

## ECONOMIC DIVERSIFICATION AND PRICE STABILITY IN NIGERIA

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### ABSTRACT

*This study explores the dynamics of price stability in Nigeria between 1991 and 2022, focusing on the critical role of economic diversification. Using an Autoregressive Distributed Lag (ARDL) model, this study analyses the short and long-run dynamics. In the short run, the findings reveal that past price stability positively influences current stability, while investment tends to destabilize prices. Non-oil gross domestic product, in the long run, positively influences price stability, therefore suggesting that economic diversification can contribute to greater stability. However, the study finds that non-oil exports, investment, and the exchange rate negatively impact price stability, implying that while these factors may boost economic activity, they also introduce volatility. The findings underscore the need for Nigerian policymakers to focus on diversifying the economy, managing exchange rate volatility, and crafting targeted investment policies to enhance long-term price stability.*

**Keywords:** *Economic Diversification, Autoregressive Distributed Lag (ARDL) Model, Non-oil GDP, Exchange Rate, Price Stability.*

### 1.0 INTRODUCTION

Economic diversification remains a significant challenge for many developing nations, including Nigeria (Akrofi, 2021). Traditionally, these countries heavily rely on the production of primary commodities on a large scale, which are highly susceptible to price fluctuations and climate variability. In the face of the global economic landscape, Nigeria, as an emerging economy, has grappled with the challenges of maintaining price stability and fostering economic diversification. Nigeria's dependence on oil exports has long been a source of vulnerability, exposing it to the volatility of international commodity prices (Kilishi, 2010).

In Nigeria, achieving and sustaining price stability has been a long-standing challenge that is characterized by high and volatile inflation rates. For instance, the Nigeria National Bureau of Statistics reported that year-on-year growth was 1.85% in 2020, 3.71% in 2021, 18.85% in 2022 and 5.81% in 2023. The contributing factors include; heavy reliance on oil exports, depreciation of the Naira, fiscal challenges leading to government budget deficits, and structural bottlenecks such as infrastructure deficiencies and rigidities in key sectors, which have contributed to cost-push inflation (Haruna et al., 2022).

Furthermore, the Nigerian economy has also experienced significant swings in its macroeconomic performance, largely driven by the fluctuations in global oil prices. This volatility has exerted a

destabilizing effect on the growth of the economy, employment, and overall development while highlighting the significant role of oil prices in shaping the Nigerian economy.

Specifically, studies have shown that the Nigerian economy is highly prone to external shocks, as the country's key macroeconomic variables (e.g. economic growth, employment, and inflation) are considerably influenced by the volatility of international oil prices (Kilishi, 2010). This vulnerability underscores the urgent need for Nigeria to diversify its economic base beyond the oil sector to minimise the adverse effect of external shocks on price stability (Orji, et al., 2021).

To mitigate the adverse consequences of this dependence, the need for economic diversification has been widely recognized as a crucial strategy to provide a viable solution to address the challenges of price instability and promote sustainable development in Nigeria through employment creation, expansion of the export base, as well as unlocking the untapped economic sectors.

Sustainable growth as well as development require huge local financing, transparent institutions, as well as concerted efforts in non-oil sectors of the economy such as farming, industrial, education, healthcare, technology etc. (Suberu, et al., 2015). Diversification is identified as a key strategy to mitigate the impact of oil price fluctuations, enhance job creation, and boost overall economic productivity (Olure-Bank & Salako, 2016; Owan et al., 2020).

Several policies and institutional support have over the years been implemented to promote economic diversification via non-oil exports in Nigeria. These include the introduction of the Nigerian Export Promotion Council, financial liberalization, creation of the Nigerian-Export Bank, incentive facilities for non-oil export by the Central Bank of Nigeria, the export development fund and export expansion grant all targeted towards diversifying the economic base of the country.

Economic diversification as observed in the preceding paragraphs, holds promises to positively impact price stability in Nigeria by reducing reliance on oil, promoting growth in new sectors, mitigating vulnerabilities to external shocks, enhancing competition, and improving productivity. Nevertheless, despite ongoing economic diversification efforts and lessened reliance on the oil sector, the question of how these diversification initiatives affect price stability in Nigeria is unclear. As an emerging economy, Nigeria's efforts to diversify away from its historically oil-dependent economy throw up the challenge and the potential impact of price stability on the diversification efforts including fluctuations in different sectors.

Existing literature lacks a comprehensive analysis of the fundamental relationship between diversification efforts and price stability in the Nigerian economy. Consequently, it becomes difficult for regulators, policymakers and other relevant stakeholders to understand how diversification strategies have impacted price dynamics. This hinders their ability to make informed decisions and implement effective policies to ensure a stable and resilient economic environment in Nigeria.

Additionally, diversification efforts may pose temporary challenges to price stability during the transition phase, necessitating effective management and targeted policies to foster competition and flexibility within the diversified economy (Usman & Landry, 2021). This study therefore examines the relationship that exists between economic diversification and price stability in Nigeria for the period 1990 to 2022 based on data availability.

## **2.0 Literature Review**

**2.1 Price Stability:** Price stability, a cornerstone of economic management signifies a condition where prices in an economy remain relatively steady over time, particularly, in targeting low and predictable

inflation rates (Omotosho, 2020). This stability is key in fostering an environment conducive to long-term investments and reducing uncertainty.

Central banks worldwide prioritize maintaining price stability, employing various monetary policy tools and frameworks to achieve this goal. Price stability remains a critical objective for Nigeria's economic development. Despite persistent challenges, ongoing diversification efforts as well as the implementation of sound macroeconomic policies offer a promising avenue towards achieving greater stability. Understanding the theoretical foundations of price stability and the potential implications of diversification is essential for policy-makers to formulate effective strategies and navigate the complexities of the Nigerian economy.

**2.2 Economic Diversification:** This is commonly described as the process through which a country strives to increase its economic production each year via various channels (Koumou, 2020). It is also regarded as the investment in different sectors of an economy to reduce the negative effects of a failure or economic downturn in one sector on the rest of the economy. The significance of diversification in achieving sustainable economic growth has been widely acknowledged and supported in literature where it is argued that it plays a central role in creating job prospects through the export-oriented businesses' development.

Uzonwanne (2020), for example, emphasizes that economic diversification necessitates the active involvement and inclusion of other important sectors that may contribute substantially to the Nigerian economy and enhance its growth potential.

Furthermore, an increase in per capita income is essential to promote a sound export policy (Owan et al., 2020). Consequently, evidence shows diversifying the economy is characterized by the potential to bolster the balance of payment position of a country through foreign exchange earnings. Studies also suggest that a diversified economy can experience growth and development when surplus savings from certain sectors are redirected towards needy sectors (Dahiru et al., 2023).

### **2.3 Theoretical Underpinning:**

This study is underpinned by the new growth theory that focuses on the pivotal role of innovation, human capital, and technology in propelling forward the growth of an economy. It underscores the significance of knowledge creation, spillovers, and technological advancements in sustaining prolonged economic development (Solow, 2000). This theory is intimately connected to technological innovation, knowledge accumulation, and subsequent productivity growth. It posits that investments directed towards human capital, research and development, and technology adoption can drive heightened economic diversification, productivity enhancements, and ultimately, bolstered price stability (Glor, 2024).

Through its lens, the New Growth Theory sheds light on the intricate mechanisms by which economic diversification and associated factors influence price stability. For example, investments in education and skills development can facilitate economic diversification by empowering the workforce to adapt to emerging industries and technological advancements. Likewise, policies geared towards fostering innovation and technological progress can stimulate non-oil exports and amplify productivity levels. Consequently, such initiatives contribute to price stability by curbing production costs and bolstering competitiveness.

Empirical studies rooted in New Growth Theory have delved into the nexus between technological innovation, economic diversification, and macroeconomic stability across diverse contexts (Adeola &

Evans, 2017; Ahmad & Jabeen, 2024; Rehman et al., 2023). These studies often employ econometric methodologies to scrutinize longitudinal data, pinpointing the pathways through which growth propelled by innovation impacts price stability.

Therefore, New Growth Theory can be used to furnish a theoretical framework that elucidates the underlying mechanisms driving the interplay between economic diversification, and price stability. This theory offers a comprehensive perspective that underscores the paramount importance of innovation and knowledge creation in nurturing sustainable economic development and upholding macroeconomic stability.

## 2.4 Empirical Review

Extant literature on economic diversification and price stability cuts across various regions and economies. It also provides an empirical overview of the relationship between the two concepts.

Sannasse et al. (2014) as well as Mudenda et al. (2014) examined the relationship between export diversification and South Africa's economic growth from 1980 to 2011. Using the Vector Error Correction (VEC) model, they identified a positive relationship between export diversification, trade openness, and economic growth. However, variables such as the real exchange rate, capital formation, and human capital exhibited a negative long-term relationship with economic growth. Their study, however, lacked a diversification index, which could have provided a more precise measure of export diversification.

Doki and Tyokohol (2019) investigated this relationship in Nigeria from 1981 to 2016, employing the Theil export diversification index and GDP per capita as indicators. Using the Autoregressive Distributed Lag (ARDL) bounds testing approach, they found that export diversification had a positive but statistically insignificant effect on Nigeria's economic growth in both the short and long term.

Amoro (2020) studied 15 ECOWAS states from 2005 to 2015 and confirmed a positive relationship between export diversification and economic growth using the dynamic panel data estimation technique. However, the relationship was non-linear, as the benefits of diversification were observed to increase up to a critical export concentration value of 0.52, beyond which further diversification negatively affected income. This highlights the nuanced nature of export diversification's influence on economic growth in the ECOWAS region.

Sannasse et al. (2014) also utilized the vector cointegration method to explore the link between export diversification and economic growth in Mauritius. By measuring diversification with the inverse of the Herfindahl index and using real GDP per capita as an indicator, they found a positive correlation, suggesting that increased export diversification fostered economic growth. Their findings emphasize the role of expanding a country's range of exportable goods and services as a driver of economic development and GDP growth.

Evbuomwan (2016) noted that despite the underperformance of Nigeria's agriculture and mining sectors following the discovery of oil in the 1970s, these sectors still hold significant potential for sustainable growth. The author highlighted that agriculture's contribution to GDP increased from 15.5% in 1981 to 23.1% in 2015, with a growing share of agricultural products in non-oil exports, underscoring the sector's untapped potential.

Collectively, these reviewed studies highlight the gaps that the present study seeks to fill i.e. the need for Nigeria to reduce its dependence on oil and focus on diversifying its economy by developing sectors

such as agriculture, solid minerals, technology, services, and tourism. Diversification can promote economic growth, improve citizen welfare, and mitigate risks associated with oil price volatility. Achieving these objectives will require targeted policies and a conducive environment to support diversification efforts.

### 3.0 Methodology

#### 3.1 Model Specification

This study is hinged on the endogenous growth model, which suggests that long-term economic growth is primarily fueled by the production of goods and services and the level of private domestic investment, rather than external factors, as explained by Romer (1994) in the theoretical framework.

Within this model, the connection between diversification and price stability can be analyzed based on its core principles.

The model, when expressed in a linear form, is:

$$PS = f(NO\text{GDP}, NO\text{EXP}, INV, EXC) \quad (1)$$

Where;

PS denotes Price stability  
 NOGDP denotes Non-oil GDP (as a proxy for diversification)  
 NOEXP denotes Non-oil export (a proxy for export diversification)  
 INV denotes Investment  
 EXC denotes the Exchange Rate

Standardizing the variable and stating the resulting coefficients in econometric terms, the equation (1) above is simplified in a log-linearized form and the relationship becomes:

$$\ln PS_t = \beta_0 + \beta_1 \ln NO\text{GDP}_t + \beta_2 \ln NO\text{EXP}_t + \beta_3 \ln INV_t + \beta_4 \ln EXC_t + \mu_t \quad (2)$$

Where

$\beta_0$  = intercept.

$\beta_1, \beta_2, \beta_3, \beta_4$  are all slope coefficients.

$\ln PS$  = log of Price stability

$\ln NO\text{GDP}$  = log of Non-oil GDP (used as diversification proxy)

$\ln NO\text{EXP}$  = log of Non-oil export (used as export diversification proxy)

$\ln INV$  = log of Investments

$\ln EXC$  = log of Exchange Rate

$\mu$  = Error term.

$t$  = period

All variables are described in Table 1

**Table 1: Variable Description, Measurement and Source**

Variable(s)	Measurement(s)	Source(s)
Price stability (PS)	It is the rate of increase in prices over a given period and is measured as inflation, GDP deflator (annual %).	CBN Statistical Bulletin
Non-oil GDP (NOGDP)	This measures a country's total economic output excluding the oil sector, reflecting activities in manufacturing, agriculture, services, and more. It serves as an indicator of economic diversification.	World Development Indicators Database (WDI)

Non-oil exports	This encompasses goods and services sold internationally, excluding petroleum products, such as manufactured	World Development Indicators Database
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(NOEXP)	goods, agriculture, and services.	(WDI)
Investment (INV)	This refers to spending on capital goods like machinery, infrastructure, and construction, including both domestic and foreign investment.	World Development Indicators Database (WDI)
Exchange Rate (EXC)	The exchange rate is the value of one currency relative to another, reflecting purchasing power in the foreign exchange market. A stable exchange rate supports price stability by anchoring inflation expectations, easing economic planning, and reducing import price uncertainty.	CBN Statistical Bulletin and Annual Reports

*Source: Authors Computation (2024)*

### 3.2 Nature and Sources of Data

This study employs time series data from 1991 to 2022, sourced from reliable secondary materials such as the Central Bank of Nigeria (CBN) statistical bulletin, CBN annual reports, and various editions of the World Development Indicators (WDI).

### 3.3 Estimation Technique

The ARDL Bound Test is employed to determine the long-term relationship between price stability and the explanatory variables (Non-oil GDP, Non-oil exports, Investment, and Exchange Rate). Along with regression analysis, an inferential method is used to assess the statistical validity of the estimates.

The process begins with pre-estimation testing using the Augmented Dickey-Fuller (ADF) test to evaluate the stationarity of the time series data, as time series often exhibit trends that lead to non-stationarity. If the ADF test shows that all series are stationary at their levels, Ordinary Least Squares (OLS) estimation will be used for the analysis.

If the variables are not stationary at the level and are integrated of order one (I (1), indicating stationarity at the first difference), the Engle-Granger Co-integration test will be applied to determine if a long-term relationship exists among the I (1) series. If no co-integration is found, the analysis will proceed with the First Difference ARDL regression model. If co-integration is confirmed, a short-run Error Correction Model (ECM) will be estimated.

When the ADF test shows a mix of I (0) and I (1) series, the ARDL bound testing method will be used to check for a long-term relationship. If the bound test confirms one, the ARDL co-integrating and long-run model will be employed, capturing both short-run and long-run dynamics. If the bound test indicates no long-term relationship, I (1) variables will be included in the ARDL model at their first difference, while I(0) variables remain at their levels (Pesaran et al., 2001).

## 4.0 Results and Discussion of Findings

**Table 1: Descriptive Statistics**

	EXE	INV	NOEXP	NOGDP	PS
<b>Mean</b>	110.5139	2.27E+09	644865.8	5805662	18.41968
<b>Median</b>	100.5707	8.16E+08	166426.5	2937208	12.94178
<b>Maximum</b>	273.0096	1.50E+10	3207100	20298726	72.8355

<b>Minimum</b>	49.77958	2363116	4227.8	86393.3	5.388008
<b>Std. Dev.</b>	49.10903	3.53E+09	873501.7	6367777	16.24845
<b>Skewness</b>	1.786916	2.231391	1.689128	1.146268	2.159182
<b>Kurtosis</b>	6.195778	7.545402	5.136334	3.238879	6.622813
<b>Jarque-Bera</b>	30.64703	54.10282	21.30206	7.083715	42.36405
<b>Probability</b>	0	0	0.000024	0.028959	0
<b>Sum</b>	3536.446	7.26E+10	20635706	1.86E+08	589.4296
<b>Sum Sq. Dev.</b>	74762.6	3.86E+20	2.37E+13	1.26E+15	8184.378
<b>Observations</b>	32	32	32	32	32

*Source: Authors' Computation 2024*

The Exchange Rate (EXE) data in Table 1 shows an average of 110.5139, suggesting that the exchange rate typically hovers around this value. The mean investment is approximately 2.27 billion, but the median is much lower at 816 million, indicating a skewed distribution. Non-oil export (NOEXP) data exhibits notable variability, with an average of 644,865.8 and a median of 166,426.5. The skewness and kurtosis of NOEXP imply that extreme values heavily influence its distribution.

Non-oil GDP (NOGDP) data also displays considerable variation, with a mean of about 5.81 million and a median of 2.94 million. The skewness and kurtosis are moderate, contributing to the non-normality of the NOGDP data.

The mean for PS is 18.42, while the median is 12.94, indicating a skewed distribution. The Jarque-Bera test statistic of 42.36405 with a p-value of 0 confirms that the distribution is not normal, with positive skewness and high kurtosis suggesting that extreme values significantly affect the PS data.

The variance inflation factor (VIF) test results in Table 2 show that all variables have a VIF below 10, indicating that multicollinearity is within acceptable levels, as per the literature.

**Table 2: Variance Inflation Test (VIF)**

<b>Variable</b>	<b>Coefficient Variance</b>
<b>IN_PS_(-1)</b>	0.045339
<b>IN_PS_(-2)</b>	0.068942
<b>IN_NOGDP_</b>	0.152035
<b>IN_NOEXP_</b>	0.081211
<b>IN_INV_</b>	0.002376
<b>IN_INV_(-1)</b>	0.002006
<b>IN_EXE_</b>	0.195595
<b>IN_EXE_(-1)</b>	0.148727
<b>IN_EXE_(-2)</b>	0.093422
<b>C</b>	9.918954

*Source: Author's Computation 2024*

Table 3 presents the ADF unit root test results, indicating a mix of I(0) and I(1) series. This suggests that the ARDL bound test is the most suitable estimation method to determine whether a long-run relationship exists among the variables.

**Table 3: Augmented Dickey-Fuller (ADF) Unit Root Test**

<b>Variable</b>	<b>Test Statistics</b>	<b>p-Value</b>	<b>Order of Integration</b>
<b>lnPS</b>	-2.2564	0.1918	I(0)
<b>lnNOGDP</b>	-1.7281	0.4077	I(0)
<b>lnNOEXP</b>	-1.0063	0.7385	I(0)



<b>lnINV</b>	-8.7288	0.6886	I(1)
<b>lnEXC</b>	-2.5194	0.1208	I(0)

**Notes:** Lag Length based on SIC, Probability based on MacKinnon (1996) one-sided p-values.

**Source:** Author's Computation 2024

Table 4 indicates that the F-Statistics value of 31.798 surpasses the upper bound (I(1) Bound) value of 4.01 at a 5% significance level. As a result, the null hypothesis is rejected, suggesting the presence of a long-run relationship among the variables (Pesaran et al., 2001).

**Table 4: Cointegration Test**

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	31.798482	4
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

**Source:** Author's Computation 2024

Table 5 presents the long-run and short-run regression results for LNPS from the ARDL model.

**Table 5: Regression and Diagnostics Test Results**

Dependent Variable: lnPS				
Regressor	Coefficient	Standard Error	t-Statistics	p-Value
<b>lnNOGDP</b>	0.335406	0.544965	0.615465	0.5452
<b>lnNOEXP</b>	-0.27345	0.396897	-0.68896	0.4988
<b>lnINV</b>	-0.08856	0.086693	-1.02156	0.0319
<b>lnEXC</b>	-0.19747	0.492456	-0.40098	0.0492
<b>C</b>	3.607755	3.878679	0.930151	0.3634
Short-run				
<b>CointEq(-1)</b>	-0.7586	0.229259	-3.30893	0.0035
<b>D(IN_PS_(-1))</b>	0.549701	0.262569	2.093553	0.0492
<b>D(lnNOGDP)</b>	0.254439	0.389916	0.652548	0.5215
<b>D(lnNOEXP)</b>	-0.20744	0.284976	-0.72791	0.4751
<b>D(lnINV)</b>	-0.01664	0.048747	-0.34138	0.0236
<b>D(lnEXC)</b>	0.326215	0.30565	1.067283	0.2986

Diagnostic Test		
	F-statistics	p-value
<b>Breusch-Pagan Godfrey Serial Correlation</b>	0.116185	0.891
<b>Breusch-Pagan-Godfrey Heteroskedasticity</b>	0.346533	0.9473

**Source:** Authors' Computation, 2024

Table 5 shows that, in the short run, the error correction term (CointEq (-1)) is negative (-0.7586) and statistically significant at the 1% level (p-value 0.0035). This indicates that any short-term deviations from the long-run equilibrium are corrected at a rate of 75.86% per period, demonstrating a strong tendency for the system to revert to equilibrium after a shock. The short-run significant variables

include the lagged difference of price stability (0.549701) and investment (-0.01664), both significant at the 5% level.

The lagged price stability variable suggests a positive and significant relationship between past price stability and the current period, meaning that previous price stability positively influences future stability, aligning with Haruna et al. (2022). The negative coefficient for investment implies it adversely affects price stability in the short run, indicating that investment could disrupt the economy, thus requiring careful policy consideration to balance investment and price stability (Dahiru et al., 2023).

In the long run, the coefficients reveal that investment and the exchange rate significantly affect price stability. The coefficient for investment (-0.08856) aligns with the short-run trend, suggesting similar effects in both periods. The exchange rate has a coefficient of -0.19747, meaning that a one-unit increase in the exchange rate leads to a 0.19747 decrease in price stability. The p-value of 0.0492 indicates that this effect is statistically significant, though marginal.

The ARDL model's analysis reveals key findings for Nigeria's price stability. In the short run, the lagged price stability is significant and positively related to current price stability (Haruna et al., 2022; Omotosho, 2020). Non-oil GDP and non-oil exports do not significantly affect price stability in the short term. Investment has a negative impact on price stability, while the exchange rate shows a positive, but not significantly influential, short-term effect.

The error correction term, significant at 75.86%, indicates a rapid adjustment towards long-run equilibrium after disturbances, consistent with Kilishi (2010). In the long run, non-oil GDP positively influences price stability, suggesting that economic diversification promotes greater stability (Owan et al., 2020). However, non-oil exports, investment, and the exchange rate negatively affect price stability. This suggests that while these factors stimulate economic activity, they may also contribute to volatility (Omotosho, 2020). The negative impact of the exchange rate emphasizes the need to manage currency fluctuations to maintain stability (Orji et al., 2021).

## **5.0 Conclusion, Policy Implication and Recommendations**

This study, through its analysis, highlights that Nigerian policymakers should adopt a comprehensive strategy to maintain and improve price stability. First, there should be a focused effort to diversify the economy. Reducing reliance on the oil and gas sectors by promoting growth in areas like agriculture, industry, and technology can help mitigate vulnerability to external shocks and fluctuations in global commodity prices, supporting more stable price levels.

Second, managing exchange rate volatility is crucial. The findings show that exchange rate fluctuations significantly negatively affect price stability. Policymakers should consider measures to stabilize the currency, such as strengthening external reserves, implementing stronger monetary policies, or engaging in targeted currency interventions. These actions can help reduce the negative impacts of exchange rate fluctuations on domestic prices and improve overall economic stability.

Additionally, investment policies must be carefully structured to minimize their adverse effects on price stability. While investment drives economic growth, it needs to be managed to avoid increasing price volatility. Targeted investments in stable sectors with long-term growth potential, particularly in infrastructure development and productivity-enhancing projects, can help stabilize prices over time. Effectively balancing these elements requires a coordinated policy approach that integrates economic diversification, exchange rate management, and investment strategies. By creating a more predictable and stable economic environment, policymakers can foster sustainable economic growth, build investor confidence, enhance resilience, and promote long-term prosperity.

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