“Bank concentration, debt maturity, and borrowing costs: Evidence from Vietnam”

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BANK CONCENTRATION, DEBT MATURITY, AND BORROWING COSTS: EVIDENCE FROM VIETNAM

Abstract

In bank-dependent economies, the structure and cost of corporate debt are crucial determinants of financial sustainability and investment decisions. Vietnam, with its underdeveloped capital market and dominance of bank lending, presents an ideal context to examine how banking market structure influences corporate financing. This paper explores the critical role of bank concentration in shaping the maturity structure and cost of debt among 520 listed Vietnamese firms during 2010–2024. The study utilizes financial data from FiinPro, including firm-level, bank-level, and macroeconomic indicators. A dynamic panel data model is estimated using the two-step system generalized method of moments (GMM) approach to address endogeneity concerns and ensure the robustness of results. The results highlight the pivotal role of bank concentration in shaping both the maturity structure and cost of corporate debt. The empirical findings reveal that higher bank concentration significantly increases the proportion of long-term debt. At the same time, firms reduce their reliance on short-term financing, indicating a shift toward more stable financial structures. Moreover, firms operating in more concentrated banking environments benefit from lower borrowing costs.

Keywords banking market structure, system-GMM estimation, credit allocation efficiency, financial contracting, debt maturity optimization

JEL Classification D40, G21, G30

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INTRODUCTION

In bank-based financial systems, the structure of corporate debt and the cost of capital play a central role in determining firms' financial health and investment capacity. Unlike capital market-based economies, where firms can flexibly access diversified funding sources, firms in emerging markets such as Vietnam rely heavily on bank loans. This dependency raises important concerns about how banking market characteristics influence corporate financing decisions.

Recent literature highlights the importance of bank market structure, particularly bank concentration, in shaping credit allocation and contractual terms. However, empirical evidence on how bank concentration affects debt maturity structure and borrowing costs in emerging economies remains limited. In the context of Vietnam, where the capital market is underdeveloped and large banks dominate the credit system, this issue becomes particularly salient.

This study addresses this gap by examining the impact of bank concentration on the maturity structure of corporate debt and the cost of capital for listed firms in Vietnam during the period 2010–2024. The research seeks to answer a key question: Does higher bank concentration provide firms with more favorable borrowing conditions, or does it exacerbate financial constraints due to reduced competition? By tackling this problem, the study contributes to the growing body of literature on financial intermediation and corporate finance in emerging markets.

1. LITERATURE REVIEW AND HYPOTHESES

Understanding how the structure of the banking market affects corporate financing decisions remains a central theme in financial economics (Bai et al., 2024; Cao-Alvira & Gomez-Gonzalez, 2025; Gao & Xu, 2023; Huynh, 2023; Sun, 2024). In particular, the implications of bank concentration for debt maturity structure and borrowing costs have attracted growing academic interest, especially in bank-based and emerging market contexts. This stream of literature is grounded in theories of market structure, financial contracting, and information asymmetry, providing a multidimensional view of how banks influence firm behavior.

Debt maturity structure is a critical component of a firm's liquidity management strategy (Hu & Li, 2024; Zhou et al., 2024). Theoretically, the efficient structure hypothesis posits that in concentrated markets, more efficient banks dominate, enabling them to offer long-term financing under favorable conditions (Demsetz, 1973; Peltzman, 1977). Large banks, due to scale and informational advantages, are better equipped to reduce monitoring costs and offer longer maturities (Boot, 2000; Petersen & Rajan, 1994). The agency theory of debt also supports this, suggesting that long-term debt mitigates short-term conflicts between shareholders and creditors (Denis et al., 1997; Jensen, 1986).

However, other perspectives argue the opposite. The market power hypothesis suggests that concentrated banking systems enable a few dominant banks to restrict long-term lending to preserve control via frequent refinancing (Bain, 1951). Short-term loans are used strategically to extract information or rents from borrowers, especially those with limited outside options (Flannery, 1986). These divergent theoretical predictions underscore the need for empirical testing in specific institutional settings.

Empirical findings reflect this theoretical ambiguity. Some studies find that firms in more competitive banking environments enjoy longer debt maturities and reduced refinancing risks. For instance, Demirgüç-Kunt and Maksimovic (1999) and Fan et al. (2012) document that banking competition is associated with higher proportions of long-term debt, particularly in countries with stronger investor protections and deeper financial markets. Li et al. (2024) and Xu (2025) provide causal evidence from China, showing that increased banking competition – via deregulation of bank branching – significantly reduces the prevalence of maturity mismatch among SMEs.

In contrast, research from Europe and Latin America reveals that bank concentration may support longer debt maturities under conditions of relationship lending. Hernández-Cánovas and Martínez-Solano (2010) find that SMEs with stable relationships with lead banks – common in concentrated markets – tend to access longer-term debt. Ongena and Smith (2000) also suggest that concentrated banking systems foster deeper relationships, compensating for limited competition through contractual flexibility. Detragiache et al. (2000) and Ioannidou and Ongena (2010) offer nuanced findings showing that banks may use short-term lending as a control mechanism in the early stages of lending relationships, extending maturities only after firms establish reputational capital.

Turning to the cost of capital, the traditional structure-conduct-performance (SCP) paradigm predicts that bank concentration leads to higher borrowing costs due to reduced price competition (Berger & Hannan, 1989; Sapienza, 2002). Empirical studies confirm that loan spreads are higher in more concentrated markets, especially for small and opaque firms. Boyd and De Nicoló (2005) argue that reduced competition weakens market discipline, raising costs and lowering credit quality. Similarly, Black and Strahan (2002) demonstrate that U.S. states that liberalized bank branching saw declines in borrowing costs and growth in entrepreneurial activity.

Nonetheless, other research highlights countervailing forces. Petersen and Rajan (1995) argue that banks in concentrated markets may initially offer lower rates to establish long-term relationships, raising rates only after capturing informational rents. This is confirmed by Ioannidou and Ongena (2010), who show that firms in Bolivia initially benefit from favorable terms, but face higher renewal rates over time due to lock-in effects. Bonini et al. (2016) and Wang et al. (2020) extend this view, finding that strong bank–firm relation-

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ships in concentrated markets can offset the negative effects of reduced competition. These relationships lower asymmetric information and allow banks to offer favorable pricing to loyal clients. Xu (2025) shows that bank competition reduces interest rates and enhances access to formal credit, while Li and Wang (2025) find that high competition mitigates the spillover costs of zombie firms on healthy borrowers.

Thus, while theoretical and empirical studies provide competing narratives, there is increasing recognition that the impact of bank concentration on debt maturity and cost of capital is context-dependent. It varies with firm size, creditworthiness, the strength of institutional frameworks, and the presence or absence of relationship lending mechanisms.

To explore these issues in a context where bank credit plays a dominant role in corporate finance, this study investigates the impact of bank concentration on the debt maturity structure and borrowing costs of listed firms in Vietnam from 2010 to 2024. Specifically, the research examines whether greater bank concentration reduces firms' reliance on short-term debt while increasing access to long-term financing, and whether it alleviates or exacerbates borrowing costs for these firms. Accordingly, two testable hypotheses are formulated:

H1: Bank concentration is positively associated with the proportion of long-term debt and negatively associated with the proportion of short-term debt in total corporate debt.

H2: Bank concentration reduces the cost of corporate borrowing.

2. METHODOLOGY AND DATA

To examine the impact of bank concentration on corporate financing structures, this study employs a dynamic panel data regression model. The empirical specification accounts for the endogenous nature of corporate financial decisions and reflects the persistence typically observed in firms' capital structures. The general model is expressed as follows:

$$\begin{aligned} Y_{it} = {} & \beta_0 + \beta_1 \cdot Y_{it-1} \\ & + \beta_2 \cdot bank\_concentration_{t-1} \\ & + \beta_3 \cdot firm\_control_{it-1} \\ & + \beta_4 \cdot macro\_control_{t-1} + \varepsilon_{it}, \end{aligned} \quad (1)$$

where *i* denotes firms and *t* refers to years. The dependent variable *Y* captures two distinct aspects of corporate financing: the maturity structure of debt and the cost of debt capital. Each is examined separately to test the two hypotheses developed earlier. The key independent variable is the measure of bank concentration *(bank_concentration).* Additional firm-level controls *(firm_control)* include size, growth, profitability, asset tangibility, liquidity, listing age, and state ownership. Macroeconomic controls *(macro_control)* consist of annual GDP growth and the inflation rate. The model includes a lagged dependent variable to capture dynamic effects and address potential autocorrelation, a common feature in corporate financing behavior. Omitting this term would likely introduce bias due to unobserved persistence. Therefore, a dynamic panel data framework is essential to obtain unbiased estimates.

The study adopts the two-step system generalized method of moments (GMM) estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). This method effectively addresses endogeneity by employing internal instruments based on lagged levels and differences of endogenous variables. Compared to standard estimators such as ordinary least squares (OLS) or fixed effects, system GMM offers consistent and efficient estimates, even when the panel data exhibit heteroskedasticity, serial correlation, or omitted variable bias. The two-step version is preferred due to its improved efficiency, as it incorporates a robust weighting matrix that corrects for potential heteroskedasticity.

Three dependent variables are analyzed. First, the short-term debt ratio, defined as the proportion of short-term debt to total debt, reflects a firm's reliance on short-term borrowing, associated with refinancing risk and liquidity constraints. Second, the long-term debt ratio, or long-term debt over total debt, captures the extent to which firms access more stable funding sources. Although these two measures are arithmetically complementary, estimating them separately provides valuable in-

sights into distinct financing strategies and responses to banking market conditions. Lastly, the cost of debt is proxied by the interest expense-to-total debt ratio, indicating the average borrowing cost faced by firms.

The main explanatory variable is bank concentration. It is measured using two commonly employed indicators: the three-bank concentration ratio (CR3) and the Herfindahl-Hirschman Index (HHI), both based on total banking assets. CR3 represents the asset share of the three largest banks in the system, while HHI is computed as the sum of squared market shares across all banks, capturing overall market dominance and asymmetry. These indicators have been widely used in empirical banking studies and are appropriate given the Vietnamese data environment. To ensure robustness, the study also tests alternative measures. These include CR3 and CR5 based on outstanding loans, which directly reflect credit market concentration. Loan-based HHI is also included to capture systemic concentration in credit allocation. The use of multiple concentration measures allows for a comprehensive assessment and reduces the likelihood that findings are driven by any specific indicator.

The empirical analysis utilizes an unbalanced panel of 520 non-financial firms listed on the Ho Chi Minh and Hanoi Stock Exchanges from 2010 to 2024. Firm-level financial data, including debt structure, interest expenses, asset composition, and ownership characteristics, are obtained from the FiinPro platform. Banking sector data – used to compute concentration indices such as CR3, CR5, and HHI based on both total assets and outstanding credit – are also sourced from FiinPro. Macroeconomic variables, including GDP growth and inflation, are retrieved from the same database to maintain consistency. The combined dataset allows for a dynamic panel framework that captures the relationship between bank concentration and corporate financing outcomes.

3. RESULTS

This section presents the empirical findings of the study. It begins with descriptive statistics of the variables used in the analysis, providing an overview of their distributions and variation across firms. The subsequent analysis reports the regression results on the relationship between bank concentration and the debt maturity structure of firms. Finally, the impact of bank concentration on the cost of corporate borrowing is examined, offering evidence on whether concentrated banking markets ease or tighten financing conditions for firms in Vietnam.

3.1. Descriptive statistics of variables

Table 1 reports the descriptive statistics of the main variables used in the analysis. Regarding the dependent variables, the debt maturity structure indicates a strong reliance on short-term borrowing. On average, short-term debt accounts for 75.7% of total debt, while long-term debt represents only 24.3%. The standard deviation of 0.301 for both ratios highlights substantial heterogeneity, ranging from firms that rely exclusively on short-term debt to those that rely entirely on long-term debt. The average cost of debt, measured by interest expenses over total debt, is 6.8%, with wide dispersion from zero to nearly 50%, suggesting significant variation in borrowing conditions across firms, potentially linked to credit relationships, risk levels, and bargaining power with banks.

Turning to the explanatory variables, the concentration indices show the dominant role of a few large commercial banks. The CR3 based on assets averages 39.2%, and the asset-based HHI equals 0.078, with relatively stable values over time, indicating a moderately concentrated banking system. By contrast, credit market concentration is more pronounced: CR5 averages 60.2%, CR3 reaches 45.5%, and the loan-based HHI is 0.093. The variation in these indicators, with CR3 ranging from 41.3% to 49.7%, illustrates that the top three banks control nearly half of total lending. The reported standard deviations also point to meaningful fluctuations in concentration during the sample period, reflecting banking sector restructuring, credit policy changes, and macroeconomic developments.

In addition, the control variables exhibit wide dispersion across firms, such as size, profitability, liquidity, and ownership structure. This diversity in

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Table 1. Descriptive statistics

Variables	Mean	SD	Min	Max	Obs	Construction
Corporate financing variables						
Short-term debt ratio	0.757	0.301	0.000	1.000	5,528	Short-term debt / Total debt
Long-term debt ratio	0.243	0.301	0.000	1.000	5,528	Long-term debt / Total debt
Interest cost	0.068	0.073	0.000	0.498	6,637	Interest expenses / Total debt
Bank concentration variables						
CR3 (by total assets)	0.392	0.016	0.361	0.418	6,637	Share of total assets held by the three largest banks
HHI (by total assets)	0.078	0.004	0.071	0.083	6,637	Sum of squared market shares by assets across all banks
CR5 (by loans)	0.602	0.024	0.563	0.639	6,637	Share of total outstanding loans held by the five largest banks
CR3 (by loans)	0.455	0.026	0.413	0.497	6,637	Share of total outstanding loans held by the three largest banks
HHI (by loans)	0.093	0.007	0.083	0.108	6,637	Sum of squared market shares by outstanding loans across all banks
Control variables						
Firm size	27.244	1.566	23.794	31.590	6,637	ln(Total assets)
Revenue growth	0.158	0.532	–0.737	3.442	6,637	Annual growth rate of net sales
Liquidity	2.432	2.913	0.430	20.410	6,637	Current assets / Current liabilities
Profitability	0.119	0.124	–0.378	0.494	6,637	Net income / Equity
State ownership	0.237	0.425	0.000	1.000	6,637	Dummy variable equal to 1 if state-owned, 0 otherwise
Listing age	1.973	0.803	0.000	3.091	6,637	ln(Years since listing)
Fixed assets ratio	0.235	0.195	0.000	0.835	6,637	Fixed assets / Total assets
GDP growth	0.059	0.015	0.026	0.080	6,637	Annual GDP growth rate
Inflation rate	0.049	0.042	0.006	0.187	6,637	Annual CPI growth rate

Note: For debt maturity structure variables, observations are missing in years when firms report zero total debt, as ratios cannot be computed with a denominator equal to zero.

firm-level and macroeconomic characteristics ensures sufficient variation in the data, thereby enhancing the reliability and explanatory power of the regression results.

3.2. Regression results for the impact of bank concentration on debt maturity structure

Table 2 reports the regression results for short-term debt ratios using asset-based concentration measures. The coefficient of CR3 is –0.502, significant at the 5% level. A 0.01-point increase in CR3 reduces the short-term debt ratio by about 0.00502, equivalent to 0.66% of its mean value of 0.757. When normalized by one standard deviation of CR3 (0.016), the reduction equals 0.00803 or about 1.06% of the mean. Similarly, the coefficient of the asset-based HHI is –2.183, significant at the 5% level. A 0.01-point increase lowers the short-term debt ratio by 0.02183 (2.88% of the mean), while a more realistic comparison using its standard deviation of 0.004 indicates a reduction of 0.00873 (1.15% of the mean). These consistent negative signs and statistical/economic significance confirm that higher asset concentration is associated with reduced reliance on short-term borrowing.

The robustness tests using loan-based concentration indices in Table 3 show similar patterns. The coefficients are –0.412 for CR5, –0.300 for CR3, and –1.182 for HHI, all significant at conventional levels. Standardized effects converge around a 1% reduction in the short-term debt ratio per standard deviation increase in concentration, demonstrating the stability of results across measures.

Table 2. Impact of banking concentration on the short-term debt ratio

Variables	(1) Short-term debt ratio	(2) Short-term debt ratio
Lagged dependent variable	0.720***	0.704***
	(0.046)	(0.047)
CR3 (by total assets)	−0.502**	–
	(0.219)	–
HHI (by total assets)	–	−2.183**
	–	(1.074)
Firm size	−0.015***	−0.015***
	(0.003)	(0.003)
Revenue growth	−0.001	−0.001
	(0.005)	(0.005)
Liquidity	0.006**	0.006**
	(0.003)	(0.003)
Profitability	0.033	0.028
	(0.021)	(0.021)
State ownership	−0.009	−0.009
	(0.007)	(0.007)
Listing age	0.007	0.010**
	(0.004)	(0.004)
Fixed assets ratio	−0.091**	−0.106***
	(0.037)	(0.038)
GDP growth	0.123	0.159
	(0.148)	(0.175)
Inflation rate	0.036	0.040
	(0.079)	(0.084)
Constant	0.810***	0.802***
	(0.162)	(0.161)
Total observations in regression	4,896	4,896
Total firms in the sample	489	489
AR(1) test statistic	0.000	0.000
AR(2) test statistic	0.380	0.385
Hansen test statistic	0.207	0.177

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

Table 3. Impact of banking concentration on the short-term debt ratio: Robustness checks

Variables	(1) Short-term debt ratio	(2) Short-term debt ratio	(3) Short-term debt ratio
Lagged dependent variable	0.683***	0.685***	0.683***
	(0.029)	(0.029)	(0.029)
CR5 (by loans)	−0.412***	–	–
	(0.156)	–	–
CR3 (by loans)	–	−0.300**	–
	–	(0.137)	–
HHI (by loans)	–	–	−1.182**
	–	–	(0.520)
Firm size	−0.017***	−0.017***	−0.017***
	(0.003)	(0.003)	(0.003)
Revenue growth	−0.003	−0.003	−0.003
	(0.005)	(0.005)	(0.005)
Liquidity	0.004*	0.004*	0.004*
	(0.002)	(0.002)	(0.002)
Profitability	0.069***	0.067***	0.068***
	(0.023)	(0.023)	(0.023)
State ownership	−0.005	−0.005	−0.005
	(0.008)	(0.008)	(0.008)
Listing age	0.006	0.007	0.006
	(0.005)	(0.005)	(0.005)
Fixed assets ratio	−0.104***	−0.105***	−0.105***
	(0.028)	(0.028)	(0.028)
GDP growth	0.177	0.101	0.085
	(0.127)	(0.117)	(0.116)
Inflation rate	0.130***	0.123**	0.137***
	(0.049)	(0.049)	(0.051)
Constant	0.950***	0.831***	0.811***
	(0.147)	(0.125)	(0.116)
Total observations in regression	4,896	4,896	4,896
Total firms in the sample	489	489	489
AR(1) test statistic	0.000	0.000	0.000
AR(2) test statistic	0.383	0.380	0.380
Hansen test statistic	0.149	0.110	0.122

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

The analysis of long-term debt ratios, presented in Tables 4 and 5, confirms the symmetric effect. Asset-based CR3 shows a positive and significant coefficient of 0.824, indicating that a 0.01-point increase raises the long-term debt ratio by 0.00824 (3.39% of its mean value of 0.243). When scaled by one standard deviation, the increase reaches 5.43%. Although the asset-based HHI is positive but insignificant, the loan-based concentration indices provide stronger evidence. CR5, CR3, and HHI by loans are all positive and significant, with normalized impacts clustered between 4% and 5%.

Overall, the findings show that bank concentration significantly reduces the share of short-term debt while increasing the share of long-term debt. This supports Hypothesis 1, which posits that bank concentration is positively associated with long-term debt and negatively associated with short-term debt in total corporate debt. The symmetry between the two dependent variables strengthens the interpretation: concentrated banking markets shift firms' financing structures toward greater stability and longer maturities.

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Table 4. Impact of banking concentration on the long-term debt ratio

Variables	(1) Long-term debt ratio	(2) Long-term debt ratio
Lagged dependent variable	0.683***	0.690***
	(0.034)	(0.034)
CR3 (by total assets)	0.824**	–
	(0.376)	–
HHI (by total assets)	–	0.914
	–	(1.112)
Firm size	0.041**	0.015***
	(0.021)	(0.003)
Revenue growth	0.006	0.006
	(0.006)	(0.005)
Liquidity	–0.003	–0.006***
	(0.003)	(0.002)
Profitability	–0.072**	–0.040*
	(0.032)	(0.021)
State ownership	0.008	0.011
	(0.008)	(0.007)
Listing age	–0.016**	–0.011**
	(0.008)	(0.004)
Fixed assets ratio	0.095***	0.106***
	(0.034)	(0.030)
GDP growth	–0.434**	–0.172
	(0.207)	(0.187)
Inflation rate	0.118	–0.097
	(0.126)	(0.083)
Constant	–1.352**	–0.392***
	(0.597)	(0.114)
Total observations in the regression	4,896	4,896
Total firms in the sample	489	489
AR(1) test statistic	0.000	0.000
AR(2) test statistic	0.414	0.427
Hansen test statistic	0.648	0.535

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

Table 5. Impact of banking concentration on the long-term debt ratio: Robustness checks

Variables	(1) Long-term debt ratio	(2) Long-term debt ratio	(3) Long-term debt ratio
Lagged dependent variable	0.709***	0.709***	0.708***
	(0.028)	(0.028)	(0.028)
CR5 (by loans)	0.463***	–	–
	(0.179)	–	–
CR3 (by loans)	–	0.462***	–
	–	(0.155)	–
HHI (by loans)	–	–	1.403**
	–	–	(0.553)
Firm size	0.015***	0.016***	0.015***
	(0.003)	(0.003)	(0.003)
Revenue growth	0.005	0.005	0.004
	(0.005)	(0.005)	(0.005)
Liquidity	–0.004*	–0.004*	–0.004**
	(0.002)	(0.002)	(0.002)
Profitability	–0.059***	–0.061***	–0.060***
	(0.022)	(0.022)	(0.022)
State ownership	0.003	0.003	0.004
	(0.008)	(0.008)	(0.008)
Listing age	–0.006	–0.005	–0.006
	(0.005)	(0.005)	(0.005)
Fixed assets ratio	0.086***	0.086***	0.086***
	(0.027)	(0.027)	(0.027)
GDP growth	–0.211	–0.167	–0.129
	(0.129)	(0.121)	(0.118)
Inflation rate	–0.187***	–0.191***	–0.189***
	(0.051)	(0.051)	(0.053)
Constant	–0.622***	–0.563***	–0.475***
	(0.144)	(0.114)	(0.098)
Total observations in the regression	4,896	4,896	4,896
Total firms in the sample	489	489	489
AR(1) test statistic	0.000	0.000	0.000
AR(2) test statistic	0.382	0.379	0.380
Hansen test statistic	0.499	0.522	0.483

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

3.3. Regression results for the impact of bank concentration on the cost of borrowing

The analysis of interest expenses relative to total debt is presented in Tables 6 and 7. Asset-based concentration measures in Table 6 reveal a negative relationship between bank concentration and borrowing costs. The coefficient of CR3 is –0.258, highly significant. A 0.01-point increase in CR3 lowers the cost of debt by 0.00258, or about 3.79% of its mean value of 0.068. When normalized by one standard deviation (0.016), the reduction equals 6.07%. Similarly, the asset-based HHI has a coefficient of –1.471, also significant. A 0.01-point increase corresponds to a 21.63% reduction of the mean, though a comparison using its standard deviation of 0.004 suggests a more realistic effect of 8.65%. Both measures point consistently to lower borrowing costs in more concentrated markets.

Table 6. Impact of bank concentration on the cost of borrowing

Variables	(1) Interest cost	(2) Interest cost
Lagged dependent variable	0.102**	0.132**
	(0.044)	(0.055)
CR3 (by total assets)	–0.258***	–
	(0.062)	–
HHI (by total assets)	–	–1.471***
	–	(0.319)
Firm size	0.000	0.000
	(0.001)	(0.001)
Revenue growth	0.001	0.002
	(0.001)	(0.001)
Liquidity	–0.004***	–0.004***
	(0.000)	(0.000)
Profitability	–0.016**	–0.014*
	(0.007)	(0.007)
State ownership	–0.004*	–0.004
	(0.003)	(0.002)
Listing age	–0.006***	–0.006***
	(0.001)	(0.001)
Fixed assets ratio	0.009*	0.007
	(0.005)	(0.005)
GDP growth	0.261***	0.354***
	(0.044)	(0.057)
Inflation rate	0.102***	0.084***
	(0.029)	(0.032)
Constant	0.153***	0.153***
	(0.036)	(0.035)
Total observations in the regression	6,117	6,117
Total firms in the sample	520	520
AR(1) test statistic	0.000	0.000
AR(2) test statistic	0.867	0.891
Hansen test statistic	0.081	0.087

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

Loan-based concentration indices in Table 7 reinforce this conclusion. The coefficients are –0.335 for CR5, –0.242 for CR3, and –1.510 for HHI, all significant at the 1% or 5% level. A 0.01-point increase reduces borrowing costs by 0.00335, 0.00242, and 0.01510, respectively. When scaled by one standard deviation, the reductions converge between 9% and 16% of the mean cost of debt. This range highlights both the statistical and economic relevance of the results.

Table 7. Impact of bank concentration on the cost of borrowing: Robustness checks

Variables	(1) Interest cost	(2) Interest cost	(3) Interest cost
Lagged dependent variable	0.122***	0.106**	0.116**
	(0.045)	(0.046)	(0.046)
CR5 (by loans)	–0.335***	–	–
	(0.072)	–	–
CR3 (by loans)	–	–0.242***	–
	–	(0.079)	–
HHI (by loans)	–	–	–1.510***
	–	–	(0.330)
Firm size	–0.002***	–0.010**	–0.008**
	(0.001)	(0.005)	(0.004)
Revenue growth	0.000	0.012***	0.009**
	(0.001)	(0.004)	(0.004)
Liquidity	–0.005***	–0.005***	–0.005***
	(0.000)	(0.001)	(0.000)
Profitability	–0.007	–0.011	–0.012
	(0.007)	(0.009)	(0.009)
State ownership	–0.029*	–0.047***	–0.004
	(0.015)	(0.016)	(0.003)
Listing age	–0.007***	–0.002	–0.006***
	(0.002)	(0.002)	(0.002)
Fixed assets ratio	0.024***	0.037***	0.023***
	(0.007)	(0.009)	(0.007)
GDP growth	0.300***	0.212***	0.255***
	(0.045)	(0.043)	(0.045)
Inflation rate	0.177***	0.175***	0.197***
	(0.025)	(0.025)	(0.024)
Constant	0.325***	0.444***	0.409***
	(0.054)	(0.154)	(0.123)
Total observations in the regression	6,117	6,117	6,117
Total firms in the sample	520	520	520
AR(1) test statistic	0.000	0.000	0.000
AR(2) test statistic	0.909	0.921	0.923
Hansen test statistic	0.117	0.153	0.133

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. The dependent variable is the short-term debt ratio.

Taken together, the evidence demonstrates that higher bank concentration is systematically associated with lower corporate borrowing costs. This finding is consistent across all measures of concentration, robust to alternative specifications, and economically meaningful. As with the debt maturity regressions, diagnostic checks of the system GMM estimations validate the results: the Hansen test does not reject instrument validity, and no second-order serial correlation is detected. These outcomes, all at the 5% significance level, confirm the reliability of the empirical findings. This provides strong support for Hypothesis 2 that bank concentration reduces the cost of corporate borrowing.

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4. DISCUSSION

We find that higher bank concentration is significantly associated with a greater proportion of long-term debt and a reduced reliance on short-term borrowing. This relationship is consistently observed across both asset-based and loan-based measures of bank concentration. This result aligns with theoretical arguments emphasizing structural efficiency and relationship lending. In concentrated markets, large banks enjoy advantages in technology, information, and monitoring capacity, which reduce information asymmetry and transaction costs, making them more willing to provide long-term loans to qualified firms. This interpretation resonates with the efficiency structure hypothesis (Demsetz, 1973; Peltzman, 1977), the relationship lending literature (Boot, 2000; Petersen & Rajan, 1994), and the trade-off and agency cost theories, which suggest that longer debt maturities mitigate refinancing risk and reduce agency conflicts.

The Vietnamese context reinforces this mechanism. Large domestic banks dominate market share, maintain internal credit rating systems, and collect extensive borrower information, which enables them to transform scale advantages into greater capacity to extend long-term credit. Listed firms, as the study sample, benefit from relatively high transparency and financial discipline, facilitating the formation of durable lending relationships. These findings are consistent with evidence from European SMEs, where close relationships with main banks in concentrated markets were associated with longer maturities (Hernández-Cánovas & Martínez-Solano, 2010; Ioannidou & Ongena, 2010). By contrast, studies linking broader financial development and competition to longer maturities (Demirgüç-Kunt & Maksimovic, 1999; Fan et al., 2012; Li et al., 2024) highlight institutional differences: in Vietnam, relationship-based monitoring appears more influential than market competition in driving maturity extension.

The results also show that bank concentration lowers the cost of debt, with consistent negative coefficients across all concentration indices. Two main channels explain this outcome. First, efficiency gains from concentrated banks allow cost savings in funding and risk management, which are partially passed on to borrowers (Demsetz, 1973; Peltzman, 1977). Second, long-term relationships reduce information asymmetry and risk premia, enabling more accurate risk pricing and lower interest margins (Boot, 2000; Petersen & Rajan, 1994). From the perspective of agency theory, effective monitoring by large banks also mitigates risk-taking behavior, lowering the risk-adjusted cost of debt.

The Vietnamese setting again amplifies these effects. Large banks with low retail funding costs and extensive credit databases can price loans more competitively, especially for listed firms that display higher transparency. This contrasts with findings from advanced economies, where greater concentration often increased loan spreads, particularly for smaller firms lacking alternatives (Berger & Hannan, 1989; Black & Strahan, 2002; Sapienza, 2002). Instead, the results are closer to studies emphasizing relationship benefits in concentrated markets, where banks offer lower borrowing costs to clients with strong credit histories (V. González & F. González, 2008; Ioannidou & Ongena, 2010).

Overall, the findings suggest that in Vietnam's bank-based system, concentration improves financing conditions for listed firms by simultaneously lengthening debt maturity and lowering borrowing costs. These outcomes reflect the dual role of large banks in exploiting scale economies and leveraging relationship-specific information.

CONCLUSION

This study investigates how bank concentration affects the maturity structure and cost of corporate debt in Vietnam, a bank-based emerging economy. Using panel data from 2010 to 2024 and a dynamic system GMM model, the analysis provides robust evidence on the role of banking market structure in shaping firms' financing behavior.

The results show that higher bank concentration leads to a greater proportion of long-term debt and a corresponding reduction in short-term borrowing, indicating a shift toward more stable debt structures. In addition, firms operating in more concentrated banking environments face lower borrowing costs, suggesting that large banks provide relationship-based advantages such as enhanced credit access and better monitoring. These findings are consistent across alternative concentration measures and specifications, confirming the central role of bank structure in corporate debt decisions.

From a policy perspective, these results support the view that carefully managed banking sector consolidation can improve financial efficiency and credit allocation. Strengthening large banks' capacity to monitor and support long-term lending may benefit firms without necessarily harming competition, provided regulatory safeguards are in place. For firms, cultivating long-term ties with major banks may yield lower financing costs, greater maturity matching, and enhanced capital access. These insights are particularly relevant for emerging economies seeking to build resilient financial systems through bank-firm relationships.

AUTHOR CONTRIBUTIONS

Conceptualization: Thi Hong Nhung Nguyen.
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Formal analysis: Thi Hong Nhung Nguyen.
Methodology: Van Dan Dang.
Project administration: Thi Hong Nhung Nguyen, Van Dan Dang.
Resources: Thi Hong Nhung Nguyen.
Software: Thi Hong Nhung Nguyen.
Supervision: Thi Hong Nhung Nguyen, Van Dan Dang.
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