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# INSTITUTIONAL DRIVERS OF FINANCIAL INCLUSION: A 75-COUNTRY EXAMINATION USING DIFFERENCED-GMM TECHNIQUE

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**Abstract**
The study investigates the role of institutional quality in promoting financial inclusion, a critical driver of sustainable economic development and societal transformation. By focusing on its links to seven of the 17 Sustainable Development Goals (SDGs), the research highlights the importance of robust institutions in enhancing inclusive financial systems. The study adopts a panel data approach using secondary data from the World Development Indicators covering 75 countries between 2006 and 2021. To ensure robust analysis, the Differenced-Generalized Method of Moments (D-GMM) model is employed, enabling a comprehensive evaluation of the institutional determinants of financial inclusion. The results show that regulatory quality and political stability positively influence financial inclusion by creating supportive environments for financial access. In contrast, corruption and weak governance exert negative effects, undermining trust and constraining service accessibility. These findings highlight the central role of institutional frameworks in shaping inclusive financial ecosystems. This study advances the literature by introducing a novel financial inclusion index that consolidates essential dimensions into a standardized and comprehensive measure, minimizing overlaps among components. It further integrates institutional quality into financial inclusion research through the use of D-GMM. Distinguishing itself from earlier studies, it provides robust empirical evidence across diverse national contexts. Policymakers are encouraged to strengthen regulatory frameworks, enhance political stability, and implement anti-corruption measures to foster inclusive financial systems. Such initiatives will not only improve access to financial services but also contribute to achieving broader socio-economic development and SDGs.
**Keywords:** Institutional Quality, Regulatory Quality, Political Stability, Control of Corruption, Voice and Accountability, Financial Inclusion.

## 1. INTRODUCTION

Financial inclusion (FI) has been long acknowledged as a vital process for integrating individuals into essential financial services. Since the early 2000s, FI has gained substantial focus due to its direct impact on poverty alleviation. Initially, the efforts of financial institutions were primarily concentrated on providing microcredit services. However, these efforts have broadened to encompass comprehensive access to essential financial services. FI has increasingly proven to be a cornerstone for sustainable economic development and societal transformation on a global level. In contemporary debate, FI is recognized as a critical enabler for achieving seven of the 17 Sustainable Development Goals (SDGs). Countries worldwide have reaffirmed their commitment to advancing global FI by endorsing the "High-Level Principles for Digital FI." FI is viewed as an essential tool for eradicating extreme poverty and promoting shared prosperity, as evidenced by the World Bank's ambitious target set in 2020 to achieve universal financial access. The rising significance of FI has captivated substantial scholarly interest over its developmental route. Empirical studies have demonstrated that FI, particularly when coupled with the proliferation of mobile phone technology, enhances savings (Ouma et al., 2017), alleviates poverty, increases household consumption (Abor et al., 2018), and reduces the costs associated with accessing financial services (Gebrehiwot and Makina, 2015). FI significantly reduces income inequality (Erlando et al., 2020). Nevertheless, the extant literature also underscores numerous impediments to the progression of FI, such as deficient institutional quality (Andrianova et al., 2015) and challenging socio-economic conditions (Ghosh and Vinod, 2017). Consequently, extensive research has been directed toward clarifying institutional quality (IQL) in fostering FI, boosting financial development, and driving economic growth (Ali et al., 2022). Robust IQL is frequently identified as a crucial enabler of FI across various national contexts (Aracil et al.,

2022), highlighting the indispensable role of sound institutions in advancing inclusive financial systems. Hence, this study addresses two principal issues: the influence of governmental decisions on FI and the correlation between an IQL and the level of FI.

The influence of IQL on the breadth of the financial sector has recently emerged as a contentious topic. Although extensively debated, the theoretical perspectives and empirical evidence surrounding this issue must be clarified and often conflicting. Two predominant methodologies are employed to elucidate the extent to which the quality of the operational environment affects the financial accessibility of economically marginalized groups. The first approach examines the financial statements of firms or banks in combination with macroeconomic indicators to discern how these variables affect the provision of financial services and the formation of lending relationships with formal financial institutions. Research employing this method has consistently demonstrated that adverse environmental factors severely restrict access to financial services and result in suboptimal allocation of resources within the financial sector (Ahamed et al., 2021). For example, several studies (Ali et al., 2022; Andrianova et al., 2015) highlight that the lack of comprehensive credit information systems and ineffective regulatory frameworks substantially hinder the financial sector's capacity to allocate resources efficiently. These inefficiencies arise due to the prohibitive costs associated with the screening processes and the complexities involved in establishing and maintaining lending relationships, which financial institutions need help to internalize.

A distinct approach centers on using macroeconomic indicators exclusively to evaluate the extent and direction of institutional factors' impact on FI tailored to individual countries. Nonetheless, this domain of inquiry still needs to be explored, as scholarly attention tends to prioritize the benefits of FI over strategies to bolster it (Van et al., 2022). Scholars (Hechmy, 2016; Talmaciu, 2014) contend that institutional factors wield a more substantial influence on financial development than mere supply-demand imbalances. They argue that the financial superstructure's quality must precede or attain a critical threshold to foster substantive financial development. Extending this argument, recent research (Muriu, 2021) underscores the geographical consequences of institutional infrastructure on FI. However, these studies often rely on an FI index, like the one in the Global Findex, which offers a single-dimensional perspective, typically gauging the "number of depositors with commercial banks." This metric needs to encapsulate the multifaceted role of institutional infrastructure more adequately.

This study significantly contributes to the existing literature on FI through three principal avenues. Firstly, it introduces a novel FI index from 2006 to 2021. This index integrates essential facets of FI to formulate a comprehensive and standardized metric while concurrently mitigating potential correlations among its constituent elements. Secondly, it advances our comprehension of the interplay between IQL and FI across diverse contexts, drawing upon macroeconomic fundamentals, social attributes, and institutional dimensions. Lastly, the research employs the "Differenced-Generalized Method of Moments (D-GMM)" model to investigate the influence of IQL on FI. By leveraging the D-GMM framework in panel data analysis, the study effectively addresses methodological challenges such as unobserved individual-specific and time-specific effects, thereby minimizing biases arising from omitted variables and unobserved heterogeneity.

Despite the study's recognized significance, notable lacunae exist in comprehending the nexus between IQL and FI across heterogeneous national landscapes. By scrutinizing this nexus and employing rigorous methodologies, this investigation offers innovative perspectives on how institutional determinants influence the accessibility and efficacy of financial services for marginalized segments of society. Moreover, developing a comprehensive FI index spanning an extensive temporal scope addresses a critical void in the scholarly debate, furnishing a standardized measure for evaluating FI across diverse geographical domains and temporal epochs. Through these scholarly contributions, the study aspires to provide valuable insights to policymakers, practitioners, and scholars regarding the dynamics of FI and its contingent reliance on institutional frameworks, thereby striving to promote more inclusive and sustainable financial ecosystems on a global scale. The rest of the paper proceeds with a literature review, followed by sections on data and research methodology, empirical results, discussions, and concluding remarks with policy implications.

## 2. LITERATURE REVIEW

The role of IQL in shaping FI extends beyond the essential availability and usage of financial services. The integrity and efficiency of institutions within an economy critically influence the level of trust that both households and businesses place in the financial products and services available (Ouechtati, 2023). Therefore, a thorough analysis of IQL's impact on FI is paramount. This perspective is reinforced by Muriu (2021), who explored the critical importance of IQL in the realm of FI. The study of Muriu (2021), which spanned annual data from 120 nations, including both developed and developing economies, from 2004 to 2019, highlighted the significant influence of regulatory quality and the rule of law on fostering inclusive finance. This effect is especially pronounced in regions such as Africa.

Both FI and IQL are multi-dimensional constructs. Researchers often assess FI through the opportunities for adults to engage in financial markets (Aracil et al., 2022). Additionally, a well-established link between FI and the broader macroeconomic environment highlights the importance of enabling the financial system to perform its essential functions effectively. These functions include optimizing and facilitating the allocation of resources, promoting trade, enforcing corporate governance, and acting as a mechanism for risk management (Ali et al., 2022).

Several studies (Alam et al., 2022; Olanrewaju et al., 2019; Ali et al., 2022; Ouechtati, 2023; Zeqiraj et al., 2022) have examined the nexus between FI and IQL. From a laissez-faire perspective, an effective government is characterized by robust regulatory frameworks and an efficient taxation system. Contrarily, Olanrewaju et al. (2019) highlight the importance of regulatory quality in enhancing access to diverse financing options, particularly for impoverished populations. These scholars argue that borrowing becomes prohibitively expensive and challenging in market imperfections, leading individuals to invest in human capital rather than altering their occupational paths. The prohibitive costs of financial engagement for poor households, driven by insufficient collateral and the high costs associated with the monopolistic nature of banking institutions, further complicate their participation in financial markets (Anarfo and Abor, 2020; Tahir et al., 2015).

Extensive research has examined the dynamics between trade liberalization, financial deregulation, and the efficacy of legal frameworks in fostering FI. Ahamed et al. (2021) have explored the influence of different legal systems on investors' willingness to participate in capital markets. The third dimension of IQL pertains to the nexus between fraudulent activities and their associated social costs (Emara and El Said, 2021). Typically, high-income countries possess more resilient financial systems coupled with a populace with elevated financial literacy levels. In contrast, Zeqiraj et al. (2022) suggested that the scale of economic activities could serve as a proxy for evaluating governmental effectiveness. However, considering the scale of an economy as an endogenous variable, the reality of emerging economies, which possess distinctive IQL characteristics, needs to be adequately captured.

Moreover, Aracil et al. (2022) analyzed to explore the influence of IQL on FI and its efficacy in alleviating poverty. Their findings indicate that high-quality institutions significantly bolster the role of inclusive finance in poverty reduction, with the impact being more pronounced in developing countries than in advanced economies.

Therefore, IQL and FI represent expansive economic constructs that can mutually influence each other through various mechanisms. The literature review within this study highlights a critical need for further research to elucidate the impact of IQL on FI across developing and developed countries. This study primarily examines the asymmetric effects of different IQL dimensions (such as control of corruption, regulatory quality, political stability, rule of law, voice and accountability, and government effectiveness) on FI. This nuanced aspect of IQL's impact on FI has yet to be explored in existing scholarly discourse.

### 2.1 Theoretical Framework and Hypotheses

Financial intermediation theory emphasizes financial intermediaries, such as banks, play a role in channeling resources efficiently and minimizing transaction costs between savers and borrowers (Allen and Santomero, 1997). This theoretical framework supports the nexus of IQL and FI by illustrating how well-functioning institutions cultivate a fertile ground for these intermediaries to thrive (Ouechtati, 2023). High IQL, characterized by robust regulatory systems, transparency, and dependable governance, builds trust in financial institutions, diminishes information asymmetry, and reduces transaction costs, broadening access to financial services. Institutions with high IQL provide robust legal and regulatory infrastructures that mitigate risks and bolster financial stability, which is crucial for enhancing public confidence and participation in the financial sector (Ali et al., 2022). Furthermore, superior IQL drives innovation and the proliferation of financial services by fostering an environment conducive to adopting new technologies and financial products, thereby expanding the reach and inclusiveness of financial systems (Anthony et al., 2019). Empirical studies (Zulfiqar et al., 2025; Olanrewaju et al., 2019; Ali et al., 2022; Ouechtati, 2023; Zeqiraj et al., 2022) consistently reveal that nations with institutional solid frameworks experience higher levels of FI, as these frameworks amplify the operational effectiveness and scope of financial intermediaries. Consequently, such countries are better equipped to cater to a broader demographic, significantly contributing to economic development and growth. The study, hence, formulates that:

$H_1$: Control of corruption (CC) significantly influences financial inclusion.
$H_2$: Regulatory quality (RQ) significantly influences financial inclusion.
$H_3$: Political stability (PS) significantly influences financial inclusion.
$H_4$: Rule of law (RL) significantly influences financial inclusion.
$H_5$: Government effectiveness (GE) significantly influences financial inclusion.
$H_6$: Voice and accountability (VA) significantly influences financial inclusion.

## 3. METHODOLOGY

### 3.1 Research Design

The research actions are fundamentally grounded in underlying assumptions, summarized in five pivotal concepts: "ontology, epistemology, axiology, rhetoric, and methodology" (Creswell and Creswell, 2017). These concepts underpin diverse paradigms that guide scholarly studies, notably positivism, constructivism, and pragmatism. Positivism, associated with quantitative research, aims to uncover objective realities through empirical measurement and analysis (Creswell and Creswell, 2017). This investigation adopts a positivist stance, particularly apt for studies characterized by clearly defined variables and quantifiable scales. The research utilizes a deductive approach, formulating hypotheses grounded in pre-existing theoretical frameworks and scholarly literature. This methodical approach aims to elucidate the factors influencing FI by applying the principles of financial intermediation theory (Mertens and Recker, 2023).

### 3.2 Data and Variables

This study employs a quantitative research approach, utilizing data sourced from secondary datasets. The research focuses on panel data from 2006 to 2021, covering 75 countries. The chosen period is dictated by data availability, with 2006 being the start year because it marks the point at which consistent measurements for most variables, particularly those essential for evaluating the FI variable, began. The "World Development Indicators (WDI)" obtained the data. Table 1 provides a detailed description of the measurement techniques employed for each variable.

**Table 1: Definitions and Measurement of Variables**

| Variable | Type | Measurement | Reference |
|---|---|---|---|
| Financial Inclusion (FI) | Dependent | Country level: An index is developed to measure financial inclusion using PCA:<br>i. Number of ATMs per 100000 Adults<br>ii. Number of Branches per 100000 Adults<br>i. %age of population who has access to internet<br>ii. Mobile subscription per 100 people | Peprah et al., (2020) |
| Regulatory Quality (RQ) | Independent | "Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, ranging from approximately -2.5 to 2.5." | Saha et al. (2022) |
| Rule of Law (RL) | | | |
| Control of Corruption (CC) | | | |
| Political Stability (PS) | | | |
| Government Effectiveness (GE) | | | |
| Voice and Accountability (VA) | | | |

### 3.3 Estimation Strategies

This investigation utilizes the "Differenced-Generalized Method of Moments (D-GMM)" model to analyze the factors influencing FI. The D-GMM approach provides substantial methodological advantages in panel data analysis by effectively addressing complications such as unobserved individual-specific and temporal effects, thereby mitigating biases associated with omitted variables and heterogeneity (Nsiah and Tweneboah, 2023). Furthermore, D-GMM adeptly handles endogeneity concerns, ensuring consistent parameter estimation even when regressors and errors are correlated. Its robustness in managing unbalanced panels and heteroscedasticity enhances its applicability across diverse research contexts (Demirguc-Kunt et al., 2018). The model's estimation process follows the established methodological frameworks of prior research (Demirguc-Kunt et al., 2018).

$$FI_{it} = FI_{it-1} + \alpha_0 + \alpha_1 CC_{it} + \alpha_2 RQ_{it} + \alpha_3 RL_{it} + \alpha_4 PS_{it} + \alpha_5 GE_{it} + \alpha_6 VA_{it} + \varepsilon_{it} - - - (1)$$

Where; "FI, CC, RQ, RL, PS, GE, and VA indicates financial inclusion, control of corruption, regulatory quality, rule of law, political stability, government effectiveness and voice and accountability, respectively. $\alpha_0$ is constant, $\alpha_1 - \alpha_6$ are the parameter, ε is residual term, i indicates cross-section and t denotes time."

The study uses "Principal Component Analysis (PCA)" to objectively assign weights to various dimensions, effectively avoiding the biases linked to arbitrary weight choices, as subjective weight assignment significantly skews results (Parks and Mercado, 2015). PCA offers a systematic and parametric method to mitigate these biases.

The study applied the "Levin–Lin–Chu unit root test" to ensure data reliability and stationarity. This test evaluates whether variables are stationary, with the $H_0$ indicating non-stationarity. Confirming stationarity is crucial for preserving the assumptions of the white noise error term ($\varepsilon_t$) and maintaining the statistical analysis's robustness. Below is the equation (equation 2) representing the unit root test:

$$\Delta P_t = \partial P_{t-1} + \acute{x}_t \gamma + \pi_1 \partial P_{t-1} + \pi_2 \partial P_{t-2} + \ldots\ldots + \pi_d \partial P_{t-d} + \mu_t \ldots\ldots\ldots (2)$$

This test examines $H_0$ as $\partial = 0$ whereas the $H_1$ as $\partial < 0$ using t statistics, such as $t_{\partial} = \frac{\partial}{SE(\partial)}$, where $\hat{\partial}$ is a projected score of $\partial$ and $(SE(\hat{\partial}))$ is the standard error. The asymptotic distribution of $\partial$ and $(SE(\hat{\partial}))$ is sovereign to the number of lags of the first difference.

The study evaluated autocorrelation in residuals to address potential correlations using lagged dependent variables as predictors. In the GMM framework, residuals from the differenced equation may show serial correlation, but if the original errors are serially independent, the differenced residuals should not follow an AR(2) process. GMM is particularly effective in addressing endogeneity, a common issue in data that leads to heterogeneity. It also corrects biases from omitted variables, endogenous predictors, and measurement errors. The study first used both fixed and random effects models to handle potential heterogeneity, determining the best fit through the Hausman test. The dynamic panel GMM technique was then applied to account for fixed effects by transforming the original model into a first-difference form.

$$FI_{it} = Y_1\Delta FI_{it-1} + Y_1\Delta CC_{it} + Y_2\Delta RQ_{it} + Y_3\Delta RL_{it} + Y_4\Delta PS_{it} + Y_5\Delta GE_{it} + Y_6\Delta VA_{it} + \Delta_{it} - - - (3)$$

This study utilizes the first-difference transformation to adjust the regressors, eliminating fixed effects tied to country-specific characteristics that remain constant over time. Given our dataset's structure, with more cross-sectional units (75 countries) than periods (16 years), we chose the difference-GMM (D-GMM) method. Mileva (2007) advocates D-GMM in such scenarios, highlighting its superiority over system-GMM. We also employed ordinary least squares (OLS), fixed effects, and random effects regressions to ensure robustness.

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for all variables. The mean RQ score of -0.0041, while slightly higher than the world average of -0.04, indicates that the regulatory frameworks in these countries are only marginally superior. This slight advantage suggests considerable scope for enhancing the policies and regulations that oversee business and economic activities. The near-average performance in regulatory quality highlights the progress in regulatory reforms and the ongoing challenges that must be addressed to improve the regulatory environment further. The descriptive measures of all other variables are presented in Table 2.

**Table 2: Descriptive Statistics**

| Variables | Mean | Median | Maximum | Minimum | Std. Dev. |
|---|---|---|---|---|---|
| RQ | -0.0041 | -0.1215 | 2.0813 | -1.7092 | 0.8178 |
| RL | -0.1704 | -0.3640 | 2.0244 | -1.9225 | 0.8522 |
| CC | -0.1931 | -0.4547 | 2.3803 | -1.6721 | 0.8913 |
| PS | -0.2916 | -0.2997 | 1.5621 | -2.8100 | 0.8841 |
| GE | -0.0949 | -0.2449 | 2.1051 | -2.2188 | 0.8628 |
| VA | -0.0786 | -0.0801 | 1.7382 | -1.7959 | 0.8192 |
| FI | 0.0000 | 0.0032 | 2.4395 | -1.8026 | 1.0000 |

### 4.2 Multicollinearity

The correlation analysis detailed in Table 3 reveals no significant multicollinearity among the variables. This balanced correlation structure is crucial as it mitigates the risk of multicollinearity, which can otherwise inflate standard errors and undermine the precision of coefficient estimates. The absence of multicollinearity ensures that the explanatory variables retain their distinct contributions to the regression models, thereby bolstering the validity and interpretability of the regression outcomes. Consequently, these characteristics collectively underpin the soundness and robustness of the subsequent regression analyses, ensuring that the findings are both statistically reliable and substantively meaningful.

**Table 3: Correlation Matrix**

| Variables | RQ | RL | CC | PS | GE | VA | FI |
|---|---|---|---|---|---|---|---|
| RQ | 1.0000 | | | | | | |
| RL | 0.4139 | 1.0000 | | | | | |
| CC | 0.6630 | 0.6436 | 1.0000 | | | | |
| PS | 0.6290 | 0.6986 | 0.6946 | 1.0000 | | | |
| GE | 0.4127 | 0.5298 | 0.5897 | 0.6219 | 1.0000 | | |
| VA | 0.7121 | 0.7069 | 0.7241 | 0.6117 | 0.6884 | 1.0000 | |
| FI | 0.6860 | 0.6341 | 0.5783 | 0.4777 | 0.6990 | 0.5166 | 1.0000 |

### 4.3 Assessment of Data Stationarity

Assessing the stationarity of data series is imperative for ensuring robust model estimation. This study employs the "Levin–Lin–Chu unit root test" for panel data to evaluate the stationarity of key variables rigorously. According to the results detailed in Table 4, all variables under consideration are stationary at level I(0). The confirmation of stationarity at level I(0) for all variables is significant as it verifies that each time series has constant mean, variance, and auto-covariance over time, a prerequisite for reliable econometric modeling. This stationarity ensures that the variables are stable and do not contain unit roots, which could otherwise lead to misleading inferences. Consequently, the dataset's conformity to stationarity criteria substantiates its appropriateness for advanced econometric techniques, explicitly facilitating the reliable estimation of the D-GMM model.

**Table 4: Panel Unit Root Test**

| Variables | I(0) | P-Value |
|---|---|---|
| FI | -11.5553*** | 0.0000 |
| RQ | -4.7811*** | 0.0000 |
| RL | -5.2352*** | 0.0000 |
| CC | -2.5351*** | 0.0056 |
| PS | -5.1756*** | 0.0000 |
| GE | -2.8418*** | 0.0022 |
| VA | -1.3979* | 0.0811 |

Note:*p≤0.10, ** p≤0.05 and *** p≤0.01

### 4.4 Differenced-GMM Estimates

The analysis yielded a statistically significant $\chi^2$ value at the 1% significance level, underscoring the collective relevance of the variables RQ, RL, CC, PS, GE, and VA in explaining the phenomenon under investigation. These results, as detailed in Table 5, highlight the substantial joint influence of these factors. Further bolstering the analysis's robustness, the unit root test results confirmed the variables' stability, affirming their stationarity and suitability for inclusion in the econometric model. This stationarity check is crucial, as it mitigates concerns about the potential generation of spurious results, ensuring that the inferences drawn from the analysis are valid and reliable. Additionally, the analysis revealed no evidence of autocorrelation within the dataset, as indicated by the unbiased variance of the error term. This absence of autocorrelation enhances the reliability of the analytical outcomes, ensuring that the error terms are not systematically related over time, thereby supporting the credibility of the model's estimations and the robustness of its conclusions.

**Table 5: Differenced-GMM Estimates**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| FI(-1) | 0.8979 | 0.0032 | 278.5364 | 0.0000*** |
| CC | -0.0513 | 0.0110 | -4.6458 | 0.0000*** |
| RQ | 0.1026 | 0.0133 | 7.7416 | 0.0000*** |
| RL | 0.0189 | 0.0137 | 1.3822 | 0.1672 |
| PS | 0.0377 | 0.0085 | 4.4231 | 0.0000*** |
| GE | 0.0044 | 0.0088 | 0.4987 | 0.6181 |
| VA | -0.1109 | 0.0115 | -9.6188 | 0.0000*** |
| Wald $\chi^2$ p-value | 0.0000*** | | | |

Note:*p≤0.10, ** p≤0.05 and *** p≤0.01

Table 5 indicates that CC exerts a statistically significant negative effect on FI (β: -0.0513, p≤0.01) across the selected countries. This finding suggests that a unit increase in CC corresponds to a 0.0513-unit decline in FI. Likewise, VA negatively impacts FI (β: -0.1109, p≤0.01), indicating that a one-unit increase in VA is linked with a 0.1109-unit decline in FI. Besides, RQ positively contributes to FI (β: 0.1026, p≤0.01), suggesting that a one-unit rise in RQ causes a 0.1026-unit inclination in FI. Similarly, PS positively impacts FI (β: 0.0377, p≤0.01), with a one-unit increment in PS corresponding to a 0.0377-unit rise in FI. However, RL (β: 0.0189, p>0.10) and GE (β: 0.0044, p>0.10) show insignificant impact on FI as indicated by the negligible p-value.

**Table 6: Robust Regression Estimates**

| OLS Regression Estimates | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |

| | | | | |
|---|---|---|---|---|
| C | 0.0218 | 0.0226 | 0.9642 | 0.3351 |
| CC | -0.3429 | 0.0687 | -4.9902 | 0.0000 |
| RQ | 0.4748 | 0.0725 | 6.5517 | 0.0000 |
| RL | -0.1956 | 0.0964 | -2.0281 | 0.0428 |
| PS | 0.1486 | 0.0325 | 4.5725 | 0.0000 |
| GE | 0.7918 | 0.0719 | 11.0174 | 0.0000 |
| VA | 0.0119 | 0.0414 | 0.2872 | 0.7740 |
| $R^2$ | 0.5293 | | | |
| Adjusted $R^2$ | 0.5269 | | | |
| **Fixed Effect Regression Estimates** | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | 0.0714 | 0.0255 | 2.8022 | 0.0052 |
| CC | -0.4810 | 0.1015 | -4.7393 | 0.0000 |
| RQ | 0.0826 | 0.0915 | 0.9025 | 0.3670 |
| RL | 0.9879 | 0.1258 | 7.8546 | 0.0000 |
| PS | -0.0230 | 0.0488 | -0.4710 | 0.6377 |
| GE | 0.2387 | 0.1000 | 2.3886 | 0.0171 |
| VA | -0.2600 | 0.1023 | -2.5424 | 0.0111 |
| $R^2$ | 0.8321 | | | |
| Adjusted $R^2$ | 0.8199 | | | |
| **Random Effects Regression Estimates** | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | 0.0564 | 0.0659 | 0.8564 | 0.3920 |
| CC | -0.4977 | 0.0899 | -5.5369 | 0.0000 |
| RQ | 0.1712 | 0.0851 | 2.0125 | 0.0444 |
| RL | 0.8125 | 0.1136 | 7.1545 | 0.0000 |
| PS | 0.0032 | 0.0446 | 0.0720 | 0.9426 |
| GE | 0.3443 | 0.0917 | 3.7530 | 0.0002 |
| VA | -0.0883 | 0.0779 | -1.1329 | 0.2575 |
| $R^2$ | 0.1506 | | | |
| Adjusted $R^2$ | 0.1463 | | | |

Note:*p≤0.10, ** p≤0.05 and *** p≤0.01

Table 6 presents the outcomes from the robustness tests conducted through OLS, fixed effects, and random effects regressions. These estimations offer additional insights into the relationships investigated in Table 5, contingent upon the established significance criteria of the research design. Upon revisiting the analysis of FI using alternative methods, the findings presented in Table 6 corroborate (fully or partially) those of Table 5, offering quantitative validation and bolstering the robustness of the study's conclusions.

**4.5 Discussion**

This study examines the relationship between IQL and FI, introducing a new FI index and applying advanced methods like the D-GMM model. It highlights both the benefits of FI and the challenges posed by weak institutions. By analyzing diverse national contexts, the research offers fresh insights to guide policymakers, practitioners, and scholars in fostering inclusive and sustainable financial systems aligned with global development goals. The study findings indicate a negative association between CC and FI. This observation underscores the adverse impact of corruption on FI, wherein a higher level of corruption corresponds to a decrease in FI. Corruption, eroding trust in financial institutions and impeding equitable access to financial services, disproportionately affects vulnerable populations, exacerbating financial exclusion. Thus, mitigating corruption is posited as a pivotal strategy to enhance FI by fostering an environment conducive to transparent and accountable financial systems. Thus, $H_1$ is confirmed.

Conversely, RQ demonstrates a significant positive impact on FI, indicating the critical role of robust regulatory frameworks in facilitating inclusive financial environments. Enhanced RQ fosters transparent and efficient financial operations, safeguards consumer interests, and promotes market competition (Ahamed et al., 2021). By reducing entry barriers for financial services and fostering innovation, improved RQ bolsters FI efforts, particularly benefiting marginalized communities (Anarfo and Abor, 2020). The result supports $H_2$. PS is another significant predictor of FI with a positive association, suggesting the pivotal role of stable political environments in fostering inclusive financial ecosystems. PS engenders investor confidence, reduces economic uncertainties, and promotes an enabling

environment for financial sector development (Vo, 2024). Consequently, enhancing political stability is imperative for advancing broader FI goals. Hence, $H_3$ is acknowledged.

The analysis reveals a negative effect of VA on FI. This result suggests that increased VA is associated with diminished FI, with each unit's rise in VA leading to a reduction in FI. The counterintuitive nature of this relationship underscores the intricate dynamics between political and financial systems. Higher VA, reflective of enhanced political engagement and government transparency, may coincide with contexts where financial infrastructure and inclusion initiatives are underdeveloped (Vo, 2024). Consequently, despite advancements in governance and civic liberties, barriers to financial access persist, necessitating a crucial approach to address underlying structural constraints (Ali et al., 2022). Here, $H_6$ is sustained. However, the study does not find statistically significant impacts of the RL and GE on FI. This suggests that improvements in these governance dimensions may not directly translate into discernible enhancements in FI within the studied contexts. The complexity of FI challenges underscores the need for a multifaceted approach addressing governance and socio-economic, infrastructural, and cultural barriers to promote meaningful FI initiatives (Vo et al., 2021). Hence, $H_4$ and $H_5$ are rejected.

## 5. CONCLUSION AND IMPLICATIONS

### 5.1 Theoretical Implications

The identified patterns of influence, indicating the adverse impact of CC and VA alongside the positive effects of RQ and PS on FI, carry profound theoretical implications within the framework of financial intermediation theory. The negative associations of CC and VA emphasize the imperative of fostering transparent and accountable financial environments, resonating deeply with the theory's foundational tenets concerning information asymmetry and agency issues. Conversely, the positive correlations observed between RQ and PS with FI align seamlessly with financial intermediation theory, which posits that well-regulated and politically stable financial systems facilitate efficient intermediation, broadening access to financial services. These findings illuminate the interplay between institutional dynamics and financial intermediation processes, highlighting the pivotal role of governance structures in shaping the outcomes of FI endeavors.

### 5.2 Practical Implications

This study emphasizes the critical role of governance, accountability, and transparency in enhancing financial inclusion. Tackling corruption and strengthening accountability mechanisms build public trust in financial systems, encouraging broader participation, especially from marginalized groups. Enhancing voice and accountability empowers citizens to engage in FI-related processes, ensuring more inclusive and responsive policies. The findings also highlight the positive impact of regulatory quality and political stability on financial inclusion, highlighting the need for robust governance frameworks. Policymakers are encouraged to implement reforms that improve regulatory environments and stabilize political systems, creating conditions for financial intermediaries to reach underserved populations and support economic development. For financial institutions, these insights guide strategic decisions and investments toward markets with strong regulatory and political environments, reducing risks and opening growth opportunities. Development practitioners can leverage these findings to design targeted interventions that build institutional capacity and strengthen governance, thereby enabling sustainable financial inclusion ecosystems. Collectively, these measures advance financial inclusion, support poverty alleviation, and promote broader socio-economic development worldwide.

### 5.3 Managerial Implications

Financial institutions play a pivotal role in advancing financial inclusion by addressing corruption and accountability gaps. Prioritizing integrity, transparency, and ethical conduct is essential for building stakeholder trust and stimulating broader participation in formal financial systems. Robust anti-corruption measures, strong governance mechanisms, and investments in technologies like blockchain and digital identity verification can enhance accountability, reduce opportunities for malpractice, and strengthen transaction integrity. Cultivating a culture of compliance and ethical behavior further reinforces institutional credibility, ultimately supporting customer acquisition and financial inclusion expansion. The findings also emphasize the significance of governance factors such as regulatory quality and political stability. Financial institutions must actively collaborate with policymakers and regulatory authorities to create conducive regulatory environments and promote stable political conditions. These efforts not only enhance financial inclusion but also provide a secure and predictable ecosystem for financial operations. Strategic resource allocation toward regions with robust regulatory quality and political stability enables institutions to mitigate risks and capitalize on growth opportunities. Additionally, forming partnerships with governments, civil society, and allied stakeholders enhances collective efforts, enabling stronger voice and accountability and reinforcing sustainable financial inclusion initiatives that contribute to long-term development goals.

### 5.6 Conclusion

This study offers a comprehensive exploration of the nexus between IQL and FI, illustrating the pivotal role of governance frameworks in shaping the accessibility of financial services and fostering socio-economic advancement. The findings demonstrate the harmful impact of corruption and inadequate accountability mechanisms on FI, emphasizing the imperative of promoting transparent and accountable governance structures within societies. Conversely, the observed positive correlations between RQ and PS with FI highlight the critical significance of robust governance frameworks in fostering inclusive financial ecosystems. These insights furnish actionable guidance for policymakers, financial institutions, development practitioners, and societal stakeholders, delineating strategic pathways toward humanizing more inclusive and sustainable financial ecosystems. By prioritizing endeavors to combat corruption, augment accountability, fortify regulatory environments, and promote political stability, stakeholders are poised to propel FI's agenda collectively, thus fostering broader socio-economic development and alleviating poverty on a global scale. Ultimately, the study emphasizes the necessity of promoting transparent, accountable, and steadfast governance structures to actualize the transformative potential of FI in advancing equitable and sustainable development outcomes.

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