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Article

Bank lending efficiency assessment of the Ukraine agricultural sector to ensure its sustainable functioning

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Abstract: Agricultural lending in Ukraine remains one of the determining factors not only of the sustainable functioning of agriculture but also of the survival and preservation of the production and resource potential of enterprises. With the beginning of the full-scale war, the problem of lack of financing to ensure the current production activities of enterprises in the agricultural sector of the economy has become much more acute. The study is devoted to the assessment of the problems of organizing credit relations in the agricultural sector of the economy and the methodological substantiation of the tools for indicative assessment of the effectiveness of agricultural lending. It has been established that low production efficiency and constant growth in debt on loans reduce the creditworthiness of agricultural enterprises and do not allow them to fully use their production potential. It is proposed to evaluate the effectiveness of state support not only by indicators characterizing the economic efficiency of agricultural production (financial result and profit) but also by additional parameters (profitability of lending by operating activities; profitability of lending by all activities of agricultural enterprises; profitability of lending by total capital of enterprises; profitability of lending by current assets of enterprises; definition and factor analysis of the aggregate indicator of lending efficiency). The use of this scientific product will allow the formation of a system for monitoring the level and efficiency of credit provision of enterprises in the agricultural sector of the economy of Ukraine.

Keywords: agricultural credit; indicators of lending efficiency; state support; integral indicator; cost of credit; profitability of lending

1. Introduction

The agricultural sector traditionally plays one of the key roles in the economy of Ukraine. It generates about 20% of Gross Domestic Product (GDP) and provides work for approximately 16%–18% of the country's working population. The food security of the state and the well-being of the urban and rural populations depend on the efficiency of agriculture. However, in recent years, the agricultural sector has faced a number of serious problems that hinder its development. One of the key factors that can stimulate the growth of agricultural production may be the expansion of access of agricultural entrepreneurs to bank loans on acceptable terms. Bank lending is an important source of investment, contributes to the continuity and acceleration of the reproduction process, strengthens the financial potential of agricultural enterprises, and occupies a key place among the profitable activities of banking institutions.

However, agricultural enterprises are subject to restrictions on the use of credit for the development of their activities, since agricultural production is associated with

high risks characteristic of this sphere. This is a dependence on natural and climatic conditions, a long reproduction cycle, low profitability of production, indebtedness of commodity producers due to the loss of demand for goods and low domestic prices for products, their insufficient state support, the difference in prices between agriculture and the industries that serve it, and a significant need for short-term and long-term borrowed funds. Lending to agrarian businesses operating in regions where active hostilities are taking place is risky.

In this context, conducting research on improving the organization of bank lending to agricultural enterprises and determining the level of its efficiency is particularly relevant and has theoretical and practical significance. For society as a whole, the value of these studies is determined by their ability to contribute to the development of recommendations that ensure the financial stability of agricultural enterprises, increase competitiveness, contribute to the expansion of bank lending to the agricultural sector, and thereby ensure the stable functioning of the agrarian economy and the banking system of Ukraine.

The real possibility of overcoming the payment deficit and restoring the working capital of agricultural producers on this basis will allow us in the future to ensure the growth of investments in fixed capital. The insufficient development in banking science of problems related to the use of bank loans by enterprises and the undoubted importance of a comprehensive analysis of the effectiveness of the current practice of bank lending to agricultural entities in the modern economy of Ukraine determined the choice of the topic of the article.

Among the considerable number of scientific works devoted to the problem under study, the following works can be distinguished as the most significant.

Ali et al. analyzed the impact of interest rate levels on farmers' access to credit in Nigeria [1]. Mubarok argued that bank financing of the agricultural sector in the short and long term is particularly affected by interest rate levels and inflation in Indonesia [2]. The results of the study by Wilm Fecke et al. showed that an increase in interest rates negatively affects agricultural lending, while grace periods provided to farms contribute to the growth of lending [3]. Khan proved that by signing a written contract with agro-processing companies for the sale of products, farmers could increase their ability to pay interest on loans [4]. Abuka et al. proved that when the money supply decreases, the supply of bank loans decreases, and therefore interest rates increase, and therefore farmers refuse credit resources on unprofitable terms [5]. Research in this direction was continued by Beutler et al. [6], Borion and Gambacorta [7], Bhowmik and Sarker [8], and Andros et al. [9]. In particular, scientists analyzed the impact of interest rate risk on lending to enterprises by banking institutions and the effectiveness of monetary policy in stimulating the growth of bank lending. In this regard, we note that interest rate risk within the framework of banking activities requires special control, since the amount of profit received by banks depends on its value, provided that interest income is a priority.

The results of the study by Asante-Addo et al. showed that thanks to credit programs, farm households gain access to financing. However, sometimes fears about non-repayment of the loan and lack of savings become the reasons for farmers' frequent refusal to participate in credit programs [10]. In this context, the scientific approaches of Niswatin and Santoso [11] and Muhović [12] are interesting, who

analyzed the determinants affecting the emergence and growth of problem loans in banking institutions when financing the agricultural sector of Indonesia, Serbia, Montenegro, Bosnia, and Herzegovina. The relationship between the effectiveness of bank management and the volume of problem agricultural loans in Malaysia and Singapore was shown by Karim et al. [13]. In turn, Geoffrey Kibet et al., in order to reduce the level of problem loans, suggested that commercial banks in Kenya take a comprehensive approach to the analysis and assessment of such indicators as gross domestic product and real effective exchange rate when lending to the agricultural sector [14]. In addition, Martey et al. emphasized that credit programs should be aimed primarily at small farmers who are in a difficult situation and urgently need financial support [15]. Fatch et al. supplemented the research in this aspect and analyzed the impact of government policy and credit programs on the diversification of agricultural activities [16]. We agree with the scientist's point of view regarding the importance of diversification of production to ensure the financial stability of agricultural producers in the face of negative changes in the external and internal environment.

Scholars such as Issahaku et al. [17], Nordjo and Adjasi [18], Manoharan and Varkey [19], Bahşian and Çetin [20], and Seven and Tumen [21] have analyzed the relationship between agricultural credit and productivity in the agricultural sector of Ghana, India, and Turkey. Factors affecting credit constraints and their relationship with farm productivity have been analyzed by Khanal and Omobitan [22], Nguyen and Le [23], Aguilar-Gomez et al. [24], and Brewer et al. [25]. In particular, Ullah et al. have assessed the socio-economic characteristics of farms and established the indirect role of these characteristics in access to finance in Pakistan [26]. At the same time, Sabasi et al. established that expanding access to credit is one of the key factors stimulating the growth of agricultural productivity in the United States [27]. According to Kadanal and Kaya [28], Du et al. [29], Ameh and Lee [30], and Peng et al. [31], with the effective satisfaction of the financial needs of agricultural producers in credit resources, one can expect an increase in the cost of production and ensure the sustainable development of the agricultural sector as a whole. In our opinion, the sustainability of the development of the agricultural sector should be based not only on the constant additional attraction of credit resources but also on the rational use of existing ones. Attracting additional financing to the agricultural sector is necessary, but it is not unlimited and should be clearly determined by economic feasibility both from the position of agricultural businesses and banking institutions and from the position of the state's economic policy.

Scholars such as Sageri and Patra [32] and Suryanto and Dai [33] have analyzed the impact of financial reporting indicators on the decision-making process for bank lending. Akdemir et al. [34] emphasize the need to develop a credit policy aimed at improving producers' access to credit for the development of the agricultural sector in Turkey. According to DanIoan Topor et al., the implementation of a credit policy that facilitates access to sources of financing contributes to sustainable development and ensures the competitiveness of the agricultural sector in Romania [35]. Finally, it should be noted that Li et al. [36] and Andros and Gerasymchuk [37] have identified development prospects and proposed constructive directions for consolidation and improvement of interaction between the insurance system, bank loans, and the agricultural sector of the economy. Cheremisina and Tomashuk [38] devoted their

study to retrospective measurement of the efficiency of agricultural lending in Ukraine, taking into account regional differentiation. The authors substantiate the calculation tools and determine the dynamics of the credit load and the efficiency of lending in agriculture by regions of Ukraine.

The deterioration of macroeconomic indicators in Ukraine after February 2022 (the beginning of a full-scale war) led to a discussion about the real impact of the military conflict on the agricultural sector and the economy as a whole. The economic components of the armed conflict, its geopolitical prerequisites (factors), and consequences began to arouse considerable interest. This issue has been studied for a long time in the professional circle of military economics specialists. Ganegodage and Rambaldi [39] studied the theoretical and econometric basis for assessing the impact of war on the economic growth of a developing country.

Arshad et al. [40] and Thies and Baum [41] devoted their works to determining the impact of military spending on a country's economic growth. The current realities of the socio-economic consequences of the war in Ukraine were studied by Tian et al. [42] and Saeed [43].

At the same time, globalization changes in the world require intensification of this kind of development, since it is necessary to take into account the conditions of martial law and political and economic reality as much as possible. Armed conflicts, in our view, are one of the forms of global competition, which, as is known from the theory of entrepreneurship, takes place in two directions: access to economically more attractive sources of resources, as well as high-margin sales markets. Of course, the economic basis of many wars is carefully masked, since it contradicts both general humanitarian values and the norms of international law. These issues are also a subject of research interest for the authors.

Despite the rather large domestic and foreign scientific base, existing studies in the context of the interaction of banking institutions and the agricultural sector of the economy indicate significant differences in conceptual approaches to solving this problem. The high dependence of the agricultural sector on external financing and the low availability of credit funds determined the need for an indicative assessment of the efficiency of bank lending and state financing of the agricultural sector of Ukraine to ensure its sustainable development.

Despite a significant number of studies, the problem of organizing credit relations in the agricultural sector of the economy and the methodological justification of the tools for assessing the efficiency of agricultural lending require in-depth analytical monitoring.

The purpose of the article is to provide an indicative assessment of the effectiveness of bank lending and state support for agricultural enterprises and to substantiate areas for improving credit relations between commercial banks and the agricultural sector of Ukraine.

2. Materials and methods

The research methodology is based on theoretical views set out in scientific works of Ukrainian and foreign authors in the field of bank lending and state financing, as well as in regulatory documents of state bodies.

A number of methods were used in the research process: comparative analysis—to compare the dynamics of lending to agricultural producers; tabular—to visually display the results of the research; graphical—to illustrate the current debt on loans provided; calculation-constructive—to determine the effectiveness of agricultural lending; abstract-logical—to formulate conclusions. The monographic method was used to detail the current level of lending and state support for the agricultural sector of the economy of Ukraine and define the efficiency of lending to the agricultural sector and its comparison with the general economic indicator in Ukraine.

The conducted research is based on the following informational data set:

Data from the State Statistics Service of Ukraine (dynamics of production and sales of agricultural products, indicators of financial result and net profit, number of business entities, etc. [44];

Information and analytical data from the monetary and credit statistics of the NBU (loans provided to business entities in agriculture, regional breakdown of lending to the agricultural sector of the economy, interest rates on loans issued [45];

Operational data from the Ministry of Agrarian Policy and Food of Ukraine on the state of state support for farmers and the implementation of the program "Affordable Loans 5-7-9%" [46].

Practical implementation of the methodological toolkit for assessing the effectiveness of lending to agricultural enterprises has the form of the following calculation algorithm:

Calculation of the effectiveness of lending by the volume of production and sales of agricultural products per unit of attracted loans;

Determination of the effectiveness of lending by financial result and net profit (defined as the ratio of the rate of change of the relevant indicators to the rate of increase/decrease in credit resources);

Calculation of the profitability index of lending by operating activities;

Calculation of the profitability index of lending by all activities of agricultural enterprises;

Calculation of the profitability index of lending by total capital of enterprises;

Calculation of the profitability index of lending by current assets of enterprises;

Of course, efficiency will occur only when the above-mentioned types of profitability of agricultural enterprises exceed the cost of credit.

Determination and retrospective analysis of the aggregate indicator of the efficiency of lending to agricultural enterprises.

The efficiency of lending (by agricultural products produced) is calculated by the formula:

$$\text{Ef}prod_i = \frac{Q_{pri}}{Lag_i} \quad (1)$$

where Ef$prod_i$—the indicator of the efficiency of lending to agricultural enterprises of Ukraine in the i period, agricultural products produced per 1 thousand of attracted loans;

Q_{pri}—the volume of agricultural production by agricultural enterprises in the i period, thousand UAH;

L_{agi}—the volume of attracted loans, thousand UAH in the i period.

Lending efficiency (by agricultural products sold) is calculated by the formula:

$$Efsold_i = \frac{S_{pri}}{Lag_i} \quad (2)$$

where $Efsold_i$—efficiency of lending to agricultural enterprises of Ukraine in the *i* period, agricultural products sold per 1 thousand attracted loans;

S_{pri}—volume of agricultural products sold in the *i*-th period, thousand UAH.

The calculation of lending efficiency indicators by financial result and net profit is carried out according to the following formulas:

$$\mathrm{EL}_{FRi} = \frac{RCh_{FRi}}{RCh_{LVi}} \quad (3)$$

where EL_{FRi}—the indicator of the effectiveness of lending based on the financial results of agricultural enterprises in Ukraine in the *i* period;

RCh_{FRi} is the rate of change in the financial results of agricultural enterprises in Ukraine in the *i* period;

RCh_{LVi} is the rate of change in the volume of lending to agricultural enterprises in Ukraine in the *i* period.

$$\mathrm{EL}_{NPi} = \frac{RCh_{NPi}}{RCh_{LVi}} \quad (4)$$

where EL_{NPi} is the indicator of the efficiency of lending by net profit of agricultural enterprises in the *i* period;

RCh_{NPi} is the rate of change in net profit of agricultural enterprises in the *i* period.

The set of indicators of profitability of lending to agricultural enterprises is determined by the following formulas:

lending profitability by operating activities;

$$R_{odi} = \frac{P_{odi}}{L_{ratei}} \quad (5)$$

where R_{odi} is the profitability of lending to enterprises of the agricultural sector of the economy in the *i* period, %;

P_{odi} is the profitability of production (operational activities) of agricultural enterprises in the *i* period, %

L_{ratei} is the average interest rate on loans attracted by agricultural enterprises in the *i* period, %.

lending profitability by all activities of agricultural enterprises;

$$R_{tdi} = \frac{P_{tdi}}{L_{ratei}} \quad (6)$$

where R_{tdi} is the profitability of lending to enterprises of the agricultural sector of the economy in the *i* period, %;

P_{tdi}—profitability of all activities of agricultural enterprises in the *i* period, %;

profitability of lending on the total capital of enterprises.

$$R_{tki} = \frac{P_{tki}}{L_{ratei}} \quad (7)$$

where R_{tki}—profitability of lending to enterprises of the agricultural sector of the economy on their total capital in the *i* period, %;

P_{tki}—profitability of capital of agricultural enterprises in the *i* period, %;

profitability of lending on the current assets of enterprises.

$$R_{wki} = \frac{P_{wki}}{L_{ratei}} \quad (8)$$

where R_{wki}—profitability of lending to enterprises of the agricultural sector of the economy on their current assets in the *i* period, %;

P_{wki}—profitability of working capital of agricultural enterprises in the *i* period, %.

The construction and calculation of the integral indicator of the efficiency of lending to agricultural enterprises is defined as the root of the 8th degree of the product of all the above indicators characterizing the efficiency of lending, and we analyze the obtained dynamics during the studied period using the following formula:

$$Tef_i = \sqrt[8]{Efprod_i * EFsold_i * EL_{FRi} * EL_{NPi} * R_{odi} * R_{tdi} * R_{tki} * R_{wki}} \quad (9)$$

where Tef_i is the aggregate indicator of the efficiency of lending to the agricultural sector of the economy of Ukraine in the *i* period.

The methodological toolkit for determining the aggregate indicator of the efficiency of lending to agricultural enterprises can be presented as a multiplicative model.

Accordingly, the modeling of the factorial influence of the component indicators on the aggregate indicator of the efficiency of lending was carried out differently for the period of stable functioning of the economy and during the war.

The generalized structural model of the multiplicative type of retrospective change in the aggregate indicator of the efficiency of lending to agricultural enterprises is presented in the following form:

$$\Delta Tef_i = Tef_i - Tef_i - 1 = \Delta Ef_{prodi} + \Delta Ef_{soldi} + \Delta EL_{FRi} + \Delta EL_{NPi} + \Delta R_{odi} + \Delta R_{tdi} + \Delta R_{tki} + \Delta R_{wki} \quad (10)$$

where ΔTef_i is the change in the aggregate indicator of the efficiency of lending to agricultural enterprises in the *i* year;

$\Delta Efprod_i$, $\Delta Efsold_i$, ΔEL_{FRi}, ΔEL_{NPi}, ΔR_{odi}, ΔR_{tdi}, ΔR_{tki}, and ΔR_{wki} are the corresponding changes in all structural indicators characterizing the efficiency of lending in the *i* period.

3. Results and discussion

At the current stage of development and improvement of market relations, the credit system plays an important role in the accumulation of funds and their provision to economic entities. Gaining experience in the functioning of the economic system and developing reform programs requires the use of bank loans. Bank loans play an important role in the economy of Ukraine, allowing agricultural enterprises to use borrowed funds to expand production and circulation of products.

In recent years, the credit system has changed significantly both in methodology and in credit technology. However, experts note that in many cases, Ukrainian banks do not have a single methodological and regulatory framework for organizing the credit process. Banking legislation applicable to credit operations does not fully reflect

current practice in the credit market. The situation has developed so that each commercial bank develops its own approaches and credit system, based on its own experience, although it is obvious that there are common organizational principles that reflect international and domestic experience and allow banks to significantly streamline credit relations with clients and improve loan repayment.

The development of credit relations is one of the most important factors in the progressive development of the modern economy. In conditions of limited funds, banks that temporarily accumulate free funds and lend to the economy can significantly influence the expansion of production and the development of the agricultural sector of the economy. Much depends on how reliably the goals, objects, and methods of lending are chosen, as well as the methods of ensuring the repayment of bank loans. The relatively long duration of the production cycle in combination with the seasonality of agricultural production and the peculiarities of the formation of cost prices and production inventories of enterprises caused by these factors lead to an increased need for external capital. Its use allows farmers to expand the scope of economic activity, ensure more efficient use of their own resources, and accelerate the renewal of fixed assets and replenishment of working capital.

The main source of loan capital is credit resources. Credit ensures the accumulation of temporarily free funds and their redistribution in accordance with the needs of commodity producers when forming funds at various stages of production, distribution, exchange, and consumption of products.

Ukraine's agriculture is characterized by relatively low productivity and an outdated material and technical base. The reasons for this situation are both objective problems in the industry and insufficient efficiency of state regulation. Among the objective factors are martial law, a shortage of qualified personnel in rural areas, and underdevelopment of material and technical and transport infrastructure. The shortcomings of state regulation include the lack of a long-term comprehensive strategy for the development of the agricultural sector and the fragmentation of state support measures.

The war also created a number of problems in the banking system of Ukraine, some of which directly relate to lending to agriculture and hunting. We can name the following problems: The credit demand of agribusiness remains very high, and at the same time the solvency of agribusiness is decreasing due to high interest rates and a significant increase in the volume of non-performing loans (NPLs) in banks. The state and commercial banks offer new interest rates and credit loan programs. However, the problems remain long-term bureaucratic complexity and uniformity of the procedure.

At the same time, we note that during the war, in conditions of reduced efficiency of economic activities of enterprises, the volume of lending even increased (**Table 1**).

Table 1. Share of loans provided to the agricultural sector of the economy, 2008–2024, UAH million.

Year	Total loans by type of economic activity, UAH million	Agricultural loans, UAH million	Share of agricultural lending, %	Loan growth rate, %	Agricultural loan growth rate, %
2014	684,194	40,952	6.0	12.7	19.2
2015	787,795	48,425	6.1	15.1	18.3
2016	808,208	48,494	6.0	2.6	0.1
2017	808,593	59,711	7.4	0.0	11.6
2018	857,152	67,366	7.9	6.0	12.8
2019	845,506	57,055	6.7	−1.4	−15.3
2020	743,380	59,761	8.0	−12.1	4.7
2021	723,308	82,118	11.4	−2.7	37.4
2022	769,649	117,249	15.2	6.4	42.8
2023	735,295	113,605	15.5	−4.5	−3.1
November 2024	790,365	115,616	14.6	7.5	1.8

Source: calculated by the authors based on data from the National Bank of Ukraine [45].

In the first year of the war, thanks to state financial assistance, the growth rate of agricultural lending was quite high—+42.8%. However, the following years showed a completely different trend. Thus, in 2023, the growth rate of agricultural lending was negative (−3.1%). In 10 months of 2024, an increase of only 1.8% was recorded.

At the same time, the growth rate of lending in the economy as a whole at the end of November 2024 was 7.5%. However, it should be noted that the growth in lending volumes is still due to the negative impact of inflation and devaluation of the national currency. Thus, the annual inflation rate in Ukraine during the war increased significantly: in 2022—26.6%, in 2023—5.1%, and in 2024—12.0%.

The insufficient pace of development of agricultural lending is due, on the one hand, to the instability of the political and economic situation in Ukraine, and on the other hand, to the decrease in the level of financial stability of enterprises—potential borrowers. At the same time, credit institutions themselves have a number of serious shortcomings in the practice of credit management, which leads to a deterioration in the quality of their loan portfolio. Finding a borrower who meets the requirements is as difficult for large and medium-sized banks as it is for small businesses to obtain a loan. Banks that offer small and medium-sized enterprises a range of services related to financing economic activities prefer the following forms of security: collateral in the form of goods and materials, real estate, account balances, securities and guarantees, etc. When providing credit and financial products and services, banks take into account not only the financial condition of the potential borrower and his credit history but also the presence of a bank account, long-term business contacts with the borrower, and his reputation. To increase reliability and reduce risk, the bank requires that the borrower's financial share in the project be 30–50% of its volume.

Lending to agribusiness, compared to other types of economic activity, is riskier. During the war, the risk of repayment of loan funds by agricultural enterprises increases significantly. Therefore, commercial banks practice setting a higher interest rate in order to protect themselves and compensate for possible losses due to non-repayment of the loan.

A steady trend of increasing the volume of problem loans has been established. The largest business creditor of the agricultural sector of the economy is a bank with foreign capital—Raiffeisen Bank (18.7 billion UAH). The second and third places were taken by state-owned banks—Oschadbank and PrivatBank (18.6 billion UAH and almost 11.0 billion UAH, respectively). Thus, FUIB (UAH 10.6 billion), ProCredit Bank (UAH 8.9 billion), and state-owned Ukrgasbank (UAH 7.4 billion) took fourth, fifth, and sixth positions, respectively, in this ranking. Seventh place in terms of loan portfolio to agriculture and hunting was taken by commercial Credit Agricole Bank (UAH 6.6 billion) (**Figure 1**).

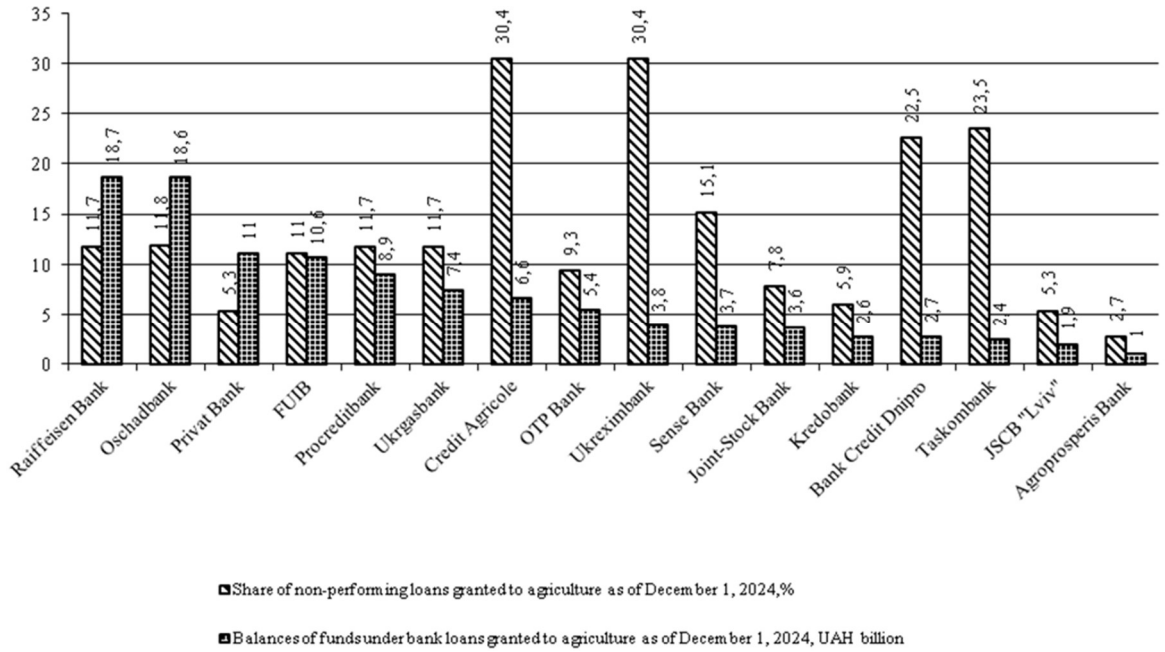

Figure 1. Balances of funds under loans to agriculture and hunting in the portfolio of banking institutions as of 1 December 2024, UAH billion.

Source: calculated by the authors based on data from the National Bank of Ukraine [45].

According to the NBU, as of 1 December 2024, the "first place" in terms of the share of problem agricultural loans was shared between the state-owned Ukreximbank (30.4%) and the commercial Credit Agricole Bank (30.4%). "Second and third place" are Taskombank at 23.5% and Bank Credit Dnipro at 22.5%, respectively. The fourth position in terms of the share of problem agricultural loans is held by the state-owned Sense Bank at 15.1%.

As of 1 December 2024, this indicator is stable at 11.8% and 11.7%, respectively, in the state-owned Oschadbank and Ukrgasbank. As of 1 December 2024, the least problem loans to agriculture and hunting are concentrated in Agroprosperis Bank (2.7%), but at the same time, this bank occupies the last position in the lending rating (1 billion UAH) among the banks analyzed by us. We can state that under martial law, the level of problem agricultural loans in state and commercial banks has increased significantly.

Research into agricultural lending policy from the perspective of enterprise size has allowed us to establish the following trend. Financial and credit institutions give preference to medium-sized businesses. Currently, they have been granted loans in the

amount of UAH 43.4 billion, or 38.0% of the total (**Table 2**). At the same time, the volume of problem debt of these entities fluctuates within UAH 5.2 billion, or 34.7% of the portfolio of non-performing agricultural loans.

Table 2. Structure of agricultural lending and the level of problem loans by size of agricultural enterprises, as of 1 December 2024, UAH million.

Size of business entity	Balances of funds on loans granted to agriculture						Balances of funds on problem loans granted to agriculture					
	Total	%	national currency	%	foreign currency	%	Total	%	national currency	%	foreign currency	%
Large business entity	14,861.6	13.0	5648.5	6.3	9213.1	36.7	329.7	2.2	7.7	0.1	322	9.8
Medium business entity	43,429.3	38.0	33,439.3	37.5	9990.1	39.8	5285.7	34.7	3890.8	32.5	1394.9	42.4
Small business entity that is not a micro-business entity	23,381.3	20.4	20,968.1	23.5	2413.1	9.6	2998.9	19.7	2254.5	18.8	744.4	22.7
Micro business entity*	11,079.4	9.7	10,856.5	12.2	222.9	0.9	2169	14.2	2081.5	17.4	87.6	2.7
Micro business entity**	7007.9	6.1	6899.3	7.7	108.6	0.4	1204.1	7.9	1184.4	9.9	19.7	0.6
Micro business entity***	3865.2	3.4	3865.2	4.3	-	-	421.5	2.8	421.5	3.5	-	-
Other	10,769.5	9.4	7599.6	8.5	3169.9	12.6	2845.1	18.7	2127.6	17.8	717.5	21.8
Total	114,394.1	100	89,276.4	100	25,117.7	100	15,254	100	11,967.8	100	3286.1	100

Micro-entrepreneur*—A micro-entrepreneur whose annual income from any activity exceeds the equivalent of EUR 500,000 and does not exceed the equivalent of EUR 2 million; Micro-entrepreneur**—A micro-entrepreneur whose annual income from any activity exceeds the equivalent of EUR 50,000 and does not exceed the equivalent of EUR 500,000; Micro-entrepreneur***—A micro-entrepreneur whose annual income from any activity does not exceed the equivalent of EUR 50,000. Source: compiled and calculated by the authors based on data from the National Bank of Ukraine [45].

It has been established that microenterprises, whose annual income does not exceed the equivalent of 50 thousand euros, are outsiders in the general agricultural lending system. Thus, the volume of loans is 3.9 billion UAH, and their share in total agricultural lending is only 3.4%.

The main problems of lending to small agricultural enterprises are focused on the lack of official financial accounting, lack of liquid collateral for the bank, lack of economic and legal knowledge among entrepreneurs, and opacity of small businesses.

Agricultural lending requires active state support, especially for enterprises that have suffered the most from the war. In order to improve the conditions for lending to agribusiness, the program “Affordable Loans 5-7-9%” was created [47].

The implementation of the program is carried out by the Ministry of Finance through authorized banks with the participation of the Entrepreneurship Development Fund. This program provides for simplifying access for agricultural producers to bank lending at a reduced interest rate. However, it is quite difficult to obtain such a loan due to high requirements for entrepreneurs (some of which are changed by the bank, sometimes even during the consideration of the application), a large number of documents that need to be provided, and long terms for considering the application.

In the state budget for 2024, more than 18 billion UAH was provided for compensation for interest rates of the 5-7-9% program. However, a significant part of these funds was directed to repay debt on loans already granted, which reached 10 billion UAH.

It was also established that the share of agricultural enterprises that attracted loans during the war decreased. Thus, in 2022 this indicator was 90.2%, then in 2023 it decreased to 24.2%, and in 2024 to 23.9%.

Thus, in 2024, 13,088 farmers attracted 104 billion 462 million in credit funds. The largest amount of credit funds under all credit programs was received by farmers from the following regions: Kyiv region (21.7 billion UAH), Dnipropetrovsk region (7.5 billion UAH), Vinnytsia region (7.4 billion UAH), Kirovohrad region (6.8 billion UAH), Odesa region (6.4 billion UAH), Cherkasy region (6.2 billion UAH), and Lviv region (almost 5.9 billion UAH). However, it should be noted that these regions are far from active hostilities (**Table 3**).

Table 3. Dynamics of attracting credit funds by business entities of the agro-industrial complex in 2024, including under the state program "Affordable Loans 5-7-9%" by regions of Ukraine.

Regions of Ukraine	Number of agricultural producers who have attracted loans				Volume of attracted loan/credit line, thousand UAH		
	Total	including under the 5-7-9 program	Share in the region, %*	Share within all regions, % **	Total under all lending programs	including under the 5-7-9 program	Share within all regions, %***
Vinnytsia	1297	894	68.9	10.2	7,417,533.35	4,076,012.41	8.69
Volyn	594	464	78.1	5.3	4,477,832.46	2,733,674.62	5.8
Dnipropetrovsk	946	575	60.8	6.6	7,481,531.09	2,752,778.48	5.87
Donetsk	15	13	86.7	0.15	128,107.30	106,876.61	0.2
Zhytomyr	303	171	56.4	1.95	2,059,692.07	982,766.37	2.1
Zakarpattia	68	47	69.1	0.5	452,991.45	241,119.38	0.5
Zaporizhzhia	296	214	72.3	2.4	1,199,603.33	1,096,686.62	2.3
Ivano-Frankivsk	196	96	49.0	1.1	1,574,457.19	975,306.74	2.1
Kyiv	1251	835	66.7	9.5	21,713,044.55	5,684,586.80	12.1
Kirovohrad	1584	1112	70.2	12.7	6,875,898.70	3,682,013.23	7.8
Luhansk	0	0	0	0	0.00	0.00	0.00
Lviv	860	626	72.8	7.2	5,866,491.88	2,697,212.56	5.7
Mykolaiv	480	255	53.1	2.9	2,428,124.20	1,382,771.26	2.9
Odesa	1179	819	69.5	9.4	6,415,029.55	4,012,277.01	8.6
Poltava	605	330	54.5	3.8	5,667,119.72	2,008,156.92	4.3
Rivne	177	127	71.8	1.5	1,781,729.39	1,130,402.47	2.4
Sumy	396	314	72.3	3.6	2,530,329.54	2,024,879.99	4.3
Ternopil	506	325	64.2	3.7	5,775,202.00	1,549,817.90	3.3

Table 3. (*Continued*).

Regions of Ukraine	Number of agricultural producers who have attracted loans				Volume of attracted loan/credit line, thousand UAH		
	Total	including under the 5-7-9 program	Share in the region, %*	Share within all regions, % **	Total under all lending programs	including under the 5-7-9 program	Share within all regions, %***
Kharkiv	699	516	73.8	5.9	4,147,524.54	3,350,070.28	7.1
Kherson	59	33	55.9	0.4	345,689.17	260,227.31	0.55
Khmelnytskyi	473	290	61.3	3.3	3,908,894.19	1,315,959.48	2.8
Cherkasy	526	270	51.3	3.1	6,211,333.46	1,787,656.66	3.8
Chernivtsi	165	142	86.1	1.6	1,146,874.15	514,116.27	1.1
Chernihiv	413	282	68.3	3.2	4,857,016.74	2,555,179.71	5.4
Total in 2024	13,088	8750	66.9	100	104,462,050.02	46,920,549.08	100
2023	13,981	10,914	78.1		78,837,495.85	44,512,714.00	
2022	43,648				95,467,281.55		

Source: Systematized by the authors based on data from the Ministry of Agrarian Policy and Food of Ukraine [46]. *—share of agricultural producers who have attracted loans under the 5-7-9 program in the region; **—share of agricultural producers who have attracted loans under the 5-7-9 program in the portfolio of regions; ***—share of the volume of loans attracted by agricultural producers under the 5-7-9 program in the portfolio of regions.

The total number of agricultural enterprises that used the program "Affordable Loans 5-7-9%" in 2024 was 8750, which is 19.8% less compared to 2023. Under this program, loans worth almost UAH 47 billion were attracted, which exceeds the indicator for 2023 by UAH 2.4 billion, or 5.4%.

It is quite clear that the loan repayment should be at the expense of the achieved investment effect, which meets the interests of creditor companies and the state represented by the National Bank of Ukraine. Therefore, the methodological and practical result of the conducted research is to determine the dynamics of the effectiveness of agricultural lending according to the selected structure of calculation indicators.

It was found that during the analyzed period, agricultural production decreased by 3.6%—from 620.5 to 598.2 billion UAH—and during the war, the reduction gained even greater momentum—by 16.1% (or by 114.4 billion UAH). At the same time, revenue from sales of products during 2017–2023 increased by 1.7 times. In war conditions, this indicator decreased by 15.1%, which in monetary equivalent is 138.7 billion UAH. Compared with the existing growth of credit burden in agriculture, lending efficiency indicators turned out to be much more modest. Determining the efficiency indicators of agricultural lending by the volume of production and sales of agricultural products per 1 thousand UAH of attracted loans in war conditions revealed a significant downward trend. Thus, the efficiency of agricultural lending by agricultural production volumes decreased by 15%—from 6.08 in 2021 to 5.15 thousand UAH in 2023. In turn, the efficiency of lending by the dynamics of sales revenue decreased by 13.9%—from 7.84 to 6.75 thousand UAH. (**Table 4**).

Table 4. Dynamics of indicators of the efficiency of lending to agricultural enterprises of Ukraine by production and sales of agricultural products, 2017–2023.

Indicators	2017	2018	2019	2020	2021	2022	2023	2023 in % to 2017	2023 in % to 2021
Dynamics of agricultural production, billion UAH (Q_{pri})	620.5	671.3	681.0	612.1	712.6	538.4	598.2	96.4	83.9
Dynamics of revenue from the sale of agricultural products, billion UAH (S_{pri})	467.6	525.1	556.3	605.5	918.7	680.5	780	166.8	84.9
Production of agricultural products per thousand UAH of attracted loans ($Efprod_i$)	4.17	9.96	11.94	7.45	6.08	4.74	5.17	124.0	85.0
Sold agricultural products per thousand UAH of attracted loans ($Efsold_i$)	7.61	7.79	9.75	7.37	7.84	5.99	6.75	88.7	86.1

Source: calculated by the authors based on statistics from the National Bank of Ukraine [45] and the State Statistics Committee of Ukraine [44].

Calculation and comparison of the growth rates of financial results, and net profit with the corresponding indicators of lending dynamics in the pre-war period (during 2017–2021), revealed a trend of a significant increase in efficiency. Thus, the efficiency indicator of lending to agricultural enterprises of Ukraine by financial result during this period increased by 3.3 times—from 0.62 in 2017 to 2.05 in 2021. However, the difficult economic conditions caused by the war worsened this indicator by almost 3 times. In 2023, the ratio of the rate of change in financial results and lending volumes was 0.74 points (**Table 5**).

Table 5. Determination of profitability indicators of lending to agricultural enterprises of Ukraine, 2017–2022.

Indicators	2016	2017	2018	2019	2020	2021	2022	2023	2023 in % to 2017	2023 in % to 2021
Financial results from ordinary activities before taxation, UAH billion	90.1	68.6	71.5	94	82.2	240	87.3	65.4	349.9	27.3
Net profit received by enterprises UAH billion	74.3	88.7	94.4	116.6	108.6	248.3	126.4	99.4	279.9	40.0
Rate of change in financial result (RCh_{FRi})	-	0.76	1.04	1.31	0.87	2.92	0.36	0.75	383.5	25.7
Rate of change in net profit (RCh_{NPi})	-	1.19	1.06	1.24	0.93	2.29	0.51	0.79	191.5	34.4
Rate of change in credit resources (RCh_{LVi})	-	1.23	1.13	0.85	1.44	1.43	0.97	1.02	116.0	71.3
Efficiency of lending by financial result (EL_{FRi})	-	0.62	0.92	1.55	0.61	2.05	0.38	0.74	330.7	36.0
Efficiency of lending by net profit (EL_{NPi})	-	0.97	0.94	1.46	0.65	1.60	0.53	0.77	165.1	48.3

Source: calculated by the authors based on statistics from the National Bank of Ukraine [45] and the State Statistics Committee of Ukraine [44].

Determining the efficiency of lending to agricultural enterprises by net profit in the pre-war period revealed an increase in this indicator by 1.7 times. Accordingly, the decrease in the profitability of most agricultural enterprises during the war reduced this indicator by more than 2 times, from 1.6 in 2021 to 0.77 in 2023.

The calculation of the dynamics of lending profitability indicators according to the selected criteria structure indicates the presence of positive dynamics of efficiency in the pre-war period. During 2017–2021, the profitability indicator of lending for operational activities of agricultural enterprises increased almost 3 times—from 1.46 to 4.20. A similar trend is observed in other profitability indicators. Thus, the

profitability indicator of lending to all activities of enterprises, the profitability indicator of lending to capital, and the profitability indicator of lending to current assets of enterprises increased during this period by 3.6, 3.8, and 4.1 times, respectively.

Accordingly, during 2022–2023, all indicators of lending profitability decreased catastrophically (**Table 6**).

Table 6. Determination of the indicator of lending profitability of agricultural enterprises of Ukraine, 2017–2022.

Indicators	2017	2018	2019	2020	2021	2022	2023	2023 in % to 2017	2023 in % to 2021
Profitability of operating activities (P_{odi})	22.4	18.3	19.2	18.6	40.3	20	12	179.9	29.8
Profitability of all activities of enterprises (P_{tdi})	16	13.7	16.1	13.6	36.4	13.3	8	227.5	22.0
Profitability of capital of enterprises (P_{tki})	7.5	7.2	9.1	7.2	17.8	6	4.1	237.3	23.0
Profitability of current assets (P_{wki})	10.7	10.9	14.6	11.5	27.2	8.8	6.2	254.2	22.8
Average rate on loans provided (L_{ratei})	15.3	17.5	17.9	13.5	9.6	13.5	15.8	62.7	164.6
Rate of profitability of lending by operating activities of enterprises (R_{odi})	1.46	1.05	1.07	1.38	4.20	1.48	0.76	286.7	18.1
Rate of profitability of lending by all activities of enterprises (R_{tdi})	1.05	0.78	0.90	1.01	3.79	0.99	0.51	362.6	13.4
Rate of profitability of lending by capital (R_{tki})	0.49	0.41	0.51	0.53	1.85	0.44	0.26	378.3	14.0
Rate of profitability of lending by current assets of enterprises (R_{wki})	0.70	0.62	0.82	0.85	2.83	0.65	0.39	405.1	13.8

Source: calculated by the authors based on statistics from the National Bank of Ukraine [45] and the State Statistics Committee of Ukraine [34].

The profitability index of lending for operating activities of enterprises during the war decreased by 5.5 times (from 4.2 to 0.76 points), the profitability index of lending for all activities of enterprises decreased by 7.5 times (from 3.79 to 0.51 points), the profitability index of lending for capital decreased by 7.1 times (from 1.85 to 0.26 points), and the profitability index of lending for current assets of enterprises decreased by 7.2 times (from 2.83 to 0.39 points).

Table 7. Dynamics of the aggregate efficiency indicator of lending to agricultural enterprises of Ukraine, 2017–2023.

Indicators	2017	2018	2019	2020	2021	2022	2023
Agricultural production per thousand UAH of attracted loans ($Efprod_i$)	4.17	9.96	11.94	7.45	6.08	4.74	5.17
Agricultural products sold per thousand UAH of attracted loans ($Efsold_i$)	7.61	7.79	9.75	7.37	7.84	5.99	6.75
Efficiency of lending by financial result (EL_{FRi})	0.62	0.92	1.55	0.61	2.05	0.38	0.74
Efficiency of lending by net profit (EL_{NPi})	0.97	0.94	1.46	0.65	1.60	0.53	0.77
Indicator of profitability of lending by operating activities of enterprises (R_{odi})	1.46	1.05	1.07	1.38	4.20	1.48	0.76
Indicator of profitability of lending by all activities of enterprises (R_{tdi})	1.05	0.78	0.90	1.01	3.79	0.99	0.51
Indicator of profitability of lending by capital (R_{tki})	0.49	0.41	0.51	0.53	1.85	0.44	0.26
Indicator of profitability of lending by current assets of enterprises (R_{wki})	0.70	0.62	0.82	0.85	2.83	0.65	0.39
Total indicator of lending efficiency	1.33	1.39	1.79	1.39	3.27	1.12	0.97

Source: authors' calculations.

Based on the phased definition of the system of efficiency indicators of lending to agricultural enterprises, the level was calculated, and the dynamics of the aggregate efficiency indicator were analyzed (**Table 7**).

The maximum value of the determined lending efficiency indicator was in 2021—3.27. Over the two years of the war, the cumulative efficiency of agricultural lending decreased by almost 3.5 times—from 3.27 to 0.97 points.

There is no control value for this cumulative indicator; it is an author's development. The practical application of this scientific product will help form a system for monitoring the level and efficiency of lending to enterprises in the agricultural sector of the economy of Ukraine.

The final stage of the practical testing of the methodology for assessing the efficiency of lending to agricultural enterprises was the conduct of a deterministic factor analysis of the impact on the cumulative indicator of structural indicators. The algorithm for conducting factor analysis is focused on a comparative analysis of the impact of component indicators of efficiency before the war and during the war period. It should be noted that the calculation tools for determining the factor impact are based on the use of chain substitutions and differences.

The practical implementation of this methodological approach allowed us to establish the following dynamics and the corresponding rating assessment of the factor impact (**Table 8**).

Table 8. Effective indicators of the assessment of the factor impact on the aggregate efficiency indicator of lending to agricultural enterprises in Ukraine, 2017–2023.

Indicators	2021 compared to 2017	2022 compared to 2021	2023 compared to 2022	2023 compared to 2021
Agricultural production per thousand UAH of attracted loans	0.064	−0.100	0.012	−0.066
Agricultural products sold per thousand UAH of attracted loans	0.005	−0.105	0.017	−0.059
Efficiency of lending by financial result	0.226	−0.582	0.099	−0.376
Efficiency of lending by net profit	0.105	−0.320	0.059	−0.242
Indicator of profitability of lending by operating activities of enterprises	0.245	−0.264	−0.104	−0.486
Indicator of profitability of lending by all activities of enterprises	0.345	−0.293	−0.095	−0.452
Indicator of profitability of lending by capital	0.545	−0.427	−0.013	−0.497
Indicator of profitability of lending by current assets of enterprises	0.399	−0.062	−0.121	−0.121
Change in the aggregate lending efficiency indicator	1.935	−2.153	−0.146	−2.299

Source: authors' calculations.

It was found that during 2017–2021 the aggregate indicator of the efficiency of agricultural lending increased by 1.94 points, or 2.4 times. The greatest positive impact on the growth of efficiency was caused by the indicators of lending profitability: by capital—by 28.2%; by current assets of enterprises—by 20.6%; and by profitability of activities—by 17.8%.

During the first year of the war, lending efficiency decreased by 2.2 points, or by 65.7%. All component indicators had a negative impact. The decline in the efficiency indicator was most affected by the decline in financial results and net profit of agricultural enterprises—by 27 and 14.9%, respectively. In 2023, the decrease in efficiency was less noticeable—by 0.15 points, or by 13.4%. It was established that the positive impact was caused by production factors—financial results, net profit, dynamics of sales, and production of agricultural products.

In general, compared to the pre-war period, the efficiency of agricultural lending fell by 2.3 points, or 3.4 times, while all component indicators had a negative factor impact.

It is quite clear that the full-scale war and economic and political challenges faced by Ukraine and its agricultural sector do not form a stable basis for the growth of the effect of credit investments. It should be noted that under normal conditions of the functioning of the agricultural economy, the efficiency of the use of credit resources will contribute to the growth of GDP, national income, and profitability of agricultural enterprises.

4. Discussion

The war in Ukraine has been going on for over 11 years. Three years of full-scale combat operations practically throughout the country. The duration of the conflict affects macroeconomic indicators: GDP, government spending, export-import indicators, household spending, domestic investment, etc.

The consequences of the armed conflict affect the GDP indicator: the destruction of production facilities, infrastructure, and transport; loss of land use ability due to shelling, mining, and pollution. In addition, the departure of the workforce from the country and losses among the civilian population have a side effect on this indicator.

Armed conflicts lead to an increase in the indicator of government spending per capita. This is due to the fact that with the beginning of armed confrontation, spending on security and defense increases, as well as on the repair and reconstruction of infrastructure destroyed as a result of hostilities.

Armed conflict affects both domestic and foreign investors. Depending on the intensity of the conflict, they withdraw capital abroad or transfer production facilities to other regions of the country.

Armed conflicts affect the exchange rate of the national currency. The national currency of Ukraine depreciated almost 5 times during 2014–2025.

We note that the impact of an armed conflict on the devaluation of the national currency of the conflict country depends on how destructive such a conflict is for its economy and how quickly its consequences can be overcome or compensated.

Military conflict negatively affects Ukraine’s external debt. There is an outflow of foreign capital from the country due to investment risks. Spending on defense and infrastructure restoration after hostilities is increasing. War reduces incomes, and unemployment is increasing due to the destruction of business infrastructure, migration, and the outflow of investments.

Armed conflicts have affected the decline in exports. This is due to the destruction of export capacities, cross-border restrictions on the movement of goods (in interstate

conflicts), trade blockades, and imposed sanctions. The effectiveness of foreign economic activity is decreasing. Before the start of the full-scale war, Ukraine held leading positions among the world's exporters of agricultural products. It provided 10% of world wheat exports and 15% of barley and produced 47% of sunflower oil. But despite the war, Ukraine remains a key participant in the global food market.

Currently, lending to agricultural enterprises is carried out mainly within the framework of state programs, which is associated with the difficult state of the Ukrainian economy and its sectoral components. Therefore, the priority direction of the post-war restoration of the agrarian economy is the development of a system of bank lending to rural producers.

Thus, the agricultural lending system should be built on the basis of a combination of various credit products that take into account the specifics of each category of agricultural producers, namely agricultural enterprises, peasant (farm) farms, and households. At the same time, it is necessary to maintain the orientation of bank agricultural lending to small and medium-sized agricultural producers, which play an important role in ensuring the country's food security.

The provision of preferential loans to small and medium-sized agricultural enterprises implies certain requirements for credit institutions. The main thing is that commercial banks must be able to provide large volumes of loans over a sufficiently long period of time. The dominant position of the state bank (PrivatBank) in agricultural lending should be maintained in the future. At the same time, it is advisable to involve other commercial banks more in lending to agricultural enterprises (for example, on a syndicated basis) and use various refinancing programs.

Unjustifiably high prices for bank loans lead to the redistribution of profits of agricultural enterprises, which mostly come in the form of interest income to the banking sector, creating excessive profits for banks. In this situation, part of the financial resources do not come to the agricultural sector, and the profitability of this sector of the economy decreases. We consider it unproductive to provide loans to agricultural enterprises at an interest rate higher than the level acceptable to the enterprise, based on the current profitability of equity. The interests of banking institutions and enterprises in the agricultural sector should be coordinated on the basis of setting such a loan price that allows the bank to achieve an economically justified margin and the enterprise to receive a comparable excess of income from the sale of products compared to current expenses.

Compared to existing approaches to assessing the effectiveness of lending and the state support provided, which focus on monitoring the achievement of established target values at the national level, the proposed methodology is distinguished by the completeness of the system for assessing the effectiveness of the use of credit resources by individual agricultural enterprises (increase in the efficiency of production and sales of products due to attracted loans, positive dynamics of the set of indicators of lending profitability).

5. Conclusion

It was found that low production efficiency and constant growth in debt on loans reduce the creditworthiness of agricultural enterprises and do not allow them to fully use their production potential.

It was determined that during the war, in conditions of a decrease in the efficiency of economic activities of enterprises, the volume of lending even increased. In the first year of the war, thanks to state financial assistance, the growth rate of agricultural lending turned out to be quite high—+42.8%. However, the following years showed a completely different trend. Thus, in 2023, the rate of agricultural lending turned out to be negative (−3.1%). At the same time, a steady trend of increasing the volume of problem loans was established.

It was found that financial and credit institutions give preference to medium-sized businesses. Microenterprises, whose annual income does not exceed the equivalent of 50 thousand euros, are outsiders in the general system of agricultural lending.

Agricultural lending in Ukraine is currently simply impossible without active state support. This is especially true for enterprises that were most affected by the war. In order to improve the conditions for lending to agribusiness, the program "Affordable Loans 5-7-9%" was created. Research has shown a significant decrease in lending activity during the war. The share of agricultural enterprises that attracted loans in 2022 was 90.2%; in 2023, there was a decrease to 24.2%, and in 2024, to 23.9%.

In our opinion, there is a need for mechanisms to simplify access to credit resources for small and medium-sized agricultural enterprises. It is necessary to form separate efficiency criteria for each lending objective. It is advisable to implement comprehensive monitoring of the quality of assets and the achieved socio-economic results of the activities of enterprises that have used the preferential lending program. It is necessary to develop a mechanism for insurance of war risks, which will allow for strengthening the role of working capital lending in the structure of the program and reducing the credit risks of borrowers. This will help ensure the most effective allocation of public funds to stimulate economic growth, given the critical limitation of budget resources.

It is proposed to evaluate the effectiveness of state support not only by indicators that characterize the economic efficiency of agricultural production (financial result and profit) but also by additional parameters (profitability of lending by operating activities; profitability of lending by all activities of agricultural enterprises; profitability of lending by total capital of enterprises; profitability of lending by current assets of enterprises; definition and factor analysis of the aggregate indicator of lending efficiency).

The research found that the efficiency of agricultural lending by agricultural production volumes decreased by 15%—from 6.08 in 2021 to 5.15 thousand UAH in 2023. In turn, the efficiency of lending by the dynamics of sales income decreased by 13.9%—from 7.84 to 6.75 thousand UAH.

Measuring the efficiency of lending to agricultural enterprises by the volume of net profit made it possible to establish the following. In the pre-war period, an increase

in this indicator was recorded by 1.7 times, and during the war, a decrease of more than 2 times from 1.6 in 2021 to 0.77 in 2023.

Calculation of the dynamics of lending profitability indicators according to the selected criterion structure revealed stable positive dynamics of efficiency in the pre-war period and a rapid decrease during the war. During the two years of the war, the total efficiency of agricultural lending decreased by almost 3.5 times—from 3.27 to 0.97 points.

Promising directions of lending to agricultural producers in Ukraine today should be based on the following approaches:

development of mortgage lending as a source of long-term credit resources for agriculture (while simultaneously solving the problem of full-fledged loan collateral);

development of exchange trading in agricultural products and introduction of new banking products for providing loans secured by the harvest of agricultural crops (including future yields) based on the term securities market to meet the needs of the agricultural sector in short-term credit funds.

On the one hand, land, as an important means of production in agriculture, should act as collateral, which will enable agricultural enterprises to obtain long-term credit resources necessary for financing economic activities. On the other hand, the products of agricultural enterprises can and should serve as collateral for short-term loans.

The difficult economic situation in Ukraine, objectively caused by military actions, requires further development and improvement of mechanisms for state support of agricultural lending, because ensuring food security remains a priority task.

The need to improve and optimize the regulatory framework that regulates the processes of credit provision to farmers by banking institutions, ensuring the accessibility of attracting bank credit, further development of the policy of cheapening loans, and real stimulation of banks by the state in order to further activate their credit cooperation with enterprises of the agricultural sector of the economy remains relevant.

Financial support from international organizations remains an important source of agricultural sector recovery in 2025. Institutions such as the World Bank, the European Bank for Reconstruction and Development, and the Food and Agriculture Organization of the United Nations are implementing programs to support farmers, including grants and soft loans for farmers in the affected regions. Ensuring transparent business conditions and guarantees of investor safety should become a priority of state policy: Ukraine should create favorable conditions for attracting international capital.

Ukraine’s agro-industrial complex has significant potential for recovery. This requires demining territories and restoring infrastructure; introducing innovative technologies to increase productivity; complying with EU standards, which will expand export opportunities; and developing the processing industry to increase added value and create jobs.

The Ukrainian agro-sector, despite current challenges, retains strategic importance in the global food market.

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SC; resources, SA and SC; data curation, SA and SC; writing—original draft preparation, SA and SC; writing—review and editing, SA and SC; visualization, SA and SC; supervision, SA and SC; project administration, SA and SC; funding acquisition, SA and SC. All authors have read and agreed to the published version of the manuscript.

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