



Article

Bank Loans and Economic Growth: Case of Uzbekistan

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Abstract: This article analyzes the various conflicting opinions and research results regarding the impact of bank loans on economic growth. Some views conclude that bank loans have a stronger influence on inflation rates rather than economic growth, while others argue that bank loans provide a significant boost to economic growth. In our opinion, these perspectives depend on the country's level of development and its development paths. Specifically, the first view tends to be prevalent in countries without well-developed markets, whereas in countries with perfect markets, especially in developed nations, the impact of loans on economic growth is substantial. It should also be emphasized that, regardless of the market's level of perfection, bank loans have a greater impact on economic growth than on inflation rates in the short and medium term. However, in the long term, the expansion of these loans has a more significant effect on inflation. In economic terms, we refer to this as the neutrality of money. In other words, long-term economic growth cannot be achieved solely through monetary policy

Keywords: banking system, bank credit, economic growth, inflation, monetary policy, neutrality of money.

1. Introduction

Bank loans are a fundamental tool for financing productive activities in modern economies. By providing access to capital, commercial banks enable businesses to invest in physical assets, upgrade technology, and expand their operations. These investments directly contribute to increasing output, generating employment, and fostering innovation. For small and medium-sized enterprises (SMEs), which often face capital constraints, access to bank credit is particularly vital. The multiplier effect of such lending activities extends throughout the economy, boosting demand, improving productivity, and ultimately raising GDP levels. Thus, a well-developed banking system with efficient lending practices can act as a catalyst for sustained economic growth.

The allocation of bank credit plays a crucial role in determining which sectors of the economy experience growth. Strategic lending to sectors such as manufacturing, agriculture, infrastructure, and information technology can accelerate structural transformation and economic diversification. Conversely, excessive credit to non-productive areas like consumer spending or real estate bubbles may lead to imbalances and undermine long-term growth. Therefore, central banks and regulatory bodies have a significant role in guiding credit policies through interest rate regulations, reserve requirements, and macroprudential measures. Aligning credit flows with national development priorities enhances the impact of banking on economic expansion and resilience.

Despite the potential benefits of credit-driven growth, there are inherent risks and challenges. Excessive lending without proper risk assessment can lead to a buildup of non-performing loans (NPLs), financial instability, and even banking crises. Moreover, if credit is not accompanied by improvements in the business environment—such as

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regulatory efficiency, transparency, and investor protection—it may fail to generate real economic gains. Developing countries often struggle with asymmetric information, limited credit histories, and underdeveloped financial infrastructure, which hinder optimal loan distribution. Addressing these challenges requires sound banking supervision, institutional reforms, and investment in financial literacy and innovation.

Empirical studies across various regions have consistently shown a positive correlation between bank lending and economic growth, particularly in emerging economies. In countries like India, Brazil, and Uzbekistan, expansion in the volume of bank credit has been linked to increased investment activity, job creation, and poverty reduction. However, the strength of this relationship depends on the quality of governance, the efficiency of credit allocation, and macroeconomic stability. In Uzbekistan, for example, recent banking sector reforms and digitalization efforts have improved access to finance, especially for SMEs, leading to a noticeable boost in entrepreneurial activity and regional development. These trends underscore the importance of a proactive and inclusive banking policy in achieving sustainable economic growth.

Literature review

We can observe various conflicting opinions and research results regarding the impact of bank loans on economic growth. Some views conclude that bank loans have a stronger influence on inflation rates rather than economic growth, while others argue that bank loans provide a significant boost to economic growth. In our opinion, these perspectives depend on the country's level of development and its development paths. Specifically, the first view tends to be prevalent in countries without well-developed markets, whereas in countries with perfect markets, especially in developed nations, the impact of loans on economic growth is substantial. It should also be emphasized that, regardless of the market's level of perfection, bank loans have a greater impact on economic growth than on inflation rates in the short and medium term. However, in the long term, the expansion of these loans has a more significant effect on inflation. In economic terms, we refer to this as the neutrality of money. In other words, long-term economic growth cannot be achieved solely through monetary policy.

In their research, D. Dansana et al. explored the use of machine learning algorithms, particularly the Random Forest algorithm, to predict bank loan approvals and analyze the impact of various loan features on the acceptance of bank borrowers [1]. The authors aimed to enhance the accuracy of credit risk assessment by analyzing the financial data of loan applicants. The study revealed how specific loan characteristics (such as loan amount, term, interest rate, borrower's credit history, etc.) influence bank loan approvals. The research results demonstrate that the Random Forest algorithm exhibits high accuracy in determining the creditworthiness of borrowers. This algorithm enables successful analysis of various loan features. Notably, factors such as the borrower's credit history, income level, loan amount, and term were found to have a strong influence on the borrower's creditworthiness. The findings contributed to improved accuracy in credit risk assessment, allowing banks to mitigate risks in their lending processes. The article emphasizes the significance of machine learning in the financial sector and aims to develop new methods for determining borrowers' creditworthiness.

The study conducted by Ashraf and Shen analyzed how Economic Policy Uncertainty (EPU) affects bank lending activities [2]. Theoretically, the authors argue that an increase in EPU can alter banks' risk assessment mechanisms. Specifically, uncertainty in economic policy can make the business environment more ambiguous for banks, compelling them to raise interest rates or tighten lending standards to reduce credit risks. This increases the likelihood of a negative impact on credit market efficiency. The empirical analysis results show that in cases of increased economic policy uncertainty, banks become more cautious in their lending policies. The study revealed a statistically significant positive correlation between bank loan interest rates and the EPU index from 2000 to 2016. This indicates that during periods of high EPU, banks raise loan interest rates, which can increase borrowing costs for businesses and slow down economic activity. Additionally, the research results

demonstrate that EPU negatively affects the volume of bank lending, meaning that under uncertain conditions, banks reduce their lending volume.

In the study by Batrancea, Rathnaswamy, and Batrancea, the main factors influencing economic growth in seven non-BCBS countries (not members of the Basel Committee on Banking Supervision) were examined using panel data analysis [3]. Theoretically, the authors consider the development of financial institutions, investment levels, inflation, trade openness, and the role of government spending as key indicators of economic growth. According to their hypothesis, the effective functioning of financial institutions and regulatory mechanisms is an important factor in stimulating economic growth, and economic policies implemented by the state also influence sustainable growth. The results of empirical analysis show that economic growth rates are higher in countries with a developed financial sector. The panel data analysis revealed that the efficiency of financial institutions and the development of the credit market have a positive impact on economic growth. At the same time, an increase in the inflation rate emerged as a factor slowing economic growth. The research results indicate that the improvement of financial policies and institutional structures in non-BCBS member countries can make a significant contribution to economic growth.

In his research, Zidan analyzed the relationship between the banking sector and economic growth using the Palestinian economy as an example. From a theoretical perspective, the author examines various theories regarding the influence of banking sector development on economic growth, emphasizing the importance of financial intermediation, credit allocation, investment promotion, and financial stability mechanisms [4]. According to the research, an effective banking system can accelerate economic growth by improving capital allocation and investment processes. The results of the empirical analysis, based on data from the Palestinian economy for the period 1995-2017, show a positive correlation between the banking sector and economic growth. The regression analysis results established that bank loans have a significant impact on the growth of gross domestic product (GDP). At the same time, the study noted the limitations of the banking system and political uncertainty as factors hindering economic growth. The author emphasizes the need to strengthen institutional reforms and financial regulation mechanisms for the development of the banking sector in the Palestinian economy.

In the study by Ozili, Ademiju, and Rachid, existing literature on the impact of financial inclusion on economic growth was analyzed [5]. Theoretically, the authors emphasize that financial inclusion is one of the main factors stimulating economic growth. Specifically, through broader access to financial services, various segments of the population gain access to credit, savings, and insurance services, which stimulates entrepreneurship and contributes to GDP growth. The study also examines theoretical approaches highlighting financial inclusion's important role in increasing social equality, reducing poverty, and ensuring economic stability. The empirical analysis results aim to assess the general conclusions of existing research, with most empirical works confirming a positive relationship between financial inclusion and economic growth. However, some studies note that the effectiveness of financial inclusion depends on financial infrastructure and institutional quality. Therefore, the authors recommend institutional reforms, strengthening financial literacy, and widespread use of technology to increase the effectiveness of financial inclusion policies. The study suggests deeper investigation into the impact mechanisms of financial inclusion in different countries for future research.

Chen, Kumara, and Sivakumar's study examined the financial industry's risk awareness model and its impact on digital economic growth. Theoretically, the authors emphasize that the development of the financial sector is inextricably linked with risk management models in the digital economy [6]. They demonstrate that the integration of the financial industry with digital technologies positively impacts economic growth and plays a crucial role in forming effective risk protection mechanisms. The study also discusses methods for minimizing uncertainty and risks in financial markets through the Risk Awareness Model. The empirical analysis results confirm a strong connection

between the financial sector and digital economic growth. The authors analyze data from large financial institutions and companies that have widely implemented digital technologies, determining that the growth of digital financial services increases economic efficiency. Additionally, the research results show that the digital economy can ensure sustainable growth when models for understanding and managing financial risks are effectively implemented. The authors propose developing new risk assessment models in digital finance for future research.

2. Materials and Methods

In this scientific study, we use structural vector auto regression model to conduct an empirical analysis of the impact of bank loans and their interest rates on economic growth. Regarding the selected indicators, we have chosen the quarterly real change in the volume of bank loans, the quarterly change in the average real interest rate of bank loans, the quarterly change in the real value of gross domestic product as an economic growth indicator, and the quarterly change in the domestic inflation rate. The selected indicators are quarterly measurements covering the period from 2005Q1-2024Q2. Additionally, to clarify the influence of these indicators, the selected statistical data have been natural log-transformed.

3. Results and Discussion

Bank loans are a crucial component of the economy, and changes in their volume and interest rates significantly impact a country's economic development. An increase or decrease in loan volume can directly affect investment and consumption levels, leading to growth or decline in gross domestic product (GDP). Additionally, interest rates are one of the key factors influencing inflation. Through empirical analysis of this issue, the following aspects are identified:

1. Impact of changes in bank loan volume on GDP growth

An increase in lending volume can stimulate investments and expand production.

A decrease in loan volume can lead to reduced investment and consumption, diminishing economic activity.

2. Effect of interest rates on GDP and inflation

Rising interest rates can increase borrowing costs, reduce investments, and slow economic growth.

Conversely, decreasing interest rates can boost economic activity but may also fuel inflation.

3. The interrelation between inflation and credit

An increase in loans can lead to higher consumption and demand, creating inflationary pressure.

High interest rates may reduce inflationary pressure by limiting access to credit.

According to our hypothesis, an increase in lending volume can positively impact economic growth in the short term, but may intensify inflationary pressure in the long term. Furthermore, if interest rates rise, the volume of loans may decrease, negatively affecting economic growth but potentially reducing inflation. However, if average interest rates remain stable, economic growth and inflation may maintain a steady level.

To assess the data's compliance with normal distribution, the Jarque-Bera test was applied. The analysis results revealed that all the selected external factors follow a normal distribution. This is because the calculated Jarque-Bera statistic for all indicators showed reliable results, with their probability values being less than 0.05. In the preliminary stage of the analysis, we conducted descriptive statistics of the selected indicators.

Table 1. Descriptive statistics of selected factors

	GDP	CPI	Bank Loans	Loan Rates
Mean	62950.26	2.796058	2380.490	-0.849183
Median	48357.33	2.924939	2151.262	-1.017918

Maximum	139445.1	7.561533	4846.986	2.034223
Minimum	12572.46	-0.310897	757.1935	-5.584392
Std. Dev.	41597.10	1.765930	1104.055	1.762494
Skewness	0.453502	0.218245	0.603780	-0.299165
Kurtosis	1.714906	2.360239	2.370761	2.338313
Jarque-Bera	8.040900	1.949410	6.025967	2.586438
Probability	0.017945	0.377304	0.049145	0.274386
Sum	4910121.	218.0925	185678.2	-66.23629
Sum Sq. Dev.	1.33E+11	240.1250	93858137	239.1917
Observations	78	78	78	78

In the next stage of our analysis, we will determine the correlation matrix of the indicators. Through this, we will analyze the correlation coefficients between the volume of bank loans, loan interest rates, inflation, and gross domestic product. This examination of interrelationships helps to understand the degree of sensitivity among economic indicators.

Table 2. Correlation matrix of indicators

	Bank Loans	Loan Rates	CPI	GDP
Bank Loans	1			
Loan Rates	-0.28	1		
CPI	0.29	-0.99	1	
GDP	0.99	-0.29	0.30	1

The correlation between bank loans and GDP is 0.99, indicating a very strong positive relationship. This means that an increase in lending volume in the economy directly contributes to GDP growth. This situation confirms the rise in investments and consumer spending due to credit. In other words, when loans increase, the financial capabilities of businesses and the population expand, leading to increased economic activity. Therefore, regulating credit policy plays a crucial role in ensuring stable GDP growth.

There is a very strong negative correlation of -0.99 between loan interest rates and inflation. This implies that when interest rates rise, the inflation rate decreases, and vice versa. This result aligns with classical economic theory: if loans become more expensive, the money flow in the economy decreases, demand falls, and consequently, prices stabilize. Conversely, lower interest rates provide more money to the economy through cheap loans, which can increase inflation. This relationship confirms the importance of interest rate policy used by central banks in controlling inflation.

In our analysis, we employ a structural vector autoregression model. This model evaluates the dynamic relationships among multiple variables that interact over time. When using the structural vector autoregression model, it is crucial to conduct an Augmented Dickey-Fuller Test on the indicators. Through this Augmented Dickey-Fuller Test, the indicators are examined for unit roots, and it is determined whether the selected indicators are stationary or non-stationary.

Table 3. Augmented Dickey-Fuller Test

		t-Statistic	Probability	Conclusion
1	Bank Loans	-4.909435	0.0001	I(0)
2	Loan Rates	-6.551909	0.0000	I(0)
3	CPI	-6.609802	0.0000	I(0)

4	GDP	-5.806967	0.0000	I(0)
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As evident from the above data, all selected indicators are in a stationary state, which serves as the basis for utilizing a structural vector autoregression model based on these indicators.

In the next stage of our analysis, we will develop a structural vector autoregression model of the selected indicators. When constructing this model, it is necessary to determine the optimal lag.

Table 4. VAR Lag Order Selection Criteria

Sample: 2005Q1 2024Q2

Included observations: 70

Lag	LogL	LR	FPE	AIC	SC	HQ
0	2299.518	NA	3.86e-34	-65.58622	-65.45774	-65.53519
1	2442.340	265.2409	1.03e-35	-69.20971	-68.56728	-68.95453
2	2538.809	168.1312	1.04e-36	-71.50882	-70.35245	-71.04949
3	2592.286	87.09097	3.60e-37	-72.57959	-70.90928*	-71.91612
4	2617.051	37.50141	2.87e-37	-72.83002	-70.64577	-71.96241
5	2641.558	34.31066*	2.33e-37*	-73.07309*	-70.37490	-72.00134*
6	2653.861	15.81839	2.74e-37	-72.96747	-69.75533	-71.69157

From the above data, we determined that in our chosen model, the optimal number of "lags" was 5 according to the Final Prediction Error (FPE), Akaike Information Criterion (AIC), and Hannan-Quinn Information Criterion (HQ) tests, while it was 3 based on the Schwarz Information Criterion (SC) test. Therefore, it would not be incorrect to consider the optimal number of "lags" as 5 in our analysis.

Table 5. Vector Autoregression Estimates (with restrictions)

	Bank Loans	Loan Rates	Inflyatsiya	YaIM
Bank Loans (-1)	3.704408 (4.51082) [0.82123]	6.802330 (4.69611) [1.44850]	-6.696375 (4.52651) [-1.47937]	2.366903 (4.55125) [0.52006]
Bank Loans (-2)	-0.070482 (7.93817) [-0.00888]	-3.115133 (8.26424) [-0.37694]	3.411353 (7.96579) [0.42825]	0.085293 (8.00932) [0.01065]
Bank Loans (-3)	2.539540 (7.78604) [0.32617]	-6.212737 (8.10586) [-0.76645]	5.735925 (4.81313) [2.73414]	2.901817 (7.85582) [0.36938]
Bank Loans (-4)	-14.47365 (7.69795) [-1.88020]	-0.551778 (8.01415) [-0.06885]	0.215721 (7.72473) [0.02793]	-14.68282 (7.76694) [-1.89042]
Bank Loans (-5)	10.14980 (4.03667) [2.51440]	4.173151 (4.20248) [0.99302]	-3.755190 (4.05071) [-0.92704]	2.25850 (4.07285) [2.51875]

Loan Rates (-1)	3.315198 (2.00871) [1.65041]	-0.736350 (2.09123) [-0.35211]	0.007911 (2.01570) [0.00392]	3.249508 (2.02672) [1.60333]
Loan Rates (-2)	-1.568261 (2.55940) [-0.61275]	-3.108671 (2.66453) [-1.16669]	2.180694 (2.56831) [0.84908]	-1.648891 (2.58234) [-0.63853]
Loan Rates (-3)	-3.772131 (2.79672) [-1.34877]	-3.359615 (2.91160) [-1.15387]	2.532199 (2.80645) [0.90228]	-3.858728 (2.82179) [-1.36748]
Loan Rates (-4)	-3.772167 (2.46323) [-1.53139]	-0.102460 (2.56441) [-0.03995]	-0.175323 (1.47180) [-2.07093]	-3.817508 (2.48531) [-1.53603]
Loan Rates (-5)	-3.749341 (1.97930) [-1.89428]	-3.032597 (2.06060) [-1.47171]	2.614962 (1.98618) [1.31658]	-3.773153 (1.99704) [-1.98938]
C	-8.37E-06 (1.4E-05) [-0.61997]	-9.86E-06 (1.4E-05) [-0.70132]	9.43E-06 (1.4E-05) [0.69600]	-8.23E-06 (1.4E-05) [-0.60401]

We can draw a general conclusion from the model that bank loans have a positive impact on the economy in the short term; however, negative consequences may arise in the long term. The influence of credit interest rates is complex, with differing short-term and long-term effects.

4. Conclusion

The Vector Autoregression (VAR) model is an important tool for analyzing dynamic relationships between economic variables and forecasting future trends. In this analysis, the variables of loans, loan interest rates, inflation, and GDP are assessed in their interconnectedness. According to the analysis results, loans have a significant impact on variables through their past period values. Specifically:

Loans (-1) have a positive impact on their future value (t-stat = 0.82), but this is not statistically significant.

Loans (-4) had a significant negative impact on GDP (-14.68) and on themselves (-14.47). This represents a delayed effect of loans, indicating that they may act as a deterrent to economic growth in the long term.

Loans (-5) showed a positive effect again, helping to increase GDP by another 2.25 units.

This suggests that lending can have a positive impact on the economy in the short term, but its long-term impact is complex and likely to be negative.

It's important to understand how loan interest rates affect economic variables:

The loan interest rate (-1) has virtually no effect on its future value (t-stat = -0.35).

The loan interest rate (-4) has a significant negative impact on inflation (-0.175). This indicates that an increase in interest rates may reduce inflation.

The results show that the impact of interest rates on inflation is complex, with potentially different short-term and long-term effects.

We can conclude from the model that bank loans have a positive impact on the economy in the short term; however, negative consequences may arise in the long term. The influence of loan interest rates is complex, with differing short-term and long-term effects...

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