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MONETARY POLICY INTEREST RATES AND BANK RISK-RETURN TRADEOFF: HOW DOES BANK COMPETITION MODERATE THIS RELATIONSHIP?

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ABSTRACT

This study empirically examines the moderating effect of bank competition on the link between monetary policy interest rates and bank risk-return dynamics in Vietnam from 2007 to 2019. The findings suggest that during monetary expansion, marked by decreasing interest rates, banks typically employ a more conservative strategy regarding their credit portfolios, thereby minimizing risk exposure. Nonetheless, this risk avoidance incurs reduced interest margins, decreased overall profitability, and compromised stability. Furthermore, the research utilizing both traditional and funding-adjusted Lerner indices indicates that increased market concentration, or diminished bank competitiveness, mitigates the impact of monetary policy interest rates on the trade-off between bank risk and return.

Keywords: Bank competition; Bank performance; Interest rates; Market power; Monetary policy.
JEL Classifications: E43; E52; G21.

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I. INTRODUCTION

The influence of monetary policy on bank returns has been established in banking literature for an extended period (Hancock, 1985; Samuelson, 1945). The central premise of this discussion is that fluctuations in interest rates may profoundly influence bank profitability through their effects on interest income, which is the primary contributor to overall bank returns. The aim of expansionary monetary policy is to stabilize financial markets and promote economic growth. Nonetheless, despite the intricate and many causes of the 2008 global financial crisis, monetary policy is well acknowledged as a major contributing factor to increased risk exposure (Altunbas *et al*., 2012). Consequently, numerous scholars have invoked the term "the bank risk-taking channel": sustained low interest rates during prolonged monetary expansion result in increased risk tolerance (see, Bubeck *et al*., 2020). Numerous recent studies have empirically examined the impact of interest rates on bank risk and return, yielding some significant findings (e.g., Dang and Huynh, 2022b; Drakos *et al*., 2016; Shareef and Prabheesh, 2022). Conversely, a more stringent monetary policy exacerbates financial market vulnerabilities. Banks, confronted with increased capital costs, may engage in riskier ventures to attain greater profits, hence amplifying their risk-taking tendencies (Bernanke and Gertler, 1995). Thus, by comprehending the importance of the risk-taking channel, policymakers and regulators may more effectively navigate the equilibrium between monetary goals and financial stability (Abbate and Thaler, 2023; Ding and He, 2023).

Despite the evolving literature, empirical studies investigating the moderating influence of market structure are scarce, underscoring a deficiency in the current body of work. This prompts an essential inquiry: In what manner does market structure influence the relationship between monetary policy and the risk-return tradeoff for banks?

The study empirically examines the risk-taking channel and the bank performance channel of monetary policy transmission, focusing on the moderating effect of bank rivalry in these dynamics. When bank incentives are pivotal to the operation of these transmission channels, it follows that bank-specific characteristics may impact the degree to which monetary policy influences variations in risk and return. The fundamental idea is that market structure significantly influences bank behavior, potentially enhancing or mitigating the effects of monetary policy on bank performance. This concept is derived from the belief that a transition to a less competitive banking system ultimately enhances market power, raising significant concerns for policymakers and scholars, as it may influence how fluctuations in marginal costs are perceived by banks, affect their pricing strategies, and impact their lending practices. Additionally, our impetus for this research is further propelled by the continuous structural changes within the banking sector, which are altering market dynamics and enhancing the liberalization and innovation of financial domains (Amidu and Wolfe, 2013). Moreover, previous data indicates that fundamental bank-level indicators (such as capitalization, size, and liquidity position) inadequately evaluate banks' ability and inclination to extend additional loans (Mishra and Burns, 2017).

This article utilizes annual micro and macro data from Vietnam spanning 2007 to 2019 to examine whether monetary policy functions variably through

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bank performance among banks with differing levels of market power. In this framework, bank performance is evaluated through critical parameters including interest margins, credit risk, and financial stability. A diversified analytical strategy yields richer insights than a singular tool framework (Varlik and Berument, 2017). Furthermore, whereas several monetary policy tools may demonstrate comparable impacts in certain respects, significant differences can emerge due to the extraordinary magnitude of interventions and the unique attributes of each instrument. This study utilizes three categories of interest rates as primary monetary indicators: short-term loan rates, refinancing rates, and rediscounting rates. We employ the Lerner index, which is highly acknowledged in the literature for its efficacy in delivering bank-level assessments of competitiveness and is regularly utilized in banking research. We employ a dynamic panel model estimated by Generalized Method of Moments (GMM) regression for empirical research to address the persistence in bank risk-taking and profit-making behaviors.

Vietnam presents a compelling case study to investigate the proposed research concerns. The Vietnamese capital market is underdeveloped, with companies significantly reliant on banks, rendering the stability and resilience of the banking sector vital to the economy (Dang and Huynh, 2022a). Secondly, the banking sector has experienced substantial reforms recently, especially since 2007, which have enabled the entry of international banks and altered competitive dynamics. These structural modifications highlight the necessity to objectively investigate the moderating influence of market structure. Third, since interest rates in Vietnam have never neared zero, apprehensions about possible biases or inconsistencies in regression results stemming from asymmetric monetary policy impacts are alleviated.

This study presents several additions to the relevant literature. Initially, we have created a comprehensive depiction of the subject about the relationship between monetary policy and bank performance. This research examines a variety of interest rates employed by the central bank regarding the monetary stance. We assess bank performance through a series of accounting metrics. Prior research exclusively examines individual monetary policy indicators and limited bank performance proxies, potentially resulting in an inadequate evaluation. The second significant addition of this research is the analysis of whether market structure affects the relationship between monetary policy and bank risk-return dynamics. Although considerable research has examined the variability of the bank lending channel amid differing degrees of bank competition (Adams and Amel, 2011; Yang and Shao, 2016), there is a notable paucity of studies investigating the moderating influence of market structure on the effects of monetary policy.

II. WHAT THE LITERATURE SAYS?

Widely acknowledged, fluctuations in interest rates can substantially influence bank profitability by affecting bank interest margins. The trajectory indicates that decreasing interest rates lead to a reduction in interest income from bank loans, yet interest expenses on deposits do not diminish proportionately, given that banks' portfolios are mostly comprised of demand deposits (Samuelson, 1945). Furthermore, it has been posited that elevated interest rates can enhance

bank profitability, as lending rates are generally more elastic than deposit rates (Hancock, 1985). Nevertheless, above a specific threshold, increasing interest rates may negatively impact profitability, as loan demand often exhibits more sensitivity to interest rate variations than deposit demand (Borio *et al*., 2017). Empirically, a limited number of research in recent years have precisely investigated the relationship between bank profitability and interest rates. Most studies reveal a favorable correlation between interest rates and bank profits (English *et al*., 2018), but some research suggests that elevated interest rates may not inherently result in improved bank returns (Altavilla *et al*., 2018).

The literature concerning the relationship between monetary policy and bank profitability has been somewhat overlooked recently, but the research on bank risk in response to interest rate shocks has been more productive. Traditionally, expansionary policy aims to facilitate borrower operations and invigorate the economy. A rate drop reduces borrowers' refinancing costs, enhances their repayment capacity, and ultimately diminishes banks' propensity for risk-taking (Bernanke and Gertler, 1995). A burgeoning body of scholarship asserts that monetary policy significantly influences banks' risk perception and tolerance, positing that maintaining low interest rates during monetary expansion is a crucial component in elevating bank risk levels. This literature strand indicates the presence of the risk-taking channel, which may function in several specific manners.

Initially, when interest rates are diminished, banks may demonstrate a pronounced motivation to pursue a "search for yield" strategy. Monetary growth diminishes the returns on secure assets, compelling banks to augment their investments in riskier, higher-yielding assets to sustain their desired return levels (Rajan, 2006). Secondly, low interest rates during monetary growth may enhance asset valuations, so encouraging banks to increase their risk-taking (Borio and Zhu, 2012). Third, reduced rates may lead to an increased credit supply, as demonstrated in the bank lending channel, resulting in a greater propensity to extend credit to higher-risk borrowers (Jiménez *et al*., 2013).

Consequently, due to this theoretical ambiguity, further empirical testing are required to elucidate the aforementioned relationship. Researchers have demonstrated substantial empirical evidence in recent years, albeit with ambiguous outcomes. Some research indicate that a prolonged duration of low loan rates advantages consumers, provided that banks do not instigate their own risky activities (Agénor *et al*., 2013). Conversely, numerous studies have substantiated the presence of the risk-taking channel by establishing a negative correlation between interest rates and bank risk (Bubeck *et al*., 2020; Heider *et al*., 2019). Consequently, the majority of studies focus on financial institutions operating within low or negative interest rate environments. This setting offers a significant foundation for our comparison research, as Vietnam's interest rate structure has constantly remained far from zero. Several recent research have investigated the financial efficacy via the banking channel (Dang and Huynh, 2022a; Dang and Nguyen, 2021; Nguyen and Dinh, 2022). In contrast to this segment, Dang and Huynh (2022b) investigate the impact of monetary policy on performance.

In the pertinent literature, most empirical studies have indicated that the robustness of bank balance sheets may influence the relationship between bank

performance and monetary fluctuations. Previous research has demonstrated that the impact of interest rates on risk-taking is not consistent but rather dependent on critical bank-specific attributes. Factors encompass capitalization (Altunbas *et al*., 2012; Delis and Kouretas, 2011), bank size and liquidity position (Jiménez *et al*., 2014), bank ownership (Drakos *et al*., 2016), and business strategies (Dang and Huynh, 2022b).

The tempered relationship between interest rates and bank performance necessitates careful consideration of market structure, characterized by bank market strength or competition, due to its possible impact on monetary transmission mechanisms. Banks with higher influence may have more accessible alternative funding sources, resulting in their responses to central bank monetary policy changes being less pronounced (Jayaratne and Morgan, 2000). Secondly, banks with diminished market dominance may diversify their operations more extensively to augment revenues and strengthen their market position. Conversely, market-leading banks with elevated marginal profits exhibit greater conservatism and are inclined to maintain their existing results (Koetter *et al*., 2012), characterized by diminished incentives to "search for yield". The initial two mechanisms lead to less variability in bank performance following monetary shocks. Third, enhanced market dominance promotes risk-taking among banks by amplifying their risk appetite, as they perceive themselves as "too-big-to-fail" entities (Chen *et al*., 2017). Banks often ease their risk controls due to diminished competitive pressure in the market (Repullo, 2004).

Although theoretical frameworks indicate that bank rivalry affects the responsiveness of bank performance to monetary policy alterations, empirical investigations in this area are limited, underscoring a significant deficiency in the literature. Current research has predominantly investigated the influence of market power on monetary transmission. In this context, certain data suggest that diminished competition in banking undermines the efficacy of the bank lending channel (Adams and Amel, 2011; Olivero *et al*., 2011), which contradicts the conclusions of other studies (Amidu and Wolfe, 2013; Yang and Shao, 2016).

Our manuscript pertains to the work of Chen *et al*. (2017). Utilizing data from 29 emerging economies between 2000 and 2012, they examine the risk-taking channel, emphasizing the significance of market structure. According to the research conducted by Chen *et al*. (2017), we identify some salient aspects that warrant our attention for enhancement and expansion. Initially, prior authors employ various proxies to calculate banking concentration levels, positing that a rise in these proxies signifies diminished competition. Nonetheless, as extensively critiqued in the literature, such concentration indicators inadequately assess both the degree of bank rivalry and market power; therefore, they should not be utilized to elucidate variations in market structure (Amidu and Wolfe, 2013). Recognizing this limitation, we employ the Lerner index, which offers greater advantages, to assess bank rivalry in our study. Secondly, Chen *et al*. (2017) concentrate exclusively on bank stability in nearly all regressions. To enhance their methodology, we utilize a comprehensive array of accounting-based measures to accurately represent many facets of bank performance in this study.

III. DATA AND METHODOLOGY

A. Data

The study compiles data from Vietnamese commercial banks by analyzing their yearly financial reports from 2007 to 2019, particularly utilizing the specific notes inside each bank's financial statements to gather the necessary materials for calculating the Lerner index. The assembled dataset comprises an unbalanced panel of 31 banks. It is essential to acknowledge that our sample excludes the years 2020 to 2022, potentially indicating a substantial structural disruption attributable to the COVID-19 pandemic. During this period, concurrent alterations in monetary policy and bank performance may provide challenges to the interpretation and relevance of our estimates. The statistics pertaining to monetary policy measures and macroeconomic variables are sourced from the International Financial Statistics and the State Bank of Vietnam (SBV) database.

B. Methodology

Our panel model is written as:

$$DV_{i,t} = \beta_0 + \beta_1 \times DV_{i,t-1} + \beta_2 \times MPI_{t-1} + \beta_3 \times Market_{i,t-1} + \beta_4 \times MPI_{t-1} \times Market_{i,t-1} + \beta_5 \times BV_{i,t-1} + \beta_6 \times MV_{t-1} + \varepsilon_{i,t} \quad (1)$$

where *i* represents banks and *t* denotes years. *DV* separately captures bank returns, bank risks, and bank stability. *MPI* is the monetary rates. *Market* is to reflect the competition levels. *BV* is a vector of bank factors, *MV* contains macro controls. The interaction term *MPI*×*Market* of our main interest indicates how banks with different market power levels react differently to monetary changes. With the dynamic model, the study applies the system GMM regression (Blundell and Bond, 1998).

To capture monetary policy, the first one is the short-term lending rates, and the other two are refinancing rates and rediscounting rates. For bank return measures, we focus on the interest-earning capacity via the Net Interest Margin (*NIM*) and the overall returns via *ROA* and *ROE*. To assess banks' risk profiles in Vietnam, we apply two measures regularly used: loss provision ratio (*LLP*) and Non-Performing Loan ratio (*NPL*). Besides, we utilize the Z-score index to proxy the overall risks of Vietnamese commercial banks:

$$Z\text{-}score = \frac{ROA + Capital}{\sigma(ROA)} \quad (2)$$

where $\sigma(ROA)$ is the standard deviation of *ROA* for the entire period under research (Roy, 1952). The higher the Z-score is, the lower the overall risk (Bektas *et al*., 2022; Ngambou Djatche, 2019).

The banking literature has innovated multiple ways to estimate bank competition, categorized as structural and non-structural measures. For the former, concentration ratios are employed (Baarsm and Vooren, 2018; Hussain and Bashir,

2020). For the latter, the Lerner index emerges as a prominent representative to gauge bank competition or market power. The Lerner index is defined as the difference between the bank's output price and marginal cost (Berger *et al*., 2009; Fu *et al*., 2014), divided by the output price:

$$Lerner_{it} = \frac{P_{it} - MC_{it}}{P_{it}} \tag{3}$$

where marginal cost is more complex to estimate using a cost function as follows:

$$lnCost_{it} = \beta_0 + \beta_1 lnQ_{it} + \frac{\beta_2}{2} lnQ_{it}^2 + \sum_{k=1}^{3} \gamma_{it} lnW_{k,it} + \sum_{k=1}^{3} \delta_k lnQ_{it} lnW_{k,it} + \sum_{k=1}^{3} \sum_{j=1}^{3} lnW_{k,it} lnW_{j,it} + v_t + \varepsilon_{i,t} \tag{4}$$

where *Cost* is a bank's total costs and *Q* is a bank's total assets. W_1, W_2, and W_3 denote the labor cost, physical cost and cost of debt, respectively. We use the coefficients to reach the marginal cost:

$$MC_{it} = \frac{Cost_{it}}{Q_{it}} \left[\beta_1 + \beta_2 lnQ_{it} + \sum_{k=1}^{3} \delta_k lnW_{k,it} \right] \tag{5}$$

To enhance model interpretability and mitigate the issue of excluding critical variables, we account for several major banking characteristics that may exert substantial effects on bank performance. The macroeconomic environment significantly influences banking operations and investment decisions, ultimately modifying the bank's risk and return profiles. Consequently, to account for the influence of external environmental factors on banks, the article utilizes macroeconomic variables, such as economic cycles, inflation, and stock market returns. The particular justifications for employing each variable can be readily

found in the current literature (Goetz, 2018; Huynh and Dang, 2022; Mateev *et al*., 2022).[1]

IV. RESULTS

A. Preliminary Statistical Results

Table 1 indicates that the Lerner index has a mean of 0.445 during the research period, significantly above values observed in other markets. The average Lerner index for 23 developed countries, as calculated by Berger *et al*. (2009), is 0.220; for China, as computed by Yang and Shao (2016), it is 0.407; and for 55 developing countries, measured by Amidu and Wolfe (2013), it ranges from 0.068 to 0.236, considering that these authors employed the same methodology as we did in estimating the conventional Lerner index. This comparison indicates that Vietnamese banks possess significant market strength, and the banking sector is moderately competitive, reinforcing the notion that certain banks have maintained market dominance to date. Moreover, the elevated standard deviations of risk and return metrics indicate significant variability in performance among banks in Vietnam during the research period.

The findings of the cross-correlations among variables are presented in Table 2. Regarding the bank return and risk metrics, we observe that certain utilized variables exhibit significant connections with one another (e.g., the correlations between ROA and ROE, or between LLP and NPL), indicating that utilizing these measures as alternative variables is justifiable. A primary issue concerning the relationships among monetary policy indicators is their significant dependency, indicating that the SBV generally utilizes various interest rate instruments concurrently in its monetary policy execution. Finally, an examination of the correlations among independent variables indicates that the likelihood of severe multicollinearity in the model is low, with the exception of the strong correlation between the inflation rate and monetary policy interest rates, which surpasses 0.80. Therefore, to preserve model integrity and mitigate multicollinearity concerns, the inflation variable is omitted from the regression analysis.

[1] Our model does not include international variables, such as global monetary policy and exchange rates, due to several reasons as follows. For the global monetary policy variable, banks in Vietnam are mostly small and weak, with limited integration into the global economy, and are largely dependent on domestic monetary policy. Hence, domestic monetary policy plays a crucial role. The SBV employs a range of tools to maintain monetary stability, including managing interest rates and controlling inflation. By tailoring its policies to the specific needs of the domestic economy, the SBV can buffer Vietnamese banks against external monetary shocks. This localized control ensures that global policy changes, such as those implemented by the Federal Reserve or the European Central Bank, have a more muted impact on Vietnamese financial institutions. As for the exchange rate variable, the research sample does not include foreign banks and the domestic banks in our sample engage minimally in foreign exchange trading, which is only a minor business area for some Vietnamese banks. Therefore, exchange rate fluctuations are less likely to significantly impact bank performance. Furthermore, if there were concerns about the exchange rate variable, we are uncertain about which specific exchange rate should be included in the regression model (VND/USD, VND/EUR, VND/JPY, VND/GBP, among many others). Additionally, when examining many studies on bank performance within a single country, almost no research controls for these international variables (Chiorazzo *et al.,* 2008; Dang and Dang, 2020; Dong and Wang, 2021; ElBannan, 2015; Hirata and Ojima, 2020; Matthys *et al.,* 2020).

B. Monetary Policy, Bank Competition, and Net Interest Margins

To ensure robustness, we perform a stepwise regression analysis. Initially, we estimate the model with solely the principal variables of interest. Subsequently, we integrate bank-specific control variables, and ultimately, we augment the model to encompass macroeconomic controls. Table 3 presents the data for net interest margins. The appropriateness of the GMM framework, along with the statistically significant persistence of the dependent variable, endorses a dynamic panel model. Consequently, we are assured of the dependability of our given estimates.[2]

Table 1.
Summary Statistics of Variables Employed

The sample covers 31 commercial banks in Vietnam for the period from 2007 to 2019, constituting an unbalanced panel data with a total of 391 bank-year observations.

	Mean	Standard Deviation	Median	Definitions
Bank Risk and Return Measures				
LLP	1.254	0.545	1.134	Loan loss provisions/Total gross loans (%)
NPL	2.185	1.316	2.009	Non-performing loans/Total gross loans (%)
Z-score	2.866	0.510	2.865	Natural logarithm of the Z-score index (see equation 2 for the calculation of the Z-score index)
NIM	5.521	2.217	5.439	Net interest income/Total average interest-earning assets (%)
ROA	0.923	0.684	0.762	Net return on average assets (%)
ROE	9.850	7.231	8.654	Net return on average equity (%)
Bank-level Factors				
Lerner	0.445	0.079	0.450	Lerner index estimated by the translog functions (see equations 3–5 for the estimation of Lerner index)
Size	31.967	1.294	32.007	Natural logarithm of bank total assets
Capital	10.280	5.351	8.707	Capital equity/Total assets (%)
Liquidity	17.762	10.429	14.772	Liquid assets/Total assets (%)
Monetary Policy Interest Rates and Macroeconomic Factors				
Lending rates	10.400	3.328	10.069	Short-term average lending rates (%)
Refinancing rates	8.042	2.547	6.500	Refinancing rates announced by the SBV (%)
Rediscounting rates	5.894	2.660	4.500	Rediscounting rates announced by the SBV (%)
Inflation	7.495	6.226	6.592	Annual inflation rate (%)
Economic cycle	6.245	0.642	6.240	Annual growth rate of GDP (%)
Stock market	7.425	29.655	8.124	Annual growth rate of VNindex (%)

In accordance with the assertions of the aforementioned theoretical and empirical studies (English *et al*., 2018; Hancock, 1985; Samuelson, 1945), we demonstrate that banks' interest margins are significantly positively correlated with the central bank's monetary policy interest rates; specifically, elevated interest

[2] For other remaining tables of estimation results presented in the paper, we also have similar conclusions about the reliability of the estimation results.

rates enhance banks' interest income. A negative and substantial coefficient on the interaction term implies that bank competition is crucial for the transmission. The correlation between banks' net interest margin and monetary policy diminishes in institutions with higher influence. These findings consistently apply across three categories of interest rates and are economically significant in all regressions.

C. Bank Competition's Effects

Refer to Tables 4 and 5 for the results. Utilizing LLP (Table 4) and NPL (Table 5) as dependent variables, a positive and substantial effect is observed across all models. The findings indicate a lack of empirical evidence for the risk-taking channel hypothesis within the Vietnamese banking industry over the study period. Our findings demonstrate that banks significantly elevate their credit risk subsequent to a monetary policy tightening.

Consistent with classic theory and other recent empirical research, our findings suggest that contractionary policy may adversely affect risk (Agénor *et al*., 2013; Bernanke and Gertler, 1995). Increased interest rates directly elevate borrowing expenses for individuals and enterprises, rendering debt servicing more costly for current borrowers. Consequently, certain borrowers may find it challenging to fulfill their financial commitments, resulting in a rise in loan defaults. Increasing default rates subsequently heighten credit risk for banks, potentially resulting in a greater quantity of non-performing loans on their balance sheets. In this context, referencing the previously obtained results, we see that a bank faces a trade-off between a broader interest margin and a more hazardous portfolio.

The coefficient of the interaction term is significant at a minimum of 5% across all regressions. This outcome suggests that the influence of monetary policy may fluctuate based on the bank's market power or the level of competition within the market. The negative regression coefficient of the interaction terms, contrasting with the positive coefficients of the individual interest rates, indicates that an increase in bank market power diminishes the efficacy of monetary policy. Our estimates also guarantee the appropriate amount of the economic repercussions.

Table 2.
Correlation Coefficients Matrix

	Z-score	LLP	NPL	ROA	ROE	NIM	Lerner	Size	Capital	Liquidity	Lending rates	Refinancing rates	Rediscounting rates	Inflation	Economic cycle	Stock market
Z-score	1.000															
LLP	0.160	1.000														
NPL	0.180	0.590	1.000													
ROA	0.140	–0.160	–0.250	1.000												
ROE	0.000	0.010	–0.280	0.790	1.000											
NIM	0.150	0.010	0.010	0.490	0.350	1.000										
Lerner	0.180	0.020	–0.140	0.520	0.520	0.210	1.000									
Size	–0.120	0.440	–0.010	–0.110	0.330	–0.060	0.100	1.000								
Capital	0.370	–0.290	0.050	0.260	–0.230	0.370	0.020	–0.720	1.000							
Liquidity	0.090	–0.300	–0.170	0.310	0.150	–0.070	0.230	–0.430	0.310	1.000						
Lending rates	0.300	0.070	0.160	0.290	0.140	0.230	–0.020	–0.340	0.340	0.450	1.000					
Refinancing rates	0.210	0.110	0.150	0.200	0.100	0.260	–0.060	–0.220	0.230	0.330	0.910	1.000				
Rediscounting rates	0.190	0.100	0.150	0.160	0.080	0.240	–0.090	–0.200	0.220	0.300	0.890	0.980	1.000			
Inflation	0.280	–0.010	0.100	0.260	0.130	0.210	–0.030	–0.330	0.340	0.450	0.930	0.860	0.880	1.000		
Economic cycle	–0.190	–0.190	–0.310	0.040	0.160	–0.130	0.110	0.220	–0.230	–0.080	–0.440	–0.380	–0.340	–0.370	1.000	
Stock market	–0.110	0.020	–0.030	–0.030	–0.020	–0.140	0.110	0.090	–0.160	–0.180	–0.550	–0.530	–0.650	–0.670	–0.040	1.000

Table 3.
Monetary Policy Interest Rates and Net Interest Margins

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively.

	Dependent Variable: Net Interest Margin (NIM)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged NIM	0.453***	0.471***	0.464***	0.525***	0.564***	0.553***	0.559***	0.609***	0.608***
	(0.034)	(0.042)	(0.041)	(0.046)	(0.050)	(0.047)	(0.048)	(0.054)	(0.050)
Lending rates	0.260***			0.259***			0.421***		
	(0.073)			(0.062)			(0.077)		
Lerner*Lending rates	–0.498***			–0.577***			–0.749***		
	(0.171)			(0.145)			(0.170)		
Refinancing rates		0.324**			0.365***			0.429***	
		(0.148)			(0.133)			(0.127)	
Lerner*Refinancing rates		–0.636*			–0.850***			–0.854***	
		(0.359)			(0.325)			(0.309)	
Rediscounting rates			0.416***			0.483***			0.541***
			(0.138)			(0.129)			(0.127)
Lerner*Rediscounting rates			–0.831**			–1.080***			–1.094***
			(0.332)			(0.304)			(0.303)
Lerner	6.442***	5.973**	6.079***	5.415***	5.647**	5.601***	5.721***	4.086*	4.141***
	(1.750)	(2.752)	(1.832)	(1.450)	(2.294)	(1.650)	(1.567)	(2.125)	(1.554)
Size				0.185**	0.176**	0.180**	0.178**	0.153**	0.162**
				(0.075)	(0.070)	(0.072)	(0.073)	(0.071)	(0.070)
Capital				–0.021*	–0.025**	–0.025**	–0.009	–0.014	–0.014
				(0.011)	(0.012)	(0.012)	(0.012)	(0.011)	(0.010)
Liquidity				0.041***	0.041***	0.040***	0.030***	0.036***	0.036***
				(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)
Economic cycle							0.722***	0.618***	0.598***
							(0.066)	(0.068)	(0.067)
Stock market							0.005***	0.003***	0.004***
							(0.001)	(0.001)	(0.001)
Observations	360	360	360	360	360	360	360	360	360
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.141	0.151	0.146	0.145	0.152	0.146	0.224	0.217	0.209
Hansen test	0.118	0.117	0.114	0.163	0.164	0.157	0.159	0.157	0.150

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Table 4.
Monetary Policy Interest Rates and Loan Loss Provisions

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively.

	Dependent Variable: Loan Loss Provisions as a Share of Gross Loans (LLP)								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Lagged LLP	0.487***	0.572***	0.538***	0.470***	0.601***	0.649***	0.461***	0.646***	0.692***
	(0.049)	(0.033)	(0.034)	(0.065)	(0.044)	(0.037)	(0.058)	(0.045)	(0.037)
Lending rates	0.218***			0.349***			0.288***		
	(0.079)			(0.076)			(0.057)		
Lerner*Lending rates	–0.445**			–0.709***			–0.536***		
	(0.178)			(0.167)			(0.128)		
Refinancing rates		0.347***			0.435***			0.370***	
		(0.098)			(0.083)			(0.079)	
Lerner*Refinancing rates		–0.707***			–0.895***			–0.743***	
		(0.226)			(0.199)			(0.189)	
Rediscounting rates			0.069***			0.085***			0.114***
			(0.017)			(0.019)			(0.029)
Lerner*Rediscounting rates			–0.083**			–0.114***			–0.127**
			(0.034)			(0.037)			(0.062)
Lerner	6.147***	6.899***	1.037***	9.660***	8.672***	1.274***	7.090***	6.975***	1.163***
	(2.214)	(2.074)	(0.214)	(1.955)	(1.810)	(0.277)	(1.575)	(1.748)	(0.353)
Size				0.002	–0.012	–0.018*	0.026	–0.015	–0.027***
				(0.015)	(0.015)	(0.009)	(0.017)	(0.015)	(0.010)
Capital				–0.017***	–0.020***	–0.019***	–0.013***	–0.018***	–0.014***
				(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Liquidity				–0.004*	0.001	0.002	–0.004**	0.001	0.000
				(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Economic cycle							0.053***	0.029***	0.078***
							(0.018)	(0.011)	(0.016)
Stock market							0.002***	0.001***	0.003***
							(0.000)	(0.000)	(0.000)
Observations	360	360	360	360	360	360	360	360	360
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.181	0.163	0.190	0.195	0.181	0.126	0.186	0.107	0.139
Hansen test	0.373	0.221	0.326	0.424	0.370	0.211	0.294	0.294	0.379

Table 5.
Monetary Policy Interest Rates and Non-performing Loans

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively

	Dependent Variable: Non-performing Loans as a Share of Gross Loans (NPL)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged NPL	0.330***	0.359***	0.401***	0.324***	0.357***	0.399***	0.354***	0.452***	0.476***
	(0.027)	(0.023)	(0.020)	(0.031)	(0.018)	(0.017)	(0.026)	(0.020)	(0.020)
Lending rates	0.283***			0.291***			0.433***		
	(0.071)			(0.072)			(0.071)		
Lerner*Lending rates	–0.514***			–0.500***			–0.631***		
	(0.151)			(0.151)			(0.146)		
Refinancing rates		0.579***			0.564***			0.611***	
		(0.154)			(0.120)			(0.120)	
Lerner*Refinancing rates		–1.127***			–1.068***			–1.059***	
		(0.329)			(0.269)			(0.257)	
Rediscounting rates			0.488***			0.497***			0.520***
			(0.145)			(0.120)			(0.110)
Lerner*Rediscounting rates			–0.994***			–0.991***			–0.890***
			(0.313)			(0.270)			(0.239)
Lerner	4.623***	8.232***	5.249***	4.728***	8.139***	5.523***	5.166***	7.468***	4.473***
	(1.478)	(2.549)	(1.772)	(1.521)	(2.152)	(1.619)	(1.474)	(2.044)	(1.442)
Size				–0.158***	–0.167***	–0.173***	–0.151***	–0.175***	–0.189***
				(0.051)	(0.046)	(0.046)	(0.054)	(0.052)	(0.052)
Capital				–0.032***	–0.031***	–0.033***	–0.020***	–0.024***	–0.028***
				(0.010)	(0.010)	(0.010)	(0.007)	(0.009)	(0.009)
Liquidity				–0.010*	–0.011**	–0.007*	–0.013***	–0.008***	–0.007**
				(0.006)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
Economic cycle							0.385***	0.297***	0.284***
							(0.049)	(0.030)	(0.029)
Stock market							0.010***	0.008***	0.009***
							(0.001)	(0.001)	(0.001)
Observations	304	304	304	304	304	304	304	304	304
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.001	0.002	0.002	0.002	0.002	0.002	0.004	0.001	0.001
AR(2) test	0.169	0.166	0.167	0.169	0.165	0.162	0.192	0.104	0.197
Hansen test	0.154	0.134	0.121	0.152	0.180	0.149	0.265	0.241	0.285

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D. Bank Competition Return and Stability

Tables 6 and 7 demonstrate that both ROA and ROE have a positive correlation with the three short-term interest rates, suggesting that elevated monetary policy rates may enhance bank profitability. This effect is probably influenced by the initial surge in net interest income after an interest rate hike, which seems to surpass any adverse consequences for bank risk. Moreover, in all specifications presented in Tables 6 and 7, the interaction terms between monetary policy measures and the Lerner index are continuously negative and statistically significant. The findings demonstrate that the impact of monetary policy interest rates on overall bank profitability is heightened in more competitive banking environments, as lower Lerner index values signify greater market competitiveness.

We provide the estimation results derived from analyzing the impact of monetary policy fluctuations on the financial stability of banks. Table 8 demonstrates that the coefficient for monetary policy measures is notably positive and consistently resilient across various interest rates. This pattern suggests that, subsequent to a reduction in interest rates, banks diminish their financial soundness. This outcome is consistent with the ROA regressions, as ROA is the primary determinant in the Z-score calculation. Furthermore, the enhancement in net interest margins may completely counterbalance any losses incurred from heightened credit risk due to elevated interest rates. Furthermore, in the Z-score index function, all interaction coefficients are considerably negative. Our data quantitatively demonstrate economic impact as well.

In conclusion, we observe that competition within the Vietnamese banking sector appears to heighten the susceptibility of bank stability to monetary policy fluctuations. Our findings align with the emerging literature indicating that the net advantages of extended monetary expansion may be diminishing due to its detrimental side effects (Borio *et al*., 2017), specifically reduced bank profitability and diminished financial stability stemming from low interest rates in our context. Crucially, regarding the principal focus of our work, we observe a persistent trend indicating that diminished competition in banking attenuates the effects of monetary policy on bank risk and return profiles. Multiple plausible explanations exist for our findings. Initially, increased market dominance or less competition lessens bank managers' motivation to seek higher returns, since their capacity to set prices beyond marginal costs already generates adequate earnings (Koetter *et al*., 2012). Secondly, banks with substantial influence in less competitive markets generally have enhanced access to a variety of financing sources. As a result, their reactions to changes in central bank monetary policy are generally less pronounced than those of banks functioning in highly competitive markets (Jayaratne and Morgan, 2000).

Table 6.
Monetary Policy Interest Rates and Return on Assets

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively.

	Dependent Variable: Return on Assets (ROA)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged ROA	0.707***	0.716***	0.663***	0.628***	0.595***	0.553***	0.715***	0.662***	0.614***
	(0.021)	(0.022)	(0.023)	(0.016)	(0.014)	(0.012)	(0.022)	(0.019)	(0.018)
Lending rates	0.197***			0.175***			0.126***		
	(0.038)			(0.035)			(0.035)		
Lerner*Lending rates	–0.473***			–0.460***			–0.414***		
	(0.087)			(0.077)			(0.076)		
Refinancing rates		0.217***			0.184***			0.136***	
		(0.044)			(0.035)			(0.040)	
Lerner*Refinancing rates		–0.548***			–0.500***			–0.454***	
		(0.102)			(0.076)			(0.087)	
Rediscounting rates			0.206***			0.173***			0.134***
			(0.036)			(0.043)			(0.045)
Lerner*Rediscounting rates			–0.490***			–0.438***			–0.420***
			(0.081)			(0.094)			(0.098)
Lerner	4.183***	3.544***	2.209***	4.112***	3.353***	2.130***	3.340***	2.819***	1.839***
	(0.832)	(0.840)	(0.512)	(0.808)	(0.690)	(0.608)	(0.772)	(0.717)	(0.616)
Size				0.099***	0.117***	0.117***	0.099***	0.117***	0.118***
				(0.017)	(0.019)	(0.020)	(0.017)	(0.019)	(0.019)
Capital				0.034***	0.038***	0.037***	0.032***	0.033***	0.033***
				(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Liquidity				0.012***	0.012***	0.011***	0.012***	0.011***	0.010***
				(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Economic cycle							–0.052***	–0.035***	–0.015
							(0.017)	(0.013)	(0.014)
Stock market							–0.004***	–0.003***	–0.004***
							(0.000)	(0.000)	(0.000)
Observations	360	360	360	360	360	360	360	360	360
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.001	0.002	0.002	0.001	0.002	0.002	0.002	0.003	0.004
AR(2) test	0.855	0.971	0.804	0.996	0.735	0.918	0.540	0.431	0.440
Hansen test	0.315	0.287	0.252	0.226	0.221	0.221	0.156	0.168	0.166

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Table 7.
Monetary Policy Interest Rates and Return on Equity

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively

	Dependent Variable: Return on Equity (ROE)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged ROE	0.927***	0.938***	0.886***	0.930***	0.891***	0.833***	1.092***	0.953***	0.891***
	(0.020)	(0.022)	(0.021)	(0.020)	(0.023)	(0.023)	(0.034)	(0.021)	(0.021)
Lending rates	1.418***			1.437***			0.498**		
	(0.288)			(0.210)			(0.248)		
Lerner*Lending rates	–3.884***			–4.189***			–3.113***		
	(0.680)			(0.490)			(0.577)		
Refinancing rates		1.876***			1.889***			1.776***	
		(0.355)			(0.304)			(0.326)	
Lerner*Refinancing rates		–5.299***			–5.453***			–6.153***	
		(0.835)			(0.708)			(0.843)	
Rediscounting rates			1.594***			1.564***			1.323***
			(0.260)			(0.229)			(0.233)
Lerner*Rediscounting rates			–4.332***			–4.304***			–4.887***
			(0.609)			(0.513)			(0.605)
Lerner	28.107***	27.579***	12.773***	28.625***	29.439***	14.017***	14.236**	35.233***	17.565***
	(6.829)	(7.224)	(4.253)	(4.860)	(5.517)	(2.795)	(6.803)	(6.300)	(3.591)
Size				0.397*	0.484***	0.539**	0.214	0.291	0.310
				(0.221)	(0.181)	(0.217)	(0.198)	(0.182)	(0.206)
Capital				0.118**	0.103**	0.073*	0.132***	0.068*	0.034
				(0.048)	(0.041)	(0.043)	(0.043)	(0.038)	(0.037)
Liquidity				0.074***	0.054***	0.042***	0.086***	0.049**	0.039**
				(0.020)	(0.017)	(0.015)	(0.023)	(0.020)	(0.018)
Economic cycle							–1.749***	–1.128***	–1.026***
							(0.228)	(0.152)	(0.129)
Stock market							–0.051***	–0.040***	–0.050***
							(0.005)	(0.003)	(0.004)
Observations	360	360	360	360	360	360	360	360	360
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.007	0.006
AR(2) test	0.655	0.911	0.753	0.636	0.813	0.820	0.925	0.710	0.857
Hansen test	0.260	0.241	0.235	0.250	0.238	0.203	0.286	0.287	0.273

Table 8.
Monetary Policy Interest Rates and Bank Stability

The table reports the regression results obtained by the two-step system GMM dynamic estimator. Standard errors are given in parentheses. Diagnostic tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively.

	Dependent Variable: Natural Logarithm of the Z-score Index (Z-score)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged Z-score	0.832***	0.819***	0.830***	1.055***	1.053***	1.065***	1.050***	1.127***	1.140***
	(0.020)	(0.020)	(0.021)	(0.031)	(0.019)	(0.020)	(0.023)	(0.019)	(0.021)
Lending rates	0.030***			0.024**			0.054***		
	(0.009)			(0.012)			(0.011)		
Lerner*Lending rates	–0.065***			–0.051**			–0.090***		
	(0.022)			(0.025)			(0.027)		
Refinancing rates		0.061***			0.047***			0.062***	
		(0.012)			(0.018)			(0.017)	
Lerner*Refinancing rates		–0.133***			–0.103***			–0.117***	
		(0.029)			(0.040)			(0.042)	
Rediscounting rates			0.041***			0.039**			0.047***
			(0.012)			(0.017)			(0.015)
Lerner*Rediscounting rates			–0.095***			–0.088**			–0.081**
			(0.028)			(0.038)			(0.036)
Lerner	0.909***	1.346***	0.792***	0.475	0.781**	0.449	0.793**	0.697*	0.211
	(0.239)	(0.250)	(0.201)	(0.353)	(0.382)	(0.292)	(0.323)	(0.383)	(0.257)
Size				–0.065***	–0.064***	–0.064***	–0.063***	–0.068***	–0.069***
				(0.011)	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
Capital				–0.037***	–0.037***	–0.037***	–0.034***	–0.038***	–0.039***
				(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Liquidity				0.003***	0.003***	0.003***	0.001	0.003*	0.003*
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Economic cycle							0.078***	0.069***	0.067***
							(0.007)	(0.006)	(0.006)
Stock market							0.001***	0.001***	0.001***
							(0.000)	(0.000)	(0.000)
Observations	360	360	360	360	360	360	360	360	360
Banks	31	31	31	31	31	31	31	31	31
Instruments	25	25	25	28	28	28	30	30	30
AR(1) test	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
AR(2) test	0.751	0.859	0.846	0.841	0.761	0.747	0.799	0.987	0.922
Hansen test	0.142	0.147	0.148	0.179	0.177	0.181	0.216	0.215	0.193

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E. Robustness Checks

To conduct additional assessments, we modify the market power/bank competition indicator and revise the econometric methodology. Initially, concerning the alternate Lerner measure, we employ its funding-adjusted variant. The literature indicates that including funding costs in the translog equation for calculating the standard Lerner index may bias the results, as this element intrinsically represents pricing power in the deposit market (Maudos and de Guevara, 2007). Subsequently, we adjust the model and do static model analysis utilizing fixed effects (Hoechle, 2007).

We integrate all modifications in the regression technique and re-evaluate the outcomes. The findings for interest income and credit risk are shown in Table 9, while the equations for overall return and bank stability are detailed in Table 10. We continue to document consistent evidence that strongly supports our primary finding in the report.

Table 9.
Robustness Checks in the Functions of Interest Income and Credit Risk

The table reports the estimation results obtained by the fixed-effects static regressions with Driscoll-Kraay standard errors. The dependent variables are displayed at the top of each column. Standard errors are given in parentheses. F-tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively.

	(1) NIM	(2) NIM	(3) NIM	(4) LLP	(5) LLP	(6) LLP	(7) NPL	(8) NPL	(9) NPL
Lending rates	0.498***			0.035***			0.353***		
	(0.091)			(0.008)			(0.091)		
Lerner_adjust*Lending rates	–0.553***			–0.136***			–0.205		
	(0.176)			(0.010)			(0.172)		
Refinancing rates		0.578***			0.041***			0.510***	
		(0.151)			(0.007)			(0.090)	
Lerner_adjust*Refinancing rates		–0.785**			–0.151***			–0.621**	
		(0.299)			(0.009)			(0.216)	
Rediscounting rates			0.597***			0.044***			0.454***
			(0.132)			(0.011)			(0.105)
Lerner_adjust*Rediscounting rates			–0.802**			–0.153***			–0.517**
			(0.292)			(0.018)			(0.232)
Lerner_adjust	11.545***	12.389***	11.046***	–1.473***	–1.121***	–0.811**	–0.727	2.403	0.624
	(2.388)	(2.821)	(2.216)	(0.323)	(0.297)	(0.351)	(1.579)	(1.558)	(1.605)
Controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	360	360	360	360	360	360	304	304	304
F-test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.262	0.239	0.238	0.298	0.272	0.262	0.242	0.210	0.179

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Table 10.
Robustness Checks in the Functions of Overall Return and Bank Stability

The table reports the estimation results obtained by the fixed-effects static regressions with Driscoll-Kraay standard errors. The dependent variables are displayed at the top of each column. Standard errors are given in parentheses. F-tests are reported with p-values. ***, **, and * indicate the significance levels at 1%, 5%, and 10%, respectively

	(1) ROA	(2) ROA	(3) ROA	(4) ROE	(5) ROE	(6) ROE	(7) Z-score	(8) Z-score	(9) Z-score
Lending rates	0.156***			1.310***			0.084***		
	(0.031)			(0.330)			(0.025)		
Lerner_adjust*Lending rates	–0.376***			–3.619***			–0.126*		
	(0.077)			(0.553)			(0.064)		
Refinancing rates		0.188***			1.681***			0.116***	
		(0.036)			(0.358)			(0.032)	
Lerner_adjust*Refinancing rates		–0.453***			–4.467***			–0.206**	
		(0.094)			(0.856)			(0.080)	
Rediscounting rates			0.174***			1.587***			0.099**
			(0.043)			(0.434)			(0.032)
Lerner_adjust*Rediscounting rates			–0.399***			–4.038***			–0.167*
			(0.089)			(0.769)			(0.083)
Lerner_adjust	7.063***	6.741***	5.485***	72.013***	69.527***	57.637***	2.147***	2.514***	1.876***
	(1.017)	(1.107)	(0.951)	(8.455)	(9.886)	(7.599)	(0.572)	(0.638)	(0.521)
Controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	360	360	360	360	360	360	360	360	360
F-test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.351	0.338	0.336	0.226	0.214	0.210	0.628	0.621	0.613

V. CONCLUSIONS

This article seeks to empirically examine the moderating influence of competition on the relationship between monetary interest rates and bank risks and returns to determine the marginal effects. Utilizing both bank-level and macroeconomic data from Vietnam between 2007 and 2019, several intriguing findings have surfaced. The baseline estimation results indicate that during monetary expansion through lowered interest rates, banks may mitigate the risk of their credit portfolios; however, this must be balanced against declines in interest margins, total returns, and financial stability. Our additional findings of primary significance indicate that the policy impact is diminished for banks possessing greater market power and experiencing reduced competition.

Our primary findings present several significant implications. Central banks must to evaluate both banking performance and financial stability in the development of monetary policy, while bank executives must meticulously analyze the risk-return tradeoff arising from alterations in monetary policy. The extent of bank rivalry and the degree of market strength are pivotal in influencing the transmission of monetary rates. From a policy perspective, central banks can amplify the beneficial impacts of expansionary policy on bank risk by promoting increased competition within the banking sector. Our findings highlight the necessity of considering bank market structure in the analysis of interest rate fluctuations on bank risk and return, rather than exclusively emphasizing conventional bank-specific attributes.

It is imperative to recognize that our research solely investigates the effects of monetary policy via interest-based devices. Furthermore, our analysis is restricted to a single market due to data restrictions. Consequently, we allocate for future investigation additional quantitative monetary tools from cross-national contexts to enhance our comprehension of the current subject.

REFERENCES

Abbate, A., & Thaler, D. (2023). Optimal Monetary Policy with the Risk-taking Channel. *European Economic Review, 152,* 104333.

Adams, R. M., & Amel, D. F. (2011). Market Structure and the Pass-through of the Federal Funds Rate. *Journal of Banking and Finance*, 35, 1087–1096.

Agénor, P. R., Alper, K., & da Silva, L. P. (2013). Capital Regulation, Monetary Policy, and Financial Stability. *International Journal of Central Banking*, 9, 193–238.

Altavilla, C., Boucinha, M., & Peydró, J.-L. (2018). Monetary Policy and Bank Profitability in a Low Interest Rate Environment. *Economic Policy*, 33, 531–586.

Altunbas, Y., Gambacorta, L., & Marques-Ibanez, D. (2012). Do Bank Characteristics Influence the Effect of Monetary Policy on Bank Risk? *Economics Letters*, 117, 220–222.

Amidu, M., & Wolfe, S. (2013). The Effect of Banking Market Structure on the Lending Channel: Evidence from Emerging Markets. *Review of Financial Economics*, 22, 146–157.

Baarsm, B., & Vooren, M. (2018). Bank Competition and the Transmission of Unconventional Monetary Policy in the Euro Area. *European Competition Journal*, 14, 174–193.

Bektas, E., Elbadri, M., & Molyneux, P. (2022). Do Institutions, Religion and the Economic Cycle Impact Bank Stability in Dual Banking Systems? *Journal of International Financial Management & Accounting*, 33, 252–284.

Berger, A. N., Klapper, L. F., & Turk-Ariss, R. (2009). Bank Competition and Financial Stability. *Journal of Financial Services Research*, 35, 99–118.

Bernanke, B. S., & Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, 9, 27–48.

Blundell, R., & Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87, 115–143.

Borio, C., Gambacorta, L., & Hofmann, B. (2017). The Influence of Monetary Policy on Bank Profitability. *International Finance*, 20, 48–63.

Borio, C., & Zhu, H. (2012). Capital Regulation, Risk-taking and Monetary Policy: A Missing Link in the Transmission Mechanism? *Journal of Financial Stability*, 8, 236–251.

Bubeck, J., Maddaloni, A., Peydró, J.-L., Bubeckis, J., & Bundesbank, D. (2020). Negative Monetary Policy Rates and Systemic Banks' Risk-taking: Evidence from the Euro Area Securities Register. *Journal of Money, Credit and Banking*, 52, 197–231.

Chen, M., Wu, J., Jeon, B. N., & Wang, R. (2017). Monetary Policy and Bank Risk-taking: Evidence from Emerging Economies. *Emerging Markets Review*, 31, 116–140.

Chiorazzo, V., Milani, C., & Salvini, F. (2008). Income diversification and bank performance: Evidence from Italian Banks. *Journal of Financial Services Research*, 33, 181–203.

Dang, V. D., & Dang, V. C. (2020). The Conditioning Role of Performance on the Bank Risk-taking Channel of Monetary Policy: Evidence from a Multiple-tool Regime. *Research in International Business and Finance*, 54.

Dang, V. D., & Huynh, J. (2022a). Bank Funding, Market Power, and the Bank Liquidity Creation Channel of Monetary Policy. *Research in International Business and Finance*, 59.

Dang, V. D., & Huynh, J. (2022b). Monetary Policy and Bank Performance: The Role of Business Models. *The North American Journal of Economics and Finance*, 59.

Dang, V. D., & Nguyen, K. Q. B. (2021). Monetary Policy, Bank Leverage and Liquidity. *International Journal of Managerial Finance*, *17*, 619–639.

Delis, M. D., & Kouretas, G. P. (2011). Interest Rates and Bank Risk-taking. *Journal of Banking and Finance*, 35, 840–855.

Ding, Q., & He, W. (2023). Digital transformation, Monetary Policy and Risk-taking of Banks. *Finance Research Letters*, 55, 103986.

Dong, Y., & Wang, C. (2021). The Effect of Stimulus Policy on Lending Behavior and Bank Risk: Evidence from the Chinese Banking Sector. *Emerging Markets Review*, 49, 100761.

Drakos, A. A., Kouretas, G. P., & Tsoumas, C. (2016). Ownership, Interest Rates and Bank Risk-taking in Central and Eastern European Countries. *International Review of Financial Analysis*, 45, 308–319.

ElBannan, M. A. (2015). Do Consolidation and Foreign Ownership Affect Bank Risk Taking in an Emerging Economy? An Empirical Investigation. *Managerial Finance*, 41, 874–907.

English, W. B., Van den Heuvel, S. J., & Zakrajšek, E. (2018). Interest Rate Risk and Bank Equity Valuations. *Journal of Monetary Economics*, 98, 80–97.

Fu, X. M., Lin, Y. R., & Molyneux, P. (2014). Bank Competition and Financial Stability in Asia Pacific. *Journal of Banking and Finance*, 38, 64–77.

Goetz, M. R. (2018). Competition and Bank Stability. *Journal of Financial Intermediation*, 35, 57–69.

Hancock, D. (1985). Bank Profitability, Interest Rates, and Monetary Policy. *Journal of Money, Credit and Banking*, 17, 189–202.

Heider, F., Saidi, F., & Schepens, G. (2019). Life Below Zero: Bank Lending Under Negative Policy Rates. *Review of Financial Studies*, 32, 3727–3761.

Hirata, W., & Ojima, M. (2020). Competition and Bank Systemic Risk: New Evidence from Japan's Regional Banking. *Pacific Basin Finance Journal*, 60.

Hoechle, D. (2007). Robust Standard Errors for Panel Regressions with Cross-sectional Dependence. *Stata Journal*, 7, 281–312.

Hussain, M., & Bashir, U. (2020). Risk-competition Nexus: Evidence from Chinese Banking Industry. *Asia Pacific Management Review*, 25, 23–37.

Huynh, J., & Dang, V. D. (2022). Exploring the Asymmetric Effects of Loan Portfolio Diversification on Bank Profitability. *The Journal of Economic Asymmetries*, 26.

Jayaratne, J., & Morgan, D. P. (2000). Capital Market Frictions and Deposit Constraints at Banks. *Journal of Money, Credit and Banking*, 32, 74–92.

Jiménez, G., Lopez, J. A., & Saurina, J. (2013). How does Competition Affect Bank Risk-taking? *Journal of Financial Stability*, 9, 185–195.

Jiménez, G., Ongena, S., Peydró, J., & Saurina, J. (2014). Hazardous Times for Monetary Policy: What do Twenty-three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk-taking? *Econometrica*, 82, 463–505.

Koetter, M., Kolari, J. W., & Spierdijk, L. (2012). Enjoying the Quiet Life Under Deregulation? Evidence from Adjusted Lerner Indices for U.S. Banks. *Review of Economics and Statistics*, 94, 462–480.

Mateev, M., Moudud-Ul-Huq, S., Sahyouni, A., & Tariq, M. U. (2022). Capital Regulation, Competition and Risk-taking: Policy Implications for Banking Sector Stability in the MENA Region. *Research in International Business and Finance*, 60.

Matthys, T., Meuleman, E., & Vander Vennet, R. (2020). Unconventional Monetary Policy and Bank Risk Taking. *Journal of International Money and Finance*, 109.

Maudos, J., & de Guevara, J. F. (2007). The Cost of Market Power in Banking: Social Welfare Loss vs. Cost Inefficiency. *Journal of Banking & Finance*, 31, 2103–2125.

Mishra, A., & Burns, K. (2017). The Effect of Liquidity Shocks on the Bank Lending Channel: Evidence from India. *International Review of Economics and Finance*, 52, 55–76.

Ngambou Djatche, M. J. (2019). Re-exploring the Nexus between Monetary Policy and Banks' Risk-taking. *Economic Modelling*, 82, 294–307.

Nguyen, T. P., & Dinh, T. T. H. (2022). The Role of Bank Capital on the Bank Lending Channel of Monetary Policy Transmission: An Application of Marginal Analysis Approach. *Cogent Economics & Finance*, 10.

Olivero, M. P., Li, Y., & Jeon, B. N. (2011). Consolidation in Banking and the Lending Channel of Monetary Transmission: Evidence from Asia and Latin America. *Journal of International Money and Finance*, 30, 1034–1054.

Rajan, R. G. (2006). Has Finance Made the World Riskier? *European Financial Management*, 12, 499–533.

Repullo, R. (2004). Capital Requirements, Market Power, and Risk-taking in Banking. *Journal of Financial Intermediation*, 13, 156–182.

Roy, A. D. (1952). Safety First and the Folding of Assets. *Econometrica*, 20, 431–449.

Samuelson, P. A. (1945). The Effect of Interest Rate Increases on the Banking System. *American Economic Review*, 35, 16–27.

Shareef, A. O., & Prabheesh, K. P. (2022). Does International Monetary Policy Influence the Bank Risk? Evidence from India. *Buletin Ekonomi Moneter dan Perbankan*, 25, 135–154.

Varlik, S., & Berument, M. H. (2017). Multiple Policy Interest Rates and Economic Performance in a Multiple Monetary-policy-tool Environment. *International Review of Economics and Finance*, 52, 107–126.

Yang, J., & Shao, H. (2016). Impact of Bank Competition on the Bank Lending Channel of Monetary Transmission: Evidence from China. *International Review of Economics and Finance*, 43, 468–481.

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