

COMPARATIVE ANALYSIS OF BANK LENDING TO NON-FINANCIAL CORPORATIONS UNDER THE CONDITIONS OF INFLATION TARGETING

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Abstract

The influence of the interest policy of the National Bank of Ukraine on the dynamics of lending to non-financial corporations during the period of using the monetary regime of fixed exchange rate and inflation targeting is considered. It has been proven, that the use of the symmetric corridor of the interest policy of the National Bank of Ukraine has a negative effect on the volume of lending to non-financial corporations, since high rates on deposit certificates of the National Bank of Ukraine create a risk-free and highly profitable instrument for the placement of bank assets, which discourages lending to the real sector of the economy. The absence of a connection between the interest rate policy and the dynamics of the consumer price index and the money supply during the period of inflation targeting is substantiated, which made it possible to prove the low level of effectiveness of the chosen monetary regime.

The aim of the article is to study the problems of bank lending to non-financial corporations of Ukraine in the conditions of inflation targeting and to develop proposals for its stimulation, taking into account foreign experience.

Methods. The methodological basis of the work is the dialectical method of cognition, the position of the theory of monetary policy and credit. The work uses methods of economic and mathematical statistics and methods of correlation analysis to analyze the features of lending to non-financial corporations and the impact of inflation targeting on the dynamics of bank lending; generalization methods for formulating research conclusions.

Results. The monetary regime of inflation targeting is quite often recommended by the International Monetary Fund for implementation in countries with emerging markets as a basic set of central bank tools for regulating inflation and ensuring price stability. However, in conditions of import dependence of the national economies of countries with emerging markets, in addition to changes in the money supply and credit activity of banks, the dynamics of export-import operations and the volume of official reserve assets, which determine the level of the exchange rate, have a decisive influence on the dynamics of the consumer price index, and it, in turn, determines the level of prices for imported goods and services. Neglecting the non-monetary factors of supply inflation during the implementation of the interest policy leads to the limitation of bank lending to non-financial corporations, which in turn reduces the ability of enterprises to increase capital investments at the expense of bank loans, as well as to develop domestic production with high added value and to implement the policy of import substitution. Therefore, for this purpose, it is necessary to use the asymmetric corridor of the central bank's interest policy and stimulate targeted bank lending to non-financial corporations.

Keywords: lending to non-financial corporations, inflation targeting, interest rate policy, consumer price index, money supply.

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1. Introduction

Bank lending to non-financial corporations in countries with emerging markets is one of the main resources for stimulating economic growth, and therefore regulation of its dynamics and quality is extremely important for ensuring the effectiveness of macroeconomic policy. At the same time, the monetary regime of inflation targeting does not provide sufficient flexibility of actions to the central banks of countries with emerging markets, because it involves the use of interest rates to regulate the amount of money supply in the country and credit activity of banks. However, in countries

with emerging markets, the size of the money supply and the credit activity of banks are not always decisive when setting prices for goods and services, because quite often in such countries, inflation of supply, which is determined by the cost of critical imported goods, is not dominated by demand inflation. Therefore, efforts to achieve price stability by limiting the growth of the money supply and reducing the credit activity of banks leads to stagnant processes in the economy and the accumulation of risks of economic crisis in the future.

Thus, the issue of the effectiveness of using the monetary regime of inflation targeting is relevant in countries with developing markets from the point of view of the need to combine tools for achieving price stability and tools for stimulating economic growth, in particular lending to non-financial corporations.

A number of Ukrainian scientists have devoted their works to the problems of lending to the real sector of the economy and the role of monetary policy in the development of lending to non-financial corporations, in particular such as: Verbytska V., Bredykhin V. [1] where the peculiarities of the credit policy of banks regarding lending to small and medium-sized businesses are analyzed and the negative impact on lending dynamics of high interest rates is substantiated; Glushchenko V., Sadova G. [2], the problems of crediting non-financial corporations were investigated and it was proved, that the low level of creditworthiness of the borrower requires a change in the credit policy of the state in order to minimize credit risks; Dzyublyuk O. [3]; Zabchuk, G. [4], the mentioned authors singled out the main factors of the slowdown in the development of lending to non-financial corporations in countries with emerging markets, and in particular in Ukraine, among which it is worth noting the inefficient interest policy of the central bank, which provides for setting high interest rates on certificates of deposit, which discourages bank lending to the real sector; Ivanets I., Zholnerchyk H. [5]; Korneev V. [6], who substantiated that one of the main factors that determine the dynamics of lending to business entities is the resource provision of banks and monetary conditions that determine the price of credit resources for both banks and non-financial corporations. At the same time, Dzyublyuk O. [7], Matrosova L. [8], Pasichnyi M. [9], Khokhych D. [10] note the low level of effectiveness of the central monetary policy in the context of credit market regulation, because the monetary regime of inflation targeting quite often leads to unjustified growth interest rates on bank loans, and also increases the interest of banks in placing their assets in government securities and certificates of deposit.

As for foreign researchers, the study of the effectiveness of the monetary regime of inflation targeting at various stages of the economic cycle is a fairly relevant research issue. Thus, in particular [11] in an in-depth empirical study of macroeconomic data of 54 countries, 15 of which use the monetary regime of inflation targeting, notes that inflation targeting has a positive effect on price dynamics only during the period of crisis phenomena in the economy. That is, according to the author, inflation targeting has only an anti-crisis effect on the price level, but at other stages of the economic cycle, inflation targeting has no connection with either price dynamics or production dynamics. The work [12] concluded, however, that inflation targeting reduces the probability of financial crises, however, no attention was paid to the impact of inflation targeting on the level of production, lending and GDP growth, because the absence of crises under conditions of economic stagnation cannot indicate the effectiveness of the monetary regime. A significant contribution to the study of the peculiarities of the monetary regime of inflation targeting and its impact on the price level and GDP was made by the work [13], where the effectiveness of inflation targeting in the small open economy of Turkey was investigated using the neo-Keynesian DSGE model and it was proved, that in crisis conditions and in the stages of post-crisis recovery economy, the main macroeconomic indicator is the exchange rate, and the main instruments of the central bank are instruments of exchange rate policy. Such conclusions indicate that in small open economies, inflation targeting is an ineffective monetary regime.

The expediency of using a flexible monetary regime of inflation targeting in view of the need to stimulate production by increasing bank lending to non-financial corporations is discussed in works [14–16], where the authors prove the importance of the active role of the central bank in the development of the economy by increasing credit activity.

However, unsolved parts of the problem of bank lending to non-financial corporations remain the issues of credit development in the conditions of the implementation of the monetary regime of inflation targeting in Ukraine, which limits the credit activity of banks in order to achieve inflation goals.

The aim of the article is to study the problems of bank lending to non-financial corporations of Ukraine under conditions of inflation targeting and to develop proposals for its stimulation, taking into account foreign experience.

2. Materials and Methods

The methodological basis of the work is the dialectical method of cognition, the position of the theory of monetary policy and credit, as well as the practice of monetary regulation of the economy of countries with developing markets. In order to analyze the problems of using the monetary regime of inflation targeting in the context of the development of bank lending to the real sector of the economy, the analytical data of Ukraine was chosen, as a country that in 2014 implemented a number of recommendations of the International Monetary Fund regarding the transformation of monetary policy and the introduction of the monetary regime of inflation targeting, despite structural imbalances in the economy and a high level of its import dependence. An analysis of the Ukrainian experience of inflation targeting is particularly relevant in view of Ukraine's participation in a full-scale war with the Russian Federation and large-scale economic losses. Therefore, in order to study the influence of the interest policy of the National Bank of Ukraine on the dynamics of bank lending to the economy, methods of economic and mathematical statistics and methods of correlation analysis were used, which made it possible to determine the relationship between the dynamics of interest rates for active and passive operations of the central bank, as well as between the volumes of provided refinancing loans and funds, raised for certificates of deposit, and the dynamics of bank lending to non-financial corporations. Generalization methods were also used to formulate research conclusions and proposals for improving the central bank's monetary policy instruments.

3. Results

Bank lending to non-financial corporations in Ukraine has always been one of the main drivers of the economic growth, however, due to the low level of capitalization of domestic banks, the short-term resource base and miscalculations in the monetary policy, the volume of lending was not sufficient for the formation of a strong economy.

The role of bank lending to non-financial corporations in Ukraine can be traced thanks to a comparison of indicators of the total amount of loans, granted to economic entities in terms of currencies, the share of bank loans in capital investments of enterprises, as well as the ratio of loans, granted to economic entities to the gross domestic product (**Fig. 1, 2**).

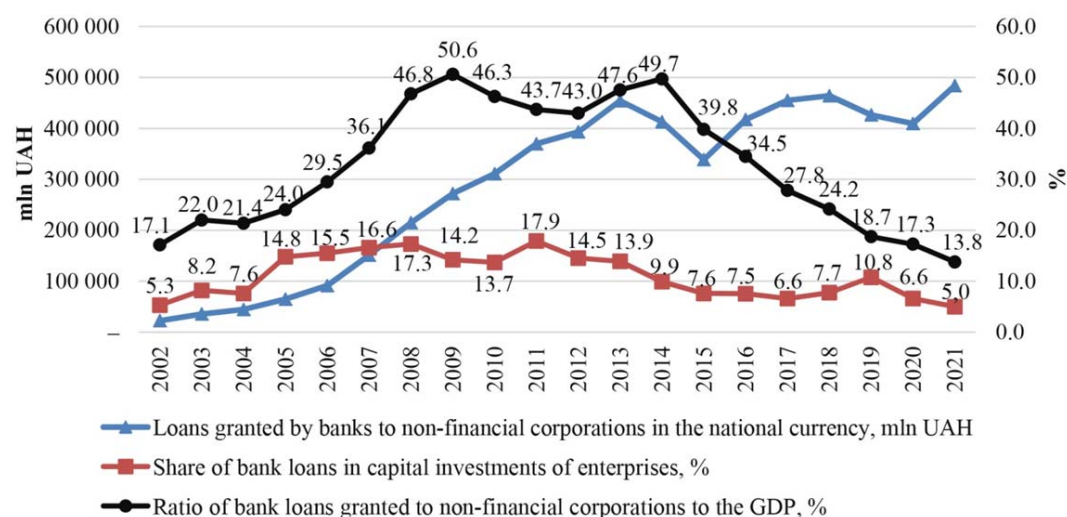


Fig. 1. Dynamics of loans, granted by banks to non-financial corporations in the national currency, the share of loans in capital investments and the ratio of loans, granted to non-financial corporations, to the GDP of Ukraine in 2002-2021. Calculated by the author based on the data of the National Bank of Ukraine and the State Statistics Service of Ukraine [9]

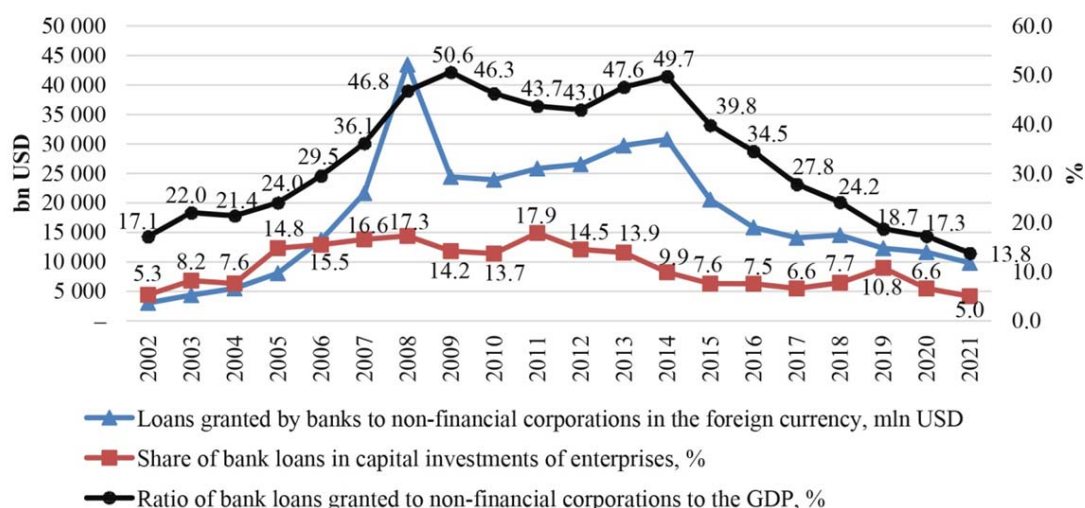


Fig. 2. Dynamics of loans, granted by banks to non-financial corporations in the foreign currency, the share of loans in capital investments and the ratio of loans, granted to non-financial corporations, to the GDP of Ukraine in 2002–2021. Calculated by the author based on the data of the National Bank of Ukraine and the State Statistics Service of Ukraine [9]

The data in **Fig. 1** show that the slowdown in the rate of growth of lending by banks to non-financial corporations in the national currency led to a decrease in the ratio of loans, granted to non-financial corporations, to the GDP of Ukraine and to a decrease in the share of bank loans in capital investments of financial corporations. At the same time, the data in **Fig. 2** indicate a higher level of connection between the dynamics of loans, granted in the foreign currency, and indicators of the ratio of loans to the GDP and the share of bank loans in capital investments of non-financial corporations, in particular, the correlation coefficient between the volume of bank loans to non-financial corporations in the foreign currency and the ratio of bank loans to the GDP is 0.8746 (**Table 1**), and the correlation coefficient between the volume of bank loans to non-financial corporations in the foreign currency and the share of bank loans in capital investments of non-financial corporations is 0.6318, while for loans in the national currency the value of correlation coefficients have the form 0.2041 and -0.1696 , respectively.

In our opinion, such a high level of connection between the dynamics of loans, granted by Ukrainian banks to non-financial corporations in the foreign currency, is connected with the long-term stability of the national currency exchange rate, because the stability of the exchange rate allowed banks and non-financial corporations to expand their business planning horizons for 1–2 years ahead. Moreover, the stability of the national currency rate contributed to the development of lending to non-financial corporations in the foreign currency by banks with foreign capital, which had a high level of capitalization and high standards of risk management. On the other hand, Ukrainian non-financial corporations, engaged in foreign economic activity, used loans in the foreign currency to finance export-import operations, including for the purchase of fixed assets.

The deterioration of exchange rate stability had a negative impact not only on the dynamics of bank lending to non-financial corporations and in the foreign currency, but also on the dynamics of the ratio of bank loans, granted to non-financial corporations, to the GDP (**Fig. 3**).

The data in **Fig. 3** make it possible to confirm the thesis that currency stability is the basis for the development of lending to non-financial corporations in Ukraine, because as evidenced by the data during the financial and economic crisis of 2008–2009, the devaluation of the hryvnia was accompanied by a decrease in the share of bank loans in capital investments of non-financial corporations, and starting from 2010, the ratio of bank loans to Ukraine's GDP began to decrease.

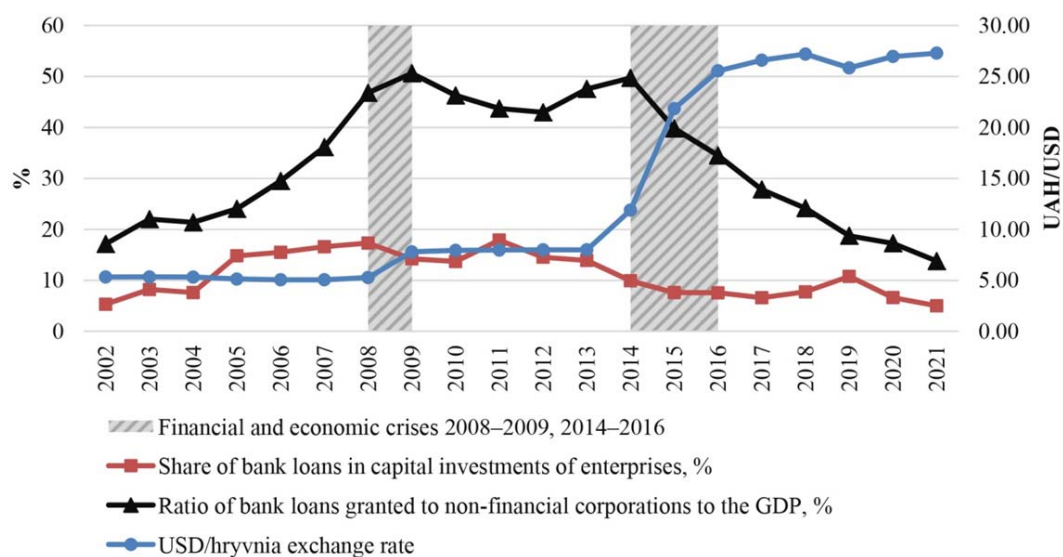


Fig. 3. Dynamics of the hryvnia exchange rate, the share of bank loans in capital investments of enterprises and the ratio of bank loans, granted to non-financial corporations, to the GDP of Ukraine in 2002–2021. Calculated by the author based on data from the National Bank of Ukraine [17] and the State Statistics Service of Ukraine [18]

For the sake of fairness, it should be noted, that the volume of bank lending in the foreign currency to non-financial corporations as of 2008 reached 52 % of the total credit portfolio of economic entities [11], which, without proper risk hedging, increased the negative effect of devaluation on the activity of banks (an increase in deductions to reserves for credit operations, and therefore an increase in losses, as well as the bankruptcy of Ukrprombank and others), as well as on the activities of non-financial corporations (lending restrictions). At the same time, the restoration of currency stability in 2010 contributed to the restoration of bank lending and the maintenance of high values of the ratio of bank loans, granted to non-financial corporations, to the GDP (Fig. 2, 3).

However, the introduction of the inflation targeting regime and the use of a floating exchange rate starting in 2014 led not only to a decrease in the ratio of bank loans, granted to non-financial corporations, to the GDP and the share of bank loans in capital investments of non-financial corporations, but also destroyed the conditions for the recovery of lending to business entities after the crisis of 2014–2016.

The inflation targeting regime, introduced by the National Bank of Ukraine, provides for two key changes in the monetary policy: first, the establishment of a target guide for the consumer price index as a key indicator of macro-financial and macroeconomic stability; secondly, the use of key interest rates of the National Bank of Ukraine as the main instrument of the monetary policy. That is, since 2014, interest rates on active (rates on refinancing loans) and passive (rates on deposit certificates) operations became the main instrument of the monetary policy, with the help of which the National Bank of Ukraine began to regulate the volume of the money supply, the credit activity of banks and the dynamics of the consumer price index. At the same time, during the implementation of the inflation targeting regime in 2014 and for the next seven years, the National Bank of Ukraine did not take into account the origin, causes and type of inflation, which are critically important measures to ensure the effectiveness of the monetary regime, in the inflation targeting process.

Thus, taking into account the fact that the national economy is dependent on export-import operations (the coefficient of openness of the economy (export + import/GDP) ranges from 85–98 %), it is the price of imports and the receipt of foreign exchange earnings from exports that

determine price trends in the country, and not the interest rate policy of the National Bank, which is aimed at regulating the money supply and credit activity of commercial banks. Important in this context is the fact that about 40 % of Ukrainian imports are energy carriers [9], the cost of which is included in the cost of goods and services, sold on the domestic market. Therefore, a sharp change in the exchange rate leads to a sharp increase in the consumer price index in the country, and the stabilization of the foreign exchange market is the basis of the stabilization of price trends (Fig. 4).

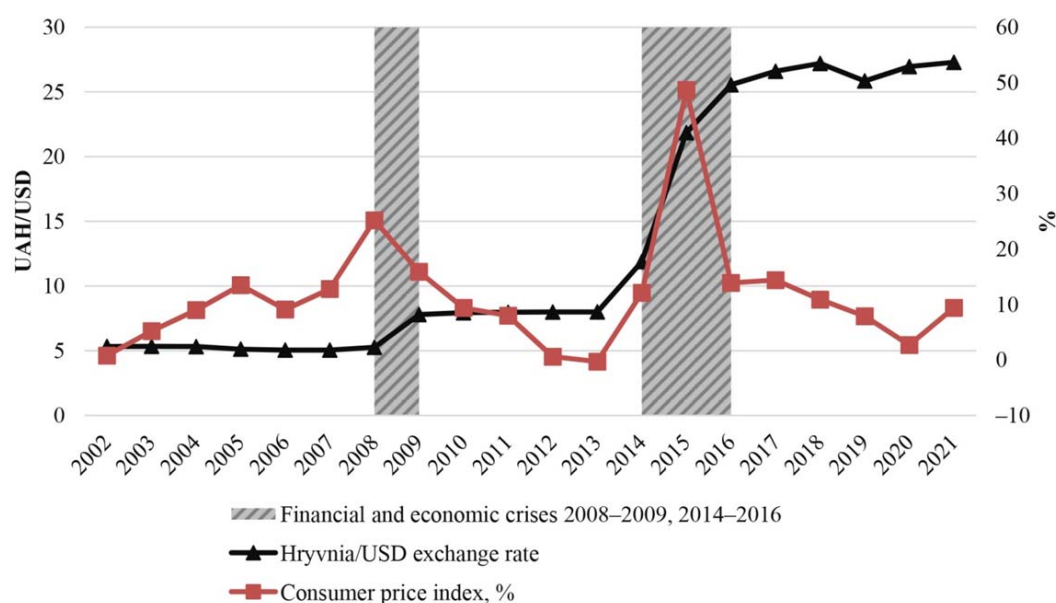


Fig. 4. Dynamics of the hryvnia exchange rate against the US dollar and the consumer price index in Ukraine in 2002–2021. Calculated by the author based on data from the National Bank of Ukraine [19]

As shown in **Fig. 4**, during the financial and economic crisis of 2008–2009 and 2014–2016, the period of sharp devaluation of the hryvnia coincided with a sharp increase in the consumer price index, especially such trends were observed in 2014–2016. Therefore, with the stabilization of the exchange rate, the consumer price index decreases to a level below 10 %.

Taking into account the above trends and features of the inflation targeting regime, we will analyze the effectiveness of the interest rate policy of the National Bank of Ukraine in the context of its impact on the dynamics of bank lending and money supply, as well as on the dynamics of the consumer price index and other important macroeconomic indicators using correlation analysis. At the same time, we note that in order to preserve the relevance of the results, we will conduct an analysis for two periods of time: 2002–2013 – the period of application of the fixed exchange rate regime; 2014–2021 – the period when the inflation targeting regime is applied. The main tasks of our correlation analysis are the following:

1) to determine the impact of interest rates on active and passive operations of the National Bank of Ukraine on the dynamics of bank lending to non-financial corporations in national and foreign currencies;

2) to determine the impact of interest rates of the National Bank of Ukraine on the dynamics of interest rates for bank loans to non-financial corporations;

3) to determine the impact of the interest rate policy of the National Bank of Ukraine on the dynamics of the consumer price index and to justify the level of its effectiveness;

4) to analyze the impact of macroeconomic indicators on the dynamics of bank lending to non-financial corporations and on the dynamics of the consumer price index.

The results of the correlation analysis are grouped in **Tables 1, 2**.

Table 1
Results of correlation analysis of indicators of bank lending to non-financial corporations and monetary and macroeconomic indicators of Ukraine in 2002–2013

Macroeconomic and monetary indicators	Loans granted to non-financial corporations in the national currency, million UAH	Loans granted to non-financial corporations in the foreign currency, million USD	Share of bank loans in capital investments of enterprises, %	Ratio of bank loans granted to non-financial corporations to the GDP, %	NBU discount rate, %	Interest rate on NBU refinancing loans, %	Amount of refinancing loans provided, million UAH	Rate on deposit certificates of the NBU, %	Rate on deposit certificates of the NBU, %	Amount of funds raised for deposit certificates of the NBU, million UAH	Weighted average interest rate on bank loans to non-financial corporations in the national currency, %	Weighted average interest rate on bank loans to non-financial corporations in the foreign currency, %	Money supply (M3), million USD	Hryvnia/ USD exchange rate	/ Consumer price index, %
NBU discount rate, %	r -0.1560	0.4028	0.3926	0.2380	1	0.8340	0.6990	0.4137	-0.5624	-0.0389	0.1181	-0.1102	-0.2905	0.9381	
p 0.00008															
Interest rate on NBU refinancing loans, %	r -0.2222	0.0929	0.1845	0.0869	0.8340	1	0.0026	0.0191	0.0006	0.0000	0.0008	-0.2365	-0.1659	0.3799	
p 0.00008															
Amount of refinancing loans provided, million UAH	r -0.2091	0.9748	0.3468	0.2357	0.6990	0.3036	1	0.2194	-0.5603	0.2178	0.2547	-0.0617	-0.4974	0.5725	
p 0.0077															
Rate on deposit certificates of the NBU, %	r 0.2142	0.2596	-0.2839	0.4178	0.4137	0.4077	0.2194	1	-0.5603	0.9001	-0.2746	0.1388	0.3842	0.2189	
p 0.00008															
Amount of funds raised for deposit certificates of the NBU, million UAH	r 0.5152	-0.1149	-0.1653	0.1921	-0.5624	-0.3776	-0.5603	1	0.2559	0.0000	-0.0254	0.5354	0.3418	-0.4340	
p 0.0078															
Weighted average interest rate on bank loans to non-financial corporations in the national currency, %	r -0.3934	-0.4040	-0.7157	-0.3840	-0.0389	-0.0039	0.2178	0.9001	-0.4401	1	0.3818	-0.4706	-0.1481	-0.1788	
p 0.00008															
Weighted average interest rate on bank loans to non-financial corporations in the foreign currency, %	r -0.9011	-0.6379	-0.5789	-0.7679	0.1181	0.1821	0.2547	-0.2746	-0.0254	0.3818	1	-0.8860	-0.8150	0.1889	
p 0.00008															
Money supply (M3), million USD	r 0.9886	0.8084	0.6268	0.8831	-0.1102	-0.2365	-0.0617	0.1388	0.5354	-0.4706	-0.8860	1	0.8245	-0.1184	
p 0.0124															
Hryvnia/ USD exchange rate	r 0.8980	0.4826	0.2921	0.7439	-0.2905	-0.1659	-0.4974	0.3842	0.3418	-0.1481	-0.8150	0.8245	1	-0.3186	
p 0.0124															
Consumer price index, %	r -0.1695	0.4161	0.4774	0.2669	0.9381	0.7702	0.5725	0.2189	-0.4340	-0.1788	0.1889	-0.1184	-0.3186	1	
p 0.00008															
The volume of deposits attracted by banks of Ukraine, million UAH	r 0.9860	0.7951	0.6182	0.8664	-0.1327	-0.2624	-0.0667	0.1182	0.5216	-0.4736	-0.8908	0.9992	0.8175	-0.1454	
p 0.0971															
Export of goods, million USD	r 0.8502	0.8931	0.7743	0.8166	0.1569	-0.0625	0.4988	0.0296	0.0472	-0.6055	-0.8116	0.8988	0.5793	0.1505	
p 0.0009															
Import of goods, million USD	r 0.8714	0.8879	0.7539	0.8135	0.0844	-0.1580	0.4479	-0.0004	0.1183	-0.5690	-0.8237	0.9203	0.5956	0.0788	
p 0.0016															
Official reserve assets, million USD	r -0.6537	-0.4823	-0.0503	-0.5559	0.0680	0.1533	-0.2418	-0.4917	0.0253	-0.5212	0.7932	-0.6183	-0.6093	0.2855	
p 0.0003															

Note: *A significant level of correlation in the scientific literature is considered to be greater than 0.5 and less than -0.5 [20], which is highlighted in bold in the table. **Calculated by the author based on the data of the National Bank of Ukraine [17] [19] and the State Statistics Service of Ukraine [18]

As evidenced by the data in **Table 1**, in the period 2002–2013, the influence of the interest policy of the National Bank of Ukraine on the dynamics of bank lending in national and foreign currencies was practically absent, because the level of correlation between the interest rates of the central bank and the dynamics of bank lending is extremely low, which indicates a low level of effectiveness of the interest rate policy of the central bank from the point of view of regulation of the lending market of non-financial corporations (the value of correlation coefficients (r) is lower than 0.4). At the same time, the amount of refinancing loans granted had a positive effect on the dynamics of lending to non-financial corporations in the foreign currency ($r=0.9748$), which indicates that it was the amount of refinancing loans granted that was the stimulus for the development of lending, not the interest rate. In addition, it is worth noting the significant relationship between the discount rate and the consumer price index ($r=0.9381$), which, at first glance, indicates the effectiveness of the interest policy. However, an increase in the discount rate and interest rates on refinancing loans, both in theory and in practice, should have an inversely proportional relationship with the dynamics of the consumer price index, and this indicates that the change in the discount rate by the National Bank of Ukraine occurs as a reaction to the change in inflation, not the reaction of inflation to a change in the interest rate. There is a much higher level of connection between the interest rates of commercial banks on loans to non-financial corporations and the money supply, while such a connection is inversely proportional, which indicates that when the interest rates on loans of commercial banks increase, the volume of the money supply increases. In turn, the dynamics of the money supply has a significant relationship with the dynamics of bank lending to non-financial corporations in national and foreign currencies ($r=0.9886$ and 0.8084 , respectively).

As for the influence of interest rates of commercial banks on the volume of lending to non-financial corporations, there is a high level of connection between the weighted average interest rate on bank loans to non-financial corporations in the foreign currency and the dynamics of loans in the foreign currency (correlation coefficient $r=-0.6379$) and national currencies ($r=-0.9011$), which is quite natural. There is also a high level of connection between the rates on loans in national and foreign currency and the share of bank loans in capital investments of non-financial corporations. Also, interest rates on loans in the foreign currency determine the ratio of loans, granted by non-financial corporations, to the GDP, which confirms our theses that a higher share of loans in the foreign currency in the loan portfolio of banks determines the dynamics of lending to non-financial corporations in 2002–2013. And the dynamics of loans to non-financial corporations in the foreign currency and the national currency is determined by the dynamics of export-import operations (correlation coefficients of 0.8502 and 0.8879 , respectively), which determine the dynamics of Ukraine's GDP.

In addition, it is worth noting, that the dynamics of the money supply, which determines the dynamics of lending to non-financial corporations, depends on such factors as the dynamics of the hryvnia exchange rate ($r=0.8245$), the dynamics of the volume of deposits, attracted by banks ($r=0.9992$), the dynamics of exports (0.8988) and imports (0.9203) of goods, dynamics of official reserve assets (0.5757). In turn, the dynamics of the hryvnia exchange rate and deposits have a significant connection with the dynamics of loans in the national currency.

Thus, summarizing the above, we can conclude that the dynamics of the money supply and its value are not determined by the interest policy of the National Bank of Ukraine, but depend on the currency component. After all, the currency interventions of the National Bank of Ukraine, aimed at regulating the exchange rate, which lead to a decrease in official reserve assets, reduce the hryvnia money supply in the case of selling foreign currency on the foreign exchange market and vice versa. The increase in export revenue due to the physical increase in the export of goods or export prices and their sale on the foreign exchange market also has an impact on the money supply in the direction of its decrease, and the purchase of foreign currency to finance imports leads to an increase in the hryvnia money supply. Therefore, the determining factors of the regulation of the money supply in Ukraine and the dynamics of lending to non-financial corporations in the period from 2002 to 2013 were the exchange rate, official reserve assets and deposits, attracted by banks. At the same time, none of the analyzed indicators, except for the discount rate and the rate on refinancing loans, had any connection with the dynamics of the consumer price index.

Table 2

The results of the correlation analysis of indicators of bank lending to non-financial corporations and monetary and macroeconomic indicators of Ukraine in 2014–2021

Macroeconomic and monetary indicators	Correlation coefficients													
	Loans granted to non-financial corporations in the national currency, million UAH	Loans granted to non-financial corporations in the foreign currency, million USD	Share of bank loans in capital investments of enterprises, %	Ratio of bank loans granted to non-financial corporations to the GDP, %	NBU discount rate, %	Interest rate on NBU refinancing loans, %	Amount of refinancing loans provided, million UAH	Rate on deposit certificates of the NBU, %	Amount of funds raised for deposit certificates of the NBU, million UAH	Weighted average interest rate on bank loans to non-financial corporations in the national currency, %	Weighted average interest rate on bank loans to non-financial corporations in the foreign currency, %	Money supply (M3), million USD	Hryvnia/ USD exchange rate	Consumer price index, %
NBU discount rate, %	r -0.4518	0.4209	0.3064	0.5654	1	0.9555	-0.2710	0.7557	-0.7573	0.9044	0.6078	-0.7790	-0.2431	0.7875
	p 0.0000	0.0000	0.0026	0.0043	1	0.2326	0.0004	0.2918	0.0023	0.1817	0.0010	0.0000	0.0006	0.4173
Interest rate on NBU refinancing loans, %	r -0.5737	0.3977	0.4855	0.5544	0.9555	1	-0.2905	0.8343	-0.8050	0.9817	0.6217	-0.8189	-0.2300	0.7409
	p 0.0000	0.0000	0.0010	0.0116	0.2326	1	0.0004	0.1182	0.0023	0.4912	0.0005	0.0000	0.0051	0.4350
Amount of refinancing loans provided, million UAH	r 0.1700	0.1194	0.2037	-0.1323	-0.2710	-0.2905	1	-0.4071	0.1639	-0.2074	-0.3667	0.2324	-0.1594	-0.4620
	p 0.0000	0.0002	0.0004	0.0004	0.0004	0.0004	1	0.0004	0.0027	0.0004	0.0004	0.0000	0.0004	0.0004
Rate on deposit certificates of the NBU, %	r -0.3822	-0.1393	0.2139	0.0923	0.7557	0.8343	-0.4071	1	-0.5018	0.7910	0.2845	-0.4782	0.3106	0.5821
	p 0.0000	0.0000	0.0173	0.0026	0.2918	0.1182	0.0004	1	0.0023	0.0775	0.0072	0.0000	0.0003	0.3189
Amount of funds raised for deposit certificates of the NBU, million UAH	r 0.3685	-0.6371	-0.5936	-0.7605	-0.7573	-0.8050	0.1639	-0.5018	1	-0.8482	-0.8043	0.9722	0.4681	-0.3867
	p 0.0039	0.0024	0.0023	0.0023	0.0023	0.0023	0.0027	0.0023	1	0.0023	0.0023	0.0131	0.0023	0.0023
Weighted average interest rate on bank loans to non-financial corporations in the national currency, %	r -0.6034	0.4755	0.6025	0.6153	0.9044	0.9817	-0.2074	0.7910	-0.8482	1	0.6633	-0.8622	-0.3155	0.6572
	p 0.0000	0.0000	0.0005	0.0090	0.1817	0.4912	0.0004	0.0775	0.0023	1	0.0002	0.0000	0.0016	0.4281
Weighted average interest rate on bank loans to non-financial corporations in the foreign currency, %	r -0.5909	0.7763	0.2945	0.9401	0.6078	0.6217	-0.3667	0.2845	-0.8043	0.6633	1	-0.9085	-0.6364	0.5708
	p 0.0000	0.0000	0.1686	0.0001	0.0010	0.0005	0.0004	0.0072	0.0023	0.0002	1	0.0000	0.0000	0.0623
Money supply (M3), million USD	r 0.5184	-0.7362	-0.5464	-0.8715	-0.7790	-0.8189	0.2324	-0.4782	0.9722	-0.8622	-0.9085	1	0.5742	-0.5259
	p 0.000007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0131	0.0000	0.0000	1		
Hryvnia/ USD exchange rate	r 0.4119	-0.9671	-0.5265	-0.8501	-0.2431	-0.2300	-0.1594	0.3106	0.4681	-0.3155	-0.6364	0.5742	1	-0.2343
	p 0.0000	0.0000	0.0000	0.0027	0.0006	0.0051	0.0004	0.0003	0.0023	0.0016	0.0000	0.0000	1	0.0541
Consumer price index, %	r -0.7281	0.3500	-0.0137	0.5079	0.7875	0.7409	-0.4620	0.5821	-0.3867	0.6572	0.5708	-0.5259	-0.2343	1
	p 0.0000	0.0000	0.0851	0.0331	0.4173	0.4350	0.0004	0.3189	0.0023	0.4281	0.0623	0.0000	0.0541	1
The volume of deposits attracted by banks of Ukraine, million UAH	r 0.5264	-0.7593	-0.5342	-0.8913	-0.7722	-0.8063	0.2198	-0.4562	0.9628	-0.8522	-0.9211	0.9988	0.5988	-0.5309
	p 0.00005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0082	0.0000	0.0000	0.0281	0.0000	0.0000
Export of goods, million USD	r 0.5828	-0.1434	-0.2046	-0.4051	-0.5544	-0.6836	0.3504	-0.7193	0.6819	-0.7025	-0.6387	0.6873	-0.0610	-0.4622
	p 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
Import of goods, million USD	r 0.7165	-0.2422	-0.0267	-0.5095	-0.5136	-0.6035	0.4190	-0.5948	0.5650	-0.6110	-0.7299	0.6463	0.0532	-0.6107
	p 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
Official reserve assets, million USD	r -0.0760	-0.7950	-0.3717	-0.6196	0.0749	0.1389	-0.3599	0.6002	0.2810	0.0367	-0.3800	0.3199	0.8575	0.2231
	p 0.0000	0.0002	0.2702	0.2733	0.2711	0.2714	0.0005	0.2709	0.0023	0.2714	0.2700	0.0000	0.2727	0.2712

Note: *A significant level of correlation in the scientific literature is considered to be greater than 0.5 and less than -0.5 [20], which is highlighted in bold in the table. **Calculated by the author based on the data of the National Bank of Ukraine [17] [19] and the State Statistics Service of Ukraine [18]

As for lending to non-financial corporations, a decrease in the interest rate on refinancing loans leads to an increase in the volume of lending in the national currency ($r=-0.5737$), the reaction of the volume of lending to the dynamics of interest rates of commercial banks on loans in the national currency is similar (-0.6034).

Analyzing the impact of the interest rate policy of the National Bank of Ukraine on the dynamics of bank lending to non-financial corporations in the period 2014–2021, it is worth paying attention not only to the quantitative relationship, but also to the qualitative one, which characterizes the pace of credit growth (Fig. 5).

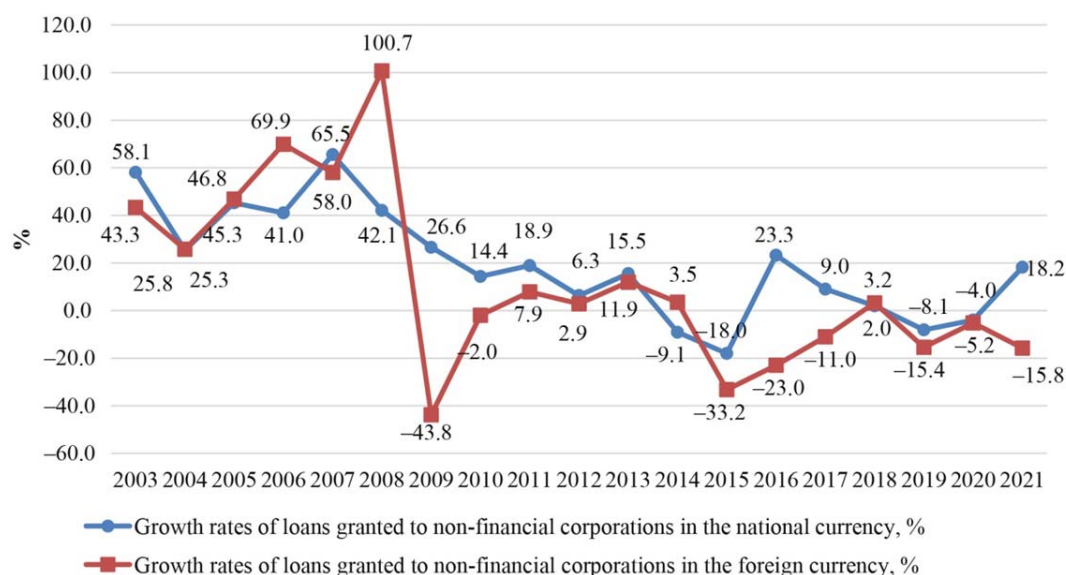


Fig. 5. Dynamics of growth rates of loans, granted to non-financial corporations in national and foreign currency in 2002–2021. Calculated by the author based on data from the National Bank of Ukraine [17]

As the data in Fig. 5 show, starting from 2014, despite the high level of correlation between the interest rates of the National Bank of Ukraine and the volume of lending (see Table 2), the growth rates of loans, granted to non-financial corporations in the foreign currency, are negative, and the growth rates loans in the national currency are quite low, which, in our opinion, does not give a sufficient effect for expanding production, increasing capital investments, and ultimately - the development of the economy.

One of the main aspects of the low growth rate of loans, granted to non-financial corporations in national and foreign currency in 2014–2021, is the low quality of the NBU interest policy, which provides for setting high rates on NBU certificates of deposit, which has a negative effect on the growth rate of loans (Table 3).

As raised (see Table 2) for NBU certificates of deposit and the dynamics of loans, granted by banks to non-financial corporations in the foreign currency ($r=-0.6371$), the dynamics of the share of loans in capital investments of non-financial corporations (-0.5936) and the dynamics of the ratio of loans to the GDP (-0.7605). Thus, using a symmetrical corridor of interest rates for active and passive operations as a key aspect of inflation targeting led to a violation of the banking system's performance of financial intermediation functions in full, because commercial banks, attracting funds for deposits from the population and businesses, do not place them in the economy of Ukraine in the form of loans, and on deposit certificates of the central bank. Evidence of this is actually a direct relationship between the dynamics of deposits, attracted by commercial banks, and the dynamics of the volume of funds, placed on deposit certificates of the NBU ($r=0.9628$), i. e. the main direction of the placement of funds by commercial banks is not the economy, but the National Bank of Ukraine, which can be traced in Fig. 6.

Table 3

Results of the correlation analysis of the growth rates of loans, granted to non-financial corporations, and the growth rates of interest rates for active and passive operations of the NBU in 2014–2021

Indicators	Growth rate of loans granted to non-financial corporations in the national currency, %	Growth rate of loans granted to non-financial corporations in the foreign currency, %	Growth rate of the refinancing rate, %	Growth rate of the rate on deposit certificates, %
Growth rate of loans granted to non-financial corporations in the national currency, %	1			
Growth rate of loans granted to non-financial corporations in the foreign currency, %	–0.0342	1		
Growth rate of the refinancing rate, %	–0.5255	0.1660	1	
Growth rate of the rate on deposit certificates, %	–0.6408	–0.3460	0.7984	1

Note: Calculated by the author based on data from the National Bank of Ukraine [17]

At the same time, special attention should be paid to the relationship between the dynamics of funds shown in **Fig. 6**, the annual volume of funds, placed on deposit certificates of the National Bank of Ukraine, began to grow significantly after the introduction of inflation targeting in 2014. Moreover, in 2020–2021, the volume of funds, placed on deposit certificates of the NBU during the year, exceeded 10 trillion hryvnias, which is a paradoxical phenomenon in the conditions when the state's economy is turning into a commodity appendage of the developed countries of the world. Analyzing the amount of funds, placed on deposit certificates of the NBU, it is necessary to understand that UAH 10 trillion characterizes the turnover of funds on deposit certificates, because the lion's share of such funds are overnight deposits.

This design of the monetary policy of the National Bank of Ukraine is based on the example of the European Central Bank and other countries that use the inflation targeting regime, the basis of which is a symmetrical corridor of interest rates for active and passive operations of the central bank. However, in our opinion, the quality of monetary policy and macroeconomic conditions for the formation of inflationary trends were not taken into account when learning from the experience of leading central banks regarding the implementation of the inflation targeting regime.

Thus, the European Central Bank, when conducting the interest rate policy, focuses not only on changing inflationary trends, but primarily on stimulating lending to the real sector of the economy in general, and non-financial corporations in particular (**Table 4**).

Table 4

Results of the correlation analysis of the interest rate policy of the ECB and loans, granted to non-financial corporations

Indicators of bank lending and ECB interest rates	Loans granted to non-financial corporations	ECB deposit rate, %	ECB key refinancing rate, %	Inflation, %	Money supply (M3), million euro
Loans granted to non-financial corporations, million euro	1				
ECB deposit rate, %	–0.7775	1			
ECB key refinancing rate, %	–0.7606	0.9940	1		
Inflation, %	–0.2250	0.5431	0.5666	1	
Money supply (M3), million euro	0.9377	–0.6943	–0.6668	–0.2151	1

Note: Calculated by the author based on data from the European Central Bank [22]

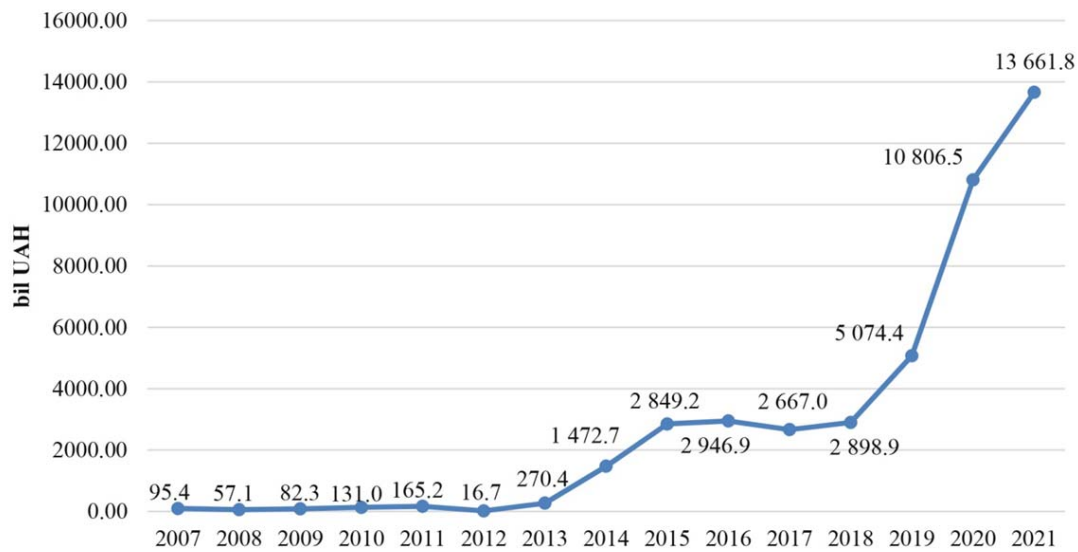


Fig. 6. Dynamics of the volume of funds, placed on deposit certificates of the National Bank of Ukraine in 2007–2021. Calculated by the author based on data from the National Bank of Ukraine [21]

As shown in **Table 4**, the interest rate policy of the ECB ensures a high level of connection between the key interest rates for active and passive operations of the central bank and the dynamics of bank loans, granted to non-financial corporations, because the correlation coefficients of interest rates and the volume of loans are -0.7775 and -0.7606 respectively. This shows that the decrease in interest rates of the central bank leads to an increase in the volume of loans to non-financial corporations. At the same time, it should be noted, that the ECB uses a negative interest rate on deposits (**Fig. 7**) in order to stimulate banks to lend, and not to create a “famine” of liquidity.

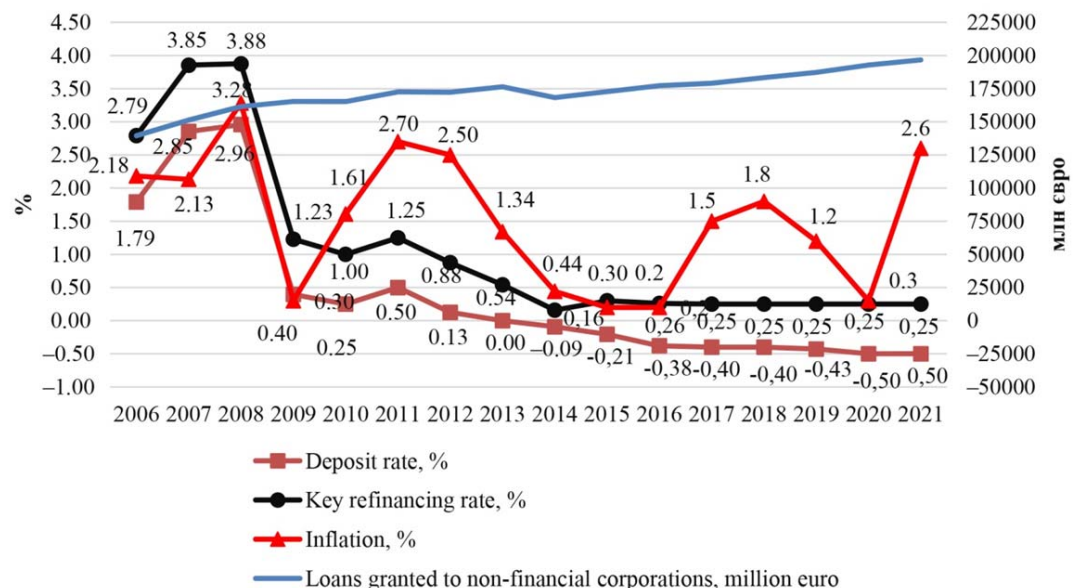


Fig. 7. Dynamics of key interest rates for active and passive operations of the ECB and dynamics of loans, granted to non-financial corporations, and inflation in 2006–2021. Calculated by the author based on data from the European Central Bank [22]

The data in **Fig. 7** show that the dynamics of interest rates of the European Central Bank do not correspond to inflationary trends, but to the dynamics of lending to non-financial corporations. Such a policy is aimed at the development of the real sector of the economy, the economy with a high level of added value and the domestic market, which in turn leads to a decrease in unemployment, an increase in production and consumption, and therefore minimizes negative factors affecting inflation. Moreover, in the conditions of crisis phenomena in the economy, the European Central Bank uses non-traditional monetary policy instruments [14–16], the essence of which is to provide an unlimited amount of liquidity, direct debt redemption and the provision of targeted loans to the European Investment Bank, which aimed at stimulating lending to non-financial corporations.

4. Discussion of research results

The conducted study of the influence of the monetary regime of inflation targeting on bank lending of non-financial corporations for a small open economy using the example of Ukraine, made it possible to conclude that the application of such a monetary regime is incorrect, because in countries with emerging markets, supply inflation prevails over demand inflation, which minimizes positive effects of the interest rate policy of the central bank. In addition, in small open economies of countries with emerging markets, the monetary regime of inflation targeting leads to an unreasonable increase in interest rates on active and passive operations of the central bank, which leads to a decrease in the lending activity of banks, and also creates incentives for placing bank assets on deposit certificates of the central bank, which, in turn, reduces the effectiveness of the banking system's performance of financial intermediation functions.

Similar results of the study of the effectiveness of the use of the monetary regime of inflation targeting were achieved in the work of Pınar Deniz and Erhan Aslanoglu [13], in which the authors studied the experience of Turkey in the use of inflation targeting in the conditions of a small open economy. In addition, it is worth paying attention to the results of the study by Antoni [23], which indicate that in a small open economy, inflation targeting should be flexible and allow the use of exchange rate adjustment mechanisms during crisis shocks in the economy, which will make it possible to ensure an acceptable price of loans for product manufacturers. The results of the study of the monetary policy of a small open economy, conducted in the work of Divino J. A. and Haraguchi C. [24], also indicate the need to use exchange rate regulation tools along with inflation targeting tools in the context of establishing price stability, as well as the credit gap in the economy should be used as an indicator of the effectiveness of the central bank's interest rate policy.

The limitations of the study are the use of empirical data on the example of Ukraine.

Prospects for researching the influence of the monetary regime of inflation targeting on lending to non-financial corporations are a comparison of the monetary policy of small open economies in terms of stimulating economic growth and developing lending to the real sector of the economy.

5. Conclusions

Thus, summarizing the above, we can conclude that the volume of lending to non-financial corporations in Ukraine significantly depends on the quality of the monetary policy of the National Bank of Ukraine and the specifics of the inflation targeting regime. After all, the use of a symmetrical corridor of interest rates for active and passive operations of the central bank leads to an inefficient redistribution of financial resources, which the banking system accumulates by attracting funds from the population and businesses, and this, in turn, reduces the effectiveness of the banking system's performance of financial intermediation functions. At the same time, the study made it possible to conclude that the dynamics of inflationary trends in Ukraine in 2014–2021 practically do not depend on the dynamics of lending to non-financial corporations and the growth of the money supply, because the main factors in the growth of the consumer price index are the increase in import dependence of the national economy. Import dependence increases the need to buy foreign currency from the market to finance imports, and therefore leads to an increase in the

money supply or a devaluation of the national currency. In turn, devaluation leads to an increase in the prices of imported goods, and therefore to an increase in the consumer price index.

Therefore, it is expedient for the National Bank of Ukraine to reduce rates on deposit certificates in order to free up additional liquid funds that commercial banks can use for lending to non-financial corporations. At the same time, in order to effectively develop lending to non-financial corporations, it is advisable for the National Bank of Ukraine, together with the Government, to develop broad target programs for lending to the real sector of the economy, but the funds for such lending should be attracted by commercial banks, and not withdrawn from the State budget, as it is done within the framework of the “5-7-9” program. Only in the case of the development of lending to non-financial corporations together with the reduction of interest rates on NBU certificates of deposit in Ukraine, it is possible to create a financial basis for the development of the national producer, the expansion of the domestic market and the reduction of the economy’s import dependence. Such conditions will minimize supply-side inflationary factors and, ultimately, will be acceptable for inflation targeting without harming the development of lending to non-financial corporations.

Prospective areas of research in this context can be the study of the peculiarities of lending to non-financial corporations under the conditions of the existing monetary regime, martial law, as well as taking into account the challenges of the post-war recovery of the national economy.

Conflict of interest

The authors declare that there is no conflict of interest in relation to this paper, as well as the published research results, including the financial aspects of conducting, the research, obtaining and using its results, as well as any non-financial personal relationships.

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