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Does economic growth promote banking sector development in Algeria?

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Abstract ;

This study seeks to reassess the relationship between economic growth and the development of the banking sector, represented by bank deposits and bank credit, in Algeria spanning from 1964 to 2021. Employing Johansen cointegration analysis, the study investigates the presence of a long-term relationship among these variables, while Granger causality analysis is utilized to explore the direction of causality.

The findings indicate the absence of cointegration between economic growth and banking sector development, suggesting no long-term relationship between the two. Additionally, the Granger causality test reveals a one-way causality from the logarithm of economic growth to the logarithm of bank deposits and bank credit, indicating that an increase in gross domestic product leads to development in the banking sector. Therefore, the demand-following hypothesis holds true for Algeria.

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1. INTRODUCTION

Lately, the strength of any country's economy is often measured by the strength of its financial system, including financial markets and commercial banks. The contemporary economy is frequently labeled as a credit-based economy, underscoring the crucial role of financial development in driving substantial economic growth. The correlation between economic advancement and the presence of a robust and effective financial infrastructure is now widely recognized and acknowledged. This system should be adept at gathering funds from surplus entities in the shape of deposits (both demand and time deposits) and directing these resources as bank credits (ranging from short-term to medium-term and long-term) to deficit units, encompassing governments, corporations, and individuals. Monitoring the evolution of discussions regarding the causal relationship between financial development and economic growth centers on four main hypotheses: the supply-leading hypothesis (first proposed by Schumpeter in 1911), the demand-following hypothesis (introduced by Robinson in 1952), the bidirectional hypothesis (formulated by Patrick in 1966), and the independent hypothesis (put forward by Lucas in 1988). Researchers persist in examining the validity of these hypotheses and their relevance to diverse economies, particularly those in the process of development. Therefore, the aim of this study is to reassess the correlation between economic growth and the evolution of the banking sector in Algeria.

Since the establishment of the Bank of Algeria on December 13, 1962, the banking system has witnessed several amendments during the 1970s and early 1980s. However, one of the most significant changes occurred in 1990 through the Monetary and Credit Law 90-10, which was considered a cornerstone in building a strong and internationally open banking system. By tracing the evolution of financial intermediation indicators, as shown in Figure 1, we can observe that bank deposits and bank credits began to experience accelerated growth starting from 1990.

The relationship between economic growth and banking sector development in Algeria is worth investigating, given bank's major activities growth since the radical change in 1990. In literature, several studies (Bendahmane & Kerrouche , 2021), (حبيب و زقرير،

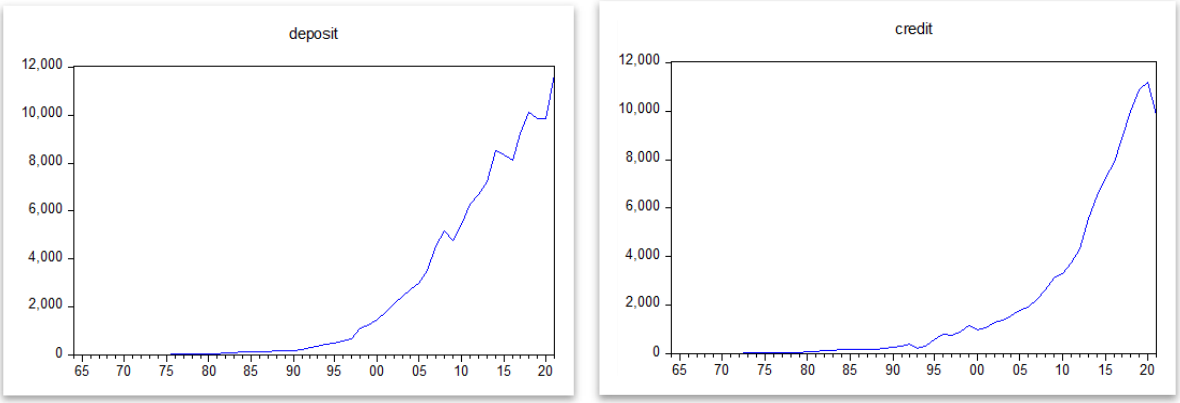
(2019, (2021 ،بن سعدة و كبير) dwells mainly on the impact of credit or financial intermediation on economic growth, with no study

specifically assessing how economic growth enhance banking sector development. Accordingly, this paper intends to bridge this lacuna in the literature by scrutinizing the cointegration between the

study variable using Johansen test, and the granger causality, than short-run relationship using Vector Autoregression (VAR) framework.

The subsequent section provides an overview of the literature, while Section 3 provides an explanation of our data and the methodology used for estimation. Section 4 explores the empirical results, and the conclusion is presented in Section 6.

Fig. 1. Deposit and Credit (billion dinars) 1964- 2021



Source: Bank of Algeria

2.*Literature review* :

Classical economic theories overlooked the importance of finance and assumed a perfect market with no financial transaction costs. They focused on labor, capital and entrepreneurship as the key drivers of production and economic growth. As a result, little attention was given to the role of a well-developed financial system. However, modern economic theories highlight the significance of finance and a strong financial system in fostering favorable condition for economic growth.

Therefore, four primary theories provide the most credible explanations for the relationship between finance and economic growth. These theories encompass the supply-

leading hypothesis, demand-following hypothesis, bidirectional hypothesis, and independent hypothesis.

Schumpeter was the pioneer in proposing the first theory, known as the supply-leading hypothesis, to explain the relationship between finance and economic growth (nid & bouabdallah, 2023). In accordance with this theory, a financial system plays a crucial role in mobilizing the necessary funds for investment, innovation, and entrepreneurship—key elements for economic growth. This supports the supply-leading hypothesis (jima & Makoni, 2023) . In 1952, Robinson presented a contrasting viewpoint to the supply-leading hypothesis with the introduction of the demand-following hypothesis. According to this theory, economic growth spurs the expansion of the financial sector in response to heightened demand for financial services (Patrick , Oladapo , olufemi, & Stephen, 2015). According to this viewpoint, the growth and development of the real economy stimulate a greater demand for financial services. This increased demand then leads to the establishment of new financial institutions and markets to meet the growing needs for financial services.

In contrast to the two previously mentioned contrasting theories, some scholars argue for the presence of a bi-directional relationship, which combines elements of both the supply-leading and demand-following hypotheses. Others propose an independent relationship in which there is no causation between financial inclusion and economic growth. Introduced by Patrick in 1966, the 'bidirectional' hypothesis captures the relationship between financial development and economic growth by amalgamating elements of both the supply-leading and demand-following hypotheses. This theory proposes a dynamic correlation between financial development and economic growth, where the causal connection fluctuates as the economy evolves. In the initial stages of development, the theory posits the relevance of the supply-leading hypothesis, signifying that economic growth is propelled by financial development. (Patrick , Oladapo , olufemi, & Stephen, 2015). However, as the economy matures, the supply-leading hypothesis becomes less significant, and the demand-following hypothesis becomes more prevalent.

In Lucas's (1988) independent hypothesis, it is postulated that there is no causal relationship between financial development and economic growth. According to this viewpoint, financial development and economic growth are regarded as separate factors that do not directly influence each other (eric , muazu, & yakubu, 2019).

Empirical studies examining the relationship between banking sector development and economic growth suggest that the advancement of the banking sector notably impacts the economic growth of many countries. We discuss further in this section the relationship between economic growth and banking sector development.

Using the autoregressive distributed lag method, (Phuc Tran , 2022) conducted an empirical investigation into the impact of the banking system on the growth of the Vietnamese economy during the transitional period that commenced in the early 1990s. The results indicate that banking development, as measured by broad money and bank credit, has a positive long-term impact on economic growth. Furthermore, the findings suggest a nonlinear effect and a diminishing marginal impact of banking development during the sub-period from 2007 to 2020.

By employing principal component analysis, causal relationship examination, and vector regression modeling, a study was conducted to monitor the evolution of the banking sector and to ascertain causality between the banking sector and economic growth in Ukraine and several EU countries. The results obtained confirmed a significant gap in the progress of Ukraine's banking sector compared to certain EU nations. Furthermore, the causality analysis revealed a strong positive correlation between the level of development in Ukraine's banking sector and GDP per capita (Nadiya , Olha , Yuliia , Mariia , & Taras , 2021).

The analysis encompasses forty developing countries and investigates the causal relationship between banking sector development and economic growth. Khalil, Chokri & Ali (2017) utilized a bootstrap panel Granger causality approach on time series data spanning from 1970 to 2012. The findings reveal a causal relationship between banking sector development and economic growth in only twenty-five out of the forty examined countries.

3. The importance of Banking Sector Development in Algeria

The progress of the banking sector in Algeria holds significance for several reasons:

3.1. Financing Economic Activity: A well-developed banking sector acts as a key engine for economic growth by providing loans and other financial services to businesses and individuals. This injects essential capital into the economy, allowing businesses to invest in

expansion, innovation, and job creation. Conversely, a weak banking sector can hinder economic activity by making it difficult for businesses to obtain financing.

3.2. Mobilizing Savings: Banks play a vital role in channeling savings from individuals and businesses to those who need them for investment purposes. This efficient allocation of resources ensures that capital is directed towards productive activities, further propelling economic growth. In Algeria, where reliance on hydrocarbon revenues is high, diversifying the economy through effective mobilization of savings becomes even more critical.

3.3. Financial Intermediation: Banks act as intermediaries between lenders and borrowers, matching resources with potential investments. This reduces transaction costs and facilitates efficient allocation of capital across different sectors of the economy. A robust banking system with a variety of financial products and services can cater to the diverse needs of the Algerian economy, fostering growth and development.

3.4. Financial Stability: A sound and stable banking system promotes confidence in the financial system, encourages savings, and attracts foreign investment. This stability is crucial for maintaining a healthy macroeconomic environment that supports long-term economic growth. In Algeria, with its vulnerability to global oil price fluctuations, a stable banking sector can provide a buffer against external shocks and contribute to greater economic resilience.

3.5. Promoting Financial Inclusion: Expanding access to financial services through an inclusive banking system can empower individuals and businesses, particularly in underserved areas. This can lead to poverty reduction, increased entrepreneurship, and overall economic development. In Algeria, promoting financial inclusion through the banking sector can contribute to diversifying the economy and creating a more equitable society.

Hence, the connection between economic growth and the evolution of the banking sector in Algeria is intricately interlinked. Cultivating a robust and dynamic banking system is imperative for unlocking the country's

4.*Methodology* :

4.1.*Data descriptive and variables* :

In term of approach, the study employed a quantitative approach, utilizing both econometric and descriptive techniques to fulfill the research objectives. This research used primary data, collected from Bank of Algeria. In term of coverage, the study focused on the case of Algeria from 1964 to 2021. Table 1 provide a clear explanation for all the factors included in our study

Table 1. Description of variables

Variable	Acronym	Proxy
Economic growth	GDP	Real grpss domestic produts (billion dinars)
Bank deposit	BD	Total value of demand and time deposit (billion dinars)
Bank credit	CR	Domestic credit to economy by banks (billion dinars)

Source: Prepared by the researchers

4.2.*Model specification*:

The empirical model was formulated in logarithmic form in order to avoid the problem of heterogeneity of data and to obtain direct estimates of flexibilities. As follows:

$$\text{Ln Economic growth} = \beta_0 + \beta_1 \text{ Ln deposit}_t + \varepsilon_t \text{ (Model 1)}$$
$$\text{Ln Economic growth} = \beta_0 + \beta_1 \text{ Ln credit}_t + \varepsilon_t \text{ (Model 2)}$$

The proxies of all variables used in the analysis have been pre-defined and established beforehand, except ε which is the error term, t represent the sample period, β_0, refers to the intercept, β_1 is the coefficients.

4.3. *Johansen cointegration*:

Johansen's procedure is a method for estimating cointegrated variables based on maximum likelihood estimation, rather than relying on ordinary least squares (OLS)

estimation. This approach heavily depends on the association between the rank of a matrix and its characteristic roots. Johansen formulated the maximum likelihood estimation employing sequential tests to ascertain the number of cointegrating vectors (RAJAB, 2011). This method can be categorized as a second-generation approach as it directly utilizes maximum likelihood instead of partially relying on least squares. Essentially, Johansen's procedure serves as a multivariate extension of the Dickey-Fuller test.

4.4.*Granger causality*:

The Granger causality test is designed to investigate the short-run causality between the variables incorporated in the model. It assesses four potential directions of causality: unidirectional causality, unidirectional causality, bidirectional causality or feedback effect, and independence where no directional causality is evident. The hypothesis testing for this test can be formulated as follows:

- **Null hypothesis (H0)**: $\beta 1 = \beta 2 = \beta 3 = 0$ (the independent variable does not Granger cause the dependent variable)
- **Alternative hypothesis (H1)**: $\beta 1 \neq \beta 2 \neq \beta 3 = 0$ (the independent variable does Granger cause the dependent variable)

According to the rejection rule, we can reject the null hypothesis if (p-value $\leq \alpha$). This means that the independent variable Granger causes the dependent variable. On the contrary, if the (p-value $\geq \alpha$), the H0 is not rejected, indicating that there is no variable Granger cause between the variables (Jason, 2021, p. 258).

5. *Empirical results*

5.1.*Descriptive statistics*:

The descriptive statistics for all variables examined in the study are summarized in table 2. The mean value of economic growth is 9890.862 billion dinars, with maximum and minimum values of 19150 billion dinars and 2560 billion dinars, respectively. Turning to deposit, it recorded a mean value of 2406.405 billion dinars, with maximum and minimum values of 11685.10 billion dinars and 1.68 billion dinars. Credit has recorded a mean value of 1974.545 with maximum and minimum values of 11180.19 billion dinars and 1.872 billion dinars. The stander deviation of deposit and credit is greater than the average value indicating a higher volatility; while economic growth recorded lower volatility. It also

observed that deposit and credit have a leptokurtic distribution, given that their kurtosis value is greater than 3. Vice versa for economic growth. Further, the jarque-bera probability values indicate that deposit and credit are not normaly distributed at 5%.

Table 2. Descriptive statistics

	GDP	BD	CR
Mean	9890.862	2406.405	1974.545
Median	8665.000	328.2395	315.8280
Maximum	19150.00	11688.10	11180.19
Minimum	2560.000	1.680000	1.872000
SD	5056.007	3439.083	3144.583
Skewness	0.381323	1.276238	1.770519
Kurtosis	2.031810	3.216344	4.864090
Jarque-Bera	3.670964	15.85802	38.69996
Propability	0.159537	0.000360	0.000000
Observations	58	58	58

Source: Eviews 10 output

5.2. *Test of Unit root*:

In order to assess unit root presence, the augmented Dickey-Fuller (ADF) test was utilized, conducted at both the level I(0) and the first difference I(1), as outlined in Table 3. The results indicate that all variables exhibit stationarity at the first difference. Consequently, it is reasonable to proceed with the cointegration test, given that the prerequisite condition for cointegration has been met. In both models, all variables are integrated at the same order.

Table 3. Unit root test results

	LnGDP		LnBD		LnCR	
	At level	At first difference	At level	At first difference	At level	At first difference
Constant	-2.8320 (0.0603)	-8.7446 (0.000)	-3.0325 (0.0378)	-5.7292 (0.0000)	-2.1685 (0.2199)	-8.0802 (0.0000)
Constant & trend	-1.5534 (0.7986)	-9.5040 (0.0000)	-0.6790 (0.9697)	-6.4642 (0.0000)	-3.8555 (0.0205)	-8.3788 (0.0000)
Without Constant & trend	4.8579 (1.0000)	-2.6392 (0.0092)	1.5925 (0.9714)	-2.0174 (0.0428)	2.4840 (0.9965)	-9.8182 (0.0000)

Source: Eviews 10 output

5.3.*Lag length selection*:

For lag selection we depended on the value of akaike information criterion (AIC): (AKAIKE, 1974)

$$AIC = \hat{\sigma}^2 \exp\left[2\left(\frac{p+q}{N}\right)\right]$$

Results recommend lag 3 for model 1, and lag 1 for model 2.

Table 4. Lag order selection criteria results

Model no 1						
Lag	**0**	**1**	**2**	**3**		
AIC	**3.012663**	**-4.963994**	**-4.946631**	**-5.075128***		
Model no 2						
Lag	**0**	**1**	**2**	**3**	**4**	**5**
AIC	**2.573521**	**-2.332625***	**-2.319369**	**-2.233460**	**-2.138087**	**-2.025640**

Source: Eviews 10 output

5.4.*Cointegration test*:

It is evident that there is no cointegration equation for both models. This conclusion is drawn from the fact that the Trace statistics and Max Eigen values for both Model No. 1 and Model No. 2 are lower than their respective 5% critical values, and the associated p-values are greater than 5%. As a result, the null hypothesis of no cointegration is accepted.

In practical terms, this means that there is no long-run relationship between the bank's major activities (deposit and credit) and economic growth. Consequently, the decision is made to employ a VAR model instead of a VECM. This choice aligns with the understanding that cointegration is not established, and the analysis will be conducted using the VAR framework to capture the short-term dynamics without accounting for long-term relationships.

Table 5. Johansen test for cointegration results

	Model no 1						Model no 2					
lag	LRE*stat	df	Prob	Rao F-stat	df	Prob	LRE*stat	df	Prob	Rao F-stat	Df	Prob
1	4.675162	4	0.3223	1.186155	(4,90.0)	0.3223	6.157479	4	0.1877	1.570912	(4,102.0)	0.1877
2	1.589206	4	0.8107	0.396387	(4,90.0)	0.8108	3.341936	4	0.5023	0.840941	(4,102.0)	0.5024
3	4.222230	4	0.3768	1.068556	(4,90.0)	0.3768	1.760348	4	0.7797	0.439560	(4,102.0)	0.7797
4	4.699632	4	0.3195	1.192526	(4,90.0)	0.3196	1.603201	4	0.8082	0.400014	(4,102.0)	0.8082
5	3.684173	4	0.4504	0.929613	(4,90.0)	0.4505	4.159665	4	0.3848	1.050897	(4,102.0)	0.3849
6	1.883338	4	0.7572	0.470612	(4,90.0)	0.7572	1.144133	4	0.8872	0.284835	(4,102.0)	0.8872
7	3.924599	4	0.4193	0.991597	(4,90.0)	0.4164	4.947247	4	0.2928	1.254695	(4,102.0)	0.2928
8	2.660222	4	0.6162	0.667456	(4,90.0)	0.6162	3.567270	4	0.4677	0.898631	(4,102.0)	0.4678
9	0.537703	4	0.9697	0.133342	(4,90.0)	0.9697	2.716163	4	0.6064	0.681393	(4,102.0)	0.6064
10	0.686499	4	0.9530	0.170381	(4,90.0)	0.9530	4.590622	4	0.3319	1.16220	(4,102.0)	0.3320

Source: Eviews 10 output

5.5. *Test of Granger causality*:

The aim of the Granger causality test is to examine the short-run causal relationship between the variables incorporated in the model.

Model no 1:

$$\Delta \ lnGDP_t = \sum_{i=1}^{n} \beta_{11} \ lnGDP_{t-1} + \sum_{j=1}^{n} \beta_{12} \ lnBD_{t-j} + \varepsilon 1_t$$

$$\Delta lnBD_t = \sum_{i=1}^{n} \beta_{21} \ lnBD_{t-1} + \sum_{j=1}^{n} \beta_{22} \ lnGDP_{t-j} + \varepsilon 2_t$$

Model no 2:

$$\Delta \ lnGDP_t = \sum_{i=1}^{n} \beta_{11} \ lnGDP_{t-1} + \sum_{j=1}^{n} \beta_{12} \ lnCR_{t-j} + \varepsilon 1_t$$

$$\Delta lnCR_t = \sum_{i=1}^{n} \beta_{21} \ lnCR_{t-1} + \sum_{j=1}^{n} \beta_{22} \ lnGDP_{t-j} + \varepsilon 2_t$$

According to the findings displayed in table 6, we observe that the probability value between lnGDP and lnBD is less than 5%, as for the probability of granger cause between lnGDP and lnCR. Therefore, the null hypothesis (there in so causal relationship) is rejected against the alternative hypothesis (there is causal relationship). When it comes to causality direction from lnBD to lnGDP, and from lnCR to lnGDP the null hypothesis is accepted because p value is greater than 5%.

Based on these results, we concluded that economic growth cause banking sector development (deposit and credit). This results aligns with the demand-following hypothesis.

Consequently, the expansion of real gross domestic products in Algeria has been generated an increased demand for financial services. Hence, promoting the growth of bank's major activities on development of banking sector.

Table 6. Granger causality test result

Model no 1: Pairwise Granger Test (lag3)			
Null Hypothesis	Obs	F-statistic	Prob
LNGDP does not granger cause LNBD	55	3.65949	0.0187
LNBD does not granger cause LNGDP		2.57551	0.0647
Model no 2: Pairwise Granger Test (lag 1)			
Null Hypothesis	Obs	F-statistic	Prob
LNGDP does not granger cause LNCR	57	16.8733	0.0001
LNCR does not granger cause LNGDP		1.97528	0.1656

Source: Eviews 10 output

5.6.*Vector Autoregression*:

After ensuring the stationary of time series, and the absence of cointegration among the variables included in both models. The short-run relationship will be proceeded. The following equation shows the VAR test result:

Model 1: (LNGDP granger cause LNBD)

LNBD= 1.148500 LNBD(-1) - 0.364292 LNBD(-2) + 0.243757 LNBD(-3) – 0.924138 LNGDP(-1) – 0.091421 LNGDP(-2) + 2.485952 ……(1)

Model 2: (LNGDP granger cause LNCR)

LNCR= 2.303923 LNGDP(-1) +0.435140 LNCR(-1) +0.435140 LNCR(-2) – 17.51917 ……(2)

Through the results outlined in appendix 1&2 and equation 1&2, we achieved that the gross domestic products (LNGDP) in Algeria is not significant in both models, which means that the change in deposit and credit cannot be explained by change in GDP. This absence of short-run relationship between economic growth and deposit is due to the weak threshold flexibility of bank deposit and credit, i.e weak correlation of deposit and credit with the changes at the real sector level in short-run.

5.7.*Diagnostic tests results*:

Finally, we preform sevral diagnostic tests to ensure the validity of our models.

5.7.*1Autocorrelation LM test*:

The result of these test indicating the acceptance of the null hypothesis (no correlation between the model residuals) the probability of LM test is greater than 5% considering a lag order of 10. which implies the absence of autocorrelation among the estimated models.

Table7. Autocorrelation LM test result

	Model no 1						Model no 2					
lag	LRE*stat	df	Prob	Rao F-stat	df	Prob	LRE*stat	df	Prob	Rao F-stat	Df	Prob
1	4.675162	4	0.3223	1.186155	(4,90.0)	0.3223	6.157479	4	0.1877	1.570912	(4,102.0)	0.1877
2	1.589206	4	0.8107	0.396387	(4,90.0)	0.8108	3.341936	4	0.5023	0.840941	(4,102.0)	0.5024
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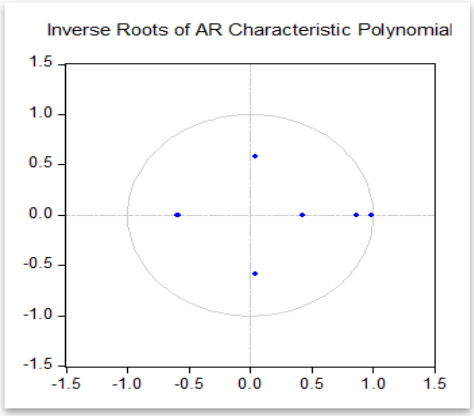
10	0.686499	4	0.9530	0.170381	(4,90.0)	0.9530	4.590622	4	0.3319	1.16220	(4,102.0)	0.3320

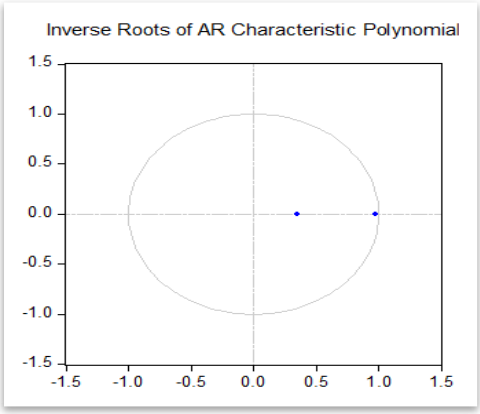
Source: Eviews 10 output

5.7.2. *Stability test*:

Because the modulus of each eigenvalue is strictly less than 1, the estimates satisfy the eigenvalue stability condition for model no1, and model no 2.

Fig.2. Stability test result





Source: Eviews 10 output

6. *Conclusion*:

The banking sector plays a critical role in the Algerian economy. Therefore, identifying the relationship between economic growth and banking development is essential for policymakers to develop policies and strategies that promote this development.

This study examines the relationship between economic growth, measured by real gross domestic product, and the banking sector, measured by total bank deposits and loans, in Algeria. The findings show that there is no cointegration between the study variables, so there is no long-term relationship between them. Our results also reveal a one-way causal relationship running from real GDP to total bank deposits and loans, which supports the validity of the demand-following hypothesis.

While the results of the vector autoregression (VAR) model indicate that the impact of growth on the main banking activities was not statistically significant at the 5% level. Therefore, it has no effect in the short run. Since the analysis indicates the absence of both short-run and long-run relationships between economic growth and banking sector development in Algeria, it implies that the two variables do not exhibit significant and sustained connections over time. This suggests that fluctuations or changes in the banking sector do not appear to have an immediate or lasting impact on economic growth, and vice versa, according to the findings of the study or analysis. Therefore, we recommend banks to adopt a clear savings policy that is capable of collecting the largest volume of deposits during periods of economic prosperity. Additionally, to ensure effective implementation, this policy should incorporate a well-defined lending policy that can promptly address the funding requirements of prospective borrowers, especially during periods of high economic growth.

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Appendix1 : VAR model no 1

Vector Autoregression Estimates
Date: 07/01/23 Time: 19:04
Sample (adjusted): 1967 2021
Included observations: 55 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LNBD	LNGDP
LNBD(-1)	1.148500	0.082771
	(0.13164)	(0.05012)
	[8.72430]	[1.65146]
LNBD(-2)	-0.364292	-0.110057
	(0.19910)	(0.07580)
	[-1.82971]	[-1.45192]
LNBD(-3)	0.243757	0.052311
	(0.13617)	(0.05184)
	[1.79008]	[1.00903]
LNGDP(-1)	-0.924138	0.619681
	(0.35318)	(0.13446)
	[-2.61663]	[4.60859]
LNGDP(-2)	-0.091421	0.368391
	(0.42741)	(0.16272)
	[-0.21390]	[2.26391]
LNGDP(-3)	0.748564	-0.138717
	(0.35638)	(0.13568)
	[2.10044]	[-1.02236]
C	2.485952	1.260436
	(1.16525)	(0.44363)
	[2.13340]	[2.84116]
R-squared	0.998432	0.994830
Adj. R-squared	0.998236	0.994183
Sum sq. resids	0.532942	0.077249
S.E. equation	0.105371	0.040117
F-statistic	5095.313	1539.313
Log likelihood	49.46699	102.5800
Akaike AIC	-1.544254	-3.475636
Schwarz SC	-1.288775	-3.220157
Mean dependent	5.963001	9.114108
S.D. dependent	2.509135	0.526009

Appendix2 : VAR model no 2

Vector Autoregression Estimates
Date: 07/01/23 Time: 19:08
Sample (adjusted): 1965 2021
Included observations: 57 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LNGDP	LNCR
LNGDP(-1)	0.888110	2.303923
	(0.06232)	(0.56088)
	[14.2510]	[4.10771]
LNCR(-1)	0.020401	0.435140
	(0.01452)	(0.13064)
	[1.40545]	[3.33080]
C	0.932319	-17.51917
	(0.48354)	(4.35194)
	[1.92810]	[-4.02560]
R-squared	0.993956	0.973649
Adj. R-squared	0.993732	0.972673
Sum sq. resids	0.107969	8.745693
S.E. equation	0.044715	0.402439
F-statistic	4439.984	997.6132
Log likelihood	97.78593	-27.45653
Akaike AIC	-3.325822	1.068650
Schwarz SC	-3.218293	1.176179
Mean dependent	9.070943	5.724485
S.D. dependent	0.564782	2.434452

Source: Eviews 10 output