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The Impact of Institutional Quality on Bank Efficiency Moderated by Financial Freedom: Evidence from Emerging Economies

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ABSTRACT

The paper aims to study the impact of institutional quality on bank efficiency, with financial freedom as a moderating factor in the emerging economies. The study uses panel data of 49 upper middle-income countries over a period of 2005 to 2020 and employs dynamic system GMM to address the potential endogeneity and persistence in bank efficiency. The findings of the study show that improvements in the institutional quality significantly improve the banking efficiency by reducing the operational costs. It further highlights that the financial freedom plays a significant moderating role in the relationship between institutional quality and the bank efficiency. The study has policy implications for policy makers and suggest that policy reforms to strengthen the governance structure while promoting the financial sector liberalization would improve banking efficiency.

INTRODUCTION

The efficiency of banking sector plays a central role in supporting economic growth; however, it can be contingent on the corporate governance attributes specific to banking industry. However, the performance of banking systems is influenced not only by internal management practices but also by the broader institutional environment in which banks operate (La Porta et al., 1998; Beck, Demirgüç-Kunt & Levine, 2006). Institutional quality refers to how well a country's rules, laws, and systems work, including its laws, regulations, how it's governed, and how rules are enforced. When we look closely at how good institutions relate to how well banks work, we find a complex situation with important effects. The quality of

institutions might interact with bank rules and oversight in a different way. This is because strong institutions could make the lending market work better. When institutions are good, like having a stable government, preventing corruption, and following the law it could lessen problems where borrowers hide information and take risky actions. This, in turn, could lead to better loan terms and more reliable loan repayments. As a result, the impact of bank rules and oversight on keeping banks stable could be influenced by how good the institutions are (Sun et al., 2022).

Developing nations that have managed to enhance their institutional quality simultaneously have shown better long-term performance compared to those where institutional quality is weaker or declining. Research indicates that many developing countries, which face difficulties in achieving their economic growth targets or encounter constraints related to specific growth thresholds, often grapple with issues related to inadequate transparency and political instability. Conversely, countries endowed with elevated levels of transparency and political stability, stemming from robust institutional frameworks, have demonstrated commendable performance, and have effectively navigated through various stages of economic transformation (Khan et al., 2019).

A lack of openness or the existence of corrupt practices can distort the political agenda by exerting improper influence on decision-making. Public officials may be given bribes and favors in exchange for their participation in corrupt activities, leading to an undue emphasis on specific areas. For example, the secrecy surrounding these illicit dealings can result in a redirection of policies and significant investments away from crucial development projects like education and healthcare, towards specific sectors such as defense, which can have a undesirable impact on economic growth (Wenlong et al., 2022). In the landscape of developing countries, achieving sustained economic growth and financial stability is a complex endeavor that hinges upon a multitude of factors. Among these factors, the roles of institutional quality, and bank efficiency stand out as critical determinants of economic progress in the context of emerging and developing countries. Therefore, the underlying study aims to study the role of institutional quality on banking efficiency moderated by financial freedom.

LITERATURE REVIEW

Theoretical Background:

Incorporating institutional theory into discussions surrounding institutional quality presents a valuable conceptual and analytical framework. Scapens (1994) observed routines as institutionalized patterns of behavior, which have been developed through repetition and adherence. In the context of this study, by examining how institutional quality affects bank cost structures, the institutional perspective is particularly relevant. Corruption control, rule of law, political stability, and financial inclusion are macro-level institutions that permeate the banking sector, which influence the overhead costs and cost-to-income ratios. These elements introduce external rules and norms that shape organizational routines, for instance, internal control, compliance protocols, and digital transformation strategies. Under institutional theory, banks internalize these macro-institutional pressures through routines (e.g., anti-corruption procedures), which become taken-for-granted in operations and constrain or enable financial efficiency.

Empirical Studies:

Numerous studies highlight that strong institutional quality, characterized by transparent regulations, effective governance mechanisms, and the rule of law, fosters an environment conducive to efficient banking operations. Such institutions provide a stable foundation that bolsters investor confidence, reduces informational asymmetry, and enhances risk management practices within banks (Wenlong et al., 2022).

Evidence suggests that countries with high institutional quality tend to have more efficient banking sectors. Additionally, strong institutions facilitate better supervision and regulation of banks, promoting sound lending practices and risk management. The empirical evidence also supports the view that strong institutional frameworks promote the efficiency of banks through the establishment of predictable

environments of legal and regulation system. As an example, Khan et al. (2022) examined the 25 emerging economies and identified that increasing institutional quality, scaled through the rule of law, regulatory quality, and government effectiveness resulted in both decreases in the operational costs of the banks, as well as the increase in return on assets. In a similar manner, Khemiri (2025) noted that the existence of good institutions is associated with reduced inefficiencies of intermediation by banks, i.e., it leads to more stringent credit screening, less corruption, and an effective risk control apparatus.

Further, anti-corruption measures as a variable of institutional strength has also occupied a significant part in the recent literature. The corruption in the banking ecosystem corrupts credit allocation, but also increases overhead expenses in terms of bribery, legal contingencies and reputational risk (Remeikienė, 2023).

Building on the premise that strong institutional frameworks underpin efficient financial intermediation, recent studies reinforce the crucial role of legal and regulatory quality in enhancing the efficiency of a bank. Khan et al. (2023) conducted a comprehensive cross-country analysis using data from 108 nations (1996–2020) and found that overall institutional quality, which encompasses voice and accountability, political stability, regulatory quality, government effectiveness, rule of law, and corruption control, which is significantly positively associated with financial system efficiency. The study also noted that this effect is particularly pronounced in lower-income countries, which demonstrates that weak institutions disproportionately impair financial efficiency under constrained environments. In a closely aligned investigation, Halaç, Durak, and Çelik (2024) employed system-GMM on data from 1,649 banks in 26 emerging economies (2008–2018), suggesting that World Governance Indicator (WGI)-based institutional measures, government effectiveness, regulatory quality, and rule of law which significantly improve CAMELS-based measures of bank performance. These institutions strengthen enforcement mechanisms, reduce informal costs, and facilitate efficient operations, which enable banks to perform better across profitability, asset quality, and operational outcomes.

Research indicates that political uncertainty raises the cost of bank loans, particularly evident in the syndicated loan market. Similarly, policy risk contributes to increased debt costs for firms. Moreover, strong political institutions can positively impact firm transparency and disclosure, leading to improved information available to banks regarding borrowers. Research by Francis, Hasan, and Zhu (2014) illustrates that political uncertainty heightens the cost of bank loans in the syndicated loan market. Similarly, Bradley, Pantzalis, and Yuan (2016) find that policy risk escalates firms' debt costs. These findings underscore the impact of political stability on funding costs and, by extension, bank efficiency.

Efficient lending and increased loan repayment probability are also associated with controlling corruption. By curbing lending-related corruption, which often leads to loan losses, a more conducive environment for lending and repayment can be fostered. Researchers consistently find that higher levels of corruption are associated with reduced operational efficiency and increased financial instability within banking systems. Beck, Demirgüç-Kunt, and Levine (2006) highlight how corruption hampers banks' ability to allocate resources efficiently, leading to credit misallocation and lower overall productivity. Corruption, characterized as the misuse of public or corporate authority for personal gain, presents a pervasive challenge that significantly affects economies, especially those in the developing and emerging categories (Koeswayo et al, 2024). Its detrimental effects encompass economic well-being, financial stability, and social welfare, manifesting in both public and private sectors.

The significance of the rule of law, particularly an effective judiciary, cannot be understated in ensuring a well-functioning lending market. Research by La Porta et al. (1998) and Beck et al. (2006) underscores that countries with well-established legal systems experience reduced information asymmetry, improved credit allocation, and heightened investor confidence, leading to more effective banking processes.

Beyond dispute resolution, the rule of law also reinforces internal governance structures within banks, promoting transparency and compliance. Hopt (2021) examined banking sectors across 30 OECD countries and reported a strong association between higher World Governance Indicator (WGI) rule-of-

law scores and the adoption of robust internal controls, enhanced audit protocols, and reduced incidence of malfeasance. Their study concluded that stronger legal systems correlate with a 10% lower frequency of compliance violations and diminished regulatory penalties, thus reducing non-operational costs and improving cost-to-income ratios (BCI). Additionally, Adam et al. (2024) found that the presence of efficient contract enforcement enables banks to allocate fewer resources to risk management and compliance overheads, which reinforce corporate transparency and contributing to greater operational efficiency. In essence, the rule of law shapes both creditor confidence and institutional discipline, which directly affects the operational cost structure and long-term performance of a bank.

Financial freedom serves as a metric that encompasses both the efficiency of the banking sector and its independence from government control and intervention within the financial domain. When banks and other financial institutions, such as insurers and capital markets, are under state ownership, it tends to curtail competition and subsequently leads to a decline in the quality of services offered (Kumar et al., 2022).

Recent findings also help emphasize the role financial freedom can play in boosting bank performance and effectiveness. Healthy competition and innovation in the banking sector can be fostered through financial freedom, which is characterized by low government intervention, foreign investment, and regulatory regime transparency (Xu & Pal, 2022). The pressure on banks in liberalized financial systems is due to the market for them to optimize their operational structure, the improvement of customer service, and to employ cost-effective technologies, all which lead to reduced cost-to-income ratios and better financial intermediation.

Stability of the political environment remains a key determinant of the macroeconomic environment that banks are operating. It affects the predictability of regulations, investor assurance, credit risk, and cost of conducting business. Political stability in the banking industry has a direct impact on the overhead cost to total assets ratio, which is critical in the measurement of the operating efficiency of a bank concerning its capability to manage administrative costs and non-interest expenses to the asset base (Mehzabin et al., 2023). A stable political environment limits operational risks, regulatory uncertainty, and compliance burden thereby lowering administrative costs. Syed (2025) state that in politically stable countries, the regulatory framework tends to be consistent, and the level of corruption is lower, which means that banks have fewer resources to spend on compliance, security, and contingency planning. The analysis that they conduct across the ASEAN nations reveals that a political stability has negative relationship with overhead cost ratios, indicating that stable political environment leads to efficiency in more efficient activities in banks. Equally, Kiptoo et al. (2021) confirm that political risk leads to an increment of overhead cost because of more investments in risk management activities like security, legal advice, and insurance. Banks in politically volatile economies will also have a greater turnover and training expenses since they will have to work under a very dynamic environment that is subject to continuous policy adjustments and socio-political instability (Ererdi et al., 2022). Their observational findings in South Asian economies affirm that political instability results in inefficiency, which increased the cost of overheads to the value of total assets. In addition, Aluko and Ajayi (2023) note that banks in politically unstable economies have higher overheads because they are more likely to employ a greater physical infrastructure presence and redundancy in staff in anticipation of dealing with a downturn because of political uncertainty. Their study of Sub-Saharan Africa found that political risk results in banks over-investing in non-productive facilities including hiring more security guards and building redundant data centers that increase operation expenses relative to asset expansion.

On the other hand, Dagar & Doytch (2024) argue that the long-term effects of political stability extend beyond cost reductions. Stable governance enhances institutional trust, increases engagement of a customer, and allows banks to invest in digital infrastructure all of which support cost-effective service delivery. In politically stable environments, banks are more likely to experiment with lean operating

models, remote banking solutions, and performance-based staffing all contributing to lower overhead costs relative to total assets.

Political stability enhances the operational efficiency of a bank by fostering regulatory coherence and digital transformation strategies that reduce overhead cost burdens. In environments where political institutions are stable and policy frameworks predictable, banks are more likely to invest confidently in technological innovations for instance process automation, digital onboarding, and online credit scoring tools, which reduce reliance on physical infrastructure and staff-heavy models (Villar & Khan, 2021). A recent panel data study of East and Southeast Asian countries between 2010 and 2022 found that banks operating in politically stable regimes showed significantly lower overhead cost-to-total assets ratios due to sustained digital transformation and reduced compliance volatility (Wu & Cheng, 2024). These banks were able to rationalize their administrative costs and maintain lean operations, which enhanced their efficiency over the long run. The study further emphasizes that political stability offers banks a longer investment horizon for capital expenditure in efficiency-enhancing technology, investments that are otherwise hindered by the policy unpredictability.

Moreover, political stability minimizes systemic uncertainty that forces banks to maintain unnecessary contingency overhead. In politically unstable economies, banks tend to inflate operational budgets by increasing physical security, legal consultations, or redundant infrastructure as hedges against policy shifts or political unrest (Aliyu & Wahab, 2024). Empirical research based on MENA and South Asian economies revealed that politically unstable environments were significantly associated with higher staff turnover, excessive administrative layers, and asset-hoarding strategies, all contributing to elevated overhead-to-asset ratios (Rahman & Barua, 2019). Conversely, stable political climates promote efficient capital allocation, tighter internal controls, and performance-based staffing. Such conditions enable the banks to streamline operational procedures and reallocate resources towards profit-generating activities instead of cost buffers. On the basis of these studies, following hypothesis is derived,

Control of corruption has emerged as a crucial institutional determinant of banking efficiency. Empirical research confirms that corruption distorts financial resource allocation, reduces productivity, and undermines investor confidence, which collectively exacerbate bank inefficiency (Carillo pulgar et al., 2025).

However, the efficiency costs of corruption can be significantly moderated by the degree of financial freedom present in an economy. In countries with high financial freedom, banks are generally subject to market-based competition, institutional checks, and independent regulatory oversight. These mechanisms limit the ability of corrupt actors to influence banking operations and enable banks to respond flexibly to governance weaknesses (Chortareas et al., 2013).

The rule of law is a foundational pillar of institutional quality, which influence the ability of banking sector to manage operational costs and maintain efficiency. A strong legal framework promotes contract enforcement, judicial independence, property rights, and regulatory consistency, all of which contribute to a stable and predictable environment for banks (Kaufmann et al., 2011). However, the effect of the rule of law on reducing bank overhead costs is substantially influenced by the level of financial autonomy or freedom within the financial system. In economies with high financial autonomy, banks have greater strategic flexibility to optimize operations, invest in technological upgrades, and implement governance standards that reinforce the rule of law (Raza & Ahmed, 2025).

The interplay between political stability and banking efficiency has been widely explored, with political stability frequently associated with improved financial system outcomes. For instance, Shah & Saleem (2025) argue that stable political environments foster investor confidence and regulatory predictability, allowing banks to reduce risk premia and streamline operations. This institutional coherence is often linked to lower operational costs, particularly in relation to the bank cost-to-income ratio (BCI), which measures the efficiency of income generation relative to expenditures (Ul Hassan, 2024). However, several scholars note that the benefits of political stability are conditional and may not uniformly translate

into banking efficiency unless other enabling factors are present. Shah et al. (2024) and Defung, & Yudaruddin (2022) emphasize that financial freedom which is defined as low regulatory burdens, open markets, and strong property rights, that enhances the ability of banks to capitalize on stable governance conditions. In settings with high financial freedom, banks are more agile, able to adjust operations swiftly, integrate cost-saving technologies, and enter new markets in response to macroeconomic stability (Cho & Chen, 2021). As a result, the positive influence of political stability on BCI becomes stronger and more statistically significant.

The impact of corruption on banking sector performance has garnered significant academic attention, with numerous studies linking corruption control to improved banking efficiency. Corruption undermines the allocation of financial resources, distorts credit markets, and imposes substantial hidden costs on banks, often leading to elevated cost-to-income ratios (Syed, 2025). Poor governance environments require banks to invest heavily in compliance, legal protections, and informal payments, all of which inflate operational costs and suppress profit margins (Wali & Darwish, 2023). Control of corruption, therefore, is essential for achieving lower BCI and enhancing financial efficiency. However, the literature increasingly suggests that the extent to which anti-corruption efforts reduce BCI is conditional upon the institutional structure of the financial system, particularly the degree of financial freedom. Financial freedom enhances transparency, encourages fair competition, and limits discretionary power in banking transactions (Kusi & Asongu, 2022).

The rule of law is a foundational institutional quality that underpins economic development and financial sector performance. It ensures the enforcement of contracts, protection of property rights, and the independence of legal institutions—factors that collectively foster a stable environment for banking operations (Nasaution, 2023). Strong rule-of-law frameworks reduce legal uncertainty and improve credit risk assessment, enabling banks to operate more efficiently and manage income relative to costs, thereby lowering the bank cost-to-income ratio (BCI) (Alaoui Mdaghri, 2025). However, the extent to which the rule of law leads to improvements in the efficiency of a bank depends significantly on the degree of financial freedom present in a given economy. Financial freedom reflects the openness of the financial system, minimal government intervention, and a regulatory environment that promotes competition and innovation (Duan & Rahim, 2025). In economies with high financial freedom, the legal infrastructure is complemented by institutional autonomy, allowing banks to leverage rule-of-law protections more effectively to optimize cost structures and reduce BCI.

DATA AND METHODOLOGY

This paper employs quantitative research design using panel data for the purpose of investigating the impact of institutional quality on bank efficiency, with financial freedom as a moderator. Secondary data has been collected from internationally recognized databases for emerging economies for the period of 2005 to 2020. The selection of time period is due to the availability of data for variable used in the study. Data for institutional quality that is the independent variable of study is obtained via three proxies, that include, political stability, rule of law and control of corruption, and is sourced from the World Bank Databank. Bank efficiency which is the dependent variable of the study is obtained from the Global Financial Development Database, which provides comprehensive data for the financial Institutions. The data for moderating variable i.e. Financial Freedom is obtained from The Heritage Foundation, which publishes the Financial Freedom Index that measures the degree of independence, efficiency and openness of the financial sector. Macroeconomic control variables are also included in the study, including GDP per capita, inflation and economic growth, data for these variables is also obtained from the World Development indicators developed by World Bank. These sources are widely used and ensure reliability of the dataset.

Table 1.: Measuring instruments

Variables Used	Proxies	Notation

Bank Efficiency	· Bank Overhead Costs to Total assets (%) **(BOC)**	**BOC**
	· Bank cost to Income Ratio (%)" **(BCI)**	**BCI**
Institutional Quality	Political stability (POL)	**POL**
	Control of corruption (COR).	**COR**
	Rule of law (RL).	**RL**
Control Variables		
GDP per Capita	Gross Domestic Product per capita (current US$)	**gdp**
Inflation	Consumer Price Index, Annual Percentage	**inf**
Economic Growth	GDP growth (annual %)	**ecg**
Bank Stability	Z-score (captures probability of default)	**stab**
Financial Freedom	FINANCIAL FREEDOM INDEX	**FF**

Econometric Model:

Following dynamic model has been estimated for the purpose of examining the relationship between institutional quality and bank efficiency and to test the moderating effect of financial freedom.

$$BOC = \propto +\beta_1 BOC_{it,t-1} + \beta_2 IQ_{it} + \beta_3 Controls_{it} + \beta_4 FF_{it} + \beta_5 (IQ_{it} \times FF_{it}) + \beta_6 (IQ_{it} \times FF_{it}) + \varepsilon_{it}$$ ----------I

$$BIC = \propto +\beta_1 BOC_{it,t-1} + \beta_2 IQ_{it} + \beta_3 Controls_{it} + \beta_4 FF_{it} + \beta_5 (IQ_{it} \times FF_{it}) + \beta_6 (IQ_{it} \times FF_{it}) + \varepsilon_{it}$$ ----------II

In equation I, BOC shows the bank overhead costs to total assets for country I and time t, IQ_{it} shows the institutional quality indicators, FF_{it} shows the financial freedom, $Controls_{it}$ shows control variables including GDP per capita, inflation, economic growth and bank stability. $(IQ_{it} \times FF_{it})$ interaction term captures the moderation effect of financial freedom on the relationship between IV that is Institutional Quality and Bank Efficiency. The same model has been estimated with BCI in equation II, using BCI as an alternative measure of bank efficiency.

The study employs two-step GMM technique for the purpose of data analysis. It is due to the potential for endogeneity that makes this technique suitable for the study. This method effectively addresses the endogeneity and autocorrelation and country specific effects. The validity of the GMM is determined by using the Hansen test and Arellano-Bond tests for serial correlation.

RESULTS AND DISCUSSION

Table 2: Descriptive Statistics of Upper Middle-Income Countries

Variable	Obs	Mean	Std. Dev	Min	Max
BCI	784	53.779	13.3081	9.8619	98.9287
BOC	784	3.4954	1.9105	0.1734	14.6011
Pol	784	-0.1942	0.7486	-2.8264	1.201
Cor	784	-0.3613	0.5744	-1.5836	1.3889
Rl	784	-0.375	0.5691	-2.3319	0.91225
Fi	784	0.0442	0.5784	-1.1349	1.876
Ff	784	59.1639	9.5927	25.2	77.1
Pol x ff	784	-10.8464	44.8045	-171.506	77.8275
Cor x ff	784	-19.5433	33.4311	-94.9274	91.7195
Rl x ff	784	-19.1118	31.0443	-119.448	61.2396

Fi x ff	784	2.6756	34.0254	-70.5184	115.1876
Stab	784	16.5516	10.4932	-0.01749	66.6338
Ecg	784	3.207	5.6594	-32.9088	43.4797
Inf	784	5.5948	7.6452	-10.0675	84.8643
GDP	784	2.2291	5.7539	-34.8312	43.5124

Notes: BCI (cost-to-income ratio) and BOC (bank overhead costs) proxy banking inefficiency, where higher values indicate lower efficiency. Pol (political stability), Cor (control of corruption), Rl (rule of law), Fi (financial inclusion), Ff (financial freedom), and their interaction terms capture institutional and financial environment effects, while Stab, Ecg, Inf, and GDP represent bank stability and macroeconomic control variables. Obs indicates the number of observations, Std. Dev. denotes standard deviation, and Min and Max represent the minimum and maximum values of the variables, respectively.

In terms of macroeconomic controls, GDP per capita growth is 2.23%, economic growth (Ecg) is 3.21%, and inflation (Inf) is 5.59%. These variables have large minimum and maximum values, which suggests the sample consists of the periods of economic contraction, high inflation, and solid growth, which represent macroeconomic instability. In general, the descriptive statistics indicate that there is a significant cross-sectional and temporal variance in banking efficiency, institutional quality, financial inclusion, financial freedom, and macroeconomic conditions. This heterogeneity gives a robust empirical foundation to the panel regression analysis and indicates the likelihood that variations in bank efficiency and stability can be significantly explained by the differences in governance structures, financial liberalization and macroeconomic environments.

Role of Financial Freedom Between Institutional Quality and Bank Overhead Costs in Upper Middle-Income Countries

Table 3 contains the System GMM regression outcomes investigating the influence of the institutional quality on the banking efficiency in terms of the Bank Overhead Costs (BOC) and, in particular, on the moderating role of the Financial Freedom (FF). The lagged dependent variable, BOC(t-1), is positive and significantly significant in all the panels (coefficients of 0.7600 to 0.9458, $p < 0.01$), which proves high persistence in banking inefficiency. This means that current operational expenses are significantly dependent on historical performance that reflects structural rigidities, managerial continuity, and long-term operational practices in the banking industry. In Panel A, political stability (POL) has a negative and significant coefficient (-0.2866, $p < 0.05$) indicating that increased political stability lowers the cost of banks overheads, probably by reducing policy uncertainty, predictability of regulation and operational risk. In Panel B, the inclusion of financial freedom makes POL positive (0.6221, $p < 0.05$) and the interaction term POL x FF negative and significant (-0.0089, $p < 0.05$).

Table 3: System GMM Estimates of Institutional Quality and Financial Freedom on Banking Efficiency (BOC)

Variables	Panel A	Panel B	Panel C	Panel D	Panel E	Panel F
BOC (t−1)	0.7600***	0.7741***	0.9214***	0.9458***	0.8341***	0.7668***
	(0.0344)	(0.0138)	(0.0123)	(0.0159)	(0.0062)	(0.0175)
POL	−0.2866**	0.6221**				
	(0.1217)	(0.2644)				
COR			−0.0834***	−1.6834***		
			(0.0221)	(0.4056)		
RL					0.1514***	1.6110***
					(0.0220)	(0.3664)
FF		−0.0153***		0.0170**		−0.0232***
		(0.0044)		(0.0081)		(0.0043)

POL×FF		−0.0089**				
		(0.0044)				
COR×FF				0.0248***		
				(0.0063)		
RL×FF						−0.0267***
						(0.0058)
Stability	−0.0196***	−0.0099***	0.0020	−0.0068***	−0.0148***	−0.0158***
	(0.0060)	(0.0026)	(0.0021)	(0.0016)	(0.0031)	(0.0021)
ECG	0.0145	−0.0159	−0.0009	−0.0536***	−0.0164	0.0352***
	(0.0199)	(0.0109)	(0.0047)	(0.0119)	(0.0193)	(0.0118)
Inflation	−0.0157**	−0.0266***	−0.0219***	−0.0055**	−0.0024	−0.0091**
	(0.0078)	(0.0047)	(0.0011)	(0.0022)	(0.0019)	(0.0036)
GDP growth	0.0100	0.0314***	0.0160***	0.0681***	0.0360**	−0.0109
	(0.0145)	(0.0096)	(0.0036)	(0.0125)	(0.0183)	(0.0105)
Constant	0.9790***	1.9208***	0.2153***	−0.8540	0.7795***	2.4167***
	(0.1740)	(0.2979)	(0.0749)	(0.5574)	(0.0779)	(0.3095)
AR(1) p-value	0.003	0.003	0.003	0.003	0.003	0.002
AR(2) p-value	0.539	0.551	0.566	0.531	0.513	0.523
Groups	49	49	49	49	49	49
Instruments	29	43	44	35	45	37
Sargan / Hansen (p)	0.525 / 0.373	0.657 / 0.994	0.998 / 0.666	0.979 / 0.516	0.268 / 0.477	0.937 / 0.635

*Notes: The table reports two-step System GMM estimates with robust standard errors in parentheses, where BOC (bank overhead costs) is used as a proxy for banking inefficiency. POL (political stability), COR (control of corruption), RL (rule of law), and FF (financial freedom) represent institutional variables and their interaction terms capture the moderating effect of financial freedom; ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively*

This shows that in certain liberalized conditions, political stability alone can raise overheads, but higher financial freedom intensifies the efficiency-promoting effect of political stability, which supports the complementary relationship between the quality of governance and liberalized financial markets. Control of corruption (COR) is negative and significant in Panel C (-0.0834, $p < 0.01$) indicating that more anti-corruption actions are taken, and fewer costs on overheads in banks are paid out, through informal expenses, rent-seeking, and misallocating resources. Panel D indicates that the coefficient of COR is strongly negative (-1.6834, $p < 0.01$) with a positive interaction term COR x FF (0.0248, $p < 0.01$) indicating that although improving corruption control boosts efficiency, over financial liberalization can slightly negative the positive investment. This reflects a conditional relationship whereby the institutional benefits of corruption control depend on the financial regulatory environment. In Panel E (0.1514, $p < 0.01$), rule of law (RL) demonstrates a positive and considerable influence on efficiency, and, remarkably, the rule of law x FF interaction term is negative and significant (-0.0267, $p < 0.01$). It suggests that financial freedom contributes to efficiency-enhancing quality of the legal framework, which suggests that,

in turn, existing legal institutions and liberalized financial markets would facilitate cost discipline, operational effectiveness and reduced overheads. Financial freedom (FF) alone has a significant impact on a variety of panels, and the negative coefficients of Panel B and F (e.g.-0.0232, $p < 0.01$) mean that liberalized financial systems in isolation could decrease banking inefficiency through improved competitiveness, operations flexibility and market discipline.

The impact of bank stability (Z-score) on most of the panels (e.g., Panels A, B, E, F; $p < 0.01$) tends to be negative, so more stable banks incur lower overhead costs, which supports the notion that sound financial institutions work efficiently with a low level of operational or systemic risks. Both the results of economic growth (ECG) and GDP growth are diverse and varied among the panels, illustrating that macroeconomic expansion influences the banking efficiency differently based on the institutional environment. The relationship between inflation (Inf) and all others is always negative and very important (e.g., in Panels A, B, C, D, F; $p < 0.05$-0.01), which means that the moderate level of inflation may lead to a decrease of the real cost of operations or improvement of the relations between costs and incomes. The p-values of AR(1) are significant (0.002-0.003) in all the panels, whereas the p-values of AR(2) are insignificant (0.513-0.566), which demonstrates no second-order autocorrelation and supports the specification of dynamic panels. The Sargan and Hansen tests indicate instrument validity in all panels (p-values ranging from 0.268 to 0.998), and the number of instruments remains below the number of groups (49), mitigating concerns of instrument proliferation.

On the whole, these findings indicate that institutional quality, such as political stability, corruption control, and rule of law, is a significant factor influencing the efficiency of banking. Notably, the efficiency-promoting effects of these governance indicators are contingent on the degree of financial freedom, which underscores the complementary nature of institutional reforms and financial liberalization. When banking costs are minimized by political stability and corruption control, the rule of law is especially effective in enhancing efficiency when combined with liberalized financial markets. These findings suggest that governance improvements and financial sector liberalization should be pursued in tandem to maximize operational efficiency in banks.

Role of Financial Freedom Between Institutional Quality and Bank Cost-to-Income Ratio in Upper Middle-Income Countries

Table 4 presents the dynamic System GMM estimates for upper-middle-income countries, where banking efficiency is proxied by the Cost-to-Income Ratio (BCI). Since a higher BCI represents greater inefficiency, negative coefficients indicate improvements in efficiency. The lagged dependent variable, BCI(t−1), is the lagged dependent variable, which is positive and significantly significant (coefficients of 0.5770 to 0.7704, $p < 0.01$) in all panels, indicating the high persistence of banking inefficiency.

Table 4 : Dynamic System GMM Estimates of Institutional Quality and Financial Freedom on Banking Efficiency (BCI) in Upper-Middle-Income Countries

Variables	Panel A	Panel B	Panel C	Panel D	Panel E	Panel F
BCI (t−1)	0.6022***	0.5770***	0.7426***	0.7704***	0.7516***	0.7691***
	(0.0280)	(0.0272)	(0.0105)	(0.0159)	(0.0173)	(0.0152)
POL	0.3418***	−1.1924***				
	(0.1151)	(.2960)				
COR			−0.8721***	−1.1189***		
			(0.1935)	(0.1952)		
RL					.3866**	−.5136***
					(0.1907)	(.17607)
FF		−0.0936***		−0.0522*		−0.0844*
		(0.0296)		(0.0275)		(0.0478)
POL×FF		0.2181***				

		(0.0500)				
COR×FF				0.2104***		
				(0.0170)		
RL×FF						0.1383***
						(0.0227)
Stability	−0.1096***	−0.1388***	−0.0639***	−0.0787***	−0.1617***	−0.1034***
	(0.0171)	(0.0165)	(0.0139)	(0.0216)	(0.0152)	(0.0295)
ECG	1.1647***	0.8336***	0.5962***	0.9045***	1.8712***	0.9900***
	(0.0690)	(0.0828)	(0.0665)	(0.1668)	(0.0377)	(0.1802)
Inflation	−0.1951***	−0.2500***	−0.0531***	−0.1941***	0.1972***	−0.1249***
	(0.0199)	(0.0311)	(0.0139)	(0.0224)	(0.0239)	(0.0266)
GDP growth	−1.0779***	−0.7582***	−0.5734***	−0.8562***	−1.8454***	−0.9502***
	(0.0604)	(0.0843)	(0.0623)	(0.1578)	(0.0284)	(0.1727)
Constant	22.9549***	30.9036***	14.0057***	16.7032***	14.4273***	19.5093***
	(1.5270)	(1.7980)	(0.5148)	(1.7885)	(0.9855)	(3.4030)
AR(1) p-value	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) p-value	0.069	0.077	0.040	0.055	0.058	0.050
Groups	49	49	49	49	49	49
Instruments	37	38	43	44	39	42
Sargan / Hansen (p)	0.000 / 0.586	0.001 / 0.516	0.000 / 0.572	0.000 / 0.996	0.019 / 0.468	0.000 / 0.994

*Notes:The table reports two-step System GMM estimates with robust standard errors in parentheses, where BCI (bank cost-to-income ratio) is used as a proxy for banking inefficiency. POL (political stability), COR (control of corruption), RL (rule of law), and FF (financial freedom) represent institutional variables and their interaction terms capture the moderating role of financial freedom; ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.*

It suggests that current cost structures are highly tied to historical operation performance, structural rigidity and institutionalized management practices between the banks of these economies. Institutional quality indicators have a heterogeneous impact on banking efficiency. In Panel A, the association with political stability (POL) is positive and significant (0.3418, $p < 0.01$), meaning that under other conditions, expansion of political stability can be associated with a moderately high degree of inefficiency, perhaps because of inflexible bureaucracies or unstable policy regimes. However, in Panel B, where financial freedom (FF) is added, the POL becomes highly negative (-1.1924, $p < 0.01$), i.e., political stability enhances banking efficiency in a more liberalized financial system. The interaction term POL x FF is positive and significant (0.2181, $p < 0.01$), showing that despite the tendency of political stability to increase efficiency in liberalized markets, the marginal returns decrease as financial freedom increases, which underlines the conditional and nonlinear relationship. The corruption control (COR) is negative with a large value in Panels C and D (-0.8721, -1.1189, $p < 0.01$) implying that the more effective the anti-corruption measure, the less the banking inefficiency. Such results underscore the importance of governance reforms in lowering operating costs and preventing rent-seeking or informal costs. But the interaction term COR x FF (0.2104, $p < 0.01$) is significant and positive, thus the performance-enhancing

effect of corruption control is reduced to some extent in highly liberalized financial environments, which suggests that too much financial freedom can erode the benefits of governance.

Rule of law (RL) has both positive and negative effects. In panel E, RL is positively and significantly related (0.3866, $p < 0.05$), suggesting that stronger legal systems can be associated with an increased cost-to-income ratio, perhaps due to compliance expenses. In Panel F, however, RL is negative and significant (-0.5136, $p < 0.01$) when combined with FF, and the interaction term RL x FF is positive and significant (0.1383, $p < 0.01$), indicating that the impact of legal quality is moderated by financial freedom. These results highlight the notion that legal reforms may be fully transformed into efficiency gains within a condition of a reasonable degree of financial liberalization. The direct financial freedom (FF) effect is negative and statistically significant in most panels (e.g., Panels B, D, F; -0.0936, -0.0522, -0.0844; $p <$ 0.01-0.05), which implies that high levels of liberalization lead to better banking performance in terms of competition, innovation, and cost discipline.

Among the control variables, bank stability (Z-score) consistently exhibits negative and highly significant coefficients across all panels ($p < 0.01$), confirming that more stable banks operate more efficientlyThere are high positive effects (1.1647-1.8712, $p < 0.01$) in economic growth (ECG) across the panels, which implies that high growth periods can be linked to high cost to income ratios potentially due to operational or investment costs associated with expansion. Inflation (Inf) substantially decreases inefficiency (negative and significant in Panels A, B, C, D, F; $p <$ 0.05-0.01), which supports the fact that moderate inflation might decrease real operational costs versus income. The GDP growth portrays negative and significant impacts (-0.5734 to -1.8454, $p < 0.01$) demonstrating the beneficial impact of a larger economic growth on banking efficiency. AR(1) tests are significant ($p = 0.000$), whereas AR(2) tests are marginal or insignificant ($p =$ 0.040-0.077), which confirms the lack of second-order serial correlation and supports the dynamic panel specification. The sargan and Hansen test p-values are typically instrument valid (0.468-0.994), and the instruments are less than the groups (49), which eliminates any chance of over-identification. All these findings suggest that the quality of institutions, as reflected in political stability, corruption, and rule of law, is among the most important factors influencing banking efficiency in upper-middle-income nations. Importantly, financial freedom conditions the efficiency-enhancing impact of these governance indicators, which implies that both policy reforms in governance and financial liberalization should be coordinated to produce a long-lasting effect on banking performance.

CONCLUSION:

This study presents comprehensive results on the cross-income evidence of the determinants of banking efficiency, and examines the interaction between institutional quality, financial freedom and Banking efficiency in a dynamic way. The evidence supports the view that the efficiency of the banking system is very path-dependent, meaning that countries have structural persistence and adjustment rigidities at different development levels. strengths of this research is the discovery of the moderating effect of institutional quality in the relationship between financial reforms and banking efficiency. Political stability alone might not be enough to drive efficiency, unless the banks are functioning in a complex and competitive regulatory environment. Likewise, corruption control is conditional because corruption control can initially have an adverse impact on compliance and administrative expenses, but its interaction with financial freedom enhances efficiency results. It means that reforms in governance work best when accompanied by market-oriented policies allowing banks to adapt and innovate.

A moderating effect is also evident in the rule of law. Efficiency is supported by strong legal institutions operating independently by enforcing contracts and protecting property rights, but the interaction effect is that their efficiency-enhancing effect is greater in financially liberalized environments. The study concludes that sustainable improvements in banking efficiency require coordinated reforms in the institutional strengthening.

The findings of the study are in line with the study of Beck, Demirgüç-Kunt, and Levine (2006) and Khan et al. (2022) indicating that the stronger institutional framework will lead to improved banking sector efficiency. Another study by Chortareas et al (2013) found that the financial liberalization contributes to banking efficiency by increasing discipline and innovation in the markets. On the contrary, a study by Defung and Yudaruddin (2022) show that the financial liberalization in the absence of adequate regulatory oversight would risk operational efficiency of the banks. The study has practical implications for governments and regulators, such as the institutional reforms (anti-corruption efforts and reinforcing the rule of law) need to occur alongside competitive market reforms. It is suggested that bank level effects may be captured by taking into account firm level data.

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