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## **Global Economic Uncertainty and its Impact on Nigeria's Trade and Investment Outcomes**

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### **Abstract**

This study investigated the impact of global economic uncertainty on Nigeria's trade and investment outcomes, addressing a critical gap in the literature regarding African economies. The study employed yearly time series data from 1980 to 2022, the analysis employs the autoregressive distributed lag (ARDL) model estimation technique and Bounds test of cointegration and were used to estimate both short-run and long-run relationships between global economic uncertainty (proxied by the World Uncertainty Index) and Nigeria's trade (balance of payments) and investment outcomes (FDI as a percentage of GDP), controlling for economic growth, trade openness, exchange rates, foreign reserves, interest rates, and inflation. The study found that global economic uncertainty exerts a negative and statistically significant impact on both trade and investment outcomes in Nigeria in the short run. Specifically, a one percent increase in global economic uncertainty leads to a 68.2% decrease in trade outcomes and a 1.6% decrease in investment outcomes in the short run, holding other factors constant. However, the long-run impacts, while negative, are not statistically significant at the 5% level. These results suggest that Nigeria's trade and investment sectors are highly sensitive to global shocks, particularly in the immediate aftermath of uncertainty events. These findings highlight the vulnerability of Nigeria's trade and investment performance to global economic uncertainty, especially in the short term. To mitigate these negative impacts, the study recommends targeted trade promotion strategies, simplification of trade procedures, and the development of a robust risk management framework. Additionally, fiscal measures such as targeted tax incentives and investment allowances, alongside monetary interventions including interest rate management and liquidity support, are essential to bolster resilience and sustain economic growth during periods of heightened uncertainty.

### **Keywords:**

*Global economic uncertainty, trade outcomes, investment outcomes, Nigeria, ARDL*

### **1. Introduction**

Uncertainty, defined as the state of incomplete knowledge about future events or outcomes, is a pervasive feature of economic life. In the global economic landscape, uncertainty manifests as volatility, risk, and ambiguity, influencing the decision-making processes of households, firms, and governments. Economic agents, when faced with unpredictable environments, often delay or scale back investments and trade commitments, leading to

subdued economic activity and growth (Koetse et al., 2006; Kundu & Paul, 2022). In recent years, the global economy has experienced heightened uncertainty driven by a confluence of disruptive events. These include sharp fluctuations in commodity prices, persistent exchange rate volatility, intensifying geopolitical tensions, trade wars, and abrupt shifts in trade and economic policies (Glebocki & Saha, 2024). The COVID-19 pandemic further amplified these uncertainties, disrupting supply chains, altering demand patterns, and triggering unprecedented policy responses worldwide. Such developments have made it increasingly difficult for businesses and policymakers to anticipate future economic conditions, complicating strategic planning and resource allocation.

Nigeria, as a major oil-exporting and highly open economy, is particularly exposed to the vagaries of global economic uncertainty. The country's economic fortunes are closely tied to international oil prices, which are themselves subject to global shocks and policy shifts. This integration exposes Nigeria to multiple transmission channels of uncertainty: the trade channel, where uncertainty can depress export volumes and reduce foreign exchange earnings; the investment channel, where heightened risk perceptions deter foreign direct investment (FDI); and the financial channel, where volatility in global financial markets affects capital flows, exchange rates, and the cost of capital (Abaidoo, 2019; Balakeffi et al., 2019; Fasanya & Akinde, 2019; Odionye et al., 2023).

Empirical evidence on the impact of global economic uncertainty on trade and investment is mixed and sometimes time specific and country specific. Several studies have documented significant negative impacts of global uncertainty on trade outcomes, particularly over the long term (Gong et al., 2024; Yayi, 2024). For instance, increases in global economic policy uncertainty have been linked to declines in export performance and bilateral trade flows, especially for fuel and industrial products (Nana et al., 2024; Aslan & Acikgoz, 2023). However, some research highlights non-linear and even positive short-term impacts under certain circumstances, such as when domestic uncertainty prompts temporary export surges or when intra-industry trade mitigates negative impacts (Liu et al., 2024; Gebre-Borojo et al., 2023).

The literature on investment outcomes has similar pattern. While many studies find that global economic uncertainty discourages FDI inflows, particularly in emerging and developing economies (Gao et al., 2024; Ölmez et al., 2024) others report more complex or even positive impacts, depending on country characteristics, sectoral composition, and the time horizon considered (Wu & Shao, 2023; Jarret et al., 2023). Factors such as financial development, export sophistication, and policy frameworks can mediate the relationship between uncertainty and economic outcomes, underscoring the importance of context-specific analysis. Despite the growing body of research, significant gaps remain. Much of the existing literature focuses on advanced economies, emerging markets in Asia and Europe, or aggregates of developing countries, with relatively little attention paid to African economies and, specifically, Nigeria. Moreover, studies often examine trade and investment outcomes separately, rather than considering their interdependence and joint response to global shocks. This leaves policymakers with limited evidence on how global economic uncertainty shapes the trajectory of Nigeria's trade and investment, and what strategies might mitigate negative impacts or harness potential opportunities.

Nigeria's own experience over the past four decades illustrates the complex interplay between global uncertainty and economic performance. Periods of heightened global uncertainty have frequently coincided with declines in both trade and investment outcomes, as

evidenced by fluctuations in the country's balance of payments and FDI-to-GDP ratios. For example, the surge in global uncertainty during the 1990s and the post-2010 period was associated with weaker trade performance and subdued investment, while episodes of relative stability supported stronger economic growth and external sector resilience. The COVID-19 pandemic, which triggered a spike in global uncertainty, further exposed Nigeria's vulnerability, with both trade and investment outcomes deteriorating despite a partial easing of uncertainty in subsequent years.

Against this backdrop, the study aims was to fill the identified research gap by addressing two core questions: (1) What is the impact of global economic uncertainty on Nigeria's trade outcomes? and (2) How does global economic uncertainty affect investment outcomes in Nigeria? The remainder of the paper is organized as follows: the next section reviews the conceptual and theoretical literature, highlighting key frameworks and empirical findings; subsequent sections detail the methodology, present the results, and discuss their implications; the final section offers conclusions and policy recommendations tailored to Nigeria. In sum, understanding the nexus between global economic uncertainty and Nigeria's trade and investment outcomes is both timely and essential. As external shocks become more frequent and complex, evidence-based strategies are required to safeguard economic stability and foster sustainable development in Nigeria.

## **2.0 Literature review**

### **2.1 Conceptual clarifications**

Global economic uncertainty is broadly defined as the heightened unpredictability and volatility in global economic conditions, often stemming from political instability, policy shifts, financial crises, natural disasters, and geopolitical tensions. This uncertainty complicates the forecasting of economic growth, inflation, and market stability, leading businesses and consumers to delay investment and spending, which in turn suppresses economic activity and raises recession risks (Bloom, 2014; Bachmann et al., 2021). Prominent measures of global economic uncertainty include the Global Economic Policy Uncertainty Index (Baker et al., 2016), the World Uncertainty Index (Ahir et al., 2023), and indices based on financial market volatility or survey-based assessments (Castelnuovo & Tran, 2017).

Trade outcomes encompass the results of international trade activities, including trade performance, composition, direction, and intensity. These outcomes are typically measured through variables such as export and import volumes, trade balances, and the structure of traded goods and services (Santos-Paulino, 2005).

Investment outcomes, particularly in the context of foreign direct investment (FDI), refer to the economic, social, and technological impacts of cross-border investment on host countries. FDI intensity, often measured as the ratio of FDI inflows to GDP, is a common proxy for investment outcomes (Dunning, 2000; Li & Tanna, 2019).

### **2.2 Theoretical framework**

The relationship between uncertainty and economic decision-making is anchored in several foundational theories. The Arrow-Pratt theory of risk aversion posits that individuals and firms are generally risk-averse due to diminishing marginal utility of wealth, leading them to demand a risk premium for engaging in uncertain ventures (Arrow, 1965; Pratt, 1978). Under conditions of elevated uncertainty, this risk aversion intensifies, resulting in delayed or reduced investment and trade activities as agents seek safer assets or postpone decisions.

Rank-dependent utility (RDU) theory (Quiggin, 1982) extends the analysis of risk by introducing non-linear probability weighting. Decision-makers may overweight low-probability negative events and underweight high-probability favorable outcomes, leading to behavioral responses that amplify the impact of uncertainty on trade and investment. RDU theory helps explain why uncertainty can trigger abrupt shifts in economic flows, as agents focus disproportionately on worst-case scenarios.

Cumulative prospect theory (CPT) (Tversky & Kahneman, 1992) further incorporates behavioral insights, emphasizing loss aversion and reference dependence. Under CPT, losses are perceived more acutely than equivalent gains, and decision-makers evaluate outcomes relative to a reference point. This framework predicts that heightened uncertainty will exacerbate risk-averse behavior, with firms and investors more likely to curtail trade and investment to avoid potential losses, even when long-term prospects remain favorable.

Collectively, these theories underscore that global economic uncertainty can suppress trade and investment by altering risk perceptions, amplifying loss aversion, and distorting probability assessments among economic agents.

### 2.3 Empirical Literature

Recent empirical research consistently documents the negative impacts of global economic uncertainty on trade and investment, though the magnitude and channels of impact vary across contexts. Studies such as Gong et al. (2024) and Yayi (2024) find that both domestic and global policy uncertainties exert significant negative impacts on trade performance, particularly in the long run. Liu et al. (2024) highlight that economic policy uncertainty inhibits exports, while Nana et al. (2024) quantify a 4.5% decline in bilateral trade for each standard deviation increase in global uncertainty.

The literature also identifies non-linear and context-dependent relationships. For instance, Chishti (2024) and Dagar & Malik (2023) report that the impacts of oil price shocks and uncertainty on exports can be complex and non-monotonic. Mitigating factors such as intra-industry trade and export diversification can buffer the negative consequences of uncertainty (Liu et al., 2024; Aslan & Acikgoz, 2023). Country-specific studies reveal that export structure sophistication influences vulnerability to uncertainty, with less diversified economies more exposed to both domestic and foreign shocks (Yayi, 2024).

On the investment side, a robust body of evidence indicates that global economic uncertainty deters FDI inflows. Gao et al. (2024), Ölmez et al. (2024), and others document significant negative relationships between uncertainty and FDI across various regions. However, some studies note exceptions: Wu & Shao (2023) find that, in China, domestic uncertainty can paradoxically spur outward FDI, while host-country monetary policy uncertainty inhibits it. Financial development and institutional quality are identified as potential mitigators of uncertainty's negative impacts on investment (Zhang et al., 2023).

### 2.4 Research gap

Despite the extensive literature on the impacts of uncertainty, most empirical studies focus on advanced economies or large emerging markets in Asia and Europe. African contexts, and Nigeria in particular, remain underexplored. Existing research often examines trade or investment outcomes in isolation, rather than considering their joint dynamics under global uncertainty. Comprehensive analyses that integrate both trade and investment channels in the Nigerian context are notably scarce.

In sum, the literature establishes that global economic uncertainty is a critical determinant of trade and investment outcomes, primarily through its impacts on risk perceptions and behavioral responses. However, the lack of integrated, country-specific studies for Nigeria leaves important questions unanswered regarding the magnitude, mechanisms, and policy implications of these relationships in one of Africa's largest economies. This gap motivates the empirical investigation presented in the subsequent sections. Building on the identified research gap regarding Nigeria-specific evidence, this section details the methodological approach adopted to empirically assess the impacts of global economic uncertainty on Nigeria's trade and investment outcomes.

### 3. Research methodology

#### 3.1 Research design

This study employed an ex post facto research design, which is appropriate for analyzing relationships among variables where the events of interest have already occurred and the researcher cannot manipulate the independent variables (Campbell & Stanley, 2015; Rohwer, 2022). The design integrates both descriptive and econometric methods. Descriptive statistics such as means, standard deviations, and graphical analyses were used to summarize historical trends and variability in the variables. The core empirical analysis utilized time series econometric techniques (ARDL) to rigorously examine the dynamic relationships among global economic uncertainty, trade outcomes, and investment outcomes.

#### 3.2 Econometric model specification

Two distinct models were estimated to capture the impacts of global economic uncertainty:

##### A. Global economic uncertainty–trade outcomes model (GEUTOM)

The functional form

$$BOP = f(\text{GEU}, \text{EGR}, \text{TOPN}, \text{EXCHR}, \text{FORES}) \quad 1$$

The mathematical form is given as

$$BOP_t = \alpha_0 + \alpha_1 \text{GEU}_t + \alpha_2 \text{EGR}_t + \alpha_3 \text{EXCHR}_t + \alpha_4 \text{TOPN}_t + \alpha_5 \text{FORES}_t \quad 2$$

The econometric form is given as

$$BOP_t = \alpha_0 + \alpha_1 \text{GEU}_t + \alpha_2 \text{EGR}_t + \alpha_3 \text{EXCHR}_t + \alpha_4 \text{TOPN}_t + \alpha_5 \text{FORES}_t + \varepsilon \quad 3$$

The log-linear specification

$$\log(BOP)_t = \alpha_0 + \alpha_1 \text{GEU}_t + \alpha_2 \text{EGR}_t + \alpha_3 \text{EXCHR}_t + \alpha_4 \text{TOPN}_t + \alpha_5 \log(\text{FORES})_t + \varepsilon \quad 4$$

where  $\alpha_0$  is the intercept of the model and  $\alpha_1$   $\alpha_2$   $\alpha_3$   $\alpha_4$  and  $\alpha_5$  are the respective coefficients of the model.  $\alpha_1$   $\alpha_2$   $\alpha_3$ . and  $\alpha_5$ ,

This GEUTOM controls for economic growth, trade openness, exchange rate, and foreign reserves, all of which are established determinants of trade performance and it is based on the Arrow-Pratt theory, cumulative prospect theory, and rank-dependent utility theory, the model shows that uncertainty leads to risk-averse behaviour and declined trade outcomes, supported by empirical evidence (Handley & Limão, 2015) demonstrating the negative impact of global economic uncertainty on trade outcomes.

## B. Global economic uncertainty–investment outcomes model (GEUIOM):

The functional form

$$FDIGDP = f(\text{GEU}, \text{EGR}, \text{INTR}, \text{INFL}, \text{TOPN}) \quad 5$$

The mathematical form

$$FDIGDP = \beta_0 + \beta_1 \text{GEU} + \beta_2 \text{EGR} + \beta_3 \text{INTR} + \beta_4 \text{INFL} + \beta_5 \text{TOPN} \quad 6$$

The econometric form

$$FDIGDP = \beta_0 + \beta_1 \text{GEU} + \beta_2 \text{EGR} + \beta_3 \text{INTR} + \beta_4 \text{INFL} + \beta_5 \text{TOPN} + \varepsilon \quad 7$$

$\varepsilon$  is the error term.  $\beta_0$  is the constant term while  $\beta_1, \beta_2, \beta_3, \beta_4$ , and  $\beta_5$ , are parameters defined above

This specification includes economic growth, interest rate, inflation, and trade openness as controls, reflecting the various drivers of FDI inflows. And it is grounded in the Arrow-Pratt Theory, Cumulative Prospect Theory, and Rank-Dependent Utility Theory. These theories suggest that uncertainty leads to risk-averse behavior, delayed investments, and influenced investment outcomes due to loss aversion, probability weighting, and non-linear decision-making.

### 3.3 Variable definitions and proxies

- i. Trade outcome (BOP): Measured as the annual balance of payments in US dollars, capturing the net economic transactions between Nigeria and the rest of the world.
- ii. Investment outcome (FDIGDP): Defined as foreign direct investment inflows as a percentage of GDP, reflecting the intensity of investment activity relative to economic size.
- iii. Global economic uncertainty (GEU): Proxied by the world uncertainty index, which quantifies the frequency of “uncertainty” in country reports and is widely used in the literature (Ahir et al., 2023).
- iv. Economic growth rate (EGR): Annual percentage change in real GDP.
- v. Trade Openness (TOPN): Ratio of total trade (exports + imports) to GDP, expressed as a percentage.
- vi. Exchange rate (EXCHR): Annual average official exchange rate (naira per US dollar).
- vii. Foreign reserves (FORES): Total foreign exchange reserves, in US dollars.
- viii. Interest rate (INTR): Average lending rate charged by banks.
- ix. Inflation rate (INFL): Annual percentage change in the consumer price index.

### 3.4 Estimation procedures

Given the time series nature of the data, the analysis followed a structured econometric sequence to ensure robust inference:

- i. Stationarity testing: The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests were applied to all variables to determine their order of integration. The results indicated a mix of I(0) and I(1) variables, justifying the use of the Autoregressive Distributed Lag (ARDL) modeling framework, which accommodates such mixed integration orders.
- ii. Optimal Lag Selection: The optimal lag lengths for each ARDL model were determined using the Akaike Information Criterion (AIC) within a vector autoregressive (VAR)

context. For both the trade and investment models, the AIC indicated an optimal lag length of five, ensuring the dynamic structure adequately captured short- and long-term relationships.

- iii. Cointegration testing: The ARDL Bounds testing approach was used to assess the existence of a long-run equilibrium relationship among the variables in each model. The F-statistics from the bounds tests were compared against critical values for the appropriate number of regressors (k). In both models, the F-statistics exceeded the upper bounds at the 5% significance level, confirming cointegration.
- iv. Model estimation: The ARDL approach was then applied to estimate both the short-run dynamics and long-run coefficients for each model. The ARDL framework is particularly suitable for small sample sizes and provides unbiased estimates even when regressors are endogenous or integrated of different orders.
- v. Error Correction Mechanism (ECM): The error correction term (ECT) from the ARDL models captured the speed of adjustment toward long-run equilibrium following short-run shocks. The significance and sign of the ECT provided evidence on the stability and adjustment process of the system.
- vi. Diagnostic and Stability Tests: Model adequacy was assessed using several diagnostic checks: Serial correlation: Breusch-Godfrey LM test; Heteroskedasticity: Breusch-Pagan-Godfrey test; Model stability: Cumulative Sum (CUSUM) and CUSUM of Squares tests, ensuring parameter constancy over the sample period; and Goodness-of-fit: Adjusted R<sup>2</sup> and F-statistics.

### 3.5 Data Sources and Sample

The analysis was based on annual time series data spanning 1980 to 2022, providing 43 observations for each variable. Data on trade outcomes (balance of payments, BOP), foreign direct investment as a percentage of GDP (FDIGDP), economic growth rate (EGR), and trade openness (TOPN) were sourced from the World Bank's World Development Indicators (2023). Interest rate (INTR), inflation rate (INFL), exchange rate (EXCHR), and foreign reserves (FORES) were obtained from the Central Bank of Nigeria Statistical Bulletin (2023). The global economic uncertainty variable (GEU) was proxied by the World Uncertainty Index, as constructed by Ahir et al. (2023). All data were cross-checked for consistency and completeness.

### 3.6 Reproducibility and transparency

All data sources are publicly available and the estimation procedures are fully documented, allowing replication. The analysis was conducted using EViews statistical software, with all intermediate outputs archived for verification.

## 4.0 Result presentation

### 4.1 Presentation of descriptive results

#### 4.1.1 Descriptive Statistics

The results of the descriptive statistics of the study's variables are presented in TABLE 1. Trade outcomes (BOP) averaged \$4.9 billion, with a wide range of -\$16 billion to \$36.5 billion, indicating significant fluctuations. Investment outcomes (FDIGDP) averaged 1.18% of

GDP, ranging from -1.15% to 4.28%, suggesting variability in investment levels. Economic growth averaged 3.07%, with a range of -13.13% to 15.33%, highlighting the economy's volatility. The exchange rate averaged N112.98 per \$1, with a substantial range of N0.55 to N425.98 per \$1, indicating considerable exchange rate fluctuations. Additionally, foreign exchange reserves averaged \$19 billion, ranging from \$0.224 billion to \$53 billion, while global economic uncertainty averaged 0.25, with a range of 0.001 to 0.73. The macroeconomic indicators also showed significant variability, with inflation averaging 18.74% (range: 5.39% to 72.84%), interest rates averaging 17.05% (range: 8.43% to 31.65%), and trade openness averaging 31.51% (range: 3.03% to 51.02%).

**TABLE 1: Descriptive statistics of the study's variables, 1980-2022**

	<i>FDIGDP</i> %	<i>BOP</i> \$Billion	<i>EGR</i> %	<i>EXCHR</i> \$1 =N	<i>FORES</i> \$Billion	<i>GEU</i> %	<i>INFL</i> %	<i>INTR</i> %	<i>TOPN</i> %
<i>Mean</i>	1.18	4.9	3.07	112.98	19	0.25	18.74	17.05	31.51
<i>Median</i>	1.07	1.1	3.65	111.23	9.01	0.19	12.88	9.75	31.22
<i>Maximum</i>	4.28	36.5	15.33	425.98	53	0.73	72.84	31.65	51.02
<i>Minimum</i>	-1.15	-16	-13.13	0.55	0.224	0.00	5.39	8.48	3.03
<i>Std. Dev.</i>	1.01	11.8	5.26	119.06	17.6	0.19	16.32	4.15	12.14
<i>Skewness</i>	0.59	0.98	-0.86	1.05	0.46	0.75	1.91	0.76	-0.69
<i>Kurtosis</i>	3.75	4.03	4.86	3.28	1.58	2.81	5.59	3.55	3.08
<i>Observations</i>	43	43	43	43	43	43	43	43	43

Source: Author's computation (2025) using EViews

The skewness analysis revealed that variables such as trade outcomes (BOP), foreign direct investment (FDIGDP), exchange rate (EXCHR), foreign exchange reserves (FORES), global economic uncertainty (GEU), inflation (INFL), and interest rate (INTR) exhibited positive skewness, indicating that their mean values exceeded their median values. Conversely, economic growth rate (EGR) and trade openness (TOPN) displayed negative skewness, suggesting their mean values were lower than their median values. The kurtosis analysis further showed that variables like FDIGDP, BOP, EGR, EXCHR, INFL, INTR, and TOPN were leptokurtic, characterized by peaked distributions with thick tails, potentially indicating outliers in the data. In contrast, FORES and GEU variables were platykurtic, with kurtosis values less than 3, implying a normal distribution.

#### 4.1.2 Correlation analysis

The correlation matrix in TABLE 2 shows the relationships between the study's variables. Notably, the correlation coefficient between trade outcomes and global economic uncertainty is 0.0149, indicating a very weak positive association. Similarly, the correlation coefficient between investment outcomes and global economic uncertainty is 0.1523, suggesting a weak positive relationship. These findings imply that both trade and investment outcomes tend to move in the same direction as global economic uncertainty, but the relationships are not strong.

**TABLE 2: The correlation matrix of the study's variables, 1980-2022**

	<i>FDIGDP</i>	<i>BOP</i>	<i>EGR</i>	<i>EXCHR</i>	<i>FORES</i>	<i>GEU</i>	<i>INFL</i>	<i>INTR</i>	<i>TOPN</i>
<i>FDIGDP</i>	1								
<i>BOP</i>	0.4489	1							
<i>EGR</i>	0.3197	0.4504	1						
<i>EXCHR</i>	-0.0787	0.0331	0.1398	1					
<i>FORES</i>	0.1772	0.4880	0.2826	0.7553	1				
<i>GEU</i>	0.1523	0.0149	0.0754	0.4297	0.4860	1			
<i>INFL</i>	0.2110	-0.1997	-0.2094	-0.2730	-0.3647	0.1796	1		
<i>INTR</i>	0.4782	0.0476	0.3150	-0.4159	-0.3874	-0.1138	0.4374	1	
<i>TOPN</i>	0.5620	0.4801	0.3903	0.1824	0.3037	-0.0177	-0.2421	0.2327	1

Source: Author's computation (2025) using EViews

**4.1.3 Unit root test**

The unit root result is presented in TABLE 3. TABLE 3 shows both the ADF and PP unit root test results for all the variables, and it shows that some of the variables were stationary at level while others were stationary after first difference. The order of integration of the variables in Table 3 using ADF and PP unit root test showed a mixed stationarity, and this justified the use of the ARDL estimation techniques in this study.

**TABLE 3: Unit root test results: ADF and PP: summarized result of the unit root test results; 1980-2022**

Variable	At level		At first difference		Remark
	ADF	PP	ADF	PP	
<i>EGR</i>	-2.5937 (0.2851)	-4.2391 (0.0039)	-12.0826 (0.0001)	-18.4303 (0.0001)	I(0)/ I(1)
<i>EXCHR</i>	0.1568 (0.9969)	0.1346 (0.9967)	-4.9916 (0.0012)	-4.8571 (0.0017)	I(1)
<i>FDIGDP</i>	-3.9766 (0.0172)	-3.9347 (0.0191)	NE	NE	I(0)
<i>GEU</i>	-3.9342 (0.0191)	-3.9705 (0.0175)	NE	NE	I(0)
<i>INFLA</i>	-3.8442 (0.0240)	-3.0985 (0.1199)	NE	-12.2367 (0.0001)	I(0)/ I(1)
<i>INTR</i>	-3.1831 (0.1027)	-2.8643 (0.1839)	-4.1938 (0.0107)	-8.0644 (0.0001)	I(1)
<i>Log(FORES)</i>	-3.4508 (0.0583)	-3.4323 (0.0607)	-6.4268 (0.0001)	-7.4172 (0.0001)	I(1)
<i>Log(BOP)</i>	-0.4115 (0.9836)	-3.0326 (0.1358)	-7.7547 (0.0001)	-8.2688 (0.0001)	I(1)
<i>TOPN</i>	-2.6175 (0.2750)	-2.7597 (0.1220)	-6.0310 (0.0001)	-6.0928 (0.0001)	I(1)

Note: figures in parenthesis are the respective probability values of the unit root test results; NE = not estimated because of reaching stationarity; the statistical significance of the unit root results is at 5 % level of significance.

Source: Author's computation (2025) using EViews

**4.2 ARDL model estimation**

**4.2.1 Analysis of the global economic uncertainty-trade outcome- model**

**4.2.1.1 Optimal lag selection for the global economic uncertainty-trade outcomes- model**

The study used VAR lag order selection criteria to determine the optimal lag length, and the results in TABLE 4 indicate that the Akaike information criterion (AIC) selects an optimal lag length of 5 for the global economic uncertainty-trade outcome model.

**TABLE 4: Optimal lag selection for the global economic uncertainty-trade outcome-model**

<i>VAR Lag Order Selection Criteria</i>							
<i>Lag</i>	<i>Endogenous variables: LOG(BOP2) GEU EGR TOPN EXCHR LOG(FORES)</i>						
	<i>LogL</i>	<i>LR</i>	<i>FPE</i>	<i>AIC</i>	<i>SC</i>	<i>HQ</i>	
0	-515.91	NA		34259.4	27.4689	27.7275	27.5609
1	-382	218.485		203.161	22.3157	24.1257	22.95971
2	-349.38	42.9191		281.148	22.4937	25.8551	23.68965
3	-312.03	37.3458		398.332	22.4229	27.3356	24.1708
4	-274.52	25.6683		982.639	22.3431	28.8073	24.64303
5	-76.824	72.83532*	2.106993*	13.83282*	21.84837*	16.68469*	

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)  
 FPE: Final prediction error  
 AIC: Akaike information criterion  
 SC: Schwarz information criterion  
 HQ: Hannan-Quinn information criterion

Source: Author’s computation (2025) using EViews

**4.2.1.2 The Bounds test (co-integration) result for the global economic uncertainty-trade outcomes- model**

The Bounds test result in TABLE 5 indicates a long-run relationship between global economic uncertainty and trade outcomes. The F-statistic (4.4758) exceeds the upper bound critical value (3.79) at the 5% significance level, leading to the rejection of the null hypothesis of no long-run relationship. This confirms the existence of cointegration among the variables, suggesting a long-run relationship in the global economic uncertainty-trade outcomes model.

**TABLE 5: Bounds test result for the global economic uncertainty-trade outcome- model**

<i>ARDL Bounds Test</i>			
<i>Null Hypothesis: No long-run relationships exist</i>			
<i>Test Statistic</i>	<i>Value</i>	<i>K</i>	
<i>F-statistic</i>	4.4758		5
<i>Critical Value Bounds</i>			
<i>Significance</i>	<i>I0 Bound</i>	<i>I1 Bound</i>	
10%		2.26	3.35
5%		2.62	3.79
2.50%		2.96	4.18
1%		3.41	4.68

Source: Author’s computation (2025) using EViews

**4.2.1.3 The short run and error correction results of the global economic uncertainty trade outcomes- model**

The short run results of the global economic uncertainty-trade outcomes- model are shown in TABLE 6. The short run coefficient of global economic uncertainty is -0.6824 with its corresponding probability value of 0.0320. This shows a negative and statistically significant impact of global economic uncertainty on the balance of payments (trade outcomes) at a five per cent level of significance in the short run, given that the corresponding probability value of 0.0320 is less the five percent level of significance. This result implies that a one percent increase in global economic uncertainty will lead to about a 68.24 percent decrease in the current year’s balance of payments, all other things being equal in the short run.

**TABLE 6: ARDL short run and error correction results of the global economic uncertainty-trade outcomes- model**

<i>Dependent Variable: DLOG(BOP)</i>				
<i>Selected Model: ARDL(2, 1, 0, 2, 2, 0)</i>				
<i>Variable</i>	<i>Coefficient</i>	<i>Standard error</i>	<i>t-Statistic</i>	<i>Probability value</i>
<i>DLOG(BOP(-1))</i>	0.3103	0.1726	1.7974	0.0831
<i>D(GEU)</i>	-0.6824	0.3024	-2.2567	0.0320
<i>D(EGR)</i>	-0.0023	0.0113	-0.2052	0.8389
<i>D(EXCHR)</i>	-0.0021	0.0031	-0.6655	0.5112
<i>D(EXCHR(-1))</i>	0.0073	0.0032	2.3008	0.0291
<i>DLOG(FORES)</i>	0.1787	0.0793	2.2543	0.0322
<i>D(TOPN)</i>	0.0078	0.0054	1.4493	0.1584
<i>D(TOPN(-1))</i>	-0.0116	0.0053	-2.2005	0.0362
<i>ECT(-1)</i>	-0.8738	0.2321	-3.7640	0.0008
<i>Diagnostic test results</i>				
<i>Adjusted R-squared</i>	0.5807	<i>Durbin-Watson stat</i>		1.92914
<i>F-statistic</i>	8.9121	<i>Prob(F-statistic)</i>		0.0001
<i>Breusch-Godfrey Serial Correlation LM test result</i>				
<i>Obs*R-squared</i>	1.2208	<i>Prob. Chi-Square(2)</i>		0.5431
<i>Heteroskedasticity Test: Breusch-Pagan-Godfrey test result</i>				
<i>Obs*R-squared</i>	16.6479	<i>Prob. Chi-Square(2)</i>		0.1633

Source: Author’s computation (2025) using EViews.

The error correction coefficient (-0.8738) indicates that about 87.38% of short-run disequilibrium is corrected in the long run, confirming a long-run relationship between the variables of the global economic uncertainty-trade outcomes model. The model's goodness of fit is modest, with an adjusted R-squared of 0.5807, meaning that the independent variables explain about 58.07% of the variation in the balance of payments. The F-statistic (8.9121) shows that the independent variables jointly have a statistically significant impact on the balance of payments. Additionally, the Durbin-Watson statistic (1.9291) suggests no autocorrelation in the model. The diagnostic tests confirm the reliability of the estimated model. The Breusch-Godfrey test for serial correlation yields a probability value of 0.5431, indicating no significant serial correlation. Additionally, the Breusch-Pagan-Godfrey test for heteroskedasticity shows a probability value of 0.1633, suggesting the presence of

homoscedasticity (equal variance) in the model. These results support the validity of the estimated global economic uncertainty-trade outcomes model.

#### 4.2.1.4 The long run result of the global economic uncertainty-trade outcome- model

The long run results of the global economic uncertainty-trade outcomes- model are shown in TABLE 7. The long run coefficient of global economic uncertainty is -0.0545 with its corresponding probability value of 0.8935. This shows a negative but highly not statistically significant effect of global economic uncertainty on the balance of payments at a five per cent level of significance in the long run. This result implies that a one percent increase in global economic uncertainty will lead to about 5.45 percent decrease in the balance of payments, all other things being equal in the long run.

**TABLE 7: The long run results of the global economic uncertainty-trade outcome- model**

<i>Dependent Variable: LOG(BOP)</i>				
<i>Variable</i>	Coefficient	Standard error	t-Statistic	Probability value
<i>GEU</i>	-0.0545	0.4033	-0.1351	0.8935
<i>EGR</i>	-0.0027	0.0129	-0.2066	0.8378
<i>TOPN</i>	0.0175	0.0056	3.1394	0.0040
<i>EXCHR</i>	-0.0033	0.0009	-3.6748	0.0010
<i>LOG(FORES)</i>	0.2045	0.0669	3.0566	0.0049

Source: Author's computation (2025) using Eview.

#### 4.2.1.5 Stability test for the global economic uncertainty-trade outcomes- model

The stability tests, as shown in FIG 1 (CUSUM) and FIG 2 (CUSUM of squares), confirm that the parameters of the variables in the estimated global economic uncertainty-trade outcomes model are consistent and stable over the study period, staying within the 5% significance bounds. This indicates that the model's parameters are structurally stable, with no evidence of instability, and that all coefficients remain stable.

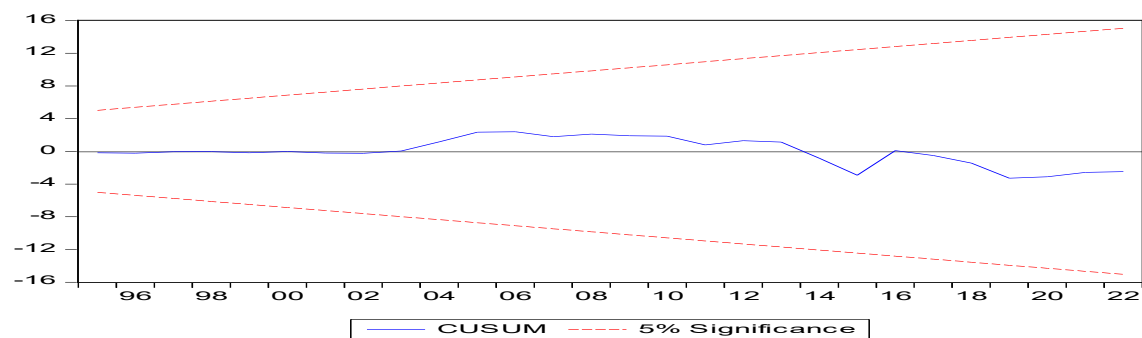


FIG 1. Cumulative sum for test of stability of the global economic uncertainty-trade outcome- model

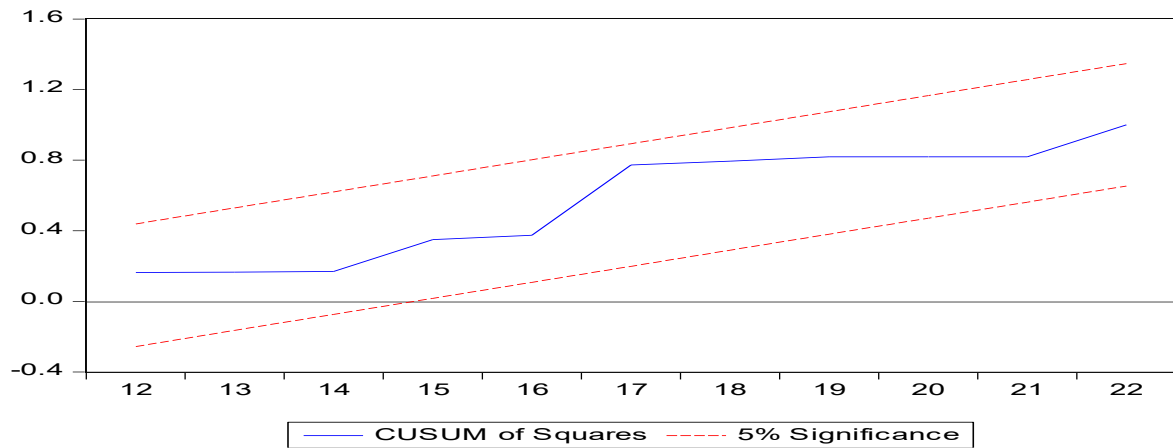


FIG 2. Cumulative sum of squares for test of stability of the global economic uncertainty-trade outcome- model

**4.2.2 Analysis of the global economic uncertainty-investment outcomes- model**

**4.2.2.1 Optimal lag selection for the global economic uncertainty-investment outcomes- model**

This study employed the VAR lag order selection criteria to determine the optimal lag length for the model. According to the results presented in TABLE 8, the Akaike information criterion (AIC) indicated that the optimal lag length for the global economic uncertainty-investment outcome model is five (5). This suggests that the model should select lag within five lags range to capture the dynamic relationships between the variables effectively.

**TABLE 8: Optimal lag selection for the global economic uncertainty-investment outcomes- model**

<i>VAR Lag Order Selection Criteria</i>								
<i>Lag</i>	<i>LogL</i>	<i>Endogenous variables: FDIGDP GEU EGR INTR INFL TOPN</i>						
		<i>LR</i>	<i>FPE</i>	<i>AIC</i>	<i>SC</i>	<i>HQ</i>		
0	-530.94	NA		75589	28.2603	28.51882	28.35225	
1	-469.62	100.064		20442.9	26.9271	28.73709	27.5711	
2	-425.15	58.50839*		15164.4	26.4815	29.84289	27.67748	
3	-383.59	41.558		17213	26.189	31.10176	27.93693	
4	-309.96	50.3765		6347.01	24.2086	30.67278	26.50852	
5	-195.67	42.1089	1096.909*	20.08781*	28.10336*	22.93968*		

\* indicates lag order selected by the criterion  
*LR: sequential modified LR test statistic (each test at 5% level)*  
*FPE: Final prediction error*  
*AIC: Akaike information criterion*  
*SC: Schwarz information criterion*  
*HQ: Hannan-Quinn information criterion*

Source: Author’s computation (2025) using EViews.

**4.2.2.2 The Bounds test (co-integration) result for the global economic uncertainty-investment outcomes- model**

The Bounds test results for the -global economic uncertainty investment outcomes model, presented in TABLE 9, indicate a long-run relationship between the variables. With an F-statistic value of 7.7537 exceeding the upper bound critical value of 3.79 at the 5%

significance level, the null hypothesis of no long-run relationship is rejected. This confirms the existence of cointegration among the variables, suggesting that they share a stable long-run relationship.

**TABLE 9: Bounds test result for the global economic uncertainty-investment outcomes model**

<i>ARDL Bounds Test</i>			
<i>Null Hypothesis: No long-run relationships exist</i>			
<i>Test Statistic</i>	<i>Value</i>	<i>K</i>	
<i>F-statistic</i>	6.185798		5
<i>Critical Value Bounds</i>			
<i>Significance</i>	<i>I0 Bound</i>	<i>I1 Bound</i>	
10%	2.26		3.35
5%	2.62		3.79
2.50%	2.96		4.18
1%	3.41		4.68

Source: Author's computation (2025) using EViews.

**4.2.2.3 The short run and error correction results of the global economic uncertainty-investment outcomes- model**

The short-run results of the global economic uncertainty-investment outcome model, presented in TABLE 10, reveal a significant impact of global economic uncertainty on investment outcomes. Specifically, the coefficient of global economic uncertainty is -1.5915, with a probability value of 0.0349, indicating a statistically significant negative effect at the 5% level. This suggests that a 1% increase in global economic uncertainty would lead to a 1.59% decrease in investment outcomes in Nigeria in the short run, all else being equal.

The error correction coefficient, which measures the speed of adjustment, is -0.8117 with a probability value of 0.0001, indicating that about 81.17% of short-run disequilibrium is corrected in the long run. This confirms the existence of a long-run relationship between the variables. The model has a modest fit, with an adjusted R-squared of 0.6336, meaning that the independent variables explain about 63.36% of the variation in investment outcomes. The F-statistic of 16.5716 is statistically significant, indicating that the independent variables jointly impact investment outcomes. Additionally, the Durbin-Watson statistic of 2.0513 suggests no autocorrelation in the model. The diagnostic tests confirm the reliability of the model.

**TABLE 10: ARDL short run and error correction results of the global economic uncertainty-investment outcomes- model**

<i>Dependent Variable: FDIGDP</i>					
<i>Selected Model: ARDL(1, 0, 2, 1, 2, 0)</i>					
<i>Variable</i>	<i>Coefficient</i>	<i>Standard error</i>	<i>t-Statistic</i>	<i>Probability value</i>	
<i>D(GEU)</i>	-1.5915	0.7190	-2.2134	0.0349	
<i>D(EGR)</i>	-0.0502	0.0300	-1.6737	0.1049	
<i>D(EGR(-1))</i>	-0.0417	0.0241	-1.7314	0.0940	
<i>D(INTR)</i>	-0.0499	0.0403	-1.2359	0.2264	
<i>D(INFL)</i>	0.0036	0.0093	0.3891	0.7001	
<i>D(INFL(-1))</i>	0.0318	0.0107	2.9764	0.0058	

<i>D(TOPN)</i>	0.0211	0.0133	1.5895	0.1228
<i>ECT(-1)</i>	-0.8117	0.1643	-4.9404	0.0001
<i>Diagnostic test results</i>				
<i>Adjusted R-squared</i>	0.6336	Durbin-Watson stat	2.0513	
<i>F-statistic</i>	7.2876	Prob(F-statistic)		0.0001
<i>Breusch-Godfrey Serial Correlation LM test result</i>				
<i>Obs*R-squared</i>	4.0047	Prob. Chi-Square(2)	0.1350	
<i>Heteroskedasticity Test: Breusch-Pagan-Godfrey test result</i>				
<i>Obs*R-squared</i>	19.5743	Prob. Chi-Square(2)	0.0515	

Source: Author’s computation (2025) using EViews.

The Breusch-Godfrey serial correlation LM test shows no evidence of serial correlation, with a probability value of 0.1350 exceeding the 5% significance level. Additionally, the Breusch-Pagan-Godfrey heteroskedasticity test indicates homoscedasticity (constant variance) in the residuals, as the probability value of 0.0515 is slightly above the 5% significance level, suggesting equal spread and validating the model's assumptions.

**4.2.2.4 The long run result of the global economic uncertainty-investment outcome- model**

The long run results of the global economic uncertainty-investment outcomes- model are shown in TABLE 11 . The long-run result reveals that global economic uncertainty has a negative impact on investment outcomes in Nigeria, with a coefficient of -1.9606. Although this effect is not statistically significant at the 5% level (probability value of 0.0866), it is significant at the 10% level. This suggests that a 1% increase in global economic uncertainty would lead to a 1.96% decrease in investment outcomes in the long run, all things being equal

**TABLE 11: The long run results of the global economic uncertainty-investment outcomes- model**

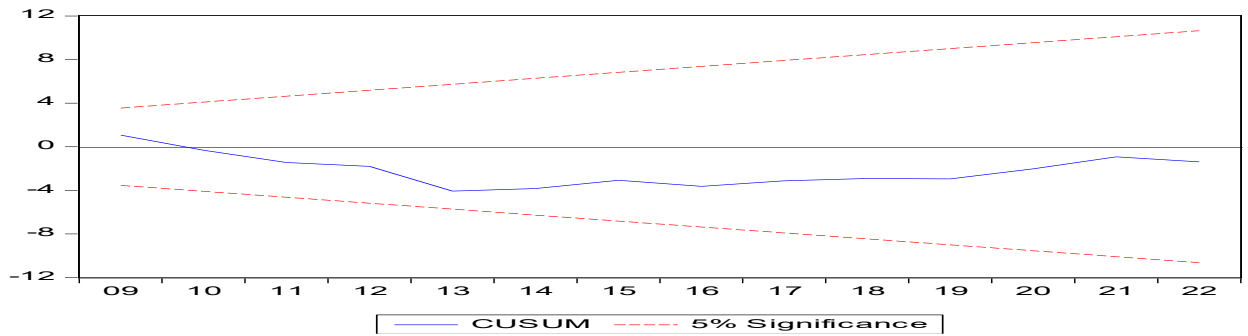
*Dependent Variable: FDIGDP*

<i>Variable</i>	Coefficient	Standard error	t-Statistic	Probability value
<i>GEU</i>	-1.9606	1.1052	-1.7741	0.0866
<i>EGR</i>	0.0932	0.0372	2.5040	0.0182
<i>INTR</i>	0.0115	0.0512	0.2257	0.8230
<i>INFL</i>	0.0071	0.0169	0.4181	0.6789
<i>TOPN</i>	0.0260	0.0142	1.8236	0.0785
<i>Constant</i>	0.4122	0.7226	0.5704	0.5728

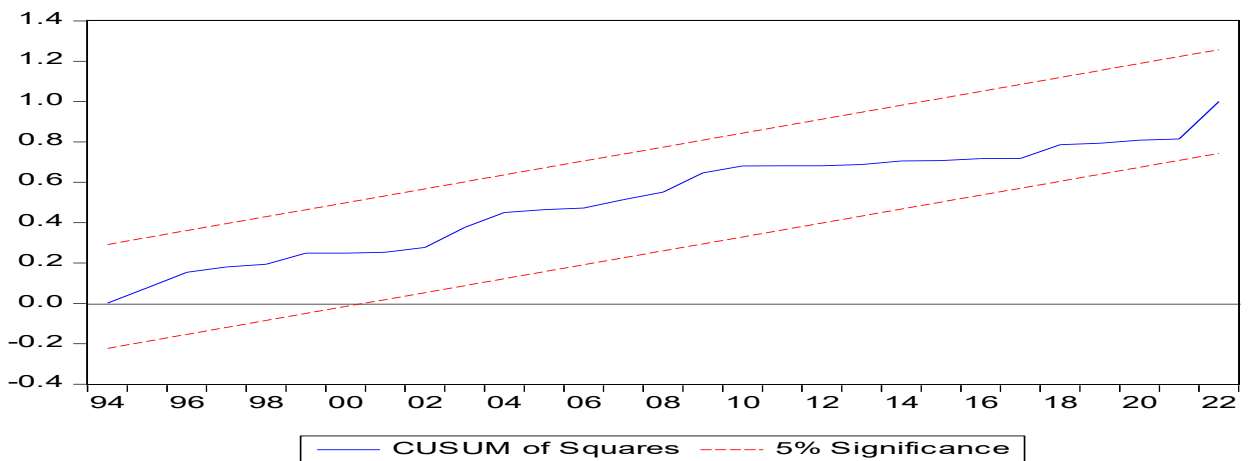
Source: Author’s computation (2025) using EViews.

**4.2.2.5 Stability test for the global economic uncertainty-investment outcomes- model**

The stability tests, as shown in FIG 3 (CUSUM) and FIG 4 (CUSUM of squares), indicate that the variables in the global economic uncertainty-investment outcome model are consistent and stable throughout the study period, staying within the 5% significance bounds. This suggests that the model's parameters do not exhibit structural instability, and the coefficients remain stable over time.



**FIG 3 Cumulative sum for test of stability of the global economic uncertainty-investment outcomes- model**



**FIG 4 Cumulative sum of squares for test of stability of the global economic uncertainty-investment outcomes- model**

**4.3 Discussion of key findings**

The negative short-run impacts of global economic uncertainty on Nigeria’s trade and investment can be attributed to several interrelated mechanisms. First, uncertainty increases the perceived risk associated with international transactions and long-term capital commitments. For a country like Nigeria, where export revenues are heavily concentrated in oil and a handful of commodities, global shocks such as abrupt changes in energy prices or trade policy translate rapidly into revenue and balance of payments volatility. This volatility, in turn, prompts exporters and importers to delay or scale back transactions, as they face greater difficulty in forecasting demand, prices, and costs (Balakeffi et al, 2019; Glebocki & Saha, 2024).

Second, uncertainty amplifies risk aversion among both domestic and foreign investors. According to the Arrow-Pratt theory of risk aversion, economic agents facing heightened uncertainty will demand higher risk premia or may postpone investment altogether, especially in environments where institutional and macroeconomic buffers are weak (Arrow, 1965; Pratt, 1978). In Nigeria, this manifests as reduced foreign direct investment inflows and a slowdown in domestic capital formation during periods of global turmoil.

Third, uncertainty can disrupt access to international finance and raise the cost of capital. Fluctuations in global risk sentiment often lead to capital outflows from emerging markets, currency depreciation, and higher borrowing costs. For Nigeria, these dynamics are

compounded by exchange rate volatility and limited foreign exchange reserves, which further constrain trade financing and investment (Fasanya & Akinde, 2019; Odionye et al, 2023).

### **Comparison with other emerging economies**

The observed impacts in Nigeria mirror those found in other emerging and developing economies, but with some distinctions. Studies in Asian and Latin American contexts have similarly documented that global economic and policy uncertainty suppresses both trade flows and FDI, with the magnitude of the impact often greater in countries with less diversified export structures and weaker institutional frameworks (Gebre-Borojo et al, 2023; Nana et al, 2024). For instance, Yayi, (2024) notes that economies with more sophisticated export baskets are less vulnerable to external shocks, while Liu et al. (2024) highlight the mitigating role of intra-industry trade.

However, Nigeria's high dependence on oil exports and its relatively narrow manufacturing base make it particularly susceptible to global shocks. Unlike some Asian peers that have successfully diversified their export sectors or developed robust hedging and risk-sharing mechanisms, Nigeria's adjustment capacity remains limited. This underscores the importance of structural transformation and institutional strengthening as part of the policy response.

### **Theoretical implications: risk aversion and probability weighting**

The findings lend empirical support to behavioral and decision-theoretic frameworks such as the Arrow-Pratt theory of risk aversion and the Rank-Dependent Utility (RDU) theory. Under uncertainty, economic agents in Nigeria appear to overweight the probability of negative outcomes such as currency depreciation, trade disruptions, or policy reversals leading to a disproportionate contraction in trade and investment relative to the objective probability of such events (Quiggin, 1982). This is consistent with the RDU and cumulative prospect theory, which posit that decision-makers are not only risk-averse but also subject to non-linear probability weighting and loss aversion (Tversky & Kahneman, 1992).

Such behavioral responses are likely to be amplified in environments where information is scarce, policy credibility is fragile, and macroeconomic volatility is endemic. In Nigeria, anecdotal evidence from business leaders and policymakers corroborates this interpretation:

“When global headlines are unpredictable, our clients delay orders and investors demand higher returns. The cost of waiting is often lower than the cost of being wrong.” — Senior executive, Nigerian manufacturing firm

This risk-averse stance, while rational from the perspective of individual firms, can generate negative spillovers for the broader economy, reinforcing cycles of low investment and sluggish trade growth.

## **5.0 Conclusion and policy recommendations**

### **5.1 Conclusion**

The main objective of this study was to examine global economic uncertainty relationship with Nigerian trade and investment outcomes. The specific objectives were to analyze the impact of global economic uncertainty on the balance of payments of Nigeria; and to examine the impact of global economic uncertainty on investment outcomes in Nigeria. The

study adopted the descriptive and analytical research design. It employed the Augmented–Dickey–Fuller and the Philip–Person unit root test methods and the autoregressive distributed lag model (ARDL) and Bounds test of co-integration. The summary of the results of the estimation is presented as follows: The study found a negative and statistically significant impact of global economic uncertainty on the balance of payments (trade outcomes) at a five per cent level of significance in the short run. but in the long run, the study found negative but highly not statistically significant effect of global economic uncertainty on the balance of payments at a five per cent level of significance in the long run.

The study found a negative and statistically significant impact of global economic uncertainty on investment outcome at a five per cent level of significance in the short run in Nigeria but a negative and statistically insignificant impact of global economic uncertainty on investment outcome in Nigeria. The concluded that global economic uncertainty is bad for Nigerian trade and investment outcomes.

## 5.2 Policy recommendations

Based on the findings of the study, the following recommendations are made to boost trade outcome and investment outcome in the face of global economic uncertainty:

- i. To capitalize on the potential trade opportunities arising from global economic uncertainty, the Nigerian government should implement targeted trade promotion strategies. The Nigerian Export Promotion Council (NEPC) should take the lead in diversifying Nigeria's export markets to reduce dependence on specific markets and mitigate potential losses. Additionally, the NEPC should implement targeted trade promotion strategies to increase Nigeria's exports and take advantage of new market opportunities.
- ii. To facilitate trade and reduce costs for traders, the Nigeria Customs Service (NCS) should simplify trade procedures. This can be achieved by streamlining documentation requirements, reducing bureaucratic hurdles, and increasing transparency. Furthermore, the Federal Ministry of Transportation and the Nigerian Ports Authority should invest in trade infrastructure, such as ports and border crossings, to facilitate trade and reduce transit times.
- iii. To mitigate potential losses due to global economic uncertainty, the Central Bank of Nigeria (CBN) and the Securities and Exchange Commission (SEC) should develop a risk management framework. This framework should incorporate and promote strategies such as diversification, hedging, regular risk assessment, and contingency planning to help Nigerian businesses manage associated risks. Additionally, the CBN can provide trade finance facilities to support businesses in navigating uncertainty and capitalizing on new market opportunities, enabling them to operate effectively in a volatile global economy.
- iv. To mitigate the negative impact of global economic uncertainty on investment outcomes in Nigeria, several policy recommendations can be implemented. From a fiscal policy perspective, the Federal Inland Revenue Service (FIRS) can implement targeted tax incentives for investors in key sectors such as manufacturing and agriculture. Additionally, the FIRS can increase investment allowances for businesses that invest in Nigeria to encourage domestic investment and reduce reliance on foreign investment.
- v. The Central Bank of Nigeria (CBN) can manage interest rates to prevent a credit crunch and ensure that businesses have access to funding. Furthermore, the CBN can provide liquidity to the financial system to prevent a credit crunch. To promote investment, the Nigerian Investment Promotion Commission (NIPC) can intensify its investment promotion efforts to attract foreign investors and encourage domestic

investment. The NIPC can also simplify investment procedures and reduce bureaucratic hurdles to make Nigeria a more attractive investment destination.

### 5.3 Limitations of the study

While the study provides robust evidence of the negative impact of global economic uncertainty on Nigeria's trade and investment, several limitations merit attention. The analysis focuses on aggregate outcomes and does not disaggregate by sector or firm size, which may mask important heterogeneities. Furthermore, the study period includes the COVID-19 pandemic, which introduced additional layers of uncertainty and policy response that may not be fully captured by standard econometric models. Future research could explore sectoral dynamics, the role of firm-level characteristics, and the impactful Ness of specific policy interventions in buffering the economy against global shocks.

### 5.4 Data and measurement constraints

A primary limitation of this study is its reliance on secondary data sources. While the use of established datasets such as the World Development Indicators, Central Bank of Nigeria Statistical Bulletin, and the World Uncertainty Index ensures a degree of credibility and comparability, secondary data inherently restricts the researcher's control over data quality, measurement consistency, and variable selection. Potential issues such as data revision, reporting lags, and inconsistencies in national accounting practices may introduce measurement errors or bias, particularly in the context of developing economies where statistical capacity can be uneven.

The measurement of global economic uncertainty itself presents additional challenges. The study employs the World Uncertainty Index as a proxy, which, although widely used, is based on the frequency of the term "uncertainty" in country reports. This approach captures broad shifts in sentiment but may not fully reflect the multidimensional or country-specific nature of uncertainty, especially in economies with less media coverage or where reporting standards differ.

### 5.5 Future research directions

To address these limitations, future research could pursue several avenues. First, the use of alternative or complementary measures of uncertainty such as financial market volatility indices, survey-based expectations, or country-specific policy uncertainty indices could provide a more robust understanding of the uncertainty–outcome relationship. Second, employing non-linear modeling techniques (example., threshold models, regime-switching models, or vector autoregressions) may better capture the complex dynamics and potential asymmetries in the impacts of uncertainty.

Incorporating additional control variables, particularly those reflecting institutional quality, political stability, or sectoral characteristics, would help mitigate omitted variable bias and clarify the mechanisms at play. Where data permit, panel data approaches or comparative studies across multiple countries could enhance the external validity of the findings and identify context-specific drivers of resilience or vulnerability.

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**Data Availability:** Data available on request from the authors.