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Determinants of Banking Stability in the G8: An Interaction Analysis under Competition and Economic Policy Uncertainty

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Abstract

This study investigates the determinants of banking financial stability in the G8 countries over the period (2004-2021), using the FGLS and MMQR estimation methods, while also applying a dynamic causality test to examine bidirectional and temporal relationships among the variables. The results indicate that bank-specific internal factors negatively affect stability, while higher market concentration combined with strong interbank linkages increases systemic risk. Economic policy uncertainty does not alter this relationship. The findings also show that financial inclusion raises operational complexity and risk exposure, although it becomes relatively safer in more concentrated banking markets and provides a modest buffering effect against policy volatility. Financial development contributes to improved stability, but its positive impact weakens under excessive competition, and economic uncertainty does not significantly influence this association. Governance quality strengthens banking stability, with a more pronounced effect in concentrated markets, while remaining unaffected by policy uncertainty. The study recommends reinforcing independent supervision, enhancing monitoring mechanisms, promoting secure digital transformation, restructuring operational models of large banks, and improving transparency and financial disclosure to support long-term banking stability.

Keywords: Financial stability, Financial dimensions, Institutional quality, Banking concentration, Economic policy uncertainty

JEL classification: : C33, E44, G21, G28, O16.

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1. Introduction

Banking stability is crucial for financial Stability and economic growth, especially in light of systemic weaknesses exposed by the 2008 crisis and COVID-19. It is influenced by financial, institutional, and regulatory factors within uncertain macroeconomic and political environments (Zanfack et al., 2024; Simona et al., 2025). This issue is particularly significant in G8 countries facing increased bank competition and policy uncertainty. Stability supports investor confidence and economic resilience by enabling the sector to manage risks and absorb shocks without harming performance (Kurtoglu & Durusu-Ciftci, 2024).

Financial performance indicators such as capital structure, asset quality, and operational efficiency are central to banking stability, as they reflect a bank's ability to absorb losses and limit systemic risk (Liang et al., 2024). Financial inclusion has emerged as an important stabilizing factor, ensuring wider and fairer access to banking services, expanding the customer base, diversifying funding

sources, and spreading risks more evenly to enhance stability during crises (Setianto et al., 2025; Oanh et al., 2023; Antwi et al., 2024). Financial development is another key determinant, reflecting the sophistication of the financial sector in terms of access, depth, and efficiency. It is measured by domestic credit to the private sector or the World Bank's Financial Development Index (Syed et al., 2022; Atellu & Muriu, 2021). While it can promote stability through better resource allocation and risk management (Ndoya et al., 2023), unchecked financial liberalization in weak regulatory settings may trigger vulnerabilities, known as the financial development paradox (Elgharib, 2024). At the institutional level, the quality of governance is a critical factor in ensuring banking stability. Key institutional elements, including Control of Corruption, Regulatory Quality, Rule of Law, and Government Effectiveness, shape the environment in which banks operate and influence their adherence to legal and supervisory standards (Basnayake et al., 2025). Strong institutions enhance regulatory enforcement and reduce misconduct, thereby promoting financial system stability. In contrast, institutional weaknesses often lead to risky banking practices and recurrent crises (Setianto et al., 2025).

The effects of financial and institutional determinants on banking stability are not uniform and can be significantly influenced by external conditions, particularly the level of banking competition and economic policy uncertainty (EPU). High competition may enhance the positive impact of well-capitalized and efficient banks by encouraging better risk management and innovation, but it can also increase vulnerability if banks engage in excessive risk-taking to maintain profitability. Similarly, elevated policy uncertainty can weaken the stabilizing effects of sound financial and institutional practices by discouraging lending, increasing capital costs, and complicating risk management decisions. Understanding how these factors operate under varying competitive and policy environments is therefore crucial for assessing banking stability and resilience, especially in advanced economies such as the G8, where both competitive pressures and policy uncertainty are prominent and persistent (Amendola et al., 2025; Antwi et al., 2024; Trinh & Tran, 2023; Tran et al., 2025; Shabir et al., 2021).

This study investigates the dynamic interactions of financial and institutional determinants under banking competition and economic policy uncertainty, and their combined impact on banking stability in the G8 countries over the period 2004–2021. Rigorous methodologies, including FGLS and MMQR, are employed to ensure robust results. Additionally, the dynamic causality analysis of Juodis et al. (2021) is applied to identify bidirectional and temporal relationships among the variables, providing deeper insights into the mechanisms linking financial, institutional, and policy factors with banking stability. The G8 economies are selected due to their advanced financial systems and governance structures, along with persistent economic and political challenges, which provide a rich empirical setting. The study fills several gaps in the existing literature. First, it jointly investigates financial and institutional determinants while accounting for their structural interactions with competition and uncertainty, an aspect that has received limited attention in prior studies. Second, it adds value by employing two alternative indicators of financial stability - Z-scores and NPLs - to strengthen the robustness of the estimates and provide a more comprehensive assessment of banking risk. Third, it focuses on the G8 economies, which remain relatively understudied despite their global influence, thereby contributing a unique empirical dimension. Fourth, the study applies modern quantitative techniques suitable for heterogeneous data structures, enhancing the strength and policy relevance of the findings. Finally, it provides theoretical and policy-oriented insights to guide regulatory frameworks that balance financial openness with systemic resilience, supporting sustainable banking stability amid global economic volatility.

The study's structure is as follows: Section 2 reviews the literature, Section 3 outlines the data, model, and methods, Section 4 presents the results, and Section 5 discusses policy implications and future research directions.

2. Literature review

Recent studies have emphasized the impact of internal financial indicators and institutional factors on banking stability. Key elements such as profitability, capital adequacy, loan quality, and financial inclusion have emerged as central determinants of stability. Liang et al. (2024) showed that digital financial development in China enhances bank profitability and risk resistance, though challenges such as non-performing loans and weak loan provisioning persist. In Southeast Europe, Zeqiraj et al. (2021) demonstrated a positive long-term link between profitability and stability. Nasim et al. (2024), comparing G7 and E7 countries, confirmed the importance of capital adequacy and macroeconomic stability, noting that effects differ based on economic development levels. In Nigeria, Ozili (2019) highlighted the stabilizing role of banking efficiency and financial depth, while poor capital adequacy remains a risk. Operational inefficiencies, particularly high cost-to-income ratios, reduce shock absorption capacity (Syed et al., 2022; Alihodžić et al., 2020). Güngör (2023) emphasized the role of income diversification in Turkey, though excessive size and asset spread may undermine stability. In Jordan, Kharabsheh and Gharaibeh (2022) found that capital adequacy and SME lending promote stability, while liquidity and credit risks remain key concerns. Several recent studies highlight the crucial role of institutional quality in shaping the impact of financial inclusion on banking stability. Setianto et al. (2023) found that financial inclusion has no significant effect in contexts with weak institutions, but becomes a strong stabilizing factor once governance quality improves. Similarly, Oanh et al. (2023) emphasized that the inclusion–stability relationship varies by level of financial development. In less-developed countries, inclusion supports stability, whereas in advanced economies, it may pose risks due to over-indebtedness or regulatory gaps. Regional studies from Asia and Africa, such as Nugrohowati and Ash Shidiqie (2025), confirmed that financial inclusion fosters stability in low- and middle-income countries when combined with institutional reforms. In Pakistan, Sajid et al. (2023) also demonstrated that inclusion, mediated by institutional quality, enhances financial system stability. Regarding financial development, it is generally seen as a key factor in improving efficiency and stability. Pal and Bandyopadhyay (2022) supported this in low-income countries, while Oanh et al. (2023) and Syed et al. (2023) cautioned against unchecked expansion, revealing that its effects depend on institutional context and may increase non-performing loans in emerging markets.

Institutional quality has become increasingly central in financial research due to its foundational role in enhancing banking stability and stability. Strong governance, effective anti-corruption frameworks, and sound regulatory institutions are widely recognized as essential for reducing systemic risks. Empirical studies support this view. Setianto et al. (2025), using dynamic panel threshold models for 78 countries, found that financial inclusion improves stability only when institutional quality surpasses a certain threshold. Ha and Nguyen (2023), analyzing 157 ASEAN banks, revealed that without institutional progress, inclusion may destabilize the system. Similarly, Yen et al. (2023) and Nugrohowati and Ash Shidiqie (2025) confirmed that institutional quality significantly reduces instability in low- and middle-income countries, while its effect is weaker in high-income contexts. In Ethiopia, Yitayaw et al. (2022) identified the rule of law and anti-corruption effectiveness as key drivers of stability. Shabir et al. (2021) and Ertugrul et al. (2019) also emphasized the mitigating role of strong institutions in the face of economic and political uncertainty. Sajid et al. (2023) noted that institutional quality not only enhances financial stability but also supports green development. Globally, studies by Jungo et al. (2023), Ullah et al. (2024),

and Sifrain (2021) confirmed that governance, financial literacy, and regulatory strength are vital for safeguarding banking systems, especially in fragile economies.

Banking competition is often viewed as a driver of efficiency and innovation, yet its impact on financial stability remains contested. Two opposing hypotheses dominate the debate: "competition–stability" versus "competition–fragility." Empirical evidence reflects this complexity. Alihodžić et al. (2020), using the Lerner index, found that moderate competition in the Balkans and Turkey supports stability, as reflected in improved Z-scores and stable asset quality. Similarly, Amendola et al. (2025) reported that decreased market concentration in Italy enhanced bank performance and stability. Antwi et al. (2024), using system GMM across 60 developing countries, confirmed that competition promotes stability, particularly in well-governed systems. Conversely, Rakshit and Bardhan (2020) found that intensified competition in India raised NPLs under weak regulation, encouraging risky lending. Yitayaw et al. (2022) and Desalegn et al. (2023) observed that high concentration and excessive rivalry in Ethiopia and China, respectively, undermined financial stability. Shabir et al. (2021) noted a nonlinear link, suggesting an optimal competition threshold. Syed et al. (2022) further showed, through ARDL and NARDL models, that the competition–stability relationship is asymmetric and complex, with no significant effect from foreign bank presence. Recent literature increasingly emphasizes the destabilizing impact of economic policy uncertainty (EPU) on financial systems. Ali et al. (2023), examining 23 countries, found that higher EPU significantly reduces financial stability, reflected in lower Z-scores, though its impact on asset quality differs across advanced economies due to institutional disparities. Ozili (2022) reported that EPU tends to reduce NPLs in EU and G7 countries, possibly owing to stronger regulatory frameworks, while its effects in other regions remain ambiguous. In emerging markets, Olalere and Mukuddem-Petersen (2023) demonstrated that both EPU and geopolitical risks undermine financial stability in BRICS countries by increasing systemic vulnerabilities. In the U.S., Tran et al. (2025) showed that rising EPU negatively affects profitability and return stability, particularly in large, risk-exposed banks. Danisman and Tarazi (2023) confirmed that banks with weaker capital and liquidity are more vulnerable to EPU shocks. At the micro level, Zhang and Wang (2023) found that policy uncertainty in China increases earnings opacity and reduces market transparency. Desalegn et al. (2023) added that uncertainty weakens resource allocation efficiency, exacerbating systemic fragility in the banking sector.

While numerous studies have explored financial and institutional factors affecting banking stability, important gaps persist in the literature. Most research has focused on individual determinants, paying limited attention to how these factors interact with external pressures such as banking competition and economic policy uncertainty (EPU). Moreover, evidence from advanced economies, particularly the G8, remains scarce, despite their complex financial systems and high exposure to policy and market fluctuations. In addition, few studies employ multiple indicators of banking stability or advanced econometric methods to capture heterogeneous effects across banks and countries. By addressing these gaps, the present study investigates the combined effects of financial and institutional determinants under varying levels of competition and EPU, offering a more nuanced and comprehensive understanding of banking resilience in G8 economies.

3. Data, variables and methodology

This study investigates the financial and institutional determinants of banking sector stability in the G8 countries over the period 2004–2021, with a particular focus on their effects under banking competition and economic policy uncertainty, using a balanced panel dataset. The empirical model uses a banking sector stability index as the dependent variable, with the following independent variables: bank-specific internal variables, financial inclusion, financial development, and governance quality, as well as banking competition and policy uncertainty as contextual factors

influencing the relationships. All indicators used to construct these variables were obtained directly from official international databases in their original annual form (e.g., WDI, FAS, and IMF) without any modifications. Composite financial and institutional indices were constructed using Principal Component Analysis (PCA). The selection of variables for each index was guided by theoretical relevance and empirical evidence. Specifically, the bank-specific internal variable index is the first principal component of ROA, CAR, and CI, explaining approximately 51.7% of the total variance and capturing banks' internal performance, including profitability, capital adequacy, and operational efficiency. The financial inclusion index represents the first principal component of the number of ATMs and bank branches, accounting for 62.8% of the total variance, as these indicators best reflect access to and availability of financial services. The financial development index captures the depth and advancement of each country's financial system, focusing on variables that are consistently available and comparable across G8 countries. Finally, the governance quality index represents the first principal component of PS, RL, and VA indicators, explaining around 90.1% of the total variance, thus reflecting institutional governance dimensions such as government effectiveness, rule of law, and voice and accountability. Alternative indicators were considered; however, they were excluded due to limited data availability, comparability issues, or potential redundancy with the selected variables. These clarifications ensure that the construction of the composite indices is transparent, theoretically grounded, and methodologically justified. This approach allows for a robust assessment of both financial and institutional factors affecting banking stability. (See Table 1), as follows:

$$Z - Score_{it} = \beta_0 + \beta_1 Interbank_{it} + \beta_2 FI_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 BAC_{it} + \beta_6 EPU_{it} + \varepsilon_{it} \quad (1)$$

$$Z - Score_{it} = \beta_0 + \beta_1 Interbank_{it} + \beta_2 FI_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 BAC_{it} + \beta_6 EPU_{it} + \beta_7 (Interbank_{it} * BAC_{it}) + \beta_8 (FI_{it} * BAC_{it}) + \varepsilon_{it} \quad (2)$$

$$Z - Score_{it} = \beta_0 + \beta_1 Interbank_{it} + \beta_2 FI_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 BAC_{it} + \beta_6 EPU_{it} + \beta_7 (FD_{it} * BAC_{it}) + \beta_8 (GOV_{it} * BAC_{it}) + \varepsilon_{it} \quad (3)$$

$$Z - Score_{it} = \beta_0 + \beta_1 Interbank_{it} + \beta_2 FI_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 BAC_{it} + \beta_6 EPU_{it} + \beta_7 (Interbank_{it} * EPU_{it}) + \beta_8 (FI_{it} * EPU_{it}) + \varepsilon_{it} \quad (4)$$

$$Z - Score_{it} = \beta_0 + \beta_1 Interbank_{it} + \beta_2 FI_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 BAC_{it} + \beta_6 EPU_{it} + \beta_7 (FD_{it} * EPU_{it}) + \beta_8 (GOV_{it} * EPU_{it}) + \varepsilon_{it} \quad (5)$$

Table 1 - Variable description

Variables		Description	Sources
Dependent variable			
Z-score		Banking financial stability reflects the resilience of a country's banking system, measured by the Z-score, which compares capital and profitability to return volatility.	WDI
Independent variables			
Bank internal indicators (Interbank)	ROA	Commercial banks' after-tax net income to yearly averaged total assets	WDI
	CAR	Ratio of bank capital and reserves to total assets	WDI
	CI	Operating expenses of a bank as a share of sum of net-interest revenue and other operating income	WDI
FD		Measures the depth, access, and efficiency of financial institutions and financial markets in an economy, reflecting the overall development of the financial system.	IMF
Financial Inclusion (FI)	ATMs	Number of ATMs per 100,000 adults	WDI - FAS
	BR	Number of commercial bank branches per 100,000 adults	WDI - FAS
Corporate Governance (GOV)	PS	Political Stability and Absence of Violence/Terrorism: Percentile Rank	WDI
	RL	Rule of Law: Percentile Rank	WDI
	VA	Voice and Accountability: Percentile Rank	WDI
BAC		Assets of five largest banks as a share of total commercial banking assets	WDI
EPU		An index that quantifies uncertainty by tracking the frequency of newspaper articles referencing economic, policy, and uncertainty-related terms.	www.policyuncertainty.com

Given the panel nature of the data for the G8 countries and the potential presence of cross-sectional interdependencies, the study accounted for the issue of cross-sectional dependence (CSD) using a set of advanced tests, including CD (Pesaran, 2015, 2021), CD_w (Juodis & Reese, 2021), CD_{w^+} (Fan et al., 2015), CD* (Pesaran & Xie, 2021), and CD_{BKP} (Bailey et al., 2016). Furthermore, slope heterogeneity was examined using the tests proposed by Pesaran and Yamagata (2008), Blomquist, and Westerlund (2013). The presence of heteroscedasticity was tested through the Wald test, while serial correlation was assessed using the Wooldridge test. At the estimation stage, the Feasible Generalized Least Squares (FGLS) method was employed due to its ability to correct for heteroscedasticity and serial correlation, thereby improving estimation efficiency compared to classical methods such as OLS. This makes it particularly suitable for handling small- to medium-sized panel datasets. However, recognizing the potential limitations of FGLS in the presence of strong cross-sectional dependence or heterogeneity across units, the analysis was further reinforced using the Method of Moments Quantile Regression (MMQR) developed by Machado and Silva (2019). This approach is particularly advantageous in capturing nonlinear and heterogeneous effects across different quantiles of the banking stability index, allowing for a deeper understanding of how financial and institutional variables affect banking stability at varying levels. Consequently, it provides more robust and comprehensive estimates of the results. To address potential reverse

causality between banking stability and financial, institutional, and governance factors, we incorporate dynamic panel causality tests following Juodis et al. (2021). This modern methodology is particularly suitable for heterogeneous panel data, accounts for cross-sectional dependence, and complements our FGLS and MMQR estimations by providing a robust framework to assess directional relationships.

4. Results and discussions

4.1. Preliminary analysis

Before the econometric estimation, a descriptive analysis based on 144 observations was conducted (Table 2), revealing substantial variation across the sample countries. The financial stability index (Z-score) averaged 16.23 (range: 5.06–35.36; SD = 7.49), indicating differences in banking resilience, while the composite index of bank-specific internal factors averaged -4.63e-09 (range: -2.73–3.56; SD = 1.24), indicating heterogeneity in financial performance and operational efficiency, particularly in terms of ROA and capital adequacy. Similarly, the financial development index (mean = 0.78; range: 0.46–0.95; SD = 0.12) and the financial inclusion index (mean = -2.38e-09; range: -2.18–2.49; SD = 1.12) indicate differences in market advancement and access to banking services. The institutional quality index, averaging 7.98e-09 (range: -4.34–1.71; SD = 1.64), further shows disparities in governance effectiveness across countries. Market structure and macroeconomic conditions also vary, as indicated by the banking competition index (BAC, mean = 62.62; range: 29.93–97.29; SD = 18.44) and the economic policy uncertainty index (EPU, mean = 156.57; SD = 92.47). Tests for normality (Jarque–Bera) confirmed deviations from the normal distribution, emphasizing the need for advanced estimation techniques. Furthermore, Table 2 shows that pairwise correlations among the independent variables are relatively low, and VIF values below 10 (mean = 3.47) suggest no multicollinearity issues, supporting the reliability of subsequent econometric results.

Table 2 - Descriptive statistics

Variables	Z-score	Interbank	FI	FD	GOV	BAC	EPU
Mean	16.234	-4.63e-09	-2.38e-09	0.788	7.98e-09	62.622	156.574
Maximum	35.169	3.564	2.499	0.955	1.717	97.295	490.728
Minimum	5.055	-2.733	-2.182	0.462	-4.341	29.938	45.340
Std. Dev.	7.492	1.245	1.120	0.124	1.644	18.445	79.817
Jarque-Bera	31.89	3.278	2.944	34.71	100.9	8.743	85.09
Probability	0.000	0.194	0.229	0.000	0.000	0.012	0.000
Observations	144	144	144	144	144	144	144

Table 3 - Correlation and VIF results

Variables	Z- score	Interbank	FI	FD	GOV	BAC	EPU
Z-score	1	-	-	-	-	-	-
Interbank	-0.151	1	-	-	-	-	-
FI	-0.125	0.068	1	-	-	-	-
FD	0.529	-0.072	-0.272	1	-	-	-
GOV	0.356	0.174	-0.327	0.628	1	-	-
BAC	-0.099	0.126	-0.341	0.028	0.408	1	-
EPU	-0.049	0.192	-0.321	-0.115	-0.078	0.129	1
VIF	-	1.42	1.44	6.50	7.97	2.22	1.28
1/VIF	-	0.705	0.692	0.153	0.125	0.451	0.780

4.2. Pre-estimation diagnostic tests

The strong economic and financial interconnections among G8 countries, such as integrated banking systems, similar regulatory frameworks, and shared exposure to global competition and policy uncertainty, increase the likelihood of cross-country shock transmission. Changes in macroeconomic conditions within one country may indirectly influence the financial stability of others through trade, investment, and monetary channels.

Accordingly, testing for cross-sectional independence is essential, as neglecting it may result in biased and inconsistent panel data estimates. To address this, five updated tests were applied: CD (Pesaran, 2015; 2021), CD_w (Juodis and Reese, 2021), CD_{w^+} (Fan et al., 2015), CD* (Pesaran and Xie, 2021), and CD_{BKP} (Bailey et al., 2016). As shown in Table 4, all tests rejected the null hypothesis of cross-sectional independence at the 1% and 5% levels, confirming significant interdependence.

Table 4 - Pre-estimation diagnostic tests for panel data

	Cross-sectional Dependence				
	CD	CD_w	CD_{w+}	CD*	CDB_{KP}
Z-score	1.06 (0.291)	9.16* (0.000)	56.77* (0.000)	0.41 (0.683)	0.874**
Interbank	8.99* (0.000)	-1.50 (0.133)	51.72* (0.000)	1.07 (0.82)	0.910*
FI	6.98* (0.000)	-2.12** (0.034)	51.33* (0.000)	3.17** (0.002)	0.520*
FD	2.28** (0.022)	-1.24 (0.216)	39.45* (0.000)	1.13 (0.261)	0.868**
GOV	1.71*** (0.087)	-0.65 (0.518)	35.45* (0.000)	1.97** (0.049)	0.709*
BAC	-1.28 (0.200)	-2.71** (0.007)	63.28* (0.000)	4.09* (0.000)	0.224***
EPU	15.36* (0.000)	-0.70 (0.481)	80.60* (0.000)	-2.66* (0.008)	1.012*
Slope Homogeneity					
	Δ		3.947 (0.000)*		

Pesaran and Yamagata	Δ_{adj}	5.296(0.000*)
Blomquist and Westerlund	Δ	2.052 (0.004**)
	Δ_{adj}	2.753 (0.006*)
Heteroscedasticity		
LM Test	76.99 (0.000*)	
LR Test	75.466 (0.000*)	
Wald Test	675.455 (0.000*)	
Autocorrelation		
Wooldridge test	269.808 (0.000*)	

Note: *, ** and *** represent significance at the 1%, 5%, and 10% levels, respectively.

Given the economic and institutional diversity among G8 countries, assuming homogeneous effects of financial stability determinants would be unrealistic. This inherent heterogeneity necessitates testing for variations in slope coefficients across countries. Accordingly, the Pesaran and Yamagata (2008) test, along with its modified version by Blomquist and Westerlund (2013), was employed. The statistically significant values of both the Δ and Δ_{adj} statistics confirmed the presence of slope heterogeneity. Therefore, the use of a flexible estimator such as possible generalized least squares (FGLS) is justified, as it effectively accounts for differences between countries and enhances the robustness of the results. Moreover, the results of the Wald test revealed that the null hypothesis of homoscedasticity was rejected at the 1% significance level across all models, indicating the presence of heteroscedasticity in the dataset. Similarly, the Wooldridge test results rejected the null hypothesis of no first-order serial correlation at the 1% level, confirming that serial correlation exists among the error terms. These findings further validate the appropriateness of using robust estimation techniques that can handle both heteroscedasticity and autocorrelation issues in the panel data analysis.

4.3. Baseline regressions

Following the preliminary tests, the determinants of banking stability in the G8 countries were estimated using both FGLS and MMQR methods. The results, presented in Table 5 and Figure 1, demonstrate a high degree of consistency across the two approaches, thereby strengthening the reliability and robustness of the findings.

The results indicate that bank-specific internal factors exert a negative effect on banking stability; specifically, a one-unit increase in the InterBank index reduces the Z-score by 0.741 units. This suggests that internal bank performance alone does not guarantee stability and may even introduce additional vulnerabilities if not supported by strong regulatory oversight. Historical evidence from the G8 countries further substantiates this interpretation. During the 2008 global financial crisis, institutions such as Northern Rock in the UK (2007–2008) and Commerzbank in Germany faced severe distress despite relatively solid operational structures, as high leverage and elevated operating costs intensified systemic fragility. In the United States, several major banks required extraordinary government intervention through TARP, illustrating how weaknesses in internal performance can swiftly translate into instability under systemic shocks. The COVID-19 crisis further highlighted this pattern across the G8. In countries such as Italy and France, banks with weaker internal buffers and tighter liquidity conditions were more exposed to instability risks, which were mitigated only

through large-scale policy measures, including liquidity injections, loan moratoria, and temporary capital relief. These episodes confirm that internal efficiency, in the absence of robust risk management and adequate regulatory support, can heighten financial fragility, as emphasized by Syed et al. (2022) and Alihodžić et al. (2020). Moreover, the interaction term (Interbank*BAC) is negative and significant, supporting the "concentration–fragility" hypothesis. Higher market concentration amplifies the destabilizing effects of interbank linkages, a pattern observed in concentrated banking systems such as those of France and Germany during the post-2008 adjustment period. By contrast, the interaction term (Interbank*EPU) is not significant, indicating that the domestic structure of interbank connections is not directly affected by fluctuations in economic policy uncertainty, which aligns with the relative insulation of interbank networks during COVID-19 due to strong central bank interventions across the G8 countries.

Financial inclusion (FI) exhibits a significant negative effect (-0.118) on banking stability. This negative, significant impact of financial inclusion on banking stability in G8 countries reflects the structural challenges posed by the rapid expansion of banking services. As banks expand their reach through broader branch networks and increased lending to more vulnerable client segments, operational complexity rises, and credit portfolios become riskier. This pattern was particularly evident after the 2008 financial crisis, when banks in the US and UK experienced declines in stability as aggressive outreach strategies aimed at restoring profitability contributed to heightened credit risk and a surge in non-performing loans. Similar developments occurred in Italy and Japan, where dense branch networks placed downward pressure on profitability and weakened overall resilience, a situation that became more pronounced during the COVID-19 pandemic as operational costs increased while revenues tightened. These observations align with the findings of Setianto et al. (2023), highlighting the potential trade-off between financial inclusion and banking stability. The positive and significant interaction term (FI*BAC) supports the "concentration–stability" hypothesis, indicating that financial inclusion can become a stabilizing force when strong and well-regulated banks dominate the market. This helps explain why countries such as Canada and Germany maintained strong stability indicators even while expanding financial access during crisis periods, owing to their highly effective supervisory and regulatory frameworks. Moreover, the weak but significant positive interaction term (FI*EPU) suggests that broader financial access can help absorb fluctuations in economic policy by diversifying funding sources and strengthening the stability of deposit bases. This mitigating effect was evident in France and Japan, where extensive access to banking services enhanced resilience during episodes of elevated policy uncertainty, including both the global financial crisis and the COVID-19 pandemic.

Financial development (FD) has a positive and significant impact (10.115) on banking stability, strengthening resilience through improved intermediation, portfolio diversification, and reduced reliance on short-term funding. Countries such as Canada and Japan demonstrated high stability during crises due to their deep and integrated financial markets, a pattern that aligns with the stabilizing role of mature financial systems highlighted by Pal and Bandyopadhyay (2022). Nevertheless, the interaction (FD*BAC) is negative and significant, indicating that the positive effect of financial development declines under higher banking competition, as more developed markets may induce risk-taking behaviors, supporting the "concentration–fragility" hypothesis. The interaction (FD*EPU) is positive but not significant, implying that financial development alone cannot fully counter the effects of economic policy uncertainty.

Financial development (FD) has a positive and significant impact (10.115) on banking stability, strengthening resilience through improved intermediation, portfolio diversification, and reduced reliance on short-term funding. Countries such as Canada and Japan demonstrated high stability during crises due to their deep and integrated financial markets, a pattern that aligns with the stabilizing role of mature financial systems highlighted by Pal and Bandyopadhyay (2022). Nevertheless, the interaction term (FD*BAC) is negative and significant, indicating that the positive

effect of financial development declines under higher banking competition, as more developed markets may encourage greater risk-taking incentives, supporting the "concentration–fragility" hypothesis. The interaction (FD*EPU) is positive but not significant, implying that financial development alone cannot fully mitigate the destabilizing pressures associated with economic policy uncertainty.

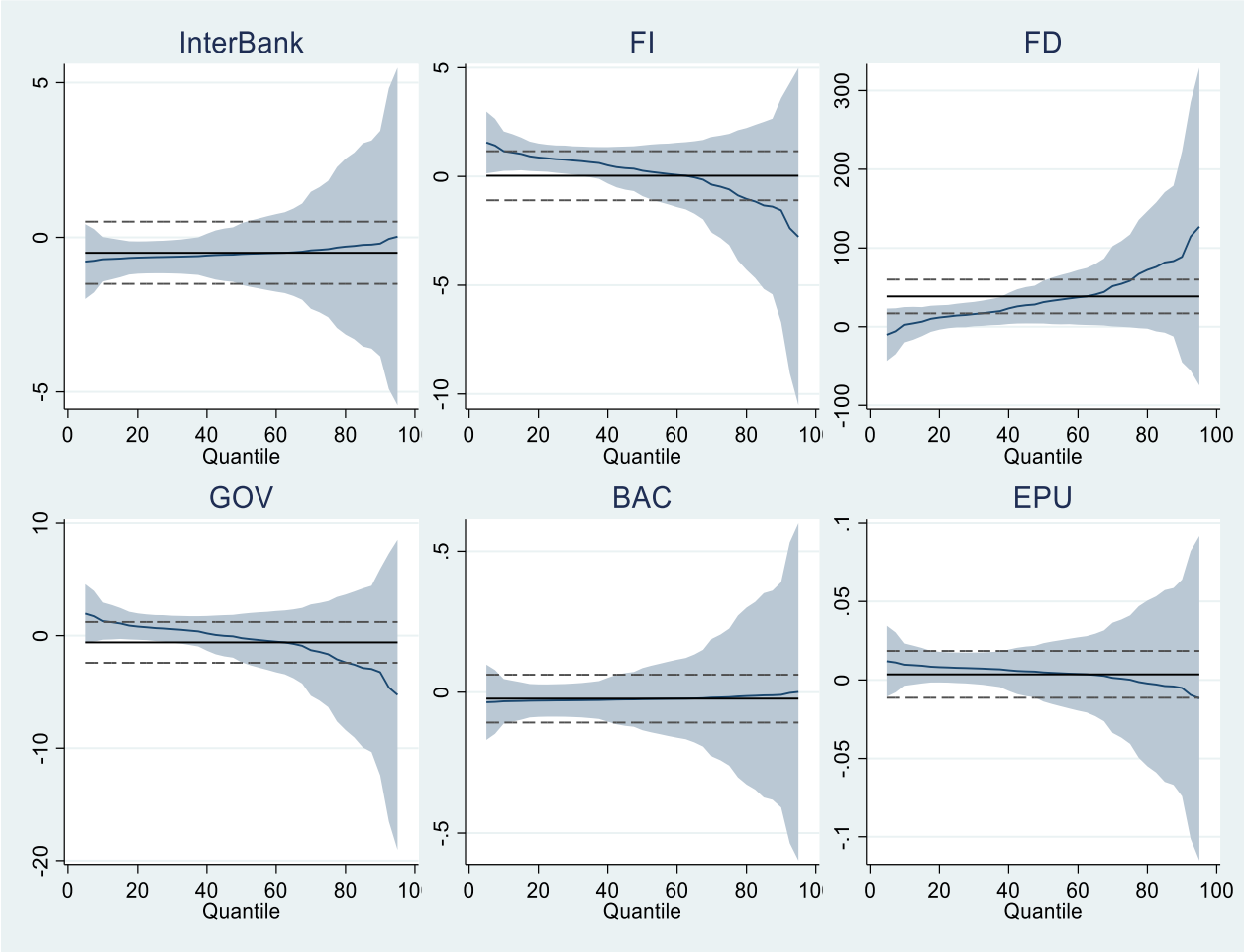
Finally, Governance quality (GOV) exerts a positive and significant influence (1.380) on financial stability, as improvements in the rule of law, government effectiveness, regulatory quality, and anti-corruption measures enhance transparency, reduce credit risk, and strengthen confidence in the banking system. These results are consistent with Setianto et al. (2025), Ullah et al. (2024), Ha and Nguyen (2023), and Yen et al. (2023). During the 2008 financial crisis, countries with strong governance, such as Canada and Germany, experienced relatively stable banking systems, as large, disciplined banks mitigated systemic risks. Similarly, during the COVID-19 pandemic, robust institutional frameworks in these countries helped contain instability despite economic disruptions. The positive and significant interaction (GOV*BAC) supports the "concentration–stability" hypothesis, highlighting that governance is particularly effective in concentrated banking markets. In contrast, the interaction (GOV*EPU) is negative and not significant; indicating that governance alone is insufficient to offset the destabilizing effects of policy uncertainty, underscoring the need for complementary macro prudential and risk-management measures during periods of heightened volatility.

Table 5 - FGLS estimation results (Z-score)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Financial variables					
InterBank	-0.741*	-0.806**	-0.818*	-0.959**	-0.723*
FI	-0.118	-4.961*	0.447	-0.424	0.058
FD	10.115**	4.277	49.317**	11.525**	6.710
Quality of governance					
GOV	1.380**	1.336*	-1.206	1.138**	1.718**
Competitive and Uncertain Environment					
BAC	0.009	0.010	0.487**	0.006	0.007
EPU	-0.004**	-0.007*	-0.005**	0.004	-0.017
Interbank*BAC		-0.028*			
FI*BAC		0.078*			
FD*BAC			-0.606**		
GOV*BAC			0.035**		
Interbank*EPU				0.001	
FI*EPU				0.006**	
FD*EPU					0.015
GOV*EPU					-0.001
Constant	8.000**	12.717**	-24.424**	4.843	10.740**
Time periods	18	18	18	18	18
Wald test	105.95*	216.62*	232.59*	202.75*	99.54*

Note: *, ** and *** represent significance at the 1%, 5%, and 10% levels, respectively.

Figure 1 - Results of MMQR approach



4.4. Robustness check

As a robustness check, the financial stability indicator (Z-score), which serves as the primary measure in the baseline model, was replaced with the non-performing loans ratio (NPLs) as a direct measure of asset quality and risk management efficiency in banks. This indicator functions as an inverse proxy for financial stability, with higher values indicating greater fragility. The models were re-estimated using the same independent variables and interaction terms as in the baseline specification, and the results were largely consistent with previous trends, although some interpretative differences are noted (Table 6).

First, bank-specific internal factors (InterBank) were positively and significantly associated with NPLs (0.432), indicating that improvements in internal performance do not necessarily reduce credit risk but may coincide with higher risk-taking and lower asset quality. This phenomenon was evident in advanced economies such as the US, Italy, and Japan, where periods of rapid expansion and aggressive lending practices during the 2008 financial crisis contributed to the accumulation of low-quality loans, highlighting that strong internal metrics alone cannot fully prevent credit deterioration. Similarly, during the COVID-19 pandemic, banks with previously high operational efficiency sometimes faced elevated NPLs due to sudden economic shocks that exposed vulnerabilities in their loan portfolios. Conversely, the interaction between internal performance and bank concentration (InterBank*BAC) was slightly negative but statistically significant. This suggests that internal efficiency in concentrated banking markets contributes to reducing credit

defaults, supporting the "concentration–stability" hypothesis. In countries such as Germany and France, where large banks dominate the market, concentrated structures allowed for more disciplined lending practices and better risk monitoring during both the 2008 crisis and the COVID-19 shock. Thus, while bank concentration coupled with strong internal performance can mitigate risks at the individual loan level, it may not eliminate systemic vulnerabilities affecting overall financial stability. The interaction with economic policy uncertainty (InterBank*EPU = -0.001) was negative but weak, indicating that enhanced internal performance provides only partial resilience against policy fluctuations. This effect is particularly observable in Canada and Germany, where robust internal controls allowed banks to absorb policy shocks more effectively, yet full protection against systemic risk still required supportive regulatory frameworks and timely interventions during periods of heightened uncertainty.

Second, financial inclusion (FI) was positively and significantly related to NPLs (0.522), indicating that the expansion of banking services through branches and ATMs can be associated with a deterioration in asset quality. Rapid expansion may drive banks to serve riskier customer segments or underdeveloped regions without adequate risk management frameworks. This pattern was observed in the US and UK following the 2008 financial crisis, where aggressive outreach contributed to higher non-performing loans, and again during the COVID-19 pandemic in countries such as Italy and Japan, where widespread branch networks exposed banks to sudden shocks in borrowers' repayment capacity. The interaction with banking concentration (FI*BAC) was not significant, suggesting that expanding access to banking services does not materially alter the relationship between market concentration and overall stability. However, the interaction with economic policy uncertainty (FI*EPU) was weakly positive and significant, indicating that during periods of political and economic volatility, broader financial inclusion may slightly elevate credit risk due to operational challenges and the unpredictability of borrower behavior. Nonetheless, this effect also reflects that financial inclusion contributes to overall stability by diversifying funding sources and increasing the deposit base, as evidenced in France and Japan during both crises, where widespread access helped mitigate severe systemic disruptions despite localized increases in NPLs.

Third, financial development (FD) was associated with an increase in NPLs (−3.007), indicating that the expansion of financial activities without effective oversight may undermine banking stability. Rapid growth in credit volumes and product diversification, as observed in the US and UK before the 2008 financial crisis, contributed to the accumulation of high-risk debt and elevated default rates. Similarly, during the COVID-19 pandemic, banks in Italy and Japan with aggressive lending portfolios experienced rising NPLs, reflecting vulnerabilities in highly developed but insufficiently supervised financial systems. In contrast, countries such as Germany and Canada were less affected, owing to strong regulatory frameworks, prudent risk management, and well-capitalized banks. The interaction between financial development and banking concentration (FD*BAC) was positive and significant, supporting the "concentration–fragility" hypothesis. This suggests that combining high financial development with concentrated markets can increase default risk, as dominant banks in weakly competitive environments may relax credit discipline, thereby amplifying systemic vulnerabilities. The interaction with economic policy uncertainty (FD*EPU = 0.010) was not significant, indicating that even amid policy volatility, robust regulatory systems in countries like Canada and Germany help prevent major deterioration in asset quality, moderating the potential adverse effects of rapid financial expansion.

Finally, governance quality (GOV) was negatively associated with NPLs (−0.461), indicating that stronger governance reduces bank defaults and enhances financial stability. Banks operating within robust institutional frameworks implement stricter credit assessments, more effective risk monitoring, and disciplined lending practices. This effect was particularly evident during the 2008 financial crisis, when countries such as Canada and Germany, with strong governance structures,

experienced fewer loan defaults and maintained higher portfolio quality compared to less-regulated systems. Similarly, during the COVID-19 pandemic, well-governed banks in France and Japan were better able to manage credit risks despite sudden economic shocks, maintaining relatively stable NPL ratios. The interaction between governance and banking concentration (GOV * BAC) was negative and significant, supporting the "concentration–stability" hypothesis, which suggests that effective governance is particularly impactful in concentrated markets where regulatory oversight can focus on a limited number of major banks, thereby improving overall asset quality. In contrast, the interaction with economic policy uncertainty (GOV*EPU) was not significant, indicating that strong governance alone enables banks to withstand policy shocks without substantial deterioration in loan quality, although complementary regulatory and risk management measures remain important during periods of heightened uncertainty.

Table 6 - FGLS estimation results (NPLs)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Financial variables					
InterBank	-0.0294	0.432*	0.104**	0.132	-0.029
FI	0.522*	0.183	0.310**	0.283**	0.503*
FD	-3.007**	-2.794**	-22.954*	-4.302*	-4.762**
Quality of governance					
GOV	-0.461*	-0.493*	1.100**	-0.456**	-0.308**
Competitive and Uncertain Environment					
BAC	-0.003	0.002	-0.205*	-0.003	-0.002
EPU	0.0005	0.0002	-0.00005	0.0009	-0.007
Interbank*BAC		-0.006*			
FI*BAC		0.005			
FD*BAC			0.265*		
GOV*BAC			-0.026*		
Interbank*EPU				-0.001**	
FI*EPU				0.001**	
FD*EPU					0.010
GOV*EPU					-0.0009
Constant	5.136*	5.032*	20.763*	6.385*	6.541*
Time periods	18	18	18	18	18
Wald test	108.99*	100.56*	294.76*	163.86	98.63*

Note: *, ** and *** represent significance at the 1%, 5%, and 10% levels, respectively.

Table 7 - The results of Granger non-causality analysis based on the JKS approach

Null Hypothesis (H0)	Wald test	P-Value	Null Hypothesis (H0)	Wald test	P-Value
Z-score ⇏ InterBank	10.833	0.004**	NPLs ⇏ InterBank	11.192	0.000*
InterBank ⇏ Z-score	8.082	0.004**	InterBank ⇏ NPLs	485.286	0.000*
Z-score ⇏ FI	14.868	0.000*	NPLs ⇏ FI	119.503	0.000*
FI ⇏ Z-score	52.754	0.000*	FI ⇏ NPLs	11.227	0.003**
Z-score ⇏ FD	7.902	0.019**	NPLs ⇏ FD	7.072	0.029**
FD ⇏ Z-score	14.379	0.000*	FD ⇏ NPLs	7.105	0.028**
Z-score ⇏ GOV	63.164	0.000*	NPLs ⇏ GOV	168.106	0.000*
GOV ⇏ Z-score	11.154	0.010**	GOV ⇏ NPLs	12.186	0.006**
Z-score ⇏ BAC	6.140	0.046**	NPLs ⇏ BAC	48.884	0.000*
BAC ⇏ Z-score	6.407	0.011**	BAC ⇏ NPLs	334.481	0.000*
Z-score ⇏ EPU	8.570	0.003**	NPLs ⇏ EPU	5.448	0.019**
EPU ⇏ Z-score	5.155	0.023**	EPU ⇏ NPLs	48.125	0.000*

Note: *, ** and *** represent significance at the 1%, 5%, and 10% levels, respectively.

The results presented in Table 7 from the Juodis et al. (2021) dynamic causality test reveal significant bidirectional relationships between all considered independent variables and the two measures of banking stability, Z-score and NPLs. Specifically, bank-specific internal variables, financial inclusion, and financial development - as key financial indicators - exhibit reciprocal causality with both Z-score and NPLs, indicating that improvements in banks' internal performance and access to financial services not only enhance stability but are also reinforced by higher stability levels. Similarly, governance quality, as an institutional factor, demonstrates strong two-way causality with the stability measures, emphasizing that sound institutional frameworks support banking stability, while stable banks contribute to strengthened institutional performance. Moreover, contextual factors such as banking competition and economic policy uncertainty display bidirectional effects, suggesting that competitive pressures and policy volatility shape stability outcomes, while banking stability, in turn, influences how the sector responds to these external conditions. Collectively, these findings, as summarized in Table 9, highlight the dynamic interdependence among financial, institutional, and bank-level determinants and banking stability, offering robust, policy-relevant insights for the design and implementation of effective regulatory and supervisory frameworks in the G8 countries.

5. Conclusion and policy options

This study highlights the critical importance of the interaction between financial, institutional, and structural determinants in shaping the trajectory of banking stability in the G8 countries over the period 2004–2021. The findings show that internal banking factors, financial inclusion, financial development, governance quality, banking competition, and economic policy uncertainty play diverse and complex roles in influencing financial stability. The analysis further reveals that the effects of these variables are neither linear nor independent; rather, they are conditioned by the degree of interaction among them and by the broader economic and regulatory environment. By relying on robust estimation techniques and multiple indicators of financial stability, the study offers a deeper understanding of the channels through which these forces contribute to the resilience of banking systems in advanced economies. The results indicate that internal bank

characteristics and financial inclusion tend to undermine stability, whereas financial development and governance quality strengthen it. The interaction results indicate that banking concentration enhances the effect of governance and financial inclusion on banking stability, highlighting its role in enhancing oversight and broadening the banking base. Conversely, banking concentration diminishes the impact of internal bank-specific factors and financial development on stability, suggesting that high concentration may intensify systemic vulnerabilities despite internal strengths or broader financial sector development. Moreover, the influence of economic policy uncertainty remains generally limited and statistically insignificant across most relationships, indicating that its direct effect on banking stability is relatively moderate within the studied context.

Based on the findings, several policy recommendations are proposed in alignment with the structural and economic context of G8 countries. First, enhancing the independence of regulatory bodies is essential. Empowering central banks and supervisory institutions protects financial oversight from political interference, improves regulatory quality, and strengthens market confidence. Second, better coordination between fiscal and banking policies is required to support systemic stability. Integrating macroeconomic and financial strategies ensures coherence and facilitates an effective institutional response to shocks. Third, the use of advanced analytical tools and digital technologies, such as stress testing and simulation models, should be prioritized. Strengthening early warning systems within central banks enhances risk detection and allows for timely interventions. Fourth, achieving a secure digital banking transformation requires investment in infrastructure and cybersecurity, while maintaining financial system stability and promoting responsible innovation. Fifth, revising the operational structures of large banks is advised to reduce exposure to high-risk activities. Emphasis should be placed on core banking functions that enhance long-term stability. Lastly, improving transparency and financial disclosure is crucial. Enforcing strict reporting and accounting standards enables regulators to monitor risks more effectively and respond proactively when necessary.

While this study offers valuable insights, several limitations suggest directions for future research: First, conducting country-specific analyses is recommended. Aggregate panel approaches may obscure structural and institutional variations across countries, limiting the accuracy of derived conclusions. Second, future research should incorporate additional intermediate indicators with potential impacts on financial stability, including environmental and climate policies, central bank independence, informal financial practices, and major economic shocks such as the 2008 global financial crisis and the COVID-19 pandemic, which could serve as independent variables capturing exogenous stress on the banking sector. Third, categorizing G8 countries based on income levels, policy orientation, or financial sector structures could provide more comparisons that are accurate and enhance the understanding of contextual and causal relationships. Expanding the analytical framework in these directions would increase the validity of future findings and support more targeted and effective policy recommendations.

Conflict of interest

The use of AI tools was used to check for grammatical errors in this manuscript. The authors declare that there are no conflicts of interest.

References

Ali, K., Hongbing, H., Liew, C. Y., & Jianguo, D. (2023). Governance perspective and the effect of economic policy uncertainty on financial stability: evidence from developed and developing economies. *Economic Change and Restructuring*, *56*(3), 1971–2002. https://doi.org/10.1007/s10644-023-09497-6

Alihodžić, A., Ekşi, İ., & Doğan, B. (2020). The determinants of bank stability: Evidence from selected Balkan countries and Turkey. *International Review*, *1–2*, 94–105. https://doi.org/10.5937/intrev2001094a

Amendola, A., Barra, C., Boccia, M., & Papaccio, A. (2025). Diversity in banking: How does competition in the Italian banking market affect bank performance? *Structural Change and Economic Dynamics*. https://doi.org/10.1016/j.strueco.2025.01.010

Antwi, F., Kong, Y., & Gyimah, K. N. (2024). Financial inclusion, competition and financial stability: New evidence from developing economies. *Heliyon*, *10*(13), e33723. https://doi.org/10.1016/j.heliyon.2024.e33723

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51. https://doi.org/10.1016/0304-4076(94)01642-d

Atellu, A. R., & Muriu, P. W. (2021). Does financial inclusion enhance financial stability? Evidence from a developing economy. *Transnational Corporation Review*, *14*(3), 297–311. https://doi.org/10.1080/19186444.2021.2019555

Bailey, N., Kapetanios, G., & Pesaran, M. H. (2016). Exponent of Cross-Sectional Dependence: Estimation and Inference. *Journal of Applied Econometrics*, 31(6), 929–960. https://doi.org/10.1002/jae.2476

Basnayake, D., Naranpanawa, A., Selvanathan, S., & Bandara, J. S. (2025). Financial inclusion and institutional quality: Catalysts for economic growth in Asia-Pacific countries. *World Development Perspectives*, *37*, 100670. https://doi.org/10.1016/j.wdp.2025.100670

Blomquist, J., & Westerlund, J. (2013). Testing slope homogeneity in large panels with serial correlation. *Economics Letters*, 121(3), 374–378. https://doi.org/10.1016/j.econlet.2013.09.012

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. https://doi.org/10.1016/s0304-4076(98)00009-8

Danisman, G. O., & Tarazi, A. (2023). Economic policy uncertainty and bank stability: Size, capital, and liquidity matter. *The Quarterly Review of Economics and Finance*, *93*, 102–118. https://doi.org/10.1016/j.qref.2023.11.008

Desalegn, T. A., Zhu, H., & Borojo, D. G. (2023). Economic policy uncertainty, bank competition and financial stability. *Journal of Financial Economic Policy*, *15*(2), 123–139. https://doi.org/10.1108/jfep-04-2022-0106

Elgharib, W. A. (2024). Financial inclusion, financial development and financial stability in MENA. *Review of Accounting and Finance*, *23*(4), 489–505. https://doi.org/10.1108/raf-05-2023-0146

Ertugrul, H. M., Ozun, A., & Kirikkaleli, D. (2019). How is Financial Stability Impacted by Political and Economic Stabilities in Emerging Markets? A Dynamic Panel Analysis. *Romanian Journal of Economic Forecasting*, *4*, 148–159. https://ideas.repec.org/a/rjr/romjef/vy2019i4p148-159.html

Fan, J., Liao, Y., & Yao, J. (2015). Power Enhancement in High-Dimensional Cross-Sectional Tests. *Econometrica*, 83(4), 1497–1541. https://doi.org/10.3982/ecta12749

Güngör, S. (2023). Bank-Specific Determinants of Financial Stability in Participation Banks: Fresh Evidence from the Driscoll-Kraay Estimator. *International Journal of Business and Economic Studies*, *5*(3), 166–181. https://doi.org/10.54821/uiecd.1333150

Ha, D., & Nguyen, Y. (2023). Institutional quality's influence on financial inclusion' impact on bank stability. *Cogent Economics & Finance*, *11*(1). https://doi.org/10.1080/23322039.2023.2190212

Jungo, J., Madaleno, M., & Botelho, A. (2023). Financial literacy, financial innovation, and financial inclusion as mitigating factors of the adverse effect of corruption on banking stability indicators. *Journal of the Knowledge Economy*, *15*(2), 8842–8873. https://doi.org/10.1007/s13132-023-01442-2

Juodis, A., & Reese, S. (2021). The incidental parameters problem in testing for remaining cross-section correlation. *Journal of Business and Economic Statistics, 40*(3), 1191–1203. https://doi.org/10.1080/07350015.2021.1906687

Juodis, A., Karavias, Y., & Sarafidis, V. (2021). A homogeneous approach to testing for Granger non-causality in heterogeneous panels. Empirical Economics, 60(1), 93–112. https://doi.org/10.1007/s00181-020-01970-9

Kaya, H., Küçükşahin, Y., & Çitil, M. (2025). Impact of geopolitical risk on firm financial fragility: International evidence from listed companies. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2025.01.004

Kharabsheh, B., & Gharaibeh, O. K. (2022). Determinants of banks' stability in Jordan. *Economies*, *10*(12), 311. https://doi.org/10.3390/economies10120311

Kurtoglu, B., & Durusu-Ciftci, D. (2024). Identifying the nexus between financial stability and economic growth: the role of stability indicators. *Journal of Financial Economic Policy*, *16*(2), 226–246. https://doi.org/10.1108/jfep-09-2023-0260

Liang, Y., Wei, R., & Duan, D. (2024). Digital Financial Development and Commercial bank stability. *International Review of Economics & Finance*, 103749. https://doi.org/10.1016/j.iref.2024.103749

Machado, J. A., & Silva, J. S. (2019). Quantiles via moments. *Journal of Econometrics, 213*(1), 145–173. https://doi.org/10.1016/j.jeconom.2019.04.009

Nasim, A., Nasir, M. A., & Downing, G. (2024). Determinants of bank efficiency in developed (G7) and developing (E7) countries: role of regulatory and economic environment. *Review of Quantitative Finance and Accounting*. https://doi.org/10.1007/s11156-024-01272-6

Ndoya, H., Nkoa, B. E. O., Kemeze, F. H., & Nchofoung, T. N. (2023). Financial development and economic complexity: The role of country stability. *Economics of Transition and Institutional Change*, *32*(2), 415–447. https://doi.org/10.1111/ecot.12392

Nugrohowati, R. N. I., & Shidiqie, J. S. A. (2025). Impact of financial inclusion and institutional quality on banking stability: Lessons from the Asia region. *Economic Journal of Emerging Markets*, 12–29. https://doi.org/10.20885/ejem.vol17.iss1.art2

Oanh, T. T. K., Van, L. T. T., & Dinh, L. Q. (2023). Relationship between financial inclusion, monetary policy and financial stability: An analysis in high financial development and low financial development countries. *Heliyon*, *9*(6), e16647. https://doi.org/10.1016/j.heliyon.2023.e16647

Olalere, O. E., & Mukuddem-Petersen, J. (2023). Geopolitical risk, economic policy uncertainty, and bank stability in BRICS countries. *Cogent Economics & Finance*, *12*(1). https://doi.org/10.1080/23322039.2023.2290368

Ozili, P. K. (2019). Determinants of banking stability in Nigeria. *SSRN Electronic Journal*. https://autopapers.ssrn.com/sol3/papers.cfm?abstract_id=3392963

Ozili, P. K. (2022). Economic policy uncertainty, bank nonperforming loans and loan loss provisions: are they correlated? *Asian Journal of Economics and Banking*, *6*(2), 221–235. https://doi.org/10.1108/ajeb-10-2021-0119

Pal, S., & Bandyopadhyay, I. (2022). Impact of financial inclusion on economic growth, financial development, financial efficiency, financial stability, and profitability: an international evidence. *SN Business & Economics*, *2*(9). https://doi.org/10.1007/s43546-022-00313-3

Pesaran, M. H. (2015). Testing weak cross-sectional dependence in large panels. *Econometric Reviews, 34*(6–10), 1089–1117. https://doi.org/10.1080/07474938.2014.956623

Pesaran, M. H. (2021). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics, 60*(1), 13–50. https://doi.org/10.1007/s00181-020-01875-7

Pesaran, M. H., & Xie, Y. (2021). A bias-corrected CD test for error cross-sectional dependence in panel data models with latent factors. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3904536

Pesaran, M. H., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics, 142*(1), 50–93. https://doi.org/10.1016/j.jeconom.2007.05.010

Rakshit, B., & Bardhan, S. (2020). Does Bank Competition Enhance or Hinder Financial Stability? Evidence from Indian Banking. *Journal of Central Banking Theory and Practice*, *9*(s1), 75–102. https://doi.org/10.2478/jcbtp-2020-0024

Sajid, M., Ansari, M. a. A., Tanveer, A., Faheem, M., & Waseem, A. (2023). Evaluating the influence of green growth, institutional quality and financial inclusion on financial stability: evidence by sustainable finance theory. *Environmental Science and Pollution Research*, *30*(54), 115965–115983. https://doi.org/10.1007/s11356-023-30362-6

Setianto, R. H., Azman-Saini, W., & Law, S. H. (2025). Threshold effects of institutional quality on the financial inclusion and stability nexus: international evidence. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2025.01.015

Shabir, M., Jiang, P., Bakhsh, S., & Zhao, Z. (2021). Economic policy uncertainty and bank stability: Threshold effect of institutional quality and competition. *Pacific-Basin Finance Journal*, *68*, 101610. https://doi.org/10.1016/j.pacfin.2021.101610

Sifrain, R. (2021). Determinants of Banking Stability: Evidence from Haiti's Banking System. *Journal of Financial Risk Management*, *10*(01), 80–99. https://doi.org/10.4236/jfrm.2021.101005

Simona, B., Noemi, O., & Marina, D. (2025). Monetary policy and financial stability: Evidence from a new macroeconomic environment. *Research in International Business and Finance*, 102992. https://doi.org/10.1016/j.ribaf.2025.102992

Syed, A. A., Kamal, M. A., Grima, S., & Ullah, A. (2022). The Impact of Financial Development and Macroeconomic Fundamentals on Nonperforming Loans among Emerging Countries: An Assessment Using the NARDL Approach. *Computation*, *10*(10), 182. https://doi.org/10.3390/computation10100182

Tran, D. V., Nguyen, C., & Hoang, K. (2025). Policy uncertainty and bank stability: Investigation from Supply-Side Effect. *International Finance*. https://doi.org/10.1111/infi.12460

Trinh, H. H., & Tran, T. P. (2023). Global Banking Systems, Financial Stability and Uncertainty: How have Countries Coped with Geopolitical Risk? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4541043

Ullah, S., Ullah, A., & Zaman, M. (2024). Nexus of governance, macroeconomic conditions, and financial stability of banks: a comparison of developed and emerging countries. *Financial Innovation*, *10*(1). https://doi.org/10.1186/s40854-023-00542-x

Yen, N. D. H., Van Son, L., & Huy, D. T. N. (2023). Analyzing Effects of Institutional Quality on Banking Stability: Evidence from Asean Countries. *International Journal of Professional Business Review*, *8*(4), e01154. https://doi.org/10.26668/businessreview/2023.v8i4.1154

Yitayaw, M. K., Mogess, Y. K., Feyisa, H. L., Mamo, W. B., & Abdulahi, S. M. (2022). Determinants of bank stability in Ethiopia: A two-step system GMM estimation. *Cogent Economics & Finance*, *11*(1). https://doi.org/10.1080/23322039.2022.2161771

Zanfack, L. T., Ngounou, B. A., Domguia, E. N., & Tebeng, E. X. P. (2024d). Financial stability in sub-Saharan Africa: Does monetary policy matter? *Heliyon*, *10*(15), e34786. https://doi.org/10.1016/j.heliyon.2024.e34786

Zeqiraj, V., Mrasori, F., Iskenderoglu, O., & Sohag, K. (2021). Dynamic Impact of Banking Performance on Financial Stability: Fresh Evidence from Southeastern Europe. *Journal of Central Banking Theory and Practice*, *10*(1), 165–181. https://doi.org/10.2478/jcbtp-2021-0008

Zhang, R., & Wang, S. (2023). Economic Policy uncertainty and bank stability: An analysis based on the intermediary effects of opacity. *Sustainability*, *15*(5), 4084. https://doi.org/10.3390/su15054084