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Original Research Article

Influence of Bank Competition and Insurance Penetration on Stock Market Development: Evidence from a Cross-Country Analysis

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Abstract

Purpose: This study investigated how bank concentration and insurance penetration influence stock market development (SMD) across countries with varying income levels.

Design/methodology/approach: This study employed secondary data from 64 nations worldwide from 2000 to 2021. It deployed pooled ordinary least squares, fixed-effect, and random-effect estimators to investigate the impact of bank concentration and insurance penetration on SMD.

Findings: The findings revealed that bank concentration negatively impacts SMD, which is significant in the full sample and lower-middle-income economies. However, it is not found to be significant in high-income and upper-middle-income economies. This indicates that the impact of bank concentration on SMD solely depends on the income level of the nation. Conversely, life insurance penetration favorably affects SMD and is robust in all regression models in all economies. By contrast, the findings showed that non-life penetration has a negligible impact on SMD.

Conclusion: This study concludes that bank concentration adversely affects SMD in lower-middle-income economies, and insurance penetration favorably impacts SMD in all types of economies.

Implications: Since high bank concentration hinders SMD in lower-middle-income nations, policymakers should focus more on increasing bank competition through regulatory reform that encourages new entrants by reducing barriers to entering the market. Policymakers should support life insurance growth by offering tax benefits, raising public awareness, and strengthening regulation to boost investor trust.

Originality/Value: This study provides novel empirical evidence on the differential impacts of bank concentration and insurance penetration on SMD across high-income, upper-middle-income, and lower-middle-income economies, a critical yet underexplored dimension in financial sector research.

JEL classification: G10, G21, G22

Introduction

Banks play a pivotal role in the development of stock markets through functions such as underwriting, liquidity provision, advisory services, and credit facilitation. The relationship between bank competition and SMD is, however, conceptually dualistic, either complementary or substitutive. On one hand, increased bank competition can lower intermediation costs, reduce information asymmetry, and ease credit constraints, thereby stimulating innovation and expanding stock market participation (Li et al., 2025; Mia, 2023). It facilitates margin lending and boosts investor demand for equities, thereby enhancing market liquidity and capitalization (Beck et al., 2004). Moreover, by improving banking services and access to finance, bank competition can attract foreign direct investment (FDI), further supporting SMD (Arestis et al., 2001; Francis et al., 2015).

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On the other hand, the substitutive hypothesis posits that enhanced bank competition may reduce firms' reliance on equity markets, as cheaper and more accessible loans crowd out stock-based financing (Beck & Levine, 2002; Cheng, 2012; Cao & Li, 2022). Excessive competition can also erode lending standards, leading to higher non-performing loans, increased credit risk, and cost inefficiencies that ultimately suppress investment and market confidence (Shaffer, 1998; Shamshur & Weill, 2019; Rahman et al., 2023). This dual nature of bank competition's impact introduces uncertainty into its overall effect on stock market development.

Likewise, insurance sector development (ISD) has important implications for SMD. Insurance companies, especially those offering long-term life products, act as institutional investors that mobilize premiums into equity markets, thereby enhancing liquidity, depth, and stability. ISD may also reduce systemic risk and encourage entrepreneurial risk-taking, indirectly promoting SMD. However, empirical evidence remains mixed. While studies like Arena (2008) and Jawadi et al. (2009) found a positive association between ISD and SMD, others, such as Lamm-Tennant and Weiss (1997), reported a negative relationship.

Despite the conceptual and empirical relevance of bank competition and ISD to stock market outcomes, most existing research (Dritsaki & Dritsaki-Bargiota, 2005; Budhathoki et al., 2024) has focused narrowly on their relationships with economic growth, rather than with stock market development. Critically, very few studies have explored their joint or comparative impact on SMD across different income groups. The limited literature fails to capture the heterogeneity in financial systems between high-income, upper-middle-income, and lower-middle-income economies contexts in which the mechanisms and intensity of financial sector development can vary substantially.

This study addresses this notable gap by investigating how bank competition and ISD influence SMD across income-classified economies. Specifically, it (i) examines the effect of bank competition on SMD within and across high-income, upper-middle-income, and lower-middle-income countries, (ii) assesses the role of ISD in shaping SMD across these income categories, and (iii) offers comparative insights into how these two financial pillars independently influence stock markets in varying economic contexts. The findings aim to inform evidence-based financial sector reforms and policy strategies for enhancing capital market efficiency, depth, and resilience.

Literature Review

Theoretical Review

The relationship between bank concentration, ISD, and SMD is explained by two main hypotheses: substitution and complementarity. The substitution hypothesis posits that banks, insurance companies, and stock markets serve as alternative financing sources. As bank competition increases, efficiency improves and interest rates fall, leading firms to rely more on bank financing and less on equity markets (Cheng, 2012). Similarly, when the insurance sector is well-developed, investors may prefer insurance products for financial security, reducing their stock market investments. In essence, this hypothesis suggests that bank competition and ISD negatively affect SMD. Conversely, the complementary hypothesis argues that bank competition, ISD, and SMD mutually reinforce each other. Increased bank competition can enhance efficiency, lower borrowing costs, provide underwriting, and other financial services that encourage stock market investment (Cheng, 2012). Banks mobilize savings from depositors, while stock markets offer investment opportunities, jointly boosting firms' profitability and stock values (Issahaku et al., 2017). Similarly, insurance companies, as institutional investors, channel long-term savings into equities, fostering stock market growth. Well-developed stock markets also support insurance sector expansion by providing investment avenues. Thus, this hypothesis asserts that bank competition and ISD positively influence SMD.

Empirical Review

The relationship between financial intermediation, comprising banks, insurance, and pension funds, and SMD remains inconclusive, with empirical studies offering support for both complementary and substitution hypotheses. Early cross-country analyses such as Demirguc-Kunt and Levine (1996) and Garcia and Liu (1999) reveal a positive link between BSD and SMD in developing nations, attributing this to banks' roles in providing liquidity, lowering transaction costs, and enhancing service efficiency. These findings highlight the complementary hypothesis, wherein efficient financial intermediaries reduce information asymmetries and transaction costs, thereby fostering stock market expansion (Ben Naceur et al., 2007; Issahaku et al., 2017).

Further reinforcing this perspective, Pradhan et al. (2014) demonstrate a unidirectional causal relationship where BSD growth propels SMD in Asian economies, suggesting that improvements in banking infrastructure can lead to deeper equity markets. Similarly, Pradhan et al. (2019) find that bank competition within European nations positively influences SMD, aligning with the argument that competition enhances stability and market confidence, which are crucial for stock market growth.

However, the relationship is not universally positive or straightforward. Mia (2023) reveals that reduced bank competition, signified by higher concentration, leads to increased intermediation costs, translating into higher borrowing rates and lower deposit rates. This cost inefficiency constrains margin lending, dampening stock market demand and capitalization. This evidence suggests that while competition fosters market development, excessive concentration can inhibit it by raising financing costs, illustrating a nuanced dynamic between bank structure and SMD. The insurance sector's impact on SMD similarly exhibits mixed evidence. Sawadogo and Guerineau (2016) and Pradhan et al. (2020) find that ISD positively influences SMD by mobilizing long-term savings and reducing investment risks. Shi et al. (2021) extend this by demonstrating how medical insurance lowers individual financial risks, increasing investors' willingness to participate in stock markets. These findings highlight ISD's role as a stabilizing force that complements SMD by providing risk mitigation and enhancing investor confidence.

Conversely, Bayar et al. (2022) provide a more differentiated view, showing that ISD's effect on SMD varies across countries, positively affecting markets in Chile, Indonesia, and South Africa, but negatively impacting Hungary and Peru. This suggests that the insurance sector's contribution to stock market development is context-dependent, influenced by a country's economic environment, regulatory framework, and market maturity.

Collectively, these studies reveal a complex interplay where BSD and ISD can either complement or substitute for stock markets depending on factors such as market structure, competition levels, and national

economic conditions. While banking competition often correlates with improved stock market outcomes, excessive concentration may raise intermediation costs, limiting equity market growth. Similarly, insurance development can stabilize and deepen stock markets but may also crowd out equity investment in certain contexts.

Methods

This study employs an explanatory research design to analyze the impact of bank competition and ISD on SMD through a cross-country approach. Secondary data were sourced from the World Bank (2023) to fulfill the research objectives. The sample comprises 64 countries, selected based on the availability of data for four key variables: the three-bank concentration ratio (BCR3), life insurance premiums (LIP), non-life insurance premiums (NLIP), and stock market capitalization (SC). A detailed list of the included countries is provided in Table 1.

Table 1: List of the Countries Included in the Study

HIC	UMIC	LMIC
Australia, Austria, Belgium, Bahrain, Canada, Switzerland, Chile, Cyprus, Germany, Spain, France, United Kingdom, Greece, Hong Kong SAR (China), Croatia, Hungary, Ireland, Israel, Japan, Kuwait, Luxembourg, Malta, Netherlands, Norway, New Zealand, Oman, Panama, Poland, Portugal, Romania, Saudi Arabia, Singapore, Slovak Republic, Slovenia, United States (35 countries)	Argentina, Bulgaria, Brazil, China, Colombia, Costa Rica, Jordon, Kazakhstan, Mexico, Mauritius, Malaysia, Peru, Namibia, Russian Federation, Thailand, Turkey, South Africa (17 countries).	Bangladesh, Côte d'Ivoire, Egypt, Ghana, Indonesia, India, Lebanon, Morocco, Nigeria, Pakistan, Philippines, Vietnam (12 countries)

Note. high-income (HIC), upper-middle-income (UMIC), and lower-middle-income countries (LMIC)

This study excluded low-income economies due to the unavailability of data, especially on ISD and SMD-related data. It included balanced panel data of 64 countries over the period from 2000 to 2021. In addition, we divided the full sample countries into HIC, UMIC, and LMIC. Table 2 presents the description of the variables.

Table 2: Variables Descriptions

Variables	Measurement	Sources	Sign/s
SC	Stock market capitalization to GDP (%)	World Bank (2023)	N/A
BCR3	Assets of the three largest banks as a share of total commercial banking assets.	World Bank (2023)	-
LIP	Ratio of life insurance premium volume to GDP.	World Bank (2023)	+
NLIP	Ratio of non-life insurance premium volume to GDP.	World Bank (2023)	+

The dependent variable used in this study is SMD, measured by stock capitalization (SC) divided by GDP. A higher SC indicates greater SMD, a metric commonly employed in prior research (Demirguc-Kunt & Levine, 1996; Garcia & Liu, 1999; Pradhan et al., 2020). ISD was captured using two proxies: life insurance premiums (LIP) and non-life insurance premiums (NLIP), both scaled by GDP. Higher values of these indicators reflect more developed insurance sectors, consistent with previous studies (Pradhan et al., 2020; Dawd & Benlagha, 2023). Bank competition was measured by the three-bank concentration ratio (BCR3), defined as the combined assets of the three largest banks as a share of total banking assets. A higher BCR3 indicates lower competition, following earlier literature (Demirgue-Kunt & Levin, 2000; Pradhan et al., 2019; Budhathoki et al., 2024).

Descriptive statistics were computed for the full sample and stratified by income groups, HIC, UMIC, and LMIC, to summarize the variables' central tendencies and dispersion.

Before econometric modeling, several diagnostic tests were conducted. Multicollinearity was assessed using Pearson's correlation, where correlations above 0.8 signal problematic multicollinearity, warranting exclusion of variables from the same regression (Field, 2024). Stationarity of all variables was tested through Levin-Lin-Chu (LLC), Augmented Dickey-Fuller (ADF), and Phillips-Perron (PP) tests (Levin et al., 2002; Maddala et al., 1999). If variables were stationary at levels (I(0), pooled ordinary least squares (POLS) were used as the baseline model; otherwise, alternative econometric approaches were considered. Additionally, cointegration among variables was verified using Johansen-Fisher panel and Kao residual cointegration tests. Given evidence of cointegration, POLS was applied as the baseline estimator, with fixed-effect and random-effect models employed as robustness checks.

Model Specification

This study aims to examine the unidirectional influence of BCR3, LIP, and NLIP on SC worldwide. Hence, we express the following function to achieve the study's objective.

This study employed POLS as a baseline regression estimator. This estimator possesses the best results when all the variables are stationary at the level and cointegrated.

$SC_{it} = \beta_1 + \beta_2 BCR3_{it} + \beta_3 LIP_{it} + \beta_4 NLIP_{it} + u_{it}$

i =1,2,3,……..,64.

t =1,2,3,……., 22.

This study also deployed a fixed-effect estimator to check the robustness of the baseline results. This estimator assumes that the intercept of the 64 countries may vary, but each country's intercept does not vary over time (Gujarati et al., 2019).

$SC_{it} = \beta_{1i} + \beta_2 BCR3_{it} + \beta_3 LIP_{it} + \beta_4 NLIP_{it} + u_{it}$

This study also used a random-effect model to check the robustness. The following regression model is used to check the results' comparing them with baseline results. In this model, the intercept value for an individual country could be expressed as ε_i.

$SC_{it} = \beta_1 + \beta_2 BCR3_{it} + \beta_3 LIP_{it} + \beta_4 NLIP_{it} + \varepsilon_i + u_{it}$

where SC denotes stock capitalization. BCR3 denotes the three-bank concentration ratio. LIP and NLIP denote life-insurance premium and nonlife-insurance premium, respectively. are the regression coefficients of BCR3, LIP, and NLIP, respectively. denotes error term. denotes the intercept values of each country.

Results and Analysis

The basic characteristics of the study variables (dependent and independent variables) are presented in Table 3. The finding revealed that the mean value of SC for the overall sample is 75.424. The mean of HIC is relatively higher than the overall sample mean value. However, the mean values of SC of UMIC and LMIC are comparatively lower than that of the overall sample mean. It indicates that most of the SC is concentrated on HIC. The finding also revealed that SC volatility, measured by SD in HIC, is higher than that of UMIC and LMIC. It is usually opined that this volatility is lower in HIC due to more prudent regulatory provisions and more stability in the financial market; however, unexpected results were found in this study. Similarly, the mean value of BCR3 in the overall sample is 63.309.

Notably, the mean value of BCR3 is higher in HIC than in UMIC and LMIC. It is argued that a higher bank concentration erodes bank efficiency and increases interest rates. However, this study found that a high concentration level prevails in HIC. The mean value of LIP for the overall sample, HIC, UMIC, and LMIC is 2.267, 3.011, 1.821, and 0.810, respectively. This indicates that insurance sector development in HIC is higher than that of UMIC and LMIC. However, the volatility of LIP is almost the same in the HIC, UMIC, and LMIC. Similarly, the mean value of NLIP for the overall sample is 1.364. The mean score of the NLIP of HIC is higher than that of UMIC and LMIC. The finding also revealed that NLIP volatility, measured by SD in HIC, is higher than in UMIC and LMIC.

Table 3: Descriptive Results

Variables	Panel A: All samples				
	N	Mean	SD	Min	Max
SC	1205	75.424	134.098	0.009	1777.54
BCR3	1393	63.309	18.488	21.451	100
LIP	1338	2.267	2.651	0.000	19.395
NLIP	1339	1.364	0.717	0.002	4.839
	Panel B: High-income countries				
SC	674	97.675	170.777	0.977	1777.54
BCR3	752	68.648	16.984	21.451	100
LIP	723	3.011	2.818	0.003	19.395
NLIP	723	1.688	0.676	0.002	4.839
	Panel C: Upper-middle-income countries				
SC	315	56.490	57.919	0.009	322.711
BCR3	361	61.118	18.308	22.0307	100
LIP	352	1.821	2.666	0.000	15.381
NLIP	353	1.257	0.490	0.314	2.913
	Panel D: Lower-middle-income countries				
SC	202	34.170	26.170	1.811	161.24
BCR3	258	52.258	17.133	23.324	100
LIP	242	0.810	0.769	0.047	4.431
NLIP	242	0.562	0.388	0.134	1.854

Note(s). N denotes the number of observations; SD represents standard deviation; Min and max denote minimum and maximum values, respectively; SC, BCR3, LIP, NLIP, and TP denote stock capitalization, three bank concentration ratios, life-insurance premium, nonlife-insurance premium, and total premium, respectively.

Table 4 presents the findings of the correlation analysis. Panel A presents the outcome of the correlation analysis for the overall sample. The results indicated a favorable yet insignificant correlation between BCR3 and SC. LIP is directly linked to SC and BCR3. NLIP exhibits a positive association with SC, BCR3, and LIP. Panel B presents the outcome of the correlation analysis of the HIC. The results indicated a negative association between BCR3 and SC. LIP is positively correlated with SC, while it negatively correlates with BCR3. NLIP exhibits a positive correlation with SC and LIP while demonstrating a negative association with BCR3. Panel C presents the results of the correlation analysis of the UMIC. The results indicate a positive correlation between BCR3 and SC. LIP exhibits a positive correlation with SC and BCR3.

In contrast, NLIP exhibits a negative yet insignificant association with SC, while it positively correlates with BCR3 and LIP. Panel D presents the results of the correlation analysis for the LMIC. The results indicated a negative correlation between BCR3 and SC. LIP exhibits a positive correlation with SC and a negative correlation with BCR3. The NLIP exhibits a positive correlation with SC, BCR3, and LIP.

Table 4: Correlation Analysis

Variables	Panel A: All Samples			
	SC	BCR3	LIP	NLIP
SC	1			
BCR3	0.032 (0.280)	1		
LIP	0.511*** (0.000)	0.135*** (0.000)	1	
NLIP	0.231*** (0.000)	0.134*** (0.000)	0.445*** (0.000)	1
	Panel B: High-income countries			
SC	1			
BCR3	-0.081** (0.038)	1		
LIP	0.586*** (0.000)	-0.071* (0.059)	1	
NLIP	0.111*** (0.000)	-0.262*** (0.000)	0.272*** (0.000)	1
	Panel C: Upper-middle-income countries			
SC	1			
BCR3	0.062 (0.280)	1		
LIP	0.266*** (0.000)	0.294*** (0.000)	1	
NLIP	-0.028 (0.627)	0.165*** (0.002)	0.575*** (0.000)	1
	Panel D: Lower-middle-income countries			
SC	1			
BCR3	-0.342*** (0.000)	1		
LIP	0.654*** (0.000)	-0.351*** (0.000)	1	
NLIP	0.205*** (0.000)	0.210*** (0.000)	0.216*** (0.000)	1

Note(s). SC, BCR3, LIP, NLIP, and TP denote stock capitalization, three bank concentration ratios; life-insurance premium, nonlife-insurance premium, and total premium, respectively; ***, **, and * denote $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Table 5 displays the outcome of panel unit root tests. Findings revealed that all the variables (dependent and independent) included in the study are stationary at levels under the LLC, ADF, and PP tests, which failed to accept that all panels contain unit roots. These findings indicated that the POLS is sufficient to draw robust findings.

Table 6: Cointegration Analysis

	Panel A: Johansen Fisher Panel Cointegration Test			
Hypotheses	Trace test	p-value	Max-eigen Test	p-value
H_0: r =0	920.3***	0.000	730.1***	0.000
H_0: r ≤ 1	367.0***	0.000	292.1***	0.000
H_0: r ≤ 2	166.3***	0.000	138.8***	0.018
H_0: r ≤ 3	166.0***	0.000	166.3***	0.000
	Panel: Kao residual cointegration test			
	t-statistics	p-value		
ADF	-1.727**	0.0442		

Table 6 displays the outcome of the panel cointegration test. Panels A and B present the outcome of the Johansen-Fisher panel cointegration test and the Kao residual cointegration test. These two tests examine whether long-run equilibrium relationships prevail among the variables in panel data. The outcome revealed that trace and max-eigen tests failed to accept the null hypothesis (Fisher stat = 920.3 and 730.1, $p < 0.05$) of no cointegrating relationship between variables in the panel. Similarly, the Kao test rejects the null hypothesis (ADF t-statistic = -1.727 and $p < 0.05$) of no cointegration at the 5% significance level, supporting a long-run relationship among the variables.

Table 5: Panel Unit Root Analysis

Variables	LLC		ADF		PP		Order of Integration
	0D	1D	0D	1D	0D	1D	
SC	-7.650***	-17.264***	229.30***	599.724***	288.053***	1668.70***	I(0)
BCR3	-8.748***	-18.954***	448.051***	483.740***	353.349***	870.552***	I(0)
LIP	-2.300**	-9.846***	154.664*	417.616***	240.368***	1141.72***	I(0)
NLIP	-6.187***	-11.146***	217.133***	438.728***	155.710*	658.871***	I(0)

Note(s). LLC, ADF, and PP denote the Levin-Lin-Chu, Augmented Dickey-Fuller, and Phillips-Perron tests, respectively; 0D and 1D denote the level and first difference, respectively.

Table 7 presents the regression results. Unit root and panel cointegration tests confirmed that all variables are stationary at the level and cointegrated, validating the use of POLS as the baseline estimator. Fixed- and random-effect models were applied for robustness checks. Across the full sample, bank concentration (BCR3) negatively and significantly impacts SC, a finding consistent across all models. This suggests that higher bank concentration, indicating lower competition, reduces banking efficiency, raises interest rates, and discourages margin borrowing, thereby lowering stock market demand and capitalization. In contrast, LIP positively and significantly influences SC, reflecting the role of institutional investors in enhancing market development. NLIP shows a positive but statistically insignificant effect. When analyzed by income groups, BCR3 negatively but insignificantly affects SC in HIC and UMIC, while its adverse effect is significant and robust in LMIC. LIP consistently exhibits a significant positive impact on SC across all income groups. Conversely, NLIP remains insignificant in all income classifications.

Table 7: Regression Analysis

Variables	Panel A: All Countries, Dependent variable =SC					
	POLS		Fixed-effect		Random-effect	
	(1)	(2)	(3)	(4)	(5)	(6)
BCR3	-0.002	-0.175*	-0.364***	-0.370***	-0.338***	-0.348***
LIP	0.223***	0.220***	0.66***	0.064***	0.089***	0.085***
NLIP		0.026		0.094		0.112*
Constant	3.342***	3.900***	5.083***	4.981	4.875***	4.772***
Wald-stat					48.86***	51.80***
F-stat.	225.24***	151.04***	17.56***	12.34***		
R-square	0.283	0.284	0.215	0.217	0.2513	0.244
	Panel B: High-income countries, Dependent variable = SC					
BCR3	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
LIP	0.212***	0.213***	0.051***	0.049***	0.062***	0.059***
NLIP		-0.035		0.086		0.079
Constant	3.499	3.573***	4.002***	3.888***	3.955***	3.850
Wald-stat					26.24***	28.38***
F-stat.	171.50***	114.39	9.00***	6.82***		
R-square	0.347	0.347	0.335	0.280	0.340	0.301
	Panel C: Upper-middle-income countries, Dependent variable = SC					
BCR3	-0.002	-0.003	-0.165	-0.125	-0.002	-0.002
LIP	0.155***	0.247***	0.098	0.113	0.052***	0.058***
NLIP		-0.780***		0.319		0.069
Constant	3.324***	4.184***	3.980***	3.394***	3.755***	3.750
Wald-stat					25.24***	27.38***
F-stat.	15.36	16.99***	36.476	34.747***		
R-square	0.095	0.148	0.703	0.704	0.330	0.291
	Panel D: Lower-middle-income countries, Dependent variable = SC					
BCR3	-0.006*	-0.007**	-0.014***	-0.014***	-0.013***	-0.013***
LIP	0.593***	0.569***	0.613***	0.591***	0.602***	0.604***
NLIP		0.176		-0.535		-0.085
Constant	3.006***	2.973***	3.422	3.374***	3.381***	3.431***
Wald-stat					78.53***	77.56***
F-stat.	67.76	45.95	33.75	23.42		
R-square	0.426	0.431	0.413	0.335	0.415	0.407

Note(s). SC, BCR3, LIP, NLIP, and TP denote stock capitalization, three bank concentration ratio, life-insurance premium, nonlife-insurance premium, and total premium, respectively; ***, **, and * denote $p < 0.01$, $p < 0.05$, and $p < 0.1$, respectively.

Discussions

This study investigated how bank concentration and insurance penetration impact SMD worldwide. It also empirically examined whether this effect differs in high-income, upper-middle-income, and lower-middle-income countries.

The findings revealed that BCR3 does not affect SC in HIC and UMIC. This finding contrasts with the findings of Demirguc-Kunt and Levine (1996), Garcia and Liu (1999), Ben Naceur et al. (2007), Pradhan et al. (2014), and Pradhan and Kumar (2025). The results indicate that capital markets are well-developed in advanced economies and offer various instruments for capital accumulation, such as equity, bonds, venture capital, and institutional investors, which reduce reliance on banks. Furthermore, savers are reluctant to deposit in banks because banks offer lower interest rates on deposits, and stocks offer higher returns and liquidity than bank deposits. Hence, the stock market functions independently and is not impacted by bank concentration.

In addition, HIC and UMIC attract more FDI, contributing to SMD regardless of banking concentration (Demirguc-Kunt & Levin, 2000). However, BCR3 adversely affects SC in LMIC. This finding supports the earlier findings of Demirguc-Kunt and Levine (1996), Garcia and Liu (1999), Ben Naceur et al. (2007), Pradhan et al. (2014), and Pradhan and Kumar (2025). This result indicates that greater bank concentration erodes banking efficiency and increases banks' lending rates, discouraging investors from taking margin loans, reducing demand for stock, and reducing market capitalization in LMIC. Furthermore, financial regulations may favor banks over the stock markets. Similarly, in bank-dominated economies, investors may perceive the stock market as riskier or less attractive, which reduces investors' participation and hinders SMD.

The outcome showed that LIP favorably affects SC across the HIC, UMIC, and LMIC. This finding supports the earlier findings of Sawadogo and Guerinean (2016), Shi et al. (2021), and Bayar et al. (2022). This indicates that life insurance companies are major institutional investors that accumulate long-term savings and allocate larger funds to equity markets, thus increasing SC. In addition, a well-developed insurance market mitigates investors' risk, reduces financial instability, and encourages equity investment. Finally, the outcome showed that NLIP does not affect SC across HIC, UMIC, and LMIC. This finding contrasts with the findings of Sawadogo and Guerinean (2016), Shi et al. (2021), and Bayar et al. (2022). This indicates that non-life insurers primarily focus on short-term risk coverage and, therefore, invest more in fixed-income securities compared to stock, which leads to minimal impact on the equity market. Furthermore, the frequent nature of claims settlement on non-life policies often leads to investing funds in short-term, more liquid assets over stock.

Conclusion and Implications

This study investigates the impact of bank concentration and ISD on SMD across HIC, UMIC, and LMIC, using a sample of 64 nations. Employing POLS as the baseline estimator, complemented by fixed-effect and random-effect models for robustness, the analysis reveals that bank concentration negatively affects SC in LMICs but shows no significant effect in HICs and UMICs. This suggests that greater bank competition enhances banking efficiency, reduces interest rates, and stimulates stock market activity by encouraging margin borrowing and increasing demand for equities.

Conversely, life insurance development, as measured by life insurance premiums (LIP), consistently exerts a positive influence on stock market development across all income groups. This highlights the pivotal role of institutional investors, particularly the life insurance sector, in fostering stock market growth. NLIPs, however, do not significantly impact the stock market, likely due to the sector's focus on short-term risk coverage and preference for investing in fixed-income securities rather than equities.

This study advances the debate on bank-versus market-based financial systems by showing that bank concentration hinders SMD only in lower-middle-income countries, supporting the substitutability hypothesis in less-developed financial contexts. In contrast, the consistent positive influence of life insurance penetration on SMD across all income levels reinforces Institutional Investor Theory, highlighting life insurers' role in deepening capital markets, while the limited effect of non-life insurance challenges existing assumptions. These findings contest generalized theories, advocating for more context-sensitive and stratified frameworks. By incorporating income-based country classification, the study extends financial intermediation models, urging the development of differentiated theoretical approaches tailored to various stages of economic development.

The findings carry important policy implications. First, the adverse effect of bank concentration on SMD in LMICs highlights the need for policies that promote bank competition. Regulators should reduce barriers to market entry, including opening the sector to foreign banks, and implement stringent anti-cartel and consumer protection regulations to prevent monopolistic behaviors and ensure fair pricing in deposits and lending. Second, the positive relationship between life insurance development and stock market growth across all income groups calls for enhanced regulatory frameworks that safeguard the solvency of insurance firms and protect policyholders from exploitation. Fiscal incentives, such as tax benefits on life insurance premiums, could further stimulate market participation.

Policymakers should also prioritize expanding insurance coverage to underserved populations by encouraging the development of affordable micro-insurance products and facilitating the entry of foreign insurers to increase competition and innovation. Public awareness campaigns can play a critical role in educating consumers on the benefits of life insurance, thereby boosting demand and overall insurance penetration. Collectively, these measures can strengthen financial sector development and, in turn, promote broader economic growth through more vibrant and inclusive stock markets.

Limitations and Future Research

This study is based on two theoretical frameworks: the complementary and supplementary hypotheses. However, it does not incorporate alternative proxies for bank competition, such as the Lerner index, Boone indicators, H-statistics, BCR5, or foreign ownership. Similarly, other indicators of ISD, including insurance investment, claims paid, insurance density, number of policies issued, and total premiums to GDP, were not considered. The measure of SMD was also limited to stock capitalization, excluding other relevant proxies like turnover ratio, value of stock traded, and the number of listed companies. Furthermore, the analysis excludes low-income economies due to data limitations, suggesting that the impact of bank competition and insurance development on SMD may differ in those contexts compared to HICs, UMICs, and LMICs. The study also relies on first-generation unit root tests, which may produce biased results

compared to more efficient second-generation alternatives. Lastly, the use of POLS, fixed-effect, and random-effect models may lead to estimation inaccuracies under certain conditions. Future research should address these limitations by incorporating a broader set of proxies, including low-income countries, and employing more robust econometric techniques.

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Conflict of Interest

The authors declare that they have no financial, personal, or professional conflicts of interest related to this research work.

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Ethical Statement

This research did not require ethical approval as it does not involve any human or animal experiments.

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References

Arena, M. (2008). Does insurance market activity promote economic growth? A cross-country study for industrialized and developing countries. *Journal of Risk and Insurance, 75*(4), 921-946. DOI: 10.1111/j.1539-6975.2008.00291.x

Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: The role of stock markets. *Journal of Money, Credit and Banking, 33*(1), 16–41. DOI: 10.2307/2673870

Bayar, Y., Gavriletea, M. D., Danuletiu, D. C., Danuletiu, A. E., & Sakar, E. (2022). Pension funds, insurance companies and stock market development: Evidence from emerging markets. *Mathematics, 10*(13), 2335. DOI: 10.3390/math10132335

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2004). Bank competition and access to finance: International evidence. *Journal of Money, Credit and Banking,* 627-648. DOI: 10.1353/mcb.2004.0039

Beck, T., & Levine, R. (2002). Industry growth and capital allocation: Does having a market-or bank-based system matter?. *Journal of Financial Economics, 64*(2), 147-180. DOI: 10.1016/S0304-405X(02)00074-0

Ben Naceur, S., Ghazouani, S., & Omran, M. (2007). The determinants of stock market development in the Middle-Eastern and North African region. *Managerial Finance, 33*(7), 477-489. DOI: 10.1108/03074350710753753

Budhathoki, P. B., Bhattarai, G., Aryal, N. P., & Ghimire, S. R. (2024). The bank concentration and risk exposure: Empirical insights from Asian countries. *Nepal Journal of Multidisciplinary Research, 7*(2), 12-29. DOI: 10.3126/njmr.v7i2.68190

Budhathoki, P. B., Bhattarai, G., & Dahal, A. K. (2024). Nexus between financial development and economic prosperity in selected countries of emerging and developing Asia. *Nepal Journal of Multidisciplinary Research, 7*(4), 1-16. DOI: 10.3126/njmr.v7i2.68191

Cao, Q., & Li, J. (2022). Bank competition and corporate financialization: Evidence from China. Asia-Pacific Journal of Accounting & Economics, 31(3), 378–394. DOI: 10.1080/16081625.2022.2147968

Cheng, S. Y. (2012). Substitution or complementary effects between banking and stock markets: Evidence from financial openness in Taiwan. *Journal of International Financial Markets, Institutions and Money, 22*(3), 508-520. DOI: 10.1016/j.intfin.2012.01.007

Dawd, I., & Benlagha, N. (2023). Insurance and economic growth nexus: New evidence from OECD countries. *Cogent Economics & Finance, 11*(1). DOI: 10.1080/23322039.2023.2183660

Demirgüç-Kunt, A., & Levine, R. (1996). Stock market development and financial intermediaries: Stylized facts. *The World Bank Economic Review, 10*(2), 291–321. http://www.jstor.org/stable/3990064

Demirgüç-Kunt, A., & Levine, R. (2000). Bank concentration: Cross-country evidence. The World Bank. http://documents.worldbank.org/curated/en/979371468780328170

Dritsaki, C., & Dritsaki-Bargiota, M. (2005). The causal relationship between stock, credit market and economic development: An empirical evidence for Greece. *Economic Change and Restructuring, 38,* 113-127. DOI: 10.1007/s10644-005-4525-3

Field, A. (2024). Discovering statistics using IBM SPSS statistics (6th ed.). SAGE publications limited.

Francis, B. B., Hasan, I., & Ofori, E. (2015). Investor protections, capital markets, and economic growth: The African experience. In International Corporate Governance (Vol. 18, pp. 239-272). Emerald Group Publishing Limited. DOI: 10.1108/S1569-373220150000018008

Garcia, V. F., & Liu, L. (1999). Macroeconomic determinants of stock market development. *Journal of Applied Economics, 2*(1), 29–59. DOI: 10.1080/15140326.1999.12040532

Gujarati, D. N., Porter, D. C., & Gunasekar, S. (2019). Basic econometric (5th ed.). McGraw Hill Education (India) Private Limited.

Issahaku, H., Abor, J. Y., & Harvey, S. K. (2017). Remittances, banks and stock markets: Panel evidence from developing countries. *Research in International Business and Finance, 42,* 1413-1427. DOI: 10.1016/j.ribaf.2017.07.080

Jawadi, F., Bruneau, C., & Sghaier, N. (2009). Nonlinear cointegration relationships between non-life insurance premiums and financial markets. *Journal of Risk and Insurance, 76*(3), 753-783. DOI: 10.1111/j.1539-6975.2009.01314.x

Lamm-Tennant, J., & Weiss, M. A. (1997). International insurance cycles: Rational expectations/institutional intervention *The Journal of Risk and Insurance, 64*(3), 415–439. DOI: 10.2307/253758

Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics, 108*(1), 1-24. DOI: 10.1016/S0304-4076(01)00098-7

Li, J., Cao, Q., & Han, C. (2025). Does bank competition boost corporate innovation? Evidence from China. *Management System Engineering, 4*(1), 3. DOI: 10.1007/s44176-025-00038-1

Maddala, G. S., & Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and statistics, 61*(S1), 631-652. DOI: 10.1111/1468-0084.0610s1631

Mia, M. R. (2023). Market competition, capital regulation and cost of financial intermediation: An empirical study on the banking sector of Bangladesh. *Asian Journal of Economics and Banking, 7*(2), 251-276. DOI: 10.1108/AJEB-03-2022-0028

Pradhan, R. P., Arvin, M. B., Hall, J. H., & Bahmani, S. (2014). Causal nexus between economic growth, banking sector development, stock market development, and other macroeconomic variables: The case of ASEAN countries. *Review of Financial Economics, 23*(4), 155-173. DOI: 10.1016/j.rfe.2014.07.002

Pradhan, K., & Kumar, V. (2025). An empirical analysis of impact of banking sector on Indian stock market. *Journal of Economic and Administrative Sciences, 41*(1), 371-380. DOI: 10.1108/JEAS-05-2022-0125

Pradhan, R. P., Arvin, M. B., Nair, M., & Bennett, S. E. (2019). Inter-linkages between competition and stabilisation policies in the banking sector and stock market development in Europe. *Applied Economics, 51*(39), 4313–4324. DOI: 10.1080/00036846.2019.1591603

Pradhan, R. P., Arvin, M. B., Nair, M., & Bennett, S. E. (2020). Unveiling the causal relationships among banking competition, stock and insurance market development, and economic growth in Europe. *Structural Change and Economic Dynamics, 55*, 74-87. DOI: 10.1016/j.strueco.2020.08.006

Rahman, M. M., Rahman, M., & Masud, M. A. K. (2023). Determinants of the cost of financial intermediation: Evidence from emerging economies. *International Journal of Financial Studies, 11*(1), 11. DOI: 10.3390/ijfs11010011

Sawadogo, R., & Guerineau, S. (2016). Does insurance development affect financial market in developing countries? https://ssrn.com/abstract=2768265

Shaffer, S. (1998). The winner's curse in banking. *Journal of Financial Intermediation, 7*(4), 359-392. DOI: 10.1006/jfin.1998.0251

Shamshur, A., & Weill, L. (2019). Does bank efficiency influence the cost of credit?. *Journal of Banking & Finance,* 105, 62-73. DOI: 10.1016/j.jbankfin.2019.05.002

Shi, G. F., Li, M., Shen, T. T., & Ma, Y. (2021). The impact of medical insurance on household stock market participation: Evidence from China household finance survey. *Frontiers in Public Health, 9,* 710896. DOI: 10.3389/fpubh.2021.710896

World Bank. (2023, March 29). *Global Financial Development Database.* https://www.worldbank.org/en/publication/gfdr/data/global-financial-development-databas

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