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Economic Policy Uncertainty, Financial Soundness and Financial Stability in Ghana

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Abstract

The increasing interconnectedness of the global economy has highlighted the importance of global economic policy uncertainty, which has been shown to affect the stability of the banking sector worldwide. Despite extensive research on the nexus between economic policy uncertainty and bank stability, there remains limited understanding of how policy-variable-based uncertainty affects Ghana's banking industry. This study examines how policy-based economic uncertainty affects the financial soundness and stability of Ghana's banking industry, using monthly data from February 2008 to April 2023 for 13 listed banks. It develops a new economic uncertainty index and a financial soundness index for Ghana. Using the Heteroskedasticity Corrected Ordinary Least Squares, Generalised Linear, and Quantile Regression models, the analysis shows that both policy-based and composite uncertainty indices have a significant negative effect on banking stability. The paper recommends that policymakers enhance fiscal and monetary consistency and that banks integrate these measures into risk management to strengthen financial resilience.

Keywords: Banking Sector Stability, Economic Policy Uncertainty, Financial Soundness, Monetary Policy.

JEL: E44, E52, E58.

1 Introduction

Globalisation, financial integration, and recurring crises have heightened the importance of Economic Policy Uncertainty (EPU), as policy shocks now spread rapidly across economies and financial systems. Historical events such as the oil shocks, the Asian financial crisis, the 2008 global financial crisis, and the COVID-19 pandemic show that EPU can trigger capital flight, exchange-rate volatility, credit contractions, and financial instability (Aiyar et al., 2023). EPU undermines financial soundness and stability, particularly in economies with shallow financial markets and limited policy capacity, by increasing risk premia, borrowing costs, regulatory ambiguity, and market volatility (Gulen & Ion, 2016). However, its effects vary with institutional quality, regulatory frameworks, and financial development (Danisman & Tarazi, 2024). In Ghana, frequent policy changes, evolving regulations, commodity price shocks, external monetary policy shifts, and fiscal surprises heighten vulnerability to both domestic and external uncertainty, with implications for bank resilience, market liquidity, capital adequacy, and credit allocation (Castelnuovo, 2019).

Firm-level evidence shows that economic policy uncertainty constrains investment, raises financing costs, limits access to credit, and increases financial distress through weaker cash flows, higher leverage, and greater default risk, particularly among smaller and financially constrained firms (Makosa et al., 2021; Sun et al., 2021). These effects can spill over into the banking sector through higher non-performing loans, increased credit risk, and weaker asset quality. Within this context, Ghana's banking sector has implemented major reforms, including the Banking Act of 2004, the Borrowers and Lenders Act of 2008, and the 2017–2019 recapitalisation exercise, which raised the minimum capital requirement from GHS 120 million to GHS 400 million (Addison et al., 2017; Cantah et al., 2023). These reforms improved resilience, as reflected in a capital adequacy ratio of 18.9% in December 2022 and a decline in non-performing loans from 21.6% in 2017 to 13.9% in 2022 (Amoah et al., 2023; Bank of Ghana, 2023). Nevertheless, the sector remains vulnerable to policy uncertainty and external shocks.

Fiscal and regulatory inconsistencies, including the introduction of the E-Levy, debates over its repeal, and abrupt policy decisions such as the removal of road tolls, have increased uncertainty in Ghana's banking sector, while currency depreciation, global inflation, rising sovereign debt, and COVID-19-related disruptions have further heightened credit and funding risks (Nutassey et al., 2023; Ministry of Roads and Highways, 2021; Askandir, Bondzie & Tweneboah, 2024). Although the 2017–2019 banking sector cleanup strengthened the industry, the revocation of nine bank licences and subsequent consolidations exposed structural weaknesses and reduced public confidence. Consequently, Ghana's banking sector remains

vulnerable to policy uncertainty, yet existing studies largely rely on global or news-based EPU indices, single banking indicators, and mean-based methods. To address these gaps, this study develops a Ghana-specific policy-variable-based EPU index and a composite financial soundness index to examine the nature of EPU and its effects on banking soundness and stability.

This study contributes to the literature in three ways. First, it develops a Ghana-specific, policy-variable-based EPU index derived from domestic fiscal and monetary policy actions, providing a more accurate measure of local policy uncertainty than global or regional news-based indices. Second, it links this index to multiple indicators of banking-sector soundness and stability, offering new evidence on how domestic policy uncertainty affects the financial system in a small open economy and enabling comparisons with global and composite EPU measures. Third, by applying quantile regression, the study reveals how the effects of policy uncertainty differ across banks with varying levels of stability, showing that more vulnerable banks are disproportionately affected. These contributions provide novel empirical and policy insights into the relationship between policy uncertainty and banking stability.

The remainder of the paper is organised as follows: Section 2 reviews the literature, Section 3 outlines the methodology, Section 4 presents the results, and Section 5 concludes the study with policy implications.

2 Literature Review

Empirical evidence generally shows that economic policy uncertainty (EPU) weakens banking stability. In advanced economies, higher EPU has been shown to reduce asset quality, capital adequacy, profitability, and systemic resilience, largely through rising non-performing loans and weaker bank performance (Gulen & Ion, 2016; Karadima & Louri, 2020). The effects are often more pronounced in emerging markets, where weaker institutions and greater exposure to external shocks disrupt credit allocation, increase market volatility, and heighten liquidity and default risks (Nguyen, 2021). EPU also reduces investment and capital inflows while increasing inflation and interest-rate volatility, thereby weakening bank balance sheets (Bekaert, Hoerova & Duca, 2013). However, some studies suggest that uncertainty can restrain excessive credit growth and encourage liquidity accumulation, producing stabilising effects under certain conditions (Christou, Cunado & Gupta, 2017).

Evidence from Africa shows that economic policy uncertainty increases non-performing loans, weakens financial intermediation, reduces credit supply, and lowers liquidity and market confidence, particularly in banking systems characterised by limited diversification, reliance on government securities, and shallow

capital markets (Gumata & Ndou, 2019; Ozili, 2022). Moreover, recent evidence from Africa emphasises the importance of financial development, institutional quality, and policy frameworks in shaping financial-sector outcomes (Mbassi, 2026; Elouaourti, 2025). However, factors such as the presence of foreign banks and resource wealth can mitigate these effects (Odhiambo, 2017). Research on Ghana remains limited but suggests that exchange rate, inflation, fiscal, and policy uncertainty weaken financial markets, reduce credit growth, disrupt banking operations, and threaten financial stability (Nutassey et al., 2023; Takyi, 2024). Although banking indicators have improved, these gains remain vulnerable to uncertainty (Amoah et al., 2023). Existing studies rely mainly on macroeconomic volatility measures or global news-based indices (Baker, Bloom, & Davis, 2016), while some evidence suggests regulatory reforms can temporarily strengthen stability (Nsanyan Sandow et al., 2021).

Recent evidence from Africa has increasingly emphasised the importance of context-specific indicators and composite measures in understanding financial-sector outcomes (Akpa & Gnidehou, 2025). While Oyadeyi (2025) examines the effects of domestic and global economic policy uncertainty on firm stability in Nigeria, this study extends the literature by investigating how a Ghana-specific policy-variable-based EPU index affects banking-sector soundness and stability. Unlike previous firm-level studies, it develops a composite financial soundness index, employs bank Z-scores to capture stability, and uses quantile regression to uncover heterogeneous effects across banks with different stability profiles. Consequently, no study has developed a policy-variable-based EPU index or examined its effect on a composite measure of financial stability in Ghana, highlighting the need for a multidimensional approach.

The literature generally finds that economic policy uncertainty weakens banking stability by increasing credit risk and reducing asset quality and profitability, although some studies report stabilising effects such as higher liquidity buffers and slower credit growth. Despite growing evidence from advanced, emerging, and African economies, research on Ghana remains limited and relies mainly on measures of macroeconomic volatility, discrete fiscal events (Takyi, 2024), or global news-based EPU indices developed for advanced economies (Baker et al., 2016; Phan et al., 2021). These measures often fail to capture Ghana's domestic fiscal, monetary, institutional, and regulatory conditions. While regulation, supervision, and institutional quality are important channels through which uncertainty affects financial stability (Nguyen, 2021; Syed, 2024), they remain underexplored in Ghana. Existing studies also focus on single indicators such as non-performing loans and capital adequacy ratios (Amoah et al., 2023; Cantah et al., 2023), leaving a gap for a Ghana-

specific policy-variable-based EPU index and a composite financial soundness measure, which motivates this study.

3 Materials and Methods

3.1 Data and Sources

The study uses monthly data from February 2008 to April 2023 on monetary policy variables (Monetary Policy Rate and inflation), fiscal policy variables (tax rate and government expenditure), and banking-sector indicators. Using annual reports from 13 commercial banks representing about 70% of sector assets, the study calculates bank Z-scores as a measure of stability (Phan et al., 2021; Fang et al., 2014) and constructs a financial soundness index based on Capital Adequacy Ratio, Core Liquid Assets-to-Short-Term Liabilities, Core Liquid Assets-to-Total Assets, Credit-to-Deposits, Non-Performing Loans, Return on Assets, and Return on Equity. Z-scores are interpolated into monthly values, and all bank-level data are aggregated into sector-level indicators, resulting in a time-series framework. The analysis also includes a dummy variable for the 2017–2019 banking-sector clean-up programme, which involved licence revocations, mergers, consolidations, and an increase in minimum capital requirements from GHS 120 million to GHS 400 million to strengthen long-term stability despite short-term disruptions (Bank of Ghana, 2019; Addison et al., 2017; Affum, 2020; Li, 2019; Cantah et al., 2023). The inclusion of this variable is further motivated by evidence that regulatory interventions and capital requirements can materially influence banking-sector behaviour and resilience in West African financial systems (Nabaloum, 2025).

Table 1: Variables, Measurements and Sources

Variable	Measurement	Literature Source	Data Source
Dependent Variables:			
Financial Soundness Index	Constructed based on the financial soundness indicators	Kyei, Cantah and Owusu (2023)	Author's Construct (2025) from Bank of Ghana Financial Soundness indicators.

Banking Sector Stability	Calculated using the Z-Score	Cantah et al. (2023); Syed (2024)	Annual reports from the websites of selected banks
Independent Variables:			
Policy-based Economic Policy Uncertainty Index	Policy Variable-based constructed weighted average EPU index	Citci and Kaya, (2023)	Author's Construct (2025)
Global Economic Policy Uncertainty Index	News-based constructed economic policy uncertainty index	Baker et al. (2016); Syed (2024)	policyuncertainty.com
Composite Economic Policy Uncertainty	Weighted average of the variable-based and news-based uncertainty indices	-	Author's Construct (2025)
Control Variables:			
Inflation	Year-on-year inflation rates	-	Bank of Ghana (2024)
Growth in GDP	Change in GDP (year-on-year percentage change in real GDP)	Gwachha & Karmacharya (2023)	Ministry of Finance
Banking Sector Cleanup Exercise	Dummy variables	-	-
Private Sector Credit	Total amount of credit granted by banks to the private sector	Kouam (2021)	Bank of Ghana (2024)

3.2 Construction and Measurement of Economic Policy Uncertainty

We develop a Ghana-specific, policy-variable-based Economic Policy Uncertainty (EPU) index to capture uncertainty arising from domestic fiscal and monetary policies that may be overlooked by global and regional

measures. Following Strazicich (2002), we use average tax rate (government revenue-to-GDP ratio), government expenditure, inflation, and the Bank of Ghana policy rate as key policy variables. We then estimate their conditional volatilities using the EGARCH model, following Citci and Kaya (2023) and Omoruyi, Onyenekwe, and Udenna (2026), to capture asymmetric responses to positive and negative shocks. The resulting volatility series form the basis of the Ghana-specific EPU index. The standard Exponential GARCH (EGARCH) model is specified below (eq 2), as in Omoruyi, Onyenekwe, and Udenna (2026), to account for asymmetric effects in volatility.

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_i Y_{t-i} + \varepsilon_t \quad (1)$$

where $\varepsilon_t = v_t \sigma_t$ and $v_t \approx N(0,1)$

$$\ln(h_t) = \varphi + \alpha_1 \left(\frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}} \right) + \beta_1 \ln (h_{t-1}) \quad (2)$$

where Y_t is the estimated GARCH equation to assess the presence of the ARCH effect in each of the policy variables, while Y_{t-i} is the lag of the dependent variable serving as the independent variable in the model to capture the autoregressive component. $\ln(h_t)$ represents the log of the conditional variance series. α_1 and β_1 are the coefficients, respectively, capturing the impacts of previous innovations and variance. The EGARCH model helps capture the leverage effect of shocks from policies, information, news, incidents, and events on the financial market.

Step 2: After the volatilities for all policy variables are estimated, we followed the weighted average formula below to calculate an overall composite index from the individual volatility series.

$$Volindex_t = \sum_{i=1}^{n} (W_i * Vol_i) \quad (3)$$

where n is the number of policy variables in the composite index, W_i is the weight of the policy variable i, and Vol_i is the volatility series for the policy variable i.

Step 3: We further constructed a combined economic policy uncertainty index (called Comp_EPU) that captures both news-based uncertainty (widely used in the literature) and policy variable-based uncertainty using the same formula in step 2. The study calculated the composite index as follows:

$$Comp_EPU_t = \sum_{i=1}^{n} (WEPU_t * EPU_t + WGEPU_t * GEPU_t) \quad (4)$$

where $Comp_EPU$ is the composite EPU index, $WEPU_t$is the weight of EPU at time t, EPU is the newly constructed policy variables-based uncertainty index, $WGEPU_t$ is the weight of GEPU at time t, and $GEPU$ is the news-based global EPU index.

Regarding the weighting scheme, equal weights were assigned to each policy variable when constructing the policy-variable-based EPU index. This means each volatility series from the EGARCH model received a weight of $w_i = \frac{1}{N}$, where N denotes the total number of policy variables in the index. This approach follows standard practice in composite-index construction when no strong theoretical or empirical justification exists for differential weighting (Joint Research Centre, 2008). Using equal weights avoids subjective bias and ensures transparency and reproducibility. We assess the robustness of the constructed indices by comparing them with alternative uncertainty measures (news-based and composite EPU), assessing consistency across multiple estimators (OLS, HCM, GLM, and quantile regression), examining distributional stability across quantiles, and applying parameter stability diagnostics.

3.3 Measurement of Banking Sector Financial Soundness

For the financial soundness of the Ghanaian banking industry (Findex), we constructed an overall index using the financial soundness indicators from the Bank of Ghana's website as listed in section 3.1 above. To do this, we used the weighted average formula below.

$$Findex_t = \sum_{i=1}^{n}(W_{it} * Ind_{it}) \quad (5)$$

where W_i is the weight of indicator i while Ind_i represents indicator i. $Findex$ represents the combined index for financial soundness.

3.4 Measurement of Banking Sector Stability

We further calculated Z-scores as a measure of stability in the banking industry, as done by several studies (see Cantah et al., 2023; Syed, 2024). The study employed the following widely used formula.

$$Z - score_{it} = \frac{ROA_{it} - E_{it}/TA_{it}}{\sigma ROA_{it}} \quad (6)$$

Where ROA is return on assets, E/TA is the ratio of equity to total assets, σROA is the standard deviation of the return on assets. We use the Z-score as a measure of banking stability because it combines profitability, leverage, and income volatility into a single indicator and provides a forward-looking estimate of a bank's distance from insolvency (Lepetit & Strobel, 2015). Unlike the Capital Adequacy Ratio or Non-Performing

Loan ratio, which capture only specific dimensions of risk, the Z-score provides a more comprehensive assessment of bank stability by incorporating both profitability and earnings volatility (Laeven & Levine, 2009). This makes it particularly suitable for emerging economies such as Ghana, where macroeconomic and financial conditions are highly dynamic. Because high-frequency supervisory data are not publicly available, we construct the Z-score from annual bank-level data and treat annual observations as constant within each year, consistent with established practice in the banking stability literature. This approach preserves key solvency information while allowing alignment with monthly policy uncertainty measures. Consequently, the monthly Z-score should be interpreted as a temporally disaggregated measure of annual banking stability rather than a measure of short-term bank distress.

3.5 Empirical Strategies

3.5.1 Economic Policy Uncertainty on the Financial Soundness

To examine the effects of economic policy uncertainty on banking-sector soundness and stability, we employ Ordinary Least Squares (OLS), heteroskedasticity-corrected Model (HCM), Generalised Linear Model (GLM), and Quantile Regression. OLS provides benchmark estimates comparable to previous studies (Phan et al., 2021), while heteroskedasticity-corrected estimators address residual heteroskedasticity (Abouelfarag & Qutb, 2022). GLM accounts for potential non-normality and non-linearity (Ponnet et al., 2024), and Quantile Regression captures heterogeneous effects across banks with different stability levels. Goodness-of-fit measures and Wald tests confirm the suitability of the estimators. We first estimate the effects of the Ghana-specific EPU index on financial soundness, followed by the effects of the global Economic Policy Uncertainty (GEPU) index and the composite Economic Policy Uncertainty (COMPEPU) index. The study specifies the following baseline model:

$$Y = X\beta + \epsilon \tag{7}$$

The study expands (7) to estimate the following equation (8) for OLS, GLM and the HCM.

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots \ldots\ldots\ldots\ldots\ldots\ldots\ldots + \beta_K X_K + \epsilon_t \tag{8}$$

where; Y_t is the dependent variable, β_0 is the intercept, $\beta_1, \beta_2, \beta_3 \ldots\ldots\ldots\ldots, \beta_k$ are the coefficients for the independent variables and ϵ_t is the error term.

The study estimates the following equations using OLS, GLM and HCM to assess the effect of all three economic policy uncertainty indices on financial soundness:

$$Findex_t = \beta_0 + \beta_1 New\ EPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (9)$$

$$Findex_t = \beta_0 + \beta_1 GEPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (10)$$

$$Findex_t = \beta_0 + \beta_1 Comp\ EPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (11)$$

where $Findex_t$ represents the financial soundness index, $New\ EPU_t$ represents the variable-based economic policy uncertainty index, $GEPU_t$ represents the news-based global economic policy uncertainty index, $Comp\ EPU_t$ represents the composite economic policy uncertainty index, $GDP\ growth_t$, $Cleanup_t$, $Inflation_t$ and $Pcredit_t$ are control variables representing growth in Gross Domestic Product (GDP), the banking sector's cleanup exercise, inflation rates, and credit to the private sector, respectively.

3.5.2 Economic Policy Uncertainty and Stability

We estimate the OLS, HCM, and quantile regression models to examine the effect of uncertainty variables on banking sector stability.

$$Z - scores_t = \beta_0 + \beta_1 New\ EPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (12)$$

$$Z - scores_t = \beta_0 + \beta_1 GEPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (13)$$

$$Z - scores_t = \beta_0 + \beta_1 CompEPU_t + \beta_2 GDP\ growth_t + \beta_3 Cleanup_t + \beta_4 Inflation_t + \beta_5 Pcredit_t + \epsilon_t \quad (14)$$

where $Z - scores_t$ represents the stability of the banking sector. We further estimate the following quantile regression equations.

$$Z - scores_t = \alpha_\gamma + \beta_{1,\gamma} New\ EPU_t + \beta_{2,\gamma} GDP\ growth_t + \beta_{3,\gamma} Cleanup_t + \beta_{4,\gamma} Inflation_t + \beta_{5,\gamma} Pcredit_t + \varepsilon_{t,\gamma} \quad (15)$$

$$Z-scores_t = \alpha_\gamma + \beta_{1,\gamma} GEPU_t + \beta_{2,\gamma} GDP\ growth_t + \beta_{3,\gamma} Cleanup_t + \beta_{4,\gamma} Inflation_t + \beta_{5,\gamma} Pcredit_t + \varepsilon_{t,\gamma} \quad (16)$$

$$Z-scores_t = \alpha_\gamma + \beta_{1,\gamma} CompEPU_t + \beta_{2,\gamma} GDP\ growth_t + \beta_{3,\gamma} Cleanup_t + \beta_{4,\gamma} Inflation_t + \beta_{5,\gamma} Pcredit_t + \varepsilon_{t,\gamma} \quad (17)$$

where α is the constant term, γ represents the quantiles and is a value between 0 and 1, with the study focusing on the 0.25, 0.50 and 0.75 quantiles and ε_t is the error term. We employ Generalised Linear Models (GLM) to accommodate potential non-normality and nonlinear relationships in the data while obtaining efficient and unbiased estimates through maximum likelihood estimation (Schwendinger, 2024). Because diagnostic tests indicate heteroskedasticity in the OLS residuals, we also use a Heteroskedasticity-Corrected Model (HCM) to obtain unbiased coefficients and reliable standard errors, thereby ensuring valid statistical inference even when the assumption of constant error variance is violated (Alkayed et al., 2024).

We used quantile regression (QR) to analyse how uncertainty impacts banking sector stability at the 25th, 50th, and 75th percentiles, providing more detail than OLS, which only estimates the mean (Woode et al., 2023). QR provides stronger, more reliable results by capturing relationships across different conditions and being more robust to outliers (Debrah, Preko & Seth, 2022). It is now a key method for modelling diverse structures across quantiles. QR captures heterogeneity in how economic policy uncertainty relates to banking stability across the distribution, allowing effects to vary between less-stable and more-stable periods. This is crucial in financial stability analysis, where risks are uneven and average effects may hide disproportionate impacts on the lower tail. Examining multiple quantiles provides a comprehensive view of how policy uncertainty influences banking stability under different resilience levels.

4 Results and Discussion

4.1 Preliminary Analyses

Table 2: Summary Statistics

	Pcredit	Z-score	Findex	GDP growth	INF	CompEPU	GEPU	New EPU
Mean	32907.01	9.55	39.23	2.31	14.40	153.58	172.83	38.53
Median	32358.51	10.16	39.89	2.05	12.01	132.49	151.17	38.68
Maximum	59317.58	11.25	48.75	5.74	31.45	394.51	428.15	39.57
Minimum	13280.01	5.75	28.67	-1.54	8.68	64.31	77.389	37.17
Std. Dev.	12670.02	1.47	7.32	2.42	6.52	0.44	0.41	0.75

Obs.	130	130	130	130	130	130	130	130

Source: Authors' construct (2025).

Table 2 presents summary statistics for the research variables and shows substantial variation across them. Private-sector credit (PCREDIT) has the greatest dispersion, with a mean of 32,907.01 and a standard deviation of 12,670.02, whereas the banking stability measure (ZSCORE) is relatively stable, with a mean of 9.55 and a standard deviation of 1.47. The financial soundness index (FINDEX) shows moderate variation (mean = 39.23; SD = 7.32). Among the macroeconomic variables, GDP growth (mean = 2.31; SD = 2.42) and inflation (mean = 14.40; SD = 6.52) display notable fluctuations. By contrast, the uncertainty measures, particularly the Ghana-specific EPU (NEW_EPU; mean = 38.53; SD = 0.75), exhibit relatively low variability across the sample.

Table 3: Correlation Matrix

Variables	LnPcredit	Z-score	Findex	GDP growth	INF	LnComp_EPU	LnGEPU	New EPU	Cleanup
LnPcredit	1.00								
Z-score	-0.53***	1.00							
Findex	-0.63***	0.16	1.00						
GDP growth	-0.19	0.41***	-0.07	1.00					
INF	0.44***	-0.63***	0.03	-0.35**	1.00				
LnComp_EPU	0.53***	-0.23	-0.58***	-0.11	0.05	1.00			
LnGEPU	0.54***	-0.22	-0.48***	-0.11	0.05	0.43***	1.00		
New EPU	0.55***	-0.14	-0.57***	-0.17	-0.05	0.68***	0.69***	1.00	
Cleanup	-0.02	0.41***	0.05	0.53***	-0.26	-0.03	-0.03	0.04	1.00

Note: *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' construct (2025)

Table 3 presents the correlation matrix. It shows that private sector credit is negatively correlated with banking stability (ZSCORE) and financial soundness (FINDEX) but positively associated with inflation and all uncertainty measures. The uncertainty indices are strongly correlated with one another and negatively related to financial soundness, while GDP growth is positively associated with the banking-sector cleanup programme. Inflation is negatively related to banking stability but only weakly associated with financial

soundness. The positive inflation-FINDEX relationship supports Wen et al. (2021) and Bandura and Leshoro (2022) but contrasts with Batayneh et al. (2021), while the negative association between NEW_EPU and inflation is consistent with Anderl and Caporale (2023). The results suggest that uncertainty, inflation, and credit conditions are closely linked to banking sector performance, consistent with Ozili (2021).

Table 4: Stationarity Test

Variable	T-Stat at level	Stationarity	T-Stat at first difference	Degree of integration	Result
Z-score	-0.98	Not stationary	-6.11	I (1)	Stationary
Cleanup	-1.78	Not stationary	-6.00	I (1)	Stationary
Findex	-0.35	Not stationary	-6.28	I (1)	Stationary
GDP growth	-2.47	Not stationary	-6.03	I (1)	Stationary
INF	-0.80	Not stationary	-6.12	I (1)	Stationary
LnComp_EPU	-0.96	Not stationary	-6.19	I (1)	Stationary
LnGEPU	-0.96	Not stationary	-6.19	I (1)	Stationary
New EPU	-1.71	Not stationary	-6.41	I (1)	Stationary
LnPcredit	1.59	Not stationary	-0.54 (-12.34 at I (2))	I (2)	Stationary

Source: Authors' construct (2025).

Table 4 presents the stationarity test results for the study variables. It shows that all variables are non-stationary at levels but become stationary after differencing. Most variables are integrated of order one, indicating stationarity after first differencing, whereas private-sector credit is integrated of order two and requires second differencing to achieve stationarity. Accordingly, all variables are used in their stationary forms to ensure valid and reliable empirical estimation.

4.2 Results

4.2.1 Construction and Assessment of the Behaviour of the Policy-Based EPU Index

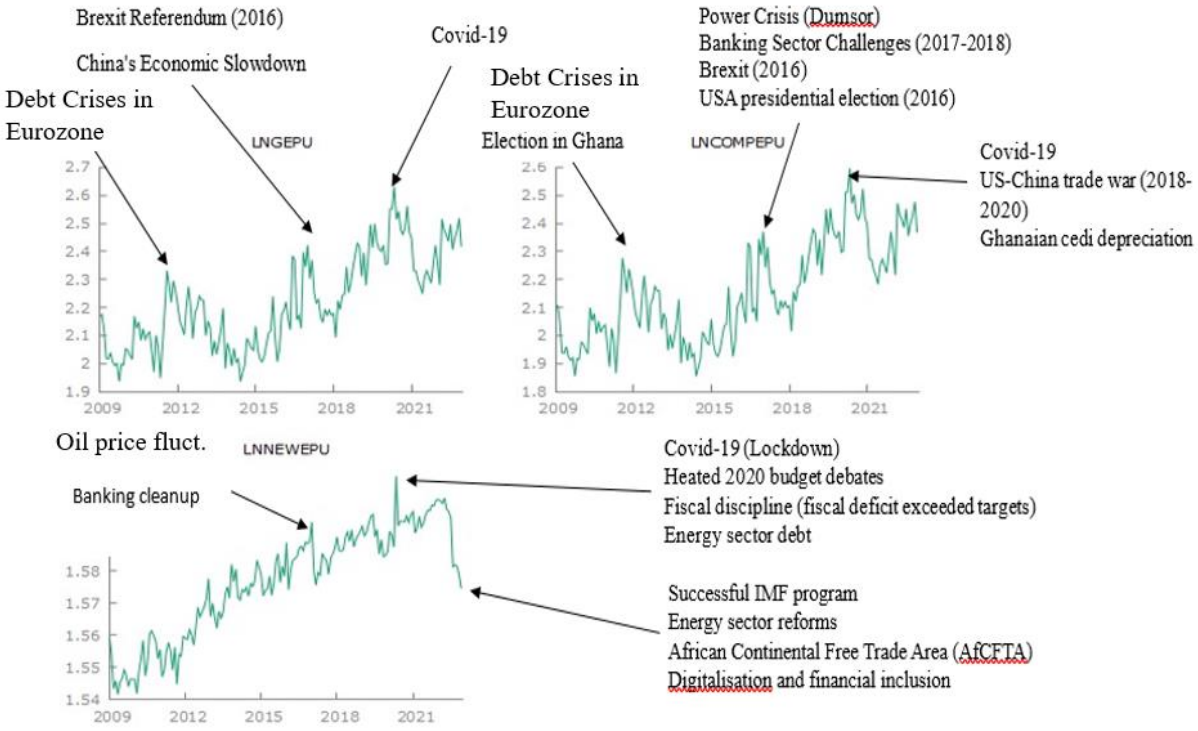

Figure 1: Line graphs for all EPU indices

Source: Author's construct (2025).

Figure 2 presents line graphs illustrating trends in the newly developed variable-based economic policy uncertainty index, the news-based global economic policy uncertainty index, and a newly created combined economic policy uncertainty index that integrates both the news- and variable-based economic uncertainties. The results demonstrate that the newly developed variable-based economic policy uncertainty index closely follows the news-based economic policy uncertainty index. The same pattern is observed in the combined index, as all three graphs show notable increases in uncertainty around 2012, between 2015 and 2018, and between 2018 and 2021, respectively. Generally, the variable-based economic policy uncertainty exhibits an upward trend throughout the study period from 2008 to 2022. However, this uncertainty declined sharply after 2021 and into 2022.

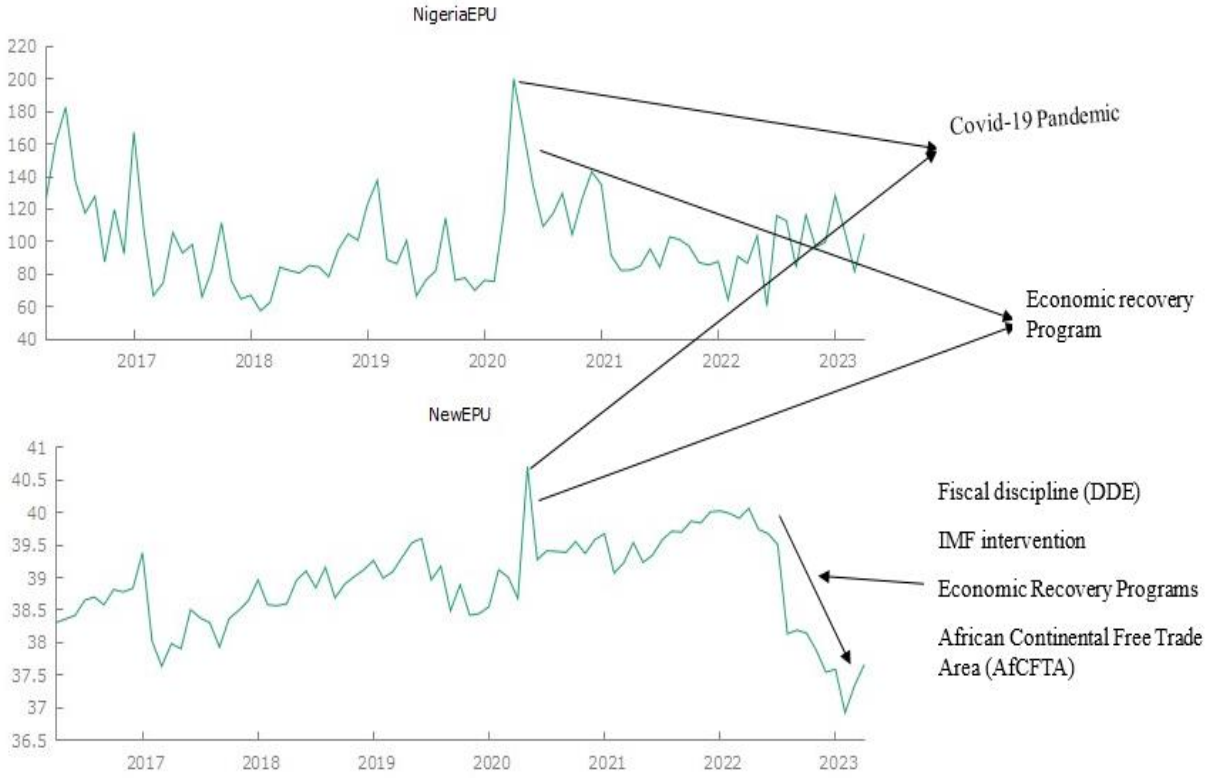

Figure 2: Line graphs of policy-based EPU and Nigeria's news-based EPU

Source: Author's construct (2025).

Figure 2 presents line graphs comparing the Nigerian news-based economic policy uncertainty index created by Tumala et al. in 2023 with the policy variable-based economic policy uncertainty index constructed by the current study. Both graphs reveal interesting trends, following similar patterns over the years. This suggests that both the variable-based and the news-based indices are affected similarly by major economic events. From Figure 2, it is evident that both indices rose in 2017 and declined sharply thereafter. Additionally, both the Nigerian and the Ghanaian indices experienced a significant surge between 2020 and 2021, followed by a sharp decline towards 2021, and remained relatively stable in the years after. However, the Ghanaian-based economic policy uncertainty index declined consistently from 2022 to 2023, whereas the Nigerian-based EPU index followed a different trend during the same period. Both indices began to rise sharply again after 2023.

4.2.2 Effect of Economic Policy Uncertainty on Financial Soundness

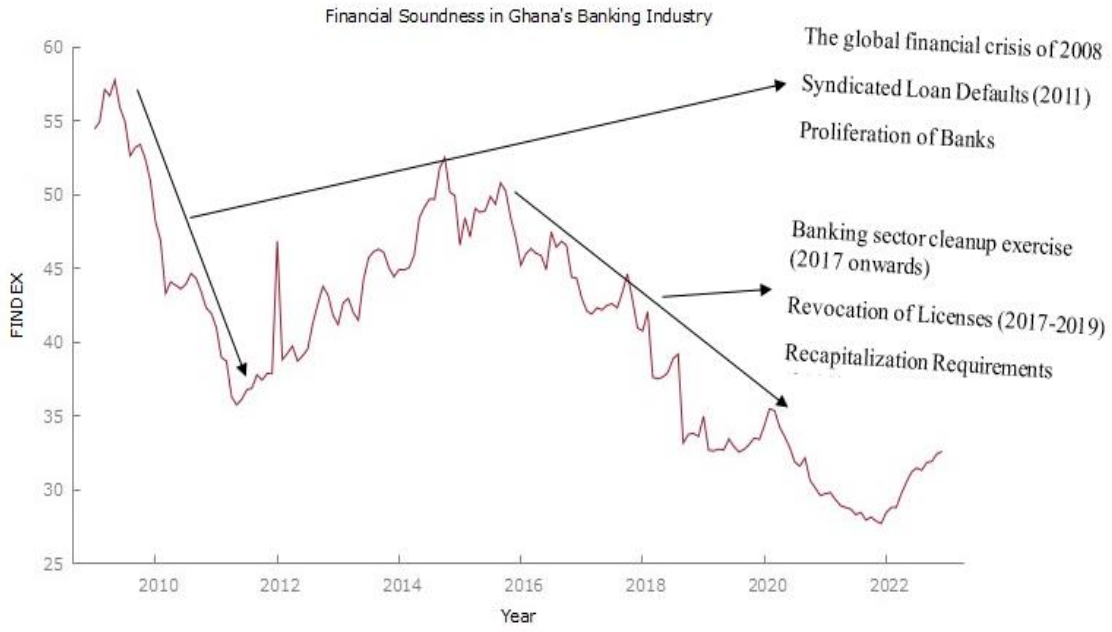

Figure 3: Line graph for the newly constructed financial soundness index for Ghana.

Source: Author's construct (2025).

Figure 3 presents the financial soundness index constructed from the Bank of Ghana's financial soundness indicators as a single measure of banking-sector health. The index shows a sharp decline from 2008 to 2013, an improvement through 2016, and another notable decline through 2020. The 2008–2013 deterioration may reflect spillovers from the 2008 global financial crisis, which affected major institutions such as Lehman Brothers, Bear Stearns, Washington Mutual, AIG, and Wachovia (Bernanke et al., 2020). It may also be linked to Ghana's 2011 syndicated loan defaults, particularly in the energy sector, broader macroeconomic pressures, and rapid bank expansion, which weakened sector performance (Akuffo-Duah, 2011). The later decline from 2016 to 2021 coincided with the banking sector cleanup initiated in 2017. Although the cleanup aimed to strengthen the industry, licence revocations, restructuring, and recapitalisation requirements initially reduced sector soundness and weakened the performance of some banks in the short term (Affum, 2020; Obuobi et al., 2020).

4.2.3 Economic Policy Uncertainty and Banking Sector Stability

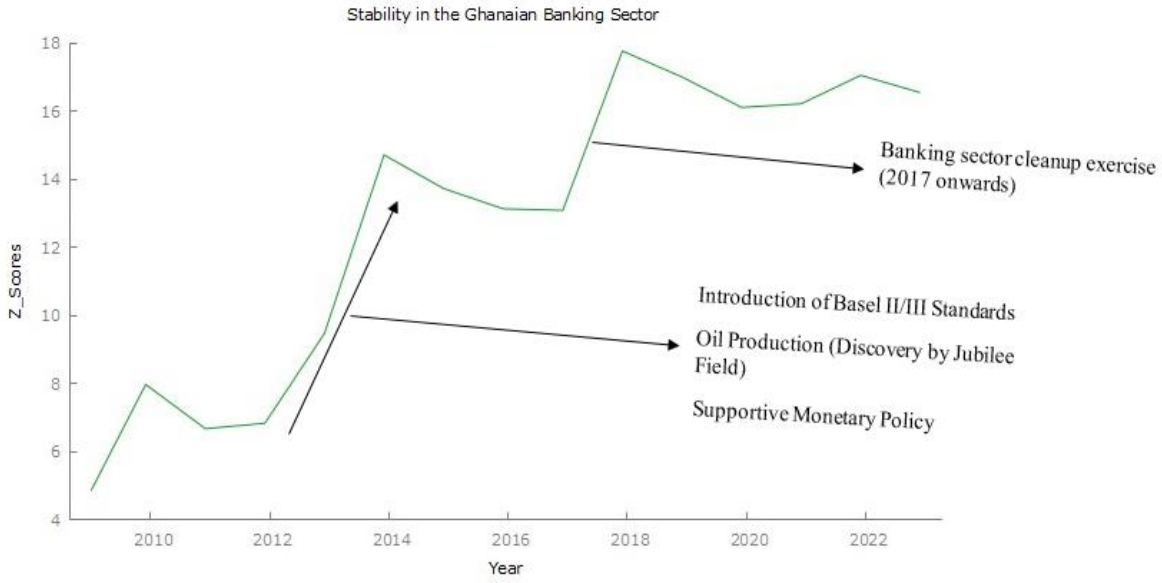

Figure 4: Line graph for calculated z-scores (financial stability)

Source: Author's construct (2025).

Figure 4 shows that banking-sector stability, measured by the Z-score, generally improved over time despite some fluctuations. Stability increased steadily between 2012 and 2014, supported by the implementation of Basel II, which strengthened capital adequacy and risk management (Bunyaminu et al., 2021), as well as improved economic conditions following the discovery of the Jubilee oil field (Debrah, 2021). Accommodative monetary policies also contributed to a stable banking environment. Stability rose sharply again between 2017 and 2019, largely reflecting the banking sector cleanup exercise, before declining and stabilising between 2021 and 2022.

Table 5: Effects of Economic Policy Uncertainty on Financial Soundness and Banking Sector Stability

Panel A: Models for EPU's Effect on Financial Soundness (OLS, GLM and HCM)				*Panel B: Models for EPU's Effect on Banking Sector Stability (OLS, HCM and QR)*				
						Quantile Regression		
Variable	**OLS**	**GLM**	**HCM**	**OLS**	**HCM**	**Q 0.25**	**Q 0.50**	**Q 0.75**
Policy-based economic policy uncertainty								
New EPU	-2.12**	-2.11*	-1.68**	-1.53**	-0.92***	-2.82***	-1.18**	-0.80***
	(2.08)	(1.25)	(1.39)	(0.57)	(0.06)	(9.93e-011)	(0.29)	(2.59e-010)
Cleanup	2.13***	2.13**	2.41***	0.58***	0.89***	0.15***	0.58**	0.71***
	(0.64)	(0.86)	(0.55)	(0.17)	(0.13)	(6.81e-011)	(0.20)	(1.78e-010)
GDP growth	0.56***	0.56***	0.51*	0.06*	0.05**	0.08***	-0.04	-0.10***
	(0.17)	(0.12)	(0.19)	(0.03)	(0.02)	(9.91e-012)	(0.02)	(2.59e-011)
INF	-0.29***	-0.29***	-0.36***	-0.31***	-0.24***	-0.29***	-0.32**	-0.34***
	(0.09)	(0.10)	(0.11)	(0.02)	(0.01)	(8.65e-012)	(0.02)	(2.26e-011)
LnPcredit	3.33e-04***	3.32e-0.04***	5.29e-04***	1.08e-04***	2.13e-06	4.03e-005***	1.20e-04**	1.52e-04***
	(9.84e-05)	(1.17e-04)	(1.51e-04)	(2.91e-05)	(2.23e-06)	(1.13e-014)	(3.39e-005)	(2.95e-014)
Const.	−0.06	0.05	0.54*	-0.02	0.01	-5.12e-011***	1.40e-016	7.09e-011
	(-0.04)	(0.19)	(0.27)	(0.01)	(0.01)	(1.73e-011)	(0.05)	(4.52e-011)
Adj. R2	0.58		0.74	0.90	0.98			
Durbin-Watson	2.01		2.03	2.00	1.99			
P-value (F for OLS, LR for GLM)	0.00	0.00	0.00	0.00	0.00			
Deviance stats		1.11						
Slope equality (Wald test)								32.21***
Symmetric Quantiles (Wald test)								49.49***
Global economic policy uncertainty (News-based)								
LnGEPU	−7.84**	-7.83**	-8.21***	-0.95***	-2.90***	-1.19	-1.19	-1.64***
	(5.80)	(3.79)	(1.04)	(1.53)	(0.29)	(14.79)	(7.28)	(8.62)
Cleanup	2.04**	2.04**	1.75***	0.86*	1.01***	1.16	1.09	0.56***
	(0.78)	(0.84)	(0.27)	(0.44)	(0.14)	(3.28)	(1.61)	(1.91)
GDP growth	0.49**	0.49***	0.44***	3.20e-03**	0.08***	0.01	-0.08	0.02***
	(0.18)	(0.11)	(0.05)	(0.05)	(0.02)	(0.43)	(0.21)	(0.25)
INF	-0.39***	-0.39***	-0.33***	-0.23***	-0.21***	-0.12	-0.21	-0.29***
	(0.11)	(0.08)	(0.03)	(0.03)	(0.01)	(0.31)	(0.15)	(9.03e-025)
LnPcredit	3.65e-04**	3.66e-04***	3.37e-04*	4.29e-05	9.97e-07	-1.05e-04	7.98e-006	1.40e-4***

	(1.41e-04)	(1.04e-04)	(4.42e-05)	(4.59e-05)	(1.78e-06)	(5.18e-04)	(2.55e-04)	(3.02e-04)
Const.	-0.09	0.09	1.32e-04	-0.04	5.79e-04	-3.70e-013	-5.83e-014	1.27e-011***
	(0.08)	(0.18)	(0.01)	(0.02)	(2.10e-03)	(0.82)	(0.40)	(0.48)
Adj. R2	0.60		0.98	0.84	0.99			
Durbin-Watson	2.02		2.00	2.03	1.99			
P-value (F for OLS, LR for GLM)	0.00	0.00	0.00	0.00	0.00			
Deviance stats		1.07						
Wald Test stat for slope equality								65.45***
Wald Test Stat for Symmetric Quantiles								29.19***
Composite economic policy uncertainty								
LnComp_EPU	-7.23**	-7.23**	- 9.65***	-0.85**	-2.69***	-1.11	-1.11	-1.53
	(5.39)	(3.51)	(0.70)	(1.18)	(0.27)	(13.74)	(6.76)	(8.01)
Cleanup	2.04**	2.04**	1.97***	0.86***	1.02***	1.16	1.09	0.56
	(0.79)	(0.84)	(0.13)	(0.28)	(0.14)	(3.29)	(1.62)	(1.92)
GDP growth	0.50**	0.50***	0.92**	3.28e-03**	0.08***	0.01	-0.08	0.02
	(0.18)	(0.11)	(0.06)	(0.03)	(0.02)	(0.43)	(0.21)	(0.25)
INF	-0.39***	-0.39***	-0.13***	-0.23***	-0.21***	-0.12	-0.21	-0.29
	(0.11)	(0.08)	(0.03)	(0.02)	(0.01)	(0.31)	(0.15)	(0.18)
LnPcredit	3.66e-04**	3.66e-04***	2.30e-05**	4.25e-05	9.96e-07	-1.05e-04	7.69e-006	1.40e-04
	(1.41e-04)	1.04e-04)	(1.07e-05)	(3.50e-05)	(1.78e-06)	(5.19e-04)	(2.55e-04)	(3.03)
Const.	-0.09	-0.09	-0.09**	-0.04	5.75e-04	-3.85e-013	-7.83e-014	2.24e-011
	(0.08)	(0.18)	(0.04)	(0.06)	(2.09e-03)	(0.83)	(0.40)	(0.48)
Adj. R2	0.60			0.84	0.99			
Durbin-Watson	2.02		2.05	2.03	1.99			
P-value (F for OLS, LR for GLM)	0.00	0.00	0.00	0.00	0.00			
Deviance stats		1.07						
Wald Test stat for slope equality								65.09***
Wald Test Stat for Symmetric Quantiles								28.85***

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' construct (2025).

Panels A and B of Table 5 show that the Ghana-specific Economic Policy Uncertainty (NEW_EPU) consistently reduces banking-sector soundness and stability, with stronger effects among less stable banks, while the larger coefficients of global and composite uncertainty measures suggest that externally driven indices may overstate uncertainty effects in Ghana. In contrast, the banking-sector CLEANUP programme improves soundness and stability, supporting evidence that regulatory reforms strengthened the sector (Cantah et al., 2023). GDP growth generally enhances resilience, whereas inflation weakens soundness and stability and private-sector credit contributes positively to banking resilience. The stronger negative effects observed among less stable banks suggest that smaller, less diversified, and less capitalised institutions are more vulnerable to uncertainty shocks, while larger and better-capitalised banks are better able to absorb them through stronger buffers, diversification, and risk-management systems. This finding is consistent with evidence that the effects of economic policy uncertainty vary with bank characteristics and tend to amplify existing vulnerabilities within the banking system (Danisman & Tarazi, 2024).

The results provide consistent evidence that economic policy uncertainty undermines banking-sector soundness and stability. The Ghana-specific policy-variable-based EPU remains negative and statistically significant across all estimators, with a one-unit increase reducing the financial soundness index by approximately 1.7-2.1 units. Quantile estimates further reveal that the adverse effects are most pronounced among less stable banks. Similarly, Global Economic Policy Uncertainty and Composite Economic Policy Uncertainty exert significant negative effects on banking stability. In contrast, the CLEANUP programme strengthens stability, inflation exerts a persistent destabilising effect, GDP growth exhibits mixed effects across stability levels, and private-sector credit enhances banking resilience, particularly among more stable banks. These suggest that policy uncertainty weakens bank balance sheets by increasing credit risk, constraining investment activity, and destabilising funding conditions, with the greatest burden falling on the most vulnerable institutions.

4.3 Diagnostic Tests

Table 6 reports post-estimation diagnostics that confirm the robustness of the models. For financial soundness, OLS models explain about 58-60% of the variation, exhibit no autocorrelation, and are highly significant. GLM models improve fit, while heteroskedasticity-corrected models achieve the highest explanatory power. For banking stability, OLS models perform strongly (adjusted R^2 = 0.84-0.90), whereas heteroskedasticity-corrected models showed higher explanatory power. The highly significant Wald tests for

slope equality and quantile symmetry further indicate that the effects of economic policy uncertainty vary across different levels of banking stability.

4.4 Robustness Checks

Several robustness checks confirm the reliability of the findings. The analysis employs alternative uncertainty measures, including the Ghana-specific, global news-based, and composite EPU indices, all of which produce consistently negative and significant effects on financial soundness and banking stability. The results also remain stable across OLS, Generalised Linear Models, and heteroskedasticity-corrected estimators, suggesting that the findings are not driven by the choice of uncertainty measure, model specification, distributional assumptions, or heteroskedasticity.

4.4 Discussion

The study developed a variables-based Economic Policy Uncertainty (EPU) index for Ghana and found major uncertainty spikes in 2012, 2015–2018, and during the COVID-19 period. The 2012 increase coincided with the Eurozone debt crisis (Baker et al., 2016), while the 2015-2018 spike reflected Brexit, China's economic slowdown, and oil price fluctuations (Ahir et al., 2018), supporting evidence that policy shocks, geopolitical risks, and energy crises increase uncertainty (Fang & Miller, 2012). More recently, COVID-19, the 2020 budget controversy, the US-China trade war, currency depreciation, and energy-sector challenges further heightened uncertainty (Brogaard & Detzel, 2015). Although the index generally increased between 2008 and 2021, it declined in 2022 following the IMF bailout, energy-sector reforms, AfCFTA implementation, and digitalisation policies. Over the same period, Ghana's banking sector experienced declining stability between 2008 and 2013 due to the global financial crisis, syndicated loan defaults, non-performing loans, operational inefficiencies, and shrinking interest margins (Churchill, 2013), and again between 2016 and 2022 during the Bank of Ghana's cleanup exercise. While licence revocations, recapitalisation, and restructuring aimed to strengthen the sector, they also generated public distrust, job losses, and liquidity pressures, illustrating that reforms can initially weaken stability while promoting long-term resilience (Agyemang et al., 2024).

The sector has shown resilience. Between 2012 and 2014, financial stability improved due to the adoption of Basel II and III standards, enhanced reporting requirements, oil production from the Jubilee Field, and supportive monetary policies (Mawutor & Obeng, 2015). Notably, the cleanup exercise from 2017 to 2019, despite causing short-term disruptions, ultimately strengthened stability by removing distressed banks and consolidating the industry. This aligns with evidence from Russia and other transition economies, where

similar reforms have improved systemic stability (Li, 2019). These findings emphasise the dynamic interaction between domestic reforms, global shocks, and macroeconomic policies in shaping both economic policy uncertainty and financial soundness in Ghana.

The second and third objectives examine the effects of economic policy uncertainty (EPU) on the financial soundness and stability of Ghana's banking sector, controlling for inflation, GDP growth, credit, and banking-sector restructuring. The findings consistently show that higher EPU weakens banking resilience, supporting evidence that uncertainty reduces credit availability, increases default risk, and threatens financial stability. This result is consistent with cross-country evidence showing higher non-performing loans and greater risk exposure during periods of elevated uncertainty (Phan et al., 2024). Similar findings have been reported in the US, Pakistan, and India (Danisman & Tarazi, 2021; Syed, 2023), while evidence from Sub-Saharan Africa also points to the adverse effects of inflation and regulatory uncertainty on banking stability (Abaidoo & Agyapong, 2023). These findings confirm the destabilising role of uncertainty in Ghana and beyond.

Inflation further weakens banking soundness and stability, consistent with evidence that rising inflation increases credit risk, deposit volatility, and balance sheet deterioration (Ramadha, 2023). Similar effects have been reported in Ghana, where inflation contributed to wider interest rate spreads, lower profitability, and asset devaluation (Kovanen, 2011). In contrast, banking-sector cleanups improve financial soundness, supporting findings that reforms enhance resilience, asset quality, and systemic stability (Li, 2019). However, evidence from Ukraine and Ghana suggests that such reforms can initially create depositor distrust and liquidity pressures (Affum, 2020). This indicates that while reforms strengthen stability in the long run, they may cause short-term disruptions. The study identifies GDP growth and private-sector credit as important stabilising factors. GDP growth improves banking soundness and stability, consistent with evidence from Nepal and other emerging economies (Gwachha & Karmacharya, 2023). Although some studies report weaker or contrasting effects (Antwi & Kwakye, 2022), the broader evidence suggests that economic growth enhances lending capacity and reduces default risk. Likewise, private-sector credit promotes stability, supporting findings on the benefits of credit creation and fintech-driven lending (Liem et al., 2022). However, Kouam (2021) show that domestic credit is associated with weaker liquidity, suggesting that these effects may vary across economies.

The negative relationship between economic policy uncertainty and banking stability is consistent with existing evidence. However, this study extends the literature by using a Ghana-specific measure of policy uncertainty rather than global or news-based proxies. The results show markedly different coefficient

magnitudes, suggesting that conventional measures may overstate the destabilising effect of uncertainty on domestic banking systems. Furthermore, the consistency of the results across specifications indicates that the relationship reflects a structural transmission mechanism rather than a sample-specific effect. Thus, the study contributes not only by confirming the relationship but also by improving the measurement and interpretation of policy uncertainty in emerging markets.

The use of annual banking data implies that the Z-score should be interpreted as a measure of long-term banking resilience rather than short-term distress, suggesting that persistent policy uncertainty gradually erodes banks' solvency buffers and that improvements in policy credibility may be more effective than short-term interventions in strengthening stability. These findings support Real Options Theory, as episodes such as the Eurozone crisis, Brexit referendum, and China's economic slowdown were associated with reduced investment and economic activity through a wait-and-see response by firms and investors (Yilanci & Kilci, 2021). They also support the Theory of Procyclicality, showing that uncertainty rises during downturns, such as the global financial crisis and the COVID-19 pandemic, and further amplifies instability through reduced credit availability, increased risk-taking, higher non-performing loans, and inflation-induced pressures on bank capitalisation (Ma & Hao, 2022).

5 Conclusions and Recommendations

This study examined how economic policy uncertainty (EPU) affects the financial soundness and stability of Ghana's banking sector, using data from 13 commercial banks between 2008 and 2023. A variable-based EPU index was developed, closely aligned with global news-based indices, and proved to be a reliable and objective measure of policy unpredictability. The results showed that both the variable-based and composite indices negatively affected financial soundness and stability, with the most significant effects observed in lower quantiles, where vulnerabilities were greater. The study concludes that higher levels of policy uncertainty and inflation reduce credit availability, increase risk-taking, and worsen non-performing loans, ultimately threatening banking resilience. Additionally, it highlights that reducing policy unpredictability is crucial for maintaining stability. Institutionalising the new EPU and Financial Soundness indices would equip regulators with context-specific tools for monitoring systemic risks.

Based on the findings, the study recommends greater consistency, transparency, and formal communication in fiscal and monetary policy to reduce uncertainty. The Bank of Ghana should adopt the Economic Policy Uncertainty (EPU) index and Financial Stability Index (FSI) as standard supervisory tools. The policy-variable-based EPU index should be updated monthly and integrated into the Bank's early-warning and

macroprudential framework alongside existing stress-testing indicators. Defined EPU thresholds could signal heightened policy risk and trigger closer supervision, targeted stress tests, countercyclical capital guidance, and forward-looking assessments of liquidity risk and credit conditions during fiscal or monetary policy shifts. Banks should also incorporate localised uncertainty measures into risk models, scenario analysis, stress testing, capital planning, credit screening, loan-to-value thresholds, provisioning policies, liquidity management, and income diversification. These measures are especially important for weaker banks and would help the industry manage policy uncertainty proactively rather than reactively.

The study has several limitations. It focuses on 13 commercial banks, excludes rural, savings and loans, and investment banks, omits some policy variables such as trade policy, and constructs the Economic Policy Uncertainty (EPU) index using equal weights. As a result, the findings primarily reflect large, well-capitalised banks and may underestimate the effects of policy uncertainty, since smaller and less diversified institutions are often more vulnerable to policy shocks. Likewise, equal weighting may mask differences in the importance of individual fiscal and monetary policy variables, potentially biasing the estimated effects toward zero. Consequently, the results should be viewed as a lower-bound estimate of the impact of policy uncertainty on Ghana's financial system. Future studies should include all categories of banks, incorporate additional policy and macroeconomic variables, and employ alternative index-construction techniques such as Principal Component Analysis or entropy methods to provide more comprehensive evidence.

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Statements and Declarations

Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the paper.

Data Availability

The data that is used for this study can be made available upon receiving a reasonable request to the corresponding author.

Authorship Contribution Statement

Iddriss Askandir: Conceptualisation, Data curation, Formal analysis, Writing – original draft.

Eric Amoo Bondzie: Conceptualisation, Data curation, Formal analysis, Writing – original draft, review and editing.

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Appendix E:

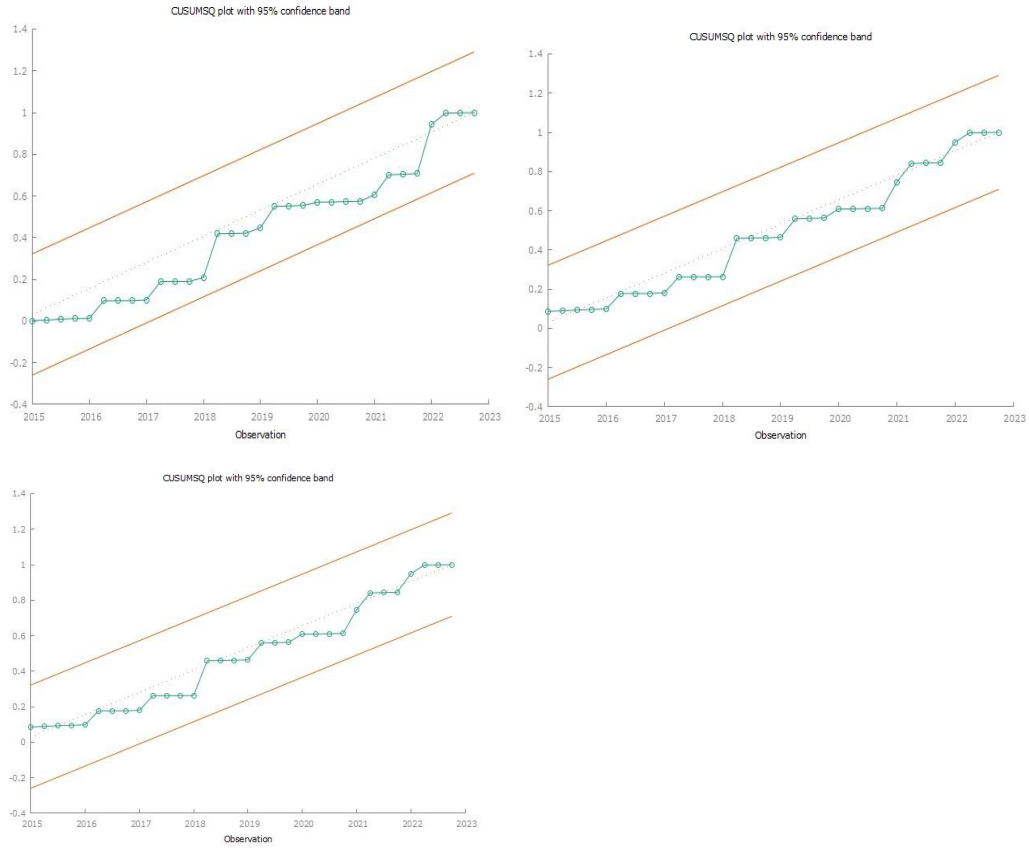

Figure 7: CUSUM Tests for the Effect of Economic Policy Uncertainty on Financial Soundness

Source: Author's construct (2025)

Appendix F:

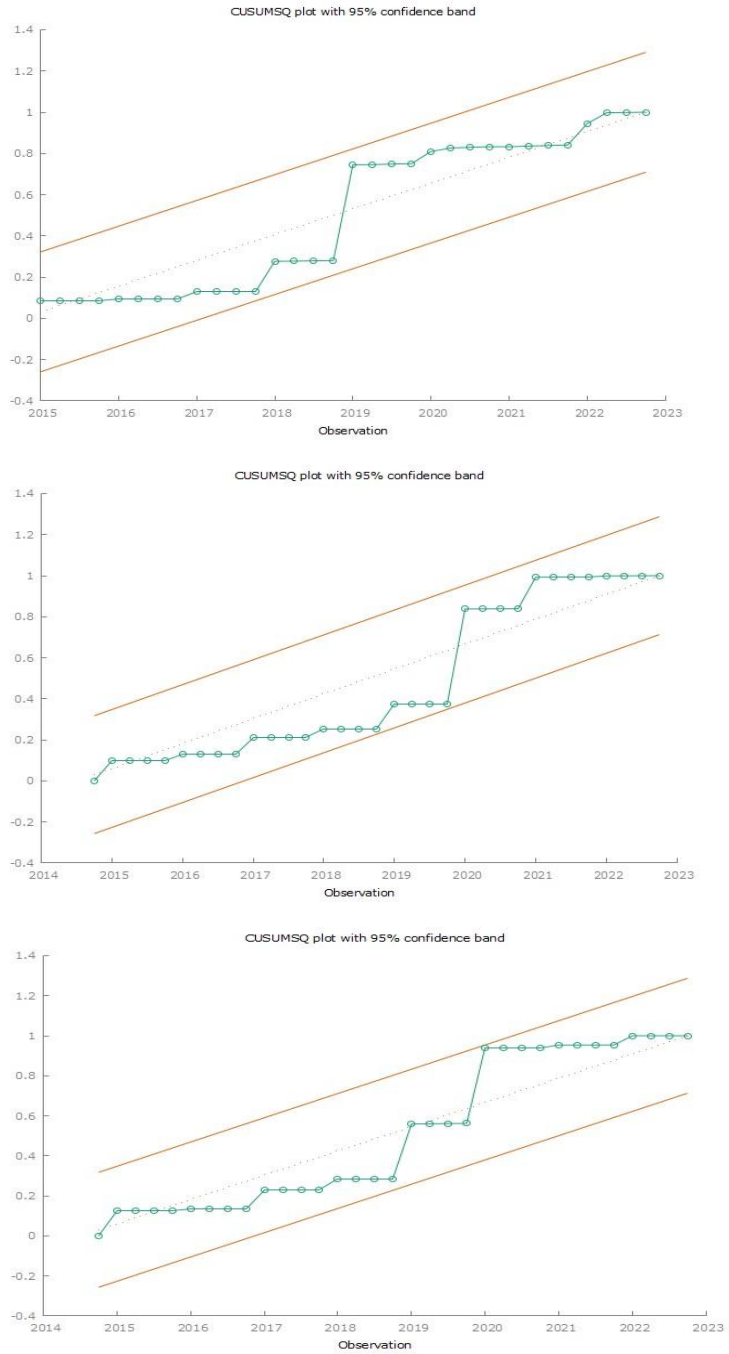

Figure 8: CUSUM Tests for the Effects of Economic Policy Uncertainty on Financial Soundness

Source: Author's construct (2024)