

## Financial liberalization and economic growth: The case of Algeria

**Mohammed BENZAZZA**

University Centre of Maghnia, Tlemcen, Algeria  
benazza.mohammed@yahoo.fr

**Djahida LAYATI**

University of Abou Bakr Belkaid, Tlemcen, Algeria  
djahida.layati@univ-tlemcen.dz

**Abstract.** *This study's objective is to investigate how financial liberalization affected Algeria's economic growth from 1990 to 2020 using ARDL model. The study discovered that although trade openness, foreign direct investment, money supply, and credit to the private sector all have a positive relationship with economic growth, the effect is only temporary. In contrast, inflation has an inverse relationship with economic growth. The KAOPEN rate also has a non-significant relationship with economic growth because of its stable value over the study period. In the short run, the economy is significantly impacted by the money supply and trade openness.*

**Keywords:** financial liberalization, financial and monetary reform, Algerian economy, economic growth, ARDL model.

**JEL Classification:** G28, E04, E05.

## 1. Introduction

Financial system liberalization policies from the restrictions imposed on it have become a reality and a need, as a result of the developments in financial transactions. Numerous economists and thinkers with expertise in this field have recently done studies that demonstrate how the liberalization of financial variables substantially improves various economic indicators, particularly economic growth. Several international organizations, like the World Bank (WB) and the International Monetary Fund (IMF), have also called for reforms aimed at freeing financial variables to accelerate rates of global growth. Despite the criticism leveled at it for failing to implement these reforms, which have catastrophic effects on the social and even economic sectors, particularly in developing countries where their economic systems are distorted,

Debates on the relationship between financial liberalization and economic growth have been more common recently because of the important the subject. Several studies came out with different results. For example, (Xun, 2022, pp. 101-122) found that reducing financial barriers and allowing access to foreign finance are important ways in which domestic financial liberalization affects investment sensitivity and increases economic growth rates, this result was confirmed by (Zhenhui and Sudeshna, 2022, pp. 578-588) that financial liberalization policies enhance the productivity of the industrial sector and thus increase investor motivation. In other study, (Ousmanou, 2017, pp. 73-83) concluded that the growth impact of financial liberalization also depends on external and macroeconomic stability, as well as a strong institutional foundation, and work to achieve important results in secondary education, macroeconomic stability (through controlling inflation rates), a stable external environment (controlling external debt), and governance.

Beginning in 1990, Algeria, like other nations, implemented economic reforms, including the liberalization of the banking and financial system and the creation of a financial market under the guidance of the International Monetary Fund, according to strict conditions. These reforms had a significant impact on the social and economic sector, between what is positive and what is negative.

Our research focuses on the following main question: What is the impact of Financial Liberalization Policy on Economic Growth Performance in Algeria during the period 1990-2020?

In order to answer the main research question, this study aims to examine the most important theoretical aspects of the subject of liberalizing financial system variables and its contribution to economic growth. This study provides us with an insight of Algeria's experiences throughout that time period. With the help of the International Monetary Fund, improvements to the banking sector and the development of Algeria's capital market started in 1990.

Through this study, we also want to test the impact of liberalizing financial indicators on economic growth in Algeria between 1990 and 2020 using the (ARDL) approach to determine the effectiveness of financial reforms over the study period.

The organization of this paper is as follows: we examine the previous research literature in the second section. In contrast, the third chapter discusses background: Algeria's economic growth rate and financial reform. We present the study's data, model, and methods in Section 4. Finally, we give the most important results and policy recommendations in Section 5.

## 2. Literature review

Financial liberalization has been studied by several authors. Esteves (2013), for example, argued that the first wave of financial liberalization at the beginning of the twentieth century and its subsequent collapse after World War I. A new era of financial integration has existed since the 1970s. Moreover, Gehringer (2013) argues that financial liberalization has important economic effects, especially in terms of financial market regulation, Optimum allocation of resources, and improved conditions for obtaining foreign finance.

The link between financial liberalization and economic growth in the literature is still up for debate, nevertheless, because of contradicting theoretical and empirical evidence. While previous research shows that liberalization decreases capital costs, increases risk sharing, encourages higher investment, and accelerates economic growth, other studies have shown that it may also have a negative effect on growth and disturb the financial system.

Financial liberalization policies and economic growth have long been the subject of research. Numerous studies have been conducted on the role of financial liberalization in accelerating economic growth, particularly in developing countries, and they study this relationship both theoretically and empirically. The original studies on the subject came to clarify the roots of the phenomenon, as both (McKinnon, 1973) and (Shaw, 1973) underlined that interest rates in the banking system needed to be liberalized in order to promote economic growth. This is because unduly low interest rate ceilings restrict the real flow of loanable funds, reducing the quantity and quality of productive investment.

Since McKinnon (1973) and Shaw (1973) published their important works on the subject of economic growth and financial liberalization, a large number of economists have discussed these topics. For example, (Basant, 1983, pp. 41-62) found that the best combination of monetary policy tools to achieve internal and external balance without inflation, by removing restrictions in front of the pace of monetary growth, the interest rate on bank deposits, and the amortization rate of the real exchange rate, both of which contribute to a significant boost to economic growth. Mathieson (1980) indicates that financial reform results in favorable changes to deposit rates, the lending ceiling, and the monetary growth rate. However, the studies of (Charlier and Oguie, 2002, pp. 355-380) suggest that higher real deposit interest rates promote greater investment and quicker economic growth.

According to different results, (Bumann et al., 2013, pp. 255-281) indicated that financial liberalization contributes positively to economic growth, but this effect is not noticeable. In other study, (Abdullahi, 2013, pp. 261-273) showed that, after controlling for

macroeconomic factors, particularly institutional quality and inflation, financial liberalization had a beneficial impact on resource mobilization and economic growth in sub-Saharan Africa. In fact, the study shows the effects of tougher reforms for nations with better legal systems, property rights protections, and greater levels of human capital. And this is confirmed by (Njikam, 2017, pp. 73-83) conducted a study on financial liberalization in sub-Saharan countries, through an empirical analysis. The study concluded that financial liberalization is likely to support economic growth in the region through complementary reforms at the macroeconomic level and the achievement of external stability.

This result was also confirmed by (Mamoon and Howard, 2017, pp. 1-18) that the liberalization of the financial sector aims to stimulate economic growth and have positive effects on the financial system by creating a more efficient banking sector.

But according to a different vision, (Rachdi et al., 2018, pp. 810-826) did so in a study on the relationship between financial liberalization, the banking crisis and economic growth. Through a sample of 15 MENA countries during the period 2000-2013. The study indicated that financial liberalization has improved levels of economic growth, while the banking crisis has caused undesirable effects. According to recent studies that delved into the methods of liberalizing financial variables that are feasible in stimulating economic growth.

(Bumann et al., 2013, pp. 255-281) examine the linkages between financial development, financial instability, financial liberalisation and economic growth in 41 African nations during the period 1985-2010. The findings imply that financial liberalization and growth have beneficial impacts on financial instability. The results also show that economic expansion lessens financial instability, and that this effect is more pronounced in the pre-liberalization era than in the post-liberalization age.

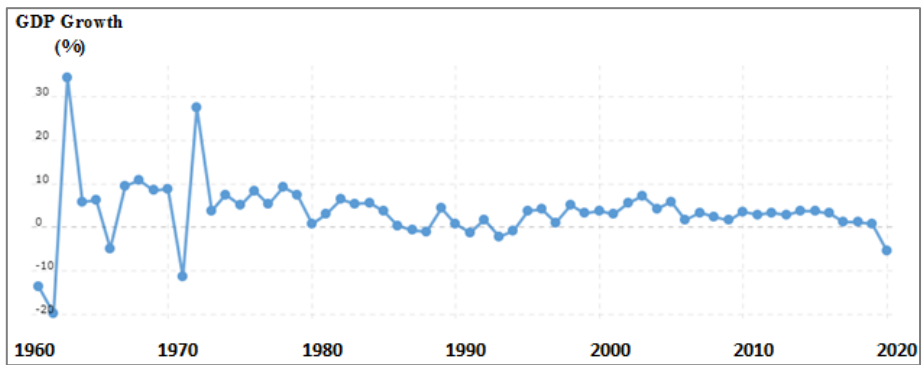
While (Moshirian et al., 2021, pp. 985-1014) find by study on liberalization of financial market how three economic channels – financing, risk-sharing, and corporate governance – underlie the beneficial effects of stock market deregulation and stimulate economic growth. In other paper, (Kuzman et al., 2022) that dealt with the relationship between liberalizing capital flows, macro-prudential policies, and credit cycles in emerging market economies. Using quarterly data from 16 developing markets. (Lwesya and Ismail, 2021, pp. 241-256) argued that the relationship between financial development and private sector investments is positive and important in achieving economic growth.

### 3. Background: the economic growth rate and the financial reform in Algeria

Even though Algeria has one of the important economies in North Africa, the price of oil continues to have a major impact on the country's economy. In actuality, the hydrocarbon industry generates more than 30% of GDP, 97% of exports, and more than 60% of government income. But between 1998 and 2008, Algeria was able to reduce its external debt from 60% of GDP to 5% because to oil revenues (Jewell et al., 2014).

From 1960 to 2020, the economic growth rate had a number of changes at different stations. This volatility can be described as follows:

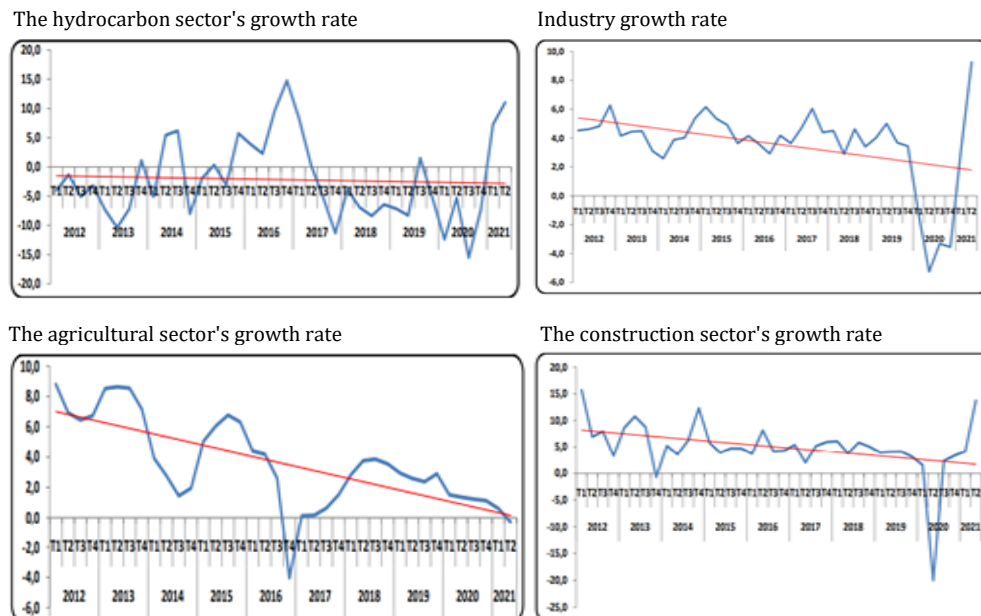
**Figure 1.** Real GDP growth (Annual percent change)



Source: World Bank, 2022.

After independence in 1962, Algeria had rapid economic growth due to the diversification of its economy into hydrocarbons, agriculture, and industry. While Since the 1990s till the present, the economic growth rate has been fluctuating periodically due to changes in the hydrocarbon industry (oil price fluctuations and OPEC control) (Oxford Business Group, 2018). The rate of overall economic growth has been impacted by the increasingly reduction in the growth of the other four economic sectors that compose the GDP: industry, agriculture, public works, and services. Figure 2 shows the fluctuations in the growth of this economic sectors as follows:

**Figure 2.** Growth rates of economic sectors in Algeria



Source: World Bank, 2022.

The sectors contributing to overall growth in Algeria, especially the hydrocarbons industry, are impacted by external factors brought on by changes in oil prices and production rates enforced by OPEC. The agriculture sector is known for enduring changes as a result of the impacts of the dry season. The underdevelopment of the public industrial sector, which carries a large amount of weight, also contributes to a continuing decline. The public works and services industries are also subject to seasonal changes.

The sequence of crises on the Algerian economy caused slow growth rates in a number of economic sectors were the financial and security crisis of the 1990s, continuous oil price declines, and the effects of the 2008 financial crisis.

Algeria started a series of reforms in the early 1990s to accelerate the economic growth rate by reforming the monetary system's structure and how monetary policy instruments were used. In collaboration with the IMF, the following modifications were implemented as elements of this reform:

- Algeria adopted Law No. 90/10 of money and credit on April 14, 1990, which focused on the reinforcing the Central Bank independence and the activation the monetary policy function. Through this reform, the banking system was separated from the public treasury, and a major role was given to banks in financing investments and stimulating economic growth.
- Banking reform in 2003 through Ordinance No. 03/11, relating to money and credit due to the “El Khalifa” Bank crisis. Through this reform, the banking sector has been more organized.
- Reform of the year 2010 by amending Order No. 11/03 due to the repercussions of the 2008 financial crisis.
- The monetary reform in 2017, due to the tumbled of Oil price. This reform came with the aim of implementing the quantitative easing policy to stimulate economic growth.

#### 4. Data, model and methodology

##### 4.1. Data description and Model specification

The study focused on the descriptive and quantitative approaches for estimate. The study's data I includes the variables that follow: CPS, GDP, FDI, INF, M<sub>2</sub>, and To. They were obtained from: the World Bank database, the Algerian Ministry of Finance, the National Bureau of Statistics (NBS), and other sources. While the KAO (kaopen index data) variable was obtained from The (Chinn and Ito, 2021). We tested using the Eviews 12 program and used yearly data from 1990 to 2020.

**Table 1.** Summary of study data and sources

Variable	Description	Source
GDP	Real gross domestic product growth rate (%):	-World Bank
CPS	Credit to the private sector (% of GDP)	<a href="https://data.worldbank.org/indicator">https://data.worldbank.org/indicator</a>
FDI	The Foreign Direct Investment Inward flows (% of GDP)	-Algerian Ministry of Finance
INF	Inflation rate (%)	<a href="https://www.mf.gov.dz/">https://www.mf.gov.dz/</a>
M <sub>2</sub>	Money supply;	-National Bureau of Statistics (NBS)
To	Trade openness rate.	<a href="http://www.ons.dz/">http://www.ons.dz/</a>
KAO	KAOPEN degree of capital account openness	-The Chinn-Ito Index <a href="http://web.pdx.edu/~ito/Chinn-Ito_website.htm">http://web.pdx.edu/~ito/Chinn-Ito_website.htm</a>

**Source:** Summarized by the authors.

The type of model that should be constructed will depend on the characteristics of the Algerian economy, the accessibility of the data and the intended results. Our main equation of model includes seven explanatory variables, which affect Algeria's GDP growth, this model can be written as:

$$GDP = \beta_0 + \beta_1 CPS + \beta_2 FDI + \beta_3 INF + \beta_5 M2 + \beta_6 To + \beta_4 KAO + \varepsilon$$

The dependent variable of this study is GDP. The independent variables of this study are: CPS (% of GDP); FDI (% of GDP); INF (%), KAO (% of GDP); M<sub>2</sub> (% of GDP); To (% of GDP).

#### 4.2. Methodology

The study's author estimates the effect of financial liberalization policy on the performance of economic growth utilising evidence from Algeria. The Autoregressive Distributed Lag (ARDL) model is used in this study to estimate the previous equation, in contrast to other studies that have preferred to use the method of simple OLS estimation.

The Autoregressive Distributed Lag (ARDL) model developed by (Pesaran and Shin, 1995), is one of the most widely used and approved econometric methods of analysis. It is necessary for the variables to be stable at various levels. With the exception of the second difference, the model has a lot of characteristics. It is effective with little samples. ARDL approach is used for the analysis of long run relations when the underlying variables included in the equation (1). The general ARDL model can be written as:

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^p \varphi_i y_{t-i} + \beta' x_t + \sum_{i=0}^{q-1} \beta_i' \Delta x_{t-i} + u_t \quad (1)$$

$$\Delta x_t = P_1 \Delta x_{t-1} + P_2 \Delta x_{t-2} + \dots + P_s \Delta x_{t-s} + \varepsilon_t \quad (2)$$

Where  $x_t$  is the  $k$ -dimensional of (1) variables that are not cointegrated among themselves,  $u_t$ , and  $\varepsilon_t$  are serially uncorrelated disturbances with zero means and constant variance-covariances, and  $P_j$  are  $k \times k$  coefficient matrices such that the vector autoregressive process in  $\Delta x_t$  is stable. We also assume that the roots of  $1 - \sum_{i=1}^p \varphi_i z^i = 0$  all fall outside the unit circle and there exists a stable unique long-run relationship between  $y_t$  and  $x_t$ .

### 5. Empirical result and discussions

#### 5.1. Description statistics

Table 2 presents the results of descriptive statistics for the study variables as follows:

**Table 2.** Results of the descriptive statistics for the study variables

	CPS	FDI	GDPG	INF	M2	To	KAO
Mean	15.77065	0.826129	2.461290	8.602581	61.11226	58.97710	-1.226155
Median	12.80000	0.810000	3.000000	4.520000	62.72000	58.71000	-1.226155
Maximum	56.14000	2.030000	7.200000	31.67000	96.08000	76.68000	-1.226155
Minimum	3.910000	-0.320000	-5.100000	0.340000	33.01000	44.92000	-1.226155
Std. Dev.	11.84236	0.625970	2.471258	9.328071	16.12198	8.987065	0.000000

**Source:** Authors' calculations based on Eviews 12 program.

Table 2 demonstrates that each variable's minimum and maximum values differ, and that the variables' known changes over the research period are shown. Except for the KAO variable, which is stable because the capital sector has not been liberalized.

### 5.2. Time series stability test

We employ the Augmented Dickey-Fuller (ADF) Test and the Phillips Perron (PP) Test to examine the time series reported in our study's stationarity. The outcomes of the ADF Test are summarized in Table and Table 4 presents the PP Test results as follows:

**Table 3.** Results of ADF Test

	Level				First Differences			
	5% test cv	ADF test stat	Prob	Result	5% test cv	ADF test stat	Prob	Result
GDP	-1.95210	-1.02049	0.266	No	-1.952	-7.5917	0.000	I(1)
INF	-3.56879	-1.91548	0.623	No	-3.572	-5.5804	0.005	I(1)
M2	-1.95273	0.92056	0.901	No	-3.572	-5.1553	0.013	I(1)
CPS	-1.95273	-2.77043	0.007	I(0)				
FDI	-3.56879	-2.68525	0.247	No	-3.586	-5.8381	0.003	I(1)
KAO	-1.95210	-0.00409	0.671	No	-1.959	-9.1615	0.000	I(1)
To	-3.56879	-0.38275	0.983	No	-3.586	-4.9893	0.021	I(1)

**Source:** Authors' estimates based on Eviews 12 program.

**Table 4.** Results of PP Test

	Level				First Differences			
	5% test cv	PP test statistic	Prob	Result	5% test cv	PP test statistic	Prob	Result
GDPG	-3.568379	-1.83119	0.6682	No	-3.574244	-9.07701	0.0000	I(1)
INF	-2.963972	-1.45688	0.5368	No	-1.952910	-5.59860	0.0000	I(1)
M2	-2.963972	-0.09014	0.9602	No	-3.574244	-5.87069	0.0002	I(1)
CPS	-1.952473	-2.64924	0.0099	I(0)				
FDI	-2.963972	-2.64142	0.0953	No	-1.952910	-8.32317	0.0000	I(1)
KAO	-1.952473	-0.00188	0.6743	No	-3.574244	-29.0727	0.0000	I(1)
To	-2.963972	-1.20253	0.6601	No	-3.574244	-4.99757	0.0020	I(1)

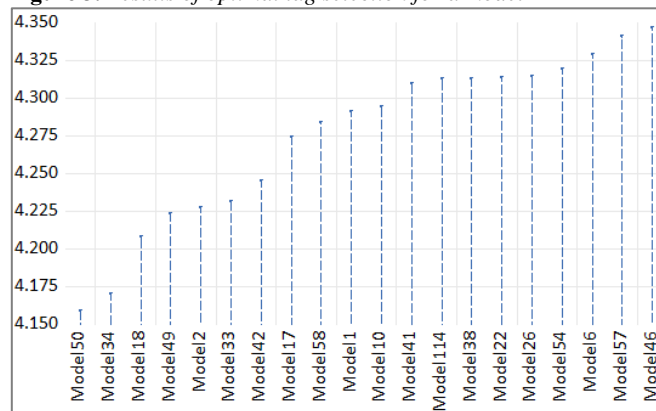
**Source:** The author calculations based on Eviews 12 program.

After testing the stationarity of the study variables according to the (ADF) test and the (PP) test, the two tests agreed on the same result, which is that the time series for the variables: CPS and I are stationary at the level I(0). While the time series of the variables: GDP, INF, M2, FDI, KAO, To are stationary at the first differences I(1). In this case, the study variables are a mixture between I(0) and I(1), we can use the ARDL model in our study.

### 5.3. Optimal lag selection for a model

The figure 3 below presents the results of optimal lag selection for a model as follows:

**Figure 3.** Results of optimal lag selection for a model



**Source:** Authors' estimates based on Eviews 12 program.



From the above graph it is clear that the lowest value of Akaike Criteria represents the degree of delay as follows: (1.0.0.1.1.1.0).

#### 5.4. The bounds test for ARDL model

The Bounds Test indicates the probability of a long-term cointegration relationship where GDP is the dependent variable and CPS, FDI, INF, KAO, M2, and To are the independent variables.

**Table 5.** Results of the bounds test for ARDL Model

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.018551	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9

**Source:** Authors' estimates based on Eviews 12 program.

Through the above results, we compare the value of F-statistic = 3.59 with the upper bound I(1) and the lower bound I(0). If:

- F-statistic > I1 – In this case we assume that there is a cointegration relationship.
- F-statistic < I0 – In this case we assume that there is no cointegration relationship.
- F-statistic > I0 < I1 – The situation is confused, unclear or inconclusive.

In our case, F-statistic = 4.018551 (greater than the values of the upper bound I(1) at 10% = 2.89, and also greater at 5% = 3.21), which means there is a cointegration relationship.

#### 5.5. Estimating long-run and short-run relationship

The next step is to analyze how the factors will impact economic growth over the long term. Table 6 shows the estimation results for the long- run and short-run relationship of the study variables, as follows:

**Table 6.** The estimation results for the long-run relationship

Variable	Coefficient	Std. Error	t-Statistic	P-Values
<b>Long-run analysis</b>				
CPS	-0.113094	0.074318	-1.521764	0.1637
FDI	0.094237	0.970954	-0.313338	0.9285
INF	-0.116696	0.073359	-1.590762	0.3584
M2	0.010685	0.041841	-0.255365	0.9303
To	0.038787	0.065467	0.592462	0.3683
KAO	-34.72373	15.21083	-2.282829	0.0318
C	-38.57892	18.34679	-2.102762	0.0399
<b>Short-run analysis</b>				
GDP (-1)	0.139399	0.249957	0.557693	0.0027
CPS	-0.073386	0.050926	-1.441015	0.1637
FDI	-0.073096	0.805051	-0.090797	0.9285
INF(-1)	-0.064839	0.069118	-0.938092	0.0584
M2(-1)	0.103117	0.035222	-0.088500	0.0303
To(-1)	0.149965	0.054398	0.918508	0.0483
KAO	-28.28075	10.25344	-2.758173	0.0115
CointEq(-1)	-0.860601	0.141091	-6.099609	0.0000
R <sup>2</sup>	0.858623			
Adjusted R <sup>2</sup>	0.758623			
D-W	2.232795			

**Source:** Authors' estimates based on Eviews12 program.

Based on the results presented in the above table, the equation shows the long-term relationship between the study variables as follows:

$$GDP = 38.57 + 0.11CPS + 0.09FDI - 0.11INF + 0.01M2 + 0.03To - 34.72KAO$$

Through this equation, it is clear that the credit provided to the private sector (CPS), have a positive relationship with the economic growth rate in the long-term but the impact is limited. Where every 1% increase in credit provided to the private sector will increase the economic growth rate by 11%. This positive result is related to Algeria increasing the quantity of money loaned to the private sector, in view of its objective to Increase investment and stimulate economic growth during the research period. As for the foreign direct investment (FDI) variable, where if the event shock in FDI by 1%, the economic growth rate will increase by 9%. What explains the limited impact of FDI on economic growth. This happens to reflect Algeria's current economic situation. According to (World Bank, 2022), Algeria did not receive a big volume of foreign investments, with the maximum percentage reaching 2% of the GDP in 2001. This is a result of the declining security situation in the 1990s and the unattractive business environment for a large number of foreign investors. Money supply (M2), is an important variable, has a positive relationship with the economic growth rate, but the effect is very small; for example, if the M2 money supply increases by 1%, the economic growth rate advances by 0.01%. The interpretation of this result is that monetary expansion in Algeria always has a minimal impact on economic growth due to the allocation of this money supply for consumer purposes and the Central Bank's uncontrolled issuance of currency, which promotes inflationary gaps rather than encourages economic growth, as was the case in 2017.

As for the inflation variable (INF) has an inverse relationship with the economic growth rate (GDP), where if the INF increases by 1%, the economic growth rate will decrease by 0.11%, the negative impacts of INF on sustainable economic growth and national economic security have become increasingly prominent, such as the Rising prices, the weakening of the Purchasing power of individuals and slow economic growth. On the other hand, the variable of trade openness (To) rate has a Positive relationship with the economic growth rate (GDP), where if the To increases by 1%, the economic growth rate will improve by 0.038%, but the effect is very limited. While the Kao index has a very weak and insignificant effect due to the stability of this indicator, during the research period

In the next stage, we determine the effect of the variables concerned in the Short run on the rate of economic growth, and the results are as follows:

- The error correction coefficient, which represents the pace of mistake repair over the long term, must be negative. The test found that the cointEq(-1) error's limit of correction is negative at the level of 1%. Its value is -0.86, which is acceptable from an economic standpoint and shows that short-term imbalances can be corrected over the long term because 86% of short-term errors are accurate. To return to the long term, the problem was fixed.

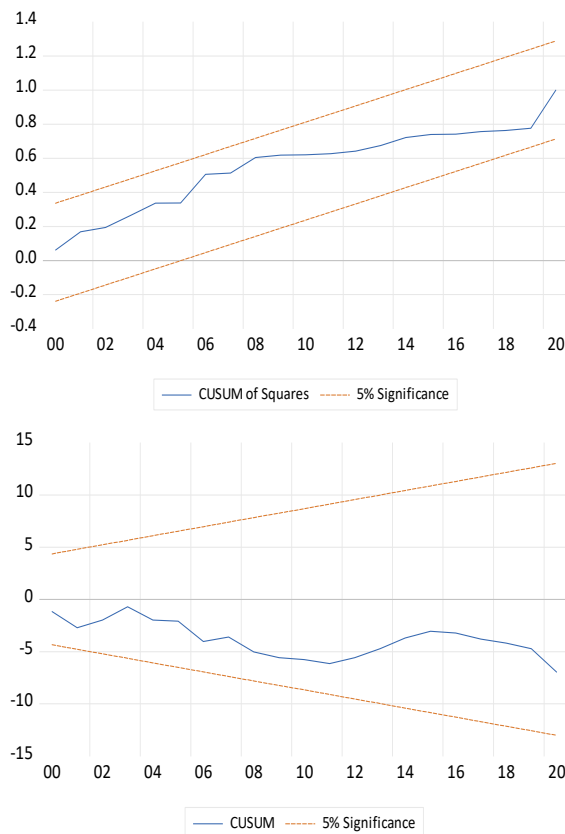
The short-run analysis makes it clearly evident that the variables of trade openness rate (To) and money supply (M2) have a significant short-term impact on economic growth. The rate of economic growth will increase by 0.13% if the rate of To increases by 1%. While economic growth will increase by 0.14% if the rate of m<sup>2</sup> rises by 1%. Diagnostic tests.

#### 4.6. Diagnostic test

##### 4.6.1. Test of “CUSUM” and “CUSUM of Squares”

The cumulative sum of the residual frequency “CUSUM” is used to detect the structural stability of the estimated parameters, within the short and long term relationship.

**Figure 4.** Results of the CUSUM Test and CUSUM Squares Test



**Source:** Authors’ estimates based on Eviews12 program.

Through the graph above, it is reported that the cumulative aggregate values are within confidence limits at the 5% level of significance, which indicates that all the estimated parameters are stable.

##### 4.6.2. Tests for constant error variance

In this regard, we use the test: Heteroskedasticity Test: Breusch-Pagan-Godfrey

**Table 8.** Results of the Heteroskedasticity Test – Breusch-Pagan-Godfrey

Heteroskedasticity Test – Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	1.681581	Prob. F(8,21)	0.1618
Obs. R-squared	11.71403	Prob. Chi-Square(8)	0.1644
Scaled explained SS	3.956200	Prob. Chi-Square(8)	0.8611

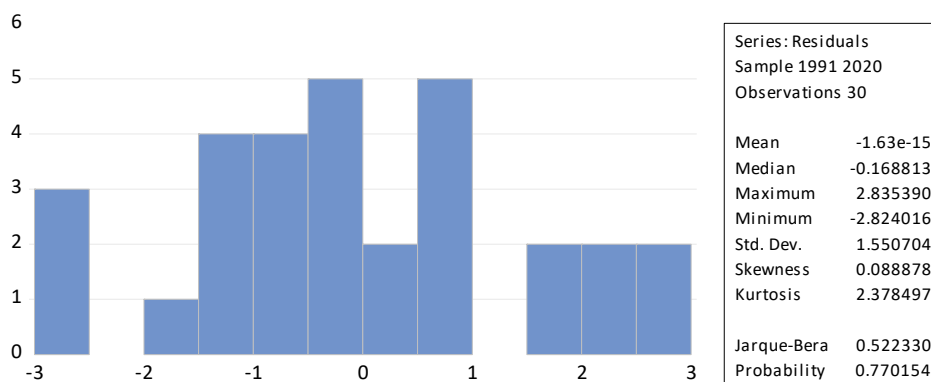
**Source:** Authors’ estimates based on Eviews12 program.

Considering that F-statistic = 0.1618 is more than 5%, we may infer that the error variance is constant.

#### 4.6.3. Residual Normality Test

Through the Residual Normality Test, we testing for breaches of the normalcy assumption.

**Figure 5.** Results of residual normality test



**Source:** Authors' estimates based on Eviews12 program.

Considering that Jarque-Bera Probability = 0.5223 is more than 5%, we may infer that the study sample is normally distributed.

## 6. Conclusion

Managing financial liberalization policies and their impacts on macroeconomic indicators is a serious challenge for policymakers in in developing countries. This research paper examines the impact of liberalizing financial variables on economic growth, using Algerian data from 1990 to 2020. We apply the autoregressive distributed lag (ARDL) approach to indicate the consequences of economic growth after liberalizing financial on a small economy, as well as analyzing the growth rates of economic sectors constituting real GDP. And then we explain the most important reforms in the monetary field, which Algeria implemented during the study period. These reforms consist in the liberalizing many financial indicators.

In the empirical researches, results of ARDL model in long run showed that the credit provided to the private sector (CPS), have a positive relationship with the economic growth rate in the long-term but the impact is limited. Where every 1% increase in credit provided to the private sector will increase the economic growth rate by 11%. This positive result is related to Algeria increasing the quantity of money loaned to the private sector, in view of its objective to Increase investment and stimulate economic growth during the research period. As for the foreign direct investment (FDI) variable, where if the event shock in FDI by 1%, the economic growth rate will increase by 9%. What explains the limited impact of FDI on economic growth. This happens to reflect Algeria's current economic situation. According to (World Bank, 2022), Algeria did not receive a big volume of foreign

investments, with the maximum percentage reaching 2% of the GDP in 2001. This is a result of the declining security situation in the 1990s and the unattractive business environment for a large number of foreign investors. Money supply (M2), is an important variable, has a positive relationship with the economic growth rate, but the effect is very small; for example, if the M2 money supply increases by 1%, the economic growth rate advances by 0.01%. The interpretation of this result is that monetary expansion in Algeria always has a minimal impact on economic growth due to the allocation of this money supply for consumer purposes and the Central Bank's uncontrolled issuance of currency, which promotes inflationary gaps rather than encourages economic growth, as was the case in 2017.

As for the inflation variable (INF) has an inverse relationship with the economic growth rate (GDP), where if the INF increases by 1%, the economic growth rate will decrease by 0.11%, the negative impacts of INF on sustainable economic growth and national economic security have become increasingly prominent, such as the Rising prices, the weakening of the Purchasing power of individuals and slow economic growth. On the other hand, the variable of trade openness (To) rate has a Positive relationship with the economic growth rate (GDP), where if the To increases by 1%, the economic growth rate will improve by 0.038% (But the effect is very limited). While the Kao index has a very weak and insignificant effect due to the stability of this indicator, during the research period

In the second stage, we determine the effect of the variables concerned in the Short run on the rate of economic growth, and the results revealed that the cointEq(-1) error's limit of correction is negative at the level of 1%. Its value is -0.86, which is acceptable from an economic standpoint and shows that short-term imbalances can be corrected over the long term because 86 % of short-term errors are accurate. To return to the long term, the problem was fixed. The short-run analysis makes it clearly evident that the variables of trade openness rate (To) and money supply (M2) have a significant short-term impact on economic growth. The rate of economic growth will increase by 0.13% if the rate of To increases by 1%. While economic growth will increase by 0.14% if the rate of m2 rises by 1%. Diagnostic tests

Our results show that certain policies must devote. First, governments should pay more attention to central Bank independence for effective application of monetary policy tools. Second, ensuring the stability of monetary policy legislation and giving importance to increasing the competitiveness of banks. Finally, activating the role of the financial market and investing in financial portfolios.

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