debt from the viewpoint of national security and sovereignty. The current situation with public debts in different types of countries is revealed. The risks, challenges and threats in the public debt sphere are presented. Different forms of public borrowings, such as loans from international organizations and banks, issuance of the securities on the domestic and international markets were analyzed. It was shown, that the international credits are characterized by the conditionality. In the case of borrowing on the open market using securities, the debtor depends on the current market conditions and can face significant deterioration of the situation. It was proved, that no form of borrowing is free from potential problems. The suggested classification of risks, challenges and threats can be useful for the efficiency of the public debt management.

**Keywords:** public debt, risks, challenges, threats, debt crisis, management, national security, sovereignty

## 1. Introduction

Public debt is a serious problem, that can affect national security and provoke restrictions on state sovereignty. It should be noted, that public debt is a controversial phenomenon. On the one hand, government borrowing can contribute to economic growth, industrial production, building and improvement of the necessary infrastructure, and development of new technologies. On the other hand, excessive public debt is a strain on the state budget, slows investment and hinders economic growth for years, all this reduces the well-being of the population and becomes a burden for future generations.

In modern conditions, the pressing issue is the sovereignty of the state and non-interference in its political and economic issues. At the same time, problems associated with external public debt create the opportunity for debtor countries to become dependent on creditor states and their representatives. However, internal public debt does not make the state free from the risk of losing independence in making decisions. For example, accumulated significant public debts complicate the fight against inflation, since an increase in the key rate to combat inflation conflicts with the objectives of managing public debt, leading to significant additional costs for servicing it.

In extreme cases, a debt trap situation may occur, that means in case of international operations that a creditor country or institution extends debt to a borrowing country partially, or solely, to increase the lender's political leverage. The creditor country extends excessive credit to a debtor country with the intention of extracting economic or political concessions when the debtor country becomes unable to meet its repayment obligations.

Currently we observe the elevated public debt, for instance, at the end of 2022 the average public debt in advanced countries was about 112 percent of their GDP, that is significantly higher than recommended [1, p.56].

Sovereign debt sustainability metrics continue to worsen around the world, especially in frontier and low-income countries, with many of the most vulnerable already facing severe strains [2, p. xiv]. Additionally to the absolute and relative numbers for the public debts (volumes and ratios of public debts to GDP), we should pay attention to the considerable surge in debt service payments on public and publicly guaranteed debt in recent years because of the increase in interest rates globally. For frontier economies and emerging markets with lower credit ratings, the situation is more worrisome. Some countries have lost market access, and debt distress pressures have become more pronounced.

Problems with public debts and even debt crises reveal the inadequacies, imperfections and inefficiencies in conducting public debt management in different countries. Particularly urgent question is the effective public debt management. Countries need the development of the credible risk-based frameworks that promote consistent macroeconomic policies, reduce debt vulnerabilities over time, and build up the necessary room to perform independent economic policy.

Different international organizations (IMF, World Bank) pay attention to the situation in the area of public debt and the need for vigorous action to avoid the debt crisis [1], [2], [3].

Many authors emphasize the need for effective management of public finances and offer their solutions. Among them we can note such scientists, as Antipova T. [4], [5]; Fattorelli M. L. [6], Batubara F. R., Ubacht, J., Janssen M. [7], Faber, A.S. C., Budding, G.T. [8], who wrote about strengthening of the instruments, methods and institutions to increase transparency, accountability and, finally, credibility of the public sector.

But, still there is the need for the methodological support of public debt management, including approaches to public debt problem prevention and resolution. Thus, this study is an attempt to contribute to the significant amount of efforts to develop the approaches to public debt management.

The research questions are as follows:

- 1) is it possible to apply an approach from another domain (security sphere) to the sphere of public debt management;
- 2) and if this is possible, what will be the calibration of risks, challenges and threats in relation to public debt;
- 3) what are the general risks, challenges and threats, that relate to all types of public borrowings, and what are the specifics of the certain types of debt.

We are not aware of any work devoted to public debt management using an approach that involves the distribution of negative factors into risks, challenges, and threats.

Thus, this paper aims to analyze the application of the «risks-challenges-threats» framework from the national security management to the sphere of public debt. To achieve the results of the research, it is necessary, firstly, to clarify the essence of above mentioned framework and clearly define the terms such as risk, challenge, threat, then to reveal the current situation in the sphere of public debt within the «risks-challenges-threats» framework, and present the final conclusion about the opportunities and difficulties, connected with this approach. All this has determined the structure of this paper.

## **2. Literature Review**

An analysis of scientific papers on the topic of public debt shows that there is a huge number of works devoted to certain negative events and effects in the field of public debt. But the authors often use the words such as «dangers», «risks»,

«instabilities», «vulnerabilities», «challenges», «threats» in intuitive manner, on the empirical level and without special analysis and clear distinctions between these categories. It is necessary to agree with I.A. Veruhs, that clarity, intelligibility and elaboration of the conceptual-categorical apparatus are necessary [9]. Without understanding of the semantic content of the main categories, it is difficult to build an effective and adequate system of management. To ensure effective management of public debt it is necessary to have clear understanding of the basic categories, that underlie decisions taken to minimize the factors that are considered to undermine security.

In our study, we used two groups of publications.

**The first group** of sources is related to research on debt and the challenges facing debt management. Among such publications, we can name the research of the following authors: J. Bulow [10], K. Rogoff [10], [11], [12], C. Reinhart [10], [11], V. Reinhart [11], C. Trebish [10]; A. Abbas and A. Pienkowski [12]; M.A. Kose, P. Nagle, F. Ohnsorge and N. Sugawara [13].

**The second group** of publications is devoted to the concepts of the security and their application in economy, finance and management [9], [15], [16], [17].

### 3. Data and Methodology

Statistical data of international economic and financial organizations (IMF, World Bank), as well as publications of foreign and domestic authors were used as sources of information. The time period covered in the analysis is mainly the period from the global economic and financial crisis until 2023 year. Variables are collected from both the developed and developing countries.

The methodological basis of the research is system approach, fundamental provisions of the theory of international economic relations, methods of comparative analysis, expert assessments.

This article pays special attention to the conceptual-categorical apparatus. We take as a basis a methodological approach, according to which risk, challenges and threats are considered as factors unfavorable for security in any area, as different degrees of danger, where risks are the lowest level of danger, and threats are the highest level [9]. They are distinguished by varying degrees of destructiveness, leading to different consequences.

Risks, challenges, and threats in the area of public debt reflect varying degrees of insecurity and require a response in accordance with the degree of danger, which will be discussed below.

In the research we will use the following meanings of risk: «1. a possibility that an action or activity causes damage or loss of material or persons; and 2. risk is used when the consequences are uncertain» [16, p.79].

As for the challenge, it is defined in different ways as follows: «1. something difficult ... that tests strength, skill, or ability...; 2. questioning rightness: a refusal to accept that something is right and legal; 3. invitation to compete... 4. a demand to stop ... or a demanding task or situation; as well as: call to try one's skill or strength; demand to respond or identify oneself; formal objection; or a call to engage in a fight, argument or contest; a questioning of a statement or fact; a demanding or stimulating situation, ..., etc.» [16, p.66].

Threat is «1. a statement or expression of intention to hurt, destroy, punish, etc. in retaliation or intimidation and 2. an indication of imminent danger, harm, evil etc.» [16, p.62].

We also rely on an important contribution on the topic by Battistelli F. and Galantino M.G., that «the risks are attributable to positive human intention, so that potential harm is an unintended side effect in the production of benefits, threats are

attributable to ill-intentioned actors, deliberately acting to cause damage to others» [15].

#### 4. Current situation with public debts and factors influencing the borrowings

Detailed information about the public debts in different groups of countries is presented in Table 1.

Table 1. General Government Debt in 2018-2028, % of GDP

	Historical information			Projections		
	2018	2020	2022	2024	2026	2028
<b>Advanced economies, average</b>	102.9	122.9	112.3	112.7	114.6	116.3
<b>USA</b>	107.4	133.5	121.3	126.9	132.9	137.5
<b>eurozone</b>	85.7	96.8	91.0	88.3	86.1	84.9
<b>Japan</b>	232.4	258.6	260.1	251.9	251.1	252.8
<b>United Kingdom</b>	85.2	104.6	101.9	105.9	108.5	108.2
<b>Canada</b>	90.8	118.9	107.4	103.3	98.6	94.7
<b>Emerging markets and developing countries, average</b>	53.3	65.9	65.3	70.1	74.3	78.1
<b>China</b>	56.7	70.1	77.0	87.4	95.9	104.3
<b>India</b>	70.4	88.5	81.0	82.3	81.7	80.5
<b>Russia</b>	13.6	19.2	18.9	21.8	20.9	18.2
<b>Brazil</b>	84.8	96.0	85.3	90.3	93.9	96.0
<b>South Africa</b>	51.5	68.9	71.1	75.8	81.6	86.7
<b>Developing countries with low income, average</b>	41.7	48.4	48.4	46.3	43.8	42.0

Source: compiled by the author based on [1, pp. 56, 64, 70].

Despite the fact that in 2022 there was a decrease in the debt to GDP ratio in the majority of countries, except Japan, China, South Africa, the growth of this indicator, according to IMF calculations, will continue in the future. Debt ratios are projected to start going up again in 2023 and continue to increase over the medium term through 2028. The level of public debt is now more elevated and projected to grow faster than foreseen before the pandemic. By 2028 the United States' public debt ratio is projected to exceed 137.5 percent of GDP, significantly surpassing the pandemic peak [1, p.56]. For China, the public debt to GDP ratio is expected to increase continuously to reach 104.3 percent in 2028, that is twice higher than the level observed in 2018 [1, p.64]. In general, the growth of public debt in 2028 compared to 2018 in developing countries (excluding China) will be more moderate than in advanced countries. There will be virtually no change in debt levels in low-income countries, but this indicates problems with access to the capital market rather than a favorable macroeconomic situation.

Public borrowing is carried out in the form of government loans and direct loans. Government loans are characterized by the fact that temporarily free funds of individuals and legal entities are attracted through the issuance and sale of government securities on national and international markets. The main type of securities symbolizing a debt obligation is a bond. Loans are characterized by the fact that lenders directly (without purchasing debt securities) transfer to the borrower the credit resources. Credit relations involve a negotiation process between the lender and the borrower, as a result of which the latter can receive more favorable financial conditions. However, in exchange for these conditions, the creditor will often make additional demands, which can be both economic and political in nature. An example of such obligations with conditionalities are the IMF loans, the provision of which is associated with a specific set of economic measures. In the case of borrowing on the open market using securities, the terms of borrowing depend on the current market conditions. The advantage of this form of debt is a wide range of potential investors, large capacity and the ability to actively manage debt obligations. No form of borrowing is free from potential problems.

Among the factors influencing the public borrowings we can name the negative effects of COVID-19 pandemic and weak recovery growth after this, general decline in economic activity, geopolitical difficulties that affect the state of countries' budgets.

The factor, that influences the situation with the public debt, is the change in the structure of debt in terms of creditors and types of debt. The debt composition has changed in recent years from predominantly bank loans to bonds, leading to higher probability of rapid contagion, as bonds change hand quickly and across borders. In contrast to the previous years, currently low- and middle-income economies have become increasingly indebted to private creditors, especially bondholders. According to the International Debt Statistics, prepared by the World Bank, at the end of 2021, 61 percent of the US\$3.6 trillion in long-term public and publicly guaranteed external debt stock was owed to private creditors—up from 46 percent in 2010. In IDA (International Development Association) eligible countries, the share owed to private creditors rose from 5 percent in 2010 to 21 percent in 2021. [3, p.ix]. The composition of debt owed by IDA countries to official bilateral creditors has also changed significantly. The proportion owed to Paris Club creditors fell to 32 percent at the end of 2021 (US\$64.2 billion), down from 58 percent (US\$48.9 billion) at the end of 2010. Above mentioned decline was compensated by the increase of the amount owed to non-Paris Club creditors (China, India, Saudi Arabia, the United Arab Emirates, and others) up to 68 percent (US\$138.3 billion) in 2021 from 42 percent (US\$35.3 billion) in 2010 [3, p.ix]. Taking into consideration the change in debt composition, debt reduction process for low- and middle-income countries in debt distress can become more challenging as reaching agreements becomes more difficult and time-consuming.

Another aspect of the composition of the debt is the increase of the share of short-term debt. According to the reports, short-term debt accounted for half of the increase in the total net external debt inflows for low- and middle-income countries in 2021, even though it accounts for only 27 percent of the overall external debt stock [3]. Short-term debt inflows are volatile and bear the increased risks of refinancing (roll-over risks).

## **5. Calibration of risks, challenges and threats in relation to public debt**

From our point of view, we can apply the approach from another domain (national security) to the sphere of public debt management. As the answer to the research question, we present our version of the calibration of the risks, challenges and threats in relation to the public debt. We also distinguish between different types

of borrowings and note general risks, challenges and threats, as well as specific ones that are characteristic of certain types of borrowings.

**Risks in public debt sphere.** Risk implies uncertainty. As Brauch H.G. mentions, risk is present only to the extent that uncertainty involves some feature of the world, stemming from natural events or human activities that impacts human reality. Risk, in human terms, exists when humans have a stake in outcomes and is close to a situation or event in which something of human value has been put at stake and where the outcome is uncertain [16, p.82]. Risk is inherent in all economic processes. We cannot take advantage of the opportunities available for government borrowing without incurring certain of the risks noted below.

IMF provides some guidelines in connection to risks, important for public debt management. So, according to IMF, risks of public debt are as follows:

-market risk (the risk of an increase in the cost of debt due to changes in market variables such as interest rates and exchange rates). The most common types of market risk are the interest rate and currency risks. Interest rate risk is the risk of an increase in the cost of debt due to changes in interest rates. Currency risk is the risk of an increase in the cost of debt due to changes in exchange rates;

- refinancing risk, or rollover risk (the risk that the debt will need to be refinanced at high cost; in extreme cases, the debt cannot be refinanced at all);

- liquidity risk (means a situation where the volume of liquid assets decreases rapidly as a result of an unexpected flow of cash liabilities and / or possible difficulties in raising funds through short-term borrowing);

- credit risk (risk of non-performance by a counterparty of obligations under loans, financial contracts, etc.);

- settlement risk (the risk that a counterparty will not deliver a security in accordance with the terms of the contract after the country (other counterparty) has already made a payment in accordance with the agreement);

- operational risk. This includes a number of different types of risk: transactional errors at various stages of execution and transaction posting; deficiencies or failures in internal controls or systems and services; reputational risk; legal risk; violations of security measures; natural disasters affecting the debt manager's ability to operate [18, p.14].

To our mind, above mentioned risks relate to all types of public borrowings.

**Challenges in public debt sphere.** Challenges to economic security are understood as a set of factors that, under certain conditions, can lead to a threat to economic security.

From our point of view, in case of challenges, it is necessary to differentiate between general challenges, that relate to all types of borrowings and challenges, that are specific to some types of borrowings.

As for general challenges, they are as follows:

- significant decrease in state budget revenues and an increase in government spending;

- realization of contingent budget obligations;

- the significant deterioration in borrowing conditions;

- challenges in the field of cybersecurity.

One of the main challenges in public debt sphere is the significant decrease in state budget revenues and an increase in government spending. This situation has fully manifested itself during the pandemic, that has negatively affected public debts. The major drivers of the significant growth of the public debts in different countries were as follows: sharp contraction in economic activity, the rises in the primary deficits and as a consequence – necessity to increase borrowing. As a result, public

debt reached record levels during the pandemic, in both advanced economies and low- and middle-income countries.

The COVID-19 pandemic has had a negative impact on economic activity across the board, with international interactions coming to a near standstill as countries impose strict travel restrictions to stop the spread of the virus. The pandemic-induced recession has led to soaring unemployment, falling real wages, shrinking fiscal revenues and a weakening banking sector. The pandemic and measures to contain it caused for a certain period of time the sharp decline in demand and a drop in oil prices. As a result, exporters of oil and manufactured goods were hit particularly hard.

The pandemic will continue to be one of the defining challenges for entering the trajectory of sustainable development and creating conditions for ensuring dynamic development in the medium term. Countries are emerging from pandemic restrictions at different speed, some industries still can not recover. New waves of the pandemic, new strains or new emergences of infectious diseases cannot be ruled out. In this case governments will be forced to financially mitigate the consequences of the pandemic by increasing the debt burden.

Escalation of the geopolitical tensions in the global economy can hinder bilateral contacts and the establishment of productive economic partnerships. It can cause the tighter global financial conditions, higher inflation, lower growth, and higher stress on public finances and, as a result, have adverse implications for various countries' debt dynamics. Continuation of the geopolitical tensions may lead to further increases in different types of spending, including defense spending. Public debt will also increase because of the fiscal support to address negative effects from disruptions to international trade.

Another example of the challenges in public debt sphere is the issue of contingent liabilities. According to the IMF, «contingent liabilities are the obligations that are not explicitly recorded on government balance sheets and that arise only in the event of a particular discrete situation, such as a crisis» [1, p. 31].

There is a steady increase in contingent obligations in the world economy. Large contingent liabilities are accumulated by now as the governments provided exceptional support during the COVID-19 pandemic and by the sovereign-bank nexus. Currently large banks have huge holdings of government debt from different countries; banks and governments have become more interdependent. Negative changes in demographics, including declining fertility and aging populations are the factors, that negatively influence the public budgets, especially in the developed countries. The complete comprehensive account of all contingent obligations accumulated by the governments is absent, that results in the failure of the authorities to manage effectively contingent liabilities and associated risks.

Another example of the challenge in public debt sphere is the significant deterioration in borrowing conditions as a result of external and internal factors. Currently, after years of low interest rates, tighter monetary policy and the increase of the key rates are challenging the public debt management.

Additional problems with the cost of debt can be caused by the additional spending, connected with the debts (numerous commissions, including commissions for negotiations, participation, management, reservation of funds, one-time special bank commissions, commissions for guarantees, overestimation of the necessary amount of the collateral). All this should be clear to the borrower.

We should also pay attention to the challenges in the field of cybersecurity. The ongoing processes of technological change affect all aspects of life and create uncertainty about the future. The sphere of public debt is under the transformations under the effect of new technologies, that have not only advantages, but also

drawbacks, such as the need for harmonization and common standards; problems of integrating new ones with existing processes and systems; the necessity to provide cybersecurity [19]. Challenges in cybersecurity can be demonstrated in different ways:

- from the point of view of the impact on network equipment, cyber challenges can be associated with denials of service and modernization, interception of equipment control, unauthorized data collection, disruption of critical communication infrastructure;

- as for challenges for routing, cyber challenges can result in unavailability of Internet resources, distortion of traffic routes, and network congestion;

- from the point of view of data processing, one may encounter denial of service and updating of user devices, de-anonymization and localization of users, unauthorized data collection;

- as for the challenges for services, cyber challenges similar to problems with data processing consist of de-anonymization and localization of users, unauthorized collection of data, as well as failure of «libraries», and the introduction of «bookmarks» in programs;

- when distributing harmful information, the challenges are associated with large-scale harm to the well-being of citizens.

Now let's turn to the specific challenges, that are observed in case of borrowing in the form of credits from international organizations and banks, as well as foreign governments.

Significant debt to international financial organizations (such as the IMF and World Bank), foreign banks and governments under bilateral loan obligations can significantly limit a country's sovereignty, especially if the country's interests do not coincide with the interests of the relevant creditors.

Loans from international financial organizations come with a number of challenges for the borrower. Among such we can name the necessity to follow the requirements about special economic programs (for example, when the country borrows from the IMF or the World Bank).

Additionally, as the challenges we can name the need to fulfill the conditions of the membership in the global financial and economic organizations (including the provision of information on the state of the country's economy, the provision of financial resources to unfriendly states (for example, as part of membership in the IMF). Thus, in case of loans from the international financial and economic organizations, we can observe conditionality of their financial resources. When restructuring debt, it is necessary to reach agreements with all creditors and to have uniformity in the applicable terms of settlement with all creditors (for instance, IMF-World Bank-Paris club).

The problem of debt dependence concerns not only low-income countries, but also countries of the European Union, which have also experienced debt crises and restrictions on their sovereignty in decision-making. This is due to the presence of supranational bodies that have control and enforcement mechanisms for the execution of decisions. An example of these actions is the anti-crisis policy imposed on Greece.

Another negative phenomenon associated with participation in international financial organizations is the lack of involvement of participating countries in making decisions about the recipient of borrowings. This problem is revealed by A.V. Navoi, who comes to the conclusion that Russia essentially generates resources for IMF loan programs, that are implemented, among other things, in favor of unfriendly countries [20].

Additional challenge, connected with the participation of the country in international financial institutions is the necessity to provide statistical and other information about the economy. A.V. Navoi proves, that this situation is becoming increasingly burdensome. Thus, due to the growth of the supervisory and control functions of the IMF, Russia is becoming increasingly burdened with obligations to provide statistical and other information to the IMF, participate in mutual inspections, and receive technical missions. Thus, in 2021, the volume of assessment activities carried out was 4 times higher than the scale of activities within the framework of FSAP (Financial Sector Assessment Program), for 2011 [21, p. 139]. It should be noted, that additionally to FSAP [22] there are several such programs within which different countries provide significant volume of information: NSDP, SDDS, SDDS+, e-GDDS [23].

Thus, the International Monetary Fund's Dissemination Standards Bulletin Board (DSBB) provides access to the National Summary Data Page (NSDP), Special Data Dissemination Standard Plus (SDDS Plus), the Special Data Dissemination Standard (SDDS), the Enhanced General Data Dissemination System (e-GDDS), and the Data Quality Reference (DQRS) sites.

- The National Summary Data Page (NSDP) is a «data portal» for countries participating in SDDS Plus, SDDS, and e-GDDS. The NSDPs allow users to access data, view metadata, or browse links to online datasets for all available categories for a country, even if these categories are compiled by multiple statistical agencies.
- The SDDS was established in 1996 to guide countries that have, or that might seek, access to international capital markets in the dissemination of economic and financial data to the public.
- The SDDS Plus was established in 2012 to reinforce and supplement the Fund's Data Standards Initiatives. It builds on the SDDS and its purpose is to assist member countries with regard to the publication of economic and financial statistical data. The main reason for the developing SDDS Plus is addressing data gaps revealed during the global crisis.
- The e-GDDS was established in 2015 to guide countries in data dissemination by supporting transparency and encouraging statistical development. This site provides information on data produced and disseminated by member countries that participate in the e-GDDS.
- Additionally, there is the Data Quality Reference Site (DQRS), which provides access to contributions in the field and includes a selection of articles and other sources related to data quality issues [23].

Thus, the difficulties, additional obligations and disadvantages of participating in certain international organizations can outweigh the advantages of participating in them.

One of the challenges, connected with credits, is the reduction in the value of the collateral and requirements for its replenishment. As the experience of Russian companies and banks during the global financial and economic crisis has shown, it is possible to encounter demands from foreign lenders for Russian borrowers to increase the collateral or repay the loan early due to the depreciation of the collateral. During the world financial and economic crisis, the fall in the share price of the Russian banks and corporations on the national stock market reached 70%. The rate of the depositary receipts of Russian companies on foreign stock markets, primarily the UK and the USA markets, as well as Russian Eurobonds (long-term debt obligations with maturity up to 30 years, that are denominated in a currency not native to the country where it is issued) and euronotes (that are similar to the eurobonds, but with shorter

maturity, typically 2-10 years), has decreased due to the risk of non-repayment on time. As a result of the depreciation of the pledged shares, the collateral for Rosneft's loan decreased, for example, from 4.9 to 2.1 billion dollars in September 2009. A similar situation arose with other Russian companies UC RUSAL (secured by shares of Norilsk Nickel), AFK Sistema (loan secured by shares of MTS), Altimo (loan secured by shares of Vypelcom). The risk of increasing costs for insuring external borrowings is associated, in particular, with the inclusion in the loan agreement of a clause on increasing the insurance premium index for the risk of the default. Its basic indicator is the cost of the CDS (credit default swap) contract. The borrower pays this premium in exchange for a commitment to pay it under certain conditions if the debtor defaults. These indices, combined with the LIBOR rate, served as a guide to the cost of the loan for borrowers. Due to the fall in Gazprom's share price, the insurance premium to LIBOR on its external debt increased from May to early September 2008, and on September 12-19, 2008 it increased by another 50% and reached its maximum - 1200 points. Subsequently, in mid-2009, the cost of CDS on Gazprom loans decreased, but it was twice the pre-crisis level [14, p.118].

As for challenges of the borrowings in the form of securities' issuance, they include the dependence on the conditions of the capital market (both national or international).

The next example of the challenges are the massive sales of debt obligations on the debt market (national or international). Usually it happens under the conditions of increased uncertainty and especially in crisis.

**Threats in public debt sphere.** Threats in the majority of the methodological publications devoted to the conceptual-categorical apparatus are recognized as a set of conditions and factors that create a direct or indirect possibility of causing damage to the national interests. As general threats, that relate to all types of borrowing, we can name as follows:

- sanctions (freezing of the debtor's international assets, blocking of accounts);
- obstruction of the settlement of public debt.

Serious threat in the sphere of debt is the obstruction of the settlement of indebtedness. For countries with excessive levels of public debt, a solution to the problem is impossible without debt restructuring. In many cases the active usage of debt settlement methods (writing off part of the debt, conversion, securitization, debt repurchase at a discount) [24].

Even before the crisis associated with the COVID-19 pandemic, negative trends related to debt to commercial creditors appeared. Thus, commercial creditors are increasingly able to obtain an inordinately large share of debt repayment during debt restructuring [10, p.14]. This is supported by examples from the experience of resolving the debt crisis of the 1980s years in countries with emerging markets, as well as the European debt crisis of 2010. Official creditors are forced to take on the burden of problems associated with helping the debtor; bear the costs associated with write-offs. As noted by J. Bulow et al., another problem is associated with the use of new tactics of disagreement and litigation on the part of private investors. There is a protracted nature of debt crises; it takes an average of 7 years to overcome an episode of default and, as a rule, several rounds of restructuring take place [10, p.16]. Private creditors have little incentive to follow the lead of formal creditors. At the same time, about 18% of the debt of countries entitled to take advantage of the moratorium on debt payments falls on commercial creditors (the corresponding figure in 2010 was 5%) [25].

The most negative scenario for the debtor is when the creditor opposes debt restructuring and demands full payment of the debt from the borrower. In previous years, there have been examples of predatory behavior by some creditors where government bonds were purchased at a significant discount, but these investors subsequently blocked decisions regarding debt restructuring.

Among threats, that are connected with bilateral credits we consider the loss of strategically important assets pledged to secure debts, including the loss of the country's infrastructure facilities.

As for the specific threats, that relate to public borrowings on the securities markets, they are as follows:

- ban on the purchase of debt obligations;
- creating a situation conducive to a real or technical default on debt obligations, including denial of access to the necessary infrastructure of the international debt market.

Let's analyze the creation of a situation conducive to a real or technical default on debt obligations, including denial of access to the necessary infrastructure of the international debt market, that can be viewed as a threat. The example of such a situation is the case of Russia's external public debt. On May 25, 2022, the license of the US Treasury expired, which gave the Russian ministry of finance and the Bank of Russia the right to conduct transactions related to payments on the country's debt obligations. The American authorities did not extend it. The Russian ministry of finance made the payment in advance - on May 20, 2022 - in original currencies, but the money did not reach the holders of Russian Eurobonds. But the creditors did not receive money because of the actions of international settlement and clearing systems. They did not make the necessary transfers, although they received the money in advance and had all the legal and financial capabilities. On June 22, 2022 Decree of the President of the Russian Federation № 394 «On the temporary procedure for the execution of government debt obligations to non-residents and foreign creditors, expressed in government securities, the nominal value of which is indicated in foreign currency» was signed. In the above mentioned document there was the clarification of the procedure for payments on Eurobonds in rubles. The document recognized obligations under sovereign Eurobonds as properly fulfilled if they are paid in rubles in an amount equivalent to their value in foreign currency. At the same time, in order to receive ruble payments, foreign bond holders were to waive future claims against Russia. From the point of view of Western rating agencies, Russia defaulted, from the point of view of Russia, it did not. Russian Finance Minister A. Siluanov emphasizes that the use of the new mechanism for paying off debt under Eurobonds does not mean a default on external debt, since foreign counterparties refuse to make payments in foreign currency. Financial markets are faced with a unique situation: a borrower facing default has the resources and desire to repay creditors, but is unable to do so due to sanctions. As a practical matter, it is not preferable for investors to initiate lengthy and costly legal proceedings against a borrower, that is willing to service the debt, and in a situation where those investors are prohibited from receiving payments due to them. According to the Ministry of Finance of Russia, the United States and the European Union are creating artificial barriers to servicing Russian foreign debt in order to «label default». At the same time, according to the position of Bloomberg, Credit Derivatives Determination Committees (CDDS) and Moody's, Russia defaulted on its public debt. So, the question is ambiguous and will be settled in the court.

The summary of the risks, challenges and threats, discussed above is presented in the Table 2.

Table 2. List of risks, challenges, threats in public debt sphere

<b>Risks</b>	<b>Challenges</b>	<b>Threats</b>
<b><i>risks relate to all types of public borrowings:</i></b>	<b><i>general challenges, that relate to all types of public borrowings:</i></b>	<b><i>general threats that relate to all types of public borrowings:</i></b>
market risk, including interest rate risk and currency risks	significant decrease in state budget revenues and an increase in government spending	sanctions (freezing of the debtor's international assets, blocking of accounts)
	realization of contingent budget obligations	obstruction of the settlement of public debt
	significant deterioration in borrowing conditions	<b><i>threats that relate to bilateral international credits and debts to international financial organizations:</i></b>
	additional spending, connected with the debts (numerous commissions, including commissions for negotiations, participation, management, reservation of funds, one-time special bank commissions, commissions for guarantees, overestimation of the necessary amount of the collateral)	loss of strategically important assets pledged to secure debts, including the loss of the country's infrastructure facilities
refinancing risk	challenges in the field of cybersecurity	<b><i>threats, that relate to public borrowings on the securities markets:</i></b>
	<b><i>challenges, that relate to bilateral international credits and debts to international financial organizations:</i></b>	ban on the purchase of debt obligations
liquidity risk		creating a situation conducive to a real or technical default on debt obligations, including denial of access to the necessary infrastructure of the international debt market
credit risk	imposition of additional conditions by the creditors on debtor countries	
settlement risk		
operational risk	the need to fulfill the conditions of membership in organizations (including the provision of information on the state of the country's economy, the provision of financial resources to unfriendly states (for example, as part of membership in the IMF)	
	reduction in the value of the collateral and requirements for its replenishment	
	<b><i>Challenges, that relate to public borrowings on the securities markets:</i></b>	
	unfavorable conditions of the capital market	
	massive sales of debt obligations on the debt market (international and national)	

Source: compiled by the author. In part of the risks, the materials of IMF were used [18].

There is a need for a critical analysis of the list of the risks, challenges and threats to this or that country's national interests in the sphere of the public debt. It can be stated that currently the real situation in different countries of the world is such that challenges and threats to state economic security, including in the public debt sphere, are constantly changing and undergoing the transformations. It is necessary to regularly assess the completeness of the list of the risks, challenges and threats in the public debt sphere. The list of risks, challenges and threats should not be very general and should take into account the specifics of a particular country, as well as new phenomena and problems in the field of public debt management.

Each of the stages of «risks», «challenges» and «threats» in the sphere of public debt can be expressed by various indicators, characterizing the public debt management. Both quantitative and qualitative measurement of the conditions corresponding to risks, challenges and threats constitute an important part of the policy of ensuring national security and sovereignty.

## **6. Conclusion and the directions of the further research**

Our answer to the research question is that the approach from another domain (security sphere) can be applied to the sphere of public debt management; and we have provided our vision of the possible calibration of risks, challenges and threats in relation to the public debt.

We also differentiated the types of borrowings and noted general risks, challenges and threats, as well as specific ones that are characteristic of certain types of debts. It was shown, that the international credits are characterized by the conditionality. In the case of borrowing on the open market using securities, the terms of borrowing depend on the current market conditions and the debtor can face significant deterioration of the situation.

In general, the challenges and threats in the area of public debt are complex. Acute indebtedness problems destabilize the entire economy of the country, that means they negatively affect national independence, create a threat to state sovereignty.

Governments search for new approaches, that provide the necessary balance between the implementation of the national interests and participation in international economic relations. So, one of the priority tasks in the field of economic security is timely forecasting of the risks and challenges and prevention of the transformation of them into the threats to the economic systems. The suggested framework of risks-challenges-threats can be helpful for the public debt problem prevention. Timely identification of risks, challenges and threats contributes to the effective management of public debt. This distinction between different conditions makes it possible to counteract the degeneration of risks into challenges, and challenges into threats. It is necessary to strive to translate threats into challenges, and challenges into risks.

As for the difficulties of the application of the suggested framework and its drawbacks, it is necessary to take into account, that risks, challenges and threats in reality can intersect and combine. In the process of the construction of this «risks, challenges and threats» framework those who do it may be subjective and have their own preferences. In this regard, an important direction for the development of this approach is such an area of improvement as getting rid of subjectivity and striving for more objective conclusions. Thus, it is necessary to further develop the criteria for classifying and distinguishing between risk, challenge, or threat. One of the directions for improving the approach is the use of various methods of collective expert assessments, which allow one to generalize the opinion of several specialists.

The findings of this paper can be useful, first of all, to the financial authorities dealing with public debt (Ministry of Finance, Central Bank, as well as the Debt Agency (if it exists in the public debt management system)).

## References

1. Fiscal Monitor. Climate Crossroads: Fiscal Policies in a Warming World. International Monetary Fund. October 2023. <https://www.imf.org/en/Publications/FM/Issues/2023/10/10/fiscal-monitor-october-2023>, last accessed: 2023/10/26.
2. Global Financial Stability Report: Safeguarding Financial Stability amid High Inflation and Geopolitical Risks. International Monetary Fund. April 2023. <https://www.imf.org/en/Publications/GFSR/Issues/2023/04/11/global-financial-stability-report-april-2023>, last accessed: 2023/09/01.
3. International Debt Statistics 2022: Updated International Debt Statistics. World Bank. <https://openknowledge.worldbank.org/entities/publication/47f55cbf-ee14-531a-8acb-8e2406f4354d>, last accessed: 2023/09/01.
4. Antipova, T.: Insights from Some Governments' Budget Functional Expenditures for the Fifteen Years: 2005–2019. In: T. Antipova (Ed.): ICCS 2021, LNNS 315, 1–11 (2022). [https://doi.org/10.1007/978-3-030-85799-8\\_6](https://doi.org/10.1007/978-3-030-85799-8_6).
5. Antipova, T.: Organizational model for public sector auditing bearing in mind time factor. In: Rocha, Á., Abreu, A., de Carvalho, J., Liberato, D., González, E., Liberato, P. (eds.) *Advances in Tourism, Technology and Smart Systems*. SIST, vol. 171, pp. 297–305. Springer, Singapore (2020). [https://doi.org/10.1007/978-981-15-2024-2\\_27](https://doi.org/10.1007/978-981-15-2024-2_27).
6. Citizen Public Debt Audit Experience and methods. Auditoría Ciudadana de la Deuda Pública: experiencias y métodos. Maria Lucia Fattorelli [Brasilia: Inove Editora, 2013] and [Geneva, Liège: CETIM/CADTM éd., 2013]. 2014 for the English Edition (2013 for the original Spanish edition). [http://www.cadtm.org/IMG/pdf/Audit\\_ENGLISH\\_text.pdf](http://www.cadtm.org/IMG/pdf/Audit_ENGLISH_text.pdf). Accessed 1 Mar 2021.
7. Batubara, F. R., Ubacht, J., Janssen, M.: Challenges of Blockchain Technology Adoption for e-government: A Systematic Literature Review. In: *Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age*. (2018). pp. 1–9, <https://doi.org/10.1145/3209281.3209317>.
8. Faber, A.S.C., Budding, G.T.: How to Be Open About Spending: Innovating in Public Sector Reporting in the Information Age. *Advances in Intelligent Systems and Computing*, 724, pp. 137–147 (2018), [https://doi.org/10.1007/978-3-319-74980-8\\_13](https://doi.org/10.1007/978-3-319-74980-8_13).
9. Veruhs, A.I.: Relation of categories «risk», «challenge» «threat» in the theory of national security. Philosophical and humanities: collection. scientific articles. - Minsk: RIVSH, 2018. - pp. 24-30. - (Scientific works of the Republican Institute of Higher Education; Issue 17). <http://elib.bsu.by/handle/123456789/207168>, last accessed: 2023/09/01.
10. Bulow J., Reinhart C., Rogoff K., Trebish C.: The debt pandemic / *Finance and development*. 2020. September. pp.12-16.
11. Reinhart, C., Reinhart, V., Rogoff, K.: Dealing with debt. *J. Int. Econ.* 96 (Supplement 1), pp. S43-55 (2015).
12. Abbas, A., Pienkowski, A., and K. Rogoff: *Sovereign Debt: A Guide for Economists and Practitioners*. Oxford University Press, New York (2019).
13. Kose, M. A., Nagle, P., Ohnsorge, F., Sugawara, N.: *Global Waves of Debt: Causes and Consequences*. Advance Edition. Washington, DC: World Bank. License: Creative Commons Attribution CC BY 3.0 IGO (2020).
14. Krasavina, L.N.: Risks in the sphere of external borrowings and problems of the Russian debt policy modernization / *Problems of forecasting*, №4, pp.116-123, (2010).
15. Battistelli, F., Galantino, M.G.: Dangers, risks and threats: An alternative conceptualization to the catch-all concept of risk / *Current Sociology*, Vol. 67(1), pp. 64–78. (2019) [ps://doi.org/10.1177/0011392118793675](https://doi.org/10.1177/0011392118793675).
16. Brauch, H.G., et al. (eds.): *Coping with Global Environmental Change, Disasters and Security*, Hexagon Series on Human 61 and Environmental Security and Peace 5, Springer-Verlag Berlin Heidelberg. (2011). DOI 10.1007/978-3-642-17776-7\_2.
17. *Forecasted challenges and threats to national security of the Russian Federation and directions for their neutralization* / Edited by A.S. Korzhevsky; editorial board: V.V. Tolstykh, I.A. Kopylov. – M.: Russian state Humanitarian University, 2021. – 604 pp.
18. Revised Guidelines for Public Debt management. International Monetary Fund. April 1, 2014. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Revised-Guidelines-for-Public-Debt-Management-PP4855>, last accessed: 2023/09/01.
19. Tsvirko, S.E.: Digital technologies for prudent public debt management In: T. Antipova (Ed.): ICCS 2021, LNNS 315, 108–117, (2022). DOI: 10.1007/978-3-030-85799-8\_10.

20. Navoi, A.V.: The Russian Federation and the International Monetary Fund: Prospects for Financial Relations at the Present Stage / National Interests: Priorities and Security, 2023, vol. 19, iss. 3, pp. 562–577. <https://doi.org/10.24891/ni.19.3.562>
21. Navoi, A.V.: Transforming Russia's Participation in the Global Financial Architecture in the Face of Geopolitical Challenges. National Interests: Priorities and Security, 2023, vol. 19, iss. 1, pp. 128–145. <https://doi.org/10.24891/ni.19.1.128>
22. Financial Sector Assessment program (FSAP) <https://www.imf.org/en/About/Factsheets/Sheets/2023/financial-sector-assessment-program-FSAP>, last accessed: 2023/10/28.
23. Dissemination Standards Bulletin Board (DSBB). <https://dsbb.imf.org>, last accessed: 2023/10/28.
24. Tsvirko, S.E.: The state of global public debt and new approaches towards debt management/ Theoretical and applied economics, №3, pp.46-57, (2021). DOI: 10.25136/2409-8647.2021.3.36610
25. Financing for Development in the Era of COVID-19 and Beyond (2020). UN. September 2020. URL: <https://www.un.org/en/coronavirus/financing-development>, last accessed: 2023/09/01.

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**The main goal** of this journal is to efficiently disseminate original findings generated by human brain with utilizing modern information/digital technologies with multidisciplinary approach.

**Topics to be discussed** in this journal include (but are not limited to) the following: Art Exhibit Review; Digital Art; Digital Painting; Excerpts from Digital Technology & Applied Science; Gender differences; Public Health and Statistics in Digital Age; Record Review of Social Media; Record Review of Information Systems; Script of Digital Public Administration.

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