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Nigeria Macroeconomic Instability and Terrorism: A VECM Analysis of Inflation, Unemployment, and Urbanization Dynamics

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Abstract

This study investigates the dynamic relationship between macroeconomic instability and terrorism in Nigeria, with specific emphasis on inflation, unemployment, and urban population growth. Using annual time series data for the period 2002–2025 obtained from the World Bank, the study employs the Vector Error Correction Model (VECM) to capture both short-run dynamics and long-run equilibrium interactions among the variables. Unit root tests confirm that all series are integrated of order one, while the Johansen cointegration results reveal the existence of multiple long-run relationships, indicating that terrorism and macroeconomic instability are structurally interlinked over time. The empirical findings indicate that inflation exerts a positive and statistically significant effect on terrorism in the long run, suggesting that persistent price instability exacerbates economic hardship and heightens conditions conducive to insecurity. In the short run, unemployment is found to have a positive and significant impact on terrorism, underscoring the role of labour market distress in intensifying immediate security risks. Urban population growth exhibits mixed effects, reflecting its dual role as both a source of socio-economic pressure and a potential driver of structural adjustment. The error correction mechanism is significant, confirming that deviations from long-run equilibrium are systematically corrected, with inflation emerging as the principal adjustment variable in the system. Further dynamic analysis based on impulse response functions and forecast error variance decomposition reveals strong persistence in terrorism and highlights the increasing contribution of unemployment and urbanization to its fluctuations over time. These results underscore the presence of complex feedback mechanisms between macroeconomic instability and insecurity. Overall, the study contributes to the literature by providing a comprehensive multivariate framework that integrates macroeconomic and demographic dynamics in the analysis of terrorism. The findings suggest that effective policy responses should extend beyond conventional security measures to include coordinated strategies aimed at price stability, employment generation, and sustainable urban development.

Keywords: Terrorism, Macroeconomic Instability, Inflation, Unemployment, Urbanization, VECM, Nigeria

1. Introduction

Macroeconomic instability and terrorism have increasingly become interrelated challenges in Nigeria, reflecting a complex interaction between economic vulnerabilities and security threats. Macroeconomic instability is typically manifested through persistent inflation, high unemployment, and rapid urban population growth, all of which have remained prominent features of the Nigerian economy in recent years. Rising inflation has significantly eroded household purchasing power and contributed to a worsening cost-of-living crisis, while unemployment, particularly among youths, continues to constrain inclusive economic growth. At the same time, accelerated urbanization, driven by rural–urban migration and demographic pressures, has resulted

in overcrowded cities, inadequate infrastructure, and the proliferation of informal settlements. These conditions collectively intensify socio-economic inequality and deprivation, thereby creating an enabling environment for social unrest and violent extremism. Recent evidence from international development agencies shows that insecurity, rising inflation, and escalating food prices have pushed over 31 million Nigerians into acute economic hardship, highlighting the strong linkage between macroeconomic stress and social instability (Reuters, 2024; Cadre Harmonisé, 2024).

The relationship between macroeconomic instability and terrorism in Nigeria is both bidirectional and mutually reinforcing. On one hand, adverse macroeconomic conditions, such as inflation and unemployment, contribute to economic frustration, poverty, and marginalization, thereby increasing the likelihood of participation in or support for terrorist activities. Empirical studies suggest that unemployment and economic deprivation expose vulnerable populations, particularly youths, to recruitment into violent groups as a means of survival and social mobility (Ogbu & Chukwuemeka, 2024). On the other hand, terrorism itself deepens macroeconomic instability by disrupting production, discouraging investment, and weakening economic performance. For instance, recent studies on Nigeria demonstrate that increased terrorist activities are associated with rising unemployment and inflation rates, alongside declining foreign direct investment and productivity (Adekoya, Oliyide, & Fasanya, 2025; Obi, Nwankwo, & Okeke, 2025; Ogbu & Chukwuemeka, 2024). Similarly, empirical evidence indicates that terrorism and inflation exert negative effects on economic growth in both the short and long run, highlighting the destabilizing role of insecurity in macroeconomic performance (Obi, Ezeanyeji, & Obi, 2025; Rotimi, Naphtali, & Irefin, 2024; Adekoya *et al.*, 2025). Moreover, emerging studies reveal a strong positive relationship between the national terrorism index and inflation, suggesting that insecurity significantly contributes to price instability in Nigeria (Adekoya *et al.*, 2025).

In recent time, the empirical literature on the macroeconomic–terrorism nexus has expanded considerably, providing deeper insights into the underlying dynamics, although with mixed findings. Recent Nigerian-focused studies (e.g., Amah & Eze, 2023; Adekoya *et al.*, 2025) demonstrate that terrorism significantly distorts macroeconomic stability through its effects on inflation, unemployment, and poverty. In particular, Adekoya *et al.* (2025) employ cointegration techniques and confirm the existence of long-run relationships between inflation, unemployment, and terrorism, emphasizing the structural interdependence among these variables. Similarly, Atsiya (2025) finds that inflation and terrorism jointly exacerbate food insecurity and economic hardship, reinforcing the socio-economic pathways through which instability fuels insecurity . Beyond Nigeria, recent global evidence also indicates that terrorism contributes to widening economic inequality and weakens redistributive mechanisms, particularly in developing economies (Meierrieks, 2025). Furthermore, insurgency-related studies confirm that terrorism imposes significant constraints on long-term economic development by discouraging investment and reducing productivity (Obi *et al.*, 2025).

Despite these contributions, the literature remains fragmented and inconclusive in several respects. First, many studies examine the impact of terrorism on economic growth without explicitly modeling the joint dynamics of key macroeconomic indicators such as inflation, unemployment, and urbanization. This narrow focus limits a comprehensive understanding of how macroeconomic instability evolves as an interconnected system. Second, although some studies employ econometric techniques such as ARDL and OLS, relatively few adopt dynamic multivariate frameworks capable of capturing both short-run adjustments and long-run equilibrium

relationships. Third, the role of urbanization as a structural driver of both macroeconomic instability and terrorism has received limited empirical attention, despite its relevance in the Nigerian context where rapid urban growth exacerbates inequality, unemployment, and social exclusion. Finally, existing studies often overlook the adjustment mechanisms through which macroeconomic disequilibria are corrected over time, thereby limiting policy-relevant insights.

Given these gaps, there is a compelling need for a comprehensive and dynamic analytical framework that captures the interdependence among macroeconomic instability indicators and terrorism in Nigeria. This study addresses this gap by employing a Vector Error Correction Model (VECM) to examine the long-run equilibrium relationships and short-run dynamics among inflation, unemployment, urbanization, and terrorism. By integrating these variables within a unified multivariate framework, the study provides deeper insights into the mechanisms through which macroeconomic instability and terrorism interact in Nigeria, thereby contributing to the emerging literature and offering evidence-based policy implications for addressing both economic instability and insecurity.

2. Data and Methodology

2.1 Data Source and Description

This study employed secondary data derived from reliable international databases. The dataset comprises annual time series variables, including the terrorism index, which captures the frequency, intensity, and overall impact of terrorist incidents within the country. The macroeconomic indicators considered in the study include the inflation rate and unemployment rate, while urban population growth is incorporated to reflect the dynamics of urbanization. The data span the period from 2002 to 2025, providing a sufficiently long-time horizon for robust time series analysis. All variables were sourced from the World Development Indicators (WDI) databank. The empirical analyses were conducted using Microsoft Excel for preliminary data handling and EViews for advanced econometric modeling.

2.2 Methodology: Vector Error Correction Model (VECM) Framework

This study adopts the Vector Error Correction Model (VECM) to examine the dynamic relationship between macroeconomic instability and terrorism in Nigeria. The VECM is particularly suitable because the variables of interest-terrorism index, inflation rate, unemployment rate, and urban population growth, are expected to be non-stationary but cointegrated, implying the existence of a long-run equilibrium relationship alongside short-run dynamics.

2.2.1 Model Specification

Let the vector of endogenous variables be defined as:

$$Y_t = \begin{pmatrix} TERR_t \\ INF_t \\ UNEMP_t \\ URB_t \end{pmatrix} \quad (1)$$

where $TERR_t$ is Terrorism index, INF_t is Inflation rate, $UNEMP_t$ is Unemployment rate, and URB_t is Urban population growth.

The VECM representation of a k-lag Vector Autoregressive (VAR) model is expressed as:

$$\Delta Y_t = \prod Y_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \, \Delta Y_{t-1} + \mu + \varepsilon_t \quad (2)$$

where Δ is first difference operator, $\prod$ represents long-run impact matrix, Γ_i represents short-run dynamic coefficient matrices, μ denotes the vector of intercepts, and ε_t is white noise error term.

The matrix $\prod$ can be decomposed as

$$\prod = \alpha\beta' \quad (3)$$

where β represents the cointegrating vectors (long-run relationships), and α represents the speed of adjustment coefficients, indicating how quickly variables return to equilibrium after a shock.

2.2.2 Pre-Estimation Procedures

Before estimating the VECM, several econometric steps are required:

1. Unit Root Test: Augmented Dickey-Fuller Test

Prior to the estimation of ARDL model, it has become a custom that the unit root hypothesis is first tested for the variable to ascertain the order of integration of the variable. We employed the Augmented Dickey–Fuller (ADF) test based on the following regression:

$$\Delta y_t = \varphi + \beta_t + \alpha y_{t-1} + \sum_{i=1}^{k} d_i \Delta y_{t-1} + u_t \quad (4)$$

where u_t is a white noise error term and $\Delta y_{t-1} = y_{t-1} - y_{t-2}$, $\Delta y_{t-2} = y_{t-2} - y_{t-3}$, etc.
Equation 1 tests the null hypothesis of a unit root against a trend stationary alternative.
The VECM requires that variables be integrated of order one, i.e., I(1).

2. Lag Length Selection

Optimal lag length is determined using information criteria such as Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), and Hannan–Quinn Criterion (HQC).

3. Johansen Cointegration Test

The Johansen (1988, 1991) maximum likelihood approach is employed to determine the number of cointegrating relationships using, the Trace statistic and the Maximum eigenvalue statistic

The existence of at least one cointegrating equation justifies the use of the VECM.

2.2.3 Error Correction Representation

The VECM explicitly incorporates the error correction term (ECT), which captures long-run equilibrium adjustments. For example, the inflation equation in the system can be expressed as:

$$\Delta TERR_t = \alpha_1 ECT_{t-1} + \sum \Upsilon 1_i \Delta X_{t-i} + \varepsilon_t \quad (5)$$

where ECT_{t-1} represents the Lagged error correction term derived from the cointegrating equation, α_1 is the Speed of adjustment parameter, $\Upsilon 1_i$ represents the Short-run coefficients, and X Vector of explanatory variables.

A significant and negative α coefficient confirms convergence toward long-run equilibrium.

2.2.4 Granger Causality, Impulse Response, and Variance Decomposition

Within the Vector Error Correction Model (VECM) framework, dynamic interactions among the variables are further examined through Granger causality analysis, which allows for the distinction between short-run and long-run causal relationships. Short-run causality is assessed using Wald tests on the joint significance of the coefficients of the lagged differenced explanatory variables. A statistically significant Wald statistic implies that past changes in one variable have predictive

power over another variable in the short run. In contrast, long-run causality is determined by examining the significance of the error correction term (ECT) in each equation of the VECM system. A negative and statistically significant ECT coefficient indicates that deviations from the long-run equilibrium are corrected over time, thereby confirming the existence of long-run causality running from the explanatory variables to the dependent variable. This dual causality framework is particularly important in understanding whether macroeconomic instability indicators such as inflation, unemployment, and urbanization influence terrorism contemporaneously or through long-term structural adjustments.

Beyond causality analysis, the study employs Impulse Response Functions (IRFs) and Forecast Error Variance Decomposition (FEVD) to provide deeper insights into the dynamic behavior of the system. The IRFs trace the time path of the response of each variable to a one-time shock in another variable, thereby illustrating the magnitude, direction, and persistence of shocks across the system. This is particularly useful in assessing how shocks to macroeconomic variables propagate to terrorism over time. Complementarily, the FEVD quantifies the proportion of the forecast error variance of each variable that can be attributed to its own shocks and to shocks from other variables in the system. This decomposition provides a measure of the relative importance of each variable in explaining fluctuations within the system. Together, IRFs and FEVD enhance the understanding of the transmission mechanisms and interdependencies among terrorism and macroeconomic instability variables, thereby offering robust empirical insights into the dynamic structure of the Nigerian economy.

3. Results and Discussion

3.1 Data Presentation

The descriptive statistics in Table 1 show clear differences in the central tendency, dispersion, and range of the variables used in the analysis, thereby providing useful preliminary insight into the nature of macroeconomic instability and terrorism dynamics in Nigeria over the study period. The terrorism index (TERR) recorded a mean value of 6.754, with a median of 7.618, a minimum of 3.860, and a maximum of 9.118, indicating that terrorism incidents and their severity were generally moderate to high during the period under review. The relatively high standard deviation of 1.964 suggests noticeable fluctuations in terrorism intensity over time, reflecting the unstable pattern of insecurity in the country. Inflation (INF) had an average value of 14.460, with a minimum of 5.388 and a maximum of 34.800, while its standard deviation of 6.294 is the highest among all the variables, indicating that inflation was the most volatile series in the dataset. This implies that price instability constituted a major dimension of Nigeria's macroeconomic instability during the period. Unemployment (UNEMP), by contrast, recorded a mean of 4.256 and a much lower standard deviation of 0.686, suggesting relatively smaller annual changes, although its range from 3.600 to 5.740 still indicates episodes of notable labour market stress. Urban population growth (URB) had a mean of 4.459, with values ranging from 3.551 to 5.066 and a standard deviation of 0.513, showing that urbanization followed a more gradual and less volatile path compared with terrorism and inflation. Overall, the descriptive statistics indicate that while inflation and terrorism exhibited stronger fluctuations and instability, unemployment and urbanization changed more gradually across the sample period.

Table 1:
Summary Statistics of the Variables

	TERR	INF	UNEMP	URB
Mean	6.754	14.460	4.256	4.459
Median	7.618	13.061	3.810	4.561
Maximum	9.118	34.800	5.740	5.066
Minimum	3.860	5.388	3.600	3.551
Std. Dev.	1.964	6.294	0.686	0.513
Observations	24	24	24	24

The trend of the terrorism index in Figure 1 reveals a distinct structural pattern over time. Between 2002 and 2007, the terrorism index remained at relatively low levels, rising only gradually from 3.86 to 4.04, which suggests a period when terrorism threats were still relatively subdued. From 2008 onward, however, the series rose sharply, increasing from 4.70 in 2008 to 8.34 in 2013 and peaking at 9.12 in 2015. This sharp escalation reflects a period of severe insecurity and intensified terrorist activity in Nigeria. After 2015, the trend began to moderate gradually, declining from 8.76 in 2016 to 7.58 in 2023, before showing a mild increase again to 7.79 in 2025. This pattern suggests that although terrorism intensity eased after its peak, the country did not return to the low-terrorism conditions observed in the early 2000s. In substantive terms, Figure 1 indicates that terrorism became a persistent structural challenge in Nigeria, with the post-2008 period representing a regime shift toward higher insecurity.

The inflation trend (Figure 2) also demonstrates considerable instability over the study period. Inflation was already elevated at 12.88 percent in 2002 and rose further to 17.86 percent in 2005, indicating significant price pressures in the early part of the sample. This was followed by a temporary moderation, with inflation falling to 5.39 percent in 2007, the lowest value recorded in the series. Thereafter, inflation resumed an upward and fluctuating movement, reaching 15.70 percent in 2016, 16.50 percent in 2017, and 18.85 percent in 2022. The most dramatic increase occurred in 2023 and 2024, when inflation accelerated to 24.66 percent and 34.80 percent respectively, before declining to 23.00 percent in 2025. This pattern confirms the highly unstable nature of Nigeria's price environment and suggests that inflationary pressures became more severe in the more recent period. The sharp spikes in later years imply worsening macroeconomic conditions, reduced purchasing power, and heightened welfare pressures on households, which may further interact with insecurity and social fragility.

Figure 1:
Trend of Nigeria Terrorism Index

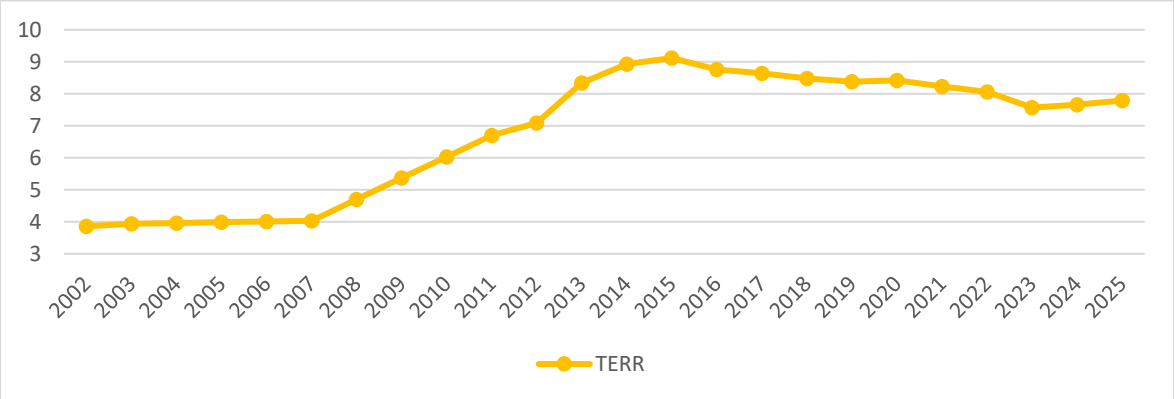
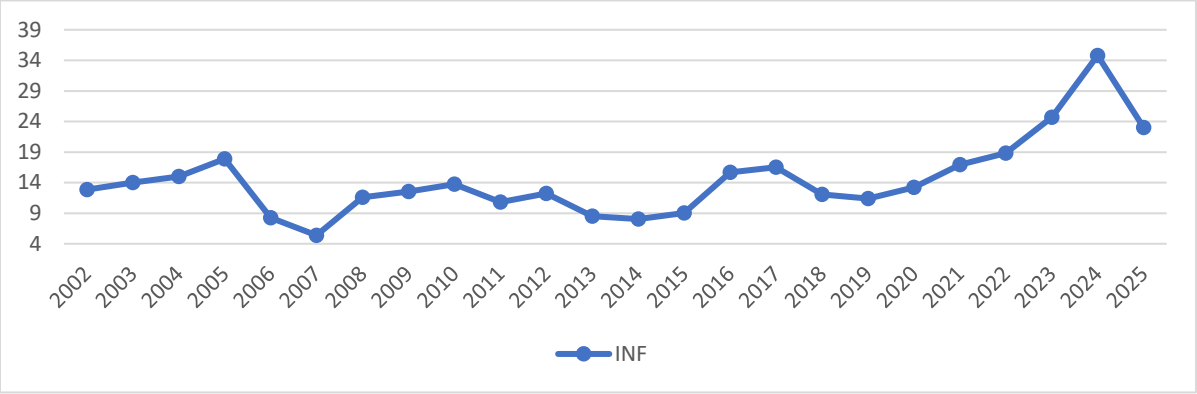
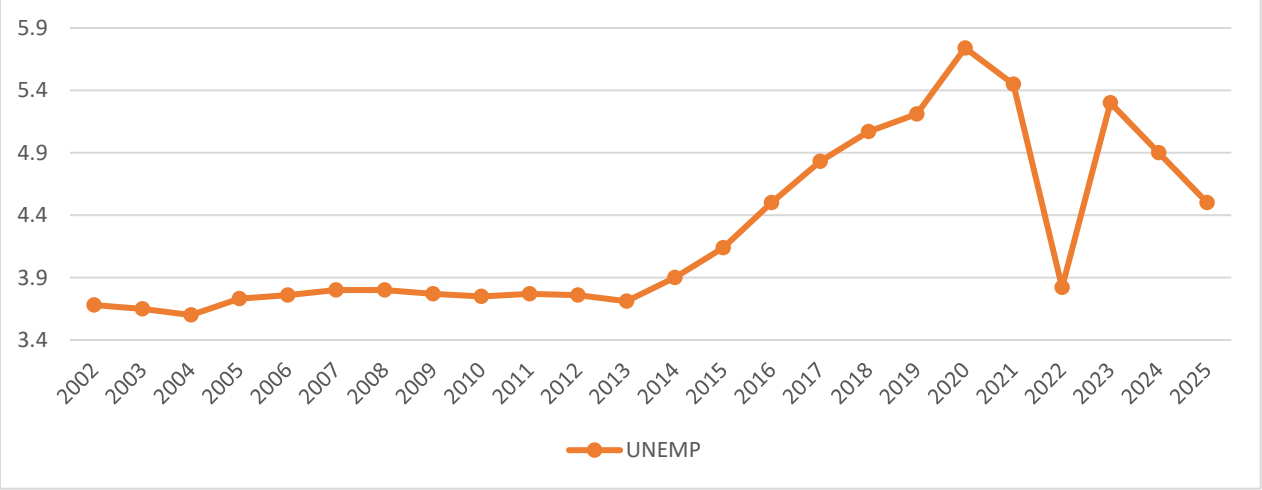


Figure 2:
Trend of Nigeria Inflation Rate



The unemployment series (Figure 3) presents a somewhat different but still important pattern. Between 2002 and 2013, unemployment remained relatively low and stable, fluctuating narrowly between 3.60 and 3.80, which suggests limited short-run labour market volatility during that phase. However, from 2014 onward, the rate began to increase more noticeably, rising from 3.90 in 2014 to 4.14 in 2015, 4.50 in 2016, and 5.74 in 2020, which represents the highest level in the entire series. Although unemployment fell sharply to 3.82 in 2022, it rose again to 5.30 in 2023 before moderating to 4.50 in 2025. This indicates that the labour market became more fragile in the latter part of the period, even if the fluctuations were less dramatic than those observed for inflation and terrorism. The post-2014 upward movement in unemployment suggests deepening structural weaknesses in employment generation, which may have compounded socio-economic frustrations and increased vulnerability among economically active populations.

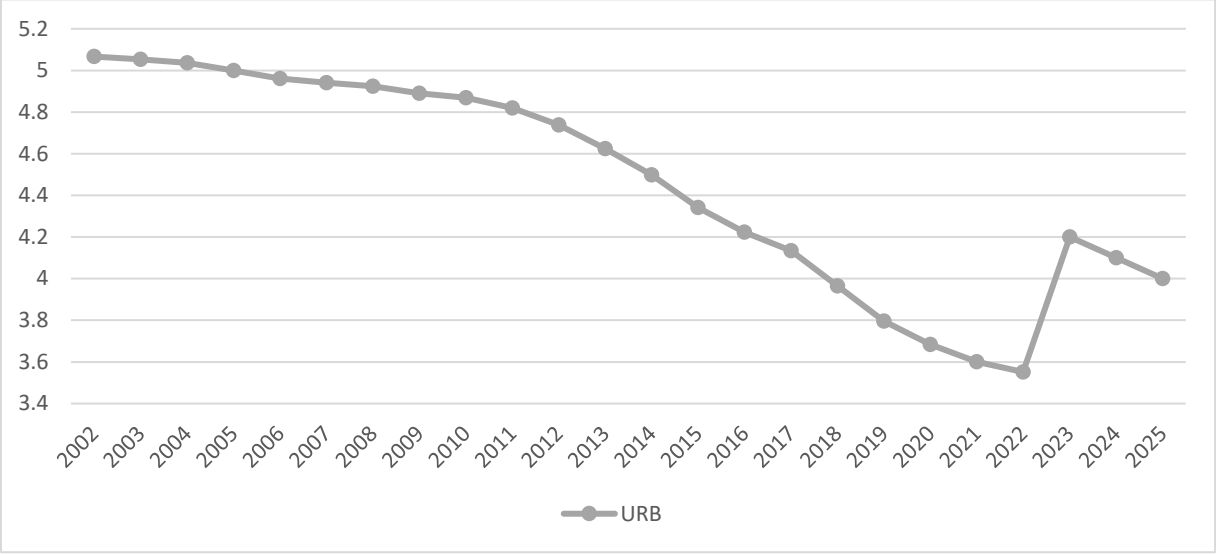
Figure 3:
Trend of Nigeria Unemployment Rate



Urban population growth followed a much more stable but steadily declining path over most of the period. The series began at 5.07 percent in 2002 and decreased gradually year after year to 3.55 percent in 2022, before recording a slight rise to 4.20 percent in 2023 and then easing marginally to 4.00 percent by 2025. Unlike terrorism, inflation, and unemployment, urbanization did not exhibit abrupt fluctuations, suggesting that it is more structural and demographically driven in nature. Nevertheless, the sustained pace of urban population growth, even while declining, still

indicates continuing pressure on urban centers, public infrastructure, housing, labour markets, and social services. In the Nigerian context, such urban pressures may intensify informal settlements, youth joblessness, and socio-spatial inequality, thereby indirectly reinforcing conditions under which insecurity and violent activities can thrive. Thus, although urbanization appears less volatile, its long-run developmental implications remain substantial.

Figure 4:
Trend of Nigeria Urban Population Growth



The descriptive results suggest that the variables display patterns consistent with the theoretical expectation of interdependence between macroeconomic instability and terrorism. Terrorism and inflation both show pronounced upward movements and significant volatility, especially in the middle and later parts of the sample, while unemployment rises more gradually but becomes more pronounced after 2014. Urbanization, though smoother, reflects an enduring structural process capable of shaping socio-economic pressures over time. The broad co-movement among these variables, particularly the rise in terrorism alongside elevated inflation and increasing unemployment during critical years, provides preliminary evidence that insecurity and macroeconomic instability may be mutually reinforcing in Nigeria. These descriptive findings, therefore, justify the subsequent use of more rigorous time-series techniques, such as unit root testing, cointegration analysis, and the VECM, to determine whether the observed associations represent statistically meaningful short-run dynamics and long-run equilibrium relationships.

3.2 Preliminary Assessment

The preliminary results strongly support the appropriateness of the VECM for examining the nexus between macroeconomic instability and terrorism in Nigeria. The Augmented Dickey–Fuller results in Table 2 indicate that all the variables satisfy the stationarity requirement for VECM estimation. Specifically, terrorism (TERR), inflation (INF), and urban population growth (URB) appear non-stationary at level but stationary after first differencing, while unemployment (UNEMP) is also treated as integrated of order one. This suggests that the variables are sufficiently comparable in their stochastic properties to permit cointegration analysis. The lag order selection criteria in Table 3 show some divergence, as the LR, FPE, and SC criteria select lag 2, whereas AIC and HQ select lag 3. In view of the relatively small annual sample size of 24 observations, adopting lag 2 is methodologically sound because it ensures model parsimony while preserving

sufficient degrees of freedom. This also aligns with the Johansen procedure, which was estimated using lags 1 to 2 in first differences.

Table 2:
Unit Root Test (ADF)

Variables	$\hat{k}$	Integration Order (I)	P-Value
TERR	0	1	0.0490
INF	0	1	0.0001
UNEMP	1	1	0.0000
URB	0	1	0.0003

Note: *$\hat{k}$ is the AIC lag term is used to select the optimal lag, to make the residuals white noise*

Table 3:
Lag Order Selection Criteria

Endogenous variables: TERR INF UNEMP URB
Exogenous variables: C

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-125.07	NA	2.562844	12.29234	12.49129	12.33552
1	-34.5625	137.9155	0.002203	5.196431	6.191214	5.412324
2	-0.11103	39.37314*	0.000464*	3.439145	5.229755*	3.827753
3	20.68716	15.84623	0.000535	2.982175*	5.568612	3.543498*

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

Table 4:
Johansen Cointegration Test

Trend assumption: Linear deterministic trend
Series: TERR INF UNEMP URB
Lags interval (in first differences): 1 to 2

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.766703	71.87683	47.85613	0.0001
At most 1 *	0.660806	41.3125	29.79707	0.0016
At most 2 *	0.534139	18.60764	15.49471	0.0164
At most 3	0.115037	2.566404	3.841466	0.1092

Note: * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values

The Johansen cointegration results presented in Table 4 provide compelling evidence of long-run equilibrium relationships among the variables. The trace statistics reject the null hypotheses of no cointegration, at most one cointegrating vector, and at most two cointegrating vectors at the 5 percent level, while failing to reject the null hypothesis at most three. This indicates the presence of three cointegrating relationships among the four variables. The existence of multiple cointegrating equations suggests that terrorism, inflation, unemployment, and urbanization are bound by stable long-run relationships, despite short-run deviations. This finding is substantively significant, as it confirms that the interaction between terrorism and macroeconomic instability in Nigeria is structurally embedded rather than transitory. Consequently, any short-term disequilibrium among these variables is expected to be corrected over time, reinforcing the appropriateness of the VECM framework for capturing both long-run equilibrium dynamics and short-run adjustments.

3.3 Examination of the Long-run Equilibrium Relationships and Short-run Dynamics among Inflation, Unemployment, Urbanization, and Terrorism

Subsequently, the normalized long-run cointegrating equation reported in Table 5 provides critical insight into the equilibrium relationship between macroeconomic instability and terrorism in Nigeria. The estimated cointegrating vector, expressed as:

$$TERR_{t-1} - 0.7641INF_{t-1} + 6.0029UNEMP_{t-1} + 7.9052URB_{t-1} - 56.9499 = 0$$

Table 5:
Long-run Cointegrating Model

		Estimates
Dependent	**TERR(-1)**	1.000000
	INF(-1)	-0.76412
		(0.1190)
		[-6.4201]*
	UNEMP(-1)	6.0029
		(1.0496)
		[5.7190]*
	URB(-1)	7.9052
		(1.1686)
		[6.7649]*
	C	-56.9499

Note: Standard errors in ( ) & t-statistics in [ ]; * denotes significant at 5% (i.e. t-stat>1.95)

Moreover, when rearranged and normalized on terrorism, the equation implies that terrorism is positively associated with inflation and negatively associated with unemployment and urbanization in the long run. The coefficient of inflation is statistically significant and indicates that sustained increases in inflation are associated with higher terrorism over time. This finding is theoretically consistent with the study topic because inflation is a major component of macroeconomic instability. Persistent inflation reduces real income, worsens household welfare, deepens poverty, and heightens economic frustration, all of which can intensify insecurity and social unrest. Thus, the positive inflation–terrorism relationship suggests that price instability is an important long-run driver of terrorism in Nigeria.

By contrast, the coefficients on unemployment and urban population growth are statistically significant but carry negative signs in the normalized long-run equation. This means that, within the estimated long-run equilibrium structure, increases in unemployment and urbanization are associated with reductions in terrorism. Although statistically valid, these signs are somewhat counterintuitive relative to conventional expectations and therefore require cautious understanding. A possible explanation is that the long-run relationship is capturing broader structural adjustment processes rather than direct one-to-one effects. For unemployment, it is possible that labour market dynamics in Nigeria are mediated by informal sector absorption, migration, or regional heterogeneity, thereby weakening the conventional positive unemployment–terrorism link in aggregate annual data. For urbanization, the negative sign may reflect long-run benefits associated with urban growth, such as improved access to infrastructure, stronger state presence, greater surveillance capacity, and wider economic opportunities, all of

which may ultimately dampen terrorist activity. These coefficients should therefore be interpreted as equilibrium associations within the multivariate system rather than simple causal effects.

Table 6:
VEC Residual Normality Test

Component	Jarque-Bera	df	Prob.
1	6.092512	2	0.0475
2	2.096986	2	0.3505
3	0.379363	2	0.8272
4	2.204238	2	0.3322
Joint	10.7731	8	0.2149

Note: H_0: Residuals are multivariate normal

Table 7:
VEC Residual Serial Correlation LM Test

Lags	LM-Stat	Prob
1	18.30287	0.3065
2	26.81185	0.0536
3	11.3268	0.7889
4	25.91592	0.0552
5	16.20069	0.4390

Note: H_0: No serial correlation at lag order h of the VEC residuals

The diagnostic tests in Table 6 and Table 7 confirm the adequacy and robustness of the estimated VECM in capturing the macroeconomic instability–terrorism nexus. The residual normality test (Table 6) indicates that the joint Jarque–Bera statistic is statistically insignificant, implying that the null hypothesis of multivariate normality cannot be rejected. Although minor deviations are observed in individual components, the joint test, which is more relevant for system-wide inference, supports the validity of the model. Similarly, the residual serial correlation LM test (Table 7) reveals no evidence of serial correlation across the specified lag structure, as all probability values exceed conventional significance thresholds. These diagnostic outcomes suggest that the model is well specified and does not suffer from major econometric violations, thereby lending credibility to the estimated long-run and short-run relationships.

Table 8:
Summary of VECM Granger Causality Analysis of Short-run and Long-run Cointegration

Dependent Variable	Short Run									Long Run
	C	DURB(-2)	DURB(-1)	DUNEMP(-2)	DUNEMP(-1)	DINF(-2)	DINF(-1)	DTERR(-2)	DTERR(-1)	ECT(-1)
DTERR	0.0671 (0.1734) [0.3871]	-0.8818 (2.4070) [-2.3664]*	2.2821 (2.1841) [1.0449]	0.701055 (0.93491) [-2.7499]*	0.158543 (0.49791) [0.31842]	-0.0586 (0.0411) [-3.4247]*	-0.0183 (0.0431) [-0.4252]	0.1629 (0.2936) [0.5550]	0.795314 (0.41177) [2.93143]*	-0.03809 (0.12488) [-2.40142]*
DINF	5.4569 (1.3171) [4.143]*	50.7764 (18.2799) [2.7778]*	-8.7331 (16.5869) [-0.5265]	-21.3042 (7.1002) [-3.0005]*	-18.15241 (3.78138) [-4.8005]*	0.7885 (0.3122) [2.5254]*	1.2716 (0.3271) [3.8877]*	-2.0358 (2.2294) [-0.9131]	-11.2578 (3.1272) [-3.599]*	- 3.20563 (0.72059) [4.44865]*
DUNEMP	0.2723 (0.1825) [1.4921]	5.7674 (2.5327) [2.2771]*	-9.7199 (2.29819) [-4.2294]*	-3.63498 (0.9838) [-3.6949]*	-0.32255 (0.52393) [-0.61563]	0.0502 (0.0433) [1.1609]	0.03877 (0.0453) [0.8555]	-0.5177 (0.3089) [-1.6757]	-0.6094 (0.4333) [-1.4065]	0.07756 (0.09984) [0.77680]
DURB	0.0348 (0.0238) [1.4647]	0.5824 (0.3296) [1.7669]	-0.4330 (0.2991) [-1.4479]	-0.4228 (0.12803) [-3.3022]*	-0.410546 (0.06818) [-6.0213]*	0.00991 (0.0056) [1.7533]	0.0120 (0.0059) [2.0353]*	-0.07692 (0.0402) [-1.91360]*	-0.1497 (0.0564) [-2.6544]*	0.02169 (0.0129) [2.66984]*

Note: ( ) Standard errors, [ ] t-statistics and * denotes significant at 5%

Furthermore, the short-run and long-run causality results reported in Table 8 provide important insight into the dynamic interrelationships among terrorism, inflation, unemployment, and urban population growth in Nigeria. In the terrorism equation, the results indicate that terrorism is significantly influenced by selected macroeconomic instability variables in the short run. Specifically, terrorism responds negatively and significantly to urban population growth at lag 2, positively and significantly to unemployment at lag 2, negatively and significantly to inflation at lag 2, and positively and significantly to its own lagged value at lag 1. The positive and significant coefficient on lagged unemployment suggests that rising unemployment contributes to increased terrorist activity in the short run. This finding is consistent with the theoretical proposition that unemployment heightens economic frustration, weakens legitimate livelihood opportunities, and increases the vulnerability of economically excluded individuals, particularly youths, to recruitment into violent or extremist networks. The positive and significant coefficient on lagged terrorism further indicates persistence in terrorist activity, implying that once insecurity intensifies, it tends to reproduce itself over time. In contrast, the negative short-run effect of inflation suggests that immediate increases in inflation may temporarily suppress terrorism, possibly because acute price shocks constrain household spending, reduce mobility, and limit the operational capacity of violent groups in the short term. Similarly, the negative and significant coefficient on lagged urbanization may indicate that short-run increases in urban population growth are associated with reduced terrorism, perhaps reflecting stronger state presence, improved surveillance, or greater economic concentration in urban areas.

Most importantly, the error correction term (i.e. ECT(-1)) in the terrorism equation is negative and statistically significant, confirming the existence of long-run causality running from inflation, unemployment, and urbanization to terrorism. This implies that when the system deviates from its long-run equilibrium path, terrorism adjusts in order to restore equilibrium. This is a crucial finding because it shows that terrorism in Nigeria is not purely an exogenous security phenomenon; rather, it is systematically linked to the broader macroeconomic environment and responds to long-run disequilibria generated by instability in prices, labour market conditions, and urbanization dynamics. Overall, these results suggest that terrorism in Nigeria is shaped by both short-run macroeconomic shocks and long-run equilibrium forces, thereby reinforcing the argument that macroeconomic instability constitutes an important structural context for insecurity.

The inflation equation in Table 8 reveals even stronger evidence of dynamic interaction within the system. Inflation responds significantly in the short run to urban population growth at lag 2, unemployment at lags 2 and 1, its own lagged values at lags 2 and 1, and terrorism at lag 1. The positive and significant coefficient on lagged urbanization suggests that urban population pressures contribute to rising prices, likely through increased demand for housing, transport, food, and public services. The negative and significant coefficients on lagged unemployment imply that worsening labour market conditions may reduce demand pressures and thereby moderate inflation in the short run. At the same time, the significance of the lagged inflation terms confirms the presence of inflation persistence, meaning that past price instability continues to feed into current inflation dynamics. Particularly noteworthy is the negative and significant effect of lagged terrorism on inflation, which suggests that insecurity has a measurable effect on price behaviour, possibly through disruptions in production, supply chains, and market efficiency. More importantly, the error correction term in the inflation equation is negative and highly significant, indicating that inflation responds strongly to deviations from long-run equilibrium and acts as a major adjustment variable in the system. This means that inflation plays a central role in restoring equilibrium whenever shocks to terrorism, unemployment, or urbanization disturb the long-run relationship. In

the context of this study, this finding underscores the pivotal importance of price instability as a key channel through which macroeconomic instability and terrorism interact in Nigeria.

The unemployment equation suggests that unemployment is primarily a short-run transmission mechanism rather than a long-run adjustment variable. The results show that unemployment responds significantly to urban population growth at both lag 2 and lag 1, as well as to its own lagged value at lag 2. The positive coefficient on urbanization at lag 2 indicates that increases in urban population growth may initially intensify unemployment, possibly because migration into urban centers expands labour supply faster than employment opportunities can be created. However, the negative coefficient on urbanization at lag 1 suggests that this effect may reverse over time, perhaps as urban labour markets gradually absorb part of the incoming workforce. The negative and significant coefficient on lagged unemployment also points to partial short-run correction, implying that previous increases in unemployment are followed by some adjustment in subsequent periods. Nevertheless, neither inflation nor terrorism is found to exert a statistically significant direct short-run effect on unemployment within the estimated model, and the error correction term is insignificant. This implies that unemployment does not serve as a long-run equilibrium-restoring variable, even though it remains an important short-run component of macroeconomic instability. Thus, unemployment appears to function more as a channel through which urbanization pressures feed into the broader macroeconomic–terrorism system than as a variable that actively restores long-run balance.

The urbanization equation also provides useful evidence on the interaction between demographic change, macroeconomic instability, and insecurity. Urban population growth is negatively and significantly affected by unemployment at both lag 2 and lag 1, positively and significantly affected by inflation at lag 1, and negatively and significantly affected by terrorism at lag 1. The negative relationship between unemployment and urbanization suggests that worsening labour market conditions may reduce the attractiveness of urban centers, possibly encouraging reverse migration or slowing the pace of urban inflows. By contrast, the positive effect of lagged inflation may indicate that rising prices, particularly in rural areas, encourage migration toward urban locations where households may perceive greater income opportunities or better access to services. The negative effect of lagged terrorism on urbanization suggests that insecurity discourages urban concentration, disrupts settlement patterns, and may alter internal migration decisions. Unlike the terrorism and inflation equations, however, the error correction term in the urbanization equation is positive and statistically significant. Since a stable error correction mechanism is typically expected to have a negative sign, the positive coefficient suggests that urbanization does not converge toward the long-run equilibrium in the conventional sense. Rather, it appears to diverge from equilibrium following shocks, indicating that urban population growth in Nigeria may be driven by strong demographic and structural forces that are not easily moderated by short-run macroeconomic adjustments. This makes urbanization a particularly complex variable in the system, with both economic and demographic determinants.

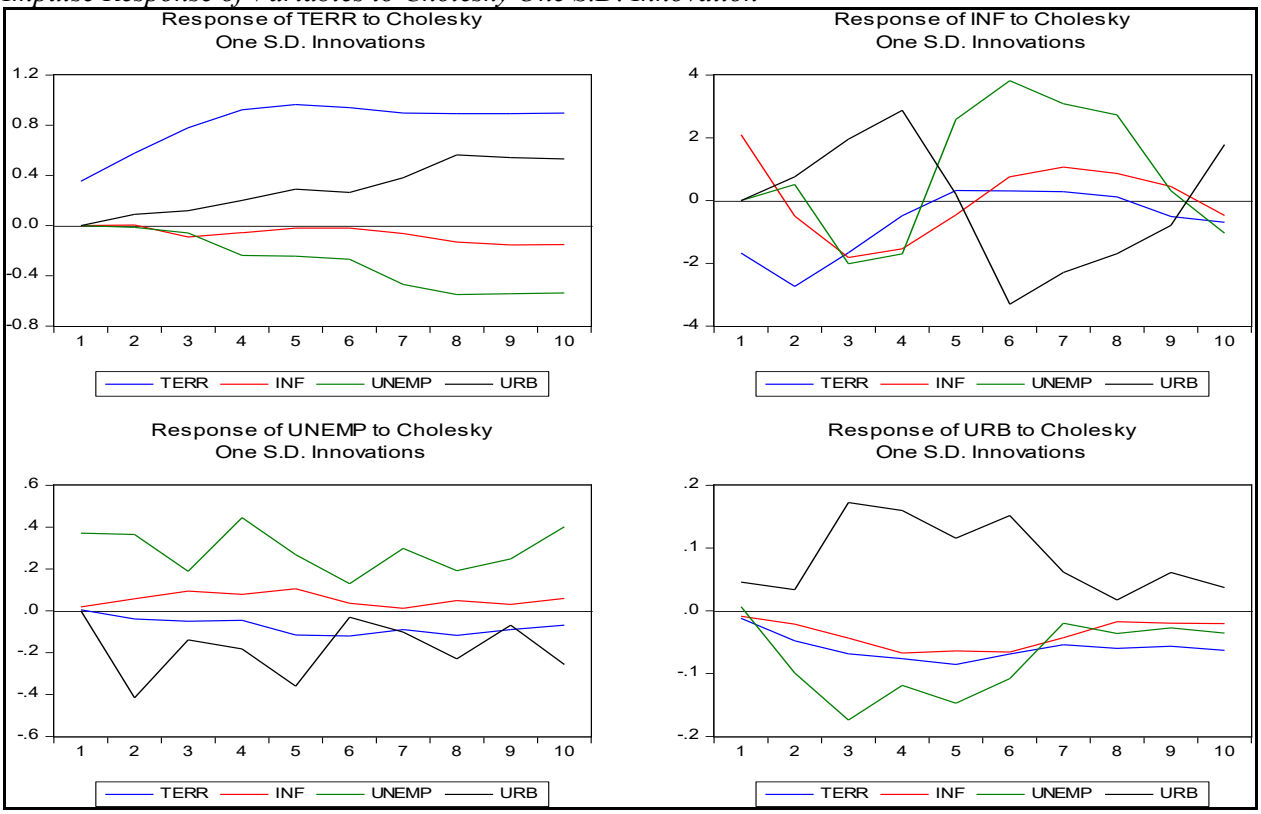
Overall, the VECM causality results reveal a complex and asymmetric pattern of interaction among terrorism, inflation, unemployment, and urbanization in Nigeria. First, terrorism is shown to respond significantly to short-run macroeconomic shocks, especially unemployment, while also adjusting to long-run equilibrium through a significant error correction mechanism. Second, inflation emerges as the dominant endogenous adjustment variable in the system, responding to shocks from the other variables and playing a major role in restoring equilibrium. Third, unemployment and urbanization are important in shaping short-run dynamics, although they do

not contribute in the same way to long-run adjustment. These findings suggest that the relationship between macroeconomic instability and terrorism in Nigeria is neither simple nor unidirectional; rather, it is characterized by feedback effects, persistence, and differing adjustment speeds across variables. In substantive terms, the results imply that terrorism is embedded in Nigeria's broader macroeconomic instability environment, with labour market distress, price fluctuations, and urbanization pressures jointly influencing the evolution of insecurity over time.

From a policy perspective, these findings carry significant implications. The positive short-run effect of unemployment on terrorism suggests that efforts to reduce insecurity in Nigeria must include employment-generating strategies, particularly for economically vulnerable populations. The central role of inflation in the adjustment process further implies that macroeconomic stabilization, especially inflation control, may have security benefits beyond its traditional economic objectives. At the same time, the mixed and sometimes counterintuitive role of urbanization suggests that urban planning, infrastructure provision, and the management of internal migration are also relevant to understanding and addressing the roots of insecurity. Consequently, the evidence supports the need for an integrated policy framework in which anti-terrorism strategies are complemented by measures aimed at stabilizing prices, expanding productive employment, and improving the socio-economic absorptive capacity of urban centers.

Figure 5:

Impulse Response of Variables to Cholesky One S.D. Innovation



The impulse response results in Figure 5 provide important evidence on how terrorism, inflation, unemployment, and urban population growth in Nigeria respond over time to one-standard-deviation shocks within the VECM system. The response of terrorism to its own shock is persistently positive throughout the ten-period horizon, increasing from 0.353 in period 1 to a peak

of about 0.965 in period 5 before stabilizing around 0.897 by period 10. This pattern suggests a strong degree of inertia in terrorism dynamics, implying that once terrorist activity rises, its effects tend to persist over time rather than dissipate quickly. In contrast, terrorism responds only weakly to shocks in inflation, but the response is generally negative from period 3 onward, indicating that inflationary shocks tend to dampen terrorism slightly over time. The response of terrorism to unemployment shocks is negative and becomes stronger over the forecast horizon, falling to about -0.549 by period 8 before remaining substantially negative through period 10. This suggests that unemployment shocks reduce terrorism within the dynamic response framework, a result that departs from conventional expectations and may reflect the influence of broader macroeconomic adjustment processes or data aggregation effects. By contrast, terrorism responds positively to shocks in urban population growth, and this positive response strengthens over time, rising from 0.090 in period 2 to about 0.564 in period 8. This indicates that urbanization pressures may gradually intensify terrorism, possibly through congestion, social exclusion, or pressure on urban resources and institutions.

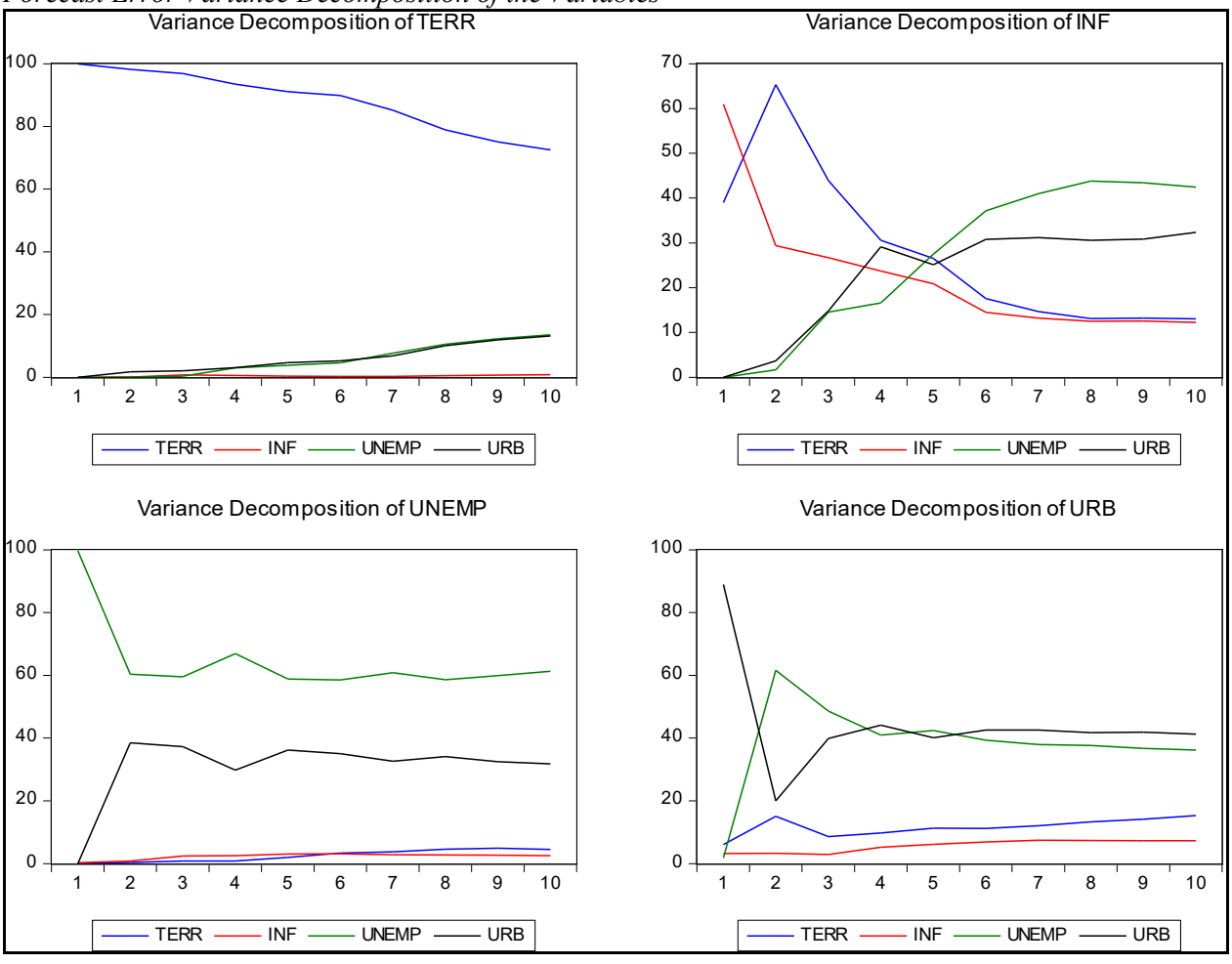
The inflation response pattern reveals that inflation is highly sensitive to shocks from the other variables, further underscoring its central role in the macroeconomic instability–terrorism nexus. Inflation initially responds negatively to shocks in terrorism, with the response reaching -2.735 in period 2, indicating that security shocks exert contractionary or disruptive short-run effects on prices. However, this negative effect weakens over time and turns mildly positive in some intermediate periods before becoming slightly negative again by period 10. Inflation's response to its own shock is initially positive at 2.093 in period 1, but then fluctuates between negative and positive values across the horizon, showing that inflationary disturbances are not only persistent but also oscillatory. More strikingly, unemployment shocks generate increasingly strong positive effects on inflation from period 5 onward, peaking at about 3.820 in period 6, while urbanization shocks also exert sizable positive effects in the early and middle periods before turning negative and later positive again. These results indicate that inflation in Nigeria is dynamically shaped not only by its own momentum but also by labour market conditions, demographic pressures, and insecurity. In substantive terms, this means that inflation behaves as a key channel through which macroeconomic instability interacts with terrorism and other structural pressures.

The response of unemployment is more stable and less volatile than that of terrorism and inflation. Unemployment responds positively and strongly to its own shocks throughout the forecast horizon, beginning at 0.371 in period 1 and remaining positive up to 0.402 in period 10. This indicates that labour market shocks are persistent and that disturbances in unemployment tend to carry forward into future periods. Inflation shocks have only small positive effects on unemployment across all periods, suggesting a mild transmission from price instability to labour market outcomes. Terrorism shocks, however, exert a consistently negative influence on unemployment after the first period, though the magnitude remains relatively modest. Urbanization shocks also affect unemployment negatively in most periods, with relatively strong effects in periods 2 and 5. This implies that increases in urban population growth may, at least within the dynamic system, reduce unemployment over time, possibly through labour market absorption effects or urban sector expansion. Overall, the impulse responses suggest that unemployment is mainly self-driven but still interacts meaningfully with inflation, terrorism, and urbanization.

The urbanization responses reveal a distinctive pattern consistent with the structural nature of demographic change. Urban population growth responds positively to its own shocks in all periods, although the magnitude fluctuates and gradually declines from 0.173 in period 3 to 0.037 by period 10. This indicates persistence in urbanization dynamics, even if the strength of self-reinforcement weakens over time. In contrast, shocks to terrorism, inflation, and unemployment all generate mostly negative responses in urbanization throughout the forecast horizon. Terrorism shocks reduce urbanization steadily, suggesting that insecurity discourages settlement concentration, disrupts migration patterns, or weakens the attractiveness of urban centers. Inflation shocks also depress urbanization, though less sharply, while unemployment shocks have a notably negative effect in the early and middle periods. These results imply that urbanization in Nigeria is vulnerable to macroeconomic and security disturbances and that sustained insecurity or labour market deterioration may slow the pace of urban growth.

Figure 6:

Forecast Error Variance Decomposition of the Variables



The forecast error variance decomposition results in Figure 6 complement the impulse responses by showing the relative contribution of each variable to fluctuations in the others over time. For terrorism, the variance decomposition indicates that terrorism is initially explained entirely by its own innovations in period 1, but this dominance gradually declines to 72.51 percent by period 10.

Over time, unemployment and urbanization become increasingly important in explaining terrorism fluctuations, accounting for 13.54 percent and 13.12 percent, respectively, by period 10, while inflation contributes only 0.83 percent. This means that although terrorism remains largely self-driven, labour market conditions and urban population dynamics become increasingly important in shaping terrorism over the medium to long horizon. The extremely small contribution of inflation to terrorism variance suggests that inflation is less important as an independent source of terrorism volatility than unemployment and urbanization within the dynamic decomposition framework.

The variance decomposition of inflation shows a very different pattern, confirming inflation as one of the most endogenous variables in the system. In period 1, 60.98 percent of inflation variance is explained by its own shocks, while terrorism accounts for a substantial 39.02 percent. By period 10, however, the importance of own shocks falls sharply to 12.21 percent, while unemployment becomes the single largest contributor at 42.42 percent and urbanization accounts for 32.34 percent. Terrorism still explains 13.03 percent of inflation variance at the end of the horizon. This indicates that inflation in Nigeria is highly influenced by developments in unemployment and urbanization over time, and to a lesser extent by terrorism. The result is analytically important because it shows that inflation is not merely a standalone monetary phenomenon; rather, it is deeply embedded in broader socio-economic and security dynamics. In the context of this study, it confirms that inflation is a major transmission channel through which macroeconomic instability and terrorism interact.

The decomposition of unemployment further highlights the strong structural role of urbanization. In period 1, unemployment is explained almost entirely by its own shocks, at 99.72 percent. However, this share declines to 61.26 percent by period 10, while urbanization explains 31.78 percent of unemployment variance. Terrorism and inflation contribute only modest shares, at 4.47 percent and 2.49 percent respectively. This implies that, after its own innovations, urban population growth is the most important driver of unemployment dynamics in Nigeria. The result supports the view that labour market pressures are closely linked to demographic expansion and migration processes, with urbanization exerting substantial medium- and long-run influence on employment conditions. The variance decomposition of urbanization reveals perhaps the clearest evidence of its interaction with unemployment. Although urbanization is initially explained mostly by its own shocks, at 88.92 percent in period 1, this share falls dramatically to 41.26 percent by period 10. Over the same horizon, unemployment becomes the dominant external source of urbanization fluctuations, accounting for 36.19 percent by period 10. Terrorism also becomes increasingly important, rising from 6.06 percent in period 1 to 15.31 percent in period 10, while inflation contributes a smaller but stable share of about 7.24 percent. These results suggest that urbanization dynamics in Nigeria are strongly conditioned by labour market conditions and, increasingly, by insecurity. In other words, movements in urban population growth cannot be understood independently of unemployment pressures and terrorism-related disruptions.

Overall, the IRF and FEVD results reveal a complex and asymmetric system of interactions among terrorism, inflation, unemployment, and urbanization in Nigeria. Terrorism exhibits strong persistence and remains largely self-driven, but unemployment and urbanization become

increasingly important in explaining its future variation. Inflation emerges as the most endogenous and system-responsive variable, heavily influenced over time by unemployment, urbanization, and terrorism. Unemployment is driven mainly by its own past shocks and by urbanization, while urbanization itself is increasingly shaped by unemployment and terrorism. These results reinforce the central argument of the study that macroeconomic instability and terrorism in Nigeria are deeply interconnected through dynamic feedback mechanisms rather than simple one-way relationships. More specifically, the findings suggest that labour market distress and demographic pressures are especially important for understanding the longer-run evolution of terrorism and macroeconomic instability.

4. Discussion of Findings

The findings of this study provide compelling evidence that macroeconomic instability and terrorism in Nigeria are deeply interconnected through both short-run dynamics and long-run equilibrium relationships. The confirmation of cointegration among terrorism, inflation, unemployment, and urbanization aligns with recent empirical studies that emphasize the structural linkage between economic conditions and insecurity. For instance, Adekoya O. B. *et al.* (2025) and Obi C. I. *et al.* (2025) document significant long-run relationships between terrorism and key macroeconomic indicators in Nigeria, reinforcing the argument that insecurity is not merely episodic but embedded within the broader economic system. Similarly, Meierrieks D. (2025) shows that terrorism interacts with macroeconomic variables through persistent structural channels, particularly in developing economies characterized by institutional fragility. The present study extends this body of knowledge by explicitly modeling inflation, unemployment, and urbanization within a unified multivariate VECM framework, thereby offering a more comprehensive understanding of how macroeconomic instability evolves as an interconnected system rather than through isolated effects.

One of the most important findings of the study is the positive and significant long-run relationship between inflation and terrorism. This result is consistent with prior empirical evidence indicating that inflation exacerbates economic hardship and contributes to insecurity. For example, Rotimi M. E. *et al.* (2024) find that inflation significantly undermines economic stability and contributes indirectly to insecurity through its effects on welfare and productivity. Similarly, Ogbu C. C. and Chukwuemeka C. O. (2024) argue that rising living costs intensify socio-economic grievances and increase vulnerability to violent extremism. The implication of this finding is that inflation in Nigeria functions not only as a macroeconomic problem but also as a critical driver of insecurity. Persistent price instability erodes real incomes, increases inequality, and heightens frustration among vulnerable populations, thereby creating fertile ground for terrorist recruitment and activity. This reinforces the need to situate inflation control within a broader security and development strategy. However, the negative long-run relationships observed between terrorism and both unemployment and urbanization depart from conventional theoretical expectations and therefore represent an important empirical contribution of this study. While previous studies, such as Amah E. and Eze C. (2023), typically find that unemployment increases the likelihood of insecurity, the present study suggests that the relationship may be more complex in the long run. This divergence may reflect structural characteristics of the Nigerian economy, including the absorptive capacity of the informal sector, migration dynamics, and regional heterogeneity in employment conditions.

Similarly, while urbanization is often associated with congestion, inequality, and social tension, the negative long-run coefficient suggests that over time, urban growth may enhance state capacity, infrastructure development, and economic opportunities, thereby mitigating insecurity. These findings highlight the importance of adopting dynamic modeling approaches, as the effects of macroeconomic variables on terrorism may differ significantly between the short run and the long run.

The short-run dynamics further reinforce the complexity of the macroeconomic instability–terrorism nexus. The positive and significant short-run effect of unemployment on terrorism is consistent with the theoretical and empirical literature, which emphasizes the role of economic exclusion in driving insecurity. Studies such as Atsiya A. (2025) and Ogbu C. C. and Chukwuemeka C. O. (2024) show that unemployment increases vulnerability to recruitment into violent groups, particularly among youths. The persistence of terrorism, as indicated by the significance of its own lag, also aligns with findings in the terrorism literature that emphasize the self-reinforcing nature of insecurity. In contrast, the negative short-run effects of inflation and urbanization on terrorism suggest that immediate economic shocks and urban concentration may temporarily constrain terrorist activities, even though their long-run effects may differ. These mixed dynamics underscore the importance of distinguishing between short-run adjustments and long-run equilibrium relationships when analyzing the drivers of terrorism.

Another key contribution of the study is the identification of inflation as the dominant adjustment variable in the system. The significant error correction mechanism in the inflation equation indicates that inflation plays a central role in restoring long-run equilibrium following macroeconomic shocks. This finding extends the literature by demonstrating that inflation is not merely an outcome of macroeconomic instability but also an active transmission channel through which instability and terrorism interact. While previous studies have highlighted the impact of terrorism on economic growth and investment, relatively few have identified the specific channels through which these effects operate. By showing that inflation responds to shocks in unemployment, urbanization, and terrorism, the study provides new insights into the mechanisms linking economic instability and insecurity. The impulse response and variance decomposition results further validate these findings by revealing the dynamic propagation of shocks across the system. The persistence of terrorism and its increasing dependence on unemployment and urbanization over time support the argument that labour market conditions and demographic pressures are critical determinants of insecurity in Nigeria. Similarly, the high endogeneity of inflation confirms its central role within the system, as it is increasingly influenced by unemployment, urbanization, and terrorism. These results are consistent with the findings of Meierrieks D. (2025), who emphasizes the importance of structural and institutional factors in shaping the macroeconomic consequences of terrorism.

Overall, the study makes several unique contributions to the literature. First, it adopts a multivariate VECM framework that simultaneously captures the interactions among terrorism, inflation, unemployment, and urbanization, thereby addressing a major gap in existing studies. Second, it provides evidence of asymmetric relationships, where the effects of macroeconomic variables differ between the short run and the long run. Third, it identifies inflation as the primary adjustment mechanism in the macroeconomic instability–terrorism nexus, highlighting a key

transmission channel that has been largely overlooked in previous research. Finally, the study reveals that urbanization, often treated as a background variable, plays a significant and dynamic role in shaping both macroeconomic instability and terrorism.

From a policy perspective, the findings suggest that addressing terrorism in Nigeria requires a holistic and integrated approach. The strong link between unemployment and terrorism in the short run implies that employment generation, particularly for youths, should be a central component of security policy. The dominant role of inflation in the adjustment process further indicates that macroeconomic stabilization, especially effective inflation control, is critical for reducing insecurity. At the same time, the complex role of urbanization highlights the need for improved urban planning, infrastructure development, and social service provision to manage the pressures associated with rapid population growth. Therefore, policies aimed at combating terrorism must go beyond military and security interventions to include coordinated efforts in economic management, labour market reform, and urban development. Such an integrated approach is essential for addressing the root causes of insecurity and promoting sustainable economic and social stability in Nigeria.

5. Conclusion and Policy Implications

5.1 Conclusion

This study set out to examine the dynamic relationship between macroeconomic instability and terrorism in Nigeria using a Vector Error Correction Model (VECM) framework, with particular focus on inflation, unemployment, and urban population growth. The empirical findings provide strong evidence that terrorism in Nigeria is not an isolated phenomenon but is structurally linked to key macroeconomic instability indicators through both long-run equilibrium relationships and short-run dynamic interactions.

The existence of multiple cointegrating relationships confirms that terrorism, inflation, unemployment, and urbanization move together over time, implying that deviations from equilibrium are not permanent but corrected through adjustment mechanisms within the system. Among the variables, inflation emerges as the most critical long-run driver of terrorism, exhibiting a positive and significant relationship. This underscores the role of price instability as a fundamental channel through which macroeconomic distress translates into insecurity. The results further reveal that unemployment plays a significant role in the short run, positively influencing terrorism and highlighting the importance of labour market conditions in shaping immediate security outcomes. In contrast, the long-run negative relationships associated with unemployment and urbanization suggest that the macroeconomic–terrorism nexus is more complex than traditionally assumed. These findings indicate that structural and institutional factors—such as informal sector dynamics, migration patterns, and urban development processes—mediate the impact of macroeconomic variables on terrorism. Furthermore, the identification of inflation as the dominant adjustment variable confirms that macroeconomic instability is transmitted and corrected primarily through price dynamics. Overall, the study concludes that terrorism in Nigeria is embedded within a broader macroeconomic and socio-demographic system characterized by feedback effects, persistence, and asymmetric relationships across variables and time horizons.

5.2 Policy Recommendations

Based on the empirical findings, several important policy recommendations emerge:
First, inflation control should be prioritized as a core component of national security strategy. Since inflation is found to significantly drive terrorism in the long run and serves as the main adjustment mechanism in the system, monetary authorities, particularly the Central Bank of Nigeria, should strengthen inflation-targeting frameworks, enhance policy coordination with fiscal authorities, and implement measures to stabilize prices, especially food and energy costs. Price stability will not only improve economic welfare but also reduce socio-economic grievances that contribute to insecurity.

Second, employment generation must be central to short-term security interventions. The positive short-run effect of unemployment on terrorism suggests that labour market distress increases vulnerability to violent extremism. Government policies should therefore focus on large-scale job creation through public works programmes, youth empowerment schemes, and support for small and medium enterprises. Expanding vocational training and improving access to credit can also enhance employability and reduce the pool of individuals susceptible to recruitment into terrorist activities.

Third, urban planning and infrastructure development should be strengthened to manage the pressures of urbanization. Given the complex role of urban population growth in both the short and long run, policies should aim at improving housing, transportation, and access to basic services in rapidly growing urban centers. Effective urban governance can help mitigate congestion, inequality, and social exclusion, thereby reducing the structural conditions that may contribute to insecurity.

Fourth, security policies should be integrated with macroeconomic management strategies. The findings clearly show that terrorism is influenced by macroeconomic conditions and, in turn, affects economic stability. Therefore, counter-terrorism strategies should not rely solely on military approaches but should incorporate economic stabilization, social protection, and institutional strengthening. A coordinated policy framework that links economic planning with security objectives is essential for achieving sustainable peace and development.

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