

Exploring the Effect of Corruption and Government Quality on Bank Stability: Evidence from Transition Countries

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Abstract

Banking stability is imperative for sustaining economic development within a country. This study examines the impact of corruption and quality of government on bank sector stability, focusing on post-Soviet countries with notable corruption levels and evolving governance structures. Using data from 12 transition countries spanning 2000-2021 and employing GMM estimation, three models are constructed to analyze these relationships. Findings reveal that reduced corruption levels and enhanced government quality are associated with improved banking sector stability. Moreover, positive relationships are observed between banking stability (z-score) and factors such as market power, credit risk, and income diversification, while negative associations exist with inefficiency and regulatory capital. However, indicators related to banking crises and market share show insignificance across models. These findings provide valuable insights for policymakers, regulators, and bank management in identifying vulnerabilities and implementing measures to fortify banking sector resilience and facilitate sustainable economic growth.

Keywords

Banking Stability, Corruption, Government Quality, Transition Countries

1. Introduction

Banks must ensure their financial stability for the benefit of the country's economy in order to provide their services and cope with various shocks. As a result, the ability to understand the factors and triggers of bank financial stability should be a top priority for scholars and regulators (Nguyen, 2023). An unstable position

of the bank system could lead to a collapse of a financial system and an increase in financial problems in the whole economy of emerging and developing countries (Adem, 2022; Saputra et al., 2020). Moreover, an unstable position could interfere with the performance of bank system's role as the main intermediary between savings mobilization and lending (Tariq et al., 2021; Hasan & Ashfaq, 2021; Irani et al., 2023). The financial and banking systems are defined as stable when lending institutions have capacity to provide the financing to households in a necessary volume, and economic downturns, external and internal shocks cannot make it vulnerable (Idawati & Syafputri, 2022; Miah & Uddin, 2017). For example, inability of banking system to resist crises, external and internal shocks can lead to a reduction in lending, therefore, business activity will decrease, unemployment will increase, and then economic growth will decrease. In addition, banking stability ensures the continuity of the provision of financial services, contributes to the efficient allocation of economic resources and the distribution of risks, stimulates economic activity and develops the country's welfare (Ali et al., 2019). There are external and internal risks that the financial system may face (Siregar & Chandra, 2017). The external ones include the world economic crisis, also the deterioration of an external economic situation, the decline in prices for important export commodities, trade wars, the imposition of sanctions by some countries against others, and disintegration processes. An internal shock includes a loss of stability by large financial institutions.

As a result, this research aims to address the following questions based on the aforementioned:

- Does corruption have an impact on the bank stability of transitional countries?
- Does government quality and its factors have influence on the bank stability of transitional countries?

Corruption and a quality of governance emerge as pivotal determinants affecting the steadiness of a bank's system. Two prominent theories delineate the impact of corruption on the bank steadiness. The initial theory posits corruption as an impediment, akin to "sand in the wheels", predominantly in nations characterized by heightened political stability. Conversely, the second theory contends that corruption functions as a lubricant, or "greases the wheels", particularly in countries with lower political stability (Shabbir et al., 2016). The former theory underscores the adverse effects of corruption on bank soundness and stability, while the latter highlights its purported positive influences. The positive impact of corruption is rationalized by an elevated level of bureaucracy, political delays, and a convoluted system. In such instances, corruption expedites lending processes, rendering them more facile for both clients and banking institutions. Consequently, these countries experience heightened lending activities, increased profitability, and enhanced stability (Mongid & Tahir, 2011; Hasan & Ashfaq, 2021).

The adverse impact of corruption on bank steadiness manifests both at the macro and micro levels. Corruption detrimentally affects at the macro level—the overall banking system, impeding the effective implementation of legislation, diminishing

investment, reducing the presence of foreign banks, and adversely impacting national income. Simultaneously, corruption amplifies external debt, poverty, and contractions in economic development (Asteriou et al., 2016). An illustrative scenario involves the coercive allocation of loans to fund government projects, which may lack profitability. Consequently, private borrowers are deprived of financing opportunities. Nurhidayat and Rokhim (2018) contend that state intervention intensifies the influence of corruption on banking risk acceptance, a phenomenon exacerbated during interventions or financial crises due to the inherent “moral hazard” of banks. At the micro level, corruption exerts a detrimental impact on individual banks, precipitating a decline in managerial competence, decision-making quality in lending, increased inefficiency in fund utilization, elevated business operating costs, and the emergence of new impediments to business operations (Asteriou et al., 2016). Findings from the study by Park (2012) reveal a correlation between corruption and a heightened incidence of overdue loans in banks, thereby compromising stability. This implies that corruption, operating through the lending channel, distorts allocation of bank’s funds, diverting resources from sound projects to suboptimal projects, thereby undermining the quality of private investment. Furthermore, Ben Ali et al. (2020) discuss that corruption incentivizes excessive risk-taking in pursuit of an augmented net interest margin, attracting riskier borrowers and subsequently diminishing asset quality and financial soundness, and escalating the likelihood of crises. The second pivotal factor influencing steadiness of banks is the quality of government. The nexus between governance quality and steadiness of banks is expounded by acknowledging a direct dependence of financial stability on governance quality, the prevailing political system, and interrelated factors. The benchmarks for economic stability often include political stability, control of corruption, rule of law, voice, and accountability. Research indicates that financial institutions operating in nations with elevated levels of corporate governance exhibit greater stability compared to those in jurisdictions characterized by lower corporate governance standards and deficient legal systems (Adem, 2022).

A stable political environment devoid of violence and terrorism facilitates external investments in the form of foreign banks and investors, particularly for domestic strategic projects. In contrast, an unstable environment deters external funding due to high risks of loss and non-repayment (Gangi & Abdulrazak, 2012; Athari & Irani, 2022; Athari et al., 2024). Political instability is identified as a significant malady detrimental to economic performance (Zubair & Khan, 2014). The efficacy of the government, the qualifications of civil servants, and judicious legislative policies supporting small and medium-sized businesses play pivotal roles in fostering entrepreneurship within the country (Uddin et al., 2020; Athari et al., 2024). The rule of law, encompassing compliance with the constitution, legal provisions, and legislation, along with the protection of contractual obligations and private property, fosters public confidence and safeguards against lawlessness and corruption. Such a confident populace is more inclined to trust bank deposits,

secure loans, engage in business development, and acquire property. In transition countries, the ongoing evolution of government quality, characterized by divergent levels in each context, makes it a pertinent target for investigation, particularly regarding its influence on banking stability.

This study contributes significantly to the current literature on banking stability, particularly in post-Soviet countries. This study broadens the discussion on the influence of corruption on the stability of the banking sector by presenting factual data from post-Soviet nations. These countries are distinguished by different degrees of corruption and developing systems of governance. This research differs from past studies by analyzing the relationship between corruption and governance quality together, rather than separately. By doing so, it provides a more thorough knowledge of how these two elements interact and impact banking stability. Furthermore, this research employs dynamic panel data methodologies, notably the Generalized Method of Moments (GMMs), to tackle endogeneity issues and yield more reliable results. This analytical technique enables a detailed investigation of the correlation between corruption, governance quality, and financial stability, while accounting for any biases and unobserved differences among nations and historical periods.

The study emphasizes the regional differences in the impact of corruption and governance quality on banking stability by examining a range of transition countries with varying political and economic paths. Policymakers and regulators must consider this regional viewpoint as it emphasizes the importance of developing solutions tailored to the unique setting in order to improve financial stability. And also, the research highlights the significance of both external and internal governance structures in reducing the negative impact of corruption on the stability of the banking sector. The information provided helps policymakers create and execute anti-corruption measures and governance changes that are suitable for transition economies. Lastly, founding of this study adds to the existing literature on the factors that influence the stability of banks. It offers useful insights for policymakers, regulators, and managers in the banking sector in transitioning countries, particularly in dealing with issues of corruption and governance quality.

2. Literature Review

A considerable body of scholarly research substantiates the theory that corruption has a detrimental impact on the stability of banking institutions. For instance, [Goel and Hasan \(2011\)](#), through an analysis of annual data from over 100 countries, identified a positive correlation between corruption levels and the prevalence of Non-Performing Loans (NPLs). Building on this, [Park \(2012\)](#) further demonstrated that corruption not only degrades asset quality but also heightens credit risk, which, in turn, exacerbates the vulnerability of the banking sector and leads to significant financial distress for banks. The resulting increase in non-performing loans due to corruption constrains bank financing, reduces domestic investment, and ultimately hampers economic growth. In a related study, [Asteriou et al.](#)

(2016) highlighted that corruption poses a particularly severe threat to medium-sized and small financial institutions, as evidenced by their disaggregated data analysis. Finally, [Rehman et al. \(2020\)](#) underscored the importance of stringent anti-corruption measures, demonstrating that such controls are associated with a reduction in the level of non-performing loans.

Contrary to the prevailing view that corruption undermines financial stability, some studies, including those by [Mongid and Tahir \(2011\)](#) and [Bougatef \(2017\)](#), argue that in contexts of poor governance, corruption may actually yield positive outcomes for banks. Specifically, they assert that corruption can provide a means for navigating regulatory challenges, thereby benefiting banks operating under weak governance structures. Supporting this perspective, [Arshad and Rizvi \(2013\)](#) and [Hasan and Ashfaq \(2021\)](#) suggest that in countries with substantial regulatory pressures and inadequate governance, corruption may inadvertently facilitate economic development.

The literature review then shifts focus to the impact of World Governance Indicators (WGIs) on bank stability, with particular attention to transition economies. Consensus among scientists connects the higher quality of the government with increased economic development and stability ([Zubair & Khan, 2014](#); [AlKhoury & Arouri, 2019](#); [Adem, 2022](#)), including the attraction of foreign assets to the country ([Gangi & Abdulrazak, 2012](#)) and a decrease Non-Performed Loans (NPLs) ([Anastasiou et al., 2019](#)). [Ranasinghe and Peiris \(2018\)](#) expanded on this by demonstrating that WGI significantly influences bank lending practices, with the rule of law, regulatory quality, and voice and accountability all showing a positive relationship with political stability. However, their study also revealed that efforts to combat corruption and enhance government effectiveness might negatively impact bank stability. [Uddin et al. \(2020\)](#), analyzing 730 banks across 19 emerging countries from 2011 to 2016, found that enhancing controls on corruption, improving government effectiveness, and adhering to the rule of law reduce financial institutions' exposure to risk, thereby reinforcing bank soundness.

The final section of the literature review examines various banking factors, including credit risk, income diversification, inefficiency, market power, and other relevant elements. Income diversification, defined as increasing revenue streams beyond interest income from lending, is a prominent theme in the literature. Most studies, including those by [Siregar and Chandra \(2017\)](#), [Ngoc Nguyen \(2019\)](#), [Khattak et al. \(2021\)](#), [Tariq et al. \(2021\)](#), and [Adem \(2022\)](#), agree that income diversification positively affects bank stability. However, there are divergent views, as highlighted by [AlKhoury and Arouri \(2019\)](#), [Le \(2021\)](#), [Ben Lahouel et al. \(2022a\)](#), and [Abbas and Ali \(2022\)](#), who raised concerns about the risks associated with excessive diversification. [Ben Lahouel et al. \(2022b\)](#), in their analysis of 114 European commercial banks from 2010 to 2019, concluded that while moderate levels of income diversification enhance bank soundness, excessive diversification may negatively impact bank stability. Regarding the Cost-Income Ratio (CIR),

several studies, including those by [Dias \(2021\)](#), illustrate a negative relationship between CIR and bank profitability, efficiency, and stability. A high CIR indicates inefficient resource utilization, which consequently diminishes bank profitability and stability, as observed by [Jovita and Wahyudi \(2017\)](#). In contrast, [Idawati and Syafputri \(2022\)](#) argued that the cost ratio, defined as expenses divided by total assets, does not significantly affect bank stability. A reduction in capital within the banking sector is often associated with heightened systemic risk and the potential need for government intervention, which could lead to increased public debt or even a sovereign debt crisis. Therefore, the literature consistently emphasizes the importance of regulatory capital, linking higher capital levels to increased liquidity, lending capacity, and overall bank stability, particularly during crises ([Chortareas et al., 2012](#); [Almazari, 2013](#); [Thakor, 2014](#); [Lotto, 2018](#); [Dias, 2021](#); [Adem, 2023](#)). However, not all studies agree on the positive effects of regulatory capital on bank stability. For instance, [Oduor et al. \(2017\)](#) and [Boachie et al. \(2021\)](#), focusing on African countries, argue that capital regulation negatively affects bank stability, with financial instability in Africa increasing alongside rising capital requirements. This suggests that higher capital requirements may not have made African banks more stable or secure. Instead, they introduce challenges related to price competitiveness for domestic banks compared to foreign banks, which can access cheaper credit from international markets or obtain more affordable capital from their parent companies.

Certain researchers attribute banking stability to a healthy competitive environment, positing that competition fosters product improvement and enhances banks' positions. This aligns with the "competition-stability" theory emphasizing the positive impact of competition on bank sustainability and economic efficiency ([Schaeck & Cihák, 2014](#); [Hendrickson et al., 2014](#); [Kasman & Kasman, 2015](#); [Shijaku, 2017](#); [Goetz, 2018](#); [Shim, 2019](#); [Ibrahim et al., 2019](#); [Rahman et al., 2021](#)). However, an opposing theory, "competition-fragility", contends that increased concentration in the banking market and heightened market power positively impact banking stability ([Beck et al., 2013](#); [Diallo, 2015](#); [Sanderson et al., 2018](#); [Albaity et al., 2019](#); [Khattak et al., 2021](#)). Credit risk, a pivotal indicator of bank stability, has been extensively studied, with the prevailing consensus emphasizing its negative impact. Works by [Ghenimi et al. \(2017\)](#), [Amara and Mabrouki \(2019\)](#), [Saputra et al. \(2020\)](#), [Matey \(2021\)](#), [Anh and Phuong \(2021\)](#), and [Idawati and Syafputri \(2022\)](#), among others, confirm the adverse relationship between credit risk and steadiness, profitability. Some contextual nuances are noted, with certain studies, such as [Atoi \(2018\)](#) and [Adusei \(2015\)](#), identifying positive impacts of credit risk in countries undergoing an early transition period and operating in more competitive environments.

In brief, the comprehensive literature review delineates the multifaceted relationships and contextual nuances surrounding corruption, governance indicators, and various banking factors in influencing stability. The discourse underscores the importance of considering diverse perspectives and contextual intricacies in

comprehending the intricate dynamics of the topics under investigation.

3. Data

We utilized an unbalanced panel dataset covering 12 former Soviet countries from 2000 to 2021, selected based on data availability. This timeframe allows us to assess the evolution of these nations' banking systems, particularly in response to recent global crises, and to explore how their political, social, and economic trajectories have influenced bank stability and profitability. Notably, the analysis reveals differences in banking stability between less developed and more developed countries, such as the Baltic nations within the Eurozone. Due to data limitations, Turkmenistan, Kyrgyzstan, and Tajikistan were excluded from the study, leaving 12 countries categorized into four regions: Baltic (Lithuania, Estonia, Latvia), Central Asia (Uzbekistan, Kazakhstan), Eastern Europe (Moldova, Ukraine, Russia, Belarus), and South Caucasus (Georgia, Armenia, Azerbaijan). It is important to note that the results should not be generalized to individual countries given the study's regional focus.

Table 1. Selected countries overview 2022 year.

Region	Country	Score	Rank	GDP per capita (current US\$)
Central Asia	Kazakhstan	36	101	11492.00
Central Asia	Kyrgyz Republic	27	140	1655.10
Central Asia	Tajikistan	24	150	1054.20
Central Asia	Turkmenistan	19	167	8792.50
Central Asia	Uzbekistan	31	126	2255.20
Eastern Europe	Ukraine	33	116	4534.00
Eastern Europe	Russian Federation	28	137	15270.70
Eastern Europe	Belarus	39	91	7888.30
Eastern Europe	Moldova	39	91	5714.40
Baltic	Estonia	74	14	28247.10
Baltic	Latvia	59	39	21779.50
Baltic	Lithuania	62	33	25064.80
South Caucasus	Armenia	46	63	7018.10
South Caucasus	Azerbaijan	23	157	7762.10
South Caucasus	Georgia	56	41	6675.00

The selection of these transition economies addresses gaps in the literature and reflects the significant development these nations have experienced in recent years. The selected countries, all around 32 years old, share a common Soviet history but now exhibit diverse political and economic systems. The information about CPI and GDP of those countries is in **Table 1**. For example, the Baltic countries show higher transparency and economic prosperity, with a Corruption Perceptions Index (CPI) score of 65 and GDP per capita of \$25,030, compared to Central Asia's CPI of 27.4 and GDP per capita of \$5050. Transparency International's 2022 data highlights that the Baltic region has the lowest corruption levels, followed by the South Caucasus, Eastern Europe, and Central Asia. Over the past decade, Central Asia has shown a significant 7.2-point increase in CPI, reflecting a 135% improvement. Estonia ranks highest in CPI within the study, positioned 14th globally, while Turkmenistan ranks the lowest, at 168th globally as of January 1, 2023, illustrating a stark contrast within the Central Asia region.

Variables Description

To evaluate banking stability, the selected dependent variable is the z-score, also referred to as the Altman Index. This indicator functions as an inverse measure of the probability of insolvency or bankruptcy, providing insights into the risk of financial distress, overall stability, margin of safety, and managerial effectiveness within financial institutions (Nurhidayat & Rokhim, 2018; Asteriou et al., 2016; Shim, 2019; Athari & Irani, 2022; Athari et al., 2023, 2024). The significance of this measure is underscored by the critical role a stable banking sector plays in ensuring economic stability and attracting investment. A destabilized banking sector can negatively affect production levels, potentially leading to broader economic downturns.

Figure 1 presents the time series of average z-scores, a measure of banking stability, across four regions: Baltic, Central Asia, Eastern Europe, and South Caucasus from 2000 to 2021. The Baltic region shows relatively stable and higher z-scores, reflecting stronger governance and economic conditions. In contrast, Central Asia and Eastern Europe display greater volatility, particularly during the 2008 financial crisis, indicating weaker governance and higher susceptibility to economic shocks. The South Caucasus shows a mixed trend with periods of increased stability but overall a declining trend towards the end of the period, reflecting ongoing economic and political transitions.

To evaluate corruption levels, the Level of Freedom from Corruption (LFC) was derived from the International Country Risk Guide (ICRG), as applied by Ben Ali et al. (2020). The ICRG assesses over 140 countries, considering economic, political, and financial risks to develop a comprehensive corruption indicator. In this study, we specifically focused on the Corruption variable, which is updated monthly. This variable captures both financial corruption—such as payments and bribes related to licensing, import/export activities, exchange controls, taxes, loans, or protection—and broader forms of corruption, including excessive patronage,

cronyism, job retention, quid pro quos, secret party funding or loans, and the close interlinkage between business and politics. For assessing government quality, the study utilizes the Worldwide Governance Indicators (WGIs), as employed by Zubair and Khan (2014) and Uddin et al. (2020). The WGI includes six key indicators: “Voice and Accountability”, “Political Stability and Absence of Violence/Terrorism”, “Government Effectiveness”, “Regulatory Quality”, “Rule of Law”, and “Control of Corruption”. Higher numerical values on these indicators denote superior government quality. Table 2 provides a comprehensive overview of the independent and dependent variables used in this study, detailing the nature and sources of each variable.

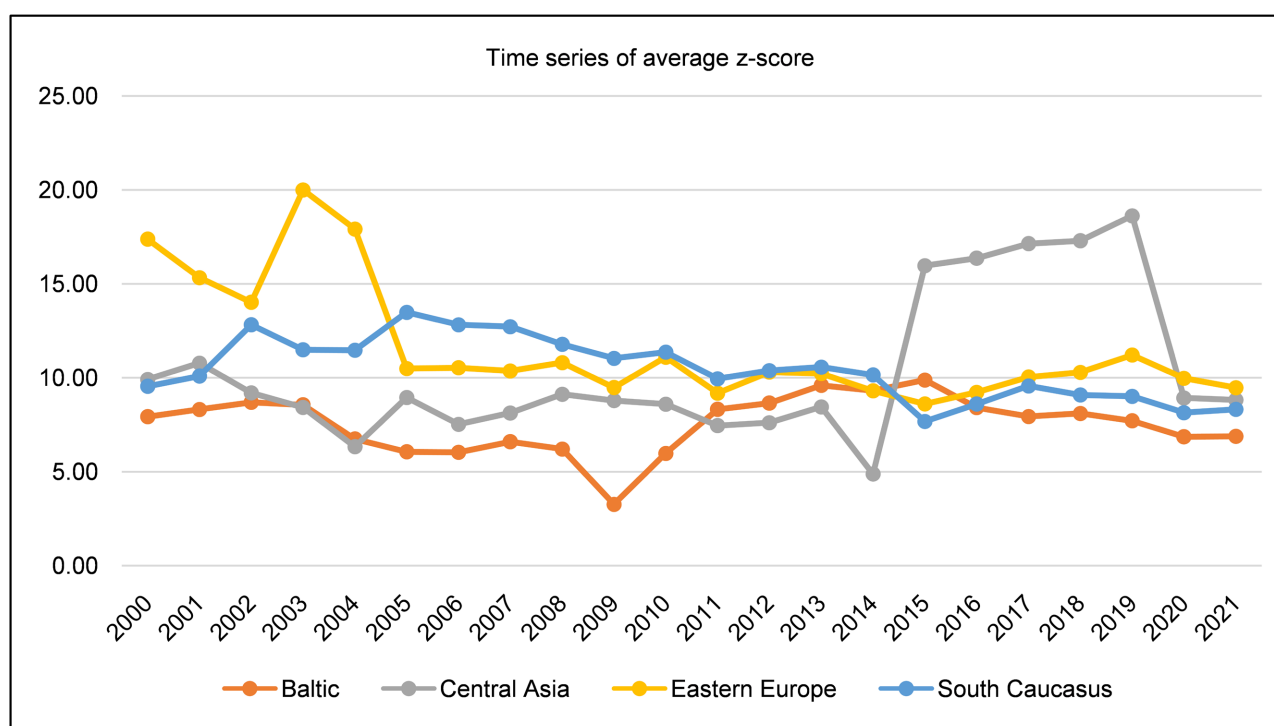


Figure 1. Time series data of bank stability in the selected transition countries.

Table 2. Variable’s description.

#	Variable’s name	Variable’s short name	Definition of variable	The source of data
1	Banking stability	Z_SCORE	It embraces the probability of default of a bank system of countries. It is estimated as $(ROA + CAR)/(\text{standard deviation of ROA})$, where ROA is the return on assets, CAR is equity to total asset ratio. Assessed for countries with more than 4 bank-level observations. Equity, ROA, and assets are country-level aggregate variables. z-score is the reverse of the probability of bankruptcy, that is, a bigger z-score points out that the bank takes less risk and it is more stable.	World bank data

Continued

2	Market power	MP	The Lerner index grants a brief and short measure of monopoly's power and is expressed in the following formula: "The price of the good set by the firm" – "The firm's marginal cost". MP assesses the percentage markup that a firm can charge above its marginal expenses and cost. The MP index ranges from 0 to 1 and the higher the value of MP, the greater a monopoly power.	World bank data
3	Inefficiency	INF	Bank cost to income ratio (%)	World bank data
4	Credit risk	CR	Bank non-performing loans to gross loans (%)	World bank data
5	Capital regulation	REG	Bank regulatory capital to risk-weighted assets (%)	World bank data
6	Income divarication	ID	Bank noninterest income to total income (%)	World bank data
7	Banking crisis	BC	Banking crisis dummy (0 = none, 1 = banking crisis)	World bank data
8	Market share	MS	Bank deposits to GDP (%)	World bank data
9	Level of freedom from Corruption	LFC	The indicator from ICRG, that is a composite indicator of political risk. Takes into account both financial corruption and actual or potential corruption. Financial corruption faced by a business in the form of payments and bribes for licensing, import/export, exchange controls, taxes, loans or protection. Actual or potential corruption is presented in the form of excessive patronage, cronyism, job retention, quid pro quos, secret party funding or loans, and suspiciously close bonds between business and politics. The higher the score, the less corrupt the country is.	The PRS Group
10	Quality of government	WGI	Indicators of quality of public administration. Consist of 6 indicators displayed below. By combining the sub-items, we built single indices for each indicator. The higher the number, the higher the quality of government.	
10.1	Control of corruption	CC	Reflects the attitude of society towards corruption, i.e. the possibility of using one's official position for extracting private benefits. The higher the number, the less level of corruption.	Worldwide governance indicators
10.1	Government effectiveness	GE	Reflects the quality of public services, the level of qualification of civil servants and the grade of their independence and freedom from political pressure, the effectiveness of public policy. The higher the number, the higher the government effectiveness.	Worldwide governance indicators

Continued

10.2	Political stability and absence of violence/terrorism	PS	Assesses the likelihood of a government being destabilized and overthrown by unconstitutional and violent means. The higher the number, the higher political stability and less level of violence/terrorism.	Worldwide governance indicators
10.3	Regulatory quality	RQ	Characterizes the government's capacity or aptitude to formulate and implement rational policies, conduct regulatory activities, which positively affects the development of a private sector. The higher the number, the higher the level of regulatory quality.	Worldwide governance indicators
10.4	Rule of law	RL	Measures the degree of citizens' confidence in the effectiveness of domestic legislation and how they follow the established rules. The higher the number, the higher the level of rule of law.	Worldwide governance indicators
10.5	Voice and accountability	VACC	Assesses various aspects of civil liberties, political processes, and political rights. The higher the number, the level of political rights and civil liberties.	Worldwide governance indicators

Our selection of independent variables is grounded in existing studies, each with anticipated relationships. Notably, we anticipate a negative influence of corruption on bank stability, aligning with findings by [Smaoui et al. \(2020\)](#). Corruption is expected to foster ineffective fund redistribution, an increase in unprofitable projects, and an encouragement of excessive risk-taking to boost interest margins. This, in turn, may attract riskier borrowers, leading to a decline in asset quality, heightened credit risk, and an elevated risk of default and crisis. Conversely, positive relationships are anticipated for the World Governance Indicators (WGIs) components on bank stability. Components such as Control of Corruption, Government Effectiveness, Regulatory Quality, and Rule of Law are expected to positively correlate with z-score, as indicated by [Uddin et al. \(2020\)](#). Similarly, Political Stability and Absence of Violence/Terrorism, as well as Voice and Accountability ([Zubair & Khan, 2014](#)), are anticipated to exhibit positive relationships.

Concerning market power and market share indicators, a negative impact on banking steadiness is expected due to potential monopolistic practices, aligning with ([Kasman & Kasman, 2015](#)). Reduced competition could lead to heightened credit risks and systemic risk, linking the stability of the country's financial system and citizens' well-being to a limited number of major players in the banking sector. Moreover, inefficiency indicators are anticipated to negatively impact banking stability, while capital regulation is expected to have a positive influence, consistent with findings by [Dias \(2021\)](#). Capital regulation, by increasing banks' capital and maintaining it at required levels, is expected to enhance overall banking system stability. Furthermore, income diversification is expected to positively impact bank stability, allowing banks to enrich their service offerings and reduce

dependence on lending activities, aligning with the views expressed by Shim (2019). Conversely, credit risk and problem loans are anticipated to negatively impact bank stability, in line with expectations outlined by Anh and Phuong (2021). Lastly, the occurrence of bank crises is anticipated to exert a negative influence on bank stability.

4. Methodology

In conducting the regression analysis, this study employs a robust statistical methodology known as the Generalized Method of Moments (GMMs) within a dynamic panel data framework. GMM is chosen to address potential endogeneity concerns and account for country-specific fixed effects. Lagged values are utilized as instruments in this approach, contributing to its effectiveness over multiple short time periods. Notably, GMM's flexibility permits the inclusion of more moment conditions than parameters, enhancing its efficiency compared to the Method of Moments (MMs) (Arellano & Bover, 1995; Blundell & Bond, 1998; Baltagi & Baltagi, 2008).

By leveraging lagged values as instruments, the GMM methodology proves adept at producing reliable results when estimating the impact of independent variables on dependent variables. This approach aligns with established practices, providing a robust analytical foundation for investigating the complex relationships influencing bank stability across the selected countries and time periods. The use of three distinct models further enhances the depth and precision of the analysis, enabling a comprehensive understanding of the factors at play in this context (Arellano & Bover, 1995; Blundell & Bond, 1998; Baltagi & Baltagi, 2008).

$$\begin{aligned} \text{Ln}(Z_SCORE) = & a_0 + a_1 \text{Ln}(Z_SCORE)_{it-1} + a_2 \text{MP}_{it} + a_3 \text{INF}_{it} + a_4 \text{CR}_{it} \\ & + a_5 \text{REG}_{it} + a_6 \text{ID}_{it} + a_7 \text{BC}_{it} + a_8 \text{MS}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Ln}(Z_SCORE) = & a_0 + a_1 \text{Ln}(Z_SCORE)_{it-1} + a_2 \text{MP}_{it} + a_3 \text{INF}_{it} + a_4 \text{CR}_{it} \\ & + a_5 \text{REG}_{it} + a_6 \text{ID}_{it} + a_7 \text{BC}_{it} + a_8 \text{MS}_{it} + a_9 \text{LFC}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Ln}(Z_SCORE) = & a_0 + a_1 \text{Ln}(Z_SCORE)_{it-1} + a_2 \text{MP}_{it} + a_3 \text{INF}_{it} + a_4 \text{CR}_{it} \\ & + a_5 \text{REG}_{it} + a_6 \text{ID}_{it} + a_7 \text{BC}_{it} + a_8 \text{MS}_{it} + a_{10} \text{CC}_{it} + a_{11} \text{GE}_{it} \\ & + a_{12} \text{PS}_{it} + a_{13} \text{RQ}_{it} + a_{12} \text{RL}_{it} + a_{13} \text{VACC}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

where “*it*” describes the country and time, accordingly, “ ε_{it} ” is an independent error term. Dependent variable $\text{Ln}(Z_SCORE)$ assesses stability of the bank sector. The country-level factors and specific-banking sector contain Market Power (MP); Inefficiency (INF); Credit Risk (CR); Capital Regulation (REG); Income Diversification (ID); Bank Crisis (BC); and Financial Market Development (FD); Market Share (MS); Level of Freedom from Corruption (LFC); Control of Corruption (CC); Government Effectiveness (GE); Political Stability and Absence of Violence/Terrorism (PS), Regulatory Quality (RQ), Rule of Law (RL), and Voice and Accountability (VACC).

The third model incorporates data from the first model along with six World-wide Governance Indicators (WGIs). However, corruption data from the second model is excluded in this third model due to the inclusion of the “Control of Corruption” indicator within the WGI. Including both could lead to multicollinearity, which would pose significant challenges in accurately interpreting the results.

5. Results and Discussion

Table 3 reveals significant variability across the sample of transition economies. The average z-score of 9.57 indicates generally stable banking sectors, though with considerable variation ($SD = 6.27$). Inflation rates are notably high, averaging 56.04%, reflecting economic instability, while credit risk also shows wide disparities, with a mean of 7.94% and a large standard deviation. Governance indicators, such as regulatory quality and government effectiveness, show moderate effectiveness with substantial variability. Market conditions, including competition and income diversification, differ widely, highlighting the diverse economic environments in these post-Soviet states. The range in corruption control and other governance indicators underscores the varying degrees of institutional strength across these countries, which play a crucial role in influencing banking stability.

Table 3. Descriptive statistics (2000-2021).

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Z_SCORE	264	9.57	6.27	1.47	50.86
MP	264	0.28	0.09	0.00	0.62
INF	264	56.04	11.57	25.48	98.92
CR	264	7.94	10.07	0.00	59.76
REG	264	19.58	6.48	7.70	48.60
ID	264	42.99	12.82	12.76	95.42
BC	264	0.07	0.26	0.00	1.00
MS	264	30.29	13.58	0.00	74.51
LFC	264	53.92	7.64	35.00	70.21
CC	264	0.03	0.90	-1.92	2.32
GE	264	0.04	0.91	-2.41	2.22
PS	264	0.00	0.88	-2.85	2.25
RQ	264	-0.02	0.87	-2.34	3.24
RL	264	-0.02	0.88	-2.74	1.82
VACC	264	-0.07	0.81	-1.78	3.60

Table 4 shows the results of the Pearson correlation matrix that there is no serious multicollinearity among the variables, as the correlations between most variables are relatively low to moderate. This suggests that the variables can be used in the regression analysis without significant concerns about multicollinearity affecting the results (Pearson, 1920).

Table 4. Correlation matrix.

	Z_SCORE	MP	INF	CR	REG	ID	BC	MS	LFC	CC	GE	PS	RQ	RL	VACC
Z_SCORE	1.000														
MP	-0.089	1.000													
INF	0.130	-0.401	1.000												
CR	-0.182	-0.175	-0.019	1.000											
REG	0.353	0.148	-0.098	-0.020	1.000										
ID	-0.016	-0.049	0.409	-0.089	-0.079	1.000									
BC	-0.178	-0.097	0.009	0.261	0.241	0.210	1.000								
MS	-0.183	-0.239	-0.119	-0.018	-0.018	-0.017	0.040	1.000							
LFC	-0.077	0.196	-0.287	-0.010	-0.023	-0.211	-0.047	0.058	1.000						
CC	-0.146	0.022	-0.239	0.105	0.114	-0.087	-0.205	-0.112	0.349	1.000					
GE	-0.165	0.011	-0.108	-0.053	-0.043	-0.087	-0.228	-0.031	0.421	0.058	1.000				
PS	0.053	0.016	-0.137	0.012	0.142	-0.121	-0.107	-0.180	-0.051	-0.026	0.110	1.000			
RQ	0.111	0.207	-0.249	0.064	0.164	0.123	0.010	-0.070	0.146	0.261	0.383	0.110	1.000		
RL	-0.073	0.076	-0.049	-0.241	-0.181	0.171	0.140	0.012	0.248	0.271	0.222	0.004	0.347	1.000	
VACC	0.039	0.054	-0.004	0.231	0.124	-0.173	-0.118	-0.011	0.035	0.048	-0.089	0.046	0.111	-0.072	1.000

As shown in **Table 5**, The panel unit root tests show that all variables in the study are stationary, meaning they are stable over time without unit roots. This stability ensures the reliability of the regression analysis, confirming that the findings are robust and not influenced by spurious correlations (Levin et al., 2002; Pesaran, 2004).

To address endogeneity issues, the Granger causality test was employed to determine the direction of the relationship between the independent variables and banking sector stability ($\ln(Z)$). The findings, as displayed in **Table 6** reveal that all independent variables, such as market power, inflation, credit risk, regulatory quality, and others, have a statistically significant impact on banking stability at either the 1% or 5% significance level. This indicates that the historical values of these variables provide predictive insights into the future stability of the banking sector, confirming their crucial role in the study.

Table 5. Results of panel unit root's test.

Variables	1: (2002) Levin-Lin-Chu		2: (2003) Im-Pesaran-Shin	
	Including trend	With cross-sectional dependence	Including trend	With cross-sectional dependence
Z-SCORE	-4.443*	-3.535*	-4.524*	-5.296*
MP	-5.326*	-5.417*	-5.643*	-2.247**
INF	-3.514*	-4.664*	-3.352*	-4.355*
CR	-6.267*	-4.282*	-4.575*	-3.324**
REG	-3.231*	-5.494*	-4.447*	-4.264*
ID	-2.425*	-2.217**	-6.538*	-5.732*
BC	-3.678*	-4.753**	-4.743*	-4.329*
MS	-4.214*	-6.526*	-4.522*	-2.224**
LFC	-5.456*	-5.744*	-2.143**	-5.584**
CC	-2.374**	-3.337*	-5.364*	-4.564**
PS	-4.532*	-4.283*	-3.666*	-4.359*
GE	-3.232*	-3.083*	-2.466*	-2.359*
RQ	-2.121**	-2.125**	-5.445*	-5.845*
RL	-5.359*	-5.474*	-6.654*	-4.286*
VACC	-5.678*	-5.587*	-3.650	-4.328*

Note: **Table 5** shows the panel unit root test results employing Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) unit root test (H_0 : Panels include unit roots). *, **, and *** indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Test of Granger causality.

Hypothesis 0			F-statistics	Probability value	Granger causality
MP	→	Ln(Z)	4.365*	[0.000]	Yes
INF	→	Ln(Z)	2.125**	[0.022]	Yes
CR	→	Ln(Z)	2.125**	[0.001]	Yes
REG	→	Ln(Z)	4.536*	[0.000]	Yes
ID	→	Ln(Z)	2.243**	[0.003]	Yes
BC	→	Ln(Z)	4.365*	[0.035]	Yes
MS	→	Ln(Z)	5.427*	[0.000]	Yes
LFC	→	Ln(Z)	2.24**	[0.042]	Yes
CC	→	Ln(Z)	5.351*	[0.001]	Yes
PS	→	Ln(Z)	2.202**	[0.000]	Yes
GE	→	Ln(Z)	1.282*	[0.000]	Yes

Continued

RQ	→	Ln(Z)	4.276*	[0.000]	Yes
RL	→	Ln(Z)	4.41*	[0.027]	Yes
VACC	→	Ln(Z)	5.656*	[0.027]	Yes

Note: * and ** indicate 1% and 5% statistical significance levels, respectively.

Based on the independent variables, three distinct models were constructed, each incorporating different sets of factors as outlined in **Table 7**. The first model focused on financial variables, the second included corruption indicators from the ICRG, and the third integrated six Worldwide Governance Indicators (WGIs). Notably, the corruption index from the second model was excluded in the third model to avoid redundancy with the Control of Corruption indicator already present within the WGI set. All three models consistently revealed directional relationships between the z-score (the dependent variable) and the independent variables, though the significance of these relationships varied across models. According to expectations, the analysis revealed a positive and significant relationship between corruption indicators and the z-score in both models incorporating corruption data. This finding aligns with the “sand in the wheels” hypothesis, which posits that lower corruption levels contribute to enhanced banking stability. Models 1 and 2, which emphasize the corruption indicator, show the largest coefficient, underscoring the critical importance of addressing corruption to bolster economic stability. The results confirm previous works (Tran et al., 2017; Syed et al., 2022). For instance, Nurhidayat and Rokhim (2018) argued that heightened levels of corruption intensify banks’ propensity for risky behavior, a sentiment echoed by (Ben Ali et al., 2020). The cumulative effects of corruption are further manifested in the proliferation of less stable banks, thereby increasing the likelihood of systemic crises. Moreover, corruption disproportionately impacts interest margins over profitability, incentivizing banks to engage with riskier borrowers, which leads to a surge in bad debts and elevates the potential for defaults or financial crises.

In Model 3, the WGI indicators excluding Voice and Accountability also exhibit a positive and significant impact on bank stability. Specifically, Regulatory Quality, Rule of Law, and Political Stability and Absence of Violence have the highest coefficient values, suggesting that these factors play a crucial role in promoting financial system stability. For instance, AlKhoury and Arouri (2019) identified positive impacts of a lack of competition, government intervention, high control of central banks, and legal protection on banking performance. The negative but insignificant relationship of Voice and Accountability in Model 3 reflects the political regimes typical of post-Soviet countries. The result of Voice and Accountability is in contrast to the conclusion of Ranasinghe and Peiris (2018) but reinforces the findings of Uddin et al. (2020), who also noted that increasing levels of voice and accountability tend to amplify banks’ risk-taking behaviors.

Table 7. GMM estimations.

Dependent Variable: Ln(Z)	(1)	(2)	(3)
MP	0.022 (2.53)	0.0709 (0.118)	0.223* (0.080)
INF	-0.053** (0.007)	-0.058* (0.041)	-0.121*** (-0.011)
CR	0.0413* (0.074)	0.0291 (0.62)	0.041** (0.030)
REG	-0.032 (0.148)	-0.016 (0.350)	-0.033** (0.049)
ID	0.057** (0.042)	0.063** (0.070)	0.0621 (0.230)
BC	-0.031 (0.170)	-0.148 (0.330)	-0.022 (0.470)
MS	-0.014 (0.440)	-0.012 (0.310)	-0.023 (0.661)
LFC	-	0.356*** (0.000)	-
CC	-	-	0.222** (0.009)
PS	-	-	1.32* (0.002)
GE	-	-	0.201 (0.067)*
RQ	-	-	1.224* (0.001)
RL	-	-	0.333*** (0.000)
VACC	-	-	-1.321 (0.002)
Time dummy	YES	YES	YES
Hansen-test	(0.389)	(0.465)	(0.489)
Sargan-test	(0.317)	(0.412)	(0.457)
M2-test	(0.311)	(0.366)	(0.362)

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

Market share, on the other hand, consistently displays an inverse and insignificant relationship with the *z*-score across all models. Unexpectedly, market power exhibits a positive impact on the *z*-score, which diverges from prior studies. This positive relationship supports the “competition-fragility” theory, suggesting that increased market power enhances banking stability within these countries. This finding aligns with policies aimed at consolidating banking structures and strengthening regulatory frameworks (Sanderson et al., 2018; Albaity et al., 2019; Khattak et al., 2021). Income diversification demonstrates a positive relationship with banking stability, in line with expectations and previous research. For instance, supporting this view, Nguyen et al. (2012) and Köhler (2015) found that banks diversifying their income with both interest and non-interest sources tend to exhibit greater stability. While this relationship is significant in Models 1 and 2, it becomes insignificant in Model 3, indicating that diversified income sources contribute to banking stability by mitigating risks associated with lending activities.

The indicator of banking crises shows a negative, albeit insignificant, impact on banking stability across all models. Conversely, credit risk has a positive effect, implying that increased non-performing loans may enhance bank stability, potentially due to ongoing measures to address problem assets and the natural evolution of the sector. This result does not correspond to expectations and most studies, but converges with the results of work by Atoi (2018) and Adusei (2015). Inefficiency, as represented by the Cost-Income Ratio (CIR), shows an inverse and significant relationship with banking stability in all models, supporting previous research (e.g. Dias, 2021; Jovita & Wahyudi, 2017). A lower CIR indicates more efficient utilization of funds, thereby contributing to greater banking stability. The regulatory capital indicator, meanwhile, demonstrates a negative relationship with the *z*-score, significant only in Model 3. This finding contrasts with some prior studies that identify banking regulation as a crucial factor in ensuring stability and minimizing default risk (e.g. Lotto, 2018; Dias, 2021; Adem, 2023). The result of our work suggests that higher capital requirements may reduce return on assets and increase the costs associated with maintaining capital levels (Oduor et al., 2017; Boachie et al., 2021).

6. Conclusion

This study provides a comprehensive analysis of the influence of corruption and governance on the sustainability and stability of the banking sector in transition economies. By examining data from 2000 to 2021, this research offers valuable insights into how different governance frameworks and corruption levels impact financial stability across countries that share a common historical background but have embarked on diverse political and economic trajectories. The findings underscore the critical role that corruption plays in undermining banking stability, particularly in regions with weaker governance structures. High levels of corruption are shown to exacerbate financial instability by eroding trust in financial institutions, increasing the cost of capital, and fostering an environment conducive

to risky and unsound banking practices. Conversely, the research highlights that robust governance—characterized by strong regulatory quality, government efficiency, and adherence to the rule of law—is essential in mitigating these risks and promoting a more stable banking environment. The study also reveals that countries with more effective governance frameworks are better equipped to maintain financial stability, even in the face of global economic shocks.

6.1. Practical Implications

From a practical standpoint, the findings emphasize the need for targeted interventions to reduce the influence of corruption within the financial sector. Legislative reforms, stricter anti-corruption measures, and educational initiatives aimed at reshaping public perceptions are vital. Banking regulators should focus on implementing robust systems for assessing bank quality, managing assets, and overseeing risks to ensure continuous monitoring and prevention of financial instability. Additionally, bank management should prioritize ethical training, rigorous adherence to risk assessment protocols, and the adoption of automation technologies to minimize human error and enhance post-control evaluations. National governments are also encouraged to consider the broader implications of governance indicators, such as regulatory quality, government efficiency, political stability, and the rule of law, on the overall stability of the banking sector. These efforts should be complemented by initiatives to reduce problem loans, address operational inefficiencies, and increase income diversification within banks.

6.2. Theoretical Implications

The study contributes to the broader discourse on banking stability by expanding the understanding of how governance and corruption interplay to affect financial institutions in transition economies. The research highlights that governance quality is not merely a peripheral factor but a central pillar that supports the resilience of banking systems. It challenges traditional perspectives on corruption by suggesting that its impact can vary depending on the surrounding governance environment. This study encourages a more holistic approach to examining banking stability and integrating governance and corruption into the analysis alongside traditional financial metrics. Such an approach offers a richer theoretical framework to explain the diverse outcomes observed in different transition economies.

6.3. Future Research

Building on these findings, future research could explore the short-term and long-term effects of competition on banking stability and overall bank performance. Additionally, further studies could delve into the complex relationships between governance quality, corruption, and bank stability, incorporating a wider range of financial variables such as non-performing loans, profitability, and loan portfolio volume. There is also a need for more detailed investigations into the positive relationship between credit risk levels and bank stability, including a breakdown of

z-score components to identify specific areas of correlation. Incorporating lagged variables in future models could provide a deeper understanding of the short-term and long-term dynamics at play.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Abbas, F., & Ali, S. (2022). Dynamics of Diversification and Banks' Risk-Taking and Stability: Empirical Analysis of Commercial Banks. *Managerial and Decision Economics*, *43*, 1000-1014. <https://doi.org/10.1002/mde.3434>
- Adem, M. (2022). Impact of Diversification on Bank Stability: Evidence from Emerging and Developing Countries. *Discrete Dynamics in Nature and Society*, *2022*, Article ID: 7200725. <https://doi.org/10.1155/2022/7200725>
- Adem, M. (2023). Impact of Income Diversification on Bank Stability: A Cross-Country Analysis. *Asian Journal of Accounting Research*, *8*, 133-144. <https://doi.org/10.1108/ajar-03-2022-0093>
- Adusei, M. (2015). The Impact of Bank Size and Funding Risk on Bank Stability. *Cogent Economics & Finance*, *3*, Article ID: 1111489. <https://doi.org/10.1080/23322039.2015.1111489>
- Albaity, M., Mallek, R. S., & Noman, A. H. M. (2019). Competition and Bank Stability in the MENA Region: The Moderating Effect of Islamic versus Conventional Banks. *Emerging Markets Review*, *38*, 310-325. <https://doi.org/10.1016/j.ememar.2019.01.003>
- Ali, M., Sohail, A., Khan, L., & Puah, C. (2019). Exploring the Role of Risk and Corruption on Bank Stability: Evidence from Pakistan. *Journal of Money Laundering Control*, *22*, 270-288. <https://doi.org/10.1108/jmlc-03-2018-0019>
- AlKhouri, R., & Arouri, H. (2019). The Effect of Diversification on Risk and Return in Banking Sector: Evidence from the Gulf Cooperation Council Countries. *International Journal of Managerial Finance*, *15*, 100-128. <https://doi.org/10.1108/ijmf-01-2018-0024>
- Almazari, A. A. (2013). Capital Adequacy, Cost Income Ratio and the Performance of Saudi Banks. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *3*, 284-293.
- Amara, T., & Mabrouki, M. (2019). The Impact of Liquidity and Credit Risks on the Bank Stability. *Journal of Smart Economic Growth*, *4*, 97-116.
- Anastasiou, D., Bragoudakis, Z., & Malandrakis, I. (2019). Non-Performing Loans, Governance Indicators and Systemic Liquidity Risk: Evidence from Greece. *SSRN Electronic Journal*.
- Anh, N. Q., & Phuong, D. N. T. (2021). The Impact of Credit Risk on the Financial Stability of Commercial Banks in Vietnam. *Ho Chi Minh City Open University Journal of Science—Economics and Business Administration*, *11*, 67-80. <https://doi.org/10.46223/hcmcoujs.econ.en.11.2.1421.2021>
- Arellano, M., & Bover, O. (1995). Another Look at the Instrumental Variable Estimation of Error-Components Models. *Journal of Econometrics*, *68*, 29-51. [https://doi.org/10.1016/0304-4076\(94\)01642-d](https://doi.org/10.1016/0304-4076(94)01642-d)
- Arshad, S., & Rizvi, S. A. R. (2013). Impact of Corruption on Bank Profitability: An Analysis of Islamic Banks. *International Journal of Business Governance and Ethics*, *8*, 195-209. <https://doi.org/10.1504/ijbge.2013.057375>

- Asteriou, D., Pilbeam, K., & Tomuleasa, I. (2016). *The Impact of Economic Freedom, Business Regulation and Corruption on Bank Profitability and Bank Stability: Evidence from Europe*. <https://openaccess.city.ac.uk/id/eprint/16839/>
- Athari, S. A., & Irani, F. (2022). Does the Country's Political and Economic Risks Trigger Risk-Taking Behavior in the Banking Sector: A New Insight from Regional Study. *Journal of Economic Structures*, 11, Article No. 32.
- Athari, S. A., Irani, F., & Haddood, A. A. (2023). Country Risk Factors and Banking Sector Stability: Do Countries' Income and Risk-Level Matter? Evidence from Global Study. *Heliyon*, 9, e20398.
- Athari, S. A., Isayev, M., & Irani, F. (2024). Does Country Risk Rating Explain Shadow Banking Development? Insights from Advanced and Emerging Market Economies. *Economic Systems*, 48, Article ID: 101192.
- Atoi, N. V. (2018). Non-Performing Loan and Its Effects on Banking Stability: Evidence from National and International Licensed Banks in Niger. *CBN Journal of Applied Statistics (JAS)*, 9, 43-74.
- Baltagi, B. H., & Baltagi, B. H. (2008). *Econometric Analysis of Panel Data* (Vol. 4). Wiley.
- Beck, T., De Jonghe, O., & Schepens, G. (2013). Bank Competition and Stability: Cross-Country Heterogeneity. *Journal of Financial Intermediation*, 22, 218-244. <https://doi.org/10.1016/j.jfi.2012.07.001>
- Ben Ali, M. S., Fhima, F., & Noura, R. (2020). How Does Corruption Undermine Banking Stability? A Threshold Nonlinear Framework. *Journal of Behavioral and Experimental Finance*, 27, Article ID: 100365. <https://doi.org/10.1016/j.jbef.2020.100365>
- Ben Lahouel, B., Taleb, L., & Kossai, M. (2022a). Nonlinearities between Bank Stability and Income Diversification: A Dynamic Network Data Envelopment Analysis Approach. *Expert Systems with Applications*, 207, Article ID: 117776. <https://doi.org/10.1016/j.eswa.2022.117776>
- Ben Lahouel, B., Taleb, L., Kočíšová, K., & Ben Zaied, Y. (2022b). The Threshold Effects of Income Diversification on Bank Stability: An Efficiency Perspective Based on a Dynamic Network Slacks-Based Measure Model. *Annals of Operations Research*, 330, 267-304. <https://doi.org/10.1007/s10479-021-04503-4>
- Blundell, R., & Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87, 115-143. [https://doi.org/10.1016/s0304-4076\(98\)00009-8](https://doi.org/10.1016/s0304-4076(98)00009-8)
- Boachie, R., Aawaar, G., & Domeher, D. (2021). Relationship between Financial Inclusion, Banking Stability and Economic Growth: A Dynamic Panel Approach. *Journal of Economic and Administrative Sciences*, 39, 655-670. <https://doi.org/10.1108/jeas-05-2021-0084>
- Bougatef, K. (2017). Determinants of Bank Profitability in Tunisia: Does Corruption Matter? *Journal of Money Laundering Control*, 20, 70-78. <https://doi.org/10.1108/jmlc-10-2015-0044>
- Chortareas, G. E., Girardone, C., & Ventouri, A. (2012). Bank Supervision, Regulation, and Efficiency: Evidence from the European Union. *Journal of Financial Stability*, 8, 292-302. <https://doi.org/10.1016/j.jfs.2011.12.001>
- Diallo, B. (2015). Bank Competition and Crises Revisited: New Results. *Economics Letters*, 129, 81-86. <https://doi.org/10.1016/j.econlet.2015.02.015>
- Dias, R. (2021). Capital Regulation and Bank Risk-Taking—New Global Evidence. *Accounting & Finance*, 61, 847-884. <https://doi.org/10.1111/acfi.12595>
- Gangi, Y. A., & Abdulrazak, R. S. (2012). The Impact of Governance on FDI Flows to African Countries. *World Journal of Entrepreneurship, Management and Sustainable Development*,

- 8, 162-169. <https://doi.org/10.1108/20425961211247761>
- Ghenimi, A., Chaibi, H., & Omri, M. A. B. (2017). The Effects of Liquidity Risk and Credit Risk on Bank Stability: Evidence from the MENA Region. *Borsa Istanbul Review*, 17, 238-248. <https://doi.org/10.1016/j.bir.2017.05.002>
- Goel, R. K., & Hasan, I. (2011). Economy-Wide Corruption and Bad Loans in Banking: International Evidence. *Applied Financial Economics*, 21, 455-461. <https://doi.org/10.1080/09603107.2010.532112>
- Goetz, M. R. (2018). Competition and Bank Stability. *Journal of Financial Intermediation*, 35, 57-69. <https://doi.org/10.1016/j.jfi.2017.06.001>
- Hasan, R., & Ashfaq, M. (2021). Corruption and Its Diverse Effect on Credit Risk: Global Evidence. *Future Business Journal*, 7, Article No. 18. <https://doi.org/10.1186/s43093-021-00060-1>
- Hendrickson, J. M., Nichols, M. W., & Fairchild, D. R. (2014). Bank Branch Location and Stability during Distress. *Journal of Financial Economic Policy*, 6, 133-151. <https://doi.org/10.1108/jfep-07-2013-0026>
- Ibrahim, M. H., Salim, K., Abojeib, M., & Yeap, L. W. (2019). Structural Changes, Competition and Bank Stability in Malaysia's Dual Banking System. *Economic Systems*, 43, 111-129. <https://doi.org/10.1016/j.ecosys.2018.09.001>
- Idawati, W., & Syafputri, S. A. (2022). The Effect of Digital Financial, Credit Risk, Overhead Cost, and Non-Interest Income on Bank Stability. *Inquisitive: International Journal of Economic*, 3, 23-44. <https://doi.org/10.35814/inquisitive.v3i1.4227>
- Irani, F., Haddood, A. A. A., Katircioglu, S., & Katircioglu, S. (2023). Impact of Sentiment and Monetary Policy on Mexican Tourism Stock Returns: The Domestic and US Role. *Journal of Hospitality and Tourism Insights*, 6, 632-653. <https://doi.org/10.1108/jhti-07-2021-0178>
- Jovita, A., & Wahyudi, S. (2017). *The Impact of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), and Cost to Income Ratio (CIR) toward Banks Profitability (Comparison Study of Domestic Bank and Foreign Bank in Indonesia from 2011 to 2015)*. Doctoral Dissertation, Diponegoro University.
- Kasman, S., & Kasman, A. (2015). Bank Competition, Concentration and Financial Stability in the Turkish Banking Industry. *Economic Systems*, 39, 502-517. <https://doi.org/10.1016/j.ecosys.2014.12.003>
- Khattak, M. A., Ali, M., Hamid, B. A., & Islam, M. U. (2021). Competition, Diversification, and Stability in the Indonesian Banking System. *Buletin Ekonomi Moneter dan Perbankan*, 24, 59-88. <https://doi.org/10.21098/bemp.v24i0.1481>
- Köhler, M. (2015). Which Banks Are More Risky? The Impact of Business Models on Bank Stability. *Journal of Financial Stability*, 16, 195-212. <https://doi.org/10.1016/j.jfs.2014.02.005>
- Le, T. D. (2021). Geographic Expansion, Income Diversification, and Bank Stability: Evidence from Vietnam. *Cogent Business & Management*, 8, Article ID: 1885149. <https://doi.org/10.1080/23311975.2021.1885149>
- Levin, A., Lin, C., & James Chu, C. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, 108, 1-24. [https://doi.org/10.1016/s0304-4076\(01\)00098-7](https://doi.org/10.1016/s0304-4076(01)00098-7)
- Lotto, J. (2018). The Empirical Analysis of the Impact of Bank Capital Regulations on Operating Efficiency. *International Journal of Financial Studies*, 6, Article 34. <https://doi.org/10.3390/ijfs6020034>
- Matey, J. (2021). Bank Liquidity Risk and Bank Credit Risk: Implication on Bank Stability

- in Ghana. *International Journal of Scientific Research in Multidisciplinary Studies*, 7, 1-9.
- Miah, M. D., & Uddin, H. (2017). Efficiency and Stability: A Comparative Study between Islamic and Conventional Banks in GCC Countries. *Future Business Journal*, 3, 172-185. <https://doi.org/10.1016/j.fbj.2017.11.001>
- Mongid, A., & Tahir, I. M. (2011). Impact of Corruption on Banking Profitability in ASEAN Countries: An Empirical Analysis. *IM Tahir-Banks and Bank Systems*, 6, 41-48.
- Ngoc Nguyen, K. (2019). Revenue Diversification, Risk and Bank Performance of Vietnamese Commercial Banks. *Journal of Risk and Financial Management*, 12, Article 138. <https://doi.org/10.3390/jrfm12030138>
- Nguyen, H. (2023). Does Institutional Quality Reduce the Impact of Market Concentration on Bank Stability? Evidence of Developing Countries. *Cogent Economics & Finance*, 11, Article ID: 2244769. <https://doi.org/10.1080/23322039.2023.2244769>
- Nguyen, M., Skully, M., & Perera, S. (2012). Market Power, Revenue Diversification and Bank Stability: Evidence from Selected South Asian Countries. *Journal of International Financial Markets, Institutions and Money*, 22, 897-912. <https://doi.org/10.1016/j.intfin.2012.05.008>
- Nurhidayat, R. M., & Rokhim, R. (2018). Corruption and Government Intervention on Bank Risk-Taking: Cases of Asian Countries. *Jurnal Dinamika Manajemen*, 9, 228-237. <https://doi.org/10.15294/jdm.v9i2.15951>
- Oduor, J., Ngoka, K., & Odongo, M. (2017). Capital Requirement, Bank Competition and Stability in Africa. *Review of Development Finance*, 7, 45-51. <https://doi.org/10.1016/j.rdf.2017.01.002>
- Park, J. (2012). Corruption, Soundness of the Banking Sector, and Economic Growth: A Cross-Country Study. *Journal of International Money and Finance*, 31, 907-929. <https://doi.org/10.1016/j.jimonfin.2011.07.007>
- Pearson, K. (1920). Notes on the History of Correlation. *Biometrika*, 13, 25-45. <https://doi.org/10.1093/biomet/13.1.25>
- Pesaran, M. H. (2004). General Diagnostic Tests for Cross Section Dependence in Panels. *SSRN Electronic Journal*.
- Rahman, S. M. K., Chowdhury, M. A. F., & Tania, T. C. (2021). Nexus among Bank Competition, Efficiency and Financial Stability: A Comprehensive Study in Bangladesh. *The Journal of Asian Finance, Economics and Business*, 8, 317-328.
- Ranasinghe, M. B. M., & Peiris, T. U. I. (2018). *Effect of Good Governance on Bank Lending: Evidence from Commercial Banks in Sri Lanka*. <http://repo.lib.sab.ac.lk:8080/xmlui/handle/123456789/176?show=full>
- Rehman, A., Abdul Adzis, A., & Mohamed Arshad, S. B. (2020). The Relationship between Corruption and Credit Risk in Commercial Banks of Pakistan. *International Journal of Innovation, Creativity and Change*, 11, 701-715.
- Sanderson, A., Le Roux, P., & Mutandwa, L. (2018). Competition and Bank Stability. *International Journal of Economics and Financial Issues*, 8, 86.
- Saputra, A. A., Najmudin, N., & Shaferi, I. (2020). The Effect of Credit Risk, Liquidity Risk and Capital Adequacy on Bank Stability. *Sustainable Competitive Advantage (SCA)*, 10, 153-162.
- Schaeck, K., & Cihák, M. (2014). Competition, Efficiency, and Stability in Banking. *Financial Management*, 43, 215-241. <https://doi.org/10.1111/fima.12010>
- Shabbir, G., Anwar, M., & Adil, S. (2016). Corruption, Political Stability and Economic Growth. *The Pakistan Development Review*, 55, 689-702.
- Shijaku, G. (2017). *Bank Stability and Competition: Evidence from Albanian Banking Market*

- Eurasian Journal of Business and Economics*, 10, 127-154.
<https://doi.org/10.17015/ejbe.2017.019.07>
- Shim, J. (2019). Loan Portfolio Diversification, Market Structure and Bank Stability. *Journal of Banking & Finance*, 104, 103-115. <https://doi.org/10.1016/j.jbankfin.2019.04.006>
- Siregar, H. S., & Chandra, G. (2017). The Effect of Lerner Index and Income Diversification on the General Bank Stability in Indonesia. *Banks and Bank Systems*, 12, 56-64. [https://doi.org/10.21511/bbs.12\(4\).2017.05](https://doi.org/10.21511/bbs.12(4).2017.05)
- Smaoui, H., Mimouni, K., & Temimi, A. (2020). The Impact of Sukuk on the Insolvency Risk of Conventional and Islamic Banks. *Applied Economics*, 52, 806-824. <https://doi.org/10.1080/00036846.2019.1646406>
- Syed, A. A., Kamal, M. A., Ullah, A., & Grima, S. (2022). An Asymmetric Analysis of the Influence That Economic Policy Uncertainty, Institutional Quality, and Corruption Level Have on India's Digital Banking Services and Banking Stability. *Sustainability*, 14, Article 3238. <https://doi.org/10.3390/su14063238>
- Tariq, W., Usman, M., Tariq, A., Rashid, R., Yin, J., Memon, M. A. et al. (2021). Bank Maturity, Income Diversification, and Bank Stability. *Journal of Business Economics and Management*, 22, 1492-1511. <https://doi.org/10.3846/jbem.2021.15583>
- Thakor, A. V. (2014). Bank Capital and Financial Stability: An Economic Trade-Off or a Faustian Bargain? *Annual Review of Financial Economics*, 6, 185-223. <https://doi.org/10.1146/annurev-financial-110613-034531>
- Tran, S. H., Nguyen, M. Q. C., & Nguyen, L. T. (2017). Corruption and the Soundness of Banking Systems in Middle-Income Countries. *Science & Technology Development Journal: Economics-Law and Management*, 1, 82-91. <https://doi.org/10.32508/stdjelm.v1iq5.494>
- Uddin, A., Chowdhury, M. A. F., Sajib, S. D., & Masih, M. (2020). Revisiting the Impact of Institutional Quality on Post-GFC Bank Risk-Taking: Evidence from Emerging Countries. *Emerging Markets Review*, 42, Article ID: 100659. <https://doi.org/10.1016/j.ememar.2019.100659>
- Zubair, D. S. S., & Khan, M. (2014). Good Governance: Pakistan's Economic Growth and Worldwide Governance Indicators. *Pakistan Journal of Commerce and Social Sciences*, 8, 258-271.