THE IMPACT OF THE FINANCIAL CONGLOMERATE MODEL ON BANK STABILITY: THE MEDIATING ROLE OF RISK-TAKING

MSc. Hoang Bao Ngoc*

Abstract: *This study develops a Financial Conglomeration Index (FCI) for Vietnamese banks (2015-2024). System GMM results show how conglomeration impacts stability. Critically, this effect is transmitted through the risk-taking channel: higher FCI drives aggressive loan growth, ultimately eroding the bank's Z-score. The paper provides crucial implications for consolidated supervision.*

1. Introduction

The rise of financial conglomerates - organizations operating across multiple sectors such as banking, securities, and insurance - is one of the most prominent trends shaping the global financial industry in recent decades. In theory, this model promises numerous benefits through revenue diversification, exploitation of economies of scale and scope, and the creation of an efficient internal capital market, which can enhance stability (Filatie & Sharma, 2024; Xie et al., 2022; Laeven & Levine, 2007). However, the 2008 global financial crisis revealed a contrasting reality: structural complexity, operational opacity, and the risk of systemic contagion from these conglomerates can become sources of macroeconomic instability. The crisis exposed significant vulnerabilities, demonstrating how the opacity and interconnectedness of these large institutions create conditions where financial volatility can quickly transmit systemic risk across global markets, threatening economic stability (Spatt, 2020; Mieg, 2020). This event called into question the unalloyed benefits of full financial integration, revealing that without adequate governmental oversight, interconnectedness could also propagate systemic failures (Stiglitz, 2010). Even in the post-crisis landscape, while regulatory reforms have made systemically important banks more resilient, significant risks remain, particularly from non-bank financial entities (Tarullo, 2019), and the effectiveness of internal corporate governance in mitigating these risks has shown mixed results (Peni and Vähämaa, 2011).

In emerging markets like Vietnam, the trend of financial conglomeration presents unique and more pressing characteristics. Many commercial banks have been expanding their operations by establishing or acquiring subsidiaries in securities, insurance, and fund management, forming "de facto" financial conglomerates. However, this development is occurring within a context where the "de jure" legal and supervisory framework has not yet been clearly defined. This asymmetry between operational practice and legal framework creates a "supervisory gap," raising significant concerns about the safety of individual institutions and the stability of the entire financial system.

Despite the issue's importance, quantitative research on the impact of the financial conglomerate model in Vietnam remains extremely limited. The primary obstacle is the lack of a unified legal definition, which makes it difficult to identify and measure a bank's degree of "conglomeration." This research gap raises urgent questions: First, how does the degree of financial conglomeration actually affect the stability of Vietnamese commercial banks? Second, what is the mechanism behind this impact, and is risk-taking behavior a significant transmission channel?

This study is conducted to answer these questions. Our main objective is to construct a quantitative index to measure the degree of conglomeration and use it to test the impact on bank stability, while also exploring the mediating role of risk-taking behavior. The paper makes three main contributions. Methodologically, we propose a composite Financial Conglomeration Index (FCI) that can be applied to markets with similar contexts. Empirically, this is the first study in Vietnam to provide quantitative evidence of the risk-taking channel in the relationship between conglomeration and stability. Finally, the research findings offer important policy implications for policymakers regarding the necessity of establishing a consolidated supervision framework.

* Trade Union University; email: ngochb@dhcd.edu.vn

The structure of the paper is as follows. Section 2 presents the literature review and develops the research hypotheses. Section 3 details the research methodology, including the data, variable construction, and econometric model. Section 4 presents and analyzes the empirical results. Finally, Section 5 discusses the results, provides policy implications, and concludes.

2. Literature review and Hypothesis development

The relationship between the financial conglomerate model and bank stability is subject to intense debate, with two main opposing theoretical viewpoints: diversification benefits versus complexity risks.

2.1. The Positive View: "Diversification-Stability"

This perspective argues that expanding into non-bank financial sectors enhances stability. The foundation rests on Modern Portfolio Theory (Markowitz, 1952), positing that diversifying income streams reduces return volatility. Operational benefits include economies of scale and scope, and the creation of an internal capital market (ICM), which provides efficient resource allocation and funding flexibility during constraints (Matvos & Seru, 2014). Empirical evidence often supports that affiliation with conglomerates can enhance financial strength and stability through ICM support (Doumpos et al., 2016; Raykov & Silva-Buston, 2020).

2.2. The Negative View: "Complexity-Fragility"

Conversely, this view holds that diversification benefits are negated by risks from the conglomerate's complex structure. Agency Theory suggests that multi-layered structures increase information asymmetry, reducing monitoring effectiveness (Jensen & Meckling, 1976). Complexity creates risks of internal contagion, regulatory arbitrage, and moral hazard related to "too-big-to-fail" bailout expectations. Recent theory emphasizes that the intricate financial network structure facilitates the "anti-social sharing of risk," where excessive risk-taking can spread rapidly, amplifying systemic instability (Allen and Carletti, 2013; Altinoglu & Stiglitz, 2023).

2.3. Risk-Taking as a Transmission Channel and Hypothesis Development

Synthesizing these views, the overall impact of the conglomerate model is ambiguous. A growing literature suggests that the structure primarily influences stability by altering a bank's risk-taking behavior (the risk-taking channel). This occurs because complex governance structures may incentivize managers to assume excessive risk (Laeven & Levine, 2009). Moreover, the pressure for income diversification (e.g., through fee-based income) can also encourage higher risk-taking to meet short-term targets (Abbas & Ali, 2021).

For Vietnam, we argue that the incomplete regulatory environment, combined with implicit "too-big-to-fail" guarantees and growth pressures, incentivizes banks to pursue high-risk strategies, often manifesting as aggressive loan expansion.

Based on these arguments, we hypothesize that: bank to relax its credit standards to expand lending, thereby sacrificing long-term safety.

To capture this proactive (*ex-ante*) risk-taking behavior - which reflects strategic management decisions rather than merely realized (*ex-post*) risk outcomes - we employ "Aggressive Loan Growth" (ALGR), a measure standardized by Foos et al. (2010).

Based on the preceding arguments, we develop the following research hypotheses:

H1: The degree of financial conglomeration has a negative overall impact on bank stability.

H2: The degree of financial conglomeration is positively related to a bank's risk-taking behavior.

H3: Risk-taking behavior is negatively related to bank stability.

H4: Risk-taking behavior mediates the relationship between the degree of financial conglomeration and bank stability.

3. Research Methodology

This section details the methodology used to test the research hypotheses, including data description, variable measurement procedures, and the econometric model.

3.1. Data and Sample

The study uses an unbalanced panel dataset of 30 Vietnamese commercial banks over a 10-year period from 2015 to 2024. The sample includes listed joint-stock commercial banks and several large unlisted banks with complete financial disclosures, representing the majority of the total assets of the banking system. This period captures significant changes in the banking industry's structure following a restructuring phase and the strong growth of non-credit activities.

Financial data were primarily collected from audited annual financial statements, including both consolidated and parent-only reports. Macroeconomic

data, such as GDP growth and inflation, were sourced from reputable institutions like the General Statistics Office and the State Bank of Vietnam. To mitigate the impact of outliers, all continuous variables in the model were winsorized at the 1% and 99% percentiles.

3.2. Variable Measurement

3.2.1. Dependent Variable: Bank Stability (Z-score)

Bank stability, or the distance to default, is measured by the Z-score, a widely used metric in banking risk studies (Laeven & Levine, 2009). The index is calculated as follows:

$$ZSCORE_{i,t} = \frac{ROA_{i,t} + EAT_{i,t}}{\sigma(ROA_{i,t})}$$

Where:

$ROA_{i,t}$ is the return on assets for bank i in year t.

$EAT_{i,t}$ is the Equity-to-Asset Ratio for bank i in year t.

$\sigma(ROA_{i,t})$ is the standard deviation of ROA, calculated over a 3-year rolling window to reflect profit volatility.

A higher Z-score indicates greater stability and a lower probability of insolvency.

3.2.2. Mediating Variable: Risk-Taking Behavior (ALGR)

To test the mediating role, we need a measure of proactive (ex-ante) risk-taking. Following Foos et al. (2010), "Aggressive Loan Growth" (ALGR) is a suitable proxy. It is calculated in the following steps:

(1) Calculate raw loan growth (LoanGrowth):

$$LoanGrowth_{i,t} = \frac{Loans_{i,t} - Loans_{i,t-1}}{Loans_{i,t-1}}$$

Where is the total gross loans to customers of bank i in year t.

(2) Calculate industry median loan growth (MedGrowth): For each year t, we calculate the median value of for all banks in the sample. This median () represents the "typical" industry growth rate, helping to filter out common macroeconomic shocks.

(3) Calculate aggressive loan growth (ALGR):

$$ALGR_{i,t} = LoanGrowth_{i,t} - MedGrowth_t$$

$ALGR_{i,t}$ measures the extent to which bank i's loan growth deviates from the industry trend. A large positive value indicates an aggressive growth strategy, reflecting a high risk appetite.

3.2.3. Independent Variable: Financial Conglomeration Index (FCI)

As Vietnam lacks an official legal definition of a "financial conglomerate," using a simple dummy variable is neither feasible nor reflective of the diverse operational structures. Therefore, we construct a composite index (FCI) to measure the "degree of conglomeration" based on functionally recognized components in international standards (Joint Forum, 2012; EU Financial Conglomerates Directive 2002/87/EC).

The FCI is constructed using a **formative model**, meaning the component indicators are considered to cause or form the "conglomeration" construct. The index is aggregated from five main dimensions:

(1) Scope: The breadth of business activities. Measured by n_sectors - the number of financial sectors (securities, insurance, fund management, financial leasing) in which the bank has a subsidiary.

(2) Non-bank Intensity: The importance of non-traditional banking activities. Measured by share_nba - the ratio of non-bank subsidiary assets to total consolidated assets.

(3) Income Diversification: The reliance on traditional interest income. Measured by share_nii - the share of non-interest income in total operating income.

(4) Structural & Financial Complexity: Organizational unwieldiness and capital dependence. This combines n_finsub (number of financial subsidiaries) and IE_solo (ratio of total investment in subsidiaries to the parent bank's equity).

(5) Scale & Systemic Footprint: The bank's market presence. Measured by size_lnTA - the natural logarithm of total consolidated assets.

To construct the FCI, the component indicators are first normalized using min-max scaling. They are then aggregated using an **equal-weighting** scheme as the baseline case for its transparency and simplicity. Principal Component Analysis (PCA) will be used for robustness checks.

3.2.4. Control Variables

To isolate the effect of the conglomerate model, we include a set of control variables, comprising bank-specific and macroeconomic factors:

Bank-specific: SIZE (log of assets), EAT (equity-to-asset ratio), LIQ (liquid assets to total assets ratio), and CIR (cost-to-income ratio).

Macroeconomic: GDPG (real GDP growth rate) and INF (inflation rate).

3.3. Econometric Model and Estimation Method

To test the mediating role of risk-taking behavior

(H4), we use the following two-equation system:

(1) $ALGR_{i,t} = \alpha_0 + \alpha_1 ALGR_{i,t-1} + a \cdot FCI_{i,t} + \beta X_{i,t} + \eta_i + \epsilon_{i,t}$

(2) $Z\,SCORE_{i,t} = \delta_0 + \delta_1 ZSCORE_{i,t-1} + c' \cdot FCI_{i,t}$
$$+ b \cdot ALGR_{i,t} + \gamma' X_{i,t} + \theta_i + \mu_{i,t}$$

Where $X_{i,t}$ is the vector of control variables, and η_i and θ_i are bank-specific fixed effects.

This model presents several endogeneity issues. First, the presence of the lagged dependent variable $ALGR_{i,t-1}$, $ZSCORE_{i,t-1}$ creates a correlation with the error term. Second, there may be two-way causality between FCI, ALGR, and Z-score. Third, there is a potential for omitted variable bias. To address these issues, we employ the System Generalized Method of Moments (System GMM).

To test the significance of the indirect effect (the product of coefficients a×b), we use a bootstrapping method with 1,000 repetitions. If the 95% confidence interval of the indirect effect does not contain zero, we can conclude that risk-taking behavior plays a statistically significant mediating role.

4. Empirical Results

This section presents the results of the data analysis, starting with descriptive statistics, followed by the main regression results and the mediation test.

4.1. Descriptive statistics and correlation analysis

Table 1 provides descriptive statistics. The average Z-score is 4.25, suggesting a moderate level of stability, though the large standard deviation (1.58) indicates significant variation. The mean ALGR is close to zero, as expected by construction. The FCI has an average of 0.48, ranging from 0.12 to 0.85, showing a clear differentiation in the degree of conglomeration.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ZSCORE	285	4.25	1.58	1.89	7.92
ALGR	285	0.01	0.08	-0.15	0.22
FCI	285	0.48	0.19	0.12	0.85
SIZE	285	19.55	1.22	17.21	21.88
EAT	285	0.09	0.03	0.04	0.18
LIQ	285	0.24	0.07	0.11	0.45
CIR	285	0.41	0.09	0.28	0.65
GDPG	300	6.15	1.05	2.58	7.5
INF	300	3.2	0.88	1.84	4.5

Table 2: Correlation Matrix

Variable	ZSCORE	ALGR	FCI	SIZE	EAT	LIQ	CIR
ZSCORE	1						
ALGR	-0.31	1					
FCI	-0.28	0.35	1				
SIZE	0.15	-0.05	0.45	1			
EAT	0.55	-0.12	-0.18	0.05	1		
LIQ	0.21	0.08	-0.1	-0.25	0.15	1	
CIR	-0.45	0.15	0.22	0.1	-0.3	-0.2	1

Table 2 shows the correlation matrix. The preliminary results are consistent with our hypotheses,

showing a negative correlation between FCI and Z-score (-0.28) and a positive correlation between FCI and ALGR (0.35).

4.2. Main Regression Results

Table 3 presents the System GMM estimation results. In Column (1), the FCI coefficient is positive and significant at the 1% level (a = 0.152), supporting **H2** by confirming that conglomeration encourages risk-taking. In Column (2), the ALGR coefficient is negative and significant at the 1% level (b = -5.871), confirming **H3**. The FCI coefficient (c') in this model is negative but insignificant.

Table 3: System GMM Regression Results

Variables	(1) ALGR	(2) ZSCORE
L.ALGR	0.215*** (0.071)	
L.ZSCORE		0.458*** (0.092)
FCI	0.152*** (0.054)	-0.855 (0.612)
ALGR		-5.871*** (1.325)
SIZE	-0.008** (0.003)	0.124* (0.071)
EAT	-0.112* (0.065)	5.102*** (1.544)
LIQ	0.054 (0.041)	1.889** (0.852)
CIR	0.098** (0.048)	-2.015*** (0.688)
GDPG	0.005*** (0.001)	0.089** (0.040)
INF	0.003 (0.002)	-0.157* (0.091)
Constant	0.122 (0.088)	1.985*** (0.551)

Diagnostics: AR(1) p=0.000; AR(2) p=0.214-0.271; Hansen p=0.312-0.487; Instruments=24-26; bank & year FE; clustered SEs

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

4.3. Mediation Analysis

Table 4 shows the results for the mediation test. The indirect effect (a×b) is -0.892 and statistically significant at the 1% level, providing strong evidence for **H4**. This indicates that risk-taking behavior is a significant channel through which financial conglomeration negatively affects bank stability. The total effect is -1.747, supporting **H1**. The indirect effect accounts for approximately 51.1% of the total effect.

Table 4: Decomposition of Effects and Mediation Test

Effect	Coefficient	95% CI (Bootstrap)
Indirect Effect (a×b)	-0.892***	[-1.215; -0.569]
Direct Effect (c')	-0.855	[-2.085; 0.375]
Total Effect	-1.747***	[-2.615; -0.879]

Clustered bootstrap (1,000 replications)

5. Discussion and Conclusion

5.1. Discussion of Key Findings

This study provides crucial insights into the complex relationship between financial conglomeration, risk-taking, and bank stability in Vietnam.

First, we find strong evidence that a higher degree of financial conglomeration has a negative overall impact on bank stability (supporting H1). This finding challenges the view that diversification always yields stability benefits, particularly in the context of an emerging market. Our results align with

the "Complexity-Fragility" perspective, suggesting that in Vietnam, the costs associated with structural complexity, information asymmetry, and potential moral hazard appear to outweigh the theoretical benefits of activity diversification.

Second, and the core finding of this study, we clarify the mechanism behind this negative relationship. The mediation analysis reveals that the conglomerate model impacts stability not just directly but also indirectly by encouraging risk-taking behavior (supporting H2, H3, and H4). Specifically, banks with higher FCI scores tend to pursue more aggressive loan growth strategies, and it is this behavior that is the primary driver of eroding stability. Significantly, this indirect effect accounts for over half of the total impact, underscoring the importance of the risk-taking channel. This suggests that the conglomerate structure itself is not the sole issue, but rather how that structure alters the incentives and behaviors of bank managers. In an incomplete regulatory environment, growth pressures and the expectation of being "bailed out" may have created a fertile ground for excessive risk-taking.

5.2. Policy Implications

Our findings offer several important and detailed policy implications for regulatory authorities, particularly the State Bank of Vietnam, aimed at mitigating the risks identified.

First, there is an urgent need to establish a formal and comprehensive legal framework for financial conglomerates. This framework should move beyond simple definitions to create legal certainty and a solid foundation for supervision. Key components should include: (i) clear quantitative and qualitative criteria for identifying a financial conglomerate, potentially using metrics similar to our FCI; (ii) group-wide capital adequacy requirements that account for correlated risks across different business lines; and (iii) stringent corporate governance standards, including regulations on the composition of the board, risk management committees at the group level, and rules to prevent conflicts of interest.

Second, the study's results strongly advocate for a decisive shift from entity-based supervision to effective consolidated supervision. This involves more than just aggregating financial statements. Regulators must develop the capacity to (i) assess the group-wide risk profile, including risk concentrations and correlations between banking, securities, and insurance activities; (ii) actively monitor and regulate intra-group transactions to prevent the transfer of risks from non-bank subsidiaries to the parent bank; and (iii) foster robust inter-agency cooperation between the State Bank, the State Securities Commission, and the insurance supervisory authority to ensure a seamless and holistic view of the conglomerate's activities, thus eliminating supervisory gaps.

Third, given that risk-taking is the main transmission channel, regulators should enhance their toolkit for monitoring and curbing excessive risk appetite. This involves (i) paying close attention to forward-looking risk indicators, such as aggressive loan growth (ALGR), and incorporating them into early warning systems; (ii) developing and implementing group-wide stress tests that simulate shocks affecting multiple sectors simultaneously to assess the resilience of conglomerates; and (iii) considering the introduction of counter-cyclical capital buffers that could be tightened for rapidly expanding conglomerates to temper their risk-taking during economic booms.

5.3. Conclusion

In summary, this study provides the first empirical evidence from Vietnam that the financial conglomerate model negatively affects bank stability. Crucially, this impact is primarily transmitted through the risk-taking channel, where the conglomerate structure, combined with an incomplete supervisory environment, incentivizes aggressive loan growth (ALGR) that erodes stability. These findings emphasize the necessity of completing the legal framework and strengthening consolidated supervision to safeguard macroeconomic stability.

The primary limitation remains the lack of public data on intra-group transactions, preventing direct analysis of contagion channels. Future research should focus on collecting more granular data to examine internal risk transfer mechanisms, investigate non-linear relationships of conglomeration, and extend the analysis to other ASEAN markets.

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