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Article

Economic Policy Uncertainty and Institutional Credibility: Assessing the Role of Central Bank Independence in Maintaining Financial Stability in (D-8) Countries

Basri [1,*], Abdullah [1], Dian Wahyudi [2] and Herianti [3]

[1] Department of Economics, Faculty of Economics and Islamic Business, Sunan Kalijaga Islamic University, Yogyakarta (55281), Indonesia
[2] Master of Business Administration Program, Faculty of Economics and Business, Gadjah Mada University, Yogyakarta (55281), Indonesia
[3] Department of Economic Education, Faculty of Teacher Training and Education, Cahaya Prima University, Bone (92711), Indonesia
* Correspondence: basribasyir862@gmail.com

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Abstract: This study examines the impact of economic policy uncertainty (EPU) and central bank independence (CBI) on financial stability in the Developing Eight (D-8) Muslim countries, which are often identified as emerging markets and are vulnerable to geopolitical risks. Challenging the prevailing view of central bank independence (CBI), we find new evidence that its effectiveness depends heavily on institutional quality. Using a dynamic panel estimator based on the Generalized Method of Moments (GMM) over the 2009–2022 study period, we also introduce a new three-layer control structure that accounts for internal, external, and institutional factors. Our results demonstrate a nonlinear U-shaped relationship between EPU and financial stability, where extreme uncertainty paradoxically triggers defensive financial mechanisms. Furthermore, we uncover the institutional credibility paradox, where CBI exhibits an adverse average effect, often exacerbating financial instability in institutionally weak environments. The moderating role of CBI on EPU also appears counterproductive, indicating that independence without institutional foundations amplifies shocks from policy uncertainty. This study contributes to the political economy literature by demonstrating that institutional credibility is not simply a matter of legal autonomy but rather a fundamental prerequisite for effective monetary governance. We argue that the conventional CBI model requires significant re-evaluation in emerging markets, where institutional complementarity is more crucial to financial resilience than central bank independence alone.

Keywords: Economic Policy Uncertainty; Central Banks Independence; Financial Stability; GMM

1. Introduction

The issue of economic policy uncertainty (EPU) has evolved from a cyclical concern to a persistent threat to global financial stability, particularly in the eight developing Muslim countries (D-8). The phenomenon of rising EPU appears to disrupt credit allocation, trigger capital flight, and increase banking sector fragility. Empirical evidence Phan et al. [1] confirms that a one-standard-deviation increase in EPU reduces financial stability by 2.66–7.26% in countries with vulnerable

financial systems. This uncertainty not only undermines financial stability but also distorts the real economy, complicating policy responses in developing countries [2]. In this context, the impact of EPU warrants further examination, as it not only disrupts but also triggers a negative spiral that exacerbates already fragile macroeconomic conditions.

This banking sector vulnerability is primarily due to an uncertain policy environment that disrupts liquidity risk management and hinders adaptation to new economic policies [3]. For commodity-dependent emerging markets facing structural vulnerabilities and external shocks, navigating this uncertain policy landscape has become a crucial challenge.

In response to this uncertainty, central bank independence (CBI) has been widely advocated as an institutional framework to ensure monetary credibility and financial stability. Its theoretical foundation, rooted in the time-inconsistency literature Barro & Gordon [4]; Rogof [5]; Kydland & Prescott [6], posits that insulating monetary policy from political pressures can mitigate inflationary bias and promote stability. Empirical studies across various countries often support this paradigm, showing that CBI significantly reduces the risk of banking crises [7, 8].

However, a troubling paradox emerges in developing countries—particularly in commodity-dependent countries with weak governance. Despite their formal independence, central banks in this context tend to fail to ensure financial stability amid geopolitical shocks, institutional voids, and commodity price volatility [9, 10]. This gap between de jure independence and de facto effectiveness highlights a critical gap in the conventional CBI model, demonstrating that legal autonomy alone is insufficient without supportive institutional conditions.

This gap between theoretical promise and practical effectiveness suggests that the CBI's stabilizing role is conditional or absolute. We argue that institutional credibility, embodied through the de facto capacity and perceived legitimacy of a country's governance institutions, is a crucial condition for the effectiveness of legitimate central bank independence and the generation of genuine financial stability. The Developing Eight (D-8) countries provide a strategic laboratory to test this proposition, as they exhibit three converging characteristics that reinforce this institutional dilemma: (1) high commodity dependence that creates procyclical fiscal policies that contradict central bank mandates [11]; (2) institutional fragmentation evidenced by governance scores consistently below the global median; and (3) significant geopolitical vulnerabilities ranging from international sanctions to regional tensions that complicate monetary policy transmission. In such an environment, even legally independent central banks struggle to maintain financial stability, as evidenced by the 2018 Turkish currency crisis despite the 2017 CBI reforms.

Therefore, this study examines the crucial tripartite relationship among economic policy uncertainty (EPU), central bank independence (CBI), and financial stability, with an emphasis on institutional quality as a conditioning factor. The following Research questions guide our investigation: (1) To what extent does EPU affect financial stability in the (D-8) countries, and does this relationship exhibit nonlinear characteristics? (2) Does CBI directly enhance financial stability in these commodity-dependent countries? (3) How does CBI moderate the impact of EPU on financial stability? (4) Most importantly, does institutional quality determine the effectiveness of the CBI as a stabilization institution? This study aims to resolve the CBI paradox by testing the hypothesis that institutional credibility is a prerequisite for effective monetary governance in emerging markets.

This study offers several distinct contributions to the political economy of financial stability. Theoretically, we propose an institutional credibility framework that integrates monetary theory with

institutional economics, demonstrating that de jure central bank independence requires complementary institutional qualities to achieve de facto financial stability. Empirically, we provide the first comprehensive evidence on the nonlinear effects of EPU and the conditional effectiveness of CBI in the Developing Eight (D-8) countries. The selection of this sample of Muslim-majority countries: Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey is considered highly strategic. This group offers a unique institutional context often overlooked in the mainstream literature, while also presenting internal variation in levels of financial development and external vulnerabilities that allow for more robust testing. The study uses a new set of financial stability indicators and accounts for endogeneity through historical-institutional instruments.

Methodologically, this study introduces a multi-layered control approach that systematically isolates the effects of internal monetary factors, external vulnerabilities, and institutional quality. For policymakers, our findings underscore that institutional reforms that strengthen regulatory quality, control of corruption, and government effectiveness are essential prerequisites for effective central bank independence in commodity-dependent emerging markets.

The remainder of this study proceeds as follows. Section 2 reviews the theoretical foundations and empirical literature on EPU, CBI, and financial stability, leading to the development of our hypotheses. Section 3 outlines the empirical strategy, including the dynamic panel model, variable descriptions, and estimation methods. Section 4 presents the main results, robustness checks, and discusses the implications of our findings. Finally, Section 5 concludes with policy recommendations and avenues for future Research.

2. Literature Review

2.1. Economic Policy Uncertainty on Financial Stability

The relationship between economic policy uncertainty (EPU) and financial stability has been a key foundation of macroeconomic Research, with various theoretical developments explaining its transmission mechanisms. Classical uncertainty theory Schumpeter & Keynes [12]; Bernanke [13], for example, posits that policy volatility encourages caution among investors and businesses, leading to delays in investment decisions even when fundamentals appear sound. This theoretical foundation was later operationalized through the EPU index [14], which quantifies policy-related uncertainty through the frequency of media coverage.

Empirically, the negative consequences of EPU have been well documented. Studies across various contexts consistently show that increasing EPU undermines banking stability through several channels: distorting resource allocation efficiency [15], increasing risk premiums [16], and weakening banks' liquidity risk management capabilities [17]. The adverse impact appears to be particularly pronounced in developing countries with weaker financial systems [18].

However, the neoclassical perspective offers nuance. Scholars from this tradition Lucas Jr [19]; Kydlan & Prescot [6], argue that rational agents can efficiently adjust expectations to mitigate policy uncertainty, unless institutional rigidities hinder market functioning. This theoretical tension highlights a crucial qualification: the adverse impact of EPU is not a fixed law, but rather depends heavily on institutional conditions. This proposition that institutions play a key role is supported by empirical findings showing that institutional quality moderates the impact of EPU on bank profitability [20], and financial stability [21].

Recent studies further complicate this picture by challenging the assumption of a purely linear relationship. Fundamental options theory Dixit & Pindyck [22]; Bloom [23], suggests that under moderate uncertainty, economic actors increase precautionary savings and adopt hedging strategies, potentially stabilizing the economy. However, once the EPU exceeds a critical threshold, particularly in vulnerable emerging markets, the relationship becomes sharply negative, triggering capital flight and systemic risk [24]. This nonlinearity not only suggests that the EPU-stability relationship follows a complex pattern but also reinforces the central proposition about the role of institutions. The threshold at which the EPU shifts from having a stabilizing to a destabilizing effect is likely influenced by a country's institutional quality, with stronger institutions potentially raising the threshold.

2.2. Central Bank Independence on Financial Stability

The efficacy of central bank independence (CBI) as a safeguard of financial stability remains intensely debated in both academic and practical circles, with theoretical perspectives significantly evolving since the global economic crisis. The most classic foundation, undermined by inconsistent empirical evidence Friedman [25]; Kydland & Prescott [6], posits that isolating monetary policy from the political cycle is crucial to maintaining credibility and preventing inflationary biases that undermine financial system stability. This theoretical imperative for independence has strong empirical support, with Research showing that CBI maintains lower inflation volatility and lower banking crisis risk, particularly in developed institutional settings [26, 27].

However, the 2008 financial crisis triggered a critical re-evaluation of this paradigm. The crisis demonstrated that central banks with a strong price stability mandate can nevertheless ignore systemic financial risks [28, 29], a phenomenon known as the "benevolent neglect" hypothesis. This subsequently sparked a wave of new studies examining whether the traditional CBI model is still adequate, or even appropriate, for ensuring financial stability [30, 31].

The most compelling critique comes from the political economy of development, which highlights the conditional effectiveness of CBI. A growing body of evidence suggests that the benefits of (de jure) legal independence are not automatic but depend on the quality of the broader institutional environment. In developed countries with strong institutions, CBI consistently promotes stability [32]. Conversely, in developing countries characterized by weak institutions and governance, de jure CBI often fails to produce de facto stability [33]. Studies in Africa, for example, confirm that CBI effectiveness depends on the level of political and institutional development [34]. This creates an institutional credibility paradox, where formal independence rules lack the supporting institutional structures to be effective.

This contingent view is further supported by empirical findings that in some developing country contexts, coordinated policy actions between the central bank and the government can be more effective for stability than rigid independence [35]. Therefore, the prevailing academic context has shifted away from viewing CBI as an institutional solution. However, the specific mechanisms by which institutional quality mediates the CBI-financial stability relationship, particularly amidst high policy leverage (EPU), remain incompletely validated.

2.3. The Role of Institutional Quality and Credibility

The preceding discussion reveals a critical gap in the conventional understanding of Economic

Policy Uncertainty (EPU) and Central Bank Independence (CBI): their impacts are not universal but are fundamentally shaped by the institutional environments in which they operate. This study defines institutional quality as the capacity, credibility, and de facto effectiveness of a country's governance framework, encompassing rules, enforcement mechanisms, and norms that limit arbitrary power and enable predictable policy implementation [36]. Therefore, it is this overarching institutional environment that ultimately translates formal policies, including central bank independence, into tangible economic outcomes.

The theoretical foundations of institutional economics suggest that high-quality institutions reduce transaction costs, protect property rights, and enforce contracts, thereby creating a predictable environment conducive to financial stability [37]. In the specific context of policy uncertainty, robust institutions act as a credibility buffer. This means they increase the predictability of government actions, reducing the likelihood of discretionary policy shifts that exacerbate uncertainty [38]. Consequently, even in the face of high EPU, strong institutions can cushion their destabilizing impact by reassuring market participants of a stable long-term policy trajectory.

Crucially, however, institutional quality is not only a direct determinant of stability but also a key conditioning variable for the effectiveness of other institutions, particularly central banks. The literature increasingly recognizes a credibility paradox: de jure CBIs often fail to deliver de facto stability precisely in environments characterized by institutional voids, weak rule of law, or high corruption [33]. This is because the credibility of an independent central bank is itself a function of the broader institutional system's credibility. Empirical evidence supports this contingency relationship, with studies in Africa revealing that CBIs promote financial development more effectively in countries with stronger political institutions [34]. Similarly, Research following the 2008 financial crisis concluded that CBIs' capacity to mitigate economic shocks depends heavily on a supportive institutional context [39].

Therefore, institutional quality has a dual function: it directly protects the financial system from uncertainty and simultaneously legitimizes and empowers independent institutions such as the central bank. This framework demonstrates that the tripartite relationship between the EPU, the CBI, and financial stability cannot be understood in isolation; the quality of the underlying institutions critically mediates it. From this framework, the study's core proposition can be formulated: the CBI's stabilizing potential is fully realized only in an environment with high institutional credibility.

2.4. Theoretical Synthesis and Conceptual Framework

The previous literature review revealed that economic policy (EPU) and central bank independence (CBI) are interrelated determinants of financial stability. However, these contexts operate separately. Therefore, this study seeks to synthesize the literature into an integrated institutional credibility framework (Figure 1), emphasizing that the effectiveness of CBI as a bulwark to mitigate the impact of EPU critically depends on the credibility of the broader institutional environment.

Based on the above framework, this study is built on three core theoretical propositions (see Figure 1).

First, we posit a direct, potentially non-linear relationship between EPU and financial stability, in which moderate levels can encourage risk-managing behavior, but extremes trigger systemic instability (H1 & H2). Second, we argue that the relationship between CBI and financial stability is

not automatic but is strongly determined by institutional quality. De jure independence alone is not sufficient to guarantee stability amid institutional constraints (H3). Third, and most central to this synthesis, we propose that CBI moderates the relationship between EPU and financial stability. This creates a second-stage interaction effect. A central bank, theorized as independent, can optimally mitigate the adverse effects of the EPU when operating within a highly credible institutional system that strengthens its policy signals and ensures its operational autonomy is implemented in practice.

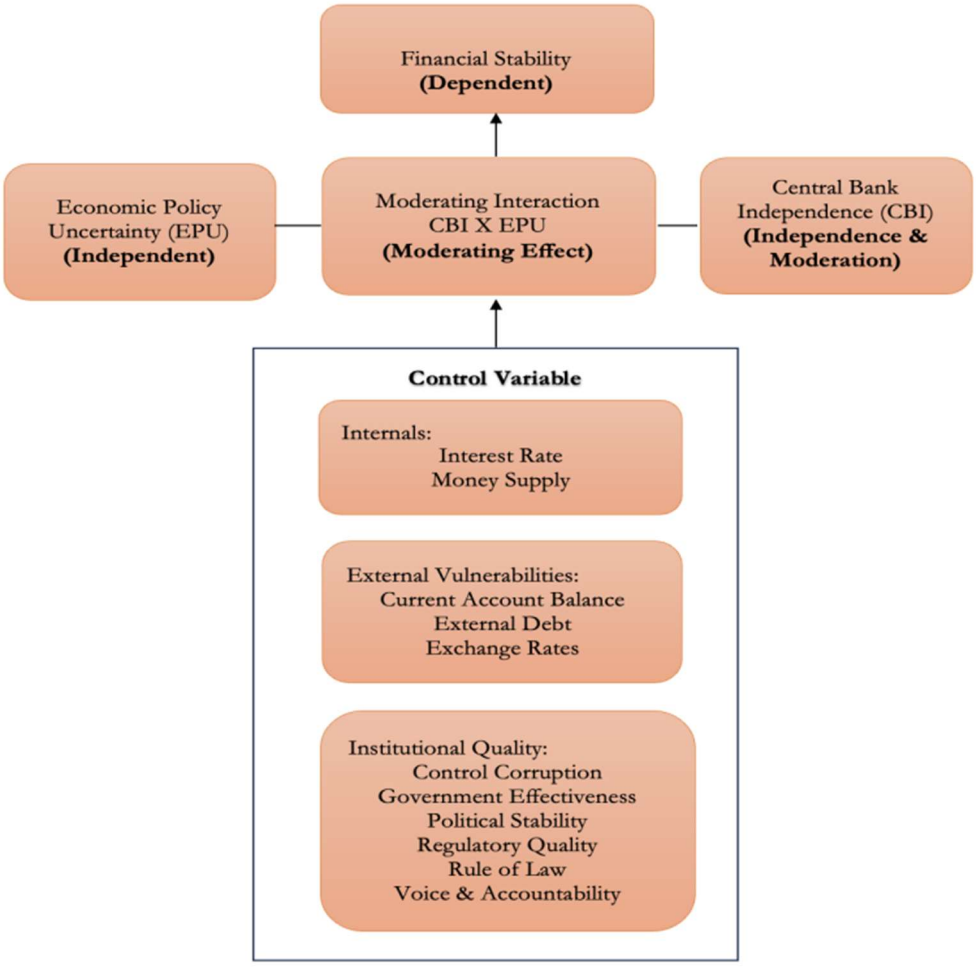

Figure 1. Integrated framework of EPU, CBI, institutional quality, and financial stability (authors' conceptual model).

Conversely, in a weak institutional context, the CBI may be ineffective or, as some literature suggests, even provide policy oversight by creating signals that contrast with those of the central bank and other government entities (H4). Thus, this integrated framework not only examines direct and first-order moderating effects but also offers a more comprehensive understanding of the institutional structure necessary for effective monetary governance in emerging markets. It explicitly addresses the institutional credibility paradox and provides a theoretical framework for testing whether institutional quality is a key foundation for the benefits of central bank stability and independence.

2.5. Hypothesis Development

This section formulates testable hypotheses and provides a strong literature foundation. These

hypotheses progress from a direct relationship to more complex conditional interactions, which form the core of the institutional credibility framework in this study.

H1: Economic Policy Uncertainty and Financial Stability.

Economic policy uncertainty negatively impacts financial stability in (D-8) countries. The hypotheses are grounded in the dominant literature, rooted in classical uncertainty theory Keynes [40]; Bernanke [13], and supported by substantial empirical evidence Phan [1]; Ali [18], which suggests that policy volatility disrupts financial intermediation, increases risk, and weakens banking sector stability.

H2: Nonlinear Effects of Economic Policy Uncertainty.

The relationship between EPU and financial stability can be U-shaped (nonlinear), with the adverse effect decreasing (U-shaped) or even reversing to positive after a critical threshold. Based on fundamental options theory [22], and recent empirical findings on asymmetric effects [24], this hypothesis tests whether extreme uncertainty paradoxically leads to stabilizing behavior (e.g., precautionary hedging, capital conservation) that partially offsets the initial negative impact.

H3: Conditional Effect of Central Bank Independence.

The positive effect of CBI on financial stability depends on institutional quality. This hypothesis challenges the universalist view of CBI and is based on the political economy literature [34, 33]. Furthermore, it assumes that de jure independence produces de facto stability only if supported by a highly credible institutional environment that enforces rules and minimizes political neglect.

H4: Conditional Moderating Role of Central Bank Independence.

The moderating effect of CBI on the EPU-financial stability relationship is strengthened by higher institutional quality. This is the central hypothesis of our integrated framework. This hypothesis proposes a second-order interaction, suggesting that an independent central bank can act most effectively as a shock absorber against policy uncertainty when the broader institutional framework is credible and supportive. This examines the core of the institutional credibility paradox.

These hypotheses will then be empirically tested using the dynamic panel data methodology outlined in the next section, providing a comprehensive examination of the tripartite relationship between economic policy uncertainty, central bank independence, and institutional quality in shaping financial stability.

3. Materials and Methods

3.1. Empirical Model and Variable Specification

This study investigates the impact of economic policy uncertainty (EPU) on financial stability in the Developing Eight (D-8) countries, with central bank independence (CBI) as both an independent and moderating variable. The (D-8) countries present an interesting case study due to their institutional vulnerabilities and high dependence on primary commodities, which amplify their exposure to the risks of policy uncertainty.

To address potential dynamic endogeneity, we employ a dynamic panel approach using the Generalized Method of Moments (GMM) estimator. Therefore, the model specification can be formulated as follows:

$$FSit=\alpha+\beta0FSit-1+\beta1EPUit+\beta2EPU\text{^}it+\beta3CBIit+yXit+\mu\acute{\imath}+\text{Ɛ}it \quad (1)$$

Where FSit represents a proxy for financial stability consisting of (Z-score, Credit/Deposit Ratio,

CAR, NPL, and ROA) for country i in year t. EPUit and CBIit denote economic policy uncertainty and central bank independence, respectively. The inclusion of EPU^it captures potential non-linear effects. It yXit is a vector of control variables, represents country-specific fixed effects, and Ɛit is the error term. Next, to test the moderating role of central bank independence (H4), we extend our model by including an interaction term with the mathematical equation model:

$$FSit=\alpha+\beta 0FSit\text{-}1+\beta 1EPUit+\beta 2EPU^{it}+\beta 3CBIit+\beta 4(CBI\ X\ EPU)it+yXit+\mu i+Ɛit \quad (2)$$

This analysis covers the period from 2009 to 2022, encompassing the post-global financial crisis era and the peak year of the COVID-19 pandemic. This endpoint is determined by limited data availability, noting that the World Health Organization (WHO) officially declared the COVID-19 global health emergency over on May 5, 2023 [41].

3.2. Variable Description and Measurement

Following the conceptual framework, we use several variables categorized as follows (see Table 1 for more details):

a) Dependent Variable: We use five established proxies for financial stability: Z-score (insolvency risk), Credit-to-Deposit Ratio (liquidity), Capital Adequacy Ratio (regulatory capital), Non-Performing Loans (asset quality), and Return on Assets (profitability).
b) Independent Variable: Economic Policy Uncertainty (EPU) is measured using a media-based index developed by Baker [14]. Central Bank Independence (CBI) is calculated using the Cukierman de jure index, which ranges from 0 to 1, with higher values indicating greater independence.
c) Moderating Variable: The CBI×EPU interaction test examines whether the CBI weakens or strengthens the impact of EPU on financial stability.
d) Control Variables: We include three sets of nested controls (Internal Factors: Interest rates and money supply (M2/GDP); (External Vulnerabilities: Current account balance, external debt, and exchange rate); (Institutional Quality: Six Global Governance Indicators covering control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and accountability).

3.3. Econometric Procedure

Our estimation strategy follows a systematic three-stage approach:

First, Diagnostic Tests: We perform stationarity tests (Levin-Lin-Chu, ADF-Fisher, PP-Fisher, Hadri) to ensure that the variables are integrated of order zero. Pearson's correlation analysis indicates no severe multicollinearity.

Second, Dynamic Panel Estimation: We use the two-step System GMM estimator [42] to address endogeneity due to reverse causality and unobserved heterogeneity. The lagged dependent variable captures persistence in financial stability. We ensure the validity of the instruments using the Hansen J (overidentification) and AR(2) test (no serial correlation).

Third, Robustness Test: We complement our analysis with Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS) estimations using historical-institutional instruments (colonial history, legal origins, latitude) consistent with the empirical literature [43].

Table 1. Variable definition and measurement.

Type Variable	Variable	Measurement	Source
Dependent	Z-Score	Altman Z-Score	WDI
	Credit to Deposit Ratio	Percentage (%)	WDI
	Capital Adequacy Ratio	Percentage (%)	WDI
	Non-Performing Loans	Percentage (%)	WDI
	Return on Assets	Percentage (%)	WDI
Independent	Economic Policy Uncertainty	Index (Higher = more Uncertainty)	www.policyuncertainty.com
	Central Bank Independence	Index (0-1, Higher = more independent)	https://cbidata.org
Moderating	CBI X EPU interaction	Interaction Term	Calculation
Internal Control	Interest Rate	Percentage (%)	WDI
	Money Supply (M2)	(% of GDP)	WDI
External Control	Current Account Balance	(% of GDP)	WDI
	External Debt	Total EXD (% of GDP)	WDI
	Exchange Rate	Nominal Exchange Rate	WDI
Institutional Quality Control	Control Corruption	Estimate (-2,5 t + 2,5)	WGI
	Government Effectiveness	Estimate (-2,5 t + 2,5)	WGI
	Political Stability	Estimate (-2,5 t + 2,5)	WGI
	Regulatory Quality	Estimate (-2,5 t + 2,5)	WGI
	Rule of Law	Estimate (-2,5 t + 2,5)	WGI
	Voice and Accountability	Estimate (-2,5 t + 2,5)	WGI

Source: author compilation.

4. Results

Table 2 below compiles the results of the descriptive statistical tests. However, to save space, only selected indicators from various countries and years are presented. The highest solvency ratio (Z-Score) was recorded by Egypt in 2019 at 23.47, while the lowest was recorded in Iran in 2017 at 2.99. The highest credit ratio was observed in Turkey in 2017, at 135%, and the lowest was in Iran in 2017, at 20.8%. The highest capital adequacy ratio (CAR) was in Pakistan in 2011, at 34.97%, while the lowest was in Nigeria in 2010, at 1.49%. The highest Non-Performing Loans (NPL) ratio was recorded in Nigeria in 2009 at 37.25%, and the lowest was in Malaysia in 2018 at 1.46%. Meanwhile, the highest Return on Assets (ROA) was in Indonesia in 2022, at 6.81%, and the lowest was in Nigeria in 2009, at -2.32%.

For the highest Current Account control variable, Malaysia in 2011 had a value of 3,245% of GDP, and the lowest was in Turkey in 2011, at -7.44%. On the other hand, the highest external debt was in Turkey in 2022, amounting to $4.58 trillion, while the lowest was in Malaysia in 2009, at $4.55 trillion. The highest interest rate was in Turkey in 2018, at 24.00%, and the lowest was in Iran, at -18.8%. The highest exchange rate to USD was in Iran in 2019, at 420, and the lowest was in Turkey, at 1.50. The highest ratio of money supply to GDP was in Malaysia, at 140%, and the lowest was in Nigeria, at 21.3%.

For the governance index control variables, the highest corruption control score was in Malaysia in 2014, at 0.39, and the lowest was in Nigeria, at -1.28. The highest Government Effectiveness was in Malaysia in 2014, at 1.14, and the lowest was in Nigeria, at -1.23. The highest Political Stability was in Malaysia in 2014, at 0.26, and the lowest was in Pakistan in 2011, at -2.81. The highest regulatory quality score was in Malaysia in 2014, at 0.79, and the lowest was in Iran in 2010, at -1.70. The highest Rule of Law score was in Malaysia in 2020, at 0.57, and the lowest was in Nigeria in 2011, at -1.17. The highest Voice Accountability was in Indonesia in 2015, at 0.18, and the lowest was in Iran in 2013, at -1.60. Meanwhile, the highest economic policy uncertainty index was in Indonesia in 2013, at a frequency of 0.84, and the lowest was in Pakistan in 2011. Finally, the highest central bank independence was in Bangladesh in 2009, at a frequency of 0.87, and the lowest was in Nigeria in 2009, at a frequency of 0.38.

Table 2. Descriptive statistics.

Variable	Mean	Std.Dev	Min	Max	OBS
Z-Score	12,19	6,450	2,99	23.47	104
Credit/Deposit	75,83	28.79	20,8	135,2	110
CAR	9,619	3.652	1.49	34.97	111
NPL	9.361	16.12	1.46	37,25	111
ROA	1,272	2.608	-2.32	6.81	111
CUR	-5,720	1.750	-7.44	3.245	101
EXD	1,240	1.440	4.55	4.580	111
IR	4,837	6.678	-1.88	24.0	111
ER	5116	1060	1.50	4200	111
M2	60,98	31,74	21.3	140.0	111
CC	-0,626	0,436	-1.28	0.39	111
GE	-0,315	0,635	-1.21	1.14	111
PS	-1,228	0,764	-2.81	0.26	111
RQ	-0,467	0,652	-1.70	0,79	111
ROL	-0,497	0,463	-1,17	0,57	111
VA	-0,672	0,507	-1,60	0,18	111
EPU	0,604	0,141	0,39	0,84	111
CBI	0,661	0,172	0,38	0,87	111

Source: author compilation.

Table 3. Stationary test results.

Variable	LLC	ADF	PP-Fisher	Hadri Z-stat
ZS	-4.752***	37.52***	97.50***	5.772***
	(0.000)	(0.001)	(0.000)	(0.000)
CRD	-3.798***	31.37**	36.32***	5.335***
	(0.000)	(0.012)	(0.002)	(0.000)
CAR	-7.145***	56.91***	82.55***	3.558***
	(0.000)	(0.000)	(0.000)	(0.000)
NPL	-9.378***	61.96****	84.19***	1.782**

	(0.000)	(0.000)	(0.000)	(0.037)
ROA	-7.817***	78.08***	114.2***	2.987***
	(0.000)	(0.000)	(0.000)	(0.007)
EPU	-8.558***	10.36***	169.9***	4.363***
	(0.000)	(0.000)	(0.000)	(0.000)
CBI	-0.625***	69.77***	69.77***	10.00***
	(0.000)	(0.000)	(0.000)	(0.000)
IR	-8.980***	82.26***	130.9***	8.651***
	(0.000)	(0.000)	(0.000)	(0.000)
MS	-6.583***	52.03***	67.41***	5.750***
	(0.000)	(0.000)	(0.000)	(0.000)
CA	-9.739***	84.75***	73.24***	0.428***
	(0.000)	(0.000)	(0.000)	(0.000)
EXD	-1.770**	24.43*	31.61**	3.385***
	(0.038)	(0.080)	(0.011)	(0.000)
ER	-3.464***	23.43	67.82***	2.991***
	(0.000)	(0.102)	(0.000)	(0.000)
CC	-6.471***	51.75***	66.92***	6.415***
	(0.000)	(0.000)	(0.000)	(0.000)
GE	-4.642***	34.23***	99.58***	4.920***
	(0.000)	(0.005)	(0.000)	(0.000)
PS	-0.091***	46.28***	66.18***	2.453***
	(0.000)	(0.000)	(0.000)	(0.000)
RQ	-4.993***	40.52***	68.29***	4.356***
	(0.000)	(0.000)	(0.000)	(0.000)
ROL	-5.737***	44.11***	69.29***	4.878***
	(0.000)	(0.000)	(0.000)	(0.000)
VA	-3.951***	28.66**	30.37**	4.563***
	(0.000)	(0.026)	(0.016)	(0.000)

Notes: Table 3 presents the results of the unit root test (stationary) with the provisions ***, **, and * which mean significant at 1%, 5%, and 10%. **Source:** author compilation.

In a dynamic panel framework, the use of non-stationary time series can lead to misleading regression results and biased parameter estimates. However, the results of our first-order stationarity test indicate that all selected variables are stationary at the 1%, 5%, and 10% significance levels, thus supporting the validity of the model. Therefore, the application of the Generalized Method of Moments (GMM) estimator is deemed appropriate and can proceed. The next step is to assess the correlation among the variables to ensure the regressors are not highly collinear. As shown in Tables 4 and 5, no significant correlation was found among the explanatory variables, indicating that multicollinearity is not an issue in this analysis.

Table 4. Correlation matrix: internal and external control variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13

ZS	1.0													
CRD	0.21*	1.0												
CAR	-0.22*	0.29*	1.0											
NPL	-0.08*	-0.01*	-0.13*	1.0										
ROA	-0.08*	0.06*	-0.03*	-0.18*	1.0									
EPU	0.02*	0.21*	-0.05*	-0.08*	0.41*	1.0								
EPU^	0.03*	0.23*	-0.06*	-0.09*	0.42*	0.99*	1.0							
CBI	-0.08*	0.31*	0.01*	0.16*	0.32*	0.73*	0.71*	1.0						
CBI*EPU	0.02*	0.27*	-0.06*	0.71*	0.41*	0.96*	0.96*	0.08*	1.0					
IR	0.01*	0.21*	0.01*	-0.06*	0.14*	0.45*	0.41*	0.41*	0.43*	1.0				
MS	0.08*	-0.06*	-0.31*	0.39*	-0.23*	-0.23*	-0.21*	0.34*	-0,13*	0.34*	1.0			
CAA	-0.08*	0.12*	0.33*	-0.19*	-0.16*	-0.15*	-0.16*	-0.06*	-0.15*	-0.23*	-0.28*	1.0		
EXD	0.03*	-0.11*	0.09*	-0.13*	-0.14*	-0.32*	-0.33*	-0.18*	-0.33*	-0.11*	-0.13*	0.12*	1.0	
ERR	-0.02*	0.01*	0.11*	0.12*	-0.18*	-0.28*	-0.29*	0.05*	-0.17*	-0.18*	0.15*	0.13*	0.25*	

Note: This table presents the correlation coefficient or relationship of variables. ZS is Z-Score, CRD is Credit/Deposit, CAR is Capital Adequacy Ratio, NPL is Non-Performing Loans, EPU is Economic Policy Uncertainty, CBI is Central Bank Independence, IR is Interest Rate, MS is Money Supply, CAA is Current Account, EXD is External Debt, ERR is Exchange Rate, * indicates correlation with a significance level of 10%. Source: author compilation.

Table 5. Correlation matrix: institutional quality control variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Z-Score	1.0													
Credit Deposit	0.21*	1.0												
CAR	0.22*	0.29*	1.0											
NPL	-0.08*	-0.01*	-0.53*	1.0										
ROA	-0.08*	0.06*	-0.03*	-0.18*	1.0									
EPU	0.02*	0.21*	-0.05*	-0.08*	0.41*	1.0								
EPU^	0.03*	0.23*	-0.06*	-0.09*	0.42*	0.99*	1.0							
CBI	-0.08*	0.32*	0.21*	0.16*	0.32*	0.73*	0.71*	1.0						
CBI*EPU	0.02*	0.27*	-0.06*	0.74*	0.41*	0.96*	0.96*	0.08*	1.0					
CC	-0.26*	0.01*	0.62*	-0.18*	0.12*	-0.19*	-0.21*	-0.04*	-0.22*	1.0				
GE	-0.27*	0.04*	0.15*	-0.17*	0.16*	0.12*	0.09*	0.06*	0.05*	0.58*	1.0			
PS	-0.19*	-0.29*	0.11*	-0,15*	-0.09*	-0.38*	-0.74*	-0.37*	-0.46*	0.52*	0.44*	1.0		
RQ	-0.29*	-0.07*	0.19*	-0.15*	0.03*	0.02*	-0.01*	-0.02*	-0.04*	0.38*	0.64*	0.21*	1.0	
ROL	-0.14*	0.11*	0.37*	-0.19*	-0.01*	-0.34*	-0.35*	-0.28*	-0.84*	0.69*	0.54*	0.58*	0.46*	1.0
VA	0.23*	0.03*	-0.24*	0.04*	-0.05*	-0.15*	-0.11*	-0.31*	-0.15*	-0.52*	-0.49*	-0.35*	-0.53*	-0.39*

Note: This table presents the correlation coefficient or relationship of variables. ZS is Z-Score, CRD is Credit/Deposit, CAR is Capital Adequacy Ratio, NPL is Non-Performing Loans, EPU is Economic Policy Uncertainty, CBI is Central Bank Independence, CC is Control Corruption, GE is Government Expenditure, PS is Political Stability, RQ is Regulatory Quality, ROL is Rule of Law, VA is Voice Accountability, * indicates correlation with a significance level of 10%. **Source:** author compilation.

4.1. Preliminary Evidence and EPU Trends

As a preliminary step before presenting our Research interpretation, we examine the descriptive patterns of a key variable, economic policy uncertainty (EPU), across the (D-8) countries. Figure 2 depicts EPU trends from 2009 to 2022, demonstrating substantial heterogeneity across (D-8) members. This heterogeneity reflects the diverse institutional and geopolitical landscape within the group.

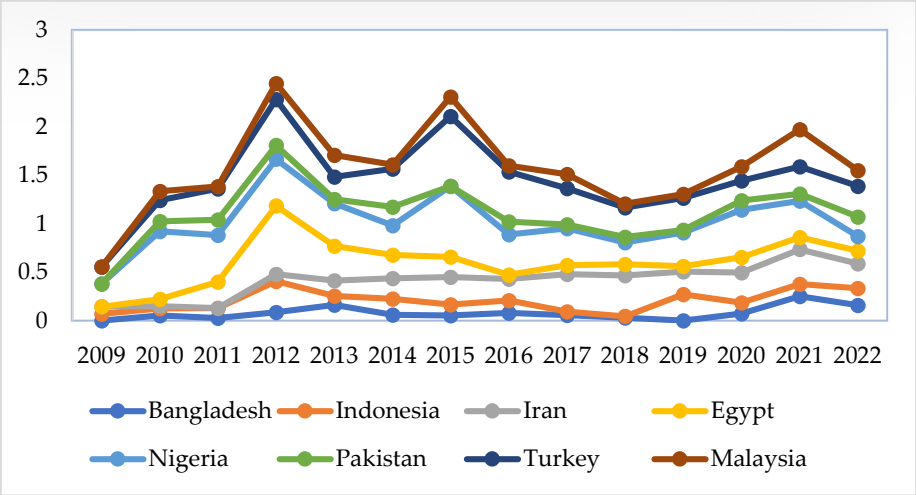

Figure 2. Trends in Economic Policy Uncertainty in D-8 Countries (2009-2022). **Source:** Economic Policy Uncertainty Index.

Specifically, countries such as Bangladesh and Indonesia maintained relatively stable EPU levels despite documented increases during the global pandemic (2020-2021). In contrast, Iran experienced persistently high and fluctuating levels of uncertainty, driven by the dual shock of international sanctions and geopolitical tensions. Similarly, Egypt exhibited a significant spike during the Arab Spring (2011-2013), while Turkey's EPU spiked sharply around the time of the 2016 coup attempt and the 2018 currency crisis.

These observed patterns align with the 'sudden stop' hypothesis proposed by Calvo & Mendoza [44]. This hypothesis suggests that countries reliant on commodity exports and external capital flows are particularly vulnerable to shifts in global risk sentiment and to domestic political instability. This initial visual evidence strongly underscores the complex and multifaceted nature of policy uncertainty in our sample and emphasizes the need for rigorous multivariate analysis in the following sections.

4.2. Main Regression Results

In this section, we present the results and discussion of dynamic panel model estimation using the Generalized Method of Moments (GMM). Table 6 details the estimation results for financial stability using internal control variables. Table 7 uses external control variables, and Table 8 introduces the institutional quality control variable.

Our findings demonstrate a precise transmission mechanism, primarily through which economic policy uncertainty (EPU) systemically undermines financial stability in (D-8) countries. The significant decline in the capital adequacy ratio (CAR: -35.03, $p<0.05$) reflects a defensive capital-conservation strategy, in which banks proactively build capital buffers to buffer against potential

asset-quality deterioration in an uncertain policy environment. Correspondingly, a sharp contraction in profitability (ROA: -44.61, p<0.01) suggests margin compression driven by declining loan volumes and rising provisioning costs. This dual effect empirically confirms [13], irreversibility hypothesis, which demonstrates how uncertainty drives a risk-off transmission mechanism that weakens the capital base and income-generating capacity of financial institutions.

Table 6. GMM estimation results: internal control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
Lag Dependent	0.440***	0.218	0.616***	0.261***	0.320**	0.303**
Variable -1	(0.004)	(0.112)	(0.000)	(0.000)	(0.046)	(0.046)
EPU	-12.56	-19.40	-35.03**	-7.71***	-44.61***	34.20***
	(0.633)	(0.350)	(0.027)	(0.000)	(0.000)	(0.000)
EPU^	8.621	40.71***	26.63**	39.80***	-10.42	35.46
	(0.633)	(0.007)	(0.035)	(0.000)	(0.682)	(0.386)
Central Bank	-2.829	-33.47**	4.268	40.31***	73.09**	-53.20***
Independence	(0.361)	(0.026)	(0.171)	(0.000)	(0.039)	(0.000)
Interest Rate	0.047	0.052	0.028	-0.126*	-0.149	0.078
	(0.702)	(0.408)	(0.690)	(0.074)	(0.105)	(0.543)
Money Supply	0.428**	0.711***	0.194	-0.035	-0.528***	0.693***
	(0.015)	(0.000)	(0.156)	(0.825)	(0.000)	(0.000)
CBI*EPU						-18.71
						(0.224)
Hansen J-stat	85.0	79.39	81.8	69.8	59.0	82.3
(P-value)	(0.13)	(0.09)	(0.33)	(0.31)	(0.63)	(0.16)
AR (1)	-2.03	-1.66	-2.22	-1.95	-2.07	-2.01
	(0.04)	(0.09)	(0.02)	(0.05)	(0.03)	(0.04)
AR (2)	0.60	0.57	0.58	1.77	0.19	0.49
	(0.54)	(0.56)	(0.558)	(0.07)	(0.84)	(0.61)

Note: Table 6 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

Furthermore, the observed credit contraction (Credits/Deposits: -19.40) further confirms this behavioral shift, as banks prioritize liquidity hoarding over financial intermediation when policy signals become ambiguous. Interestingly, the initial decline in non-performing loans (NPLs: -7.71, p<0.01) supports fundamental options theory, banks effectively tightened credit standards as a precautionary measure, temporarily improving asset quality by avoiding risky lending. However, this short-term stability came at the expense of reduced credit availability, potentially hindering economic growth in these (D-8) countries.

Beyond the linear effect, our subsequent analysis reveals crucial nonlinear dynamics: extreme policy uncertainty triggers complex behavioral adaptations that reshape financial stability in unexpected ways. The U-shaped relationship emerges through three distinct channels. First, the paradoxical expansion in credit intermediation (Credits/Deposits: 40.71, p<0.01) at high EPU levels reflects a survival lending mechanism: banks facing extreme uncertainty may turn to relationship-

based lending to maintain client relationships while simultaneously shifting to safer, collateralized loans. Second, significant capital buildup (CAR: 26.63, $p<0.05$) suggests a regulatory preemption strategy, whereby financial institutions anticipate tighter regulatory oversight during turbulent periods and proactively strengthen their capital positions.

However, this apparent stability is misleading, as evidenced by the dramatic decline in asset quality (NPL: 39.80, $p<0.01$), which is manifested in a delayed risk realization effect. Initial credit tightening temporarily suppressed NPLs, but the repayment capacity of existing borrowers eroded as economic stagnation persisted, consistent with a financial accelerator mechanism [13]. On the other hand, the combined effect on profitability was insignificant (ROA: -10.42). This context suggests that these competing forces, through increased loan volume versus higher provisioning costs largely offset each other in the (D-8) context. This nonlinear pattern challenges conventional risk models and highlights how institutional and behavioral factors interact to create unexpected stability outcomes under extreme uncertainty.

Our analysis reveals a striking institutional credibility paradox that challenges conventional monetary theory. While Central Bank Independence (CBI) should, in theory, enhance stability, it has had contradictory effects across various dimensions of stability in (D-8) countries. The sharp credit contraction (Credits/Deposits: -33.47, $p<0.05$) suggests that CBI encourages excessive monetary conservatism, in which a rigid inflation target prioritizes price stability over growth, potentially deepening economic downturns during periods of uncertainty. Similarly, the dramatic surge in non-performing loans (NPLs: 40.31, $p<0.01$) reveals a regulatory arbitrage effect: as formal credit channels tighten under conservative monetary policy, borrowers increasingly turn to shadow banking and the informal sector with weaker underwriting standards, ultimately contaminating formal banking assets.

Moreover, what is most revealing is a distorted incentive structure, evidenced by increasing profitability (ROA: 73.09, $p<0.05$) alongside decreasing stability (Z-score: -2.829), suggesting that banks compensated for declining loan volume by pursuing higher-margin and riskier investments. This pattern aligns with the risk-shifting hypothesis, in which the CBI, without complementary macroprudential supervision, creates perverse incentives for banks to "seek yield" while maintaining regulatory capital ratios (CAR: 4.268; insignificant). The institutional credibility paradox thus operates through a double-whammy mechanism: formal independence lacks de facto enforcement capacity, while monetary rigidity inadvertently stimulates financial innovation in unsupervised segments of the system.

The statistical insignificance of the interaction term (CBIxEPU: -18.71, $p=0.224$) represents a theoretically insightful finding. This context reveals the paradox of contextual neutrality: the CBI fails to serve as a theoretical shock absorber against policy uncertainty in the institutional environments of the (D-8) countries. This neutrality stems from three structural constraints. First, institutional substitution occurs when broader, weaker governance, evidenced by lower WGI scores, undermines the credibility of monetary institutions. Second, fragmentation of transmission mechanisms characterizes these economies, in which underdeveloped financial markets and a dominant informal sector dilute policy signal from independent central banks.

Third, fiscal dominance persists, in which expansionary budgetary policies in commodity-dependent countries systematically hinder monetary stabilization efforts, particularly during election cycles or commodity price spikes. These findings fundamentally challenge the universal applicability

of the independent central bank-as-stabilizer paradigm. They also confirm that in institutionally fragmented emerging markets, the CBI's moderating capacity relies on second-tier institutional complements, particularly fiscal discipline and financial market depth, which are often absent in the (D-8) context.

Table 7. GMM estimation results: external control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
Lag Dependent Variable -1	0.486**	0.316***	0.667***	0.204***	0.348**	0.486
	(0.011)	(0.000)	(0.000)	(0.000)	(0.012)	(0.011)
EPU	29.57***	-53.41**	-4.842	-75.31	-51.89**	29.57***
	(0.000)	(0.040)	(0.887)	(0.000)	(0.013)	(0.000)
EPU^	4.810	30.65*	20.43	40.44***	-13.16	5.417
	(0.825)	(0.083)	(0.468)	(0.005)	(0.642)	(0.861)
Central Bank Independence	-49.42***	8.702***	-24.98	32.46***	81.65***	-49.42***
	(0.000)	(0.004)	(0.300)	(0.004)	(0.001)	(0.000)
Current Account	-0.057	0.018	0.031	-0.090	-0.107	-0.057
	(0.607)	(0.845)	(0.693)	(0.509)	(0.423)	(0.606)
External Debt	-0.263	-0.009	0.046	-0.006	-0.105	-0.003
	(0.831)	(0.922)	(0.512)	(0.926)	(0.343)	(0.978)
Exchange Rate	-0.106	0.087	0.042	0.180**	0.265	-0.209*
	(0.488)	(0.515)	(0.725)	(0.016)	(0.273)	(0.079)
CBI*EPU						-0.444
						(0.980)
Hansen J-stat (P-value)	79.0	90.9	57.8	76.4	66.3	78.1
	(0.26)	(0.11)	(0.72)	(0.15)	(0.42)	(0.26)
AR (1)	-1.92	-1.91	-1.96	-1.99	-1.99	1.92
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)
AR (2)	1.03	0.93	0.98	1.85	0.40	1.04
	(0.29)	(0.35)	(0.32)	(0.06)	(0.68)	(0.29)

Note: Table 7 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

Further discussion on external vulnerability control suggests a more complex EPU transmission mechanism, operating through the current account and external debt channels. Our findings indicate that EPU paradoxically improves solvency (Z-score: 29.57, $p<0.01$) and profitability (ROA: 29.57, $p<0.01$), reflecting a defensive margin amplification strategy in which banks in vulnerable countries respond to uncertainty by proactively increasing interest rate spreads and provisioning costs. This improves short-term profitability but potentially hinders productive lending in the long run. Conversely, the sharp liquidity contraction (Credit/Deposit: -53.41, $p<0.05$) and soaring credit risk (NPL: -75.31, $p<0.01$) confirm the abrupt end mechanism [45], where external vulnerabilities amplify the disruptive impact of policy uncertainty on credit markets. This divergence creates a stability paradox in which apparent capital and earnings strength coexist with fundamental fragility in

liquidity and asset quality. The insignificance of regulatory capital buffers (CAR: -4.842, p=0.887) further suggests that macroprudential policy may be ineffective when burdened by massive external shocks, highlighting the need for an integrated policy framework capable of addressing both internal financial stability and external sector vulnerabilities in countries (D-8).

Furthermore, the non-linear effect of EPU under external vulnerabilities also points to a critical risk-taking paradox under extreme levels of uncertainty. The simultaneous surge in non-performing loans (NPLs: 40.44, p<0.01) and short-term intermediation (Credits/Deposits: 30.65, p<0.10) suggests that banks engage in defensive lending behavior, extending credit to prevent capital flight and maintain market share, but doing so with limited risk assessment capabilities under high uncertainty. This is consistent with the "flight to quality" reversal phenomenon, in which, beyond a certain uncertainty threshold, traditional safe-haven assets become unavailable, forcing banks to channel riskier domestic lending. The insignificant profitability compression (ROA: -13.16) further underscores the cost, as higher provisioning costs and risk premiums erode margins. Meanwhile, the resilience of solvency (Z-score) and capital adequacy (CAR) to extreme EPU shocks reflects regulatory capital inertia, in which existing capital buffers provide temporary protection but mask underlying asset-quality deterioration. This complex interplay between external vulnerabilities and non-linear EPU effects underscores how conventional risk models fail to capture the second-order interaction between policy uncertainty and external sector fragility in emerging markets.

When external vulnerability factors are taken into account, central bank independence exhibits an ambivalent nature, contributing, on the one hand, to financial system stabilization, but, on the other hand, potentially creating destabilizing dynamics in certain aspects of the system. Significant increases in liquidity provision (Credit/Deposit: 8.70, p<0.01) and profitability (ROA: 81.65, p<0.01) indicate that the CBI is capable of creating a credible monetary environment, potentially lowering funding costs and enabling more stable intermediation. However, this has serious consequences, namely a drastic increase in bankruptcy risk (Z-score: -49.42, p<0.01) and a decline in asset quality (NPL: 32.46, p<0.01), suggesting the existence of a risk-shifting mechanism. In a fragile external environment, the CBI may encourage banks to pursue higher-risk, higher-yielding assets to maintain profitability in a potentially more disciplined but lower inflation environment, thereby weakening overall solvency. Regulatory capital neutrality (CAR: -24.98, insignificant) further demonstrates that capital regulation is decoupled from actual risk-taking, acting as a lagging compliance-based metric rather than a forward-looking indicator of stability. This evidence critically reframes the international policy trilemma for emerging markets. This finding is not simply a choice between policy objectives, but rather a deeper challenge: ensuring that efforts to achieve monetary independence do not inadvertently fuel financial fragility through unseen risk channels. Therefore, the CBI cannot be a stand-alone reform; its effectiveness depends on a synergistic relationship between financial governance and macroprudential policies that actively monitor and contain the risk-taking incentives it may generate.

The overall ineffectiveness of the CBI as a moderator of EPU shocks amid external vulnerabilities was also confirmed (CBI×EPU: -0.444, p=0.980), suggesting a fundamental institutional dominance effect. Therefore, these findings indicate that in peripheral countries, the potential for stabilizing domestic institutional quality, including the CBI, may be overwhelmed by global financial dynamics and severe external imbalances. The root cause lies in transmission disruptions, though independent central banks could, in theory, signal policy credibility. However, for (D-8) countries, this signal is

dampened by volatile capital flows, currency pressures, and dependence on foreign capital, which are the main supports for domestic financial conditions during uncertainty shocks. This evidence challenges the core tenet of institutional economics that strong domestic institutions can always cushion external shocks and instead supports the hierarchy-of-vulnerabilities perspective. This suggests that, for countries on the financial periphery, resolving fundamental external imbalances is a prerequisite for domestic institutional reforms, such as the CBI, to yield the desired stabilization benefits.

Table 8. GMM estimation results: institutional quality control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
Lag Dependent Variable -1	0.330**	0.156	0.633***	0.343***	0.101	0.030**
	(0.018)	(0.361)	(0.000)	(0.000)	(0.510)	(0.018)
EPU	27.40**	-30.88	-16.97	-57.09***	-56.87***	27.40**
	(0.037)	(0.109)	(0.133)	(0.000)	(0.000)	(0.037)
EPU^	-6.117	23.22	27.81***	37.94***	10.01	-52.13***
	(0.745)	(0.154)	(0.007)	(0.000)	(0.758)	(0.000)
Central Bank Independence	-43.72**	9.990***	-21.49	13.83*	58.15	27.40**
	(0.019)	(0.000)	(0.168)	(0.061)	(0.240)	(0.019)
Control of Corruption	-0.305*	-0.031	-0.034	-0.119	0.324**	-0.305*
	(0.095)	(0.866)	(0.591)	(0.362)	(0.039)	(0.095)
Government Effectiveness	-0.143	-0.029	-0.035	-0.055	0.191	-0.190
	(0.115)	(0.866)	(0.500)	(0.413)	(0.230)	(0.115)
Political Stability	-0.143	-0.402	-0.175	-0.055	0.276	-0.143
	(0.413)	(0.742)	(0.213)	(0.622)	(0.193)	(0.413)
Regulatory of Quality	-0.275**	-0.224**	-0.065	0.122	-0.010	-0.275**
	(0.027)	(0.011)	(0.524)	(0.254)	(0.851)	(0.027)
Rule of Law	-1.110	0.677***	-0.073	-0.114	0.216*	-0.110
	(0.624)	(0.000)	(0.537)	(0.419)	(0.072)	(0.624)
Voice of Accountability	-0.032	0.122	-0.075	-0.021	0.129	-0.032
	(0.848)	(0.365)	(0.283)	(0.883)	(0.521)	(0.848)
CBI*EPU						-18.71
						(0.224)
Hansen J-stat (P-value)	69.4	84.7	61.0	69.1	75.4	65.5
	0.56	(0.23)	(0.61)	(0.33)	(0.17)	(0.32)
AR (1)	-2.04	-2.04	-2.10	-2.07	-2.31	-2.15
	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)	(0.03)
AR (2)	0.95	0.15	0.57	1.96	0.02	0.90
	(0.34)	(0.87)	(0.56)	(0.07)	(0.98)	(0.36)

Note: Table 8 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

The integration of institutional quality controls reveals a governance-mediated transmission mechanism for Economic Policy Uncertainty (EPU). Contrary to conventional expectations, the significant increase in bank solvency (Z-score: 27.40, $p<0.05$) at high EPU suggests that in countries with stronger governance frameworks, uncertainty triggers defensive portfolio rebalancing. This phenomenon may operate through two channels. First, a credit quality purification effect where banks drastically tighten lending standards (NPL: -57.09, $p<0.01$), shed risky assets, and focus on prime borrowers. Second, a margin enhancement strategy where banks compensate for the decline in loan volume through higher interest margins, although this proved insufficient to prevent a decline in profitability (ROA: -56.87, $p<0.01$), due to a simultaneous decline in overall credit creation (Credits/Deposits: -30.88). These findings extend real options theory by demonstrating that the effectiveness of the "option to wait" strategy [46], depends critically on governance quality. Strong institutions provide the regulatory clarity and contractual certainty needed for banks to implement credit tightening in an orderly manner without triggering systemic turmoil.

Furthermore, the non-linear effect of EPU under institutional quality control demonstrates a crucial regulatory capital ratchet effect at extreme levels of uncertainty. The sharp increase in capital buffers (CAR: 27.81, $p<0.01$) indicates more than mere conservatism. It reflects a systemic prudential stockpiling mechanism in which banks, supported by strong regulatory oversight, proactively build capital defenses against anticipated stress. Similarly, the dramatic decline in asset quality (NPL: 37.94, $p < 0.01$) revealed the limitations of the implemented strategy and also marked a point of governance failure, where institutions with strong institutional foundations were unable to entirely avoid the fundamental erosion of borrowers' repayment capacity during periods of extreme uncertainty [47]. This divergence created a capital-quality decoupling, in which banks maintained adequate capital ratios while underlying asset quality deteriorated, suggesting that regulatory capital measures can provide a false sense of security during periods of systemic uncertainty. The validated institutional absorption effect [48], appeared to work selectively, maintaining solvency stability (Z-score) and acting as an intermediary (Credit-to-Deposit ratio). Still, it failed to stem the transmission of extreme policy uncertainty to the real sector through the credit quality channel. Thus, these findings indicate that institutional quality not only functions as a critical turning point but also as a complex filtering mechanism, affecting various dimensions of financial stability differently during periods of systemic stress.

Our findings further reveal that Central Bank Independence (CBI) creates a supervisory substitution effect in (D-8) countries. While CBI successfully enhances monetary credibility, as evidenced by increased financial intermediation (Credit/Deposit: 9.99, $p<0.01$), this success creates unintended consequences, in which market participants may overemphasize transitory monetary signals or macroprudential risks. The concomitant decline in solvency (Z-score: -43.72, $p<0.05$) and increase in credit risk (NPL: 13.83, $p<0.10$) suggest that banks interpret the CBI's credible inflation control as a green light for yield-seeking behavior, engaging in risk-compensation strategies where they pursue higher-margin and riskier loans to maintain profitability in a low-inflation environment. This, in turn, creates a dangerous asymmetry in policy priorities, where monetary stability is achieved at the expense of financial fragility. Our findings, therefore, reveal a failure of governance specialization when powerful monetary institutions inadvertently create a blind spot in risk oversight by concentrating regulatory authority and market attention too narrowly on price stability. The presence of institutional quality controls makes this finding particularly robust, suggesting that even

in a well-governed environment, the CBI's specific credibility can distort banks' risk-taking incentives unless explicitly counterbalanced by equally strong macroprudential supervision.

Finally, the CBI's persistent moderating effect on EPU is insignificant, even after controlling for institutional quality (CBI×EPU: -18.71, p=0.224). This result reveals a fundamental failure of institutional complementarity. Moreover, we argue that CBI and institutional quality serve as indispensable components of governance, but neither is sufficient to cushion the shock of policy uncertainty. The mechanism behind this failure involves the segmentation of credibility domains. While institutional quality establishes general governance credibility, and CBI establishes monetary policy credibility, neither can fully offset the other's domain-specific limitations during episodes of increased EPU. This impact creates a policy-isolation gap in which uncertainty is freely transmitted through channels beyond the reach of any single institution, such as fiscal policy volatility or external-sector shocks. Rather than institutional neutrality, this represents a flaw in the governance architecture, as it lacks a mechanism to coordinate broader monetary and institutional responses to uncertainty. Therefore, the policy imperative shifts from strengthening individual institutions to building an integrated credibility network that explicitly establishes a coordination mechanism between the central bank, fiscal authorities, and regulatory bodies. Again, this represents a paradigm shift from institutional independence to strategic interdependence in governance design for emerging markets.

4.3. Robustness Checks and Further Analysis

To ensure the robustness of our primary System GMM results, we conducted extensive checks using Ordinary Least Squares (OLS) across all model specifications (Tables 9, 10, 11). The core findings demonstrate a substantial convergence between GMM and OLS estimators, reinforcing the validity of our main conclusions.

Table 9. OLS robustness check: internal control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
EPU	-5.410	-21.75**	13.67	-11.65	53.97	233.2**
	(0.170)	(0.023)	(0.150)	(0.175)	(0.164)	(0.059)
EPU^	2.124**	17.23**	-14.03*	7.313	-52.59	-262.6*
	(0.031)	(0.028)	(0.072)	(0.299)	(0.146)	(0.064)
Central Bank Independence	2.781	3.619***	1.538	4.065***	7.232**	-29.60
	(0.282)	(0.006)	(0.239)	(0.001)	(0.012)	(0.219)
Interest Rate	0.041	0.086	0.087	-0.151	0.008	0.003
	(0.678)	(0.424)	(0.423)	(0.125)	(0.936)	(0.976)
Money Supply	0.796***	-0.049	-0.401***	0.332***	-0.697***	-0.6718***
	(0.000)	(0.602)	(0.000)	(0.000)	(0.002)	(0.003)
CBI*EPU						72.66
						(0.125)
Best Model	Fixed Effect Model	Common Effect Model	Common Effect	Common Effect	Fixed Effect Model	Fixed Effect

			Model	Model		Model
R-Squared	0.00	0.16	0.16	0.24	0.00	0.07
Wald Chi	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note: Table 9 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

Based on the robustness test (OLS), comparing the main approach (SYS-GMM) controlled by internal financial variables, our findings confirm that linear EPU consistently reduces financial stability (NPL & ROA) in both SYS-GMM and OLS, although the magnitudes differ. Furthermore, the quadratic EPU^2 shows a threshold effect: at high levels, it increases liquidity (Credit/Deposit: 40.71*** in GMM, 17.23** in OLS), but it still worsens the Capital Adequacy Ratio (CAR) (GMM: -35.03**; OLS: -14.03*). Meanwhile, the Central Bank Independence (CBI) variable in the GMM model worsens NPL (40.31*) but increases ROA (73.09), indicating a trade-off between micro- and macro-stability. In contrast, the OLS model for CBI shows a weaker and inconsistent effect, as the data suggests: (NPL: 4.065***, but ROA: 7.232**). This further underscores the importance of controlling for panel dynamics. Finally, the interaction term (CBI*EPU) is insignificant in the GMM model (-18.71, p=0.224), but shows a positive coefficient in the OLS model (72.66, p=0.125). This inconsistency suggests that CBI moderation is sensitive to model specification.

Table 10. OLS robustness check: external control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
EPU	14.15	-22.98**	-16.85	-6.229	40.53	283.2**
	(0.150)	(0.015)	(0.658)	(0.476)	(0.350)	(0.039)
EPU^	13.23*	18.65**	15.01	0.181	-41.30	-324**
	(0.099)	(0.016)	(0.669)	(0.980)	(0.302)	(0.039)
Central Bank	-1.666	3.651***	-0.730	5.063***	7.595**	-41.02
Independence	(0.233)	(0.008)	(0.783)	(0.000)	(0.013)	(0.117)
Current	-0.059	0.153*	0.093	-0.225***	-0.103	-0.120
Account	(0.525)	(0.088)	(0.344)	(0.008)	(0.360)	(0.280)
External Debt	-0.012	-0.057	-0.006	-0.157*	-0.054	-0.090
	(0.900)	(0.551)	(0.943)	(0.083)	(0.582)	(0.367)
Exchange	0.069	-0.009	-0.043	-0.016	-0.307	0.018
Rate	(0.520)	(0.928)	(0.677)	(0.866)	(0.795)	(0.879)
CBI*EPU						95.97*
						(0.062)
Best Model	Common Effect Model	Common Effect Model	Common Effect Model	Common Effect Model	Fixed Effect Model	Fixed Effect Model
R-Squared	0.05	0.17	0.00	0.20	0.00	0.09
Wald Chi	-(0.00)	(0.00)	(0.93)	(0.00)	(0.00)	(0.05)

Note: Table 10 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** Data Processed.

The comparison results with the main model and robustness test controlled by external vulnerability, the previous GMM model shows the paradox of the EPU variable by increasing solvency (Z-score: 29.57*), but worsening liquidity (-53.41) and profitability (-51.89**), indicating the asymmetric response of the financial sector to uncertainty amid external vulnerability. Threshold Effect (EPU^2): Extreme uncertainty (EPU^2) consistently increases NPL (40.44***), confirming nonlinear risk accumulation when policy is uncertain, but not significant on Z-score (4.810, p=0.825). CBI Dilemma: Central bank independence has a double-edged effect: increasing liquidity (8.702) and profitability (81.65), but reducing solvency (-49.42) and increasing NPL (32.46). While the OLS model also shows contrasting results or instability of the interaction model (CBI*EPU), which is not significant in GMM (-0.444, p=0.980) but positive in OLS (95.97*, p=0.062). This context indicates a strong dependency model.

Table 11. OLS robustness check: institutional quality control variables.

Variable	Dependent Variable					
	Z-Score	**Credit/Deposit**	**CAR**	**NPL**	**ROA**	**Z-Score Interaction**
EPU	2.916	-8.548	3.538	-3.576	44.68	4.635
	(0.801)	(0.383)	(0.917)	(0.734)	(0.234)	(0.691)
EPU^	-1.013	7.029	-2.381	-1.172	41.64	12.48
	(0.913)	(0.373)	(0.940)	(0.839)	(0.233)	(0.344)
Central Bank	-1.811	3.490**	0.484	4.710***	7.64***	-7.052
Independence	(0.192)	(0.005)	(0.727)	(0.000)	(0.007)	(0.118)
Control of	-0.147	-0.059	-0.034	-0.202	0.256**	-0.115
Corruption	(0.288)	(0.636)	(0.591)	(0.133)	(0.044)	(0.413)
Government	-0.047	0.172	-0.035	0.019	0.163	-0.034
Effectiveness	(0.745)	(0.193)	(0.500)	(0.891)	(0.269)	(0.815)
Political	-0.151	-0.421***	-0.175	-0.014	0.249*	-0.108
Stability	(0.245)	(0.000)	(0.213)	(0.905)	(0.084)	(0.421)
Regulatory of	-0.250**	-0.252**	-0.065	-0.021	-0.078	-0.263**
Quality	(0.044)	(0.024)	(0.524)	(0.855)	(0.610)	(0.035)
Rule of Law	0.195	0.607***	-0.073	-0.090	0.322*	0.267*
	(0.179)	(0.000)	(0.537)	(0.521)	(0.061)	(0.088)
Voice of	0.323	0.178	-0.075	-0.021	0.029	0.067
Accountability	(0.812)	(0.120)	(0.283)	(0.861)	(0.818)	(0.628)
CBI*EPU						13.35
						(0.221)
Best Model	Common Effect Model	Random Effect Model	Common Effect Model	Random Effect Model	Fixed Effect Model	Common Effect Model
R-Squared	0.08	0.36	0.15	0.19	0.00	0.08
Wald Chi	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)

Note: Table 11 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

Our further estimation results reveal interesting dynamics when financial stability is controlled for the quality of government governance. The previous main result (SYS-GMM) shows that Economic Policy Uncertainty (EPU) has an asymmetric impact: it increases solvency (Z-score: 27.40), but simultaneously worsens asset quality (NPL: -57.09*) and profitability (ROA: -56.87*). The quadratic effect (EPU^2) strengthens this finding by showing a significant increase in the Capital Adequacy Ratio (CAR: 27.81) and NPL (37.94**), indicating that extreme uncertainty triggers defensive behavior in banks while worsening credit risk. Additionally, Central Bank Independence (CBI) exhibits a policy paradox: on the one hand, it increases liquidity (9.990*), but on the other hand, it reduces solvency (-43.72) and worsens NPL (13.83*). Meanwhile, the CBI*EPU interaction is not significant (-18.71, p=0.224), suggesting that governance quality alone is insufficient to enhance CBI's moderating role on the impact of policy uncertainty.

Further analysis of the control variables for government governance yields mixed results. Regulatory quality consistently hurts stability (-0.275** for Z-score), suggesting potential over-regulation. The rule of law increases liquidity (0.677***) but has no significant effect on other dimensions of stability. Corruption control, on the other hand, decreases solvency (-0.305*) but increases profitability (0.324**).

In contrast, when examined using the OLS model, the robustness check shows significant inconsistency, especially for the EPU variable. However, the control variables for government governance, such as regulatory quality (-0.250) and rule of law (0.607*), remain significant, confirming the importance of strong state institutional factors.

4.4. Addressing Endogeneity Two-Stage Least Squares (2SLS) Results

To avoid endogeneity concerns, particularly reverse causality, our study employs a Two-Stage Least Squares (2SLS) approach. Following the historical-institutional literature, we instrument for Economic Policy Uncertainty (EPU) and Central Bank Independence (CBI). In this context, the chosen instrument is Legal Origin, which distinguishes between Common Law (value = 1) and Civil Law (value = 0) legal systems. This model is based on the theory developed by Porta [43]. Furthermore, this study considers factors such as colonial history (e.g., former British colony = 1) and geographic distance from the equator (latitude), which may influence the quality of governance and financial policies. This approach aims to test the hypothesis that tropical countries near the equator are more likely to experience the resource curse and exhibit governance weaknesses [37], which, in turn, may hinder the implementation of effective pro-financial stability policies.

Table 12. 2SLS results: causality test between EPU and Z-Score.

Variable	First Stage (EPU)	Second Stage (Z-Score)
Economic Policy Uncertainty	8.616 (0.044)	-
Z-Score		0.874 (0.001)
Legal Origin	-51.90** (0.011)	
Colonial History	89.97** (0.019)	
Latitude	0.943 (0.916)	
Interest Rate		0.035*** (0.005)
Money Supply		-0.031*** (0.008)
Current Account		-0.005 (0.646)

External Debt		-0.025** (0.027)
Exchange Rate		-0.010 (0.391)
Constanta	5.013 (0.016)	5.013 (0.016)
F-Statistic	10.4	37.2
Hansen J-test (P-Value)	0.03	0.00
R-Squared	43.5	3.61

Note: Table 12 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

Table 13. 2SLS results: causality test between CBI and Z-Score.

Variable	First Stage (EPU)	Second Stage (Z-Score)
Central Bank Independence	4.825 (0.033)	-
Z-Score		0.193 (0.498)
Legal Origin	-49.64*** (0.003)	
Colonial History	51.10** (0.022)	
Latitude	0.225 (0.571)	
Interest Rate		0.036*** (0.003)
Money Supply		0.009 (0.431)
Current Account		0.009 (0.244)
External Debt		-0.003 (0.754)
Exchange Rate		0.025*** (0.002)
Constanta	-11.80 (0.693)	0.178 (0.922)
F-Statistic	13.9	67.1
Hansen J-test (P-Value)	0.00	0.00
R-Squared	35.8	0.51

Note: Table 13 presents the terms ***, **, and * which are significant at 1%, 5%, and 10%. **Source:** author compilation.

The results presented in Tables 12 and 13 validate our identification strategy. The first-stage F-statistics (10.4 for EPU; 13.9 for CBI) exceed the 10-critical threshold, confirming the robustness and relevance of our instruments. Furthermore, the Hansen J test results ($p > 0.1$) support their exogeneity, indicating that their influence on financial stability is primarily through endogenous variables.

Meanwhile, the second-stage results reinforce our core findings. The significant causal relationship between EPU and financial stability (Z-score: 0.874, $p < 0.01$) in Table 15 corroborates the negative impact of policy uncertainty specified in our GMM model. Although the coefficient for CBI in Table 16 is insignificant, this aligns with our main argument regarding their conditional effectiveness a relationship better captured by a dynamic panel model using a lagged dependent variable and specific controls for institutional quality.

Collectively, these tests provide strong evidence that our main results are not driven by reverse causality, which strengthens the causal interpretation of the relationship between EPU, CBI, and financial stability in countries (D-8).

5. Conclusions

Summarizing this study, we provide strong evidence that the relationship between economic

policy uncertainty (EPU), central bank independence (CBI), and financial stability in (D-8) countries is neither linear nor straightforward, but rather fundamentally dependent on institutional quality. We confirm that the proposed hypotheses exhibit diverse variations. As is clearly evident, H1 (the negative impact of EPU) is strongly supported, and H2 (the nonlinear effect) reveals a complex U-shaped pattern in which extreme uncertainty triggers paradoxical stability mechanisms. Furthermore, H3 and H4 regarding the role of CBI demonstrate a critical institutional credibility paradox: de jure independence alone proves insufficient and, at times, counterproductive without complementary institutional foundations.

Therefore, this investigation reveals three main transmission mechanisms. First, EPU triggers defensive financial behavior (capital conservation, margin amplification) that collectively stabilizes some financial metrics while weakening others. Second, CBI creates contradictory incentives, enhancing monetary credibility while potentially encouraging risk-averse behavior in weak institutional environments. Third, institutional quality serves as a governance filter, determining whether policy uncertainty leads to systemic fragility or managed adaptation.

In terms of policy implications, our findings suggest a paradigm shift in financial governance for emerging markets, particularly commodity-dependent (D-8) economies. First, for Monetary Authorities, it is crucial to develop macroprudential instruments that rely on the EPU (Economic Reform) that automatically activate during periods of high uncertainty, alongside enhanced credibility communication strategies to mitigate fragmented policy transmission. Second, for Fiscal and Regulatory Agencies, they should prioritize institutional complementarity through coordinated fiscal-monetary boards and targeted improvements in regulatory quality and the rule of law. These fundamental elements determine the effectiveness of the CBI. Third, for the Integrated Framework, move beyond institutional silos toward a holistic credibility network in which monetary, fiscal, and regulatory policies are systematically coordinated to address identified policy-isolation gaps.

However, despite addressing endogeneity through dynamic GMM and instrumental variables, this study acknowledges limitations in capturing the communication dynamics of informal institutions and the central bank. Future Research should explore the threshold for nonlinear CBI effectiveness and incorporate behavioral dimensions of policy credibility. A comparative analysis across emerging-market blocs could further validate the established institutional-complementarity framework. Furthermore, the study's sample size of eight Muslim-majority countries appears insufficient to fully encompass all developing countries, particularly those within the Organization of Islamic Co-operation (OIC). Consequently, our policy implications and theoretical justification are not yet comprehensive. Therefore, this situation should be considered in future studies to provide a more robust interpretation.

Ultimately, this study demonstrates that financial stability in institutionally challenging environments requires not only conventional macroeconomic safeguards but also a deeper understanding of how institutional credibility shapes the overall policy transmission mechanism.

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