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## **BANK CREDIT IN FINANCIAL PROVISION OF AGRICULTURAL ENTERPRISES**

**Abstract.** The implementation of strategic tasks of the agrarian sector of Ukraine essentially depends on the financial provision of agricultural producers. In the context of limitation of their own financial resources, budget financing, low development of the financial instruments recognized in the world practice, the loans of commercial banks are an important source of financial resources for agricultural enterprises and small farmers. The use of bank loans positively affects the financial and economic activities of the producers in the agrarian sector due to the opportunity of diversification of sources of financing, growth of investment activity, acceleration of capital turnover, increase of profitability of own capital, etc. Though, there are a number of factors that restrain the bank crediting to the agrarian sector in the modern terms.

The tendencies of bank crediting in financial provision of agricultural enterprises in Ukraine in 2013-2017 were considered. The changes in the nominal volumes both of bank crediting and real ones were estimated for this period. The comparison of the role of bank crediting to agricultural enterprises in Ukraine with the practice of lending in other countries on the base of the volume of bank loans per hectare of agricultural land, the share of these loans in the value of agricultural product and costs, Agriculture Orientation Index (AOI) for credit, was evaluated. The survey of agricultural enterprises showed a very low debt-to-assets ratio in 2017. Own financial resources of agricultural enterprises have remained the main source of their financial provision. The share of agriculture in total crediting is less than the contribution of the agriculture into the formation of gross value added in the country in recent years. The potential needs of agricultural enterprises in bank crediting were estimated. It was proved that the volume of bank crediting was insufficient for the financial support of operational and investment activity of agricultural enterprises in Ukraine. The necessary conditions for activation of bank crediting to agriculture were determined.

**Keywords:** credit, bank, agriculture, agricultural enterprises; financial provision; investments.

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## **БАНКІВСЬКІ КРЕДИТИ У ФІНАНСОВОМУ ЗАБЕЗПЕЧЕННІ СІЛЬСЬКОГОСПОДАРСЬКИХ ПІДПРИЄМСТВ**

**Анотація.** Виконання аграрним сектором України своїх стратегічних завдань суттєво залежить від фінансового забезпечення сільськогосподарських товаровиробників. В умовах обмеженості власних фінансових ресурсів, бюджетного фінансування, загальноновизнаних у світі фінансових інструментів кредити комерційних банків є фактично єдиним джерелом залучення додаткових фінансових ресурсів для сільськогосподарських підприємств та дрібних фермерів. Використання банківських кредитів позитивно впливає на фінансово—господарську діяльність суб'єктів господарювання в аграрній сфері через можливість диверсифікації джерел фінансування, зростання інвестиційної активності, прискорення оборотності вкладених коштів, збільшення рентабельності власного капіталу. Але існує низка чинників, які є стримуючими у поширенні банківського кредитування аграрної сфери в сучасних умовах.

Розглянуто тенденції у стані банківського кредитування у фінансовому забезпеченні сільськогосподарських підприємств в Україні у 2013—2017 рр. Проведено оцінку змін за цей період як номінальних обсягів банківського кредитування, так і реальних, розраховано індекс сільськогосподарської орієнтації кредитів в Україні. Здійснено порівняння ролі банківського кредитування сільськогосподарських підприємств в Україні з практикою кредитування в

інших країнах за обсягами банківських кредитів на один гектар сільськогосподарських угідь, часткою у вартості випуску продукції, витратах, індексом сільськогосподарської орієнтації кредитів. Проведене обстеження сільськогосподарських підприємств засвідчило низьку частку кредиторської заборгованості перед банками в активах підприємств. Основним джерелом фінансового забезпечення сільськогосподарських підприємств залишаються власні кошти. Частка кредитів, спрямованих в аграрний сектор протягом останніх років, значно менша внеску галузі у формування валової доданої вартості в країні.

Здійснено оцінку потенційної потреби у кредитах аграрних підприємств в Україні. Доведено, що обсяги банківського кредитування є недостатніми для фінансового забезпечення їх операційної та інвестиційної діяльності. Визначено необхідні умови для активізації банківського кредитування сільського господарства.

**Ключові слова:** кредит, банк, сільське господарство, сільськогосподарські підприємства, фінансове забезпечення, інвестиції.

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## **БАНКОВСКИЕ КРЕДИТЫ В ФИНАНСОВОМ ОБЕСПЕЧЕНИИ СЕЛЬСКОХОЗЯЙСТВЕННЫХ ПРЕДПРИЯТИЙ**

**Аннотация.** Рассмотрены тенденции в состоянии банковского кредитования в финансовом обеспечении сельскохозяйственных предприятий в Украине в 2013—2017 гг. Определены изменения за этот период как номинальных объемов банковского кредитования, так и реальных, рассчитан индекс сельскохозяйственной ориентации кредитов в Украине. Проведено сравнение роли банковского кредитования сельскохозяйственных предприятий в Украине с практикой кредитования в других странах по объемам банковских кредитов на

гектар сельскохозяйственных угодий, доли в стоимости выпуска продукции, затратах, индексу сельскохозяйственной ориентации кредитов.

Осуществлена оценка потенциальной потребности в кредитах аграрных предприятий Украины. Доказано, что объемы банковского кредитования недостаточны для финансового обеспечения их операционной и инвестиционной деятельности. Определены необходимые условия для активизации банковского кредитования сельского хозяйства.

**Ключевые слова:** кредит, банк, сельское хозяйство, сельскохозяйственные предприятия, финансовое обеспечение, инвестиции.

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**Introduction.** The fulfilment of the strategic tasks of the agrarian sector of Ukraine essentially depends on the reliable and sufficient financial provision of agricultural producers, the attraction of long-term investments in agriculture. Under the conditions of limited own financial resources, budget financing and financial instruments widely used in the world practice, the loans provided by commercial banks are actually the only source of additional financial resources for agricultural enterprises and small farmers. The use of bank loans positively affects the financial and economic activity of business in the agrarian sector through the opportunity of diversifying sources of financing, increasing investment activity, accelerating the capital turnover, increasing the return on equity, etc. The credit funds, along with own and other financial resources of agricultural producers, ensure the creation of agricultural products, value added and profit.

However, under modern conditions, a number of factors restrain the spread of bank crediting to the agrarian sector in Ukraine. High interest rates of the use of loans, the limited adequate liquidity provision, the insufficient solvency of many agricultural enterprises, the high risk of long-term lending under macroeconomic instability, significant operational cycles, a low level of protection of property rights, underdeveloped mortgage market and insurance practices hinder the development of effective relations between commercial banks and agricultural producers.

Experts of the Food and Agriculture Organization (FAO) of the United Nations estimated the global trends concern credit to agriculture and noted that total commercial credit to agriculture amounted to 2.9% in 2017, but agricultural sector globally contributed over 4% of Gross Domestic Product [1].

M. Demianenko, taking into account the peculiarities of agriculture, made a categorical conclusion: 'This branch cannot exist as a commodity producer without proper credit provision' [2, p. 186]. Professors from India, R.S. Sidhu and S.S. Gill emphasize that an access to credit is crucial for farmers, since agriculture is characterized by a significant lag between payments for resources and incomes, 80 per cent of the farmers are small and are unable to save and invest due to their low levels of income [3, p. 11].

Thus, solving the problem of the bank credit to agricultural producers is important for the financial provision of their operational activities, innovation development and food security.

**Analysis of research and problem statement.** Various aspects of bank credit to the agrarian sector have been considered in the research of many scientists. The problem of lending to agricultural enterprises has been reflected in the works of such Ukrainian economists as O. Gudz, M. Demianenko, N. Patyka, P. Stetsyuk and many others [4-8]. Issues of farmers' acquaintance with the terms of lending, availability of loans from various sources, ensuring financial stability with increasing loans in the context of lower prices for agricultural products and raising interest rates have been considered in the recent studies of foreign scientists [9—12].

We would like to note a number of the scientific discussions during of the emergence of a market economy in Ukraine, when crediting was one of the most acute problems of the functioning and development of the agrarian sector. To activate crediting to agriculture, the scientists offered various measures, including: state subsidies of interest rates; the creation of a specialized agrarian bank, a specialized fund for credit support of agriculture, a state loan guarantee fund; introduction

of targeted auctions of credit resources and stimulating the development of rural credit cooperatives [2; 13; 14].

Yu. Lupenko, A. Gutorov, O. Gutorov assessed the sources of investment support for integration relation in agrarian sector in Ukraine [6]. N. Patyka, summarized the results of the analysis of data on crediting to agriculture in 1997—2017 and concluded that there was an improvement in the situation in this area: the average annual growth rate of lending is estimated at 30.7%, interest rate decreased, the share of loans in foreign currency reduced [7, p. 47]. But our survey of agricultural enterprises in 2017 revealed an insignificant role of bank credit in the financial provision of agricultural enterprises, which does not allow them to get benefits of the credit leverage, does not promote the implementation and development of economic potential of agricultural production and financial potential of the banking system.

Therefore, the **purpose** of this article has become to determine the role of bank credit in the financial provision of agricultural enterprises in Ukraine under the current conditions, taking into account international comparisons, assessing the potential needs of agriculture in crediting.

The survey of agricultural enterprises, statistical data collection were used for the research, main methods of research were: trend and correlation analysis, indexing, comparisons.

**Research results.** The rather high credit capacity of agriculture is caused by the specifics of agrarian production: a relatively long production cycle; seasonality of production, cyclicity in the formation of cash flows and the lack of free own financial resources; relatively small size of enterprises in the agrarian sector and high risks of agribusiness.

The analysis of crediting in 1998—2017 revealed that lending to agricultural enterprises in Ukraine was cyclical and largely dependent on macroeconomic conditions. Despite of the gradual declining tightness of monetary policy since 1999, the level of interest rates in the economy remained high. The average weighted interest rate of the National Bank of Ukraine was 50.0% in 1999, 30.6% — in 2000 and 19.7% — in 2001. The average rate for commercial banks' loans in Ukraine reached 53.6% in 1999, in 40.3% — in 2000 and 31.9% — in 2001 [16]. The high value of credit resources caused by the macroeconomic crisis, insufficient supply of credit resources of the banking system at the stage of formation, total losses and high level of debt of agricultural enterprises, the lack of legal provision for liquid collateral led to collapse in crediting to agriculture in this period, only 1.9% of production costs (excluding depreciation) of agricultural enterprises were credited in 1998 and 2.4% — in 1999 [2, p. 198].

In 2000, the state introduced a partial compensation of interest rate, that agricultural producers pay on loans from commercial banks. I. Kyrylenko included the support of producers through the introduction of a scheme of subsidized loans into the range of examples of effective mechanisms of budget funds use, that contributed to maintaining transparent, stable and responsible relations between producers and banks [14, p.9]. Economic growth and state support allowed to intensify crediting to the agrarian sector. From 2000 to 2005, the volume of loans to agriculture, forestry and fishing increased by 11 times (from 735.4 million UAH to 8091.5 million UAH) [16]. In 2005, 34.8% cost of agricultural enterprises in Ukraine were credited [2].

The growth of crediting had a high positive correlation with the financial results of agricultural enterprises (the correlation coefficient of these indicators for the period 1998-2005 was 0.805), the increase of investments in fixed assets in agriculture (the correlation coefficient equaled 0.71), the growth of agricultural production volumes (the correlation coefficient equaled 0,815) [16, p.401]. These facts confirm the important role of lending in providing reproduction in agriculture.

From 2005 to 2008, the volume of loans to farmers increased by 3.5 times (up to 28595.6 million UAH). However, the financial crisis affected the reduction of crediting in 2009. From 2010 to 2014 there was a slight annual increase in crediting to agricultural producers. The political and macroeconomic crisis in Ukraine caused the reduction of bank lending: in 2015, the volume of loans to the agricultural producers decreased, though, they increased in 2016 and 2017 (*Tabl. 1*).

Table 1

Credit of deposit corporations (except NBU) for nonfinancial corporations,  
UAH million

Amount	2013	2014	2015	2016	2017	Index for 2017 (2013 — 100%)
Total	691903	778841	787795	822114	829932	119,9
To agriculture, forestry and fishing	43534	55335	48425	55374	59706	137,1
Share of agriculture, forestry and fishing in total credit flow to economy, %	6,3	7,1	6,1	6,7	7,2	+0,9 в.п.

Source: data of National Bank of Ukraine [16].

Due to the great resource potential of agrarian production, agriculture plays an important role in the Ukrainian economy. In 2017, agriculture generated 12.1% of the gross value added of the country (Tabl. 2), 45.6 agricultural enterprises were operating; 31.1 thousand of them were farms [17].

Table 2

Some indicators of agriculture operation in Ukraine in 2013—2017

Indicators	2013	2014	2015	2016	2017
Gross value added in agriculture forestry and fishing, million UAH	132354	161145	239806	279701	305194
Percentage of Gross value added in agriculture forestry and fishing, in total, %	9,9	11,7	14,2	13,7	12,1
Capital investment in agriculture, million UAH	18640	18388	29310	49660	63401
Percentage of capital investment in agriculture in total, %	7,0	8,4	10,7	13,9	14,1
Output in agriculture: total, million UAH	307054	371189	544206	637791	707792
non-financial corporations, million UAH	166961	209644	327346	387277	428399
Net profit, million UAH	14926	21413	101912	89816	78458
Percentage of agricultural enterprises, which got dead loss, %	19,7	15,3	11,1	11,6	13,3
Fixed assets at end of year, million UAH	156013	171392	210169	270467	341623

Source: data of State Statistical Service of Ukraine [17].

However, some disproportions are observed in the development of modern bank crediting to agricultural production in Ukraine. The bank portfolio of loans for agriculture (December, 2017) amounted to 7.2% of loans to non-financial corporations, which is much less than the contribution of the agriculture to the formation of gross value added in the country (12.1%), the share of investments in agriculture in total volume of investments in the economy (14,1%).

According to the assessments of experts from FAO, the highest level of credit given to agriculture in countries worldwide was 21% of total credit, but 88% of countries had less than 10% flow of credit to agriculture in 2017 [1]. The situation with the crediting to agricultural in the country is more accurately reflected through the Agriculture Orientation Index for credit (AOI) as an indicator, which equals the ratio of the share of agricultural loans to the share of agriculture in GDP, and takes into account the role of the agricultural sector in the structure of the economy. For many developed countries, this index was over 1: 5.3 — for Germany, 4.7 — Belgium, 3.6 — France and 2.5 — Italy. Among developing countries, this index was significantly below 1: 0.01 — for Togo, 0.02 — Niger and 0.02 — Guinea-Bissau [1]. According to our calculations, the Agriculture Orientation Index for credits ranged from 0.43 to 0.64 in Ukraine in 2013—2017 (Tabl. 3), which does not correspond to the practice of agricultural credit provision in most developed countries.

Table 3

## Agriculture Orientation Index (AOI) for Credit in Ukraine

Indicator	2013	2014	2015	2016	2017
Agricultural Orientation Index for crediting	0,64	0,61	0,43	0,49	0,60

Source: author's calculations.

Importance of crediting to agricultural producers is confirmed by statistics data on the absolute and relative volume of farm debt in the United States. It should be noted that the structure of farm debt in this country is not homogeneous by lenders, and commercial banks in 2016 accounted for 42.2% of the total farm debt (*Tabl. 4*). An important role in lending to farmers in the United States belongs to public finance and credit institutions (Farm Credit System, Farm Service Agency and Farmer Mac), which were created on the initiative and with the participation of the state.

Table 4

## Farm debt: amount outstanding by lender, billion dollars

Lender	Real estate debt	Non-real estate debt	Total
Farm Credit System	103.7	49.4	153.1
Farm Service Agency	5.4	3.5	8.9
Farmer Mac	5.5	-	5.5
Commercial Banks	84.4	73.2	157.6
Individuals and others	12.5	21.8	34.3
Insurance companies	13.2	-	13.2
Storage facility loans	0.7	-	0.7
Total	225.5	147.9	373.4

Source: data of National Agricultural Statistical Service of USA [18, p. X—11].

According to our assessments, based on the data of the National Agricultural Statistics Service of the USA in 2016, the amount of debt obligations of farmers to commercial banks amounted to \$ 427.5 per hectare of the farmland in use of farms, 45.0% of farm production costs and 38.1% of their total income.

In recent years, investment processes have intensified in agriculture in Ukraine (see *Tabl. 2*), which has led to an increase of the value of fixed assets in the sector. In 2017, the value of fixed assets in agriculture was 2.2 times as high as in 2013. If in 2017, the degree of depreciation of fixed assets in the economy overall equaled 55.1%, in agriculture it was 35.7%. Nevertheless, it was farm's own funds which served the main sources of financing investments in agriculture (87.3%), bank loans amounted to only 11.5% [20, p. 12].

The growth of the share of investments in agriculture in the total investment in the Ukrainian economy from 7.0% in 2013 to 14.1% in 2017 also confirms the activation of investment processes in the agricultural sector and increase of its investment attractiveness. At the same time a slow increase in volume of lending was observed. The volume of loans to agriculture, forestry and fishery in 2017 was 37.1% higher than in 2013, but the volume of capital investments was 3.4 times as high.

Our calculations confirm the fairly tight direct connections between nominal volumes of loans with the volume of capital investments, the value of fixed assets in agriculture and gross value added (correlation coefficients, according to our calculations, equal 0.720, 0.762 and 0.700, respectively) in 2013—2017. But the coefficient correlation does not confirm a tight correlation between the volume of loans and profits of agricultural enterprises, the formation of which during this period was significantly influenced by other factors (dynamics of prices for agricultural products and resources, export orientation of production). At the same time, the role of bank loans should be more significant in the investment process in agriculture.

According to the National Bank of Ukraine, commercial banks provide over 75% of lending to total private sector in Ukraine [16]. However, today, the volume of bank loans directed to

agriculture is insufficient both in terms of financial resource needs and in terms of international comparisons. In 2017, in Ukraine, the volume of bank loans per one hectare of agricultural land, according to our calculations, amounted to 108.2 US dollars (it is four times as little as in the US), 14.7% of the value of cost of production (45.0% in the US), 13.9% of the value of output (against 38.1% in the US). More than 80% of all banks loans were directed to the financing of operation activity.

Also, the assessment of volume of banks loans to agriculture, forestry and fishery in Ukraine in prices of 2013 and US dollars shows that there was an increase of nominal volumes of loans, but their real volumes even decreased (*Tabl. 5*).

Table 5

Amount of credits to agriculture, forestry and fishing in Ukraine,  
in prices of 2013 and US dollars

Amount of credits	2013	2014	2015	2016	2017	Index for 2017 (2013 — 100%), %
In prices of 2013, million UAH	43534	44303	27056	27525	26102	60,0
In US dollars	5447	4655	2217	2167	2245	41,2

Source: author's calculations.

Our survey of agricultural enterprises regarding the use of commercial banks' loans showed that only 66.7% of enterprises got loans in 2017, long-term loans were used by only 26.7% of enterprises. At the same time, 93.3% of surveyed enterprises purchased the fixed assets this year. The debt (short-term and long-term liabilities to banks)-to-assets ratio for surveyed enterprises was only 0.126 and varied from 0 to 0.448.

We have to note that the share of subsidized loans received by agricultural producers has been gradually declining in Ukraine. In 2005—2008 it ranged from 75 to 54% of the total volume of loans received, in 2009—2011 — from 61 to 28%, in 2012—2017 — from 10 to 2.5%. The number of enterprises that have benefited from the program of subsidized loans decreased from 10870 in 2005 to 580 enterprises in 2016 [19]. If in 2007 the amount of state support for crediting to agricultural enterprises was planned at the level of 667 million UAH, in 2013 and 2014 no funds were provided for the reduction of credit interest rate for agricultural producers in the State Budget of Ukraine. In 2015, the volume of expenditures planned for the State Budget to reduce the cost of loans amounted to 300 million UAH, in 2016 — 285 million UAH, in 2017 — 300 million UAH. The Law of Ukraine 'On the State Budget of Ukraine for 2018' provides for such support only 66 million UAH, the Law of Ukraine 'On the State Budget of Ukraine for 2019' — 127.2 million UAH.

The size of the interest rate effects crediting significantly. Our estimates based on the data on credit to agricultural enterprises in 2000—2005 confirmed that the reduction of the interest rate by one percentage point led to an increase of credits by UAH 266.6 million UAH. [16, p. 407]. Interest rates grew up as a consequence of macroeconomic instability in Ukraine. In spite of today's slow reduction of interest rates (Table 6), they fall below the profitability of agriculture and bank crediting remains too expensive tool for attracting external funds for agribusinesses. As a result, agricultural enterprises abandon bank loans and prefer to use mainly own financial resources. The price of credit resources for producers of agricultural sector was higher than for other sectors in 2013—2017 (*Tabl. 6*).

Table 6

Profitability of agricultural enterprises and interest rates in Ukraine, %

Indicators	2013	2014	2015	2016	2017
Profitability of operating activities	11,7	21,4	43,0	32,7	23,5
Profitability of all types of activities	8,3	9,3	30,4	24,9	18,7
Interest rates of credits for non-financial corporations	14,1	14,5	17,7	14,2	14,1
Interest rates of credits for agricultural corporations	15,2	20,1	20,2	18,4	16,3

Source: data of State Statistical Service of Ukraine and National Bank of Ukraine [16, 17].



The access of agricultural enterprises to bank loans is limited by the lack of liquid collateral among other factors, high risks of instable financial results from economic activity. However, in the world, including Ukraine, the level of non-overdue of loans by agricultural producers is lower than in other sectors.

If we assume that production cost (without depreciation and the cost of feed of own production) of agricultural enterprises amounted to 360.7 billion UAH in Ukraine in 2017, the estimated price index for two years is 120.8% (109.8% — the price index for 2018, 110.0% — the expected price index for 2019), the growth of production and, accordingly, the cost growth for two years is expected to be 5%, then the volume of loans to meet the needs of the agricultural producers in the financing of production cost at the level of 45 % is 205.9 billion UAH, that is by 3.4 times as high as the actual amount of loans to the agriculture, forestry and fishery in 2017.

Taking into account the need of agricultural producers in capital investments to provide innovative modernization at the level of 150 bln. UAH (in prices of 2017) [20], 181.2 billion UAH (in prices of 2019), which will be partly financed by the profit of agricultural enterprises (90 billion UAH) and bank loans (91.2 billion UAH), the total capacity of loans use by agricultural producers is estimated 297 billion UAH, which is almost 5 times as much as the actual amount of crediting to agriculture in 2017.

**Conclusions.** The analysis of the amounts of bank credit to agriculture and the assessment of the potential needs of the agricultural sector in loans have shown that the volume of bank credits to agriculture in Ukraine, despite some progress, remains lower the needs of the sector, and credit mechanisms are not perfect either from the point of view of the interests of borrowers, or banks. The main source of financial provision for investment and operating activities of agricultural enterprises is their own funds, which are significant (almost 88%) in terms of their share in financial resources, but not sufficient to finance the innovation development of the sector. The share of loans directed to the agrarian sector in recent years was less than the share of the contribution of agriculture to the formation of the gross value added of the country. The of Agriculture Orientation Index for credits was only 0.60 in 2017. Bank credit remain a very expensive tool for attracting financial resources for many producers.

The calculations showed a reduction of real volumes of bank loans to farmers in Ukraine for the period of 2013—2017. In 2017, the volume of loans (in prices of 2013) to agriculture, forestry and fisheries was only 60% of its volume in 2013, the volume of loans (in US dollars) was only 41.2% of its volume in 2013. The amount of bank loans used by agricultural enterprises of Ukraine is much smaller compared to the practice in developed countries. In particular, in 2017 in Ukraine, the volume of loans per hectare of agricultural land was four times as small as in the United States, the credit covering the cost of production — three times as little. Potential loan capacity of agriculture according to the assessment is five times as high as actual crediting in 2017.

The activation of bank crediting to agricultural producers requires macroeconomic stabilization; development of institutional provision of agricultural lending, including specification and protection of property rights to land, improvement of the legislative framework for financial and credit provision of the agrarian sector of the economy in terms of valuation, registration, procedure for the removal and sale of collateral, improvement of state support programs for lending, development and mastering of new technologies for agrarian and credit risk management.

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