Econometric Analysis of the Effect of Credit Volume on Money Supply and Economic Growth: in the Case of Azerbaijan

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Abstarcat: Banks are one of the financial entities that perform the work of financial intermediation and, as a result of the loans they provide, help to promote productivity, jobs, and economic development. By increasing their lending volumes, banks will be able to expand their money supply, which will result in a boost to the economy's overall performance. As a result, extensive studies have been conducted to determine the link between bank loans and economic development.
This research aims to investigate the relationship between loan volume and money supply in Azerbaijan's economy.
As a method, FMOLS, DOLS and Granger Causality tests, which show cointegration, causality and correlation coefficient from econometric models, were chosen for the data containing quarterly time series of 2006:M1-2021:M9 period.
Therefore, it was found that a one-way causal link exists between money supply and domestic credit volume, and a one-way causal relationship exists between economic growth and domestic credit volume. Also, a long-term relationship was found between the amount of money and credit available to people in their own country and how quickly their economy grows. According to the FMOLS test, a 1 percent rise in domestic loan volume raises the money supply by 1.078183 percent (1.022554 according to DOLS). Performing the FMOLS test does not affect economic development. The FMOLS test found that for every one percent increase in domestic loan volume, economic growth improves by 0.44243 percentage points, based on the number of domestic loans (0.439953 percent according to DOLS).

*Key-words***:** Credit, Volume, Money Supply, Economics, Growth, Causality.

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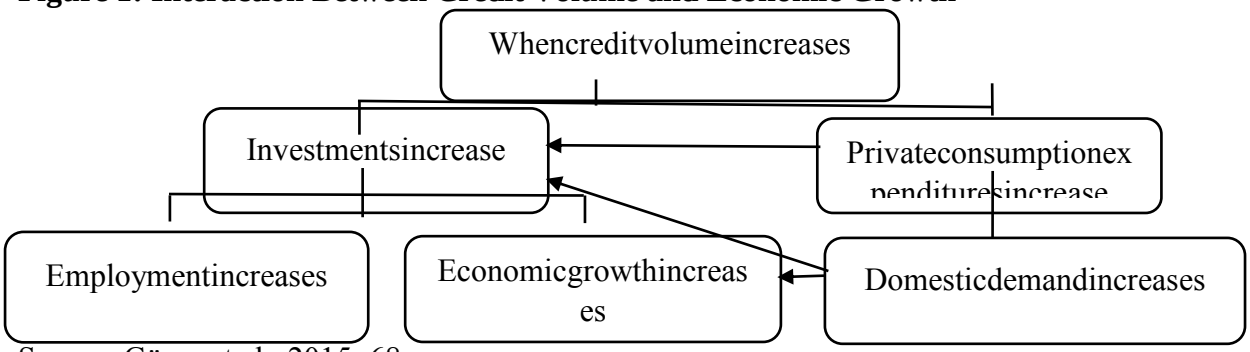
1. Introduction

Within the fast growing and developing economic systems, financial markets, where especially those who supply funds and those who request funds come together, have become markets that not only institutions but also individuals can easily access with the development of information systems. Banks, which are one of the most important actors of the said market, have an impact on the fundamental indicators of the economy, particularly in emerging countries, whether directly or indirectly. The healthy functioning of banks, which are organized institutions that bring together those with fund deficit and those with surplus funds, has effects on macro variables such as gross domestic product (GDP), inflation and money supply (Karaman, 2020).

It is very important for the development of the financial structure, the conversion of savings into investments and economic growth. Especially in the financial crises, the loans provided by the financial sector were critical in the nation's recovery from the crisis and the process of manufacturing their products. In this paradigm, a rise in the loan volume of the banks increases the money supply, increasing production, employment and thus economic growth (Kamaci et al., 2017: 401).

A clear correlation in Figure 1 shows how loan volume and economic growth are associated closely.

Figure 1: Interaction Between Credit Volume and Economic Growth



Source: Göçer et al., 2015: 68

As seen in Figure 1, the volume of credit will increase private consumption expenditures and investments in the economy. This will increase domestic demand and increase economic growth. In this research, the question of "does financial development influence growth in the economy or does economic growth affect financial development?" is analyzed, and the correlation between credit volume, economic development, and money supply is studied. In this research, it has been scientifically explored how the development of financial markets affects the growth of the Azerbaijani economy's GDP. This background includes, first and foremost, the provision of theoretical knowledge on the issue, followed by an explanation of relevant literature. The link between loan volume and economic development in Azerbaijan was then explored. This section introduces the data collection and procedures that were used, as well as provides some preliminary empirical results.

Increasing output and national revenue for products and services can be used as indicators of economic development in the economy over the long run. Economic development can be described as the method of structural changes in the economic, sociological, cultural, and political contexts and growth in the number of goods and services provided and received by a nation. However, it is apparent that techniques that improve the quality of life of products and services do nothing but improve the quality of life. This is why it is critical to examine economic growth from the environmental, social progress, and economic development perspectives to maintain the long-term viability of development. However, this needs to establish a conceptual framework for social and cultural development components (Akbulaev and Huseynova, 2019). To this day, the government effectively promotes and supports the collaboration of businesses and academic facilities involved in creating and implementing social innovations via financial assistance and grants (Khanlarzadeh, 2021).

Commercial loans are one of the important instruments offered by banks to their customers for years. Of course, money politicians have always seen these loans as an economic intervention. Therefore, whenever an expansionary monetary policy is to be followed in the country, commercial loans have become one of the indispensable monetary policy tools. As a result, the existence and attractiveness of these types of loans has always been a product of economic understanding when there is an increasing expansion in the volume of emissions, that is, in times of increased money supply. In order to revive the market, banks have offered commercial loans from time to time with very low interest rates for businesses to invest. However, on the other hand, by giving high-rate commercial loans in periods of economic stability, they enabled the market to stay away from commercial loans in a sense. In line with the definitions of selected monetary aggregates within the scope of this study, FMOLS,

DOLS and Granger causality tests will be used by analyzing the relationship between credit volume, money supply and economic growth between the period 2006:M1-2021:M9. In this context, for the Granger causality test, at the first stage, the stationarity levels of the series will be determined and the cointegration relationship between the series will be investigated. According to the findings, causality analysis will be carried out.

2. Theoretical and Conceptual Framework

Schumpeter is recognized for establishing a framework for the relationship between loan volume and economic development. By directing the finances of financial intermediaries to initiatives involving technological advancements, Schumpeter (1912) predicted that economic development would be enhanced (Becsi & Wang, 1997: 51). With this statement of Schumpeter, it is concluded that a well-functioning financial system increases economic growth because it increases savings and investments in the economy and encourages entrepreneurs to the innovation process. Later, Gurley & Shaw (1955) added the financial development process to Schumpeter's views. Gurley & Shaw stated that as the quality and characteristics of the financial system increase, that is, economic growth will expand in tandem with the acceleration of financial development (Ceylan and Durkaya, 2010: 23). According to Robinson (1952), the link between economic and financial development expansion might be seen entirely differently. In Robinson's perspective, financial development is associated with economic progress. Financial services will become more popular as the financial system develops. The need for financial services will rise as the private economy expands, a natural result of this demand being derived from the real sector. In short, as economic growth increases, the financial sector also develops (Çeştepe & Yıldırım, 2016:15). Robinson (1952), "enterprise leads, finance follows." With his statement, he claimed that financial development emerged as a result of economic growth (Tuna & Bektaş, 2013:140). Patrick (1966) was motivated by Robinson's ideas and established demand- and supply-following theories, and analyzed the link between financial development and economic expansion from a different angle. The relationship between financial development and economic growth has long been controversial. When there is a financial crisis, people often think about how the relationship between financial institutions, banking crises, and economic activities is important (Mamadova & Ahmadov, 2021).

According to the demand-followed theory, economic growth raises demand for financial intermediaries, banking sectors, and financial products, and financial development happens due to economic expansion. Assuming the demand-following theory is correct, financial development results from expanding the economy rather than being a cause of that expansion in and of itself. The circumstances in England towards the close of the 18th and beginning of the 19th century lend support to the demand-following theory. Increases in economic growth have also increased financial development. In the supply-followed hypothesis; The development of financial intermediaries will enable the development of modern sectors, which are the pioneers of economic growth, and thus financial development will increase economic growth. The supply-followed model serves two purposes. The first is the movement of capital from conventional (non-growing) industries to technological sectors, and the second is the encouragement of entrepreneurship in modern sectors. In this way, financial development will accelerate, which will stimulate economic growth (Patrick, 1966:174-175). Another way of looking at it is that financial development and economic expansion influence. Financial development results from increased demand for financial services and financial intermediates as a result of increased economic activity. On the other hand, the financial sector contributes to economic growth by acting as a conduit between the real sector and the supply of resources it requires (Türedi & Berber,

2010:302). While supply-following or demand-following hypothesis is valid in most of the countries, it is seen that this relationship is bidirectional in emerging countries in the world economy. However, since the direction of the relationship is one-dimensional in developed countries, Patrick's (1966) views continue to exist. Although there is a favorable association between financial development and economic expansion, their directions are opposed. Human Capital theory, developed by Lucas and others, states that there is no causal link between financial progress and economic growth. There is no correlation between financial development and economic growth in the long run, according to Lucas since he emphasized the importance of physical and human capital as primary growth sources.

3. Literature Review

There has been a great deal of research on loan volume and economic development. On the other hand, this link is primarily between financial development and economic expansion. Theoretical findings connecting financial development and economic growth have been discovered in research undertaken for various nation categories. There has been a one-way correlation between financial development and economic growth discovered in certain research undertaken for specific nations. In contrast, bidirectional causality between two variables has been identified in other research. However, there was no evidence of a causal link between the two factors in several research.

Using data from 80 nations between 1960 and 1989, King and Levine (1993) performed a panel regression study on the money supply, bank loans, and GDP variables. The researchers concluded that the expansion of financial markets had a favorable impact on economic growth and credit availability. Luintel and Khan (1999) 10 countries (1951-1995) Panel VAR model Total bank deposits and GDP A bidirectional causal relationship has been identified between the two variables. Kar and Pentecost (2000) Turkey (1963-1995) Analysis of causation Volume of domestic loans and economy development A one-way correlation was found between growth and financial development. Aretis et al. (2001) 5 countries (1968:Q2-1997:Q4) Causation and cointegration tests GDP and bank loans Financial development has been shown to boost economic growth, according to researchers. Jalilian and Kirkpatrick (2002) found that 42 nations were included in their study (26 developing, 16 developed countries). The study of regression panels GDP and bank loans Economic growth is increased by 0.4% for every 1 percent improvement in financial development, according to the study's findings. Shan and Jianhong (2006) The People's Republic of China (1978-2001) VAR analysis It was shown that Bank loans, financial development, and economic expansion all have a bidirectional causal effect. Akinlo and Egbetunde (2010) identified ten nations in Sub-Saharan Africa that needed assistance (1980-2005). Analysis of panel data The relationship between bank lending and the economy established that the expansion of financial markets contributes to economic growth. Ceylan and Durkaya (2010) Turkey is a country with a long history of conflict (1998-2008). Analysis of causation The volume of domestic credit and the economic growth rate show a one-way causal link between economic growth and loan volume. Türedi and Berber (2010) Turkey (1970-2007) Cointegration and causality test Domestic credit volume, the ratio of foreign trade to GDP and economic growth A unidirectional causal relationship from financial development to economic growth has been determined. Özcan and Ari (2011) Turkey (1998-2009) Causality analysis Domestic credit volume and real GDP A unidirectional causal relationship from economic growth to financial development has been determined. Tuna and Bektaş (2013) Turkey (1998-2012) Cointegration and causality test Domestic credit volume and GDP No causal relationship was determined between the two variables. Vurur and Özen (2013) Turkey (1998:Q1-2012:Q1) Causality analysis Deposits, loans and economic

growth Increases in deposit volume increase economic growth and loan amount. Alshammary (2014) Saudi Arabia (1993-2009) VAR analysis Money supply, bank loans and GDP There is a long-run and positive relationship between financial development and economic growth. Göçer et al. (2015) Turkey (2000:Q1-2012:Q4) Co-integration test with structural break Credit volume and national income 1% increase in credit volume increases economic growth by 0.28%. Çeştepe and Yıldırım (2016) Turkey (1986:Q1-2015:Q3) Causality analysis Bank loans, money supply and real GDP A bidirectional causality was found between financial development and economic growth. Turgut and Ertay (2016) Turkey (2003:Q1-2013:Q4) Causality analysis Bank loans and GDP One-way causal relationship from bank loans to economic growth has been determined. Ümit (2016) Turkey (1989-2014) Cointegration and causality test Trade openness, credit volume and economic growth A bidirectional causal relationship was determined between credit volume and economic growth. Karamekli and Keskingöz (2017) Turkey (1998-2014) Causality analysis Bank loans and GDP A bidirectional causal relationship was determined between credit volume and economic growth. Pehlivan et al. (2017) Turkey (2002:Q1-2015:Q4) Cointegration and causality test Bank loans and GDP Bidirectional causal relationship between bank loans and GDP has been determined. The results of 12 different studies for Turkey are given. Kar & Pentecost (2000), Ceylan & Durkaya (2010) and Özcan & Ari (2011) determined a one-way causal relationship from economic growth to financial development for Turkey and they argued that the demand-following hypothesis is valid for Turkey in their studies. Türedi & Berber (2010), Vurur & Özen (2013) and Turgut & Ertay (2016) found a unidirectional causality running from financial development to economic growth for Turkey and they argued that the supply-followed hypothesis is valid. However, Göçer et al. (2015), Çeştepe & Yıldırım (2016), Ümit (2016), Karamekli & Keskingöz (2017), and Pehlivan et al. (2017) found a bidirectional causality between financial development and economic growth for Turkey. In the last literature review, Tuna & Bektaş (2013) could not detect any causal relationship between the two variables in their study and reached the same results as Lucas. Different results were obtained in studies conducted for other country groups. Aretis et al. (2001), Jalilian & Kirkpatrick (2002) and Akinlo & Egbetunde (2010) found a unidirectional causality running from financial development to economic growth and the supply-followed hypothesis was valid.

Akbulaev and Huseynova (2019) examined the effect of credit volume on economic growth in Azerbaijan. In his research, the relationship between domestic credit volume and gross domestic product in public and deposit banks was made using the quarterly data of the 2006-2019 period, using Granger causality analysis. According to the result obtained, there is a bidirectional causality relationship between credit volume and economic growth.

Khanlarzadeh (2020) pointed out in his study that the difficult financial situation of innovative businesses is an inevitable consequence of changes in the fundamental basis of the functioning of the economy. He emphasized that changing existing organizational structures will facilitate the formation of an adequate economy innovation. He also concluded that boosting innovation is the most important way to achieve the final results that get the country out of the crisis, stabilize the economy and then make it grow.

Akbulaev and Tahirzade (2021) Engle-Granger cointegration test was used to test financial sustainability in Azerbaijan. In order to reveal the effects of public revenues and public expenditures separately, these items were separated and analyzed. According to the results they obtained, it shows that there is financial sustainability in Azerbaijan for the period of 2007-2020.

In the study conducted by Mamadov and Ahmadov (2021), monthly data were taken between 2005-2019 and financial development and economic growth VECM model estimation and Granger causality

analysis were performed in Azerbaijan. As a result of their analysis, they concluded that there is a bidirectional relationship between financial development and economic growth in Azerbaijan.

4. The Relationship between Credit Volume and Growth in Azerbaijan

After the 2001 crisis, the transition to a flexible exchange rate led to the restructuring of the banking sector. In this period, the banking sector strengthened again and contributed to economic growth with the loans it provided. Figure 2 shows the changes in domestic credit volume, money supply and GDP in the 2005-2020 periods.

Domestic credit volume in Azerbaijan has increased approximately 13 times from 2005 to 2020. Although domestic loans shrank in that period due to the impact of the 2008 crisis, the increase in loan volume continued in the following periods. In the same period, there was an increase of approximately 6 times in the money supply, while there was an increase of approximately 60% in the GDP. The fierce competition between banks in recent years has also increased the loans given by banks to a significant extent.

The banking system in Azerbaijan is governed by the "About Banks" legislation, which governs the activities of banks. Under this legislation, the country's banking system comprises the two-digit Central Bank of Azerbaijan and credit institutions, with the latter being the most important. The primary stage, the Central Bank of the Republic of Azerbaijan, and its activities are governed by the Law of the Republic of Azerbaijan, the statute "On the Central Bank of the Republic of Azerbaijan," the Azerbaijani Civil Code, and other normative legislative acts. A license to conduct bank business is granted and issued by the Central Bank, which supervises the bank's operations in compliance with applicable laws. Credit institutions are the second tier of the banking system in terms of importance. Azerbaijan's credit institutions operate under the authority of the Constitution of the Republic of Azerbaijan, the Banks Law, the Civil Code, the laws "On the Central Bank of the Republic of Azerbaijan," "On Non-Bank Credit Institutions," and "On Credit Unions," among other legal frameworks, which are controlled by normative legal rules. The ratio of total assets to gross national product (GNP) indicates the degree of development of the banking industry. In nations with a low degree of economic growth, analysts estimate that the banking industry's total assets do not exceed 5 percent of the country's gross national product (GNP). In Azerbaijan, the banking sector's total assets are projected to account for 32 percent of the nation's gross domestic product. The total assets of the bank in 2010 amounted to 13290.81 million Azerbaijani manats. Average bank assets amounted to 295.35 million Azerbaijani manats. The level of concentration in the country's banking system is 60.7%. The assets of 5 banks (International Bank, Kapital Bank, Bank Standard, Halk Bank and Paşabank) constitute 60.7% of the total assets. 39.2% of the registered capital of the banks in the country, 61.9% of their deposits and 58.2% of their loan portfolios belong to these five banks. In the banking system, the only state bank is the International Bank. 41.6% of the assets belong to International Bank. 41% of the loan portfolio and 36% of the deposits in the country are managed by this bank.

5. Data Set, Econometric Methods and Results

It will be discussed in this part how the data collection and econometric approach were developed and the empirical results that were achieved.

In the study, cointegration test (Engle-Granger) and unit root test (ADF) were used to test the stationarity of credit volume, money supply and GDP data. For this reason, the ADF unit root test was developed to add the delayed values of the dependent variables to the model as an independent variable for stability testing in economics writing and to eliminate autocorrelation (DEMİR, 2019). The concept of cointegration entered the time series econometrics in the 1980s. Many economists identified this new concept as the most important development of experimental modelling. It is possible to

define this concept as a long-term equilibrium relationship between variables. Engle and Granger suggested estimating cointegration relationships using regression analysis. Although the series are subject to cyclical shocks, it is possible to have a long-term equilibrium relationship. Therefore, cointegration tests are important (Inal, 2020). In the studies, the cointegration between the series whose integration degree was determined as a result of unit root tests was examined. Cointegration tests have been used to evaluate whether or not there is a long-term link between the series in question.

It goes without saying that studies utilizing econometric approaches take a substantial amount of time to be analyzed (Al, 2019). The credit volume, money supply, and gross domestic product (GDP) statistics utilized in the research were from 2006:M1 to 2021:M9. These statistics are based on monthly data and have been obtained from the Central Bank of Azerbaijan's official website.

Hypotheses to be tested in the research:

Hypothesis 1: There is no relationship between money supply and credit volume.

Hypothesis 2: There is no relationship between credit volume and non-oil GDP.

Hypothesis 3: There is no relationship between money supply and non-oil sector GDP.

Hypothesis 4: There is no relationship between money supply and oil sector GDP.

Hypothesis 5: There is no relationship between non-oil GDP and Credit volume.

Hypothesis 6: There is no relationship between oil sector GDP and Credit volume.

5.1. Data Set and Econometric Method

According to the findings of this research, the influence of domestic loan volume on money supply and economic development was studied using quarterly data for Turkey for the period between 2005:Q4 and 2017:Q1. The domestic credit volume indicator used in the study gives the value of the domestic credit volume in Azerbaijan and is included in the analysis as "YIKH". The money supply, on the other hand, represents the M2 money supply and is shown as “m2” in the analysis. Finally, the economic growth indicator used in the study deals with the GDP value in Azerbaijan in US dollars and is expressed as “GDPD” in the analysis. All of the data used in the study were obtained from the Central Bank's data address "evds.tcmb.gov.tr". The model estimated in this study is shown in equation (1) and (2): $m2it = \alpha + \beta 1\ YIKHit + \varepsilon iti=1,...,N;\ t=1,...,T$ (1) $GDPDit = \alpha + \beta 1\ YIKHit + \varepsilon iti=1,...,N;\ t=1,...,T$ (2) The dependent variable of the model is domestic credit volume; The independent variables are money supply and economic growth.

5.2. Methods of Econometric Analysis and Evaluation of Results The "Extended Dickey-Fuller (ADF)" unit root test devised by Dickey and Fuller was used to analyze the stationarity of the time series under consideration in this work (1981). The following equation will be utilized in this research. $\Delta Y = \beta 1 + \beta 2t + \Delta yT\text{-}1 + \sum ki=1\ \alpha i\ \Delta\ Yt\text{-}1 + \varepsilon t$ (3) When the variable is examined for stationary behavior, ΔY is the first difference of the variable, t is the general trend variable, and $\Delta Yt\text{-}1$ is the delayed difference terms. This is done to verify that the error terms are sequentially independent, which is why lagged difference terms are included. For the ADF test to provide a positive result, there must not be any evidence of a sequential dependence issue in the estimated model. The Akaike or Schwarz information criterion is used to calculate the lag length, which is denoted by the letter k in the equation. (Gül and Ekinci, 2006: 95) In order to execute the cointegration test, it is required for the series under consideration to be stationary. Therefore, the unit root test was carried out. As a result, it will be determined whether the variables are stationary. The results of unit root tests on variables specific to Azerbaijan are shown in Table 1.

Tablo 1. DeğişkenlerinBirimKökTestiSonuçları

Variables	Stability Degree	ADF Test Statistic	Critical Value 5% level	Probability Value
LOGGDPNO	I(0)	-5.084589	-2.878829	0.0000
LOGM2	I(0)	-6.595686	-2.877544	0.0000
LOGTL	I(0)	-4.037810	-2.877729	0.0016
LOGGDPOIL	I(0)	-2.903668	-2.878829	0.0470

It can be shown that the collected data are steady at the 5% level of significance. Using the Enhanced Dickey-Fuller test, we can observe that the probability values are "0" and near to 0, and the series is stationary at the level since the critical values are much less than those found in the ADF test statistics when looking at total credit volume, economic growth, and money supply data. This series does not need to be stationary since it does not have a unit root issue. Hence it does not need the first difference. Cointegration analysis is done after the series has been tested to check whether it is stationary to evaluate whether there is a long-term connection. Cointegration analysis is a statistical test that examines whether or not several variables move in lockstep. Whether or not cointegration or cointegration (in which they function in concert over time) occurs due to the question test, the cause-and-effect link has been established. In order to investigate the relationship between two non-stationary time series, cointegration analysis was devised. If the linear combinations of two or more time series are not stationary, but the individual time series themselves are, then the time series are said to be cointegrated (Bal, 2012: 14). This study used the Johansen Cointegration test to determine whether or not there was a long-term link between the variables. It is shown in Table 2 that the findings of the Johansen Cointegration test between loan volume and economic growth are significant and positive.

Table 2: Johansen Cointegration Test Results for Credit Volume vs. Non-Oil GDP

Trace Test	Eigenvalue Statistic	Trace Test	5% Critical Value	Probability
None *	0.225131	62.53404	15.49471	0.0000
At most 1 *	0.095385	17.64325	3.841466	0.0000
Maximum Eigen Value Test	Eigenvalue Statistic	Max.Eigen Test	5% Critical Value	Probability
None *	0.225131	44.89079	14.26460	0.0000
At most 1 *	0.095385	17.64325	3.841466	0.0000

The cointegration equation between the loan volume and non-oil GDP variables indicating economic development is evident when Table 2 is assessed at the 5% significance level for both the Trace and Maximum Eagen variables. This finding demonstrates a long-term link between loan volume and non-oil GDP, which indicates economic expansion.

Table 3: Johansen Cointegration Test Results for Credit Volume and Petroleum Sector GDP

Trace Test	Eigenvalue Statistic	Trace Test	5% Critical Value	Probability
None	0.224755	62.43826	15.49471	0.0000
At Most	0.095331	17.63283	3.841466	0.0000
Maximum Eigen Value Testi	Eigenvalue Statistic	Max-Eigen test	5% Critical Value	Probability
None	0.224755	44.80542	14.26460	0.0000
At Most	0.095331	17.63283	3.841466	0.0000

With a closer look at Table 3, it becomes clear there is a cointegration equation between the oil sector GDP variables indicating loan volume and economic growth that is significant at the 5 percent level for both Trace and Maximum Eagen values. This conclusion indicates a long-term link between loan volume and the oil sector's GDP, which reflects economic growth over a period of time.

Table 4: Johansen Cointegration Test Results for Credit Volume and Money Supply

Trace Test	Eigenvalue Statistic	Trace Test	5% Critical Value	Probability
None	0.169303	36.15068	15.49471	0.0000
At Most	0.019715	3.504456	3.841466	0.0612
Maximum Eigen Value Testi	Eigenvalue Statistic	Max-Eigen test	5% Critical Value	Probability
None	0.169303	32.64622	14.26460	0.0000
At Most	0.019715	3.504456	3.841466	0.0612

With a closer look at Table 4, it becomes clear that there is a cointegrated relationship between loan volume and money supply at the 5% level of significance for both the Trace and Maximum Eagen values. This finding demonstrates a long-run link between loan volume and money supply in the economy. Because the two models under consideration have a cointegration connection, the FMOLS and DOLS tests are used to estimate the long-term coefficients. The results of the FMOLS and DOLS tests are shown in Table 4.

Table 5: FMOLS and DOLS Test Results

	$m2it = \alpha + \beta 1\ KHit + \varepsilon it$ $GDPNOit = \alpha + \beta 1\ KHit + \varepsilon it$ $GDPOILit = \alpha + \beta 1\ KHit + \varepsilon it$		
	Katsayı	t-istatistiği	Olasılık Değeri
FMOLS LOGTL →LOGM2	1.078183	10.85771	0.0000
DOLS TL →M2	1.022554	13.68927	0.0000
FMOLS TL →GDPNO	0.873358	9.266807	0.0000
DOLS TL →GDPNO	0.913190	6.380874	0.0000
FMOLS TL →GDPNOIL	0.444243	4.502559	0.0000
DOLS TL →GDPNOIL	0.439953	3.217111	0.0015

Table 5 shows the findings of the FMOLS and DOLS tests, which show that a rise in credit volume has a beneficial effect on money supply and economic growth.

According to the FMOLS test, if the domestic credit volume grows by one percent, the money supply increases by one-hundred-and-eighth a percent (1.022554 percent according to DOLS). According to the FMOLS test, a one percent increase in domestic loan volume enhances economic growth by 0.873358 percent, while a ten percent rise in household loan volume raises economic growth by ten percent (0.91319 percent according to DOLS). According to the FMOLS test, a 1 percent increase in domestic loan volume enhances economic growth by 0.444243 percent from the standpoint of economic growth (0.439953 percent according to DOLS).

The Granger causality test was used to determine if the FMOLS and DOLS tests were consistent. The findings of the Granger causality test are shown in Table 6.

Table 6: Granger Causality Test Results

	Number of Observations	Probability value
LOGTL → LOGM2	180	0.2622
LOGM2→ LOGTL	180	0.2917
LOGTL →GDPNO	180	0.4989
GDPNO → LOGTL	180	0.7415
TL →GDPNOIL	180	0.6317
GDPNOIL → TL	180	0.0000

According to the Granger causality test results in Table 6, no causal relationship was found between money supply and credit volume, between credit volume and non-oil GDP, and between money supply and oil and non-oil sector GDP. Therefore, a unidirectional causality was found between the money supply and the domestic credit volume. When we look at the situation in terms of oil sector GDP and economic growth, there is a causality relationship at the level of 1% significance from economic growth to domestic credit volume; It was not possible to establish a causal association between domestic loan volume and economic growth in this study. As a result, the relationship between economic growth and domestic credit volume has been established unidirectional. The demand tracking theory, which was explored in the paper, was confirmed by this outcome. The demand tracking hypothesis is appropriate because of the unidirectional connection that exists between economic growth and financial development.

6. Discussion

Because the issue of economic growth is getting more complicated in current reality, it is necessary to study the nature of economic development throughout history. The investigation of economic growth variables, the most important of which are the rates of consumption and investment, is brought to the forefront (Khanlarzadeh, 2021). In Azerbaijan, the influence of loan volume on money supply has not been investigated, as can be observed from the examination of the literature on the subject. This makes the study important and contributes to the literature.

According to Granger causation:

Hypothesis 1: The hypothesis that there is no relationship between money supply and credit volume is accepted.

Hypothesis 2: The hypothesis that there is no relationship between credit volume and non-oil GDP was accepted.

Hypothesis 3: The hypothesis that there is no relationship between the money supply and the non-oil sector GDP is accepted.

Hypothesis 4: The hypothesis that there is no relationship between money supply and oil sector GDP is accepted.

Hypothesis 5: The hypothesis that there is no relationship between non-oil GDP and credit volume was accepted.

Hypothesis 6: The hypothesis that there is no relationship between oil sector GDP and credit volume is rejected. In other words, the oil sector affects the credit volume.

7. Conclusion

An analysis of the impact of loan volume on the money supply and economic development in Azerbaijan was conducted in this research. FMOLS and DOLS tests, which determine the coefficient of cointegration, causation, and connection, were performed on data including quarterly time series over 2006:M1-2021:M9. According to the conclusions of the research, a one-way causative link exists between the money supply and domestic credit volume and a one-way causal relationship between economic growth and domestic credit volume. This research provides evidence for the demand-following theory within the scope of the supply-following and demand-following hypotheses mentioned in the study. When one considers one-way causation, which runs from economic growth to financial development, the demand-following theory is correct. This finding demonstrates that economic expansion in the Azerbaijani economy increases the development of the financial sector and, as a result, the amount of credit extended. There was no evidence of a direct association between domestic loan volume and economic development. While doing so, researchers discovered that domestic credit volume, money supply, and economic growth all had a long-term cointegrated connection throughout time.

There is additional evidence for Granger causality findings from FMOLS and DOLS testing. As measured by the FMOLS test, a one-percent increase in domestic credit volume results in a 0.67 percent rise in the money supply. To put this in the framework of financial growth, according to FMOLS and DOLS, a rise in domestic credit volume of 1% raises economic growth by 0.22% (or 0.23%), respectively.

In future studies, the effect of the credit volume of state bank loans, commercial bank loans and non-bank financial institution loans on economic growth should be investigated separately.However, it would be more meaningful to investigate which bank loan affects which sector more.

Reference:

[1]. Akbulaev, N., & Huseynova, A. (2019), February).Examining the Role of Credit Volume on Economic Growth: The Case of Azerbaijan. In 37th International Scientific Conference on Economic and Social Development–" Socio Economic Problems of Sustainable Development"-Baku (pp. 14-15).

[2]. Akbulaev, N., & Tahirzade, L. (2021). FINANCIAL SUSTAINABILITY: THEORY AND AZERBAIJAN APPLICATION. Economic and Social Development: Book of Proceedings, 865-873.

[3]. Akinlo, A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience Of 10 SubSaharan African Countries revisited. The Review of Finance and Banking, 02(1), .17-28.

[4]. Alshammary, M. J. (2014). Financial development and economic growth in developing countries: Evidence from Saudi Arabia. Corporate Ownership & Control ,11(2),718-742.

[5]. Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: The role of stock markets. Journal of Money, Credit and Banking, 33(1), 16–41.

[6]. Bal, Oğuz (2012), "The Relationship between Exchange Rate, Deposit Rate, Inflation and Government Domestic Debt Securities: 1994-2008" Academic View Journal, Issue: 31, July-August 2012.

[7]. Becsi, Zsolt and Wang, Ping (1997), "Financial Development and Growth" Federal Reserve Bank of Atlanta Economic Review, Fourth Quarter, Vol. 82, Iss. 4, p. 46-62.

[8]. Cestepe, H. & Yıldırım, E. (2016). The relationship between financial development and economic growth in Turkey. International Journal of Management, Economics and Business, ICAFR 16 Special Issue, 12-26.

[9]. Ceylan, S. & Durkaya, M. (2010). The relationship between credit utilization and economic growth in Turkey. Atatürk University Journal of Economics and Administrative Sciences, 24(2), .21-35.

[10]. Forbes Magazine (2017), July 2017, No:07.

[11]. Göçer, İ., Mercan, M., & Bölükbaş, M. (2015). The effects of banking sector loans on employment and economic growth: Co-integration analysis with multiple structural breaks for the Turkish economy. Hacettepe University Faculty of Economics and Administrative Sciences Journal, 33(2), 65-84.

[12]. Gul, E. & Ekinci, A. (2006). The causality relationship between inflation and exchange rate in Turkey: 1984-2003. Anadolu University Journal of Social Sciences Institute, (6), 91-105.

[13]. Jalilian, H. & Kirkpatrick, C. (2002). Financial development and poverty reduction in developing countries. International Journal of Finance and Economics, 7, 97-108.

[14]. Kamaci, Ahmet, M. Said Ceyhan, and Mehmet AkifPece. "IMPACT OF LOAN VOLUME ON MONEY SUPPLY AND ECONOMIC GROWTH." International Journal of Management, Economics and Business 13.13 (2017): 400-409.

[15]. Karaman, A. C. (2020). *Kredihacmininmakroekonomikgöstergelerüzerindekietkisi* (Master's thesis, HasanKalyoncuÜniversitesi).

[16]. Karamelikli, H. & Keskingöz, H. (2017). The effect of financial development components on economic growth: The case of Turkey. Journal of Human and Social Sciences Research, 6(1), 683-701.

[17]. Khanlarzadeh, S. M. (2019). Innovative processes as a factor of economic development. Economic and Social Development: Book of Proceedings, 444-450.

[18]. Khanlarzadeh, S. M. (2020). Economic Growth And Sosial Progress As Fundamental Indicators Of A Developing Society. Economic and Social Development: Book of Proceedings, 2, 339-346.

[19]. Khanlarzadeh, S. M. (2021). 606 Social And Environmental Innovations As Factors Of Sustainable Development Of Economic Systems. Economic and Social Development: Book of Proceedings, 606-611.

[20]. King, R. G. & Levine, R. (1993). Finance and growth, schumperer might be right. Quarterly Journal of Economics, 108(3), August, 717-737.

[21]. Luintel, K. B. & Khan, M. (1999). A quantitative reassessment of the finance–growth nexus: Evidence from a multivariate VAR. Journal of Development Economics, 60(1999), 381–405.

[22]. Ozcan, B. & Ari, A. (2011). An empirical analysis of the relationship between financial development and economic growth: The case of Turkey. Business and Economics Research Journal, 2(1), 121-142.

[23]. Patrick, H. T. (1966). Financial development and economic growth in underdeveloped countries. economic development and cultural change, 14(2), 174-189.

[24]. Pehlivan, P., Demirlioğlu, L., & Yurtseven, H. (2017). Analysis of the relationship between banking activities and economic growth in Turkey. V. Anadolu International Conference in Economics, May 11-13, 2017, Eskişehir, Turkey.

[25]. Shan, J. & Jianhong, Q. (2006). Does financial development 'lead' economic growth? the case of China. Annuals of Economics and Finance, 1.197-216.

[26]. Snow, M. & Pentecost, E. J. (2000). Financial development and economic growth in Turkey: Further evidence on the causality issue. Loughborough University Economic Research Paper No. 00/27.

[27]. Tuna, K. & Bektaş, H. (2013). Examining the role of credit volume on economic growth: The case of Turkey. Journal of Financial Research and Studies, 5(9), 139-150.

[28]. Türedi, S. and Berber, M. (2010). The relationship between financial development, trade openness and economic growth: An analysis on Turkey. Journal of Erciyes University Faculty of Economics and Administrative Sciences, 35 (January-July), 301-316.

[29]. Turgut, A. & Ertay, H. İ. (2016), The effect of banking sector on economic growth: causality analysis on turkey. Aksaray University Journal of the Faculty of

Economics and Administrative Sciences, 8 (4), 114-128.

[30]. Umit, A. O. (2016). Relationships between trade openness, credit volume and economic growth in Turkey: Time series analysis with multiple structural breaks. ÇankırıKaratekin University, Economics and Administrative SciencesFaculty Journal, 6(1), 471-499.

[31]. Vurur, N. S. & Özen, E. (2013). Examination of the relationship between deposit bank loans and economic growth in Turkey. Uşak University Journal of Social Sciences, 6(3), 117-131.