CHAPTER 2
DEVELOPMENT OF FINANCE, ACCOUNTING AND AUDITING

DEBT POLICY IN TIMES OF CRISIS: MANAGEMENT TECHNOLOGIES AND COUNTERING SINGULARITY

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Absrtact. *The Russian-Ukrainian war has triggered profound changes in Ukraine's public finance sector, including a significant reduction in the state's tax potential, a sharp increase in expenditures for security and defense needs, social sector costs, and greater reliance on external financing sources. Since the beginning of the military invasion, the volumes of Ukraine's domestic and external debt have been rapidly increasing due to the need to finance the budget deficit. With a decline in economic growth rates and an increased dependency on financial support from partner countries, there is an acute need to explore new technologies for managing public debt and countering singularity. The article aims to highlight the peculiarities of Ukraine's debt policy in times of crisis. Its purpose is to analyze the use of public debt management technologies within the framework of Ukraine's debt policy during crises to prevent public debt from exceeding critical levels. The article examines the main technologies for managing public debt employed under Ukraine's debt policy from 2015 to 2024. Statistical analysis methods (structural, dynamic, and comparative) are used to assess the dynamics and structure of state and government-guaranteed debt during 2019–2024, identifying key trends in debt management during crises. The authors provide a detailed examination of the dynamics and structure of Ukraine's public debt, as well as the costs of servicing and repaying it. Particular attention is paid to the effectiveness of using modern public debt management technologies to maintain the sustainability of public finances and counter the phenomenon of singularity—the escalation of debt levels to critical thresholds. The study's findings demonstrate the importance of combining various public debt management technologies and highlight the growing role of strategic planning amid the Russian-Ukrainian war and the financial-economic crisis it has caused, which has heightened debt burdens and raised the risk of default.*

Keywords: *debt policy; crises; management technologies; singularity; public finance; sustainability.*

JEL Classification: G01; H 30; H 56; H63

Formulas: 0, fig.: 3, tabl.: 5, bibl.: 44

Introduction. Since the beginning of the military invasion of Ukraine, the quality of public management of state finances, particularly state debt, has been declining. This is due to rising political, social, economic, and financial instability in Ukraine, an increasing state budget deficit, as well as issues with medium-term budget planning, adherence to fiscal discipline, and an inefficient expenditure structure. From 2022 to 2026, Ukraine's debt policy is aimed at achieving debt sustainability, which directly impacts the stability of public finances.

Literature Review. The theoretical and practical foundations of Ukraine's debt policy and public debt management are highlighted in numerous scientific publications.

The priorities of Ukraine's debt policy during wartime, as noted by Horyn, V., Kvasnytsia, O., and Romankiv, A. (2023), include improving the maturity structure of external borrowings and increasing the role of loans from international organizations. Similar conclusions are drawn in the work of Trofimchuk, M., and Trofimchuk, O. (2023), particularly noting the predominance of external borrowings over domestic ones in the structure of state debt, along with the growing role of financing from international organizations. The findings of Kozlova, V. (2023) on the main directions of Ukraine’s debt policy implementation also align with these conclusions.

Lymar, O., and Kharchuk, P. (2023) point to the lack of focus and consistency in Ukraine's debt policy and inefficiencies in the functioning of the public debt management mechanism. Savasteyeva, O. (2022) investigates issues related to Ukraine’s financial relations with the IMF during wartime. Demianchuk, O., and Panova, O. (2024) explore aspects of Ukraine’s debt security, proposing a conceptual model for managing debt sustainability. Certain aspects of debt security and policy are studied in the works of Stetsenko, B., Buryachenko, A., Zakhozhai, K., and Prisniak, S. (2023), Marshalok, T. (2023), and Galustyan, R. (2024), focusing on risks and the role of international organizations in ensuring debt security.

Hryhorash, O., and Puhach, V. (2024) examine the key factors negatively affecting Ukraine’s financial stability, which have led to an increased budget deficit and public debt during the war. Neizvestna, O., Hryhoruk, A., and Lytvyn, L. (2022) summarize tools for managing Ukraine’s financial stability. Onofriichuk, V., and Onofriichuk, A. (2023) review instruments for managing debt sustainability.

The work by Krasokha, O., and Liutyi, I. (2023) discusses a comprehensive set of practical tools for public debt management to maintain financial system stability. These tools include debt restructuring, consolidation, partial write-offs, and refinancing, which the authors equate to methods of implementing debt policy.

The challenges of public finances, state debt, its typology, and the specifics of debt policy are examined in detail in the research of Petrukha, N., Klymenko, K., Kutsovskyi, O., and Myakota, R. (2024). The authors discuss an orthodox-innovative approach to selecting financial methods for managing the economy, emphasizing the importance of transparent resource management. In the work of Petrukha, N., and Kutsovskyi, O. (2024), a typology of state debt and debt policy in crisis conditions is proposed, and debt instruments are systematized.

However, comprehensive studies on debt policy management technologies during crises, especially when debt levels approach critical thresholds, are largely absent in scientific literature.

Aims. The purpose of this article is to analyze the use of public debt management technologies within Ukraine's debt policy during the crisis to prevent state debt from exceeding critical levels.

Methodology. The article analyzes the main technologies for managing public debt within Ukraine's debt policy between 2015 and 2024. The analysis includes a review of existing public debt management programs since 2016 and debt management strategies developed by the Ministry of Finance of Ukraine (MoF) since 2017. Statistical analysis methods (structural, dynamic, comparative) are used to evaluate the dynamics and structure of public and government-guaranteed debt during 2019–2024 and to identify key trends in debt management during the crisis.

Results. The Ministry of Finance, as the central executive body responsible for debt policy, carries out medium-term strategic management of public debt. Since 2016, annual debt management programs have been developed, as well as borrowing management strategies for various periods (2017–2019, 2018–2020, 2019–2022, 2021–2024, and 2024–2026). Reports on the implementation of these documents are regularly published (Ministry of Finance of Ukraine, 2024n; 2024o; 2024p; 2024q; 2024r; 2024s). In 2020, a Public Debt Management Agency was established, but due to the military invasion, the corresponding functions are essentially performed by the Ministry of Finance.

The Ministry manages public debt based on the creation of repayment schedules for existing loans during the state budget planning process, planning the volume of future borrowings to finance the budget through debt instruments, structuring borrowings by interest rate types and debt obligations, forecasting exchange rates and interest rates, and estimating debt management costs.

The main technologies for public debt management include: restructuring public and state-guaranteed debt; refinancing public debt to smooth repayment schedules; reprofiling domestic government bonds (OVDP); repurchasing Eurobonds and OVDP. For instance, in 2015, the Ministry of Finance restructured public debt to limit refinancing and smooth repayment schedules. In 2017, the Ministry purchased Eurobonds totaling $1.576 million, which reduced refinancing risks for 2018–2019 and subsequently facilitated active future operations to align repayment schedules. In October 2017, reprofiling of OVDP was carried out, replacing them with new long-term OVDP worth UAH 74.4 billion with a fixed rate and maturities between 2025–2035, and OVDP linked to inflation with maturities between 2036–2047 worth UAH 145.2 billion. This reduced the burden on the state budget for fulfilling obligations and diversified the risk of interest rate changes. To smooth refinancing peaks, the Ministry of Finance raises new debt with longer maturities. Table 1 summarizes the use of debt management technologies during 2015–2024.

Table 1. Dynamics of Ukraine's Public Debt Management Technologies Used by the Ministry of Finance (2015–2024)

Management technologies	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Restructuring	+									+
Refinancing	+	+	+	+	+	+	+	+	+	+
Medium-term planning		+	+	+	+	+	+	+	+	+
Reprofiling of government bonds			+							
Repurchase of OZDP, OVDP			+		+	+				
Issue of OVDP	+	+	+	+	+	+	+	+	+	+
Issue of Eurobonds						+				
Issue of military government bonds								+	+	+
Creating a platform for conducting electronic government bond auctions					+	+	+	+	+	+
Using long-term debt instruments of OVDP	+	+	+	+	+	+	+	+	+	+

Source: Compiled by the authors

In 2020, active operations were conducted, including the repurchase of Eurobonds maturing in 2021–2022 worth $435 million and $371 million, as well as the repurchase of over 10% of GDP warrants in circulation with payments in 2021 (Ministry of Finance of Ukraine, 2024s).

Refinancing is one of the primary tools for managing public debt. For instance, in August 2022, the Ministry of Finance entered into an agreement to extend the repayment terms of government Eurobonds and defer coupon payments for the next two years, amounting to $21.1 billion USD. This measure saved $6 billion USD, which was allocated for defense needs. As of December 31, 2023, the refinancing ratio of market-based domestic government bonds (OVDPs) reached 150%, including 172.6% for bonds denominated in hryvnia, 111.2% in USD, and 126.4% in euros (Ministry of Finance of Ukraine, 2024w; 2024x).

Since the beginning of the military invasion, the Ministry of Finance has been issuing military domestic government bonds to finance social and defense needs. As of June 1, 2024, the portfolio of military bonds amounted to 64.027 billion UAH (33.1% of the total volume of hryvnia-denominated OVDPs); $1.4647 billion USD (63.2% of the total volume of military bonds denominated in USD); and €94.9 million (19.9% of bonds denominated in euros). In total, as of June 1, 2024, military OVDPs worth 127.6 billion UAH were held by individuals and legal entities, compared to 57.9 billion UAH on June 1, 2023.

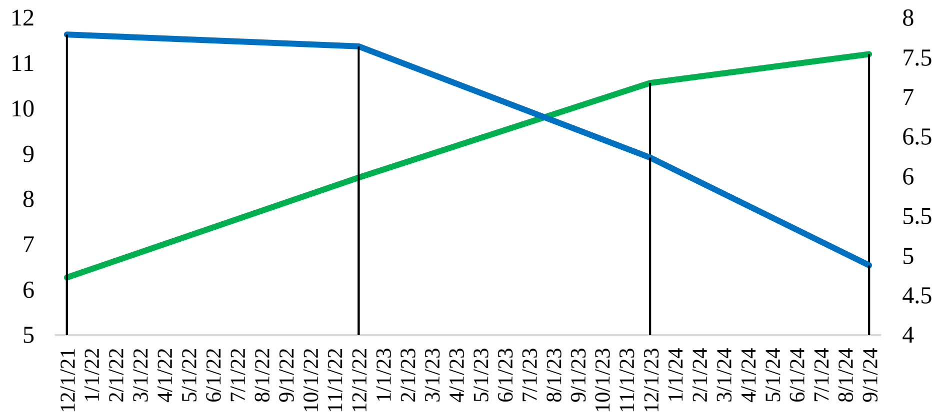
In 2024, to restore debt sustainability, the debt restructuring process was completed. This involved the exchange of a series of Ukravtodor Eurobonds worth $20.5 billion USD ($24 billion including capitalized interest) for new Eurobonds with a nominal value of $15.2 billion USD. As a result of the agreement, the public debt volume was reduced by $9 billion USD, the nominal value of the debt decreased by 37%, and the net present value fell by 60%. Debt service payments were reduced by

93%, saving $11.4 billion USD over 2025–2027. Repayment and servicing costs decreased by 77% through 2033, resulting in total savings of $22.8 billion USD for the budget (Ministry of Finance of Ukraine, 2024v).

A new tool for managing public debt is the implementation of switch operations via auctions that place government bonds while simultaneously exchanging them for bonds from other issues in circulation. This allows for the exchange of less liquid bonds with shorter maturities for more liquid ones (Ministry of Finance of Ukraine, 2024y).

Overall, active debt policy and the use of various public debt management tools have helped reduce borrowing costs. From the beginning of 2024 to June 30, 2024, the average weighted cost of state and state-guaranteed debt decreased from 6.24% to 5.6% (a 10.3% reduction), and by September 30, 2024, it had fallen to 4.88% (a 21.8% reduction) (Fig. 1). These results were also achieved thanks to concessional financing from Ukraine’s main creditors (Ministry of Finance of Ukraine, 2024; 2024z).

The declared strategic goals of public debt management have largely been achieved through the application of management tools: the average term to maturity has increased, a more even repayment schedule has been ensured, concessional loans have been secured, relationships with investors have continued to develop, and the overall debt management process has been improved.



	12/31/21	12/31/22	12/31/23	9/30/24
Deadline	6.27	8.47	10.56	11.2
Weighted average cost, %	7.79	7.64	6.24	4.88

Figure 1. Dynamics of the Weighted Average Cost and Maturity of State and State-Guaranteed Debt in 2021–2024

Source: Compiled by the authors based on data from the Ministry of Finance of Ukraine (2024; 2024z)

At the same time, during 2019–2024, the share of state debt denominated in the national currency decreased (36.6% in 2019 to 25.3% as of September 30, 2024). This trend is linked to the expansion of the loan portfolio and the attraction of financing in various currencies (Table 2).

Table 2. Structure of State and State-Guaranteed Debt by Interest Rates and Currencies at Maturity in 2019–2024

Debt by currency	2019		2020		2021		2022		2023		2024	
	UAH	%	UAH	%	UAH	%	UAH	%	UAH	%	UAH	%
Total public and government-guaranteed debt	2241,0	100	2551,9	100	2672,0	100	4072,8	100	5519,5	100	6409,2	100
US dollar	777,2	38,9	922,6	36,2	920,1	34,4	1 220,4	30,0	1 446,5	26,2	1 533,1	23,9
EURO	203,5	10,2	355,8	13,9	359,3	13,4	898,4	22,1	1783,6	32,3	2283,1	35,6
Canadian dollar	3,6	0,2	–	–	–	–	52,5	1,3	124,9	2,3	194,0	3,0
US dollar	268,3	13,4	362,6	14,2	395,7	14,8	527,8	13,0	625,8	11,3	730,5	11,4
Ukrainian hryvnia	732,3	36,6	894,3	35,0	982,7	36,8	1336,5	32,8	1501,7	27,2	1621,7	25,3
Japanese yen	13,4	0,7	16,5	0,6	13,6	0,5	36,5	0,9	35,9	0,7	38,4	0,6

Source: Compiled by the authors based on data from the Ministry of Finance of Ukraine (2024b; 2024c; 2024d; 2024f; 2024g)

The structure of state and state-guaranteed debt by interest rates indicates a predominance of borrowings at fixed rates (69.1% in 2019, 68.88% in 2021, and 67.99% as of September 30, 2024). Meanwhile, borrowings at floating interest rates accounted for 30–32% of financing during the period 2019–2024 (Figure 2).

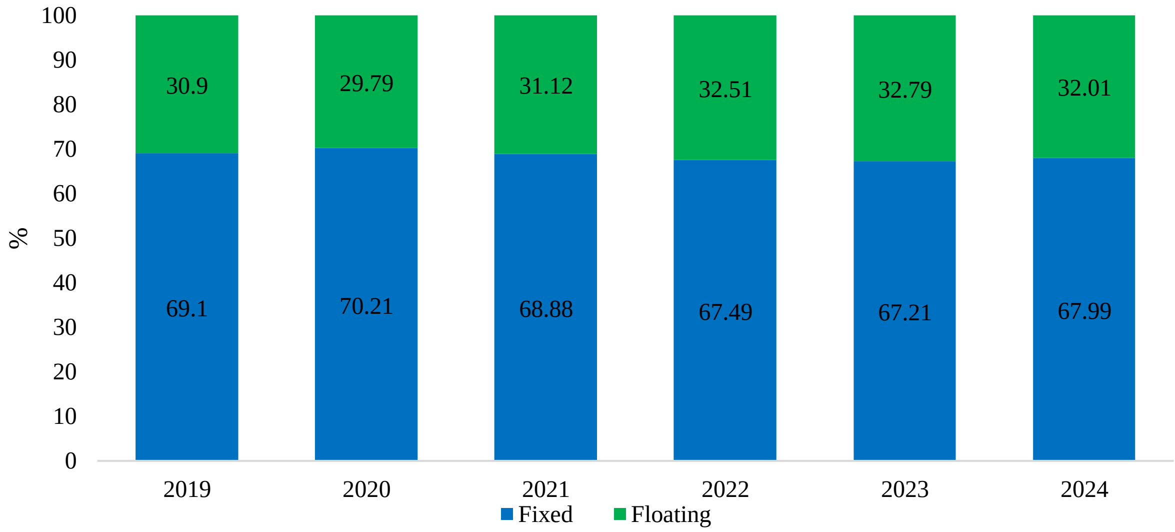


Figure 2. Structure of Ukraine's State and State-Guaranteed Debt by Interest Rates in 2019–2024

Source: Compiled by the authors based on data from the Ministry of Finance of Ukraine (2024b; 2024c; 2024d; 2024f; 2024g)

The analysis of public debt management programs and their implementation highlights a number of shortcomings and issues in the activities of the authorized bodies and executors. These problems are caused by the following:

- inadequate planning quality for forecasted volumes of state borrowings from international financial organizations and partner countries;
- lengthy tender procedures of international financial institutions;
- slow mobilization processes of contracting companies;
- delays in the enforcement of agreements, among others.

Actual performance indicators of public debt management programs exceeded the planned figures during 2019–2023 (Table 3).

Table 3. Planned and Actual Performance Indicators of Public Debt Management Programs in 2019–2023

Indicator name	2019		2020		2021*		2022		2023	
	Plan	Fact	Plan	Fact	Plan	Fact	Plan	Fact	Plan	Fact
Share of state domestic debt in the total amount of state debt, %	38,8	47,1	44,2	44,29	–	44,97	46,5	37,41	21,3	30,60
Share of long-term debt instruments in the structure of state debt (long-term), %	77,8	79,0	82,3	74,6	–	–	70,6	81,2	81,1	82,3
State budget expenses on repayment and servicing of state debt, UAH billion	417,5	464,4	387,0	505,2	434,0	591,1	425,0	605,4	418,0	684,9

Conventions: "" – indicates the absence of a report on the implementation of the state debt management program for 2021.*
Source: compiled by the author based on data from the Ministry of Finance of Ukraine (2024h; 2024i; 2024j; 2024k; 2024l; 2024m).

During the period 2013–2019, the volumes of state and state-guaranteed debt were characterized by a stable, upward trend (Figure 3).

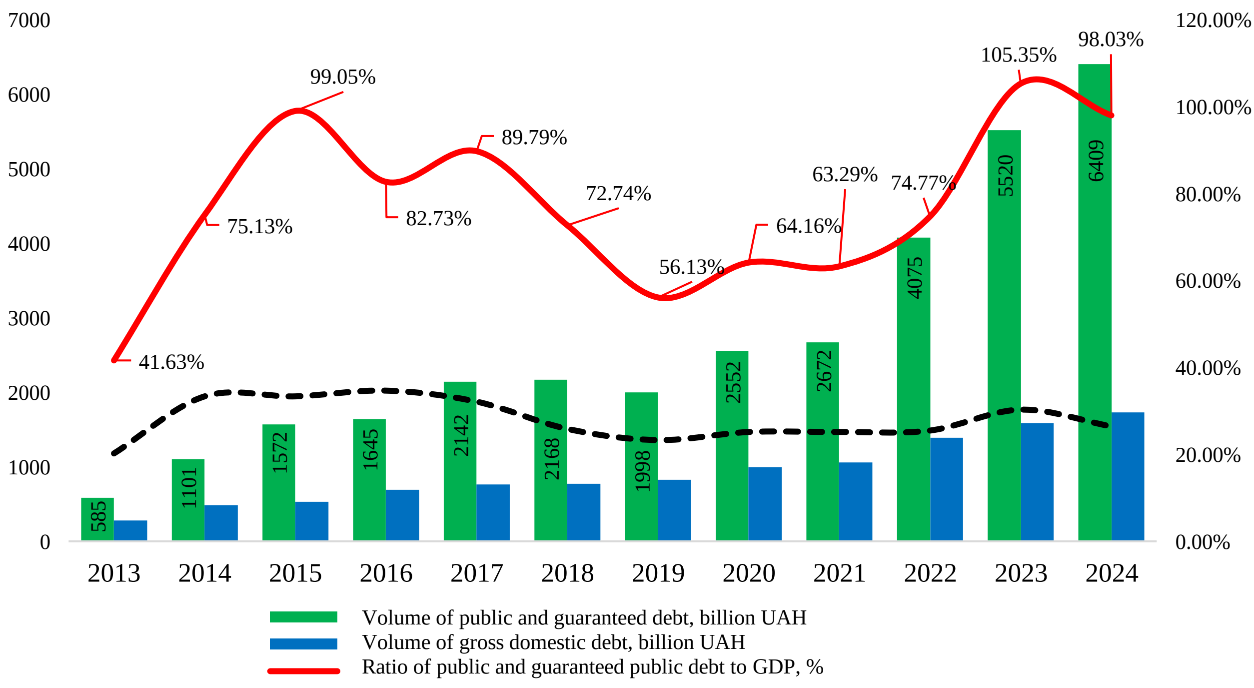


Figure 3. Dynamics of state and state-guaranteed debt to GDP of Ukraine in 2013–2024 (as of September 30, 2024)
Source: compiled by the authors based on data from the Ministry of Finance of Ukraine (2024b; 2024c; 2024d; 2024f; 2024g).

Since the end of 2019, Ukraine has witnessed a growing trend in the total amount of state and state-guaranteed debt. From 2019 to 2023, the debt volume increased by UAH 3,521.21 billion (176.21%) due to the growing budget deficit and the increasing financial needs of the security and defense sector following the onset of the invasion.

As a result, at the end of 2021, the debt volume amounted to UAH 2,672.06 billion, while as of September 30, 2024, it reached UAH 6,409.20 billion.

Accordingly, the share of state and state-guaranteed debt relative to GDP has also risen. It accounted for 41.63% in 2013 but increased to 99.05% in 2015 and 89.79% in 2018, driven by the slow pace of economic growth in 2014–2018. Due to an acceleration in GDP growth rates in 2019–2020, the share of state debt decreased. However, in 2022, the indicator exceeded the normative threshold of 60%. In 2023, the indicator value reached 105.35%, and as of September 30, 2024, it stood at 98.03%.

Specifically, the increase occurred due to a rise in the volume of state debt by 3,426.72 billion UAH during 2019–2023 (194.55%), with its share growing by 5.85% (88.14% in 2019, 95.52% as of September 30, 2024) (Table 4).

Table 4. Dynamics of the total amount of Ukraine's state debt in 2019–2024

Name of the indicator	2019	2020	2021	2022	2023	2024*	Absolute deviation	Growth rate, %
Public debt	1 761,37	2 259,23	2 362,72	3 715,13	5 188,09	6 122,22	3 426,72	194,55
Specific weight of public debt, %	88,14	88,53	88,42	91,16	94,00	95,52	5,85	–
Domestic debt	829,50	1 000,71	1 062,56	1 389,69	1 587,70	1 729,00	758,20	91,41
Specific weight of domestic debt, %	47,09	44,29	44,97	37,41	30,60	28,24	-16,49	-35,02
Debt on securities issued on the domestic market	827,38	998,73	1 060,71	1 387,97	1 586,11	1 727,51	758,73	91,70
Debt to banking and other financial institutions	2,12	1,98	1,85	1,72	1,59	1,49	-0,53	-25,00
External debt	931,87	1 258,52	1 300,16	2 325,44	3 600,39	4 393,21	2 668,52	286,36
Specific weight of external debt, %	52,91	55,71	55,03	62,59	69,40	71,76	16,49	31,17
Debt on loans received from international financial organizations	292,20	443,31	463,17	1 100,26	2 252,58	3 056,84	1 960,38	670,91
Debt on loans received from foreign government bodies (except for unsettled debt from the government bodies of the aggressor state and/or disputed debt)	24,24	26,77	24,22	160,51	239,96	318,72	215,72	890,05
Unsettled debt on loans received from the government bodies of the aggressor state and/or disputed debt	14,35	17,13	16,53	22,16	23,01	24,94	8,66	60,36
Debt on loans received from foreign commercial banks, other foreign financial institutions	33,34	61,09	50,74	60,38	59,49	66,46	26,15	78,42
Debt on securities issued (except for unsettled debt and/or disputed debt)	456,47	575,39	543,17	718,84	750,57	626,52	294,10	64,43
Unsettled debt on issued securities, and/or disputed	71,06	84,82	81,83	109,71	113,95	123,50	42,89	60,36
Debt not elsewhere classified	40,22	50,01	120,50	153,60	160,84	176,23	120,62	299,88

Conventions: "" – data as of September 30, 2024.*
*Source**:** Compiled by the author based on data from the Ministry of Finance of Ukraine (2024b; 2024c; 2024d; 2024f; 2024g).*

During the period of 2019–2023, domestic public debt increased by UAH 758.20 billion, rising from UAH 829.50 billion at the end of 2019 to UAH 1,729.00 billion as of the end of 2024. The share of domestic public debt decreased by 16.49% (from 47.09% in 2019 to 28.24% as of September 30, 2024). Between 2019 and 2023, the government's indebtedness on domestic securities issued in the domestic market, particularly medium- and long-term government bonds (OVDP), increased. Notably, the issuance of OVDPs during 2018–2023 was primarily aimed at raising funds for the state budget, except in 2022, when UAH 164.38 billion (14.58%) of the total UAH 594.38 billion was directed to the budget.

This trend is linked to an increase in the volume and share of external public debt by UAH 2,668.59 billion and 16.49%, respectively, during 2019–2023. The growth of external debt is associated with an increase in loans from international financial organizations amounting to UAH 1,960.38 billion over the same period (a 670.91% increase). The largest borrowings were received from the European Union (cumulative loans totaling UAH 3,876.36 billion in 2019–2024), the International Bank for Reconstruction and Development (UAH 1,835.99 billion in 2019–2024), the International Monetary Fund (UAH 1,407.40 billion in 2019–2024), and the European Investment Fund (UAH 409.87 billion in 2019–2024).

The volumes of Ukraine's state-guaranteed debt increased by UAH 94.49 billion during 2019–2024, including UAH 59.45 billion in domestic debt and UAH 35.04 billion in external debt. However, the share of state-guaranteed debt decreased by 5.85%. The growth in domestic guaranteed debt is attributed to the increase in liabilities on issued securities (by UAH 3.79 billion) and debts to banks and financial institutions (by UAH 55.66 billion). The rise in external guaranteed debt is primarily due to increased liabilities on issued securities amounting to UAH 57.92 billion (Table 5).

Table 5. Dynamics of the total amount of Ukraine's state-guaranteed debt during 2019–2024

Indicator name	2019	2020	2021	2022	2023	2024*	Absolute deviation	Growth rate, %
State-guaranteed debt	236,93	292,65	309,34	360,32	331,41	286,98	94,49	39,88
Share of state-guaranteed debt, %	11,86	11,47	11,58	8,84	6,00	4,48	-5,85	–
Domestic debt	9,35	32,24	49,04	72,20	68,80	67,20	59,45	635,59
Debt on securities issued on the domestic market	4,19	24,39	16,93	11,85	7,98	4,48	3,79	90,42
Debt to banking and other financial institutions	5,16	7,85	32,11	60,35	60,82	62,73	55,66	1077,86
External debt	227,57	260,41	260,30	288,12	262,62	219,78	35,04	15,40
Debt on loans received from international financial organizations	190,85	221,66	186,08	191,12	160,60	138,21	-30,25	-15,85
Debt on loans received from foreign governments	0,00	0,00	0,00	0,00	1,13	1,44	1,13	–
Debt on loans received from foreign commercial banks, other foreign financial institutions	34,05	35,43	29,51	37,27	38,82	41,61	4,76	13,98
Debt on securities issued on the foreign market	0,00	0,00	41,60	55,77	57,92	33,96	57,92	–
Debt not classified elsewhere	2,67	3,32	3,11	3,96	4,15	4,55	1,48	55,58

Conventions: "" – data as of September 30, 2024.*

Source: Compiled by the author based on data from the Ministry of Finance of Ukraine (2024b; 2024c; 2024d; 2024f; 2024g).

Discussion. The research results highlight the importance of combining various public debt management technologies, the increasing role of strategic planning amidst the Russia-Ukraine war, and the ensuing financial and economic crisis, which has heightened debt burdens and raised the risk of default. Understanding the current state of public and government-guaranteed debt, exploring opportunities to secure loans on the most favorable terms, refinancing and restructuring existing debt, and utilizing alternative debt instruments contribute to reducing the risks of a sovereign default. In debt management, addressing singularity risks requires establishing and fostering partnerships and postponing the repayment terms of existing loans.

Conclusions. In times of crisis, the volume of public and government-guaranteed debt grows, necessitating a deliberate and active debt policy along with exploring opportunities to reduce the debt burden and ensure the sustainability of public finances. In Ukraine, the following management technologies were most actively employed to achieve these goals: mitigating refinancing risks to smooth out the debt repayment schedule, medium-term planning, and issuing domestic government bonds (DGBs). During periods of singularity, when public debt volumes reached critical levels, posing default risks, technologies such as debt restructuring, DGB reprofiling, repurchase of external government bonds (EGBs) and DGBs, and attracting concessional financing were utilized. Since the start of the Russia-Ukraine war, there has been a dynamic increase in the issuance of military bonds.

Overall, active debt policy and the use of various public debt management technologies have reduced the cost of borrowing and extended repayment periods. Strategic objectives in public debt management were largely achieved, including ensuring an even debt repayment schedule, securing concessional financing, and fostering cooperation with international organizations and partner countries.

Future research should focus on the prospects for public debt management in Ukraine, considering current trends and the strategies employed by the Ministry of Finance in its practical activities.

Author contributions. The authors contributed equally.

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