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The impact of the threshold indication system on Ukraine's gross public and corporate debts

Abstract
Introduction. The problems that exist in our country cannot be solved without ensuring financial security. Stabilisation of the political and economic situation requires additional permanent financial resources. In order to stabilise the economy, Ukraine is compelled to apply for additional funding, which then forms the public debt. Yet, before making such important decisions, it is essential to understand how to repay the debt and how to attract additional resources effectively.
The purpose of the article is to investigate the dynamics of Ukraine's gross public and corporate debts and offer a system of the threshold indicators to control the volume of Ukraine's gross public and corporate debts.
Results. The article describes a mechanism to prevent financial insecurity in Ukraine, according to which they have set thresholds controlling the growth of Ukraine's corporate debt (a system of indicators relating to financial security in terms of the country's gross public and corporate debts). The authors propose thresholds for the domestic corporate debt, corporate debt to non-residents, gross external debt, foreign bond issues, gross external public and corporate loans. When reaching or exceeding the values of public debt thresholds, borrowing should be discontinued.
Conclusions. The article examines issues related to threshold indicators influenced by the amount of Ukraine's gross public and corporate debts. The authors define the structure of and changes in the country's gross public and corporate debts, and systematise the causes associated with such changes.
Keywords: Threshold Indicators; Public Debt; Corporate Debt; Mechanism; Financial Security
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Вплив системи порогових індикаторів на величину державного та корпоративного боргу в Україні

Анотація. Предметом статті є розгляд питань пов'язаних із впливом порогових індикаторів на величину державного та корпоративного боргу в Україні. Виокремлено динаміку й структуру державного та корпоративного боргу, а також найбільш важливі зміни характеру внутрішнього боргу, як-от: трансформація державного зовнішнього боргу в корпоративний борг перед нерезидентами; різке зростання валового корпоративного боргу внаслідок більш низьких відсоткових ставок на іноземні позики; подальше зниження темпів росту корпоративного боргу перед нерезидентами в найближчій перспективі внаслідок невиплат вітчизняними корпораціями своїх зобов'язань; довгострокове зростання всього валового боргу – державного і корпоративного.
Розроблено механізм впливу на запозичення. Визначено порогові значення зовнішнього корпоративного боргу, систему індикаторів економічної безпеки в сфері валового державного боргу. Запропоновано порогові значення системи індикаторів економічної безпеки в сфері валового державного боргу.
Автори вважають, що пороговий рівень внутрішнього державного боргу до ВВП в Україні під час кризи не має перевищувати 30% (715 131 млн. грн. у 2018 р.); максимальний розмір зовнішнього боргу до ВВП не має перевищувати 30% (715 131 млн. грн. у 2018 р.). Максимальний розмір загального державного боргу не має перевищувати 60% ВВП (1 502 238 млн. грн. у 2018 р.). На етапі сталого розвитку економіки максимальне значення державного боргу не має перевищувати 50–55% ВВП. Проте, висуваючи ці індикатори у вигляді основних порогових значень зовнішнього і внутрішнього боргу, варто враховувати якісні зміни, які відбулися за останні роки.
Ключові слова: порогові індикатори; державний борг; корпоративний борг; механізм; фінансова безпека.

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Влияние системы пороговых индикаторов на величину государственного и корпоративного долга в Украине

Аннотация. Предметом статьи является рассмотрение вопросов, связанных с влиянием пороговых индикаторов на величину государственного и корпоративного долга в Украине. Выделены динамика и структура государственного и корпоративного долга, а также наиболее важные изменения характера внутреннего долга, в частности: трансформация государственного внешнего долга в корпоративный долг перед нерезидентами; быстрый рост валового корпоративного долга вследствие более низких процентных ставок на иностранные займы; дальнейшее снижение темпов роста корпоративного долга перед нерезидентами в ближайшей перспективе вследствие невыплат отечественными корпорациями своих обязательств; долгосрочный рост всего валового долга – государственного и корпоративного.
Разработан механизм воздействия на заимствования. Определены пороговые значения внешнего корпоративного долга и система индикаторов экономической безопасности в сфере валового государственного долга. Предложены пороговые значения системы индикаторов экономической безопасности в сфере валового государственного долга.
Авторы считают, что пороговый уровень внутреннего государственного долга к ВВП в Украине во время кризиса не должен превышать 30% (715 131 млн. грн. в 2018 г.), максимальный размер внешнего долга к ВВП также не должен превышать 30% (715 131 млн. грн. в 2018 г.). Максимальный размер общего государственного долга не должен превышать 60% ВВП (1 502 238 млн. грн. в 2018 г.). На этапе устойчивого развития экономики максимальное значение государственного долга не должно превышать 50–55% ВВП. Однако, выдвигая эти индикаторы в виде основных пороговых значений внешнего и внутреннего долга, следует учитывать качественные изменения, которые произошли за последние годы.

Ключевые слова: пороговые индикаторы; государственный долг; корпоративный долг; механизм; финансовая безопасность.

1. Introduction

The issues related to permanent increases in public and corporate debts, improvement of financial and debt policies, raising the effectiveness of public and corporate debt management are much discussed in the modern context. Such discussions are relevant because the questions of how to reduce the public debt and improve living standards in Ukraine are particularly acute. These issues are very important because they refer to economic and financial security.

2. Brief Literature Review

An analysis of modern scientific publications on this topic has proven that researches show interest in the problems of public and corporate debts.

Actual problems of formation of public and corporate debts, indicators of financial stress and debt indicators, as well as their thresholds, are considered in a number of works by foreign scientists such as C. Van Ewijk, J. Lukkezen and H. Rojas-Romagosa (2013) [13]; S. Gebauer, R. Setzer and A. Westphal (2017) [15]; K. Greenidge, R. Craigwell, T. Chrystol and L. Drakes (2012) [17]; T. Knedlik and G. von Schweinitz (2011) [18]; P. Lysandrou (2011) [19]; D. Hollo, M. Kremer and M. Lo Duca (2012) [20]; S. G. Cecchetti, M. S. Mohanty and F. Zampolli (2011) [22].

The concept of debt and monetary aspects of the crisis phenomenon are explored in the works by foreign and domestic scientists such as T. Kovalchuk (2012) [4]; N. Yaroshevich (2007) [5]; S. Poberezhnyi (2010) [9] and others. The problems of financial security and the volume of public debt are studied in the works by A. Illarionov (1998) [2], I. Posokhov (2013, 2014) [10-11] and other scientists. Thus, the relevance of these problems requires special study and analysis of the influence of the public debt on the country's financial security, as well as determination of approaches to the definition of financial security indicators.

3. Purpose

The purpose of the article is to investigate the dynamics of Ukraine's net public and corporate debts and offer a system of the threshold indicators to control the volume of Ukraine's net public and corporate debts.

4. Results

An overview of the modern research on financial and debt security and threshold indicators of debt crises is shown in Figure 1.

The Law «On the Fundamentals of National Security of Ukraine» defines the debt security of the state as the level of external and internal state indebtedness considering the cost of servicing and effective using of external and internal debts and optimal ratio between them, which should be sufficient to solve the urgent socio-economic needs without threatening the sovereignty of the state and destroying the domestic financial system [1].

A. Illarionov developed his own system of indicators, which describes the condition of economic security. He thinks that the set of indicators should be compared with current results [2].

At present, there is no single approach to using threshold indicators of financial and debt security among scientists and practitioners.

In today's world practice, the normative indicator of debt security is the threshold of the external debt index of not more than 60% of GDP, and no more than 50% of GDP according to the World Bank's methodology. O. Baranovsky recommends the threshold value of this indicator equal to 25% of GDP.

S. M. Poberezhnyi proposes to set the threshold values of general amount state debt to GDP in Ukraine which is not more than 55%, with the external debt to GDP being no less than 25% [9].

An example of threshold values of the public debt is the Maastricht Treaty can be presented as a result of limit values in which the volume of domestic debt to GDP must not exceed 30%, and the amount of external debt to GDP is no more than 30%.

Methodological recommendations for calculating the level of economic security of Ukraine, approved by Order of the Ministry of Economic Development and Trade of Ukraine No. 1277 as of 29 October 2013 determine nine relevant components and their limit values, among which there are five indicators of debt security such as the ratio of the public and publicly guaranteed debt of Ukraine to GDP, the ratio of the gross external debt to GDP, the weighted average yield from public bonds on the primary market, the Emerging Markets Bond Index + Ukraine, the ratio of the official international reserves to the gross external debt. According to the methodology suggested by the Ministry of Economic Development and Trade of Ukraine, the domestic public debt must not exceed 30% relative to GDP; the foreign public debt should not be more than 25% of GDP [3].

Nowadays, many developed countries of the world use threshold indicators to manage financial security and public debt. These are the USA, Germany, Japan, France, the UK, Italy, Canada, Ukraine, Russia and other countries. The

peculiarities of the country's threshold systems are the list and normative values of threshold indicators to assess debt security. Each country develops and has its own methods for assessing debt security, although there are recommendations from the IMF, the World Bank and European Central Bank, and individual countries should take the relevant recommendations into account when developing threshold indicators and introducing their own techniques.

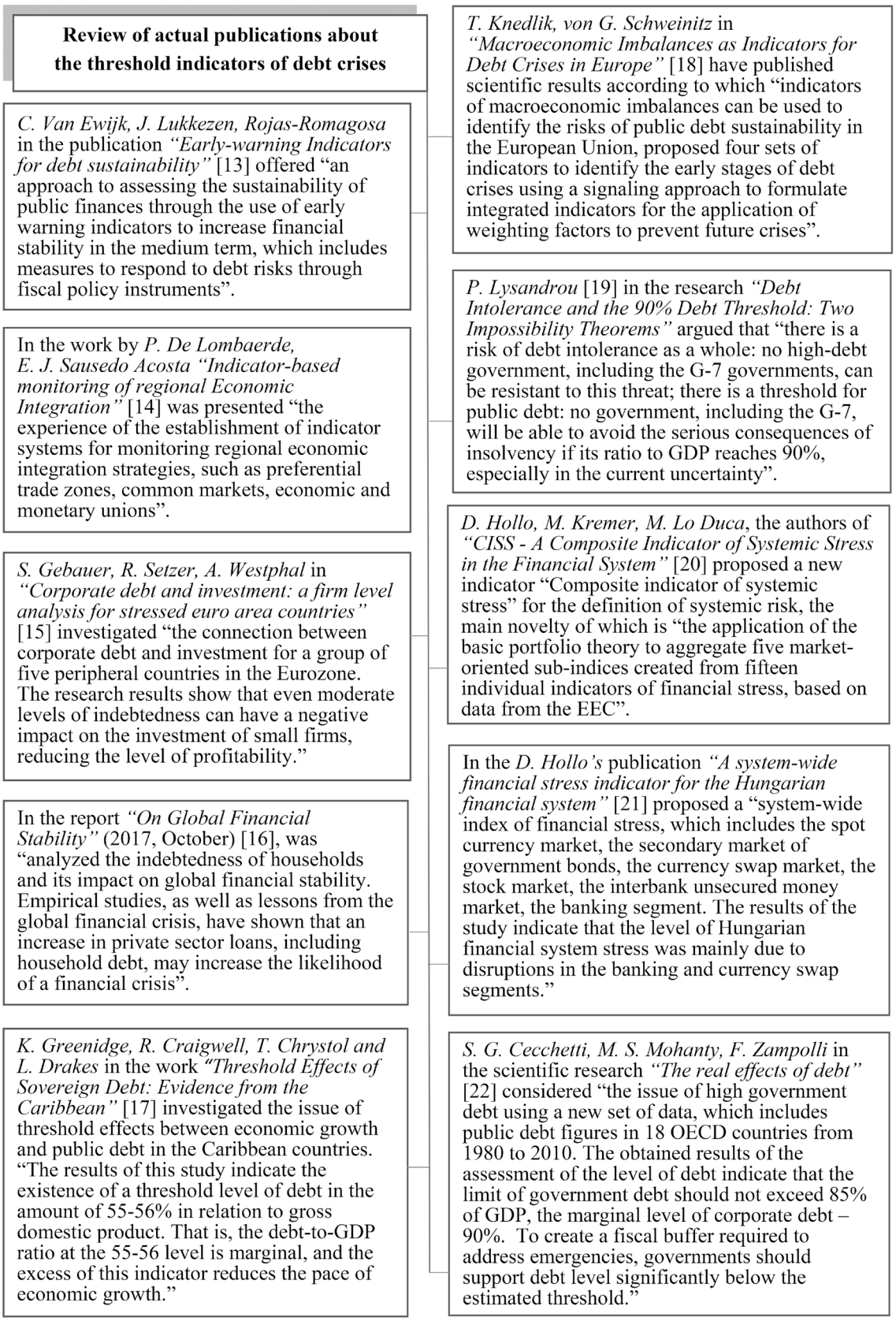

Fig. 1: **Review of scientific research on financial and debt security on the basis of threshold indicators of debt crises**
Source: Compiled by the authors based on [13-22]

As a result of the country's economic policy, significant changes have taken place in the structure and state of the public debt in the past years. During the 2011-2013, the ratio of general public debt to GDP was within the regulatory limits defined by the Budget Code of Ukraine, accounting for no more than 60% (for countries with developed domestic financial markets and high credit ratings in international markets). However, a lot of scientists think that the public debt mustn't exceed 50% of GDP in countries that have a transition economy, including Ukraine [2; 4].

Ukraine focuses on too high ultimate level of the public debt reflected in the Budget Code, which doesn't contribute to the responsible management of the public debt and has a risk of financial instability [5].

Tab. 1: **Public debt and publicly guaranteed debt of Ukraine for 2017**

State and state-guaranteed debt of Ukraine for 2017 (UAH, million)

	Total amount of public debt and publicly guaranteed debt of Ukraine		External debt		Internal debt	
31/12/2016	1,929,758.7	+11.6%	1,240,028.7	+6.1%	689,730.0	+23.2%
31/01/2017	1.931,020.0	+0.1%	1,241,330.0	+0.1%	689,690.0	-0.0%
28/02/2017	1,941,360.0	+0.5%	1,233,960.0	-0.6%	707,400.0	+2.6%
31/03/2017	1,951,846.1	+0.5%	1,232,928.0	-0.1%	718,918.1	+1.6%
30/04/2017	1,972,966.9	+1.1%	1,261,506.5	+2.3%	711,460.4	-1.0%
31/05/2017	1,968,025.4	-0.3%	1,260,930.9	-0.0%	707,094.5	-0.6%
30/06/2017	1,957,701.5	-0.5%	1,259,096.9	-0.1%	698,604.7	-1.2%
31/07/2017	1,971,153.3	+0.7%	1,261,951.5	+0.2%	709,201.8	+1.5%
31/08/2017	1,958,374.5	-0.6%	1,230,946.5	-2.5%	727,428.0	+2.6%
30/09/2017	2,043,027.3	+4.3%	1,323,285.1	+7.5%	719,742.2	-1.1%
31/10/2017	2,046,000.8	+0.001%	1,240,028.7	-0.06%	725,000.4	+0.007%

Source: Compiled by the authors based on [7]

The restructuring of the external debt, held by the Ministry of Finance of Ukraine in 2015, has allowed reducing the loading debt and eliminating the peak loads for the budget if it is required to proceed with substantial one-time payments on foreign obligations. Owing to the abovementioned restructuring, the repayment costs related to the external public debt in 2016 amounted to USD 574 million, compared to USD 2.25 billion which Ukraine would have had to pay without the restructuring. Considering the dramatic depreciation of the hryvnia, the Ukrainian national currency, during the past three years, the external public debt denominated in hryvnia has increased significantly. The main danger of the external public debt and publicly guaranteed debt of Ukraine is that such debts are denominated in foreign currency. Due to the sharp devaluation of the hryvnia, the debt denominated in the national currency, also increased significantly. The lower the rate of the national currency is, the more hryvnias is required per each unit of foreign currency to cover the budget deficit in the country.

Despite the fact the public debt in 2016 spontaneously grew by UAH 112 billion due to the state's obligations to recapitalise PrivatBank. The Ukrainian government borrowed another UAH 4 billion under state guaranties to fund the defence sector. At the end of 2016, the indicator of the public debt corresponded to the limits set by the public budget of Ukraine at the level of UAH 1.946 trillion (81.8% of GDP) [7].

At the beginning of July 2017, Ukraine's gross external debt amounted to USD 114.836 billion (it grew by 1.16% from the beginning of the year). Ukrainian banks reduced their debts by 19.76% to USD 6.78 billion (or by 24.38% since the beginning of the year). In July 2017, the volume of the aggregate public debt and publicly guaranteed debt of Ukraine increased by USD 1.05 billion (1.4%) up to USD 76.06 billion. After its revision in July, Law «On the State Budget of Ukraine for 2017» provides for the maximum amount of the public debt of UAH 1 trillion 823.7 billion at the end of 2017 and the maximum volume of the publicly guaranteed debt of Ukraine, which is UAH 579.4 billion (1 USD = 27 UAH) [6]. In 2017, Ukraine has placed Eurobonds worth USD 3 billion, returning to international loan markets for the first time since 2013.

The indicators of the public debt and publicly guaranteed debt of Ukraine for 2017 are shown in Table 1.

The amount of payments from the state budget to cover the public debt in 2017 is estimated at UAH 240.897 billion, including UAH 129.559 billion to repay the public debt and UAH 111.338 billion to service the public debt [6].

According to data by the National Bank of Ukraine, by the end of Q2 2018, the Ukrainian government is to provide for a debt repayment of USD 2745 million, along with USD 672 million to be repaid by the National Bank of Ukraine, USD 3645 million - by Ukrainian banks, and USD 35853 million - by other sectors of the economy, including USD 12332 million on trade credits and advance payments and USD 20804 million on long-term loans) [12].

The indicators and threshold values of Ukraine's debt are given in Table 2.

Taking into account the volume of international reserves of Ukraine, which are USD 18.0 billion as of 1 September 2017, the country's ability to timely pay off its debt at the level of the Government and the National Bank is not in doubt. According to the Law «On the State Budget of Ukraine for 2018», the amount of payments to cover the public debt for 2018 is UAH 175.7 billion, which is by 46.17 billion more than in 2017.

According to V. Suslov [8], the situation with the debt of the corporate sector and the forced purchase of currency for the debt payment of the corporate sector has lead to an increased demand for the US dollar. Along with the crisis of the banking system and the outflow of foreign currency deposits, it causes the periodic depreciation of the hryvnia, either speculative or natural.

In recent years, the negative trends have increased. First of all, this is attributable to the external corporate debt. Corporate debts are dangerous because the interest on the debt is much higher. According to the Ministry of Finance of Ukraine, the average interest rate on the external public debt amounts to 1.6% per annum in foreign currency, while the domestic debt amounts to 12.1% in local currency [7]. As for the commercial debts, it is much higher amounting to 6.5% and 12.7% in the national currency.

During the past years, in spite of stable development of the national economy, Ukrainian banks, corporations and holdings have been entering the foreign debt markets and attracting cheap money from abroad, getting loans from foreign banks and placing the bonds and even IPO due to the fact that external corporate debts have increased. Today, being unable to pay off a large number of external and internal debts, the real economy of Ukraine has faced with massive corporate defaults.

In 2015-2016, the highest level of defaults was observed among the companies of steel and mining industries accounting for 6.5%. A sharp drop in the world prices for raw materials leads to bankruptcies of Ukrainian companies. Corporate defaults of a number of large enterprises and financial institutions in 2016-2017 continued, while Ukrainian banks were facing difficulties in repaying their foreign loans, obtained in the period of 2016-2017. Correspondingly, the crisis in the corporate sector persists [8].

The growth of the external corporate debt increased the dependence of internal processes on the external environment. Furthermore, this is one of the reasons of Ukraine's involvement in the global crisis, which has led to economic imbalances. Big banks, state-owned companies and private corporations are the main debtors. In theory, the state is not liable for corporate debts. In fact, it helps the companies to pay off their debts.

The authors believe that the most significant changes in the nature of the domestic debt include: transformation of the external public debt in the corporate debt to non-residents and a sharp increase of gross corporate debt owing to lower interest rates on the foreign credits. However, the growth rate of the corporate debt to non-residents will sharply decrease in the near future owing to corporate defaults in the amount of UAH 8.3 billion, with special attention to be paid to long-term growth of the entire gross debt, both public and corporate one. The situation with the gross debt has worsened due to the growth of corporate debts to non-residents.

The threshold indicators of economic security related to the public and corporate debts are shown in Figure 2.

The authors believe that the economic security indicators related to the state and corporate debts should be defined in such a way:

The threshold value of the internal corporate debt. The ratio of the assets of the national banking system to GDP must be no less than 100-120%, the ratio of the volume of bank credits to the private sector to GDP - 70-75%. Within internal corporate loans, this threshold value must not exceed the ratio of 80% to GDP. However, such threshold exceeds the capabilities of the national banking system of Ukraine in crisis conditions.

The threshold value of the corporate debt to non-residents. In the modern conditions, only the most reliable Ukrainian companies can take loans or place their securities abroad. The availability of external corporate loans depends on the world market conditions (supply and demand for loans, level of interest rates). In this regard, the threshold value of corporate debt to non-residents must be within 40% of GDP. Ukraine should control the level of external corporate debt. It amounted 51.2% of GDP in 2016 and as of May 1, 2017 was USD 48.5 billion, which exceeded the recommended threshold indicator value. Consequently, the level of external corporate debt needs to be monitored and controlled on a permanent basis.

The threshold value of the total external debt. This indicator sets the limit value of total external loans and equals the sum of the threshold values of financial security by the external state and corporate debts. It must not exceed 80% of GDP in current conditions and 70% - in perspective. The total external debt of Ukraine in the 2nd quarter of 2017 decreased to USD 114.8 billion which corresponded with 124% of GDP [12], hence, the value of this indicator is much higher than the recommended threshold value. Therefore, the value of the indicator should be permanently monitored and controlled.

The threshold value for the external bonds of corporations. Its purpose is to prevent buying of a large number of securities by non-residents. This threshold value should not exceed 10% of GDP.

The threshold value for the total external state and corporate debts. Its purpose is preventing creation of the government and corporate securities' pyramid on the foreign markets. Considering the fact that the state debt for securities is less reliable than for bank loans due to the changes of the securities' profitability and market value, the value of the indicator must not exceed 30% of total external debt.

Considering that the limit *threshold value for the external state debt* is 40% of GDP, the value of the external state debt for the securities must be not more than 13% of GDP. Considering, that the *threshold value for the external corporate debt* must not exceed 10% of GDP, the *threshold of financial security for the total external state and corporate debts* must not exceed 23% of GDP.

Application of the threshold indicators data is very important in Ukraine. The volumes of state external and internal debt must fit to the threshold values. The indicative control of the threshold values of financial security in the field of state debt must be realised by the Ministry of Finance of Ukraine, and the National Bank of Ukraine. Upon the reaching or exceeding the threshold values of the indicators of the state debt, the borrowing must be reconsidered or discontinued.

Fig. 2: **Threshold indicators of economic security related to the public and corporate debts**
Source: Compiled by the authors

To prevent threats to Ukraine's economic security, it is essential to set thresholds of the growth of the corporate debt, i.e. security indicators to control the public and corporate debts.

In the authors' opinion, based at the ratios from Table 2, the threshold value of the domestic public debt of Ukraine to GDP must not exceed 30% (UAH 715,131 million in 2018) in the crisis conditions, while the threshold value of the external public debt of Ukraine to GDP must not exceed 30% (UAH 715,131 million in 2018). The maximum amount of the general public debt must not exceed 60% of GDP (UAH 1,502,238 million in 2018). The threshold value of the general public debt must not exceed 50-55% of GDP at the stage of the country's sustainable development. However, considering the indicators in the form of general threshold values of the domestic and external public debts, it is necessary to keep in mind the qualitative changes that have occurred during the past years. The external corporate was USD 49 billion, which accounted for 51.2% of GDP in Ukraine. The total amount of debt on loans to non-residents and Eurobonds of Ukrainian companies and banks as of 1 May 2017 amounted to USD 48.5 billion (USD 42.7 billion - for the corporate sector and USD 5.7 billion - for deposit-taking corporations).

5. Conclusions

1. The authors have studied the dynamics and structure of Ukraine's public and corporate debts. The obtained results show that Ukraine's external public debt has been steadily growing due to a large volume of loans from banks and non-financial corporations, which has led increasing dependence of the state from foreign countries.

Tab. 2: **Indicators and threshold values of Ukraine's debt security indicators**

Name of the indicator, unit of measurement	Threshold value		Actual significance of debt security indicators in Ukraine			
1. Debt security	Normative value in Ukraine	Normative value in international practice	As of 2015	As of 2016	As of 2017	As of 2018 (forecast)
1.1. Ratio of total public debt to GDP,%	≤55% (critical level)	≤50%-60%	79.4	81	87	85.89
1.2. Ratio of total external debt to GDP,%	≤25	–	52.68	52.03	57.35	57.14
1.3. Level of external debt per capita, USD	≤200	≤200 – for developing countries	1,676.5	1,009.6	1,824.8	1,843.1
1.4. The Ratio of the external public debt to the annual exports of goods and services,%	≤70	≤165	90.9	254.5	389.45	–
1.5. Ratio of internal debt to GDP,%	≤30	–	26.7	28.9	29.83	–

Source: Calculated by the authors

2. The growth of the corporate debt since Ukraine gained its independence has been conditioned by the low spending related obtaining and servicing of foreign loans, the absence of the system of regulation and control of external loans and increasing incomes of the corporate sector, attributed to the growth of the Ukrainian economy. However, the attraction of foreign loans has its pros and cons, since there exist exchange rate volatility and other risks. The devaluation of the national currency and economic crisis in the country has led to the insolvency of most corporate borrowers in the foreign capital markets.
3. The authors have highlighted the most significant changes in the domestic public debt of Ukraine. To eliminate various threats to the debt security of Ukraine, related to external corporate borrowings, it is necessary to adopt the legislative mechanism of effect on such loans, defining threshold values relevant to the external corporate debt and developing a system of economic security indicators with regard to the gross public debt of Ukraine.
4. The authors have proposed threshold values of the system of economic security indicators relating to the gross public debt of Ukraine in the field of gross state debt.

References

1. The Verkhovna Rada of Ukraine (2003). *On National Security of Ukraine.* Law of Ukraine. Retrieved from http://zakon4.rada.gov.ua/laws/show/964-15 (in Ukr.)
2. Illarionov, A. I. (1998). Criteria of economic security. *Voprosy ekonomiky (Questions of economy), 10,* 35-58 (in Russ.).
3. Ministry of Economic Development and Trade of Ukraine (2013). *On Approval of the recommendations on the calculation of the economic security of Ukraine*. Order Ministry of Economic Development and Trade of Ukraine. Retrieved from http://cct.com.ua/2013/29.10.2013_1277.htm (in Ukr.)
4. Kovalchuk, T. T. (2012). *Macroeconomic risks: classification criteria, methods of measurement, ways to minimize: monograph.* Kyiv: Knowledg (in Ukr.).
5. Yaroshevich, N. B. (2007). Public debt management: foreign experience and Ukrainian reality. *Naukovyy visnyk NLTU (Scientific Journal NLTU), 17,* 266-271 (in Ukr.).
6. National Bank of Ukraine (2017). *The external debt of Ukraine the first quarter of 2017.* Retrieved from https://bank.gov.ua/doccatalog/document?id=36693539 (in Ukr.)
7. Ministry of Finance of Ukraine (2016). *Statistical materials on public and publicly guaranteed debt of Ukraine.* Retrieved from http://www.minfin.gov.ua/news/view/statystychni-materialy-shchodo-derzhavnoho-ta-harantovanoho-derzhavoiu-borhu-ukrainy_2016?category=borg&subcategory=statistichna-informacija-schodo-borgu (in Ukr.)
8. Business portals News24ua (2016). *Corporate debt - a stone on the neck of Ukraine.* Retrieved from http://news24ua.com/korporativnye-dolgi-kamen-na-shee-ukrainy (in Russ.)
9. Poberezhnyi, S. M., Plastun, A. L., & Bolgar, T. M. (2010). *Financial security of banking activities.* Sumy: UABD NBU (in Ukr.).
10. Posokhov, I. (2013). Regulatory framework of the financial and economic indicators for risk analysis of corporate activity. *Economic Annals-XXI, (7-8),* 46-49. Retrieved from http://soskin.info/en/ea/2013/7-8/contents_12.html (in Ukr.)
11. Posokhov, I. (2014) *Theoretical and practical aspects of risk management of corporations: a monograph.* Kharkiv: PVPP WORD (in Ukr.).
12. External sector statistics (2017). *Short-term external debt of Ukraine for residual maturity (based on the IMF methodology).* Retrieved from https://bank.gov.ua/control/uk/publish/article?showHidden=1&art_id=65613&cat _id=44446#4 (in Ukr.)
13. Van Ewijk, C., Lukkezen, J., & Rojas-Romagosa, H. (2013). Early-warning Indicators for debt sustainability. CPB Policy Brief, 08. CPB The Hague: Netherlands Bureau for Economic. Retrieved from https://www.cpb.nl/sites/default/files/publicaties/download/cpb-policy-brief-2013-08-early-warning-indicators-debt-sustainability.pdf
14. De Lombaerde, P., & Sausedo Acosta, E. J. (2017). Indicator-based monitoring of regional Economic Integration. *Springer International Publishing.* doi: https://doi.org/10.1007/978-3-319-50860-3
15. Gebauer, S., Setzer, R., & Westphal, A. (2017, September). *Corporate debt and investment: a firm level analysis for stressed euro area countries*. ECB Working Paper No. 2101. The European Central Bank. Retrieved from https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2101.en.pdf?896229aed10aa6a0668e9fd852cb4eec
16. International Monetary Fund (2017, October). *Global Financial Stability Report Chapter Two: Household Debt And Financial Stability.* Retrieved from https://www.imf.org/en/Publications/GFSR/Issues/2017/09/27/~/media/Files/Publications/GFSR/2017/October/chapter-2/Documents/C2.ashx?la=en
17. Greenidge, K., Craigwell, R., Chrystol, T., & Drakes, L. (2012, June). *Threshold Effects of Sovereign Debt: Evidence from the Caribbean,* IMF Working Paper No. 12/157. International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/wp/2012/wp12157.pdf
18. Knedlik T., & von Schweinitz, G. (2011). Macroeconomic Imbalances as Indicators for Debt Crises in Europe. *JCMS: Journal of Common Market Studies, 50*(5), 726-745. doi: https://doi.org/10.1111/j.1468-5965.2012.02264.x
19. Lysandrou, P. (2011). *Debt Intolerance and the 90% Debt Threshold: Two Impossibility Theorems.* FMM Conference Presentation, 9, 1-25. Retrieved from: https://www.boeckler.de/pdf/v_2011_10_27_lysandrou.pdf
20. Hollo, D., Kremer, M., & Lo Duca, M. (2012). *CISS - A Composite Indicator of Systemic Stress in the Financial System.* ECB Working Paper No. 1426. Frankfurt: European Central Bank Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2018792
21. Holló, D. (2012, September). *A system-wide financial stress indicator for the Hungarian financial system.* MNB Occasional Papers No. 105. Budapest: Magyar Nemzeti Bank, Financial Stability Department. Retrieved from: https://www.mnb.hu/letoltes/op105.pdf
22. Cecchetti, S. G., Mohanty, M. S., & Zampolli, F. (2011). *The real effects of debt.* BIS Working Paper No. 352. Bank for International Settlements. Retrieved from: https://www.bis.org/publ/work352.htm

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