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UNVEILING DEPENDENCY: A CRITICAL LOOK AT ANGOLA'S CENTRAL BANK AUTONOMY

REVELANDO LA DEPENDENCIA: UNA MIRADA CRÍTICA A LA AUTONOMÍA DEL BANCO CENTRAL DE ANGOLA

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ABSTRACT

The aforementioned study takes an approach linked to the National Bank of Angola, on the topic of autonomy and dependence of the Central Bank of Angola, highlighting its objective of examining the relationship between the international reserves of the Central Bank of Angola (CBIR) and the ratio of GDP and the economic growth rate, by carrying out an extensive time series analysis from 1990 to 2023. The study aims to identify the short-term linkages and long-term equilibrium dynamics in Angola's economic landscape, focusing on understanding of the complex dynamics of these variables. The results show strong short-term correlations between the CBIR, the GDP ratio and the economic growth rate, suggesting possible adjustment processes and interactions between these variables. Furthermore, analysis of long-run equilibrium relationships reveals strong correlations between the GDP and CBIR relationship, indicating a noteworthy and affirmative relationship and its relationship with macroeconomic performance has been concentrated in the emerging markets of Asia and Latin America, as well as in the main industrialized nations. The correlation study highlights the complexity of Angola's economic dynamics, revealing only small connections between variables. These revelations have important ramifications for academics and politicians who want to support Angola's sustainable economic development.

	RESUMEN
Palabras clave: reservas internacionales del banco central (CBIR), razón del producto interno bruto (GDPR), tasa de crecimiento económico (EGR).	El estudio adopta un enfoque vinculado al Banco Nacional de Angola, sobre la autonomía y dependencia del Banco Central de Angola, destacando su objetivo de examinar la relación entre las reservas internacionales del Banco Central de Angola (CBIR) y el relación entre el PIB y la tasa de crecimiento económico, mediante la realización de un extenso análisis de series temporales de 1990 a 2023. El estudio tiene como objetivo identificar los vínculos a corto plazo y la dinámica de equilibrio a largo plazo en el panorama económico de Angola, centrándose en la comprensión de la dinámica compleja de estas variables. Los resultados muestran fuertes correlaciones de corto plazo entre el CBIR, el ratio del PIB y la tasa de crecimiento económico, lo que sugiere posibles procesos de ajuste e interacciones entre estas variables. Además, el análisis de las relaciones de equilibrio de largo plazo revela fuertes correlaciones entre el PIB y la relación CBIR, lo que indica una relación notable y afirmativa y su relación con el desempeño macroeconómico se ha concentrado en los mercados emergentes de Asia y América Latina, así como en los principales países. Naciones industrializadas. El estudio de correlación destaca la complejidad de la dinámica económica de Angola y revela sólo pequeñas conexiones entre las variables. Estas revelaciones tienen importantes ramificaciones para los académicos y políticos que quieren apoyar el desarrollo económico sostenible de Angola.

Introduction

Study background

In recent decades, Angola's economy has suffered from instability and crises. It has been susceptible to shocks to commodity prices, excessive inflation, and currency devaluation as a growing market dependent on oil (Hammond, 2011). To stabilize economies such as Angola's, academics and international organizations have advocated for the establishment of central bank independence and a transparent, rules-based framework for monetary policy (Acemoglu et al., 2008). But in many developing nations, central bank autonomy has proven difficult to establish and uphold in practice (Bodea & Hicks, 2014). The National Bank of Angola, also known as Banco Nacional de Angola, or BNA, is the central bank of Angola. Although it has adopted an inflation targeting regime among other measures, it still lacks significant operational and goal independence from political interference The BNA is nevertheless susceptible to pressure to support directed lending, finance fiscal deficits, and keep the currency rate steady in order to prevent inflation possibly at the price of other policy objectives like production stability. Aiming to improve institutions and openness, Angola has pushed economic reforms under the leadership of President João Lourenço, who was elected in 2017. Nonetheless, there has been unequal progress, and it is unclear why reform is being done. In practice, de facto central bank independence does not necessarily correspond with de jure independence. Like in Angola, personalized authoritarian regimes bolster their legitimacy by posing as autonomous institutions, but they are subtly undermined by political networks (François et al., 2015). Thus, it is essential to comprehend the political economy that surrounds central banks (Conti-Brown & Lastra, 2018). For what reasons, and who is in favor of or against autonomous reforms? What long-term effects do political and economic shocks have on central bank independence? The responses shed light on how governments, whether authoritarian or democratic, strike a balance between flexibility and trustworthiness when it comes to financial. The goal of this planned mixed-methods study is to clarify the intricate, unofficial ties that underpin Angola's central bank authority. The project will chart the evolution of BNA independence from the end of the nation's civil war in 2002, both in theory and in reality. It will map out the formal and informal interests and power dynamics limiting BNA policies following times of crisis and transformation using historical records, media reports, and expert interviews. The paper tries to examine the reasons and effects of insufficient fiscal and monetary cooperation for macroeconomic stability in Angola through a critical political economy lens.

Central bank independence

One of the main policy recommendations made by economists and organizations such as the IMF to improve macroeconomic results, particularly containing excessive inflation in developing nations, is central bank independence (CBI) (Mpofu, 2012). Nevertheless, there has been conflicting empirical data regarding the efficacy of law reforms for the CBI. Certain research indicates that when comparing underdeveloped countries to advanced economies, there is either no association or minimal impact. Determining the causal relationship between enhanced monetary and inflation control and CBI are two more topics of open discussion. De facto autonomy versus de jure autonomy is another. In order to add to this empirical discussion, Mpofu (2012) evaluated CBI reforms in three African nations: South Africa, Zambia, and Zimbabwe, from 1980 to 2005. It focuses particularly on how the CBI affects headline macro goals like inflation rates and intermediate targets like the increase of the money supply. The primary independent variable in the analysis is the Cukierman, Webb, and Neyapti (1992) index of legal central bank independence. Indexes of democracy, economic freedom, and governance offer more institutional background. The study intends to ascertain the degree and statistical significance of link between growing legal CBI and macro factors such as inflation in these nations over a period of more than two decades by utilizing multivariate time series models. The comparisons also show why different national contexts may see different impacts provides data at the macro and micro levels, adding a noteworthy African viewpoint to the empirical debate on the standards and realities surrounding central bank policy autonomy in developing countries.

Central banks and monetary policy

A summary of central banking models and monetary policy frameworks used in sub-Saharan Africa may be found in the chapter of Adam et al. (2018). It mentions that a lot of African nations had government-run credit allocation schemes and exchange rate targeting until the 1990s, without having their own central banks. Since then, a number of nations have moved towards market-based policy instruments, embraced inflation targeting, given central banks legal authority, and made an effort to enhance coordination with fiscal authorities. However, because of the undeveloped financial markets, financial strains, unstable economy, and vulnerability to political meddling, problems with performance and credibility still exist. The chapter highlights how difficult it is still for many sub-Saharan central banks to develop and carry out depoliticized, coherent monetary policies in the face of economic instability.

Central banks' independence in commodity economies

In economies that rely heavily on commodities, Koziuk (2016) investigates the factors that influence central bank independence (CBI) and its efficacy. It contends that because of changes in commodity prices, these nations are more vulnerable to macroeconomic volatility and the possibility of hyperinflation. But because monetary policy responds to the political business cycle and fiscal priorities, they also typically have weaker CBI (Koziuk, 2016). The analysis reveals that economic structure has a major impact; compared to non-commodity nations, commodity exporters exhibit lower levels of independence, inflation tolerance, and currency rate flexibility. But even in times of crisis, keeping CBI can help achieve better policy results. The study comes to the conclusion that, although political incentives provide challenges to autonomy, even resource-rich developing governments might benefit from isolating monetary institutions as a commitment mechanism. All things considered, it advances studies on the applicability of global CBI standards in unstable, internationally susceptible national environments.

Objectives

The study objectives are;

1. To investigate the impact of GDP ratio on central bank international reserves.
2. To determine the impact of economic growth rate on central bank international reserves.

Problem Statement

An extensive analysis is necessary due to the intricate interaction of factors that characterise Angola's economic landscape. The nation's central bank's international reserves have become a crucial gauge of economic stability in the face of volatility in GDP ratios and rates of economic growth. Even Nevertheless, there is still a lack of knowledge regarding how these factors relate to one another and how they affect Angola's overall economic trajectory. By examining the relationships between Angola's GDP ratios, economic growth rates, and central bank international reserves, this study seeks to close this disparity. The research looks for patterns, correlations, and causal linkages by evaluating historical data and using econometric tools. This helps to provide light on how various variables interact and affect the nation's economic performance. By examining these factors, this research aims to provide stakeholders, economists, and policymakers with a better knowledge of Angola's economic dynamics and to help them make strategic decisions for sustainable growth.

Significance of the study

The resource-rich nation of Angola in Southern Africa has seen notable economic volatility recently. Policymakers, investors, and economists must all comprehend the dynamics of the country's GDP ratio, economic growth rate, and central bank international reserves. The purpose of this study is to examine the relevance of these indicators in the particular context of Angola, elucidating their consequences for the economic stability, future development, and policy interventions of the nation. An analysis of the GDP ratio the gross domestic product divided by the population offers important information about the living standards and economic output of Angolan inhabitants. A higher GDP ratio denotes a higher level of economic output per person, implying higher living standards and more room for infrastructure and social programmed investment. On the other hand, a low GDP ratio could be an indication of inefficient use of resources, unequal income distribution, or structural impediments to economic growth. Policymakers can pinpoint areas for focused intervention to support inclusive growth and initiatives to reduce poverty by examining variations in the GDP ratio over time. An important measure of Angola's overall economic performance and trajectory is its rate of economic growth. An economy that is thriving due to external reasons like favorable conditions, productivity improvements, and investment is indicated by a robust and sustained growth rate. On the other hand, low or stagnant growth rates could indicate deeper problems including unpredictability in policy, budgetary imbalances, or external shocks. Comprehending the factors propelling Angola's economic expansion is crucial, especially considering its substantial dependence on oil earnings, in order to devise efficacious diversification tactics and mitigate susceptibility to swings in commodity prices. Furthermore, specific policies to support equitable and sustainable development can be informed by analyzing differences in growth rates between industries and geographical areas. Central banking institution Angola's macroeconomic stability and shock resistance are largely dependent on its international reserves. Angola's economy, which exports mostly oil, exposes it to volatility in the world's commodities markets, which increases its vulnerability to unexpected capital outflows, currency devaluation, and balance of payments crises. Sufficient reserves act as a safeguard against these hazards, enabling the central bank to step in and stabilise the currency while fulfilling its external commitments. Reserves can also help long-term investment and economic growth by lowering borrowing costs, facilitating access to international funding, and boosting investor confidence. It is possible for policymakers to evaluate the nation's external liquidity position and take proactive steps to alleviate potential vulnerabilities by keeping an eye on movements in central bank reserves in relation to important economic indicators. An analysis of the GDP ratio, economic growth rate, and international reserves held by the central bank provides important information about the state of the Angolan economy, its problems, and its top policy priorities. Through a knowledge of these variables' dynamics in the unique Angolan context, policymakers can devise focused interventions aimed at advancing inclusive growth, diversifying the economy, and bolstering resilience against external shocks. Additionally, this study adds to the body of knowledge on macroeconomic management and economic development in resource-dependent economies, providing policymakers worldwide with insightful guidance and best practices.

Literature review

The complexities of governance inside shadow systems are examined by Roque, P.C. (2022) in "Governing in the Shadows." The goal of the research is to provide light on the frequently disregarded players and processes that function outside of established political systems. Identifying the power and influence dynamics in these shadow systems, analyzing how they affect established governance frameworks, and evaluating the effects on democracy and accountability are some of its goals. The scope of shadow governance, how it interacts with official institutions, and how it affects public trust and policy outcomes are all factors that are measured. In order to give readers a thorough grasp of the phenomena of shadow governance, the author's methodology combines qualitative and quantitative techniques with case studies, empirical research, and theoretical frameworks. The study's final conclusion is that shadow systems are crucial to reshaping political environments, questioning accepted ideas of governance, and emphasizing the necessity of frameworks for adaptive governance to handle the growing complexity of modern society.

By Schubert, J. (2022) examines the issue of derailed development hopes and the effect of neoliberal efficiency on Angola's predicament. The goal of the study is to find out how Angola's current crises and development trajectory have been impacted by neoliberal policies. Analyzing the neoliberal reforms' implementation, assessing how they affect important development metrics, and investigating the crises' root causes are some of the goals. Evaluating economic growth rates, GDP ratios, income inequality, poverty levels, and social welfare indicators are examples of variable measurement. The study's methodology combines qualitative analysis, case studies, and statistical modeling to explore the intricate connection between Angola's development results and neoliberal policies. While neoliberal efficiency methods initially promised economic development, the study shows that they have also increased poverty and social inequality, which in turn fueled the Angolan crisis and made alternative development plans that put social welfare and inclusivity first necessary.

Using a recently created dataset, Romelli, D. (2022) investigates the political economy of changes in central bank architecture. The goal of the study is to look into the variables that affect how central bank designs vary among nations and areas. Identifying the institutional, political, and economic forces influencing central bank reforms as well as evaluating their effects on macroeconomic stability and the efficacy of monetary policy are among the goals. The research utilizes an extensive dataset to assess factors like macroeconomic results, accountability systems, transparency, and central bank independence. From a methodological standpoint, it looks at the links between these variables using econometric tools and statistical analyses. The study comes to the conclusion that political considerations, such the kind of government and its ideology, have a big impact on how central banks design changes. It also concludes that measures meant to strengthen Central Bank independence and openness often enhance macroeconomic stability and the efficacy of monetary policy.

Using cross-national data, Makrychoriti and Pasiouras (2021) investigate the connection between national culture and central bank transparency. Their research attempts to explore the ways in which cultural factors impact central banks' degree of transparency in various nations. The authors measure national culture using Hofstede's framework of cultural dimensions, and then evaluate central bank transparency using an index created by Eijffinger and Geraats (2006). They look at a lot of different countries over a period of time and use panel data analysis to find trends and correlations. The results imply that cultural aspects, including individualism and the desire to avoid ambiguity, have a major impact on the degree of transparency in central banks. This emphasizes how crucial it is to take cultural aspects into account when developing transparency rules inside central banks, offering insightful information to both academics and policymakers.

In his investigation of the factors influencing green innovation, Spyromitros, E. (2023) focuses on the role played by monetary policy and central bank traits. The purpose of the study is to find out how these variables affect the uptake and promotion of technologies that are environmentally friendly. The study aims to evaluate the correlation between monetary policy stance and green innovation, investigate the significance of central bank attributes like transparency and independence, and pinpoint plausible pathways by which these elements influence green innovation. While central bank characteristics are assessed using indices assessing transparency and independence, the study uses interest rates or other pertinent indicators to measure monetary policy stance. From a methodological standpoint, data from a sample of countries over a specific period of time are analyzed using econometric techniques like regression analysis. The results indicate that the degree of green innovation is highly influenced by both monetary policy and central bank attributes, with transparent and independent central banks frequently being linked to higher levels of environmentally friendly innovation.

The complex relationship between China and Africa's economic development is examined by (Carmody, P. et al, 2020) in their paper "Africa's Shadow Rise: China and the Mirage of African Economic Development." The study aims to critically evaluate China's contribution to African economic growth and investigate if the ostensible advantages of Chinese involvement materialize into concrete development results for African nations. In order to assess the effect of Chinese involvement on African economies, the authors take into account a number of variables, including trade volumes, infrastructure investments, FDI, and economic growth rates. The study assesses the quantitative and qualitative aspects of economic interactions between China and Africa by using a mixed-methods approach that combines econometric modeling and qualitative analysis. The writers come to the conclusion that whereas Chinese investment has definitely despite having helped Africa's economy grow, it has also raised questions about resource exploitation, debt sustainability, and the maintenance of the uneven power relations between China and African countries, raising doubts about the existence of a real African economic development illusion.

By (Mutarindwa, S, et al, 2020) investigated the connection between bank stability in African nations and supervisory guidelines on corporate governance issued by central banks. The purpose of the study was to look into how such guidance affected bank stability throughout Africa. While measures including capital adequacy ratios, asset quality, management quality, earnings, and liquidity (CAMEL) were used to quantify bank stability, the authors used qualitative analysis of regulatory texts to estimate the supervisory guidance on corporate governance provided by central banks. Using panel data analysis and fixed effects and random effects models, the methodology analyzed data from 43 African nations between 2007 and 2016. According to the study, corporate governance supervisory guidelines issued by central banks have a major positive impact on bank stability in African nations. Emphasizing how crucial strong regulatory frameworks are to improving financial stability.

In the context of political economy study, the author, Sylla, N. S. (2023), examines the complex relationship between imperialism, debt in the Global South, and theoretical frameworks such modern monetary theory, ecological economics, and dependency theory. The goal of the research is to clarify the ways that imperialism sustains debt in developing nations, emphasizing the ecological and economic ramifications. The author examines variables like debt levels, ecological degradation, economic reliance, and financial policies through a multi-dimensional study. In terms of methodology, the study makes use of a theoretical synthesis, empirical data, and critical analysis to disentangle the intricate relationships between imperialism and the debt load of the Global South. The conclusion emphasizes the necessity of global cooperation, debt restructuring procedures, and revolutionary economic strategies to solve the structural inequities brought on by imperialist actions and support the Global South's sustainable development.

De Oliveira, R. S. (2022) explores the topic of "Researching Africa and the offshore world" with the objective of investigating the relationship between Africa and offshore financial centers. The study aims to understand the extent to which African countries engage with offshore financial activities and the implications thereof. The variables measured include the volume of financial transactions, capital flows, and regulatory frameworks related to offshore activities in African nations. Methodologically, the research employs a combination of qualitative analysis and empirical data examination, drawing on case studies and statistical analysis to provide a comprehensive understanding of the phenomenon. The conclusion highlights the significant presence and impact of offshore financial activities in Africa, emphasizing the need for improved regulation and transparency to mitigate potential risks and maximize the advantages of these interactions for the economy of Africa.

Method and results

The study uses time series data from 1990 to 2023 to examine the complex relationships between Angola's GDP ratio, international reserves held by central banks, and pace of economic growth. By employing a bivariate regression Autoregressive Distributed Lag (ARDL) model, the study seeks to reveal the causal linkages and interdependencies between these important economic factors. Correlation tests are the first step in the analysis since they identify preliminary relationships between the variables and highlight possible connections that need more research. The relationship between the international reserves held by central banks and the GDP ratio and economic growth rate is then tested in both the long and short terms to uncover the relationship's complex temporal dynamics. Additionally, the research does diagnostic procedures to guarantee the stability and dependability of the study employs a rigorous methodology to investigate the underlying mechanisms behind fluctuations in Angola's GDP ratio, economic growth rate, and central bank international reserves over the last three decades. Regression modeling is used to mitigate concerns regarding potential biases or misspecifications. Over an extended period, the impact of the GDP ratio and economic growth rate on the international reserves of the central bank is observed to be significant, highlighting the critical role that reserve management plays in determining the macroeconomic conditions of Angola. Furthermore, the short-run effects shed light on the momentary nature of these interactions by highlighting the direct consequences of changes in central bank international reserves on the GDP ratio and economic growth rate. The directional relationships between the variables are further clarified by causality tests, which further illuminate the processes by which fluctuations in central bank international reserves spread throughout the economy and affect GDP growth and general economic stability. Diagnostic tests identify possible problems like heteroscedasticity or autocorrelation, which calls for model modifications and robustness checks to guarantee the accuracy of the findings. Furthermore, even though the bivariate regression ARDL model provides insightful information about the connection between GDP ratio, economic growth rate, and central bank international reserves, its applicability may be restricted in terms of fully encapsulating the intricacy of Angola's economic dynamics. Therefore, to provide a more nuanced view of the mechanisms driving economic performance in Angola.

Model specification

The following is the study model.
Y= (X)
Y= (GDPR, EGR)
Y= Central bank international reserves
GDPR= Gross domestic product ratio
EGR= Economic growth ratio.

$$\mathbf{CBIR = \beta_0 + \beta_1 GDPR + \beta_2 CBIR + ut}$$

Where the error term is ut, β0 is the slope, and coefficient estimate of independent variables is β_1, β_2.

Table 1
Descriptive statistics

	CBIR	EGR	GDPR
Mean	22.89068	3.955882	0.258824
Median	14.23500	4.050000	0.310000
Maximum	95.20000	26.60000	1.120000
Minimum	0.210000	-41.20000	-0.800000
Std. Dev.	28.04025	11.61442	0.522127
Skewness	1.393552	-1.570362	-0.315765
Kurtosis	3.667414	8.154319	2.282116
Jarque-Bera	11.63564	51.61080	1.295100
Probability	0.002974	0.000000	0.523326
Sum	778.2830	134.5000	8.800000
Sum Sq. Dev.	25946.44	4451.524	8.996353
Observations	34	34	34

In the context of the dataset containing 34 observations, the descriptive statistics shown in Table 1 provide insightful information on the distribution and features of the GDP ratio (GDPR), economic growth rate (EGR), and central bank international reserves (CBIR). The average data show that the GDPR is 0.26, the EGR is 3.96%, and the CBIR is 22.89, indicating modest levels of economic growth and central bank reserves combined with a low GDP ratio. With maximum values of 26.60 for EGR and 95.20 for CBIR, the observed large ranges nevertheless demonstrate significant variability within the dataset. The existence of negative minimum values for EGR (-41.20) indicates periods of economic recession, while the skewness values show the distributions' asymmetry, which is especially noticeable in the negative skewness values. EGR (-1.57), which suggests a propensity for slower growth rates. Furthermore, heavy-tailed distributions are indicated by high kurtosis values for GDPR and EGR, which may indicate the presence of extreme data or outliers. The CBIR and EGR Jarque-Bera tests show deviations from normalcy, so care should be taken when interpreting the data. In the context of Angola's economic environment, these descriptive statistics offer a thorough overview of the dataset and provide insightful information about the distributional features and possible subtleties in the relationships between CBIR, EGR, and GDPR.

Unit root Augmented Dicky Fuller (ADF) test

Table 2
At level, At 1st difference and Lag length criteria

	With constant and no trend		
	CBIR	EGR	GDPR
t- statistics	2.531	-5.365871	-5.365871
Prob	0.9999	0.0001***	0.0001***
	With constant and trend		
t-statist*cs*	-1.325391	-4.912723	-1.153982
Prob	0.8575	0.0020	0.9036
	Without constant and trend		
t-statistics	4.002922	-4.046848	-1.020158
Prob	0.9999	0.0002**	0.2704
	With constant and no trend		
	CBIR	EGR	GDPR
t- statistics	-1.882388	-4.624521	-4.282552
Prob	0.3344	0.0008	0.0020
	With constant and trend		
t-statist*cs*	-7.355803	-4.971614	-4.259928
Prob	0.0000***	0.0019	0.0103
	Without constant and trend		
t-statistics	-3.141825	-4.626260	-4.338985
Prob	0.0027	0.0000***	0.0001***

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-279.3025	NA	9231.128	17.64391	17.78132	17.68946
1	-202.2854	134.7800*	132.0457*	13.39284*	13.94249*	13.57503*
2	-194.2877	12.49642	143.0802	13.45548	14.41737	13.77432

The outcomes of the level-specific Augmented Dickey-Fuller (ADF) unit root tests with various constant and trend specifications provide important information about the stationary characteristics of the GDP ratio (GDPR), economic growth rate (EGR), and central bank international reserves (CBIR) variables. The t-statistics for CBIR show insignificance (2.531) with a high probability value (0.9999) when taking into account the tests with a constant and no trend. This suggests that CBIR may have a unit root and is therefore non-stationary. In contrast, the t-statistics for GDPR and EGR are both significant (-5.365871) and have probability values of 0.0001, which suggests that these variables are stationary and provide strong evidence against the presence of a unit root. The results are slightly different when the model includes a constant and trend regarding CBIR. The t-statistics show that non-stationary persists since they are consistently negligible (-1.325391) across all tests. EGR supports stationary by maintaining significance (-4.912723) with a probability value of 0.0020. GDPR, on the other hand, yields inconsistent results. Specifically, a test without a constant and trend shows insignificance, implying non-stationary, whilst a test with a constant and trend shows significance, suggesting probable stationary. Overall, these results highlight the significance of taking various specifications into account when doing unit root tests and offer information about the stationary characteristics of the variables being studied.

The findings of the first difference level Augmented Dickey-Fuller (ADF) unit root tests, with different constant and trend specifications provide more information about the stationary characteristics of the GDP ratio (GDPR), economic growth rate (EGR), and central bank international reserves (CBIR) variables. The t-statistics for CBIR show insignificance (-1.882388) with a probability value of 0.3344 when taking into account the tests with a constant and no trend, indicating that CBIR might not become stable even after differencing. In contrast, the t-statistics for GDPR and EGR are both significant (-4.624521 and -4.282552, respectively), and their low probability values (0.0008 and 0.0020) support the stationary of both variables after differencing and provide strong evidence against the presence of a unit root introducing a trend and a constant in the model considerably modifies the outcomes. After differencing, the t-statistics for CBIR show strong evidence of stationary and become extremely significant (-7.355803) with a probability value of 0.0000. EGR's stationary is supported by its significance (-4.971614) and probability value of 0.0019. With a probability value of 0.0103, GDPR likewise yields noteworthy results that imply stationary upon differencing. These results demonstrate how first differencing works well to achieve stationary, especially when paired with a constant and trend.

A lag of 1 is most appropriate for the model, according to the lag length criteria, which have been assessed using a variety of information criteria, including the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Criterion (HQ). The highest log-likelihood (LogL) value and the lowest values for AIC, SC, and HQ among the lag choices examined support this result. The choice of a lag of 1 is further supported by the likelihood ratio (LR) test, which shows a notable improvement in model fit when going from 0 to 1 lag. As a result, according to these standards, a lag of one is thought to be ideal for analyzing the relationship between the variables in question.

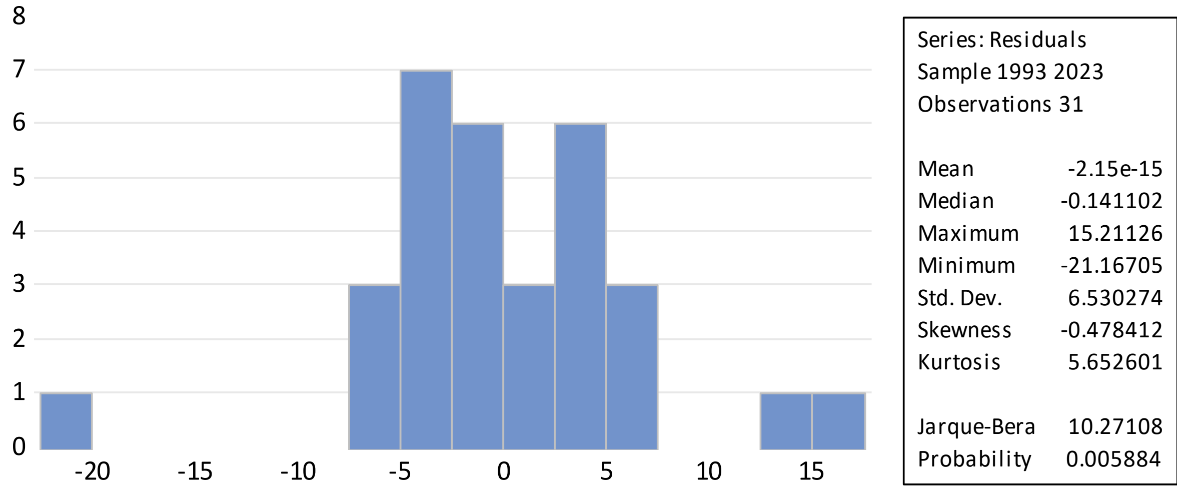
Table 3
Short run relationship

Variables	Coefficient	Std. Error	t-statistics	Prob.
C	6.255515	3.357355	1.863228	0.0780
CBIR(-1)*	-0.267997	0.079954	-3.351890	0.0033
EGR(-1)	-0.225898	0.347647	-0.649793	0.5236
GDPR(-1)	9.073196	4.601943	1.971601	0.0634
D(CBIR(-1))	0.464430	0.180092	2.533572	0.0203
D(CBIR(-2))	0.310634	0.413989	1.724859	0.1008
D(EGR)	-0.485628	0.339623	-1.173044	0.2553
D(EGR-1))	0.641299	0.259872	1.8888266	0.0744
D(EGR-2))	-0.405973	7.815057	-1.562201	0.1347
D(GDPR)	-2.183198	7.864387	-0.279358	0.7830
D(GDPR(-1))	-5.448322	7.828408	-0.692784	0.4968
D(GDPR(-2))	-12.14964	7808305	-1.551994	0.1372

The coefficients derived from the regression model are used to analyze the short-term association between the variables. With all other variables held constant, the constant term (C) shows that the model has an intercept of 6.255515, albeit it is only slightly statistically insignificant (p-value = 0.0780). With a coefficient of -0.267997 and a p-value of 0.0033, the lagged values of central bank international reserves (CBIR) show a significant negative connection, indicating that a decline in CBIR in the prior period causes a decline in the current period. A slightly significant positive association is also seen in the lagged values of the GDP ratio (GDPR) (coefficient = 9.073196, p-value = 0.0634), suggesting that an increase in the GDP ratio in the prior period typically causes a rise in the present period. Still, The first differences of the CBIR and EGR variables are represented by the coefficients D(CBIR) and D(EGR), respectively. These coefficients show inconsistent results, with some (like D (CBIR (-1) being statistically significant and others not, suggesting possible short-run dynamics and adjustment mechanisms between the variables. In general, these coefficients offer valuable information on the short-term associations among the variables.

This implies that there may be a statistically significant intercept in the long run, which would indicate the initial level of the variables while all other variables are held constant. All things considered, these coefficients shed light on the long-term equilibrium linkages between the variables, helping academics and policymakers comprehend the underlying dynamics and create effective plans for sustained economic growth.

Figure 1
Histogram normality



Note: Own elaboration, (2024)

Discussion

Nuanced insights into the data dynamics between important macroeconomic variables, such as the GDP ratio, growth rates, and central bank reserves in Angola, are offered by the comprehensive unit root tests. After first differencing, the GDP ratio and growth primarily exhibit stationary or stability, despite the fact that the precise time series features differ among specifications. Reserves, on the other hand, show resistance to changes in stability, suggesting a high level of persistence and route dependence that may be made worse by volatility in commodity prices. Therefore, intrinsic stochastic trends in buffer stock financing must be taken into consideration when evaluating what propels reserve buildup.

The short-term regression results support theoretical hypotheses on countercyclical policy, namely that additional drawdown's are associated with reserve declines in the past. However, linkages between GDP ratios are positively procyclical, indicating that increasing output scales encourage additional reserve asset purchases to sustain import cover as opposed to windfall savings. The inconsistent differenced term coefficients and insignificant intercept highlight the erratic variations in period-to-period change. This portrays central bank behavior as motivated more by strategic precaution than by a need to be reactive under severe resource constraints.

In contrast to GDP's strong correlation, growth has a negligible correlation with steady state reserves in the long term equilibrium. This is probably a reflection of the fact that Angola has never had the external stability necessary to accumulate buffers during times of fast development. However, the economy's scale puts pressure on reserve requirements even when size remains constant. The preservation of baseline assets is influenced by finance anomalies and major persistent signals.

The uneven GDP-growth reserve connections and weak lead-lag reserve correlations ultimately highlight the intricate institutional obstacles that stabilization efforts in commodity-dependent economies with unstable revenue streams face. Given the significant income uncertainty and short policy horizons, countercyclical intuitions regarding consumption smoothing are not very strong. Without addressing real-world obstacles, this challenges integrated theoretical viewpoints on optimal savings and insurance.

The Angolan case study calls for reconsidering the political economy limitations guiding central bank asset preferences, even as scholars continue their quest for an elusive rule guiding the targeting of appropriate reserves. It is likely necessary to engage with the ideational frameworks and organizational behaviors that underpin emerging nations that rely heavily on commodities in order to reconcile the differences between academic reserve accumulation models and practical decision-making. Beyond technical changes, analytical reorientations that recognize unique uncertainties and institutional contexts may clarify the observable uncertainty around reserve dependence for economic resilience in the real world.

Conclusion

In conclusion, the comprehensive analysis conducted on Angola's economic indicators, namely the GDP ratio (GDPR), economic growth rate (EGR), and central bank international reserves (CBIR), provides crucial insights into the country's economic dynamics. The unit root tests at both level-specific and first difference levels reveal nuanced stationary characteristics of the variables, highlighting the importance of considering various model specifications. The short-term relationship analysis demonstrates significant associations between CBIR, GDP ratio, and economic growth rate, indicating potential dynamics and adjustment mechanisms between these variables. Moreover, the examination of the long-term equilibrium relationships elucidates substantial links between GDP ratio and the other variables, suggesting a positive and significant relationship. However, the correlation analysis suggests only moderate relationships between the variables, indicating a complex interplay within Angola's economic landscape. Overall, these findings underscore the multifaceted nature of Angola's economy and provide valuable insights for policymakers and researchers aiming to foster sustainable economic growth and development in the country.

Limitations

- Accessing reliable, long-term high-frequency macroeconomic data can be challenging, making it difficult to quantify the robust links between policy autonomy, actions, and results.
- Limitations on central bank transparency and disclosure prevent complete observation of internal decision-making procedures.
- It is difficult to quantify outside pressure and covert political meddling on the central bank over time.
- Archival documents from the legislative and executive branches may provide insufficient information about influence over the central bank. Political economy study may be impacted by the prejudices of the researcher as an outsider to the domestic policy process.
- Political economy study may be impacted by the prejudices of the researcher as an outsider to the domestic policy process.

Future direction

The focus of a large body of scholarship on the factors influencing central bank independence (CBI) and its relationship to macroeconomic performance has been on emerging markets in Asia and Latin America as well as major industrial nations. In African economies, CBI has received less attention despite extensive reforms during the 1990s. Due to capacity constraints, neo-patrimonial political dynamics, and economic structure considerations, the African context presents particular difficulties for policy autonomy. Despite statutory measures made by Angola's central bank to establish instrument independence, not many studies have followed the development of aim and operational autonomy during commodity shocks and political changes. Specifically, from a political economics viewpoint that takes into consideration formal and informal factors, the links between de jure CBI, de facto influence, and macro stability results in Angola are still not well understood dimensions. By applying this critical lens to Angola's central banking institutionalization, gaps in the literature on CBI are filled, as is the work on African state-business governance during times of crisis and attempted reform.

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