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Research Article

Determining The Long-Term Relationship Between Financial Inclusion and Economic Growth in Algeria for the Period 2004–2019: An Empirical Study Using the ARDL Approach

Asma Adaika[1*], Bouasla Bouchra[2], Faouzi Elhadj Ahmed[3]

[1*]University of El-Oued, Email: adaika-asma@univ-eloued.dz
[2]University of Annaba, Email: bouassla.bouchra@essg-annaba.dz
[3]University of El-Oued, Email: faouzi-elhadjahmed@univ-eloued.dz

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ABSTRACT

This study aimed to determine the long-term relationship between financial inclusion and economic growth in Algeria over the period 2004–2019. Financial inclusion was measured using two indicators: the first is the banking outreach indicator (number of commercial bank branches per 100,000 adults), and the second is the financial services indicator (number of borrowers from commercial banks per 1,000 adults). Economic growth was measured by the Gross Domestic Product (GDP) at constant US dollar prices. Using a set of econometric approaches and tools and relying on the Autoregressive Distributed Lag (ARDL) methodology, the study found a long-run equilibrium relationship between financial inclusion and economic growth. It is also concluded that changes in the number of bank branches and the number of borrowers are accompanied by changes in economic growth in the same direction.

Keywords: Financial Inclusion, Economic Growth, ARDL Model.

Introduction:

The financial system of any country is considered the fundamental and most important pillar of economic activity, due to its effective role in linking various economic activities by creating an environment that collects savings and capital for economic projects. In this context, many researchers emphasize that in order to reach a developed financial system, it must be based on a broad popular foundation, meaning that all individuals and institutions should have access to financial services — a concept known as "financial inclusion." This term became prominent in 1993, as economic policies have since sought to achieve it in order to attain economic stability, primarily through growth and increased economic and social welfare.
This study, titled "Determining the Long-Term Relationship between Financial Inclusion and Economic Growth in Algeria for the Period 2004–2019," aims to add a new contribution in this field and clarify the extent to which financial inclusion contributes to enhancing economic growth.

Main Research Problem:

The main research problem revolves around the following question:
To what extent does financial inclusion contribute to increasing economic growth in Algeria during the period 2004–2019?

Sub-questions:

From the main question, several sub-questions arise:

- What is meant by financial inclusion?
- Does financial inclusion have a positive impact on economic growth in Algeria during the period 2004–2019?
- What is the nature of the relationship between financial inclusion and economic growth?

Study Hypotheses:

The study is based on the central hypothesis that **financial inclusion has a long-term equilibrium relationship with economic growth**, meaning that any change in financial inclusion is accompanied by a change in economic growth in the same direction. From this main hypothesis, several sub-hypotheses emerge:

- Financial inclusion refers to the provision of high-quality and fairly priced financial services to all segments of society, including low-income individuals.
- Financial inclusion is positively and statistically significantly correlated with economic growth in Algeria.
- Financial inclusion stimulates the economic cycle and thereby enhances economic growth.

Objective of the Study:

The objective of this study is to determine the relationship between financial inclusion and economic growth by answering the following question:

To what extent does financial inclusion contribute to increasing economic growth in Algeria, based on data from the period 2004–2019?

Methodology of the Study:

To address this study, the descriptive method was followed using econometric and statistical analysis techniques by describing the phenomenon under study and the variables that form the model.

1. Theoretical Framework of the Study:

1.1 Definition of Financial Inclusion:

According to the Arab Monetary Fund, in its joint report with the Consultative Group to Assist the Poor (CGAP) in 2017, financial inclusion is defined as:

"The ability of all individuals, including those with low incomes, and all businesses, whether large or small, to access formal financial services at affordable costs and with high quality, provided through formal and sustainable means by a variety of financial service providers within an appropriate legal and regulatory framework"

(Hassan Amin Mohammed, 2020, p. 299).

Financial inclusion is also defined as:

"The availability and equality of opportunities to access financial services"

(Kajole & Mandeep, 2016, pp. 127–153).

In order to arrive at a universally accepted definition of financial inclusion, the **Financial Inclusion Data Working Group** under the **Alliance for Financial Inclusion (AFI)** proposed the following essential criteria for indicators of financial inclusion:

- **Usefulness and relevance:** Selecting indicators that support the development of national policies for financial inclusion.
- **Consistency:** Ensuring consistent measurement and comparability across time and place.
- **Balance:** Addressing both the supply side (access to financial services) and the demand side (utilization of these services).
- **Pragmatism:** Relying, as much as possible, on available and accessible data to reduce cost and effort.
- **Flexibility:** Recognizing that financial inclusion is context-dependent — economically, geographically, socially, and culturally — and differs among countries. Thus, the proposed criteria allow sufficient flexibility for countries to choose definitions or use alternative indicators.
- **Ambition:** Accurately measuring financial inclusion may require additional efforts and resources to meet the essential criteria. However, based on pragmatism and flexibility, alternative indicators may be adopted if core indicators are unavailable, with the goal of improving measurement in the future, following an ambition-based approach rooted in the dynamic nature of the essential criteria.

2.1. Objectives of Financial Inclusion:

The Consultative Group to Assist the Poor (CGAP) considers building an inclusive financial system as the only path to reach the poor and low-income individuals, aiming to achieve the following financial inclusion objectives: (Chenibi & Ben Lakhdar, 2019, pp. 108–109):

- **a.** Enhancing access for all segments of society to financial services and products, raising awareness about their importance and how to benefit from them to improve their economic and social conditions.
- **b.** Facilitating access to funding sources to improve citizens' living conditions, especially the poor.
- **c.** Promoting self-employment projects and economic growth.
- **d.** Enabling micro and small enterprises to invest and expand.
- **e.** Reducing poverty levels and achieving economic prosperity and welfare.

3.1. Dimensions of Financial Inclusion:

According to the World Bank methodology, the dimensions of financial inclusion are divided into five main categories, as illustrated in the following table: (Ben Rajab, 2018, p. 5)

Table (1): Dimensions of Financial Inclusion

Dimension	Measurement Indicators
1. Use of Bank Accounts	• Percentage of adults with an account at a formal financial institution (banks, post offices, microfinance institutions) • Purpose of accounts (personal, business) • Number of transactions (deposits, withdrawals). • Access method (ATMs, bank branches).
2. Saving	• Percentage of adults who saved in the past 12 months through formal financial institutions. • Percentage who saved through informal means or individuals outside the household. • Percentage who saved otherwise (e.g., at home).
3. Borrowing	• Percentage of adults who borrowed from a formal financial institution in the past 12 months • Percentage who borrowed from informal sources, including family and friends.
4. Payments	• Percentage of adults who used an account to receive wages or government payments in the past 12 months • Percentage who used an account to send/receive remittances. • Percentage who used mobile phones to pay bills or transfer/receive money.
5. Insurance	• Percentage of adults who have insurance. • Percentage of adults working in agriculture, forestry, or fishing who insure their activities (crops or livestock) against natural disasters (rain, storms).

Source: Prepared by the researchers.

2. Previous Studies:

Several studies have addressed the topic of financial inclusion and its impact on macroeconomic variables such as increased consumption, higher savings propensity, poverty reduction, economic growth, and inflation control. For example:

- **Abiola A. Babajide et al. (2015):**

This study investigated the determinants of financial inclusion and their impact on economic growth in Nigeria. (Abiola A., Folasade B., & Alexander E., 2015, pp. 629–637)

- **Bara and Calvin (2016):**

Focused on the impact of financial inclusion on economic growth in Zimbabwe. (Bara & Mudzingiri, 2016, pp. 65–75)

- **Nasir Ali et al. (2019):**

Examined the impact of financial inclusion on economic growth in Pakistan. (Nasir, Kaneez, & Jmeel, 2019, pp. 166–174)

- **Angga Erlando et al. (2020):**

Explored the relationship between financial inclusion, economic growth, and poverty alleviation in Eastern Indonesia. (Angga, Feri, & Someya, 2020, pp. 2–13)

2.1. Study by Hassan Amin Mohamed Mahmoud (2020):

Titled *"The Impact of Financial Inclusion on Economic Growth in Egypt."*
This study aimed to answer two questions: the impact of financial transactions on banks, and the relationship between financial depth and poverty reduction in Egypt over the period 1995–2018. The study used two econometric models to analyze the relationship between financial inclusion and economic growth, and between financial depth and poverty reduction, employing the ARDL methodology.

The findings revealed a long-run equilibrium relationship between financial inclusion and economic growth, with a positive relationship between financial inclusion (measured by household loans and deposits in commercial banks) and economic growth in the long term.

Additionally, it found a statistically significant positive relationship between financial depth (private sector credit volume, number of ATMs) and poverty reduction, measured by GDP per capita. (Hassan Amin Mohamed, 2020, pp. 297–342)

2.2. Study by Asma Dardour & Saida Harakat (2020):

Titled *"Measuring the Impact of Financial Inclusion on Economic Growth in Algeria during the Period 1980–2017."*
This study aimed to measure the impact of financial inclusion using three variables (loans, deposits, and number of bank branches) on GDP as an indicator of economic growth, employing the ARDL methodology. The study concluded that there is a long-term equilibrium relationship between the study variables, except for the deposit variable, which showed an inverse relationship with growth. (Dardour & Harakat, 2020, pp. 71–90)

2.3 Study by Abeer Rashdan & Noura Eissa (2020), titled *"The Determinants of Financial Inclusion in Egypt":
This study analyzed the determinants of financial inclusion in Egypt. It concluded that there is no significant relationship between gender and financial inclusion in the country. The findings indicated that wealthier, older, and more educated individuals are more likely to be integrated into the financial system. The major barrier to financial inclusion was identified as a lack of funds, which prevents people from opening formal accounts—whether savings or credit accounts. The study also emphasized the need to adopt a financial literacy approach to enable financial inclusion to positively contribute to economic growth in Egypt. (Rashdan & Eissa, 2020, pp. 123–136)

2.4. Study by Mohamed et al. (2020), titled *"The Impact of Financial Inclusion on GDP Growth in Egypt":
The aim of this study was to measure the impact of financial inclusion on GDP growth in Egypt using quarterly data from 2007 to 2018. It found a positive relationship between GDP and the number of ATMs, which was used as an indicator of financial inclusion. Conversely, it found a negative relationship between GDP and total deposits in Egypt. (Noureldin Sayed, Abbas, & Abdelaziz Touny, 2020, pp. 379–400)

2.5. Study by Hamad Omar Bakar & Masoud Mohammed Albiman (2021), titled *"The Role of Financial Inclusion on Economic Growth in Sub-Saharan African (SSA) Region":
This study aimed to determine the effect of financial inclusion on economic growth in the Sub-Saharan African region using a variety of approaches and tools, based on data from 45 African countries over the period 2004–2017. The Generalized Method of Moments (GMM) was employed to examine whether financial inclusion, through improved access, had a positive impact on economic growth. The study concluded that financial inclusion significantly and positively contributed to economic growth, affirming that financial inclusion promotes economic development. (Mohammed Albiman & Omar Bakar, 2021, pp. 1–21)

3. Results and Discussion:

To estimate the relationship between financial inclusion—represented by banking outreach (measured by the number of commercial bank branches)—and access to financial services—represented by the number of borrowers from commercial banks—and economic growth, annual data for the period 2004–2019 were used, based on World Bank data.

The study variables were selected based on economic theory and previous studies. The logarithmic transformation method was applied to ensure data homogeneity in time series. The following model is estimated:
LRGDP = f (LCBB + LLCB) ..... (01)
Where:

- **t = 2004–2019**
- **LRGDP**: Logarithm of Gross Domestic Product
- **LCBB**: Logarithm of commercial bank branches per 100,000 adults
- **LLCB**: Logarithm of the number of borrowers from commercial banks per 1,000 adults

The **Autoregressive Distributed Lag (ARDL)** approach will be used to estimate the impact of financial inclusion on GDP, as an indicator of economic growth in Algeria. Thus, the model in its final form is as follows:

$$\Delta LRGDP_t = \beta_0 + \sum_{t=1}^{p} \beta_{1t} \Delta LRGDP_{t-i} + \sum_{t=1}^{q1} \beta_{2t} \Delta LCBB_{t-i} + \sum_{t=1}^{q2} \beta_{3t} \Delta LLCB_{t-i} + \alpha_1 LRGDP_{t-1} + \alpha_2 LCBB_{t-1} + \alpha_3 LLCB_{t-1} + + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots (02)$$

3.1 Study Variables:

Table (2): Study Variables

Variable	Symbol	Description	Data Source
Real Gross Domestic Product	RGDP	Represents the value of goods and services produced within the country's geographical area (produced domestically regardless of the producer's nationality).	World Bank Data
Commercial Bank Branches	CBB	The number of commercial bank branches per 100,000 adults was used as an indicator of banking outreach in Algeria.	World Bank Data
Borrowers from Commercial Banks	LCB	Focused on the number of borrowers from commercial banks per 1,000 adults as an indicator of financial services in Algeria.	World Bank Data

Source: Prepared by the researchers

3.2 Time Series Stationarity Test:

As a first step, we conduct a stationarity test on the time series, which is a prerequisite for cointegration. The **unit root test** is one of the most important methods for determining the stationarity and statistical properties of time series. The **Augmented Dickey-Fuller (ADF)** test was used. The following table presents the results:

Table (3): ADF Time Series Stationarity Test

Variable	Level	First Difference
	Intercept	Trend & Intercept
LRGDP	-0.927	-2.502
LLCB	-0.585	-1.672
LCCB	***-4.620	**-4.109

Test Critical Values

Significance Level	Intercept	Trend & Intercept	None
1%	-4.004	-4.9922	-2.7406
5%	-3.098	-3.8753	-1.9684
10%	-2.690	-3.3888	-1.6043

*, **, *** indicate significance at the 1%, 5%, and 10% levels respectively.
Source: Prepared by the researchers based on EViews 10 outputs.

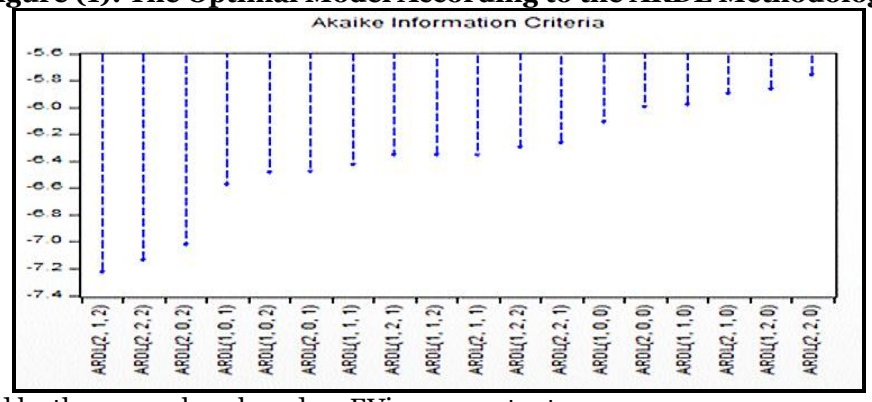
*, **, *** denote acceptance of the alternative hypothesis (H1), which means that the series is stationary at the respective significance levels (10%, 5%, and 1%).
The table shows that all the variables under study are non-stationary at level, except for the Commercial Bank Branches (LCCB) variable, because the calculated t-value is greater than the critical t-value at all significance levels (10%, 5%, 1%), indicating rejection of the null hypothesis (H0: B = 0) and acceptance of the alternative hypothesis.

However, after taking the first difference, the variables LRGDP and LLCB become stationary at various significance levels, as the calculated t-values exceed the critical values at the 10% and 5% levels. This means the series are a mixture of level and first-difference stationarity, i.e., integrated of order I(0) and I(1).
Therefore, the Autoregressive Distributed Lag (ARDL) model (Pesaran, Smith, & Shin, pp. 289–326) is the most suitable for analyzing the relationship.

3.3. Determining the Optimal Lag Lengths:

Before estimating the short- and long-term relationship using the ARDL model, it is necessary to identify the optimal lag length. This was done using the **Akaike Information Criterion (AIC), which determined the optimal model to be (2,2,1).**

Figure (1): The Optimal Model According to the ARDL Methodology



Source: Prepared by the researchers based on EViews 10 outputs.

3.4 Model Diagnostic Tests:

After estimating the selected ARDL model based on the Akaike Information Criterion (AIC), the model must undergo a set of diagnostic tests related to the residuals, known as **Residuals Diagnostics Tests**, which include:

- **a. Serial Correlation LM Test**
- **b. Heteroskedasticity Test**
- **c. Normality Test**

The following table presents the results of these diagnostic tests:

Table (4): Residuals Diagnostics Tests

Test	Prob.	Statistic	Test Type
Breusch-Godfrey Serial Correlation LM Test	0.3655	0.989794 (F-Stat)	F(1,5)
	0.1283	2.313454 (Obs*R^2)	Chi-Square(1)
Heteroskedasticity Test – ARCH	0.5026	0.480371 (F-Stat)	F(1,14)
	0.4608	0.543956 (Obs*R^2)	Chi-Square(1)
Normality Test – Jarque Bera	0.29296	—	Jarque-Bera Statistic
	0.86374	—	Probability

Source: Prepared by the researchers based on EViews 10 output

From the above table, we observe the following:

- The **serial correlation test** (Breusch-Godfrey) shows a **p-value of 0.3655**, which is greater than the 5% significance level. Therefore, we reject the alternative hypothesis and accept the null hypothesis, indicating **no serial correlation** in the residuals.
- The **heteroskedasticity test** (ARCH) yields a **p-value of 0.5026**, which also exceeds the 5% significance level. This implies acceptance of the null hypothesis that **there is no heteroskedasticity**, meaning the variance of the residuals is constant.
- The **normality test** (Jarque-Bera) shows a **p-value of 0.8637**, which is not significant at the 5% level. Hence, we accept the null hypothesis that the residuals **follow a normal distribution**.

Thus, based on these three tests, the model **does not suffer from econometric problems** and is therefore valid for analysis.

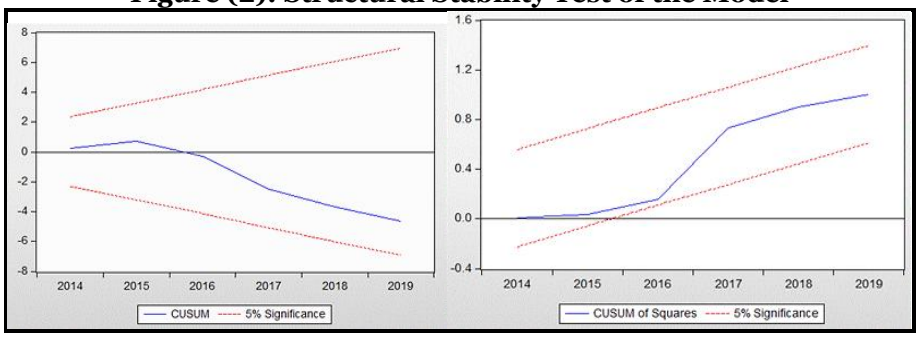
3.5 Structural Stability Test of the Model:

To ensure there are no structural changes in the data over time, we apply the following tests:

- **CUSUM test (Cumulative Sum of Recursive Residuals)**
- **CUSUM of Squares test (Cumulative Sum of Squared Residuals)**
- **Ramsey RESET Test** (for verifying the model's functional form)

The figure and table below illustrate the results:

Figure (2): Structural Stability Test of the Model



Source: Prepared by the researchers based on EViews 10 output

From **Figure (2)**, it is evident that the **CUSUM** and **CUSUM of Squares** statistics lie **within the critical bounds at the 5% significance level**. This confirms that the model is **stable and its parameters are consistent** over time.

Table (5): Results of Ramsey RESET Test

Test	Probability	df	Value
t-statistic	0.4884	5	0.747476
F-statistic	0.4884	(1,5)	0.558720

Source: Prepared by the researchers using EViews 10

The Ramsey RESET Test also supports the adequacy of the model's functional form, as the p-values exceed the 5% significance level, indicating no specification error in the model.
As we can also observe from the above table related to the model's functional specification, the p-value of the F-statistic is 0.4884, which is greater than the 5% significance level. Therefore, the model does not suffer from the problem of misspecification.

6.3. Bounds Testing Approach:

This test is used to determine whether a long-run equilibrium relationship exists among the variables, using the F-statistic, which has a non-standard distribution and does not depend on factors such as sample size or inclusion of a trend variable in the estimation. The following table presents the results of the bounds test:

Table (6): Bounds Test Results for Cointegration Critical Value Bounds:

Significance	Lower Bound	Upper Bound
10%	2.63	3.35
5%	3.10	3.87
2.5%	3.55	4.38
1%	4.13	5.00

Source: Prepared by the researchers based on EViews 10 output

From the above table, we note that the F-statistic (8.832557) is greater than the upper bound critical value (5.00) at the 1% significance level. This means we reject the null hypothesis of no cointegration and accept the alternative hypothesis that there is cointegration among the study variables. In other words, there exists a long-run equilibrium relationship from the explanatory variables (jointly) to the dependent variable real GDP, which serves as a proxy for economic growth.

Table (7): Error Correction Model (ECM-ARDL) Short-Run Estimation Results

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.471235	0.221194	2.130413	0.0772
LGDPC(-1)*	-0.245810	0.046330	-5.305614	0.0018
LCBB(-1)	0.342108	0.164117	2.084541	0.0822
LLCB(-1)	0.082061	0.021390	3.836355	0.0086
D(LGDPC(-1))	-1.098050	0.337477	-3.253704	0.0174
D(LCBB)	0.564710	0.215795	2.616886	0.0398
D(LLCB)	-0.101122	0.031139	-3.247412	0.0175
D(LLCB(-1))	-0.116175	0.035673	-3.256687	0.0173

Source: Prepared by the researchers based on EViews 10 output

The table above presents the results of the Error Correction Model (ECM), which reflects the speed of adjustment of short-run imbalances toward long-run equilibrium. For the model to be valid, the error correction term coefficient must be negative and statistically significant, which is confirmed here. The coefficient is -0.245810 and significant at less than 1%, indicating that 24% of short-run deviations are corrected within one year, meaning the model returns to equilibrium at a moderate speed.

Table (8): Long-Run Estimation Results

Variable	Coefficient	Std. Error	t-statistic	Prob.
LCBB	1.391761	0.607687	2.290258	0.0619
LLCB	0.333838	0.057949	5.760898	0.0012
C	1.917074	0.844569	2.269884	0.0637

Error Correction Equation (EC):

EC = LRGDP - (1.391761 * LCBB + 0.333838 * LLCB + 3.648609)

Source: Prepared by the researchers based on EViews 10 output

The above table shows the results of estimating the long-term relationship. It is clear that all independent variables are statistically significantly related to the dependent variable, economic growth.
The number of commercial bank branches (LCBB) is positively and statistically significantly related to real GDP, which reflects economic growth. Its coefficient is estimated at 1.391761, meaning that every 10% increase in the number of bank branches per 100,000 adults will increase the real GDP by 13% in the same direction.
The number of borrowers from commercial banks (LLCB) is also positively and statistically significantly related to real GDP. Its coefficient is estimated at 0.333838, meaning that a 10% increase in the number of borrowers per 1,000 adults is associated with a 3% increase in real GDP in the same direction.

Conclusion

This study aimed to answer the main question: To what extent does financial inclusion contribute to boosting economic growth in Algeria during the period 2004–2019? Using various approaches, methods, tests, and economic measurement tools, we reached the following conclusions:

- The study results using the Autoregressive Distributed Lag (ARDL) methodology and Bound Test indicate the existence of a long-run equilibrium relationship flowing from explanatory variables to the dependent variable.
- There is a statistically significant positive relationship between financial inclusion and economic growth, consistent with economic theory. Increasing the number of commercial bank branches per 100,000 adults is associated with economic growth because more branches bring banking services closer to citizens. This leads to increased demand for services such as deposits, withdrawals, and borrowing. Borrowed funds are used either for consumption or investment, thus increasing aggregate demand for goods and services and contributing to income growth and economic expansion.
- An increase in the number of borrowers from commercial banks per 1,000 adults leads to growth because borrowed money enhances investment and supports real economic sectors, resulting in higher GDP.
- The model used in this study is free from standard econometric problems.
- The short-run results show that the error correction term is negative and statistically significant at -0.245810, indicating that 24% of short-run deviations are automatically corrected within one year to restore long-run equilibrium, with significance at the 1% level.

Recommendations:

Based on the findings, the following recommendations are made:

- Work to increase financial inclusion in Algeria by increasing the number of bank branches and providing opportunities for more borrowers.
- Raise banking awareness and pursue efforts to reduce financial illiteracy.

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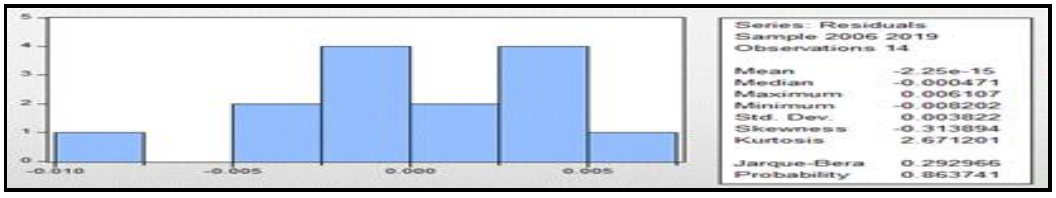
Appendix:

Breusch-Godfrey Serial Correlation LM Test:				Heteroskedasticity Test: ARCH			
F-statistic	0.989794	Prob. F(1,5)	0.3655	F-statistic	0.480371	Prob. F(1,11)	0.5026
Obs*R-squared	2.313454	Prob. Chi-Square(1)	0.1283	Obs*R-squared	0.543956	Prob. Chi-Square(1)	0.4608



Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCBB	1.391761	0.607687	2.290258	0.0619
LLCB	0.333838	0.057949	5.760898	0.0012
C	1.917074	0.844569	2.269884	0.0637

EC = LGDDP - (1.3918*LCBB + 0.3338*LLCB + 1.9171)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LRGDP)
Selected Model: ARDL(2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 08/24/21 Time: 02:12
Sample: 2004 2019
Included observations: 14

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.471235	0.221194	2.130413	0.0772
LRGDP(-1)*	-0.245810	0.046330	-5.305614	0.0018
LCBB(-1)	0.342108	0.164117	2.084541	0.0822
LLCB(-1)	0.082061	0.021390	3.836355	0.0086
D(LRGDP(-1))	-1.098050	0.337477	-3.253704	0.0174
D(LCBB)	0.564710	0.215795	2.616886	0.0398
D(LLCB)	-0.101122	0.031139	-3.247412	0.0175
D(LLCB(-1))	-0.116175	0.035673	-3.256687	0.0173

Ramsey RESET Test
Equation: UNTITLED
Specification: LRGDP LRGDP(-1) LRGDP(-2) LCBB LCBB(-1) LLCB LLCB(-1) LLCB(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.747476	5	0.4884
F-statistic	0.558720	(1, 5)	0.4884

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	8.032557	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5
Actual Sample Size	14	Finite Sample: n=35		
		10%	2.845	3.623
		5%	3.478	4.335
		1%	4.948	6.028
		Finite Sample: n=30		
		10%	2.915	3.695
		5%	3.538	4.428
		1%	5.155	6.265

Dependent Variable: LRGDP
Method: ARDL
Date: 08/24/21 Time: 02:15
Sample (adjusted): 2006 2019
Included observations: 14 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LCBB LLCB
Fixed regressors: C
Number of models evalulated: 18
Selected Model: ARDL(2, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LRGDP(-1)	-0.343860	0.372037	-0.924261	0.3910
LRGDP(-2)	1.098050	0.337477	3.253704	0.0174
LCBB	0.564710	0.215795	2.616886	0.0398
LCBB(-1)	-0.222602	0.140554	-1.583750	0.1643
LLCB	-0.101122	0.031139	-3.247412	0.0175
LLCB(-1)	0.067008	0.026395	2.538688	0.0442
LLCB(-2)	0.116175	0.035673	3.256687	0.0173
C	0.471235	0.221194	2.130413	0.0772

R-squared	0.998939	Mean dependent var	5.157389
Adjusted R-squared	0.997701	S.D. dependent var	0.117344
S.E. of regression	0.005626	Akaike info criterion	-7.227217
Sum squared resid	0.000190	Schwarz criterion	-6.862041
Log likelihood	58.59052	Hannan-Quinn criter.	-7.261020
F-statistic	807.0090	Durbin-Watson stat	2.626634
Prob(F-statistic)	0.000000		