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# **Boosting Economic Growth in Angola: Unveiling the Dynamics of Domestic Investments and Exports**

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## **Abstract:**

This paper extensively explores the intricate interplay between domestic investments, exports, and the long-term economic growth of Angola. By leveraging a robust dataset spanning from 2002 to 2022, we apply rigorous econometric methods, including cointegration analysis and the Autoregressive Distributed Lag (ARDL) model, to unveil the subtle dynamics among these crucial economic indicators. Contrary to conventional expectations, our analysis uncovers a surprising result: there is no apparent impact of domestic investments and exports on the sustained economic growth of Angola. These findings challenge established economic paradigms and emphasized the imperative need for a thorough reassessment of existing economic policies within the country.

**Keywords:** Domestic Investment, Exports, Economic Growth, ARDL Model, Angola

**JEL Classification :** C13, E22, F14, O47, O55.

## **1. Introduction**

To elaborate further, Angola's status as the second-largest oil producer in sub-Saharan Africa underscores its prominence in the global economic landscape. The nation's substantial natural resources have attracted widespread interest from economists and researchers who recognize its potential for significant economic development. Despite this potential, Angola faces persistent challenges that hinder its journey towards sustained economic growth. These challenges are multifaceted, encompassing historical conflicts, a heavy reliance on oil exports, and a pressing need for economic diversification. The historical context and the unique blend of obstacles make fostering economic expansion in Angola a complex and crucial undertaking. The study's significance is particularly pronounced against this backdrop. By delving into the intricate relationship between domestic investments and exports, the research aims to unravel the dynamics that influence the long-term economic growth of Angola. This exploration is crucial given the nation's historical context and the need to navigate the complexities arising from its economic structure. Choosing Angola as the primary focus of this study is noteworthy for several compelling reasons. First, the nation's dependence on oil exports raises questions about its resilience to external shocks, especially those related to fluctuations in global oil prices. Second, Angola grapples with developmental challenges, including persistent economic and social inequalities. Addressing these challenges requires a nuanced understanding of the factors influencing economic growth. Furthermore, the study extends its relevance beyond Angola's borders. The insights gained from analyzing Angola's economic intricacies can serve as a valuable reference for other emerging economies confronting similar issues. Thus, this research contributes not only to the understanding of Angola's economic landscape but also to the broader quest for effective strategies to stimulate sustained and balanced economic growth in developing nations.

To begin, Angola holds a noteworthy position within the African economic landscape, standing as the second-largest oil producer in sub-Saharan Africa. This distinction underscores the nation's economy, characterized by a significant dependence on crude oil exports. This reliance prompts critical inquiries regarding the susceptibility of Angola's economic framework to external shocks, particularly the impact of fluctuations in international oil prices. Secondly, Angola confronts substantial developmental hurdles. Despite recent advancements, pervasive economic and social inequalities persist, underscoring the imperative need for economic diversification. Prioritizing diversification is essential to mitigate Angola's vulnerability to the volatile nature of oil prices on the global stage. In this context, comprehending the factors

influencing economic growth becomes paramount for crafting effective public policies geared towards sustainable development. Lastly, this study extends its significance beyond the national borders of Angola. The challenges faced by emerging economies, especially those grappling with similar issues, can find resonance in the insights gleaned from Angola's experience. The findings of this research can potentially offer a blueprint or model for crafting policies that address economic growth challenges in other nations. In essence, this research contributes to a broader exploration aimed at deciphering the mechanisms of economic growth in developing economies and identifying strategies to foster growth in a sustainable and balanced manner.

Indeed, the significance of this study extends beyond the confines of Angola and resonates on a global scale. By selecting Angola as a case study, the research acquires timely and meaningful relevance, shedding light on the intricacies of national investments and exports. This choice is particularly pertinent given the unique economic challenges facing Angola and the broader implications for similar economies worldwide. The study serves as a timely exploration, considering the urgency of addressing the economic and social challenges prevalent in Angola. The historical context, marked by conflicts and a heavy reliance on oil exports, underscores the need for nuanced insights into the dynamics of domestic investments and exports. Understanding these dynamics is crucial for formulating effective strategies to navigate the complexities and foster sustainable economic and social development in the country. Moreover, the choice of Angola as a focal point for this study underscores the importance of context-specific analyses. The nation's economic landscape, shaped by its reliance on oil exports, demands tailored approaches that may not be universally applicable. By delving into the specifics of Angola's case, the study contributes valuable insights that can inform targeted policy interventions, not only in Angola but also in other regions grappling with similar challenges. In essence, this research underscores the relevance and urgency of understanding the interplay between domestic investments, exports, and economic growth in Angola. It illuminates the path for addressing the pressing economic and social challenges within the country while offering lessons and insights that transcend its borders and contribute to the broader discourse on sustainable economic development in emerging economies.

## **2. Literature Survey**

The relationship between investments and economic growth has been extensively studied in economic literature, with particular emphasis on theories surrounding human and physical capital. These theories underscore the pivotal role of investments in shaping the trajectory of

economic development. In the realm of human capital, investments in education and training are recognized as influential drivers of economic growth. Such investments are deemed essential for enhancing labor productivity, as a well-educated and skilled workforce is better equipped to contribute to overall economic output. On the other hand, in the context of physical capital, investments in infrastructure, machinery, and equipment are associated with heightened productivity, thereby contributing to economic expansion. Numerous studies have explored the link between investment rates and economic growth, consistently revealing a positive correlation. However, the precise impact of investments on growth is contingent upon a myriad of factors. The quality of institutions, political stability, and the absorptive capacity of government play integral roles in shaping the outcomes of investment-led growth. In essence, the effectiveness of investments in driving economic growth is not uniform and is influenced by the broader institutional and political context within which they occur {Choe (2003), Adams (2009), Lean and Tan (2011), Ullah et al (2014), Ilegbinosa et al (2015), Ghazali (2010), Mohamed et al (2013), Emmanuel and Kehinde (2018), Bakari (2021a), Bakari (2021b), Bakari (2017a) and Bakari (2022)}. Exports wield significant influence on economic growth, serving as a pivotal avenue for countries to tap into new markets and enhance the competitiveness of their industries. Economic literature consistently underscores the positive correlation between openness to international trade and economic growth. The relationship between exports and growth, however, is nuanced and contingent on various factors. The structure of the economy, the global demand for exported products, and a nation's ability to sustain competitiveness in global markets all play crucial roles in determining the impact of exports on growth. In economies with diverse and adaptable structures, exports can catalyze growth by fostering specialization, efficiency, and innovation. Countries exporting goods and services in high demand globally stand to benefit from increased revenue, job creation, and overall economic expansion. Conversely, the effectiveness of exports as a driver of growth may be limited if a country relies heavily on a narrow range of products or faces challenges in maintaining competitiveness. The ability to adapt to evolving global demand and uphold competitive advantages becomes imperative for sustained positive effects on economic growth. In essence, while exports are recognized as a key engine for economic growth, their impact is contingent on the interplay of factors such as economic structure, global demand dynamics, and a nation's capacity to compete in the international marketplace. Understanding and navigating these complexities is essential for formulating effective trade policies that contribute to sustained and inclusive economic growth {See: Feder (1983), Balassa (1978), Ram (1985), Emery (1967), Anwer and Sampath (2000), Fosu (1990), Begum and Shamsuddin (1998), Maizels et al (1968),

Sharma and Dhakal (1994), Sengupta and Espana (1994), Rangasamy (2009), Bakari (2017b), Bakari (2022), Bakari and Mabrouki (2017)}.

The diverse array of scholarly investigations presented provides a rich tapestry of insights into the complex relationships among domestic investment, exports, and economic growth across different countries and time periods. Zhu et al.'s (2022) extensive study focusing on Asian nations from 1981 to 2016, utilizing the Wald test within the Vector Error Correction Model (VECM) and the fixed effects model, underscores the significant impact of exports on economic growth in the region. Similarly, Subhan et al. (2021) empirically explored the interconnectedness of exports and economic growth in India from 1961 to 2015. Their meticulous approach, incorporating the VAR Model and rigorous tests for variable stationarity, revealed a positive influence of exports on India's economic growth. In the case of Nigeria, Amade et al. (2022) investigated the relationship between domestic investments and economic growth from 1981 to 2018. Their analysis, grounded in cointegration and ARDL models, unveiled a substantial role for domestic investment in driving economic growth. The associated policy recommendations emphasize the importance of optimizing local investment opportunities and normalizing exchange rates and trade transactions. Contrastingly, Ogunjinmi (2022), focusing on Nigeria within the period of 1981 to 2019, identified a negative relationship between domestic investment and long-term economic growth in Nigeria, revealing a more nuanced and context-specific dynamic. Meyer and Sanusi's (2019) examination of South Africa, utilizing quarterly data from 1995 to 2016, using Johansen's cointegration and vector error correction models, demonstrated a causality running from economic growth to investment, challenging conventional expectations. In the context of Japan, Bakari (2017c) affirmed the positive influence of domestic investment and exports on economic growth from 1970 to 2015, while Bakari et al. (2018), focusing on Nigeria from 1981 to 2015, using cointegration analysis and VECM models, concluded that no discernible relationship exists between exports, domestic investment, and economic growth in both the short and long run. In the context of India, Fakraoui and Bakari's (2019) investigation from 1960 to 2017, employing cointegration analysis and VECM models, revealed no long-term relationship between domestic investment, economic growth, and exports. However, they identified that exports have a causal impact on economic growth in the short run, highlighting the temporal dynamics of these relationships. Turning to France, Bakari (2018) discovered a negative long-term effect of domestic investment on economic growth from 1972 to 2016. This negative effect was attributed to the adverse cointegration relationship between taxation, domestic investment, and economic growth,

underscoring the complex interplay of factors in the French economic landscape. In the case of Canada, Bakari (2016) found no significant relationship between domestic investment and economic growth in both the short and long run from 1990 to 2015, emphasizing the need for country-specific considerations in understanding these dynamics. Shabbir et al.'s (2021) examination in Pakistan from 1980 to 2017, employing cointegration analysis and ARDL models, demonstrated a positive influence of domestic investment on economic growth in both the long and short run, providing insights into the Pakistani economic context. Contrastingly, Mohammed and Nasiru (2021) found a negative influence of domestic investment on economic growth in Nigeria from 1981 to 2018, challenging conventional expectations and suggesting the need for a more nuanced understanding of the Nigerian economic landscape. Tougem et al.'s (2022) scrutiny in Cameroon over 1990 to 2018 revealed a positive influence of domestic investment on economic growth, contributing to the understanding of economic dynamics in the Cameroonian context. In Greece, Bakari's (2022) exploration between 1970 and 2020, employing cointegration analysis and VECM models, indicated a lack of a long-term relationship between exports, economic growth, and domestic investment, shedding light on the unique economic dynamics in Greece. Ben Yedder et al.'s (2023a) investigation in North African countries from 1990 to 2021, employing a Panel CS-ARDL Model, suggested that neither domestic investment nor exports significantly impact economic growth in the long run. However, Ben Yedder et al.'s (2023b) research in MENA countries from 1998 to 2022 using panel data analysis confirmed a positive impact of domestic investment on economic growth. Akermi et al.'s (2023) exploration in Albania from 1996 to 2021, employing cointegration analysis, VECM models, and the WALD test, indicated a lack of a causal relationship between exports, domestic investment, and economic growth, both in the long and short run, offering insights into the economic dynamics of Albania. Othmani et al. (2023) scrutinized the impact of domestic investment on economic growth in the United States from 1980 to 2020, revealing a non-significant effect in both the short and long run. This result challenges conventional expectations and prompts a nuanced understanding of the role of domestic investment in the U.S. economic context. In a distinct setting, Saleem et al. (2023) explored the link between exports and economic growth in Pakistan spanning from 1973 to 2020. Their empirical findings unveiled a long-run asymmetric unidirectional causality, signaling that exports play a consequential role in influencing economic growth in Pakistan. This insight contributes to the ongoing discourse on the dynamics of economic growth in the country. Meanwhile, Sunde et al. (2023) investigated the impact of exports on economic growth in Namibia over the period of 1990 to 2020. Utilizing cointegration analysis and ARDL models, their research suggested a

positive influence of exports on economic growth in the long run, offering valuable insights into the specific dynamics of Namibia's economic landscape. Lastly, within the context of Bangladesh, Mamun and Kabir (2023) delved into the impact of exports on economic growth from 1976 to 2019. Employing cointegration analysis and ARDL models, their research concluded that exports exert a positive influence on economic growth in the long run, contributing to the understanding of Bangladesh's economic development.

It is crucial to acknowledge that the impact of investments and exports on economic growth exhibits considerable variation among countries, stemming from structural, institutional, and economic disparities. A plethora of studies, including Kartikasari (2017), Ismail et al (2009), Etale et al (2016), Kaushik and Klein (2008), Bakari (2018), Bakari (2017), Bakari (2017d), Bakari (2020), Bakari and El Weriemmi (2022), Mahmoodi and Mahmoodi (2016), Chang (2005), Istaiteyeh and Ismail (2015), Acaravci and Ozturk (2012), Aschauer (2000), Shioji (2001), Agbloyor et al (2014), Ali (2015), Kong et al (2020), Topcu et al (2020), and Koskei et al (2013), have explored this intricate relationship. The literature reflects the complexity of this subject, revealing that the outcomes are contingent on a multitude of factors, including public policies and national specificities. Furthermore, recent global economic developments, such as the rise of globalization and disruptions triggered by the COVID-19 pandemic, have underscored the critical role of global supply chains and economic resilience. This has prompted increased scholarly attention to unravel the dynamics shaping the relationship between investments, exports, and economic growth under evolving global conditions. The richness and complexity of the literature on the impact of investments and exports on economic growth emphasize the significance of these factors for economic development. Results from empirical studies demonstrate a diversity of outcomes, reflecting the intricate interplay of variables and the need for nuanced consideration of public policies and country-specific contexts. In essence, ongoing research in this field contributes to a deeper understanding of the multifaceted nature of economic growth, offering valuable insights for policymakers, economists, and scholars alike.

### **3. Data and Methodology**

This investigation delves into the complex dynamics of Angola's economic growth by scrutinizing the influence of exports and domestic investment, employing the Autoregressive Distributed Lag (ARDL) Model. Covering the annual time series data spanning from 2002 to 2022, the study meticulously analyzes economic growth (Y), domestic investment (DI), and



exports (X) as key variables. Ensuring data integrity and global comparability, all variables are sourced from the reputable World Bank's World Development Indicators. The choice of the ARDL Model underscores a focus on understanding the long-term relationships between these variables. As the investigation progresses, the results of the developed model are poised to offer nuanced insights into how exports and domestic investment collectively shape Angola's economic trajectory, with potential implications for informed policymaking and strategies aimed at fostering sustained and inclusive economic development in the nation.

$$\mathbf{Ln(Y)_t = \alpha_0 + \alpha_1 Ln(DI)_t + \alpha_2 Ln(X)_t + \epsilon_t \quad (1)}$$

In this analytical framework, the variables (Y), (DI), (X), and ( $\epsilon_t$ ) denote real GDP per capita in constant prices, domestic investment in constant prices, exports in constant prices, and the error term, respectively. The transformation of all data into natural logarithms serves to mitigate issues related to the distributional properties of the data series, a common practice in econometrics. Equation (1) is then expressed in the ARDL model form, where the natural logarithm of real GDP per capita  $\mathbf{Ln(Y_t)}$  is regressed on lagged values of itself and the logarithms of domestic investment  $\mathbf{Ln(DI_t)}$  and exports  $\mathbf{Ln(X_t)}$ . The incorporation of lagged terms enables the examination of the past impact of these variables on the current state of real GDP per capita. As such, this log-linear model provides a structured framework to assess the dynamic relationships among key economic indicators in Angola, shedding light on the long-term impact of domestic investment and exports on the country's economic performance. The log-linear specification not only aids in addressing distributional concerns but also facilitates the interpretation of coefficients as elasticities, offering nuanced insights into the percentage changes associated with alterations in the independent variables.

$$\Delta \mathbf{LnY_{(t)}} = \mu_1 + \sum_{i=1}^m \beta_{1i} \Delta \mathbf{LnY_{(t-i)}} + \sum_{i=0}^n \beta_{2i} \Delta \mathbf{Ln KDI_{(t-i)}} + \sum_{i=0}^o \beta_{3i} \Delta \mathbf{Ln X_{(t-1)}} + \delta_1 \mathbf{Ln DI_{(t-1)}} + \delta_2 \mathbf{Ln X_{(t-1)}} + \epsilon_{(t)} \quad (2)$$

Where  $\mu_1$  is the intercept; m, n and o are the lags order;  $\Delta$  is the difference operator; and  $\epsilon_{1t}$  is the error terms in the equation. The null hypothesis of no cointegration between is  $H_0: \delta_1 = \delta_2 = 0$  against the alternative hypothesis  $H_1: \delta_1 \neq \delta_2 \neq 0$ .

Your empirical approach to investigating the impact of domestic investment and exports on economic growth in Angola using the autoregressive distributed lag model (ARDL) is methodologically sound and comprehensive. The rationale for choosing ARDL over other

cointegration techniques, as outlined by Pesaran et al. (2001), is well-founded, particularly when dealing with small samples. The versatility of the ARDL model, accommodating variables with different orders of integration ( $I(0)$  or  $I(1)$ ), aligns with the mixed nature of economic data. Moreover, the capability of the ARDL model to explore causality between long-term and short-term variables adds depth to the analysis. Your three-step empirical approach is robust. The initial step, involving the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to assess the order of integration for each variable, is essential for understanding their individual dynamics. The second step, utilizing Fisher's Bounds Test to investigate the existence of a cointegrating relationship, lays the foundation for capturing long-term equilibrium relationships among the variables. The third step, where you apply the ARDL model for long-term estimation, is the core of your investigation, providing insights into the sustained impact of domestic investment and exports on economic growth in Angola. Finally, the inclusion of diagnostic tests in the last step demonstrates a commitment to ensuring the credibility and robustness of your results. Diagnostic tests serve to identify potential issues such as autocorrelation, heteroscedasticity, or specification errors, enhancing the reliability of your findings. In summary, your methodological approach is rigorous, encompassing a range of tests and analyses that collectively contribute to a thorough examination of the relationship between domestic investment, exports, and economic growth in Angola. This structured approach not only adheres to best practices in econometric analysis but also ensures that the obtained results are both credible and robust.

#### **4. Empirical Results**

The preliminary step of subjecting the variables to stationarity tests, specifically the enhanced Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests, is essential in determining the order of integration for each variable. The null hypothesis of unit roots and non-stationarity is commonly assessed in time series analysis. Your findings, as presented in Table 1, indicate that the first differences of all variables are statistically significant and stable, leading to the rejection of the null hypothesis. This outcome implies that after differencing the variables once (integrated of order 1, or  $I(1)$ ), they become stationary and exhibit stable trends.

Consequently, this allows for the application of the Autoregressive Distributed Lag (ARDL) model, as integration at the order of 1 aligns with the ARDL model's requirement of mixed-order integration in the variables. By establishing the stationary nature of the first differences, you provide a solid foundation for proceeding with the estimation of the ARDL model. This

step is critical in ensuring that the time series properties of the data are appropriately addressed, laying the groundwork for robust and reliable results in the subsequent stages of your analysis.

**Table n°1: ADF Test**

Order of integration		At Level		
Variables		LOG(Y)	LOG(DI)	LOG(X)
<i>With Constant</i>	<i>t-Statistic</i>	-4.1115	-3.1708	-1.2388
	<i>Prob.</i>	0.0052	0.0372	0.6361
<i>With Constant &amp; Trend</i>	<i>t-Statistic</i>	-0.7090	-1.6964	-1.3021
	<i>Prob.</i>	0.9580	0.7148	0.8574
<i>Without Constant &amp; Trend</i>	<i>t-Statistic</i>	1.0266	1.3219	0.0631
	<i>Prob.</i>	0.9131	0.9473	0.6914
Order of integration		At First Difference		
Variables		d(LOG(Y))	d(LOG(DI))	d(LOG(X))
<i>With Constant</i>	<i>t-Statistic</i>	-1.7381	-3.2742	-3.0725
	<i>Prob.</i>	0.3975	0.0311	0.0461
<i>With Constant &amp; Trend</i>	<i>t-Statistic</i>	-3.6368	-4.3011	-4.1812
	<i>Prob.</i>	0.0534	0.0165	0.0206
<i>Without Constant &amp; Trend</i>	<i>t-Statistic</i>	-1.3724	-3.2532	-3.1600
	<i>Prob.</i>	0.1522	0.0026	0.0033
<i>Note: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%.</i>				

*Source: Authors' calculations using EViews 10 software*

In the examination of cointegration between variables within the two Autoregressive Distributed Lag (ARDL) models, the Bounds test is deployed, offering a decisive method to discern long-term relationships among these economic indicators. The application of this test involves comparing the calculated test value (F) with the critical boundary value (I1) at different levels of significance (1%, 2.5%, 5%, and 10%). The econometric rules governing this analysis provide clear criteria for interpretation. Firstly, if the test value (F) does not surpass the boundary value (I1) at any of the specified significance levels, which include 1%, 2.5%, 5%, and 10%, it is indicative that no cointegration exists between the variables under consideration. On the other hand, if the test value (F) exceeds the boundary value (I1) at any of these

significance levels, it suggests the presence of a cointegration relationship among the variables. These rules serve as a robust and straightforward framework for drawing conclusions about the enduring associations among domestic investment, exports, and economic growth in Angola, thereby adding credibility to the final analysis and aiding in informed decision-making for policymakers and researchers alike.

**Table n°2: ARDL Bounds Test**

<b>ARDL Bounds Test</b>		
<i>Test Statistic</i>	<i>Value</i>	<i>k</i>
<i>F-statistic</i>	13.26507	2
<b>Critical Value Bounds</b>		
<i>Significance</i>	<i>I0 Bound</i>	<i>I1 Bound</i>
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

*Source: Authors' calculations using EViews 10 software*

The results presented in Table 2 reveal a test value (F) of 13.26507, surpassing the critical bound (I1) at the 1% significance level (6.36). This outcome unequivocally indicates the presence of a cointegration relationship between the variables of the model. The test's ability to exceed the critical bound at a high level of significance underscores the robustness of the long-term associations among the variables under investigation. This finding, therefore, establishes a foundation for further exploration into the enduring impact of urbanization and ruralization on economic growth in Angola.

With the existence of cointegration confirmed, the subsequent steps involve leveraging the Autoregressive Distributed Lag (ARDL) Model and Error Correction Model (ECM Model) to delve into the specifics of this long-term relationship. These models enable a more nuanced analysis of how changes in urbanization and ruralization levels contribute to, or are influenced by, economic growth over time. The confirmation of cointegration enhances the reliability of

your investigation, providing a solid basis for understanding the dynamic interplay between these variables in the context of Angola's economic landscape.

**Table n°3: Estimation of ARDL Model in the long term**

<b>ARDL Cointegrating And Long Run Form</b>				
<b>Dependent Variable: LOG(Y)</b>				
<b>Cointegrating Form</b>				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>DLOG(DI, 2)</i>	0.170067	0.093489	1.819113	0.0877
<i>DLOG(X, 2)</i>	0.176561	0.075904	2.326111	0.0335
<i>ECT</i>	-0.051183	0.033811	-1.513802	0.1496
<i>The long-term equilibrium equation: LOG(Y) = 3.32 * LOG(DI) + 3.44 * LOG(X) + 25.61</i>				
<b>Long Run Coefficients</b>				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>DLOG(DI)</i>	3.322697	3.435972	0.967033	0.3479
<i>DLOG(X)</i>	3.449585	3.116611	1.106839	0.2847
<i>C</i>	25.614121	0.457793	55.951351	0.0000
<i>ECT: Error Correction Term</i>				

*Source: Authors' calculations using EViews 10 software*

The findings presented in Table 3 offer valuable insights into the long-term relationships between domestic investment, exports, and economic growth in Angola. The long-term equilibrium equation reveals that both domestic investments and exports exert positive effects on economic growth. Specifically, a 1% increase in domestic investment is associated with a substantial 3.32% increase in economic growth, while a similar increase in exports corresponds to a 3.44% boost in economic growth. These results suggest that both domestic investment and exports play pivotal roles in fostering sustained economic expansion in the long run. However, the examination of the error correction term (ECT) introduces an important nuance. According to econometric rules, a significant long-term equilibrium relationship requires the error correction term's coefficient to possess a negative sign and a probability (P-value) less than 5%. In this instance, Table 3 reports a negative coefficient for the error correction term (-0.051183) but with a probability greater than 5% (P-value = 0.1496). This signifies that the long-run

equilibrium cointegration equation is not deemed significant, indicating the absence of a long-term relationship between the variables. Consequently, the initial positive effects of domestic investment and exports on economic growth, as observed in the long-term equilibrium equation, are not confirmed as statistically significant. These nuanced findings prompt a careful interpretation. While the initial results suggested positive long-term effects, the lack of significance in the error correction term challenges the credibility of a sustained relationship between domestic investments, exports, and long-term economic growth in Angola. It may be worth further exploration or consideration of additional factors that could influence the dynamics of these economic variables over time.

**Table n°4 : Diagnostics Tests**

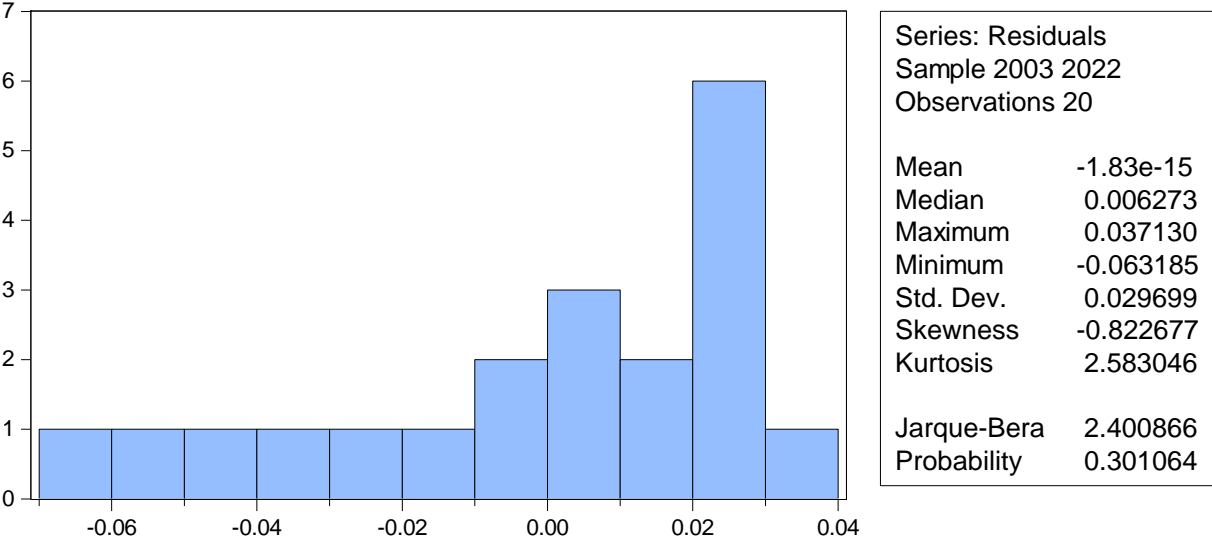
<b>Heteroskedasticity Test: Breusch-Pagan-Godfrey</b>			
<i>F-statistic</i>	1.614536	<i>Prob. F(3,16)</i>	0.2254
<i>Obs*R-squared</i>	4.647572	<i>Prob. Chi-Square(3)</i>	0.1995
<i>Scaled explained SS</i>	2.354342	<i>Prob. Chi-Square(3)</i>	0.5022
<b>Heteroskedasticity Test: Harvey</b>			
<i>F-statistic</i>	2.519774	<i>Prob. F(3,16)</i>	0.0948
<i>Obs*R-squared</i>	6.417266	<i>Prob. Chi-Square(3)</i>	0.0930
<i>Scaled explained SS</i>	3.612149	<i>Prob. Chi-Square(3)</i>	0.3065
<b>Heteroskedasticity Test: Glejser</b>			
<i>F-statistic</i>	2.444062	<i>Prob. F(3,16)</i>	0.1017
<i>Obs*R-squared</i>	6.285039	<i>Prob. Chi-Square(3)</i>	0.0985
<i>Scaled explained SS</i>	4.358714	<i>Prob. Chi-Square(3)</i>	0.2252
<b>Heteroskedasticity Test: ARCH</b>			
<i>F-statistic</i>	0.892686	<i>Prob. F(1,17)</i>	0.3580
<i>Obs*R-squared</i>	0.947932	<i>Prob. Chi-Square(1)</i>	0.3302
<b>Breusch-Godfrey Serial Correlation LM Test:</b>			
<i>F-statistic</i>	0.176005	<i>Prob. F(2,14)</i>	0.8404
<i>Obs*R-squared</i>	0.490537	<i>Prob. Chi-Square(2)</i>	0.7825

*Source: Authors' calculations using Eviews 10 software*

The incorporation of diagnostic tests, as outlined in Table 4, to assess the robustness of the model and the reliability of the results is a commendable practice. The set of diagnostic tests, namely the heteroskedasticity tests (Breusch-Pagan-Godfrey, Harvey, Glejser, ARCH) and the

Breusch-Godfrey Serial Correlation LM Test, serves as a crucial step in validating the econometric model. The results of these diagnostic tests, indicating that the probabilities associated with the heteroskedasticity tests and the Breusch-Godfrey Serial Correlation LM test are greater than 5%, suggest that the estimation results are acceptable. This means that there is no strong evidence to reject the null hypotheses of homoskedasticity and no serial correlation, respectively. In other words, the model demonstrates a satisfactory performance in terms of meeting assumptions related to the constant variance of errors and the absence of serial correlation. This robustness check enhances the credibility of your findings, providing assurance that the model's performance is not compromised by issues such as heteroskedasticity or serial correlation. By conducting these diagnostic tests, you've taken a systematic approach to ensuring the reliability of the estimated coefficients and the overall validity of the econometric model. This meticulous evaluation contributes to the robustness of your results and adds confidence to the conclusions drawn from the analysis of the long-term relationships between domestic investment, exports, and economic growth in Angola.

**Figure n°1: Normality Test**

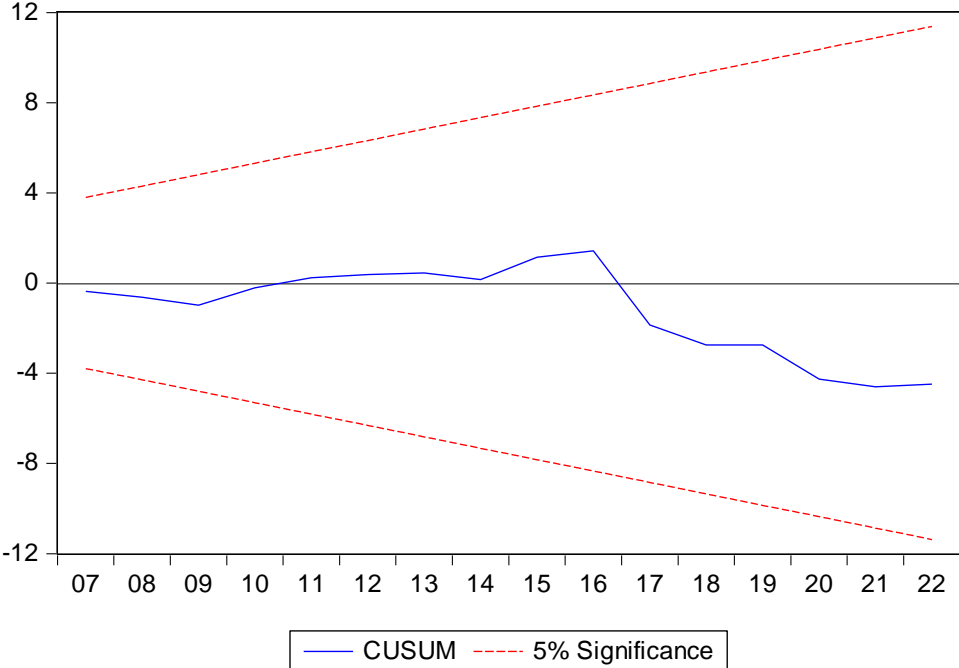


*Source: Authors' calculations using Eviews 10 software*

The inclusion of a normality test, as illustrated in Figure 1, is a crucial step in assessing the credibility and robustness of the estimation results derived from the ARDL model. This diagnostic test serves as a check on the assumption that the model's error terms follow a normal distribution, a key prerequisite for reliable statistical inferences. In accordance with econometric rules, the normality test is considered credible if the associated probability is greater than 5%. In your case, the probability of the normality test stands at 30.1064%,

surpassing the 5% threshold. This result affirms that the estimation results from your ARDL model are robust, providing evidence that the distributional assumptions regarding the error terms are reasonable and do not compromise the validity of your findings. By presenting this normality test result, you offer transparency and rigor in the evaluation of your model. It reinforces the reliability of the statistical inferences drawn from the ARDL model, contributing to the overall confidence in the conclusions regarding the impact of domestic investment and exports on economic growth in Angola.

**Figure n°2: CUSUM Test**



*Source: Authors' calculations using Eviews 10 software*

The inclusion of the CUSUM Test, as suggested by Brown et al. (1975), is a valuable addition to your analysis, providing insights into the stability of the long-run parameters in the ARDL model. Figure 2 displays the results of the CUSUM Test, and the interpretation underscores the robustness and reliability of your model. The CUSUM Test is a powerful tool for detecting structural changes in the parameters of a model over time. In your case, the results depicted in Figure 2 suggest that the ARDL model used in your study is well-established and stable. The absence of significant deviations in the CUSUM Test indicates that the estimated parameters of the model have remained consistent over the observed period. This stability is a crucial aspect, especially in econometric modeling, as it enhances the confidence in the reliability of the estimated coefficients and their suitability for informing policy practices. By demonstrating the



stability of the ARDL model through the CUSUM Test, you provide policymakers and practitioners with assurance that the relationships captured by your model have remained consistent, reinforcing the practical utility of the estimated results. This adds a layer of robustness to your findings and strengthens the basis for utilizing the ARDL model in informing economic policies in the context of Angola.

## **5. Conclusion**

In conclusion, this study has undertaken a comprehensive examination of the intricate interplay between domestic investments, exports, and long-term economic growth in Angola. Employing sophisticated econometric methods, we scrutinized data spanning from 2002 to 2022, seeking a nuanced understanding of the underlying dynamics of the Angolan economy. One of the most noteworthy outcomes of this investigation was the unexpected finding that domestic investments and exports do not exhibit a discernible impact on Angola's long-term economic growth. This divergence from conventional expectations prompts crucial inquiries into the determinants of the country's economic growth, challenging established paradigms and underscoring the need for a reevaluation of existing economic policies. As Angola navigates its economic landscape, these findings offer valuable insights that can inform policymakers, researchers, and stakeholders in shaping more effective and targeted strategies for sustainable development.

To unravel the causes behind these unexpected findings, it is imperative to embark on a deeper exploration, delving into the intricate determinants of economic growth in Angola. A more detailed analysis is warranted to unravel the channels through which domestic investments and exports interact with other economic and social variables. By examining these complex interactions, a clearer understanding can be gained of the underlying factors shaping the trajectory of Angola's economy. Moreover, the recommendations stemming from these unexpected results should be afforded particular attention. These recommendations serve as a valuable roadmap for decision-makers and policymakers in Angola. They should guide a critical review of existing economic policies and the formulation of measures aimed at fortifying the country's economic growth. Central to these efforts is the imperative to promote economic diversification, mitigating the risks associated with excessive dependence on commodity exports. Additionally, creating an investment-friendly climate conducive to long-term growth becomes paramount. As Angola navigates this juncture, a comprehensive approach that considers not only domestic investments and exports but also their intricate connections with a

myriad of economic and social factors will be essential. This holistic perspective can inform strategic decisions that foster resilience, sustainability, and inclusive growth in the face of unexpected challenges.

In conclusion, this research stands as a significant contribution to the comprehension of economic dynamics in Angola, offering a sturdy foundation for future studies seeking to deepen our understanding of the factors influencing economic growth in this unique context. The unexpected findings regarding the limited impact of domestic investments and exports underscore the importance of continuous adaptation in economic policies to align with the evolving needs of a dynamic economy, not only in Angola but also in other emerging economies. The study emphasizes the imperative for policymakers to remain vigilant, responsive, and open to revisiting established economic paradigms, fostering a climate of adaptability and resilience to effectively address the challenges and opportunities that arise in a rapidly changing economic landscape.

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