
The role of banking activities in the algerian economy

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Abstract:

In Algeria, it is widely accepted today that there is an urgent need to diversify the economy to move from exogenous growth based on hydrocarbon revenues to endogenous growth based on a supply of various products and Services. By positioning ourselves on this axis, our work analyzes the role of the reformed banking system in the Algerian economy

In this present work, we have to detect a possible impact of banking activities on economic growth in Algeria. To do this, we calculated a range of ratios, then we used the VECM technique, for the period 1990/2021, using banking variables in this case quasi-money and credits to the economy. Our study reveals a weak involvement of the banking system in the economy compared to certain strategic activities such as exports.

Keywords: Bank credit, money supply, Algerian banks, GDP, VECM

Jel Classification Codes: G21, E51, C51

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1. Introduction:

The Algerian financial system is a process that has been building since 1962. Originally formed from the colonial heritage, this system has continued to evolve to adapt to the requirements of the Algerian economy.

Following independence, in 1962, the establishment of a purely Algerian economy encountered, on the one hand, the refusal of foreign banks to finance national investments, preferring to finance commercial operations and, on the other part, to capital flight from Algeria to Europe. To establish its economic and monetary independence, the Algerian authorities have taken radical measures by nationalizing all economic sectors.

Thus, since 1962, the banking system has experienced three distinct phases, parallel to the phases of evolution of the Algerian economy:

The first phase was devoted to the creation of a national monetary unit, in this case the Algerian dinar and to the creation of a supervisory establishment, namely the Central Bank of Algeria. This was reinforced by the nationalization of foreign banks in 1966 and 1967 to create three Algerian banks: BNA, CPA, BEA.

The second phase is devoted to building a banking system adequate to the planning system adopted in Algeria. During this phase the role of the banking system was limited to providing the financing necessary for the implementation of economic plans. Furthermore, during the same phase, the public treasury was assigned an important role. Simple budget executor, the Algerian authorities entrusted him with credit management as well as the management of public companies.

In the last phase, which began in 1990, the Algerian authorities launched a wave of economic and financial reforms whose objective was to shift the economy from a socialist system to a market economy system. The reform of the financial system was brought about by Law 90-10 relating to money and credit commonly known as the LMC. This law constitutes an important innovation in the financial system aspired to give a more important role to the banking system which will enable it to support economic growth (Benissad ME ; 1993).

As a result, after more than 30 years of reforms, the Algerian banking system still suffers from several deficiencies, public banks still monopolize the banking market. The financing of the economy is dominated by short and medium term financing while long term financing is marginalized.

Faced with this observation, it is now appropriate to move on to analyzing the role of Algerian banks in economic growth.

The idea of a positive effect of the financial system on economic growth is not new. As early as the 18th century, A. Smith highlighted in the 1776 work "Wealth of Nations" the role of banks in facilitating commercial affairs and their role in the development of British industry.

This literature was enriched by Bagehot's work "Lombard Street: A Description of the Money Market" in 1873. In this work, Bagehot emphasizes that British development is the result of the superiority of its financial

market and its ability to mobilize savings. He also explains that the economic recovery recorded in England since 1866 has been favored by the resumption of credits.

More recently, for Philippon and Reshef (2013) and Laeven et al (2015), a properly functioning financial sector facilitates the transmission of information, shares risks and ensures the allocation of capital, thus ensuring key elements for successful economies and highlights that financial entrepreneurs and technology entrepreneurs come together to shape economic growth.

The algerian economic literature dealing with the bank's role in algerian economy has experienced a certain enrichment since the 2000s. However, detecting the impact of the role of these banks still remains an unanswered question.

Thus, for Oufriha (2008), the weak role of banking sector in the allocation of ressources in favor of productive activities is caused by the absence of a clear industrial policy.

In parallel, for Hafsaoui and al (2019), in Algeria, it can be said that the financial system, especially the banking System and despite the unceasing reforms, did not reach the level to keep pace with the development in the world's economies

In this present work, we will attempt to provide elements of response to our problem, which consists of detecting the role of banking intermediaries in the Algerian economy. We will study this role through banking liquidity indicators such as the money supply in the M2 sense and quasi-money in relation to the country's strategic sector, namely hydrocarbons and their export revenues.

1.1. Research Problematic:

In this present work, we will attempt to provide elements of response to our problem, which consists of detecting the role of banking intermediaries in the Algerian economy.

The question asked in this article is formulated as follows: **Do the banking activities in Algeria contribute to economic growth ?**

To answer our problem, we will try to verify the following hypotheses :

- The contribution of the Algerian banking system to economic growth remains marginal compared to the hydrocarbon sector and insufficient in view of the needs and potential of the country.
- The role of Algerian banks has improved significantly since the launch of the 1990 reforms

1.2. Research Aims:

We will study this role through banking liquidity indicators such as the money supply in the M2 sense and quasi-money in relation to the country's strategic sector, namely hydrocarbons and their export revenues.

To detect this impact, we first start by studying certain economic indicators developed in the economic literature. We will then move on to analyzing the impact of several banking variables on Algerian GDP through the VECM model.

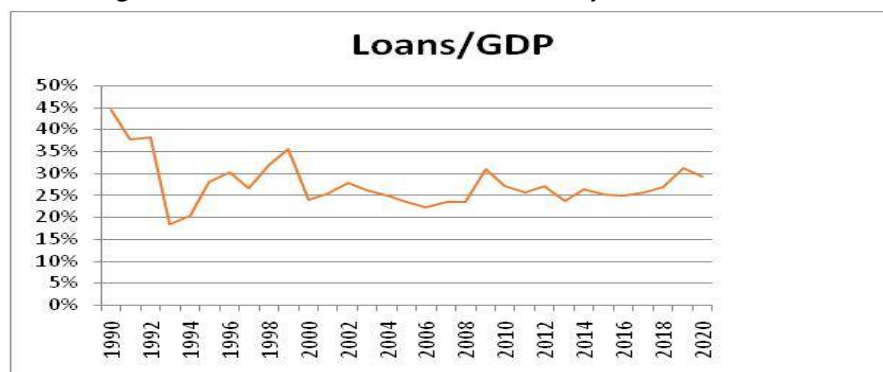
2. Impact of banking activities on the Algerian economy

To better understand the role of banking activities in the Algerian economy, we have chosen to calculate and evaluate several indicators for the period 1990-2020. They are presented as follows;

2.1. The bank loans

The analysis of the ratio of bank credits to GDP indicates the degree of involvement of the banking system in the Algerian economy.

Figure N° 1: Evolution of bank loans compared to GDP in %



Source: calculated by us based on BA data for bank loans and based on NOS data for GDP.

This ratio shows a fairly constant and fairly regular evolution during the period considered, despite a sharp decline at the beginning of the 1990s.

Between the end of the 1980s and the beginning of the 1990s, this ratio recorded a significant increase in parallel with the increase in lending rates, which contradicts the economic theory according to which when rates increase bank credits decrease. However, we can attribute this increase to the weakness of Algerian GDP during the 1990s and to the high inflation recorded (31.7% in 1992 according to the ONS).

In 1993, the ratio of bank credits to GDP recorded a considerable decline. It is the result of operations to reorganize the debts of public companies to banks and which were taken over by the Public Treasury.

This ratio started to rise again in 1995 following the drop in lending rates, particularly in 1998, when they went from 16% to 9.5%.

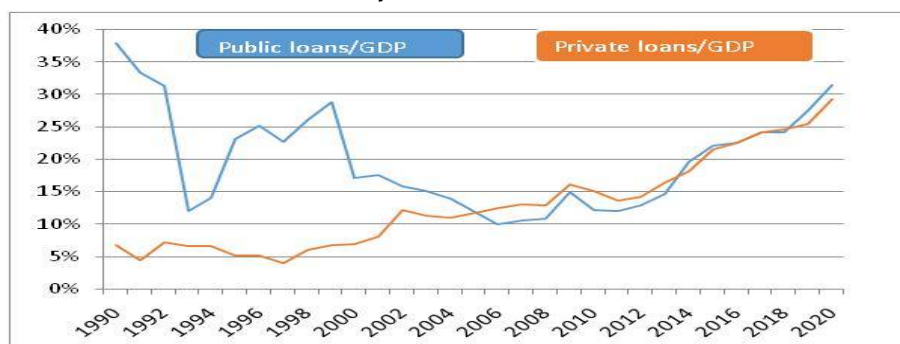
However, it should be noted that, from 2002 to 2018, credits relative to GDP have recorded fairly modest rates in recent years, despite the increase in credits granted to the economy. This is due to the increase in hydrocarbon revenues, which gave Algerian GDP greater growth than that of bank credits.

Finally, since 2018, this ratio has recorded a slight decline due to the increase in the GDP in Algeria. The analysis of the share of credits in GDP is not enough to have a complete vision of the role of Algerian banks

in the economy. We now move on to the divide between credits granted to the public sector and those granted to the private sector in relation to GDP.

Referring to the work of Ouni (2011) and Eggoh (2010), it is essential to study the loans distributed to the private sectors because they reflect the degree of bank's integration in an economy.

Figure N°2: Evolution of credits granted to the public sector and credits reported to the private sector compared to GDP in %



Source: calculated by us based on BA data for credits and based on ONS data for GDP.

This figure indicates an unequal distribution between credits granted to the public sector and those granted to the private sector.

Credits granted to the private sector are experiencing positive developments, but remain low.

The private sector had been marginalized by the public authorities since 1962; the establishment of the investment code in 1966 provided for severe control of this type. To remedy this and deal with the unfavorable consequences of centralized planning, the authorities promulgated Law 82-11 relating to productive investment, which brought improvements with respect to the private sector. It has, therefore, established prior and compulsory approval for all private investment and increased the ceiling for bank financing.

However, these measures did not revive credits to the private sector. Thus, favoring the public sector to the detriment of the private sector has long hampered Algerian economic growth.

This low share of private sector financing by banks, particularly during the 1990s, can be explained by a risky climate which discouraged the launch of investment projects. Add to this a reluctance of banks to lend and the absence of risk-taking on their part, caused by the significant share of unproductive credits granted to state-owned companies.

However, this situation was reversed from 2000, credits to the private sector increased from 28% of total credits in 2000 to 55.5% in 2006, they experienced a considerable drop in 2009 following the ban on credits for household consumption. Noting that this evolution is slow and that it results from State support mechanisms through ANSEJ and ANGEM projects². Which confirms the results of Ouni's work, for whom credits to privates sectors don't have any positive effect on the GDP in developing countries.

²Job creation support system

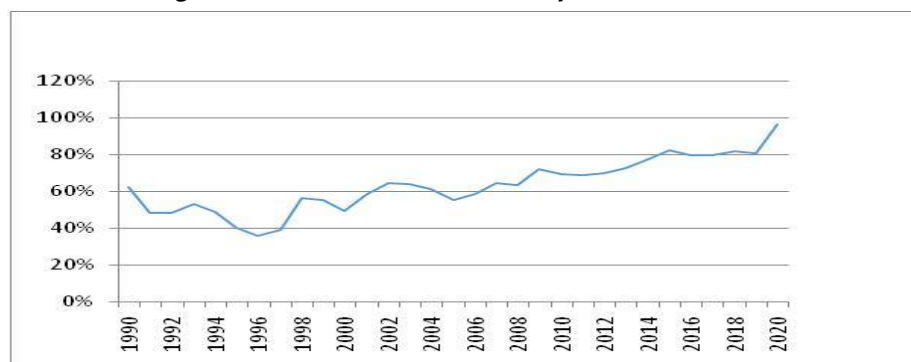
Mohamed Chérif Ilmane (2006) notes that banks are readopting credit activities for the benefit of the economy, which reduces the crowding out effect. Ilmane judges that this effort is timid and insufficient given the importance of the financing needs of the economy and the volume of resources available to the banks. The banking system contributes only weakly to financing the economy.

We notice an increase in the two ratios studied during the decade 2010-2020. Thus, loans granted to the private sector have recorded considerable growth in recent years. Indeed, banks particularly public banks, strongly support the private sector, with loans which amounted to 4124,8 billion dinar at the end of 2020 an increase of 4.8%. But for Benallal and al (2016) despite the cancellation of the policy of supervision and selectivity of bank credits in Algeria, credits to the private sector still remain marginalized due to the decrease in the return on investment in Algeria and the high degree risk associated with these investments

2.2. Liquidity of the economy and economic growth

The liquidity rate of an economy is measured by the M2/GDP ratio. King and Levine, in 1993, were the first to use the M2/GDP ratio to study the impact of financial system on the economic growth of 80 countries over the period 1960-1989. For the two authors, this ratio also makes it possible to study the size and depth of a financial system.

Figure N°3 : Evolution of M2 compared to GDP in %



Source: calculated by us based on BA data for credits and based on ONS data for GDP.

The evolution of the liquidity ratio (M2/GDP) can be studied in three phases:

During the first phase, from 1990 to 1996, the ratio fell considerably. This reflects the weakness of the holding of liquid assets by economic agents as well as the reluctance of banks towards long-term financing. During this phase, the financial system did not really participate in economic growth, which was the result of the increase in hydrocarbon revenues. Indeed, in 1993, Algerian GDP reached 1189.72 billion DA, while non-hydrocarbon GDP reached 872.2 billion DA.

The M2/GDP ratio began to increase from 1997, reaching 65.1% in 2002. During this second phase (1997/2002), the money supply increased significantly in relation to GDP, which means that the The large supply of money does not find an outlet in the real economy. From this, we can deduce that the financial system

still does not participate in economic growth, because this excess in the money supply results from the increase in the counterpart of the money mass, claims on the State.

The phase from 2003 to 2005 has strong similarities with the first phase. It is characterized by a decline in the liquidity ratio and an improvement in economic growth. The latter is raised by the increase in public spending following the increase in hydrocarbon revenues.

From 2006, the liquidity ratio began to increase, recording a rate of 71.5% in 2009, marking its highest level since the start of financial reforms. This expansion of the money supply is behind the upward trend in inflation.

Indeed, Algerian banks have recorded excess banking liquidity since 2001 which results from the consolidation and recapitalization operations of the banks by the Treasury as well as the increase in revenues from hydrocarbon exports. In this situation, the Bank of Algeria regularly intervenes in the money market to absorb part of this liquidity. The oil prices have an important impact on the financial performance of banks, which is no less important than other determinants of financial performance, its have a positive effect and statistical significance on the financial performance of the Algerian banks (Boucheker and Noui, 2023).

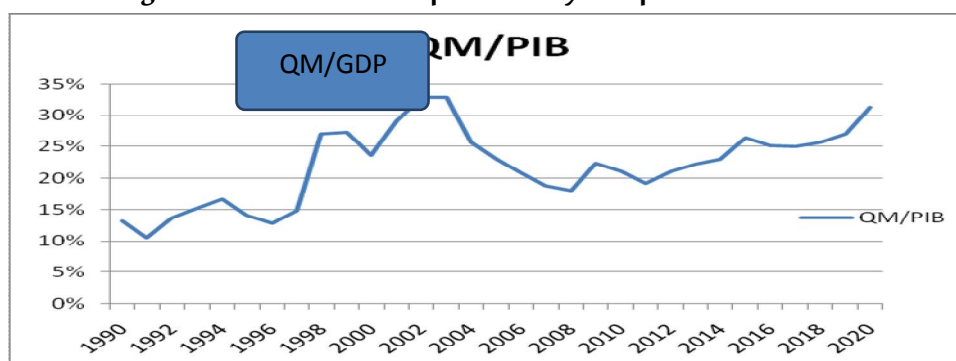
Thus, in 2011, the liquidity ratio reached 72%. However, this excess liquidity comes up against the problem of transforming resources into credit. Indeed, although bank credits granted continue to increase, their improvement nevertheless remains weak compared to the improvement in bank liquidity. In 2011, the total deposits collected by all banks reached 6,733 billion DA, only 3,724 billion were distributed. These credits are mainly intended for state-owned companies.

Despite a slight contrast in 2015 and 2016, the money mass in the M2 sense has experienced, since 2017, a significant increase driven in particular by the sharp increase in demand deposits, nevertheless, these deposits are up to 65% those of national companies of the hydrocarbons.

Having related money supply to GDP, we now relate quasi-money.

Quasi-money relative to real GDP (QM/GDP) tells us the anchoring of banking intermediaries in the economy, since it is through term deposits that they are supposed to finance economic activities.

Figure N° 4: Evolution of quasi-money compared to GDP in %



Source: calculated by us based on BA data for credits and based on ONS data for GDP.

In Algeria, the quasi-money consists essentially of the term deposits. Thus, it is made up of deposits of sectors outside hydrocarbons.

Studying the QM/GDP ratio makes it possible to study the level of monetary savings in Algeria. Thus, this ratio recorded an upward trend from 1990 until 2003, where it reached its highest level which is 33 %, despite some fluctuations. This reflects the importance of mobilized resources, therefore, promoting economic growth. The increase in this ratio, especially during the 1990s, is the result of the interest rate management policy (rate liberalization) and the transformation of visible deposits in term in 1994, which allowed The progressive recovery of credit rates credit until they become positive in real terms in 1997.

At the beginning of the 2000 decade, term currency deposits experienced a significant flight estimated at 32.1 % in 2001, so almost monetary availability increased to raise the QM/GDP ratio to 33 % in 2002.

We note that the studied ratio begins to fall from 2004, despite the increase in currency deposits, (218.9 billion DA in 2004 against 170.8 billion DA in 2003). However, this increase could not compensate for the drop in term deposits which made the quasi-money back and the QM/GDP ratio.

This ratio still recorded a slight increase in 2009 due to the contraction of GDP, under the effect of an external shock due to the financial crisis of 2008.

after that, the QM/GDP ratio is rather stable, in fact, in 2011, the quasi-money decline following the increase in financial savings (excluding fiat currency) of households and public companies. In 2012, term deposits experienced significant growth thanks in particular to term deposits from public companies. These two phenomena neutralize the evolution of the QM/GDP ratio (21% in 2012, 19% in 2011 and 21% in 2012).

During the two years 2016 and 2017, the QM/GDP ratio experienced a significant decline, but it quickly started to rise again from 2018, thanks in particular to term deposits collected by private banks which experienced an increase of up to by 19.3%.

From the above, we tried to explain the decline in the QM/GDP ratio, based on the variation in the quasi-monetary aggregate. However, the weakness of this ratio is also driven by the increase in GDP in Algeria since 2001, through the increase in hydrocarbon revenues.

3. Econometric study of the impact of banking activities on economic growth in Algeria:

To analyze the long-term relationship between the financial system and economic growth in Algeria, we will use the VECM technique.

For this equilibrium relationship to be achieved, the time series must be stationary and integrated of the same order. To create our econometric model, we took into consideration the period 1990-2021, based on the eviews 8 software.

3.1. The model specification:

To build our econometric model, we refer to Beck's work (2009), which summarizes the regression model of the link between the financial system and economic growth as follows:

$$g = \alpha B_i f(i,t) + C(i,t) Y_i + \mu(i) + \varepsilon(i,t)$$

Knowing that:

- g is the gross domestic product
- f is an indicator of financial development
- it is a qualitative index representing the information available
- μ and ε are error terms
- i represents observations and t represents years.

Based on this model we will attempt to measure the impact of financial variables on economic growth. For this we adopt the following model:

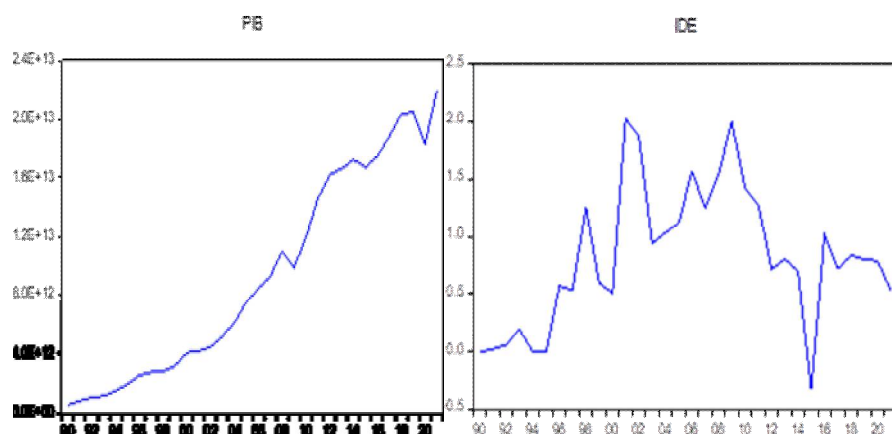
$$PIB = C + \alpha_1 \text{Credit} + \alpha_2 Qm + \alpha_3 \text{Expor} + IDE + \varepsilon_t$$

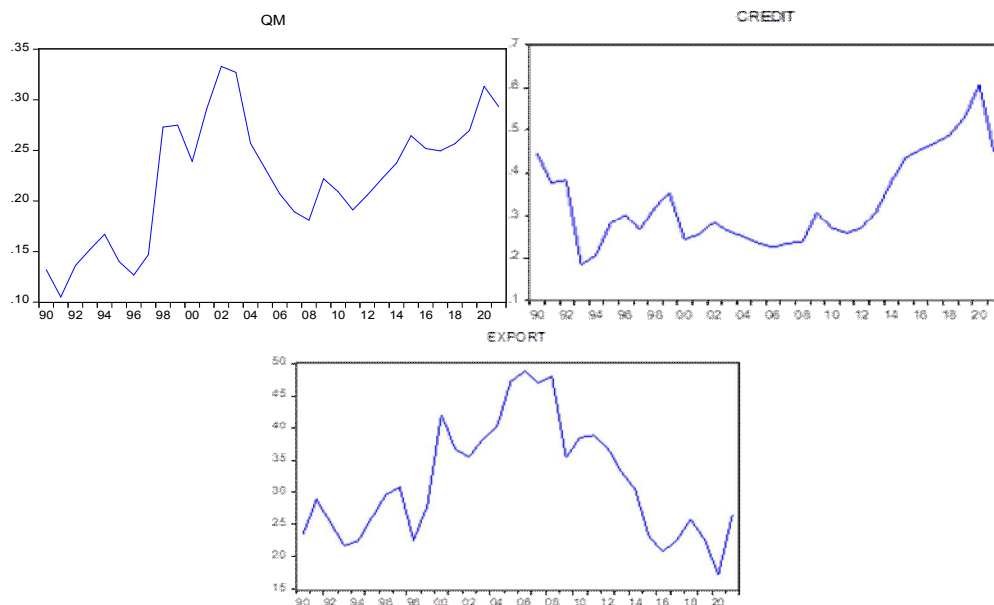
Knowing that :

- **PIB** designates the Algerian Gross Domestic Product and therefore the determining variable of economic growth.
- **Credit** designates credits intended for the Algerian economy and therefore resources channeled to the real economy.
- **QM** stands for quasi money. In Algeria, this aggregate is essentially made up of term deposits, thus it is made up of deposits from non-hydrocarbon sectors.
- **Expor** designates revenues from Algerian exports.
- **IDE** refers to foreign direct investment (net inflows).

• Properties of univariate series

The variables retained present the trends schematized in the figure below.





Series stationarity tests

Variable	Level	1difference	Variable	level	1difference
PIB	-0.268026	-7.220092	PIB	-0.149155	-7.227011
CREDIT	-2.680701	-6.945783	CREDIT	-1.785981	-10.17981
QM	0.529159	-5.653929	QM	0.121829	-5.672794
EXPOR	-1.954451	-8.138366	EXPOR	-1.857354	-8.463128
IDE	2.221155	-8.598817	IDE	-2.199499	-8.572571
Les valeurs critiques					
1% level	-4.156734	-4.161144	1% level	-4.156734	-4.161144
5% level	-3.504330	-3.506374	5% level	-3.504330	-3.506374
10% level	-3.181826	-3.183002	10% level	-3.181826	-3.183002

The analysis of the graphs relating to the evolution of the series, shows us that there is the presence of a positive, negative trend or a stable evolution for all the variables, attesting to the “non-stationarity” of the series. However, on their own, these graphs do not allow us to identify the nature of this non-stationarity nor the order of integration of the series. Hence the need to use statistical tests, in this case that of Augmented Dickey and Fuller (ADF), to specify the nature of the trend and determine the order of integration of each series.

The results obtained from the ADF tests reveal that all the series are not stationary in level. The series become stationary after the first differentiation.

3.2. Cointegration test

Since the series are integrated of the same order, we can perform the Johanson cointegration test. The results of this test indicate the existence of two cointegration relationships between the variables. In fact, according to the Trace test and the maximum eigenvalue test, two critical values are significant at the threshold of 5%.

Thus, the GDP equation, which relates to the rate of economic growth, is given as follows:

$$PIB = -6,6905 CREDIT + 3,9408 QM + 0,0008 EXPORT + 0,2482 IDE$$

These first results show that credit has a negative impact on GDP, while all other variables are positively linked with GDP.

3.3. Estimation of a VECM

The existence of cointegration relationships allows us to estimate an error correction model (VECM).

The two cointegration relationships are given in the following equations:

$$PIB_{t-1} = 0,13 QM_{t-1} + 0,09 EXPORT_{t-1} - 1,54 IDE_{t-1}$$

$$CRDIT_{t-1} = -0,56 QM_{t-1} + 0,01 EXPORT_{t-1} - 0,26 IDE_{t-1}$$

• Significance of VECM model parameters

The meaning of the parameters of this model can be studied as follows:

- For the first cointegration relation

We note that the error correction terms relating to the GDP and FDI variables are negative and significant (their t-statistic is greater than 1.96), which reflects that these variables are characterized by a return towards the long-term target. Whereas, the error correction terms for the credit, quasi-money and export variables are not significant.

- For the second cointegration relation

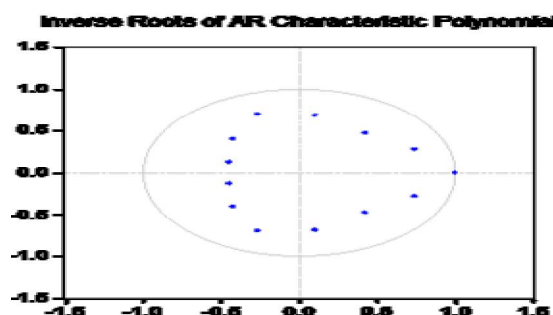
The error correction terms relating to the two variables quasi-money and FDI are positive and significant. So these variables are not characterized by a return to the long-term target. However, the error correction terms of the other variables (GDP, CREDIT, EXPORT) are not statistically significant.

The equation for GDP is presented as follows:

$$D(PIB) = 0.499689 D(PIB)_{t-1} + 0.196436 D(PIB)_{t-2} + 10.07362 D(CREDIT)_{t-1} - 12.09184 D(CREDIT)_{t-2} - 5.616272 D(QM)_{t-1} - 7.125307 D(QM)_{t-2} + 0.045099 D(EXPORT)_{t-1} - 0.070165 D(EXPORT)_{t-2} - 0.534683 D(IDE)_{t-1} - 0.310155 D(IDE)_{t-2} - 0.055695$$

• Model validity test

• Test on the stability of the model



In order for a VECM model to be globally stable, the roots of the polynomials of this model must be inside the unit circle of the complex plane. Which amounts to saying that the variables retained form a stationary dynamic system. The results of this test are shown in the following graph.

The results clearly show that all the points representative of the unit roots are inside the unit circle. This allows us to confirm the overall stability of our estimated model.

• The test on the residuals of the model

The test on the residuals consists of checking whether the latter are not correlated. There are several tests for the absence of correlation. We retained two: the correlation matrix of the forecast error residuals and LM-test of auto-correlation.

Table n° 01: The residual correlation matrix

<i>Residual Correlation Matrix</i>					
	PIB	CREDIT	QM	EXPORT	IDE
PIB	1.000000	0.086458	0.156907	-0.441099	0.359302
CREDIT	0.086458	1.000000	0.538915	-0.737974	-0.085869
QM	0.156907	0.538915	1.000000	-0.819499	-0.172282
EXPORT	-0.441099	-0.737974	-0.819499	1.000000	-0.040689
IDE	0.359302	-0.085869	-0.172282	-0.040689	1.000000

We notice through the results of this table that, apart from the main diagonal, which corresponds to the correlation between the variables themselves, the other coefficients are significantly less than 1, confirming that the residuals are not correlated. The LM autocorrelation test below further confirms this conclusion.

Table no. 02: Autocorrelation test of residuals

VEC Residual Serial Correlation
LM Tests
Null Hypothesis: no serial
correlation at lag order h
Date: 05/02/23 Time: 19:56
Sample: 1990 2021
Included observations: 29

Lags	LM-Stat	Prob
1	20.33924	0.7288
2	18.10382	0.8380
3	16.18042	0.9093
4	14.18622	0.9584
5	18.83562	0.8049
6	33.47234	0.1197
7	21.99994	0.6357
8	28.29775	0.2943
9	17.19026	0.8748
10	13.05035	0.9759
11	24.54607	0.4880
12	21.82602	0.6458

Probs from chi-square with 25
df.

The LM-autocorrelation test indicates that, for all the delays, the hypothesis H0 of absence of autocorrelation cannot be rejected. Indeed, LM-stat is lower than the Chi 2 value at the 5% risk level (37.65). These results confirm that the residuals are not correlated.

2.4. Interpretation of results

Bank loans constitute the main source of financing for the Algerian economy. They constitute 99% of credits intended for the economy. This is due to the absence of other sources of financing the economy, such as a developed financial market and investment banks, while the financing needs of companies are increasing year by year.

Credits granted to the private sector have, for a long time, been marginalized in favor of credits to the public sector. This hampered Algerian economic growth. However, this situation began to be reversed from 2006, thanks in particular to State support mechanisms through ANSEJ and ANGEM projects. But according to our results, these credits do not have a positive outcome in the real economy.

Quasi-currency has a negative impact on GDP, according to the cointegration test, which reflects that non-hydrocarbon deposits do not revive economic growth in Algeria. The rest of the tests reveal an almost zero impact of the same variable. We thus see the tiny role of monetary savings in the economy.

Concerning the variables of the real economy; we note a significant positive impact of exports at "t-1" on the variation of GDP "D(GDP)", moreover the variance of GDP depends on export innovations to the tune of 30%. As a result, the latter occupy a major place in the Algerian economy. In 2014, they constituted 30.52% of GDP. However, this figure has been in continuous decline over the last decade (48.81% in 2006).

Hydrocarbons represent the bulk of these exports with a share of 95.54% in 2014, and a decrease of 4.47% compared to 2013. Non-hydrocarbon exports, which remain marginal, with only 4.46 % of the overall volume with an increase of 39.52% compared to 2013.

Belkacem et al. (2016), by conducting empirical test on the effect of financial liberalization on economic growth in Algeria, found that despite the reforms carried on in the financial sector since the 1990s, the banking system still needs modernization to contribute to the process of development. The improvement of the financial system is needed to cut the dependence of the Algerian economy on the hydrocarbon sector, which contributed over 25 per cent to overall growth.

Finally, the impact of FDI on GDP, according to the series of tests carried out and despite a positive Granger test, is minimal compared to the other variables studied (5% of the variance in GDP is due to FDI innovations). These investments represented, in 2014, 0.7% of GDP compared to 1.3% in 2013.

Algeria offers several advantages to foreign investors, notably thanks to its qualified and cheap labor force and its strategic geographical position. However, in recent years, administrative constraints and the legislation put in place (the LFC of 2009 requires the rule of the national majority 51/49%) have reduced FDI in Algeria. They increased from \$2.9 billion in 2009 to \$1.4 billion in 2014 (BA Report 2014).

We note, through our econometric analysis, that faced with strategic activities such as exports, the involvement of the banking system in economic recovery is still not an Algerian reality.

4. Conclusion

In this present work, we tried to study the impact of banking activities on the Algerian economy. Despite a certain improvement in the indicators used in our study, the role of the banking system remains marginal in the Algerian economy. To this end, banking activities do not constitute an important factor in economic growth.

Our work has allowed us to identify numerous constraints and vulnerabilities from which the banking sector in Algeria suffers and which minimizes its role.

These constraints are linked to the structure and nature of the Algerian banking system, as well:

- The six public banks continue to play the essential role of provider of financial funds.
- Public banks owe their profitability and liquidity to the recurring support of the hydrocarbon sector, as a result, the banking system is very sensitive to oil shocks.
- The activities of private banks, all foreign, concentrate on short-term commercial credits.
- Excess liquidity hampered the implementation of an effective monetary policy and accentuated the risks of inflation during the oil shock period (2002-2014).

Furthermore, we note numerous gaps and inadequacies in banking activities, the credit policy is the most concerned:

- Inequality in the credit distribution policy between the public sector and the private sector. Indeed, public companies were favored, in particular, during the 1990s. However, in recent years, the rate of financing of the private sector has recorded a considerable increase, driven by State support mechanisms through projects (ANSEJ / ANADE and ANGEM).
- The marginalization of long-term credits and the preference for short and medium-term financing on the part of private banks and public banks.
- The absence of specialized financial institutions such as merchant banks and venture capital companies.
- The underdevelopment of microcredit in Algeria, loans are granted by the ANGEM system are supported by the banking system, which slows down the emergence of microfinance in Algeria.

Credit risk is the most important risk in the financial sector. To this end, the IMF, in its 2014 report, underlines that in Algeria, the concentration of credit and more particularly that of loans are the main banking risks, and that public banks are the most vulnerable. The biggest clients of these same banks are large state-owned enterprises in different sectors (industry, construction and commerce), which makes them vulnerable to specific shocks for each company and each sector.

The failure of the role of the banking system in the economy can also be linked to the nature of the economy itself.

The Algerian economy is of the rentier type, to this end, the volatility of hydrocarbon revenues continues to affect the non-hydrocarbon economy and its growth. Indeed, the hydrocarbon sector is the pillar of the Algerian economy, the financial prosperity that Algeria has experienced in recent years is the work of this sector. Furthermore, the importance of the role of the State in the economy due to the social and political instability of the country and the lack of diversification of the economy further weakens the Algerian economic fabric.

The challenge facing Algeria today consists of developing its financial system, by reforming it radically in its structure and in its activities in order to give it a primordial role in economic growth and to enable it to constitute an alternative to the hydrocarbon sector.

5. Bibliography

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Appendix n°1 : test ADF

1. Le PIB

Null Hypothesis: PIB has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.574373	0.4603
Test critical values:		
1% level	-2.641672	
5% level	-1.952066	
10% level	1.610400	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(PIB) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	4.688743	0.0041
Test critical values:		
1% level	-4.296729	
5% level	-3.568379	
10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

2. Le credit

Null Hypothesis: CREDIT has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-	-
Test critical values:		
1% level	2.041672	
5% level	1.952066	
10% level	1.610400	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(CREDIT) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-	-
Test critical values:		
1% level	4.296729	
5% level	3.568379	
10% level	3.218382	

*MacKinnon (1996) one-sided p-values.

3. Les IDE

Null Hypothesis: IDE has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.421163	0.1417
Test critical values:		
1% level	-2.641672	
5% level	-1.952066	
10% level	-1.610400	

*MacKinnon (1996) one-sided p-values.

4. Les EXPORT

Null Hypothesis: EXPORT has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.359711	0.5469
Test critical values:		
1% level	-2.641672	
5% level	-1.952066	
10% level	-1.610400	

*MacKinnon (1996) one-sided p-values.

5. La QM

Null Hypothesis: QM has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.339467	0.7770
Test critical values:		
1% level	-2.641672	
5% level	-1.952066	
10% level	-1.610400	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(IDE) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.038167	0.0002
Test critical values:		
1% level	-4.309824	
5% level	-3.574244	
10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EXPORT) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.120944	0.0015
Test critical values:		
1% level	-4.309824	
5% level	-3.574244	
10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(QM) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.682794	0.0040
Test critical values:		
1% level	-4.296729	
5% level	-3.568379	
10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Appendix n°2 Cointegration Test

Date: 05/02/23 Time: 18:27
Sample (adjusted): 1993 2021
Included observations: 29 after adjustments
Trend assumption: Linear deterministic trend
Series: PIB CREDIT QM EXPORT IDE
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.920160	137.7310	69.81889	0.0000
At most 1 *	0.718006	64.42687	47.85613	0.0007
At most 2	0.437784	27.71663	29.79707	0.0853
At most 3	0.310904	11.01643	15.49471	0.2105
At most 4	0.007474	0.217564	3.841466	0.6409

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.920160	73.30410	33.87687	0.0000
At most 1 *	0.718006	36.71024	27.58434	0.0026
At most 2	0.437784	16.70020	21.13162	0.1866
At most 3	0.310904	10.79887	14.26460	0.1646
At most 4	0.007474	0.217564	3.841466	0.6409

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Appendix n°3 VECM estimation

Vector Error Correction Estimates

Date: 05/02/23 Time: 18:54

Sample (adjusted): 1993 2021

Included observations: 29 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1	CointEq2			
PIB(-1)	1.000000	0.000000			
CREDIT(-1)	0.000000	1.000000			
QM(-1)	0.134577 (3.41909) [0.03936]	-0.568899 (0.37563) [-1.51453]			
EXPORT(-1)	0.095183 (0.03266) [2.91479]	0.014100 (0.00359) [3.93015]			
IDE(-1)	-1.545432 (0.56185) [-2.75063]	-0.268086 (0.06173) [-4.34319]			
C	-31.82715	-0.408095			
Error Correction:	D(PIB)	D(CREDIT)	D(QM)	D(EXPORT)	D(IDE)
CointEq1	-0.628688 (0.14090) [-4.46204]	-0.017726 (0.02083) [-0.85114]	-0.019818 (0.01016) [-1.95135]	-0.703928 (1.83001) [-0.38466]	-0.300292 (0.12645) [-2.37470]
CointEq2	2.500526 (1.81984) [1.37404]	0.028362 (0.26899) [0.10544]	0.318304 (0.13117) [2.42657]	2.584348 (23.6366) [0.10934]	4.935978 (1.63330) [3.02209]
D(PIB(-1))	0.499689 (0.16911) [2.95485]	-0.015277 (0.02500) [-0.61117]	0.018136 (0.01219) [1.48783]	0.584603 (2.19643) [0.26616]	0.248025 (0.15177) [1.63417]
D(PIB(-2))	0.196436 (0.08435) [2.32877]	-0.006885 (0.01247) [-0.55225]	0.002145 (0.00608) [0.35280]	0.079825 (1.09559) [0.07286]	-0.074310 (0.07571) [-0.98156]
D(CREDIT(-1))	10.07362 (4.15449) [2.42475]	-0.482972 (0.61407) [-0.78651]	-0.685633 (0.29946) [-2.28958]	5.861238 (53.9599) [0.10862]	-10.68775 (3.72866) [-2.86638]
D(CREDIT(-2))	-12.09184 (4.34021) [-2.78601]	0.194125 (0.64152) [0.30260]	-0.317800 (0.31284) [-1.01584]	-32.66495 (56.3720) [-0.57945]	-4.543684 (3.89533) [-1.16644]
D(QM(-1))	-5.616272 (4.09519) [-1.37143]	0.074539 (0.60530) [0.12314]	0.190384 (0.29518) [0.64497]	-44.00357 (53.1896) [-0.82730]	0.607002 (3.67543) [0.16515]
D(QM(-2))	-7.125307 (3.80078) [-1.87470]	-0.685711 (0.56178) [-1.22059]	-0.064445 (0.27396) [-0.23523]	82.09715 (49.3658) [1.66304]	-1.677692 (3.41120) [-0.49182]
D(EXPORT(-1))	0.045099 (0.04011)	-0.002675 (0.00593)	-0.003672 (0.00289)	-0.167541 (0.52101)	-0.045627 (0.03600)

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	[1.12429]	[-0.45114]	[-1.26984]	[-0.32157]	[-1.26734]
D(EXPORT(-2))	-0.070165 (0.03624) [-1.93611]	-0.000316 (0.00536) [-0.05899]	-0.001153 (0.00261) [-0.44132]	-0.112223 (0.47070) [-0.23842]	-0.014880 (0.03253) [-0.45748]
D(IDE(-1))	-0.534683 (0.24341) [-2.19667]	-0.018085 (0.03598) [-0.50269]	0.034208 (0.01754) [1.94974]	1.252125 (3.16144) [0.39606]	-0.104145 (0.21846) [-0.47673]
D(IDE(-2))	-0.310155 (0.19833) [-1.56382]	-0.021324 (0.02931) [-0.72741]	0.020010 (0.01430) [1.39972]	1.505930 (2.57600) [0.58460]	-0.013221 (0.17800) [-0.07428]
C	-0.055695 (0.10211) [-0.54544]	0.005353 (0.01509) [0.35466]	0.010394 (0.00736) [1.41222]	-0.041518 (1.32625) [-0.03130]	0.126448 (0.09164) [1.37976]
R-squared	0.933785	0.397221	0.530135	0.343225	0.710352
Adj. R-squared	0.884123	-0.054863	0.177736	-0.149357	0.493117
Sum sq. resids	3.206202	0.070046	0.016658	540.8748	2.582613
S.E. equation	0.447647	0.066166	0.032267	5.814179	0.401763
F-statistic	18.80298	0.878643	1.504361	0.696787	3.269961
Log likelihood	-9.217188	46.22628	67.05201	-83.57465	-6.081052
Akaike AIC	1.532220	-2.291468	-3.727725	6.660321	1.315935
Schwarz SC	2.145146	-1.678542	-3.114799	7.273246	1.928860
Mean dependent	-0.212600	0.002186	0.005421	0.043601	0.016227
S.D. dependent	1.315034	0.064422	0.035583	5.423266	0.564307
Determinant resid covariance (dof adj.)	2.85E-07				
Determinant resid covariance	1.46E-08				
Log likelihood	55.87209				
Akaike information criterion	1.319166				
Schwarz criterion	4.855276				