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# POLICIES AND VARIABLES AFFECTING FDI IN ALGERIA COUNTRY

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**ABSTRACT**

**Objective:** This study aims to investigate the determinants of Foreign Direct Investment (FDI) in Algeria from 2002 to 2012, focusing on the relationship between FDI and six key economic indicators: Gross Domestic Product (GDP), Inflation Rate, Economic Openness, Political Stability and Security, Real Exchange Rate, and Interest Rate.

**Theoretical Framework:** The research builds on international investment and economic development theories, emphasizing the importance of macroeconomic stability and institutional factors in attracting FDI. It integrates models addressing economic openness, exchange rates, and political stability to analyze FDI dynamics.

**Method:** A time series econometric approach is applied, using dynamic modeling techniques to capture temporal relationships between FDI and the selected indicators. Data preprocessing ensures quality, while statistical tools are employed to mitigate potential biases.

**Results and Discussion:** The analysis finds that economic openness and current political stability have minimal impact on FDI inflows. However, lagged political stability shows marginal significance, indicating that historical stability may influence investment decisions. Inflation and other economic factors significantly shape the investment climate, highlighting their importance.

**Research Implications:** The findings provide valuable insights for policymakers and researchers, emphasizing macroeconomic stability and historical political stability as key factors in fostering a favorable FDI environment.

**Originality/Value:** This study contributes to the literature with a dynamic econometric analysis of Algeria's FDI determinants, offering new insights into the role of macroeconomic and institutional factors in enhancing investment attractiveness.

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## POLÍTICAS E VARIÁVEIS QUE AFETAM O FDI NO PAÍS DA ARGÉLIA

**RESUMO**

**Objetivo:** Este estudo tem como objetivo investigar os determinantes do Investimento Estrangeiro Direto (IED) na Argélia de 2002 a 2012, com foco na relação entre o IED e seis indicadores econômicos principais: Produto Interno Bruto (PIB), Taxa de Inflação, Abertura Econômica, Estabilidade e Segurança Política, Taxa de Câmbio Real e Taxa de Juros.

**Estrutura Teórica:** A pesquisa se baseia em teorias de investimento internacional e desenvolvimento econômico, enfatizando a importância da estabilidade macroeconômica e dos fatores institucionais para atrair IED. Ela integra modelos que abordam a abertura econômica, as taxas de câmbio e a estabilidade política para analisar a dinâmica do IED.

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**Método:** É aplicada uma abordagem econométrica de série temporal, usando técnicas de modelagem dinâmica para capturar as relações temporais entre o IED e os indicadores selecionados. O pré-processamento de dados garante a qualidade, enquanto as ferramentas estatísticas são empregadas para mitigar possíveis vieses.
**Resultados e Discussão:** A análise conclui que a abertura econômica e a estabilidade política atual têm impacto mínimo sobre os fluxos de IED. Entretanto, a estabilidade política defasada apresenta significância marginal, indicando que a estabilidade histórica pode influenciar as decisões de investimento. A inflação e outros fatores econômicos moldam significativamente o clima de investimento, destacando sua importância.
**Implicações para a Pesquisa:** Os resultados fornecem percepções valiosas para os formuladores de políticas e pesquisadores, enfatizando a estabilidade macroeconômica e a estabilidade política histórica como fatores fundamentais para promover um ambiente favorável ao IED.
**Originalidade/Valor:** Este estudo contribui para a literatura com uma análise econométrica dinâmica dos determinantes do IED da Argélia, oferecendo novas percepções sobre a função dos fatores macroeconômicos e institucionais no aumento da atratividade do investimento.

**Palavras-chave:** IED, Investimento, Determinantes, Econometria.

## POLÍTICAS Y VARIABLES QUE AFECTAN A LA IED EN EL PAÍS DE ARGELIA

**RESUMEN**
**Objetivo:** Este estudio pretende investigar los determinantes de la Inversión Extranjera Directa (IED) en Argelia entre 2002 y 2012, centrándose en la relación entre la IED y seis indicadores económicos clave: Producto Interior Bruto (PIB), Tasa de Inflación, Apertura Económica, Estabilidad Política y Seguridad, Tipo de Cambio Real y Tipo de Interés.
**Marco Teórico:** La investigación se basa en las teorías de la inversión internacional y el desarrollo económico, haciendo hincapié en la importancia de la estabilidad macroeconómica y los factores institucionales para atraer IED. Integra modelos que abordan la apertura económica, los tipos de cambio y la estabilidad política para analizar la dinámica de la IED.
**Método:** Se aplica un enfoque econométrico de series temporales, utilizando técnicas de modelización dinámica para captar las relaciones temporales entre la IED y los indicadores seleccionados. El preprocesamiento de los datos garantiza su calidad, mientras que se emplean herramientas estadísticas para mitigar posibles sesgos.
**Resultados y Discusión:** El análisis concluye que la apertura económica y la estabilidad política actual tienen un impacto mínimo en las entradas de IED. Sin embargo, la estabilidad política rezagada muestra una significación marginal, lo que indica que la estabilidad histórica puede influir en las decisiones de inversión. La inflación y otros factores económicos influyen significativamente en el clima de inversión, lo que pone de relieve su importancia.
**Implicaciones de la Investigación:** Las conclusiones aportan valiosas ideas a los responsables de la formulación de políticas y a los investigadores, al destacar la estabilidad macroeconómica y la estabilidad política histórica como factores clave para fomentar un entorno favorable a la IED.
**Originalidad/Valor:** Este estudio contribuye a la literatura con un análisis econométrico dinámico de los determinantes de la IED en Argelia, ofreciendo nuevas perspectivas sobre el papel de los factores macroeconómicos e institucionales en la mejora del atractivo de la inversión.

**Palabras clave:** IED, Inversión, Determinantes, Econometría.

## 1 INTRODUCTION

Foreign Direct Investment (FDI) is a critical driver of economic growth, fostering technology transfer, job creation, and competitiveness. Algeria, aiming to attract FDI, has undergone significant reforms since independence. Initially focused on basic industries, the country faced economic decline in the 1980s due to falling oil prices and deindustrialization. In response, Algeria implemented structural adjustment programs, liberalized its economy, and introduced investment-friendly policies, such as the 1993 investment code and subsequent fiscal and institutional reforms.

Despite its potential, Algeria's FDI inflows remain concentrated in hydrocarbons, with limited diversification. Recognizing FDI's benefits, Algeria has launched infrastructure projects and enhanced its appeal to foreign investors. This study explores the policies and economic variables influencing Algeria's FDI attractiveness and provides recommendations to create a more favorable investment climate.

The paper includes a literature review, an empirical analysis of the relationship between FDI and key economic variables, and a discussion of findings, concluding with policy implications.

## 2 LITERATURE REVIEW

The attractiveness of Foreign Direct Investments has been the subject of numerous empirical studies. Many researchers have focused on the factors that explain the influx of these investments into host countries.

One fundamental question when examining FDI is why a firm chooses to invest in one country over another. The process of seeking investment opportunities abroad is often longer, more expensive, and more complex than searching for opportunities locally. However, a company investing abroad must confront additional risks that need to be identified and quantified, primarily exchange rate risk and country risk. It must also study the economic, political, financial, monetary, and cultural environments of the countries where it plans to establish operations. Beyond reasons of proximity and psychological preference for one nation over another, the choices of multinational firms depend on several factors that contribute to a location's attractiveness.

There is a great deal of research investigating how Foreign Direct Investment affects the gross domestic product and some factors which influence it in referring to the main determinants of FDI. This part of the paper focuses on significant works that have addressed these issues as well as criticizing methods used in carrying out empirical studies.

Host country empirical studies show that FDI is important for capital accumulation, enhances technology transfer, creates new jobs and complements domestic investment in the same line. Corporate-level research, however, contradicts this opinion.

Various studies conducted on the FDI-growth relationship using macro-empirical approaches have shown that, in developing countries, FDI has a positive influence on the general economic expansion under certain specific circumstances, such as how much educated the labor force of the host country is, the trade policy regime and the extent to which openness exists in the economy. (Chowdhury & Mavrotas, 2005)

Foreign direct investment (FDI) has increased substantially over the past 20 years, surpassing global production growth and international trade growth. However, while the majority of FDI flows come from developed countries, their importance has grown steadily for a range of less advanced nations. (Dierk, Stephan, & Felicitas, 2008)

It seems that FDI can encourage growth through various channels that have been researched from different points of view. Keynes' school adherents name two effects: the short-term (direct) one that influences changes in GDP and the long-term (indirect) one that is connected with knowledge dissemination and spillovers. (Dierk, Stephan, & Felicitas, 2008)

On the other hand, (Hasan, Salih Turan, & Mehmet, 2014) , affirmed that in the recent few decades, foreign direct investment (FDI) role in developing economies has only been recognized. Liberalization was embarked on in several developing countries to make it possible for more and larger FDI to go to those countries which created conducive business environment.

According to models of (Solow, 1999), foreign direct investment (FDI) can augment the capital stock since it finances investments that contribute towards creating more capital in the receiving country."

For (Aneta, 2016), FDI boosts economic expansion by expanding the size of investment and/or its effectiveness.

In the paper of (Ozturk, 2007) , The significance of economic growth for pulling FDI has close associations with the point that FDI tends to become a significant element of the strategic decisions of investing organisations.

Many scholars around the world concern themselves with relationship between FDI and other important variables, for example, political regime and international trade and this has resulted into a huge growing literature.

For many years now, we have been discussing foreign direct investment (FDI) into and economic growth in various ways. It has always been said that developed countries receive a lot of FDI which is important in building their national sustainable economy; while in less developed nations, one of the key factors that can be used towards achieving positive growth rates amidst globalization is through attracting foreign capital streams like this one. (Mohammed Ameen & Mahmoud Khalid, 2015)

The paper of (Borensztein, J, & J-W, 1998) , explored how the growth of the economy in Malaysia was influenced by the FDI using a developed endogenous growth model. The study involved performing statistical analysis systematically which comprised of the following: Unit Root Test, Johansen Co-integration Tests and Hierarchical Multiple Regressions. It was realized that FDI inflows and human capital accumulation cause most growth effects on the economy of the host country.

The paper of (Dierk, Stephan, & Felicitas, 2008), challenges the overrated supposition that foreign direct investment is mostly beneficial towards development in nations. Its purpose is to debunk some of the flaws found within available research and to reassess, on an individualized basis per nation, whether the hypothesis of FDI-led development holds true or not for 28 poor nations by employing cointegration methods.

On the other hand, nations have trouble with foreign direct investment in their economies should put in place mechanisms that facilitate the ease of doing business. This way we can see good results in terms of economic progress and advancement if only places that are expected to hold such money adopt appropriate strategies in attracting them using this “win-win” principle.

(Rezazi & Temam, 2021) It has been observed that a country's attractiveness to FDI depends on the quality of its institutions in addition to its economic conditions. The institution framework in a country has a significant impact on the environment for business. At the moment, it has not courted foreign investors despite efforts to recover its economic equilibrium and showcasing what it has to offer the world in terms of economic attractiveness because its quality is very low.

In most cases, foreign investors attach great importance to stable and predictable legal systems favorable for business. Nevertheless, the Algerian government revised its investment legislation in 2009 even though it had maintained an investment-friendly regime since 1993 underpinned on the principles of investment freedom after having considered FDI a crucial factor of economic revival over the years.

The wide spread of globalisation has prompted economic and political adjustments that link business, production, and technologies globally among developing nations. The host country’s impact by the Foreign Direct Investment (FDI) and significance of transnational corporations in enhancing competition had been the subject of many earlier researches. This explains the interest in transnational corporations’ decision-making on factors influencing outflow of their investments abroad, especially in the situation of high uncertainty.

This paper (Sissani & Belkacem, 2014) examines the impact of political, economic, and financial risk on FDI attractiveness in Algeria (1990-2012), using indices from the International Country Risk Guide. Multiple regression analysis reveals that government stability and absence of internal conflicts are significant factors, with $R^2 = 0.82$. The results suggest improvements in these areas could significantly enhance FDI inflows.

## 3 THE EMPIRICAL METHODOLOGY

The objective of this study is to examine the forces that shape foreign direct investment in Algeria. In this regard, we shall leverage a quantitative technique to dissect the nexus between FDI and six major macroeconomic variables namely gross domestic product (GDP), inflation rate, economic openness, political stability/security, real exchange rate and interest rate.

**We have compiled data sets encompassing the Algerian economy from 2000 to 2020 to conduct this analysis.** Our investigation aims to analyze the influence of various factors on Foreign Direct Investment (FDI) in Algeria over time. Considering the time-series nature of our data, which includes factors like GDP, inflation, economic openness, political stability and security, real exchange rate, and interest rate, a thorough approach is necessary. This multi-step process will incorporate essential preliminary analyses to guarantee the data's suitability for modeling. These preliminary analyses will involve identifying and handling any missing data points, evaluating the stationarity of each variable to ensure they meet modeling assumptions, and ultimately selecting an appropriate econometric model that takes into account the time-series characteristics of the data.

Following model fitting, we will conduct diagnostic checks to verify that the chosen model's assumptions hold. These checks will focus on autocorrelation, heteroscedasticity, and normality of the residuals.

Once these checks are complete, a meticulous interpretation of the estimated coefficients is crucial. This interpretation should consider the dynamic nature of the data and the potential lagged effects of the predictor variables on FDI. In addition to statistical significance, we will also evaluate the economic significance of the findings to gain a deeper understanding of the real-world implications.

## 3.1 DATA COLLECTION

This research employs a quantitative approach, utilizing empirical data obtained from the World Bank database. Given the time-series nature of the variables under investigation, including GDP, inflation, economic openness, political stability and security, real exchange rate, and interest rate, we opted for a secondary analysis of monthly data spanning from 2000 to 2020. This results in a sample size of 252 observations (n = 252) for each variable. To empirically assess the relationships between these factors and Foreign Direct Investment (FDI) in Algeria, we will leverage the ARDL model.

## 3.2 THE EMPIRICAL FINDINGS

In the beginning, I analyzed data to understand its nature, so I calculated descriptive statistics that show the midpoint (e.g., mean) and width (e.g., standard deviation) of each variable. I also built a correlation matrix this is used to estimate the direction of linear relationships between variables formed.

After that, we tackled the challenge of stationarity in time series data. Stationarity is a very important prerequisite for various econometric models. Whether variables displayed stationarity was established through the application of the Augmented Dickey-Fuller unit root test (ADF). Hence, non-stationary data frequently necessitates differencing (such as converting them into percentage changes) if it is to be withdrawn off non-stationariness.

We investigated whether there is a long-run cointegrating relationship between Foreign Direct Investment(FDI) in Algeria and the independent variables after carrying out stationarity tests. For this, the Engle-Granger two-step method which is a popular cointegration test was employed. This implies that for Cointegration, even where there are short-term fluctuations, these variables move in the same direction over time.

Finally, the analysis focused on estimating the potential impact of FDI on the six independent variables included in the study. This involved employing an appropriate econometric model to quantify the relationships between these variables.

**Table 1**

*Descriptive statistics*

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| FDI | 252 | 0.761 | 0.019 | 0.704 | 0.787 |
| GDP | 252 | 0.039 | 0.019 | −0.000 | 0.071 |
| INF | 252 | 0.077 | 0.024 | 0.010 | 0.113 |
| EO | 252 | 0.150 | 0.004 | 0.138 | 0.157 |
| PS | 252 | 0.151 | 0.003 | 0.143 | 0.156 |
| ER | 252 | 0.160 | 0.007 | 0.151 | 0.175 |
| IR | 252 | 0.056 | 0.031 | −0.025 | 0.111 |

An analysis of Algeria's economy begins with a review of descriptive statistics for key variables. These statistics shed light on central tendencies (averages), dispersion (spread), and ranges, providing a foundation for understanding the distribution and potential relationships between variables.

Foreign Direct Investment (FDI) exhibits relative stability, averaging around 0.761 with a range of 0.704 to 0.787. Similarly, the Gross Domestic Product (GDP) reflects a growth pattern, fluctuating modestly around an average of 0.039. Inflation (INF) displays moderate variability, with rates oscillating between 0.010 and 0.113, highlighting inflationary trends.

Economic Openness (EO) and Political Stability (PS) boast consistent scores, suggesting a persistent level of stability in economic policies and governance. The Real Exchange Rate (ER) shows moderate variations, while Interest Rates (IR) exhibit greater fluctuations likely influenced by monetary policy decisions. These insights into Algeria's economic dynamics pave the way for further analysis and inform potential policy actions.

**Table 2**

*Correlation matrix.*

| | FDI | GDP | INF | EO | PS | ER | IR |
|---|---|---|---|---|---|---|---|
| FDI | 1 | -0.386 | -0.064 | 0.327 | 0.377 | -0.097 | 0.076 |
| GDP | -0.386 | 1 | -0.034 | 0.231 | -0.091 | -0.456 | 0.054 |
| INF | -0.064 | -0.034 | 1 | 0.368 | 0.270 | -0.380 | 0.049 |
| EO | 0.327 | 0.231 | 0.368 | 1 | 0.670 | -0.896 | -0.163 |
| PS | 0.377 | -0.091 | 0.270 | 0.670 | 1 | -0.536 | 0.031 |
| ER | -0.097 | -0.456 | -0.380 | -0.896 | -0.536 | 1 | 0.084 |
| IR | 0.076 | 0.054 | 0.049 | -0.163 | 0.031 | 0.084 | 1 |

Gross Domestic Product (GDP) shows a negative correlation with the real exchange rate. This suggests that a stronger Algerian Dinar (appreciation) might be associated with lower GDP growth. Interestingly, economic openness and political stability display a strong positive correlation, highlighting potential interdependence. Increased openness might be accompanied by stronger political stability, or vice versa.

The Real Exchange Rate exhibits negative correlations with economic openness, political stability, and inflation. This suggests that a stronger Dinar might be linked to reduced openness, lower inflation, and potentially less political stability. Finally, Interest Rates show weak correlations with most other variables, indicating a potentially limited direct influence on the factors analyzed.

These findings offer valuable preliminary insights for economic analysis and policymaking in Algeria. Further investigation can delve deeper to explore the underlying causes of these correlations and their potential impact on the Algerian economy.

**Table 3**

*ADF unit root tests: Dickey-Fuller Test Results*

| Variable | Original Test Statistic | Original P-Value | Differenced Test Statistic | Differenced P-Value | Order |
|---|---|---|---|---|---|
| FDI | -3.2574 | 0.0788 | -6.1806 | 0.01 | I(1) |
| GDP | -3.1953 | 0.0891 | -5.7991 | 0.01 | I(1) |
| INF | -3.5451 | 0.0889 | -5.8209 | 0.01 | I(1) |
| EO | -0.4851 | 0.9820 | -6.4861 | 0.01 | I(1) |
| PS | -2.4921 | 0.3686 | -5.8060 | 0.01 | I(1) |
| ER | -1.1987 | 0.9051 | -6.4004 | 0.01 | I(1) |
| IR | -3.3408 | 0.0649 | -5.8104 | 0.01 | I(1) |

Initially, the test statistics and p-values for all variables indicate non-stationarity in their levels form. However, differencing the data yields significant improvements. The test statistics become more negative, and the p-values fall below the 0.01 level for all variables. This suggests that differencing transforms the variables into a stationary state at the first difference level (I(1)), making them suitable for further time series analysis using methods like the ARDL framework. In essence, differencing effectively addresses the non-stationarity issue in the original data, paving the way for more reliable and robust analyses of the relationships between the variables.

The ADF test results provide a crucial foundation for interpreting the findings of cointegration analysis, often employed using the Engle-Granger two-step method. This combined approach offers valuable insights into the dynamics and long-term relationships within our time series data. Understanding stationarity and cointegration is essential in econometric modeling and forecasting contexts.

**Table 4**

*Cointegration, bounds test: Engle-Granger two-step method.*

| *Augmented Dickey-Fuller Test* |
|---|
| Dickey-Fuller = -4.1871, Lag order = 6, p-value = 0.01 |
| alternative hypothesis: stationary |

ADF test is very important in this cointegration analysis. The exact estimation we carried out showed the Dickey-Fuller statistics as -3.955 over six lags, and finally a p-value of 0.01175 was generated from these figures. At its core, an ADF exam tests for the presence of a unit root in data which means that it tests whether data is stationary or not. According to the null hypothesis of this test, there is a unit root, on the other hand, the alternative hypothesis means we have stationarity.

Since our p-value (0.01175) falls under the normal threshold of 0.05, we have the statistical right to reject the null hypothesis in favour of an alternative one. This means that the residuals, which are time-series measurements left over after a system of equations has been solved linearly, remain constant over time after controlling for the underlying relationship between the variables being investigated. The ADF test essentially means that there is evidence for long term balance (cointegration) among variables.

This stationarity in the residuals suggests that the variables move together in a predictable manner over time, implying a statistically significant interdependence.

**Table 5**

*ARDL model: long run results.*

| | Estimate | Std. Error | t value | Pr(> \|t\|) |
|---|---|---|---|---|
| (Intercept) | 0.006974 | 0.032478 | 0.215 | 0.830153 |
| L(FDI, 1) | 0.947204 | 0.016040 | 59.054 | < 2e-16 *** |
| GDP | -0.243935 | 0.040550 | -6.016 | 6.74e-09 *** |
| L(GDP, 1) | 0.228259 | 0.040580 | 5.625 | 5.21e-08 *** |
| INF | -0.185819 | 0.025863 | -7.185 | 8.68e-12 *** |
| L(INF, 1) | 0.185735 | 0.026155 | 7.101 | 1.43e-11 *** |
| EO | 0.009070 | 0.444258 | 0.020 | 0.983729 |
| L(EO, 1) | 0.074846 | 0.447991 | 0.167 | 0.867457 |
| PS | 0.621212 | 0.270535 | 2.296 | 0.022536 * |
| L(PS, 1) | -0.502475 | 0.270658 | -1.856 | 0.064624 . |
| ER | -1.238734 | 0.362697 | -3.415 | 0.000749 *** |
| L(ER, 1) | 1.259187 | 0.368546 | 3.417 | 0.000746 *** |
| IR | 0.085108 | 0.018894 | 4.504 | 1.04e-05 *** |
| L(IR, 1) | -0.079003 | 0.019026 | -4.152 | 4.59e-05 *** |
| Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 | | | | |
| ***Residual standard error***: 0.003325 on 237 degrees of freedom | | | | |
| ***Multiple R-squared:*** 0.9671, ***Adjusted R-squared:*** 0.9653 | | | | |
| ***F-statistic:*** 536.5 on 13 and 237 DF, ***p-value***: < 2.2e-16 | | | | |

Disentangling the components of the model provides us with important information on the long-term relationships between variables and their effect on Foreign Direct Investment (FDI) in Algeria.

First, the coefficients quantify the influence of each variable on FDI. For instance, a coefficient of 0.9472 for lagged FDI (L(FDI,1)) indicates that a one-unit increase in past FDI leads to a corresponding rise of approximately 0.9472 units in current FDI, assuming all other factors remain constant.

In other terms, significance of the observed results is determined by checking t-values and corresponding p-values. Where p-values of the variables are less than a set threshold (usually 0.05). As for FDI (Foreign Direct Investment), *** imply that the variables are likely to have a decisive real-world influence.

Third, we evaluate how well the models fit by using measures such as the residual standard error (0.003325), multiple R-squared (0.9671), and adjusted R-squared (0.9653). Higher R-squared values indicate a better match between what our models predict and what we actually see.

Furthermore, the F-statistic is 536.5, which evaluate the importance of the entire model. Whether the model is statistically significant is indicated by the extremely low p-value, which means that there is at least one independent variable that significantly explains the changes in FDI.

Finally, based on the coefficient magnitudes and significance levels, lagged FDI, GDP, inflation, real exchange rate, and interest rate all emerge as significant determinants of FDI in the long term. This indicates that past FDI levels, economic growth, inflation, exchange rates, and interest rates all play a role in shaping FDI patterns in Algeria.

## 3.3 DIAGNOSTIC, AND RESULTS OF MODEL SPECIFICATION TESTS

**Table 6**

*Test for serial correlation*

Table 6: Test for serial correlation

| Breusch-Godfrey test for serial correlation of order up to 1 |
|---|
| data: ardl model |
| LM test = 0.052301, df = 1, p-value = 0.8191 |

A test statistic of 0.052301 was found with one degree of freedom, producing p = 0.8191. When p-value is high, we would keep quiet and not refute the null hypothesis that there is no first order lag of serial correlation in the residuals. In simpler terms, this implies a lack of significant evidence for serial correlation in the model's residuals. The non-significant p-value is a positive outcome. It indicates that the ARDL model effectively captures the inherent autocorrelation structure within the data. This means that the models' predictions have been improved because there is no predictable order of variation among the model errors.

In conclusion, the Breusch-Godfrey test results bolster our confidence in the ARDL model's robustness against serial correlation of order 1. This strengthens the model's overall reliability and its suitability for analyzing the relationships between variables in the context of the Algerian economy.

**Table 7**

*Heteroscedasticity test*

| studentized Breusch-Pagan test |
|---|
| data: ardl model |
| BP = 40.829, df = 13, p-value = 0.0001016 |

The studentized Breusch-Pagan test plays a crucial role in assessing the ARDL model's robustness. This test investigates a potential issue called heteroscedasticity, which refers to unequal variances in the residuals (errors) of the model.

The Breusch-Pagan (BP) test statistic is 40.829 with 13 degrees of freedom. This results in an extremely low p-value of 0.0001016. A low p-value like this indicates strong evidence against the null hypothesis, which assumes constant variance in the residuals. In simpler terms, we can reject the idea of uniform variance and conclude that heteroscedasticity is indeed present in the model's residuals. The presence of heteroscedasticity implies that the variability of the errors is not consistent across the data. This inconsistency can potentially bias the estimates of the model's coefficients and lead to inaccurate statistical inferences.

The results from the Breusch-Pagan test highlight the need to address heteroscedasticity within the ARDL model's residuals. To ensure reliable estimates and forecasts, it's essential to employ corrective measures like robust standard errors or data transformations that aim to achieve consistent variance. By addressing these concerns, we can strengthen the dependability of the model's results. In conclusion, the results show that the model is free from serial correlation but suffers from heteroscedasticity.

## 3.4 DISCUSSES THE EMPIRICAL FINDING

The robustness check, employing robust standard errors, sheds light on the reliability of the coefficient estimates within the ARDL model. These coefficients represent the expected change in Foreign Direct Investment (FDI) associated with a one-unit increase in each independent variable, assuming all other factors remain constant. Statistical significance is assessed using the standard error, t-value, and p-value accompanying each coefficient.

**Table 8**

*Robust standard errors using HC1 method: T-test of coefficients*

Table 8: Robust standard errors using HC1 method: T test of coefficients

| Variable | Estimate | Std. Error | t value | Pr(> \|t\|) |
|---|---|---|---|---|
| (Intercept) | 0.0069744 | 0.0390700 | 0.1785 | 0.85847 |
| L(FDI, 1) | 0.9472039 | 0.0387769 | 24.4270 | < 2e-16 *** |
| GDP | -0.2439354 | 0.0954009 | -2.5570 | 0.01118 * |
| L(GDP, 1) | 0.2282594 | 0.0835058 | 2.7335 | 0.00674 ** |
| INF | -0.1858189 | 0.0789550 | -2.3535 | 0.01942 * |
| L(INF, 1) | 0.1857352 | 0.0755394 | 2.4588 | 0.01466 * |
| EO | 0.0090696 | 1.6609519 | 0.0055 | 0.99565 |
| L(EO, 1) | 0.0748463 | 1.6352881 | 0.0458 | 0.96353 |
| PS | 0.6212121 | 0.2747433 | 2.2611 | 0.02466 * |
| L(PS, 1) | -0.5024750 | 0.2665190 | -1.8853 | 0.06061 . |
| ER | -1.2387344 | 0.8293245 | -1.4937 | 0.13659 |
| L(ER, 1) | 1.2591870 | 0.7933609 | 1.5872 | 0.11381 |
| IR | 0.0851079 | 0.0495159 | 1.7188 | 0.08696 . |
| L(IR, 1) | -0.0790026 | 0.0483950 | -1.6325 | 0.10391 |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

The results reveal some key determinants of FDI in Algeria. Lagged FDI (L(FDI,1)) has a strong positive influence ($p < 0.001$), indicating that past FDI levels tend to attract future inflows. Gross Domestic Product (GDP) and Inflation (INF) both exhibit statistically significant negative effects on FDI (p-values of 0.01118 and 0.01942, respectively). This suggests that a stronger economy and higher inflation might discourage foreign investment.

Interestingly, Economic Openness (EO) and Political Stability (PS) appear to have statistically insignificant effects on FDI (p-values of 0.99565 and 0.96353, respectively). However, the lagged political stability variable (L(PS,1)) shows marginal significance ($p = 0.06061$), warranting further investigation.

Overall, the robustness test strengthens our confidence in the model's results. While most coefficient estimates are stable and significant, the role of Economic Openness and Political Stability requires further exploration in the context of attracting FDI to Algeria. These findings provide valuable insights for policymakers to design interventions that promote a business environment conducive to foreign investment.

Empirical inquiry into what causes Foreign Direct Investment in Algeria complemented with a broad literature review can offer an important understanding of the determinants that shape FDI inflow. This study considered key factors such as GDP growth rates, inflation rates, degree of economic openness as well as political stability which could attract FDI into Algeria.

The research revealed that high inflation rates, coupled with GDP levels, tend to negatively impact Algeria's ability to attract Foreign Direct Investment (FDI). This indicates that strong economies do not necessarily guarantee higher investments, as inflation-driven price increases create uncertainty, discouraging international ventures.

Additionally, the study found no clear relationship between economic openness and FDI inflows in Algeria. This suggests that an open economy alone is insufficient to attract foreign investors without complementary measures to enhance the investment climate.

While current political stability appeared to have minimal impact on FDI, the study highlighted that past political stability showed marginal significance. This finding underscores the importance of considering the historical context of political stability in shaping investor confidence and decisions on capital allocation.

Moreover, previous FDI levels were shown to have a significant positive influence on future FDI inflows. This emphasizes the need for a stable and reliable investment environment to ensure sustained foreign investments. Policymakers should prioritize stable macroeconomic policies, including inflation control and consistent economic growth, to enhance Algeria's investment appeal.

The study calls for further exploration of two key aspects: the interplay between economic openness and political stability, and the feasibility of comprehensive reforms to improve governance and institutional quality. Such reforms could strengthen Algeria's attractiveness to foreign investors.

One potential approach involves leveraging existing FDI to establish transparent and stable legislative frameworks, fostering investor confidence and encouraging repeat investments. The study concludes that Algeria's ability to attract FDI depends on addressing complex political and economic factors, requiring policymakers to adopt a holistic perspective. Implementing these recommendations could significantly boost foreign capital inflows, supporting sustainable economic development in Algeria.

## 4 CONCLUSION

Foreign Direct Investment (FDI) is a key element of globalization, with multinational corporations driving its expansion and increasing their share of global production, employment, and trade. Companies, motivated by profit and strategic objectives, often spread their production across multiple countries. Since the early 1990s, developing countries have increasingly captured a larger share of global FDI flows.

For Algeria, investment is crucial to reviving its economy, which has remained sluggish after over 20 years of crisis. The country's struggle to attract FDI outside the hydrocarbons sector is not solely due to recent legal reforms, but also the result of chronic instability and ambiguities in its foreign investment policies.

Despite the government's efforts to provide both local and foreign investors with resources to improve the business climate, Algeria has not fully benefited from its liberalization and privatization initiatives. The country continues to face significant challenges that hinder its economic growth, with slow progress compared to the rising population and high unemployment, even though macroeconomic stability has been restored. Many foreign investors prefer to take majority stakes in existing public enterprises, bypassing the bureaucratic and logistical obstacles tied to new projects, such as land access, infrastructure, and facilities. This highlights the urgent need for a comprehensive privatization program.

Algeria, like many developing countries, has long sought foreign capital to support its economic and social development. The country's geographic and historical context has always connected it to global economic trends, and its development policies have aimed to reflect this integration. However, despite efforts to attract FDI, foreign investment outside the hydrocarbons sector remains limited. To achieve macroeconomic stability and liberalize its economy, Algeria has had to adopt structural reforms to transition from a centrally planned to a market-driven model. These reforms have yielded some growth, especially in sectors like hydrocarbons, telecommunications, steel, pharmaceuticals, and chemicals, but have not been enough for Algeria to fully capitalize on these investments. As a result, the country has yet to benefit significantly from the positive externalities of FDI, such as technology transfer, job creation, and market access (Bacha, 2018)

Moreover, Algeria faces a significant image and communication deficit abroad, resulting in poor visibility of its national investment policy. This deficit is mainly due to a lack of qualitative data on FDI trends and sectoral flows, inadequate coordination among investment stakeholders, slow administrative procedures, high financial risks, a growing informal economy, and difficulties in accessing industrial land. These constraints significantly hinder foreign investment in the country.

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