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Financial Inclusion, Political Risk, and Banking Sector Stability: Evidence from Different Geographical Regions

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Abstract

This study specifically examines the impact of financial inclusion and domestic political risk on banking sector stability for 105 countries operating in the six different geographical regions between 2009-2017. By performing the dynamic panel data estimation technique (GMM-System), the estimation results underscore that a higher level of financial inclusion increases banking sector stability globally, especially in South and East Asia and the Pacific region. Besides, the results reveal that a decline in political instability leads to rising banking sector stability globally, in particular the OECD High-Income region. Overall, the results provide evidence for the significant role of financial inclusion and domestic political risk in increasing stability in the banking sector and imply significant implications for policymakers and banks' managers.

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1. Introduction

The banking sector is a significant pillar in the body of a country's financial system, and rising stability in the banking sector has a significant role in distributing funds efficiently and enhancing economic growth (Bayar et al., 2021). Banking stability is a measure to choose whether an economy is adequately resilient enough to challenge both the internal and external shocks and having safe and sound banking help circumvent costly banking system crises and their negative effects on the real economy. Instead, rising instability in the banking sector leads to declining the efficiency of resource allocation and rising uncertainty about future output growth (Jokipii and Monnin, 2013). Besides, deterioration in the banking sector stability has an unfavorable effect on the stability of financial markets and the real sector output, and disruption of the banking system reduces the ability of banks to lessen the asymmetric information effectively.

Since financial (in)stability has (negative) positive consequences on the economy, the interest of some scholars is triggered to investigate the important factors which impact banks' (in)stability to enhance stability and curb excessive taking risky activities. Over the last three decades, there have been several studies that investigated the effect of bank-specific factors on banks' stability. Ozsuca and Akbostanci (2016) showed that banks with more capital regulation have a more financially stable situation. Miah and Sharmeen (2015) and Hassan et al. (2019) revealed that inefficiency and credit risk adversely impact banks' stability. Köhler (2015) underscored that the increase in income diversification (e.g., non-interest income) rises banks' stability. Yusgiantoro et al. (2019) showed that market power positively impacts banks' stability. Ahamed and Mallick (2019) and Vo et al. (2021) showed that a higher level of financial inclusion increases banks' financial stability. Furthermore, there have been numerous studies that examined specifically the impact of country-specific factors on banks' stability. Demirgüç-Kunt and Detragiache (2002) and Vithessonthi (2014) highlighted that deposit insurance and financial market development adversely impacts banks' stability. Remarkably, as prior studies (Calmes and Théoret, 2014; Athari, 2021a) discussed, banks by rising economic instabilities have less ability to predict better investment opportunities, have lower profitability, and are more exposed to adverse selection and moral hazard problems, causing them to take riskier investments. Besides, some studies (Belkhir et al., 2019; Athari and Bahreini, 2021) suggested that domestic political risk by declining profitability and increasing credit risk and assets volatility unfavorably impacts banking sector stability. Rezgallah et al. (2019) showed that by rising the systematic risk (e.g., political risk), excessive risk-taking behavior in the banking sector is triggered to compensate for the unpredicted losses.

While the effect of bank and country-specific factors on banking sector stability has been analyzed, much less attention has been paid to how banking sectors are influenced by financial inclusion and political risk factors extensively. This study contributes by the inclusion of novel financial inclusion and political risk indices to empirically corroborate the existence of a nexus between the mentioned above factors and stability in the banking sector. These indices are so comprehensive and also accurate proxies for measuring the financial and political risk factors[1]. Another novelty of this study is also to answer how stability in the banking sector is influenced by financial inclusion and domestic political risk in the various geographical regions. Hence, the objective of this study is to test the effect of financial inclusion and domestic political risk indices, by considering the controlling factors, on stability in the banking sector both regionally and globally. To do so, this study selects the banking sectors of 105 countries operating in the

[1] See Athari (2021a).

six different geographical regions between 2009-2017. To the best of our knowledge, limited studies have been conducted on this nexus both regionally and globally and this is the first study to investigate this relationship from this perspective. The findings open a new discussion in the banking literature and can be used by banks' managers, policymakers, and analysts.

The article is organized as follows. Section 2 describes data and methodology. Section 3 explains the results and discussions. Section 4 concludes the article.

2. Data and Methodology

2.1 Data and descriptive statistics

The sample of the present study includes the banking sector of 105 countries between 2009-2017. The period of the study and final sample size is chosen by considering the availability and matching of data from the various sources and preventing omitted observations. In grouping countries into the various regions, this study follows the World Bank countries' regional classification. This study was collected specific data for the banking sector and country-level from World Bank and International Monetary Fund (IMF). Likewise, it was obtained the data for the domestic political and economic risk indices from the PRS group[2]. Several studies (e.g., Athari, 2021b; Kirikkaleli et al., 2021; Kondoz et al., 2021) suggested that the data provided by the PRS group help measure a country's vulnerability to political, economic, and financial risks. Besides, this study is constructed the financial inclusion index based on the study by Ahamed and Mallick (2019), and the annual data is collected from International Monetary Fund (IMF). Table I presents the variables' definitions and sources.

Table I. Variables' description

Variables	Definition	Sources
Dependent variable		
Banking stability (Z-score)	The natural logarithm of (ROA + CAR) /σ(ROA) ratio; where ROA is the return on assets, CAR is equity to total asset ratio, and σ(ROA) is the standard deviation of ROA. The higher Z-score value shows the lower probability of bank's default.	World Bank
Independent variable		
Banking-sector specific variables		
Capital regulation	Bank regulatory capital to risk-weighted assets (RQ/RA).	World Bank
Credit risk	Bank non-performing loans to gross loans (NPL/GL).	
Inefficiency	Bank cost to income ratio (C/I).	World Bank
Market power	Lerner index (LI).	World Bank
Income divarication	Bank noninterest income to total income (NI/TI).	
Financial inclusion	Financial inclusion index (FI) is constructed based on financial outreach and usage dimensions. Financial outreach dimension is based on geographic and demographic branch (ATM) penetration: the number of branches per 1,000 km2 and the number of ATMs per 1,000 km2; the number of branches per100,000 adults and the number of ATM per 100,000 adults. The usage dimension refers to the number of deposit and loan accounts per 1000 adults (FI).	IMF
Country-level specific variables		
Financial development	Domestic credit provided by banking sector to GDP (DC).	World Bank

[2] www.prsgroup.com

Deposit insurance	It equals to 1 if a country has implemented explicit deposit insurance and 0 otherwise (DI).	IMF
Political risk	Political risk index (PRI) includes the government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. A higher score indicates the lower political risk.	PRS group
Economic risk	Economic risk index (ERI) includes the GDP per head, real GDP growth, annual inflation rate, budget balance (% GDP), and current account (% GDP). A higher score indicates the lower economic risk.	PRS group

Note: Table I shows the definitions and sources of variables.

Table II displays the descriptive summary of variables. Table II reveals that the banking sector is relatively less stable in Europe and Central Asia and Sub-Saharan Africa regions with a median of 1.92 and 2.26 than other regions, respectively. Besides, it reveals Sub-Saharan Africa and South and East Asia and the Pacific regions with a median of 0.51 and 0.63 have relatively the highest level of financial inclusion, correspondingly. Moreover, Table II shows that Sub-Saharan Africa and OECD High-Income regions with a median of 54.54 and 79.04 have the least and most political stability environments, respectively.

Table III shows the Pearson correlation matrix. The results show that the correlation between the using variables is below 50%, implying that the multicollinearity problems are not considered serious. Table III also reports the Variance Inflation Factors (VIF), indicating that multicollinearity is not a serious problem.

Table II. Descriptive statistics (2009-2017)

Variables	Sub-Saharan Africa (N=22)		Middle East & North Africa (N=12)		Europe & Central Asia (N=10)		Latin America & Caribbean (N=18)		South & East Asia & Pacific (N=10)		OECD High Income (N=33)		All Countries (N=105)	
	Median	St.Dev	Median	St.Dev	Median	St.Dev	Median	St.Dev	Median	St.Dev	Median	St.Dev	Median	St.Dev
Ln (Z)	2.26	0.49	2.97	0.38	1.92	0.46	2.75	0.61	2.74	0.50	2.56	0.86	2.57	0.70
RQ/RA	17.90	5.84	16.90	3.24	16.94	3.31	16.17	2.38	15.99	2.58	15.41	4.83	16.30	4.17
NPL/GL	7.24	6.45	5.26	5.66	12.89	10.52	2.73	1.02	2.26	3.77	3.31	6.66	3.76	7.14
C/I	60.02	11.06	40.30	8.77	54.46	11.86	62.99	9.03	46.57	10.00	58.00	12.77	55.89	12.81
LI	0.29	0.10	0.42	0.13	0.26	0.09	0.31	0.25	0.32	0.18	0.26	0.17	0.29	0.18
NI/TI	42.37	12.19	31.41	12.62	33.03	15.81	31.81	11.63	29.87	11.77	41.28	15.38	35.93	14.46
FI	0.51	0.82	0.42	0.87	0.40	0.91	0.48	0.83	0.63	0.87	0.29	0.96	0.44	0.89
DC	15.06	8.29	54.86	32.43	45.45	59.58	39.82	17.78	73.62	59.32	96.83	42.94	48.78	50.58
DI	0.00	0.48	1.00	0.50	1.00	0.00	1.00	0.45	1.00	0.40	1.00	0.24	1.00	0.44
PRI	54.54	7.89	62.98	11.66	65.33	5.57	64.27	8.14	60.65	11.15	79.04	6.60	66.83	12.41
ERI	31.50	4.50	35.54	7.20	33.67	3.87	34.85	3.18	37.85	4.10	38.50	4.16	35.54	5.10

Note: The description of variables presented in Table I.

Table III. Pearson correlation matrix

	RQ/RA	NPL/GL	C/I	LI	NI/TI	FI	DC	DI	PRI	ERI	VIF
RQ/RA	1.000										1.23
NPL/GL	0.213*	1.000									1.07
C/I	-0.029	-0.006	1.000								1.10
LI	0.027	0.077	-0.227*	1.000							1.09
NI/TI	-0.095*	-0.193*	0.314*	-0.181*	1.000						1.17
FI	-0.092*	0.014	-0.037	-0.156*	-0.129*	1.000					1.14
DC	0.121*	0.164*	0.013	-0.031	0.033	0.056	1.000				1.06
DI	0.212*	0.322*	0.081	0.042	-0.026	-0.055	0.072	1.000			1.14
PRI	0.181*	0.014	-0.021	0.048	-0.023	-0.112*	0.081	0.248*	1.000		1.25
ERI	0.194*	-0.063	-0.132*	0.078	0.064	-0.092*	0.059	0.159*	0.313*	1.000	1.08

Note: The symbols * indicates statistical significance at the 1% levels.

2.2 Methodology

This study performs the dynamic panel data technique (GMM-System) (Arellano and Bover, 1995; Blundell and Bond, 1998) for estimation of the model to avoid the endogeneity problems and unobserved country fixed effects. This study uses the System-GMM due to the reason that the System-GMM estimator contains both the levels and the first difference equations and outperforms the Difference-GMM methodology. It's noteworthy to mention that as the data is at the country level, the existence of cross-sectional dependence among countries is tested before estimating the model. Also, all using variables are winsorized at the top and bottom 1% for each year to avoid outlier problems. The specific following practical form is used to test the determinants of stability.

$$Stability = f(Banking\ sector\ specific, country - level)$$

Ln(Z) is banking sector stability. For the banking sector-specific variables, capital regulation (RQ/RA), credit risk (NPL/GL), inefficiency (C/I), market power (LI), income divarication (NI/TI), and financial inclusion index (FI) are employed. Moreover, financial market development (DC), deposit insurance (DI), political risk index (PRI), and economic risk index (ERI) are used for the country-level variables.

Equation (1) presents the expanded the aforementioned practical form.

$$Ln(Z)_{it} = \alpha_0 + \alpha_1 Ln(Z)_{it-1} + \alpha_2 RQ/RA_{it} + \alpha_3 NPL/GL_{it} + \alpha_4 C/I_{it} + \alpha_5 LI_{it} + \alpha_6 NI/TI_{it} + \alpha_7 FI_{it} + \alpha_8 DC_{it} + \alpha_9 DI_{it} + \alpha_{10} PRI_{it} + \alpha_{11} ERI_{it} + \varepsilon_{it} \quad (1)$$

where $_{it}$ represents country and time, respectively. ε_{it} is an independent error term.

3. Empirical results

The results in Table IV show that a rise in capital regulation (RQ/RA) increases stability and banks with more capital could better withstand unexpected losses and maintain financial stability. Besides, the results support the study by Djebali and Zaghdoudi (2020) and revealed that credit risk (NPL/GL) negatively impacts stability though the effect is pronounced in Europe and Central Asia region. Likewise, the results support the "bad management" hypothesis and highlight that a rise in inefficiency (C/I) reduces stability, in particular, Latin America and the Caribbean region. Furthermore, the results support the “structure-conduct performance” hypothesis and show that banks with more market power (LI) have more stability especially in the Middle East and North Africa region. The results also provide significant evidence that income divarication (NI/TI) positively impacts stability.

Besides, the results reveal that financial inclusion (FI) positively impacts stability however the effect is pronounced in South and East Asia and the Pacific region. As shown in Table II, FI has the highest score in South and East Asia and the Pacific region relative to the other regions. Consistently, Jahan et al. (2019) in a recent study underscored that countries in the Asia-Pacific region have made significant development in financial inclusion and perform well both in terms of financial access and usage by households relative to the other regions. For instance, their findings showed that the mean number of ATMs per 100,000 adults in Asia-Pacific has raised from about 37 to 63 in the last ten years. The study by Vo et al. (2021) highlighted that financial inclusion can help banks increase profitability (e.g., reduce costs) and their market share. Financial inclusion also decreases liquidity risk and rises the stability of deposits and monetary

transmission, which in turn, help boost banking sector stability. The results also highlight that financial development (DC) and deposit insurance (DI) unfavorably impact stability. Moreover, Table IV reveals that a decline in political (PRI) and economic (ERI) instabilities leads to rising stability, especially in the OECD High-Income region. As Table II presented, countries in this region have the highest politically and economically stable environment relative to other regions. Consistent with the findings of prior studies (Calmes and Théoret, 2014; Belkhir et al., 2019; Athari, 2021a; Athari and Bahreini, 2021), banking sectors that operate in more politically and economically stable environments are less exposed to credit risk, profitability reduction, assets volatility, adverse selection and moral hazard problems, and also have more ability to envisage better investment opportunities. In addition, banking managers have less incentive to take excessive risk actions to offset the unforeseen losses as countries are less vulnerable to political and economic risks.

Table IV. The effect of financial inclusion and political risk on banking sector stability in the different regions

Variables	Sub-Saharan Africa	Middle East & North Africa	Europe & Central Asia	Latin America & Caribbean	South & East Asia & Pacific	OECD High Income	All Countries
Lag (Ln (Z))	0.784*	0.760*	0.855*	0.788*	0.626*	0.708*	0.672*
	(3.53)	(5.09)	(4.15)	(4.88)	(3.62)	(5.86)	(4.34)
RQ/RA	0.007**	0.005	0.016	0.005	0.027*	0.022	0.027
	(2.14)	(0.99)	(1.10)	(0.74)	(3.81)	(0.87)	(1.04)
NPL/GL	-0.002**	-0.003*	-0.034***	-0.012	-0.001**	-0.024**	-0.004*
	(-2.47)	(-4.24)	(-1.68)	(-0.51)	(-2.57)	(-2.10)	(-3.20)
C/I	-0.016*	-0.008*	-0.004	-0.067*	-0.034*	-0.089	-0.682*
	(-5.32)	(-3.26)	(-1.01)	(-3.20)	(-4.36)	(-0.79)	(-3.69)
LI	0.003	0.033*	0.002***	0.027***	0.004*	0.003**	0.003
	(0.64)	(4.82)	(1.75)	(1.65)	(3.63)	(2.04)	(0.64)
NI/TI	0.031	0.005**	0.002	0.024	0.001	0.424*	0.123**
	(1.10)	(2.04)	(0.47)	(1.16)	(0.85)	(3.52)	(2.14)
FI	0.010**	0.016*	0.041*	0.006**	0.043**	0.002*	0.332*
	(2.04)	(4.68)	(3.68)	(2.17)	(2.47)	(3.22)	(4.61)
DC	-0.007*	-0.004***	-0.002*	-0.003	-0.011*	-0.024**	-0.019
	(-2.98)	(-1.65)	(-3.40)	(-0.44)	(-2.66)	(-2.07)	(-1.39)
DI	-0.042***	-0.019	-0.121**	-0.078***	-0.388***	-0.586*	-0.697**
	(-1.73)	(-0.61)	(-2.08)	(-1.69)	(-1.68)	(-4.31)	(-2.04)
PRI	0.003**	0.005*	0.026***	0.016**	0.029*	0.775***	0.386***
	(2.12)	(2.87)	(1.73)	(2.02)	(4.55)	(1.72)	(1.68)
ERI	0.001**	0.006**	0.012*	0.007*	0.033**	0.045**	0.193***
	(2.55)	(2.09)	(3.64)	(4.17)	(2.04)	(2.15)	(1.91)
Constant	0.804	0.403***	0.503	0.645**	0.526**	0.856	0.326*
	(0.04)	(1.76)	(0.78)	(2.39)	(2.27)	(0.95)	(3.01)
Time dummy	YES	YES	YES	YES	YES	YES	YES
Hansen-test	(0.434)	(0.436)	(0.462)	(0.536)	(0.387)	(0.442)	(0.499)
M_2- test	(0.458)	(0.445)	(0.561)	(0.427)	(0.468)	(0.475)	(0.376)

Note: Table IV shows the estimation results of Eq. 1 by using the GMM-System between 2009–2017. The Hansen and serial correlation diagnostic tests are performed to test the validity of the instruments and serial correlations. Standard errors are asymptotically robust to heteroscedasticity. The Z-statistics are reported in parentheses. The symbols *, ** and *** indicate statistical significance at the 1%, 5% and 10% levels, respectively.

4. Robustness check

In testing the consistency of the results, this study re-estimates Eq.1 by applying the new alternative variables of the "bank capital to total assets" (C/TA), "bank overhead costs to total assets" (OC/TA), and "political stability" (PS) from World Bank for measuring capital regulation, inefficiency and political (in)stability, respectively. Table V presents the estimation results and implies that the results are consistent and similar as displayed in Table IV. Furthermore, this study re-estimates Eq.1 by considering the endogeneity between the control variables. Results are similar however it is not reported for the sake of brevity. Moreover, in testing the validity of the estimated models and robustness of results by the System-GMM approach, the Hansen and serial correlation diagnostic tests are conducted for all estimations.

Table V. Robustness test

Variables	Sub-Saharan Africa	Middle East & North Africa	Europe & Central Asia	Latin America & Caribbean	South & East Asia & Pacific	OECD High Income	All Countries
Lag (Ln (Z))	0.812*	0.802*	0.758*	0.730*	0.617*	0.691*	0.741*
	(4.71)	(3.12)	(3.40)	(4.24)	(4.88)	(5.02)	(4.01)
C/TA	0.002*	0.025***	0.034**	0.002**	0.021	0.054**	0.024***
	(3.63)	(1.69)	(2.12)	(2.14)	(0.79)	(2.53)	(1.82)
NPL/GL	-0.001	-0.002	-0.004**	-0.003*	-0.001**	-0.026	-0.024***
	(-1.27)	(-0.57)	(-2.05)	(-4.24)	(-2.16)	(-0.35)	(-1.90)
OC/TA	-0.004**	-0.002*	-0.005*	-0.025*	-0.032	-0.015*	-0.863**
	(-2.03)	(-3.13)	(-3.61)	(-3.15)	(-0.39)	(-3.74)	(-2.09)
LI	0.029*	0.034**	0.003***	0.002	0.006***	0.002**	0.011
	(3.56)	(2.02)	(1.73)	(0.80)	(1.72)	(2.10)	(0.82)
NI/TI	0.032	0.003*	0.003*	0.003	0.002	0.498*	0.102
	(1.41)	(3.16)	(4.74)	(0.28)	(1.08)	(4.70)	(0.44)
FI	0.026***	0.022***	0.032*	0.004*	0.052***	0.003**	0.199*
	(1.65)	(1.71)	(4.36)	(4.34)	(1.68)	(2.11)	(4.70)
DC	-0.006**	-0.002	-0.001	-0.003***	-0.012	-0.037*	-0.021***
	(-2.50)	(-0.92)	(-1.34)	(-1.72)	(-1.44)	(-4.26)	(-1.76)
DI	-0.027*	-0.032*	-0.107	-0.037	-0.158***	-0.926*	-0.178**
	(-4.26)	(-4.94)	(-0.78)	(-0.92)	(-1.73)	(-4.13)	(-1.65)
PS	0.006***	0.041*	0.112***	0.023**	0.068***	0.764**	0.433*
	(1.73)	(3.05)	(1.75)	(2.11)	(1.68)	(2.08)	(4.56)
ERI	0.001*	0.004**	0.013**	0.002*	0.032*	0.713**	0.187**
	(3.34)	(2.50)	(2.03)	(3.75)	(4.56)	(2.57)	(2.56)
Constant	0.921*	0.725**	0.859**	0.241	0.648	0.706	0.841
	(4.15)	(2.46)	(1.99)	(0.90)	(1.22)	(0.33)	(1.07)
Time dummy	YES	YES	YES	YES	YES	YES	YES
Hansen-test	(0.509)	(0.425)	(0.561)	(0.428)	(0.365)	(0.439)	(0.428)
M_2- test	(0.514)	(0.533)	(0.419)	(0.517)	(0.554)	(0.385)	(0.329)

Note: See Table IV. C/TA is capital regulation; OC/TA is inefficiency; PS is political stability.

Furthermore, we followed the recent study by Athari et al. (2021) and performed the Granger causality test to check the direction of linkage between the investigated variables. As shown in Table VI, there is statistically significant evidence of Granger causality from the set of explanatory variables (capital regulation, credit risk, inefficiency, market power, income divarication, financial inclusion index, financial market development, deposit insurance,

political risk index, economic risk index) to banking sector stability in the panel countries. This implies the historical information of the investigating independent variables are capable of suggesting future information about banking sector stability in the panel countries.

Table VI: Granger causality test

Null Hypothesis			F-statistics	[prob. value]	Causality
Capital regulation	→	Banking stability	2.374**	[0.022]	Yes
Credit risk	→	Banking stability	6.519*	[0.001]	Yes
Inefficiency	→	Banking stability	5.464*	[0.001]	Yes
Market power	→	Banking stability	2.298**	[0.032]	Yes
Income divarication	→	Banking stability	4.536*	[0.002]	Yes
Financial inclusion index	→	Banking stability	2.276**	[0.018]	Yes
Financial market development	→	Banking stability	6.422*	[0.001]	Yes
Deposit insurance	→	Banking stability	5.169*	[0.002]	Yes
Political risk index	→	Banking stability	2.278**	[0.031]	Yes
Economic risk index	→	Banking stability	5.364*	[0.000]	Yes

Note. The symbols * and ** indicate statistical significance at the 1% and 5% levels, respectively.

5. Conclusion

The present study investigates the determinate of banking sector stability for 105 countries operating in the six different geographical regions between 2009-2017. The results imply that a rise in financial inclusion and a decline in political instability increases stability globally especially in South and East Asia and the Pacific and OECD High-Income regions, respectively. Furthermore, the results underscore that capital regulation, market power, and income diversification with positive signs and credit risk and inefficiency with negative signs impact stability. Moreover, the results show that financial market development and deposit insurance adversely impact stability, and countries with a lower economic instability have a more stable banking sector. The results have significant implications for the policymakers, regularity bodies, and banks' managers and suggest that countries for increasing stability in the banking sector and boosting economic growth should be increased the level of financial inclusion and provided more economically and politically stable environments. It would be beneficial for a further study to consider the effect of geopolitical risks on the banking sector stability of countries.

Declaration

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