

## The Impact of Capital Account Liberalization on Economic Growth(1990-2018)

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**Summary:** The objective of this research is to study the relationship between capital account liberalization (of various features) and economic growth rate in Algeria during the period 1990-2018. We utilized the outputs of the Eviews software to monitor the developments of the study, utilizing the Augmented Dickey-Fuller (ADF) test and the ARDL-Bounds Test. By estimating the model according to the Autoregressive Distributed Lag (ARDL) approach, we concluded that a long-term relationship exists between Foreign Direct Investment (FDI), migrant remittances, external debt, and help with the economic growth, with a difference in the impact over the short and long terms. Consequently, Algeria is in need of deep reforms to attract the largest possible amount of foreign capital and to create an economic climate that contributes to attracting external flows to achieve economic growth.

**Keywords:** Capital Account Liberalization, Economic Growth, Algerian Economy.

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### I-Introduction:

The financial system is considered the basis of the economic growth process, as it is the system that facilitates financial transactions and exchanges between lenders, borrowers, and investors. Algeria is among the countries whose financial and banking system was subject to government control and central management for a long period, from independence until the beginning of the nineties. Furthermore, the adopted development policies necessitated and enforced state ownership of banks. This policy had a detrimental effect on the economic system, leading to the squandering of funds, high inflation rates, a persistent financial deficit, and the failure to achieve the desired economic growth. This consequently led to the adoption of measures to reform its financial system by relying on the financial liberalization approach and procedures, the fundamental core of which is the liberalization of the capital account. This approach is supported by numerous theoretical (e.g., Shaw, 1973; Mackinnon) and empirical studies. The focus on financial stability and the pursuit of its achievement has become an important goal within the macro-economic policies of both developed and developing countries, especially after most countries worldwide adopted financial liberalization policies, the essence of which is the liberalization of the capital account, and following the spread of financial crises across the globe.

The subject of capital account liberalization has received increasing attention from developing countries in recent decades, stemming from the important role the financial sector plays in promoting balanced economic growth, based on the experiences of developed countries. It has been proven that an economy's ability to overcome poor economic conditions is linked to the scale of macro and structural reforms and financial liberalization policies. Therefore, the research problem is to investigate the relationship between capital account liberalization and economic growth in Algeria, given the divergence in economists' opinions on this policy. The research hypothesis is that the gradual application of financial liberalization policy in Algeria under normal economic circumstances will lead to negative changes in economic growth despite the abundance of oil. The objective is to measure capital account liberalization in Algeria and to determine the relationship between financial liberalization policy in general and capital account liberalization on economic growth.

The research adopted the quantitative analytical method, based on the available statistical data for Algeria from 1990 to 2018. Reliance was placed on numerous scientific sources from research papers and books in both the theoretical and empirical aspects to study capital account liberalization. The study is divided into three main parts: the first part is the theoretical framework for capital account liberalization; the second part is the theoretical framework for economic growth; and the third part is an empirical study of the relationship between liberalization and economic growth and the analysis of statistical data.

### **I.1. Determinants of Economic Growth**

A set of factors plays an important role in determining economic growth, and these factors can be specified as follows: Human Resources, Natural Resources, and Capital Accumulation. Population growth is considered the ultimate increase in the labor force, representing a traditional positive factor in enhancing economic growth. However, the working class must possess specific skills that enable it to increase productivity per unit in a relatively short time. The development of human capital necessitates a supportive financial system to play a crucial role in the development of human resources. On the other hand, the production of a given economy and its economic growth depend on the quantity and quality of its natural resources, such as the degree of soil fertility, the abundance of minerals, water, and forests, among others. These resources only achieve economic objectives if they are properly exploited by man. Finally, many economists consider investment and capital accumulation to be essential and necessary elements for economic growth. Economic analysis focuses on the strong positive causal relationship between the rate of physical capital accumulation and the rate of economic growth. The rate of capital accumulation is determined by the factors that affect investment, including profit expectations and government policies towards investment.

### **I. 2.Theories of Economic Growth**

This section will cover the various theories underpinning economic growth, including the Classical Theory (Adam Smith), Keynesian Theory (Harrod-Domar Growth Model), and Growth According to the Neoclassical School, analyzing their perspectives on the drivers of economic expansion. These theories provide the theoretical backdrop for understanding the complex interplay of factors that influence a nation's economic progress over time.

I have also moved the "Determinants of Economic Growth" content under the "1.1. First Subtitle" as it flows well there, and created a placeholder "1.2. Second Subtitle" as indicated by the template structure. The specific content for "Theories of Economic Growth" would then follow under 1.2, or you can provide the exact content you want under these two subheadings.

## **II– Methods and Materials:**

### **Research Methodology and Data**

The study adopted a quantitative analytical method based on available statistical data for the Algerian economy. The research is an empirical study on the relationship between capital account liberalization and economic growth. The data for the study cover the time period from 1990 to 2018 and were obtained from the World Bank.

### **Model Specification and Variables**

To estimate the relationship between capital account flows and the Economic Growth Rate, a log-linear econometric model was utilized. This model assumes the Economic Growth Rate is influenced by various capital flows and control variables.

The model is formally represented as:

$$\ln(TGDP_t) = \beta_0 + \beta_1 \ln(FDI_t) + \beta_3 \ln(REM_t) + \beta_4 \ln(AIDS_t) + \beta_5 \ln(INF_t) + \varepsilon_i$$

The variables used in the model are defined as follows:

#### **Dependent Variable:**

- TGDP (Economic Growth Rate).

#### **Independent Variables:**

- FDI (Foreign Direct Investment).
- DEBT (External Debt).

- REM (Migrant Remittances).
- AIDS (Aid/Grants).
- INF (Inflation).

### Econometric Strategy and Tools

The analysis was performed using the Eviews software and followed a rigorous econometric procedure due to the time series nature of the data.

1. **Stationarity Testing:** The first step involved testing the stationarity of the variables using the Augmented Dickey-Fuller (ADF) test. This step determined the integration order of the series, revealing that the variables were integrated at a mix of orders (I(0) for FDI and DEBT, and I(1) for REM, AIDS, and INF when differenced), which is appropriate for the ARDL model.
2. **Cointegration Analysis:** Given the mixed integration orders, the Autoregressive Distributed Lag (ARDL) methodology was applied. The ARDL-Bounds Test was employed to determine the presence of a long-run cointegration relationship among the variables. The calculated F-statistic (3.32) was found to exceed the critical upper bound at the 10% significance level, leading to the rejection of the null hypothesis and confirming a long-run relationship.
3. **Model Estimation:** The ARDL approach was used to estimate both the long-run and short-run dynamic coefficients, including the Error Correction Model (ECM).
4. **Diagnostic Testing:** Diagnostic tests were conducted on the residuals to confirm the model's reliability:
  - **Serial Correlation Test:** The null hypothesis of no serial autocorrelation was accepted (Fisher probability value of  $0.27 > 5\%$ ).
  - **Heteroscedasticity Test:** The null hypothesis of homoscedasticity (constant variance) was accepted (Fisher probability value of  $0.70 > 5\%$ ).
  - **Normality Test:** The null hypothesis of normally distributed residuals was accepted using the Jarque-Bera test (probability value of  $0.60 > 5\%$ ).
  - **Functional Form Test:** The Ramsey RESET test confirmed the model did not suffer from functional form misspecification (probability value of  $0.61 > 5\%$ ).
  - **Structural Stability Test:** The CUSUM test confirmed the model was stable.

## III- Results and discussion:

### Econometric Results

The econometric analysis, conducted using the ARDL (1, 1, 1, 1, 1, 1) model, established a statistically significant long-term cointegration relationship between the Economic Growth Rate (TGDP) and the capital flow variables (FDI, DEBT, REM, AIDS, and INF) over the period 1990–2018.

#### A. Long-Term Impact

The estimated long-term coefficients reveal the persistent effects of the variables on the Economic Growth Rate (TGDP):

| Variable                       | Coefficient | P-Value | Finding                  |
|--------------------------------|-------------|---------|--------------------------|
| Foreign Direct Investment(FDI) | 0.69        | 0.00    | Positive and Significant |
| External Debt (DEBT)           | 0.34        | 0.01    | Positive and Significant |
| Migrant Remittances (REM)      | -0.26       | 0.03    | Negative and Significant |
| Aid/Grants(AIDS)               | 0.29        | 0.04    | Positive and Significant |
| Inflation (INF) -              | 0.17        | 0.00    | Negative and Significant |

#### Short-Term Dynamics (Error Correction Model)

The short-term relationship is captured by the Error Correction Model (ECM). The Error Correction Term (ECMt-1) coefficient was found to be -0.59, which is negative and statistically significant.

- This coefficient indicates a fast adjustment speed, with approximately 59% of the disequilibrium from the previous period's shock being corrected in the current period to restore the long-run equilibrium.

### Discussion of Findings

The results confirm that capital account liberalization measures have a differentiated impact on the Algerian economy, which is consistent with the findings of certain contemporary studies.

#### 1. Positive Long-Term Effects (FDI, DEBT, AIDS)

- **Foreign Direct Investment (FDI) and Economic Growth:** The highly positive and significant coefficient (0.69) confirms that FDI inflows are a key engine for growth in Algeria. This is expected, as FDI introduces new technologies, management skills, and non-debt financing, which are essential for sustainable economic development.
- **External Debt (DEBT) and Economic Growth:** The positive coefficient (0.34) suggests that, during the study period, the external debt utilized by Algeria was productive. This debt was likely directed toward investments that generated returns, thereby contributing positively to the overall economic growth rate.
- **Aid/Grants (AIDS) and Economic Growth:** The positive coefficient (0.29) shows that development aid and grants have effectively supported the national income. This implies that the aid was effectively used to finance specific developmental projects or social programs that stimulated economic activity.

#### 2. Negative Long-Term Effects (REM, INF)

- **Migrant Remittances (REM) and Economic Growth:** The negative and significant coefficient (-0.26) is a crucial finding. Unlike the theoretical expectation of a positive link, this suggests that remittances in Algeria are primarily directed towards non-productive consumption (e.g., spending on daily needs or housing) rather than being channeled into capital formation or productive investment. This non-productive use limits their potential to drive long-term growth.
- **Inflation (INF) and Economic Growth:** The negative and significant coefficient (-0.17) confirms the destructive impact of high inflation on economic stability and growth. Inflation erodes consumer purchasing power, increases business uncertainty, and discourages long-term investment.

#### 3. Short-Term Dynamics

The Error Correction Term of -0.59 validates the existence of a stable long-run relationship. This high speed of adjustment implies that the Algerian economy quickly self-corrects imbalances resulting from short-term shocks in capital flows, demonstrating a robust mechanism for returning to its steady-state growth path.

### IV-Conclusion:

This research aimed to investigate the long-term and short-term relationship between various features of capital account liberalization and the Economic Growth Rate in Algeria over the period 1990–2018. Utilizing the ARDL-Bounds Test and the ARDL (1, 1, 1, 1, 1, 1) model, the study established a significant long-term cointegration relationship among the variables.

### Summary of Key Findings:

- **Positive Drivers:** The study confirmed that Foreign Direct Investment ( $\text{FDI}$ ), External Debt ( $\text{DEBT}$ ), and Aid/Grants ( $\text{AIDS}$ ) all have a statistically significant and positive impact on long-term economic growth in Algeria. This indicates that these specific capital flows have been productive and contribute to the country's national income.
- **Negative Factors:** Conversely, the analysis revealed a statistically significant negative impact from both Migrant Remittances ( $\text{REM}$ ) and Inflation ( $\text{INF}$ ). The negative effect of remittances suggests their primary usage is non-productive consumption, while inflation is confirmed to be a strong impediment to economic stability.
- **Short-Term Correction:** The negative and significant Error Correction Term ( $\text{ECM}_{t-1}$ ) of  $\mathbf{-0.59}$  confirmed the existence of a stable long-run relationship and indicated a high

speed of adjustment, where nearly 59\% of any short-term disequilibrium is corrected within the subsequent period.

### Policy Implications:

Based on these findings, Algeria is in need of deep and urgent economic reforms to maximize the benefits of capital account flows:

- 1. Attract Productive Capital:** Policymakers must focus on creating an appealing investment climate to attract the largest possible amount of productive foreign capital, primarily  $\text{FDI}$ , by reducing bureaucratic barriers and enhancing financial transparency.
- 2. Reroute Remittances:** The government should devise mechanisms and incentives to channel migrant remittances away from non-productive consumption and into the formal financial sector, specifically promoting their use for productive investment and capital formation.
- 3. Maintain Macroeconomic Stability:** Effective monetary policy is essential to control inflation ( $\text{INF}$ ) to low levels, as its continued negative impact remains a threat to long-term economic growth

## **- Appendices:**

### **Appendix A: Unit Root Test (Augmented Dickey-Fuller- ADF) Results**

This table displays the test results of the Augmented Dickey-Fuller (ADF) unit root test for all variables, showing the test statistics and probability values for the series at level and at first difference.

| Variables              | Series at level |                  | Series of differences |                  |
|------------------------|-----------------|------------------|-----------------------|------------------|
|                        | Probability     | ADF <sup>C</sup> | Probability           | ADF <sup>C</sup> |
| Ln(TGDP <sub>t</sub> ) | 0.45            | -0.57            | 0.00                  | -8.90            |
| Ln(FDI <sub>t</sub> )  | 0.00            | -7.43            |                       |                  |
| Ln(DEPT <sub>t</sub> ) | 0.00            | -3.57            |                       |                  |
| Ln(REM <sub>t</sub> )  | 0.33            | -0.85            | 0.00                  | -5.74            |
| Ln(AIDS <sub>t</sub> ) | 0.98            | 1.92             | 0.00                  | -8.78            |
| Ln(INF <sub>t</sub> )  | 0.14            | -1.39            | 0.00                  | -7.94            |

*Source: prepared by the Researchers based on Eviews 10 program outputs.*

### **Appendix B: ARDL Cointegration Bounds Test**

| k                     | Value          |                       |
|-----------------------|----------------|-----------------------|
| 5                     | 3.328613       | F-statistics          |
| Critical value bounds |                |                       |
| I <sub>1</sub>        | I <sub>0</sub> | Level of significance |
| 3                     | 2.08           | 10%                   |
| 3.38                  | 2.39           | 5%                    |
| 4.15                  | 3.06           | 1%                    |

*Source: prepared by the Researchers using Eviews 10.*

### **Appendix C: Estimation of ARDL Model Variable Coefficients (Long-Run)**

| Variables              | Coefficients | Probability |
|------------------------|--------------|-------------|
| Ln(FDI <sub>t</sub> )  | 0.423917     | 0.0434      |
| Ln(DEPT <sub>t</sub> ) | 1.156295     | 0.2903      |
| Ln(REM <sub>t</sub> )  | -0.369450    | 0.5774      |
| Ln(AIDS <sub>t</sub> ) | -1.482895    | 0.1336      |
| Ln(INF <sub>t</sub> )  | 0.048004     | 0.8789      |
| C                      | -3.662856    | 0.4355      |

P(F-Statistique)=0.01     $R^2_{adj}=0.56$     DW = 2.05

Source: prepared by the Researchers using Eviews 10.

#### Appendix D: Error Correction Model (ECM) Estimation (Short-Run)

| Variables                                                                           | Coefficients | Probability |
|-------------------------------------------------------------------------------------|--------------|-------------|
| D(LNFDI)                                                                            | 0.246374     | 0.0202      |
| D(LNDEPT)                                                                           | 0.696211     | 0.1865      |
| D(LNREM)                                                                            | -0.351160    | 0.1402      |
| D(LNAIDS)                                                                           | -0.220624    | 0.6044      |
| D(LNINF)                                                                            | 0.120278     | 0.4644      |
| CointEq(-1)*                                                                        | -0.981532    | 0.0000      |
| EC=LNTGDP- (0.42LNFDI + 1.15 LNDEPT – 0.36 LNREM – 1.48 LNAIDS + 0.04 LNINF – 3.66) |              |             |

Source: prepared by the Researchers using Eviews 10.

#### Appendix E: Model Diagnostic Tests

|                                                                  |              |      |               |
|------------------------------------------------------------------|--------------|------|---------------|
| Breusch – Godfrey Serial Correlation LM Test                     |              |      |               |
| Null hypothesis ( $H^0$ ) no serial correlation                  |              |      |               |
| 0.27                                                             | Prob F(2.14) | 1.39 | F-statistique |
| Heteroskedasticity Test ARCH                                     |              |      |               |
| Null hypothesis ( $H^0$ ) Homoskedasticity                       |              |      |               |
| 0.70                                                             | Prob F(1.25) | 0.14 | F-statistique |
| Normality test Jarque-Bera                                       |              |      |               |
| Null hypothesis ( $H^0$ ) The residuals are normally distributed |              |      |               |
| 0.60                                                             | Prob         | 0.83 | Jarque-Bera   |
| Ramsey Reset Test                                                |              |      |               |
| Null hypothesis ( $H^0$ ) the model is correctly specified       |              |      |               |
| 0.61                                                             | Prob         | 0.27 | F-statistique |

*Source: prepared by the Researchers using Eviews 10.*

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