

THE IMPACT OF SHADOW BANKING ON NONFINANCIAL FIRMS LISTED ON THE HO CHI MINH STOCK EXCHANGE (HOSE): EVIDENCE FROM VIETNAM

Thy Le-Bao

Faculty of Finance and Banking, Ton Duc Thang University, Ho Chi Minh City, Viet Nam

Ngan Nguyen Thi Kim

Faculty of Finance and Banking, Ton Duc Thang University, Ho Chi Minh City, Viet Nam

Thi Hoang Dieu

Faculty of Finance and Banking, Ton Duc Thang University, Ho Chi Minh City, Viet Nam

ABSTRACT

This paper examines the effect of shadow banking activities on the performance and risk-taking of 339 Vietnamese nonfinancial firms listed on the Ho Chi Minh Stock Exchange (HOSE). Using manually gathered data on firms' shadow banking activities from 2009 to 2021, the expansion of shadow banking is found to have a negative effect on the overall financial soundness of the securities companies, in particular negatively affecting performance and increasing the risk tolerance of companies. We present empirical findings about several aspects of shadow banking activities, including entrusted loans, entrusted investments, private lending, leasing, and commercial credit in this study. While the majority of shadow banking operations could have a negative impact on a firm's performance, we have discovered that commercial credit grants were crucial in reducing the COVID-19 pandemic's adverse effects on businesses, highlighting the need for financial stability in times of crisis. According to our results, the risk of shadow banking activities, which have consequences for policymakers and caution for nonfinancial enterprises, must be taken into consideration.

Keywords: shadow banking activities; entrusted loan; private lending; commercial credit; firm risk-taking

DOI: <https://doi.org/10.15549/jeecar.v11i1.1407>

INTRODUCTION

The term "shadow banking system" was first introduced by economist Paul McCulley in a speech delivered at the Kansas City Federal Reserve Bank's annual financial symposium in Jackson Hole, Wyoming in 2007. McCulley stated

in his lecture that money market funds, a significant part of financial intermediation that operates outside the balance sheets of regulated commercial banks and other depository institutions, were the first sign of the shadow banking system in the 1970s. Since its inception,

the concept of shadow banking has been extensively researched by academics and international financial organizations, leading to the development of a plethora of definitions and interpretations, some of which are contradictory. Early studies analyzing shadow banking include works by Adrian & Shin (2009); Pozsar et al. (2010); and Tucker (2010), which were conducted shortly after McCulley's speech. The Financial Stability Board (FSB), an international organization responsible for monitoring and making recommendations regarding the global financial system, has adopted a more comprehensive definition of shadow banks that encompasses all entities outside the regulated banking system that engage in the core banking function of intermediating funds (that is, collecting funds from savers and lending it to borrowers).

Since the 2008 global financial crisis, banks' risk management practices have become more stringent. The bond-rating agency DBRS reported that global shadow banks' assets increased to \$52 trillion in 2017, a 75% increase from 2010, according to data from the Financial Stability Board (FSB). According to (Medina & Schneider, 2018), the size of shadow banks has also grown in Vietnam, the average value over the period 1991 – 2015 was approximately 18.70 percent of GDP, min and maximum values were 14.78 and 21.75 percent of GDP, respectively.

The growth of shadow banking poses serious threats to socioeconomic stability and makes it more challenging for the government to efficiently regulate the flow of money and credit. Controlling economies becomes much harder in nations like China and India, where shadow banks keep enormous amounts of money outside of the official system. India's inflation rate remains higher than 8% despite numerous interest rate increases. Deposit interest rates of 3% in China are below inflation, and 97% of small firms cannot get bank loans, which is one of the reasons that shadow banking is becoming more and more popular. The danger of social instability is further increased by shadow banks as well. Regulators in the US and Europe have issued warnings about the dangers presented by the banking practices of loosely regulated financial institutions that lack deposit insurance.

Why don't governments simply banish shadow banks?

Shadow banking has grown in popularity in

many developing countries, particularly among small and medium-sized businesses (SMEs). These enterprises, which provide half of all jobs worldwide and contribute considerably to GDP, have numerous challenges in accessing funds from traditional banks. These challenges originate from a lack of cash, insufficient financial capability, and a lack of collateral, resulting in small, dispersed loans and greater transaction costs. As a result, SMEs are frequently unable to establish long-term connections with traditional banks, limiting their capacity to build long-term business strategies. Given these challenges, SMEs are increasingly looking for alternative sources of financing, including shadow banking. While shadow banking can provide much-needed access to credit and liquidity, it carries a higher risk due to a lack of regulation and oversight. Nevertheless, for many SMEs in developing countries, shadow banking may offer the only viable solution to the difficulties they face in obtaining capital from traditional banks.

In recent years, shadow banking activities have been one of the topics of interest to researchers. Many researchers have found a relationship between shadow banking and the fragility and instability of the financial system (Adrian, 2014; Luck & Schempp, 2014; Bengtsson, 2013; Pozsar et al., 2010). Others tried to develop models to measure the size of and monitor shadow banking activities at the macroeconomic level. Most existing research on shadow banking focuses on the off-balance sheet activities of commercial banks rather than looking into the shadow banking activities of nonfinancial companies (Adrian & Shin, 2009; Nelson et al., 2018; Tang & Wang, 2016; Zhang et al., 2023). As a result of the financial sector's monopoly position and pursuit of excessive profits, businesses eventually engage in shadow banking through a variety of financing avenues, including excessive financing, entrusted agents, entrusted loans, private lending, leasing, and commercial credit. Firm managers may be compelled to hide unfavorable information and potential dangers to their operations in the face of tighter government control. Moreover, after the COVID-19 epidemic, firms encountered a multitude of challenges, including financial hardships. In an effort to boost economic recovery, some firms have opted for financial support from shadow banking, often disregarding the associated risks (Serletis & Xu, 2019; Xiao, 2020). More and more nonfinancial

companies in Vietnam are opting to switch from conventional funding sources, such as banks and other financial institutions, to shadow banking sources, which pose a greater risk.

Our paper is one of the few studies that have examined the effect of shadow banking activity on the corporate performance and risk-taking of nonfinancial firms that conduct shadow banking activities. Moreover, by examining varied channels of shadow banking activities, we have made an in-depth analysis of the difference in the impact of each channel on the performance and risk-taking of nonfinancial firms. Based on these new findings, we provide recommendations for the financial managers of enterprises on how to mitigate the risks associated with shadow banking. Decision-makers who are considering the use of shadow banking will find our study to be a helpful source of information.

The remainder of the paper is structured as follows. Section 2 presents the Literature review and hypothesis development. Section 3 outlines the data and research methodology. The empirical results and discussions are analyzed in Section 4. Finally, Section 5 provides a summary of the main conclusions.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

What is shadow banking?

Shadow banking refers to a system of non-bank financial intermediaries that provide services similar to traditional banks, such as lending and borrowing, but operate outside the regulatory framework that applies to banks. Shadow banking is a complex and evolving concept that has garnered significant attention in recent years due to its potential contribution to systemic risk. Defining shadow banking accurately and comprehensively is a challenging task due to the diversity of financial instruments, institutions, and the activities it encompasses. Given that shadow banking's significance lies in its impact on systemic risk, any definition of shadow banking must capture this aspect.

There are currently three primary approaches to defining shadow banking: activity-based, entity-based, and instrument-based.

Activity-based definitions focus on the characteristics of the activities involved in shadow banking, such as maturity, liquidity, and

credit transformation, so long as they are geared towards performing credit intermediation - taking savings from lenders and channeling them towards borrowers. These definitions may or may not exclude credit intermediation performed by traditional banks, as the latter may engage in regulatory arbitrage.

Entity-based definitions, on the other hand, typically exclude traditional banks and instead focus on non-bank entities that engage in credit intermediation, such as Money Market Mutual Funds (MMMFs).

Finally, **instrument-based definitions** define shadow banking as the instruments used to carry out credit intermediation, such as a repurchase agreement (repo), which is functionally a contract to borrow on financial collateral.

In conclusion, defining shadow banking requires a complex and diversified approach to shadow banking activities, entities, and instruments. The definition must be targeted toward reflecting the systemic risk implications of shadow banking, which is why it is important.

A comparison of Traditional Banking and Shadow Banking

Traditional banks and shadow banks are two different types of financial institutions that operate in the financial system. While traditional banks are subject to strict regulations and oversight, shadow banks operate outside the regulatory framework. This results in many differences between the two types of institutions, including their funding sources, investment activities, and level of risk.

One of the main differences between traditional banks and shadow banks is regulation. Traditional banks are subject to a range of regulations and oversight from government agencies, which aim to ensure stability and protect depositors' funds. This includes regulations such as capital adequacy ratios, which dictate the amount of capital a bank must hold given its level of assets. Shadow banks, on the other hand, are not subject to the same level of regulation and oversight, which means they can operate more flexibly.

Another difference between traditional banks and shadow banks is their funding sources. Traditional banks primarily fund their operations through depositor funds which are insured by government-sponsored deposit insurance

schemes. This means that depositors' funds are guaranteed in case of a bank failure. Shadow banks, however, rely on short-term borrowing and lending, such as repo transactions, to fund their operations. This means that depositors' funds are at greater risk in the event of a shadow bank failure, as shadow banks are not typically insured.

In terms of investment activities, traditional banks are typically more conservative than shadow banks. This is due to the regulations that limit the types of investments that traditional banks can make. Shadow banks, on the other hand, can invest in a wider range of financial instruments, including complex and risky securities. While this can result in higher returns for shadow bank investors, it also increases the level of risk.

Another difference between traditional banks and shadow banks is risk management. Traditional banks are required to implement risk management practices to ensure stability, but shadow banks may not have the same level of risk management in place. This means that shadow banks are at a greater risk of failure, which can have a negative impact on the broader financial system.

In terms of financial stability, traditional banks are generally considered to be safer and more stable than shadow banks. This is due to the greater regulation and oversight that traditional banks are subject to. However, shadow banks can provide higher returns on investment, which makes them appealing to investors looking for higher returns.

While traditional banks are considered to be safer and more stable, shadow banks offer higher returns on investment. However, the growth of shadow banking has raised concerns about the potential for systemic risk and financial instability, which highlights the importance of careful monitoring and regulation of these institutions.

IMPACT OF SHADOW BANKING ACTIVITIES ON CORPORATE PERFORMANCE

One of the main advantages of shadow banks is that they provide an alternative funding source for firms. This can be especially important for those enterprises which may have difficulty accessing traditional bank loans. Shadow banks often have more flexible lending criteria and can

provide loans quicker than traditional banks in the short term but it also creates higher financial pressure (Tao et al., 2022). This can enable firms to expand their operations and improve their performance, but it can also lead to bankruptcy if they cannot pay their debts. Shadow banking can also provide access to more diverse funding sources, including asset-backed securities and other financial instruments. This can help companies diversify their funding sources and reduce reliance on traditional bank loans (Begley & Srinivasan, 2023; Wang et al., 2022). Han et al. (2019) suggested that companies involved in shadow banking activities experience enhancements in their operational performance and financial income while simultaneously witnessing a decline in operating income. Zhou & Tewari (2019) also provided evidence of the positive impact of shadow banking on the performance of nonfinancial firms in South Africa. Their findings showed that nonfinancial companies in South Africa heavily rely on borrowing directly from non-bank financial institutions.

On the other hand, some studies have suggested that shadow banks may have a negative impact on corporate performance. One of the main risks associated with shadow banks is that they may be more prone to systemic risk and financial instability. This can create uncertainty and volatility in financial markets, which can have a negative impact on corporate performance (Bai et al., 2020; Hsu & Moroz, 2010; Si & Li, 2022). Shadow banks may also be less transparent than traditional banks, making it more difficult for corporations to assess the risks associated with their lending practices. This lack of transparency can create a higher risk of default, negatively impacting corporate performance (Chen et al., 2017). Si & Li (2022) found that firms that rely heavily on shadow banking in China are more likely to face financial distress and experience a decline in profitability. These findings suggest that the use of shadow banking may lead to a reduction in the business performance of nonfinancial companies. This hypothesis is supported by previous research on the topic, which has found that the use of shadow banking can lead to increased risk-taking and decreased transparency, which in turn may reduce the efficiency of a company's core business operations. Overall, the impact of shadow banks on corporate performance is complex and multifaceted and depends on a

range of factors, such as the specific type of shadow banking activity, the regulatory environment, and the broader economic context.

The outbreak of the COVID-19 pandemic in 2020 brought unprecedented challenges to businesses worldwide, and Vietnamese companies across various sectors faced a multitude of negative impacts on their performance as they grappled with the far-reaching consequences of the global crisis. Most studies of the burgeoning literature on COVID-19 focus on the effect of the pandemic outbreak on financial markets, including stock market volatility (Baek et al., 2020; Phan & Narayan, 2020), liquidity (De Vito & Gómez, 2020), riskiness (Ashraf et al., 2022; Rizwan et al., 2022). Many empirical results found that there was a considerable negative impact on performance, principally due to a fall in total revenue and a consequent decline in the firm's performance (He et al., 2020; Hu & Zhang, 2021; Phan & Narayan, 2020; Shen et al., 2020). Prior studies show that the pandemic has led to the closure of many businesses and reduced revenue and financial fragility for those that have managed to stay open. Several companies also resorted to shadow banking to cope with severe financial limitations. During the Covid period, enterprises faced financial constraints such as a shortage of liquidity and excessive funding expenses. If firms went to the shadow banking sector, the cost of capital increased, making the firm's performance even worse.

H_{1a}: The expansion of shadow banking activities worsens the firm's performance.

H_{1b}: The COVID-19 pandemic worsens the performance of firms that expanded the use of shadow banking activities.

SHADOW BANKING ACTIVITIES AFFECTING FIRM RISK-TAKING

Financial regulation distorts loan pricing and prevents enterprises and industries from allocating capital optimally (Berger et al., 2020). The majority of Vietnamese commercial banks favor lending to SOEs or their affiliated companies, whereas non-SOEs or small and medium-sized businesses have been subject to budget restrictions. According to the literature and empirical results, access to formal loans and other banking services has long been a serious problem for SMEs. In fact, the availability of formal funding is recognized as a major barrier

by approximately 50% of SMEs in developing countries (Dalberg, 2011). As a result, a large number of SMEs, notably those that are newer and smaller, turn to informal channels as a substitute, making this a source of popular funding for assisting SMEs (Safavian & Wimpey, 2007).

The theoretical foundation for this hypothesis is based on the concept of regulatory arbitrage, which argues that firms may want to participate in shadow banking operations to avoid regulatory limits on ordinary banking activity. Nonfinancial firms may take on greater risk as they seek better profits and engage in more speculative activities as a result of this. Several studies also have provided empirical evidence to support the negative impact of shadow banking on a firm's risk-taking (Bai et al., 2020; Si & Li, 2022).

The negative effects of financing restrictions force nonfinancial corporations to pay a larger risk premium to obtain operating cash, which encourages them to participate in moral hazard and high-risk financial investment activities. These companies have increased their involvement in high-risk shadow banking operations to cover rising capital expenditures. In other words, these companies tend to invest in financial assets with relatively high risk and return rather than investing in fixed assets. Using samples of French SMEs, Psillaki & Eleftheriou (2015) investigated the impact of the global financial crisis on the allocation of credit. Their findings showed that, for SMEs experiencing financial restrictions, trade credit frequently complements rather than substitutes bank loans. An increase in commercial financing might have negative effects on enterprises' balance sheets and investment opportunities, which could push corporations to take more risks.

The COVID-19 pandemic may increase the allure of shadow banking as a popular alternative financing source. The uncertainty and financial challenges might encourage firms to seek greater risks, viewing shadow banking as an opportunity to seize potential gains or ease liquidity constraints. Relying on less-regulated financial institutions, however, may introduce vulnerabilities, especially during times of crisis like the COVID-19 pandemic, which had far-reaching adverse effects on the global economy. Some have argued that the pandemic-induced market volatility and economic downturn may

have pushed firms to adopt a cautious approach, limiting their risk exposures and becoming more risk-averse (Minh, 2022). We believe in the existence of a relationship between shadow banking during the pandemic and firm risk-taking.

H2a: The expansion of shadow banking increases the risk-taking of nonfinancial companies.

H2b: The COVID-19 pandemic increases/decreases the risk-taking of firms expanding shadow banking activities.

DATA AND METHODOLOGY

Data

In this study, we employed unbalanced panel data that includes information from 339 nonfinancial companies in Vietnam. Our data covers the period from 2009 to 2021 and is sourced from the Ho Chi Minh Stock Exchange (HOSE). To gather financial data, we collected from a variety of sources including financial reports, annual reports, and financial websites. Shadow banking activities of Vietnamese nonfinancial firms include four main categories: entrusted loan, entrusted investment, private lending, and leasing. According to H. Chen et al.

(2019), shadow banking activities are computed by a natural logarithm of 1 plus the variables representing entrusted loans, entrusted investments, private lending, and leasing, which are manually collected on the interpretation of the financial statements. Additionally, we derived the commercial credit variable based on accounts payable data as the alternative measurement. Data collection involved sorting the firm list through several steps. First, we excluded financial and insurance firms from the analysis. Second, we removed firms listed for less than 3 years or that have been delisted. Last, we eliminated firms with missing values in any of the main variables to ensure the stability and reliability of the results. Especially, data involving shadow banking activities such as entrusted loans, entrusted investments, commercial credit, and private lending was collected manually from financial statements.

Methodology

To evaluate the impact of shadow banking activities on a firm's risk-taking and performance, we employed the shadow bank's magnitude as an independent variable, the firm's performance, and the level of risk-taking as dependent variables, correspondingly.

To test hypothesis H_{1a}, we used the following model, noted as Equation 1a:

$$Performance_{it} = \beta_0 + \beta_1 Shadow_{it} + \beta_2 Control_{it} + \varepsilon_{it}$$

To test hypothesis H_{1b}, we used the following model, noted as Equation 1b:

$$Performance_{it} = \beta_0 + \beta_1 Shadow_{it} + \beta_2 Covid_t + \beta_3 Covid_t * Shadow_{it} + \beta_4 Control_{it} + \varepsilon_{it}$$

Where: i represents each firm and t represents the year; Performance_{it} indicates firm performance proxied by return on assets (ROA), and return on equity (ROE), while Shadow_{it}

represents the size of shadow banking. Control_{it} represents a group of control variables: leverage, firm age, return on assets, fixed assets, operating cash flows, sales growth, and Covid.

To test hypothesis H_{2a}, we used the following model, noted as Equation 2a:

$$Risk-taking_{it} = \alpha_0 + \alpha_1 Shadow_{it} + \alpha_2 Control_{it} + \varepsilon_{it}$$

To test hypothesis H_{2b}, we used the following model, noted as Equation 2b:

$$Risk-taking_{it} = \beta_0 + \beta_1 Shadow_{it} + \beta_2 Covid_t + \beta_3 Covid_t * Shadow_{it} + \beta_4 Control_{it} + \varepsilon_{it}$$

Where: i represents each firm and t represents year; Risk-taking denotes the firm's risk-taking,

which is measured by the standard deviation of return on assets (σ ROA) and the standard

deviation of return on equity (σROE), while $Shadow_{it}$ portrays the size of shadow banking. $Control_{it}$ represents a series of control variables documented as determinants of a firm's performance (financial leverage, firm age, return on assets, fixed assets, operating cash flows, sales growth, Covid).

First, we applied the traditional regression methods: the pooled ordinary least square (POLS) regression model, the fixed effects model (FEM), and the random effects model (REM) for

the panel data model. A Hausman test was performed to find an appropriate model between FEM and REM. Next, to assess the reliability of the model, tests of autocorrelation and heteroskedasticity were performed. In case the selected model passes the tests, it was included in the analysis of the final results. Conversely, generalized least squares (GLS) models were used to adjust the model when it exhibits autocorrelation or heteroskedasticity.

Table 1. Variable Construction

Variable name	Notation	Measured by
<i>Dependent variable</i>		
Firm risk-taking		
The standard deviation of return on asset	σROA	The standard deviation of return on asset
The standard deviation of return on equity	σROE	The standard deviation of return on equity
Firm performance		
Return on assets	ROA	The ratio of net income to total assets
Return on equity	ROE	The ratio of net income to total equity
<i>Independent variable</i>		
Shadow banking activities		
The size of entrusted loans, entrusted investments, leasing, and private lending	Shadow	The natural logarithm of 1 plus entrusted loans, entrusted investments, leasing, and private lending.
The size of commercial credit	Credit	The natural logarithm of 1 plus commercial credit.
<i>Control variables</i>		
Degree of financial leverage	Leverage	The ratio of total liabilities to total assets
Firm age	Age	Current year – established year
Fixed assets	Tang	The ratio of fixed assets to total assets
Operating cash Flows	OCF	The net cash flows from operating activities are scaled by total assets.
Sales growth rate	Salegrowth	The growth rate of net sales
Covid-19 pandemic	Covid	Covid is a dummy variable of the outbreak point. It takes the value of 1 of the calendar years that fall after 2019.

Notes: This table introduces all the variables used in the above model and their definition descriptions.

Table 2: Descriptive Statistics

Variable	Mean	Std. dev.	Min	Max
ROA	0.017	0.013	0.001	0.095
ROE	0.035	0.030	0.004	0.191
SDROA	0.024	0.025	0.0001	0.159
SDROE	0.044	0.046	0.0001	0.348
Shadow	24.042	2.212	16.118	30.001
Credit	24.967	1.931	18.336	30.124
Leverage	0.430	0.214	0.003	0.937
Age	24.581	13.607	2	69
Tang	0.196	0.205	0.0003	0.920
OCF	0.247	0.664	0.0002	6.530
Sales growth	0.254	1.014	-0.925	8.891
Covid	0.189	0.391	0	1

Notes: This table reports the result of the descriptive statistics; all variables are provided in Table 1. Source: Authors' calculation.

Table 3. Correlation Matrix

No.	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	ROA	1											
2	ROE	0.093	1										
3	SDROA	-0.015	-0.442	1									
4	SDROE	0.295	0.037	0.019	1								
5	Shadow	-0.108	-0.027	0.071	0.034	1							
6	Credit	-0.099	-0.034	0.077	-0.155	0.171	1						
7	Leverage	-0.237	-0.033	0.092	-0.209	0.245	0.270	1					
8	Age	0.052	0.006	-0.002	-0.024	0.002	0.037	0.029	1				
9	Tang	0.017	-0.004	0.001	-0.058	-0.068	-0.068	-0.014	0.024	1			
10	OCF	0.013	0.001	0.004	0.011	0.035	0.026	0.019	-0.005	0.002	1		
11	Sale growth	0.004	0.005	-0.006	0.019	0.024	0.004	-0.001	-0.072	-0.046	0.019	1	
12	Covid	0.025	-0.036	0.016	-0.026	0.008	0.068	-0.049	0.104	0.008	-0.009	0.016	1

Notes: Table 3 presents the summary statistics for both the dependent and independent variables, including the mean, standard deviation, minimum, and maximum values, as well as a correlation matrix. The results suggest that there is little evidence of multicollinearity among the independent variables, as most of the cross correlation terms are relatively small less than 70%. Source: Authors' calculation.

EMPIRICAL RESULTS

Based on the econometric tradition and panel data provided, we conducted the first step to compare and choose the most appropriate models among POLS, FEM, or REM. Both the F-test and the Hausman test were used to evaluate and choose the best model from the three regression techniques mentioned above. Following the F-test results, $\text{Prob} > F = 0.000 < \alpha = 1\%$, indicating that H_0 was rejected. Because fixed effects persisted in each firm throughout the period covered, it was determined that using the data acquired, the approach of running the FEM

model was suitable and that using POLS was inappropriate. FEM and REM were considered after choosing the FEM model over the POLS model. Based on the results of the Hausman test presented in Tables 4 and 5, $\text{Prob} > \chi^2 = 0.000$, and $P\text{-value} = 0.000 < \alpha = 1\%$, and therefore, we rejected assumption H_0 , proving FEM to be more appropriate than REM. Through testing methods of running models, FEM was the model that was chosen after evaluating various model-running techniques. We then moved forward to address the model flaws that the GLS technique had shown after doing regression and testing and

choosing the right FEM model. The outcomes that overcame the shortcomings of the model are shown in Tables 4 and 5.

Regression models were first tested for the presence of autocorrelation using the Wooldridge test technique. H_0 : the autocorrelation phenomenon, was negative; H_1 : the autocorrelation phenomenon, was positive. The test results indicated $P_value = 0.0000 < \alpha = 1\%$, the assumption H_0 would be rejected, concluding that the autocorrelation phenomenon exists.

Next, we used the Breusch and Pagan test to test the existence of variance change in the model, with the assumption H_0 : variance change phenomenon was negative. Based on the results presented in Tables 4 and 5, the coefficient $P_value < \alpha = 0.05$, and therefore assumption H_0 was rejected, which implied that there is the presence of variance change in the model. Thus, after completing the regression and testing, choosing the appropriate model of FEM, and moving forward, we overcame the model flaws discovered by the GLS technique. The outcomes that addressed these model's issues are those shown in Tables 4 and 5.

As can be seen in Table 4, shadow proxies for shadow banking activities are negatively correlated to the firm's performance. Our findings imply that the expansion of shadow banking activities will worsen the firm's performance. Hypothesis H_{1a} is supported by previous research (Bai et al., 2020; Tao et al., 2022). The theoretical foundation for this hypothesis is based on the concept of regulatory arbitrage, which argues that firms may want to participate in shadow banking operations to avoid regulatory limits on ordinary banking activity. Nonfinancial companies must pay a greater risk premium to access this sourcing because of the negative effects of financing restrictions. The firm's performance will suffer from rising financial distress costs and a greater risk premium. In contrast, we found no evidence of the impact of commercial credit as the other proxy for shadow banking activities on the firm performance.

The COVID-19 global pandemic has garnered significant attention from scholars due to its profound impact on the overall economy as well as firm-level performance around the globe. Our findings highlighted the negative impact of COVID-19 on firms' performance as did prior

research (Bassett et al., 2021; Bauer & Weber, 2021; Didier et al., 2021; Shen et al., 2020), which found that the deteriorated economic conditions have posed controversial challenges to the revenues, liquidity, solvency, and continuous operations of small businesses, thus inspiring many authorities to apply various policy interventions with the primary goal of helping businesses survive during the global crisis.

As expected, Table 4 also shows the negative correlation observed between the interaction term Covid*Credit and firm performance to support hypothesis H_{1b} . This finding suggests that firms that rely heavily on shadow banking activities experienced poorer performance during the COVID-19 pandemic. The adverse interaction effect indicates that the simultaneous impact of the COVID-19 shock and commercial credit usage from shadow banking magnified the negative consequences on firm performance. Prolonged accounts payable on a company's balance sheet also raise concerns, signaling a potential decline in its cash reserves and financial difficulties, which could harm long-term business relationships.

Table 4 also shows the positive relationship between firm age and firm performance is statistically significant at the 1% level. Our findings are in line with the results reported by Pantea et al. (2014; Coad et al. (2013); and Gaur & Gupta (2011). The previous results reported that older firms perform better than new ones because of experience-based economies of scale and learning; they can stay away from the risks related to being a new player in the industry. Several factors influence the link between performance and age. Mature and emerging markets offer learning opportunities, allowing firms to identify their niches and gradually increase their efficiency. In developing sectors, consumer knowledge of new items rises as the company gets older, which benefits performance. Additionally, a company's reputation tends to get better with time, improving management returns and performance.

The coefficient of Sale growth is positive with the firm's performance at a 5% significant level, indicating that firms experiencing higher sales growth tend to achieve better return on assets (ROA) and return on equity (ROE). The studies of Asimakopoulos et al. (2009); Samiloglu & Demirgunes (2008); Fitzsimmons et al. (2005);

and Claver et al. (2002) also reported similar results. As sales volume increases, firms can spread their fixed costs over a larger production base, resulting in lower average costs per unit. This efficiency gain can lead to higher profitability and overall performance. Furthermore, sales growth provides firms with the opportunity to invest in research and development, expand their production capabilities, or enter new markets. These strategic initiatives can drive innovation, increase competitiveness, and ultimately enhance financial performance.

Moreover, we also found that leverage is negatively correlated with a firm's performance at 1%, and 5% respectively. This result is consistent with the findings of Endri et al. (2021); Nguyen & Nguyen (2020); and Le & Phan (2017). According to Le & Phan (2017), financial distress costs may outweigh the advantages of debt from tax saving. In addition, because of the extreme information asymmetry and the underdeveloped financial system, the monitoring role of debt is not very significant.

Table 4. The effect of shadow banking activities on a firm's performance

	(1)	(2)	(3)	(4)
	ROE_Shadow	ROA_Shadow	ROE_Credit	ROA_Credit
	Coefficient	Coefficient	Coefficient	Coefficient
	(.Std err)	(.Std err)	(.Std err)	(.Std err)
Shadow	-0.00008	-0.00009***		
	(0.00007)	(0.00002)		
Credit			0.00023	0.00015
			(0.00027)	(0.00010)
Covid	-0.00061	-0.00142	-0.08911***	-0.01962**
	(0.00186)	(0.00084)	(0.02420)	(0.00643)
Covid*Shadow	-0.00025	0.00007		
	(0.00015)	(0.00005)		
Covid*Credit			-0.00381***	-0.00078**
			(0.00097)	(0.00025)
Leverage	-0.00899**	-0.0286***	-0.00816*	-0.0294***
	(0.00331)	(0.00115)	(0.00325)	(0.00114)
Age	0.00019***	0.00009***	0.00021***	0.00009***
	(0.00004)	(0.00002)	(0.00005)	(0.00002)
Tang	-0.00308	0.00149	-0.00062	0.00167
	(0.00279)	(0.00111)	(0.00277)	(0.00109)
OCF	0.00011	0.00003	0.00011	0.00003
	(0.00006)	(0.00003)	(0.00007)	(0.00003)
Sales growth	0.00127*	0.00043*	0.00064	0.00047*
	(0.00061)	(0.00019)	(0.00053)	(0.00019)
Intercept	0.0379***	0.0313***	0.0292***	0.0266***
	(0.00202)	(0.00082)	(0.00670)	(0.00255)
Observations	3100	3100	3100	3100

Note: Columns (1) and (3) display the regression results of the effect of shadow banking activities (proxied by Shadow, Credit) on firm performance (proxied by ROA). Columns (2) and (4) display the regression results of the effect of shadow banking activities (proxied by Shadow, Credit) on firm performance (proxied by ROE). ***, ** and * indicate significance levels of 1%, 5% and 10%, respectively. Source: Authors' calculation.

Table 5 shows regression results and provides a relationship and effects between the explanatory variables (Shadow, Credit, Leverage, Age, Tangible assets, Operating Cash Flow, Sale growth, and Covid) and firm risk-taking.

Through the regression results of Table 5, we found that Shadow and Credit proxies for shadow banking activities have a contrasted correlation with the firm's risk-taking. Entrusted loans, entrusted investments, and private lending are the three primary channels of the business' shadow banking activity. Following Han et al. (2019) to calculate the size of the shadow banking industry, we added the natural logarithm of 1 to the entrusted loans, entrusted investments, and private lending (Shadow), as can be seen in Table 5, Columns 5 and 6. For robustness tests, we additionally utilized the size of commercial credit as a substitute measure of shadow banking operations by nonfinancial enterprises as can be seen in Table 5, - Columns 7 and 8.

While the Shadow coefficient has a positive correlation with firm risk-taking, credit shows a negative impact on it. Hypothesis H_{2a} is rejected with Credit proxy. Commercial credit is a form of credit extended to businesses that suppliers allow customers to purchase goods or services on credit and delay payment. Businesses need to maintain a healthy cash flow and manage their finances effectively. Numerous empirical findings suggested that a decrease in bank credit may lead businesses to turn more frequently to commercial credit as a source of alternative funding (Mateut et al., 2006; Yang, 2011). Increased commercial credit, which has the benefit of not charging interest on accounts payable (unless payment is late) and is usually based on goods or services obtained, could not, in our opinion, encourage firms to take on more risk. In contrast, compared to the other forms of shadow banking such as entrusted loans, entrusted investment, and private lending, firms not only faced the negative impact of financing limitations but also paid a higher cost of capital and financial distress cost to access this funding. This will engage firms to pursue moral hazard and high-risk financial investment activities. Hypothesis H_{2a} is accepted with Shadow proxy. Our findings are consistent with most of the studies in the literature (e.g., Bai et al., 2020; Si & Li, 2022).

A negative COVID coefficient suggests that the

COVID-19 pandemic period is significantly associated with less risk-taking behavior among companies. Amidst heightened uncertainty and the economic downturns associated with the pandemic, companies adopted a more cautious approach, prioritizing financial stability and self-sufficiency over-reliance on external funding. Consequently, firms turned towards internal financing or maintaining higher cash reserves. Our findings align with recent empirical evidence (Minh, 2022; Wen et al., 2021; He et al., 2020; Shen et al., 2020). These studies similarly found a negative association between the COVID-19 pandemic and corporate risk-taking, which also proposes that the heightened uncertainty in operating activities reduces the firm risk-taking behavior of companies.

The interaction between Covid*Credit is significantly negative, with firm-risk taking indicating that firms utilizing commercial credit to access funds from shadow banking exhibit decreased risk-taking behaviors compared to those heavily reliant on traditional borrowing. We reject hypothesis H_{2b}. By opting for commercial credit, these firms secured interest-free financing, alleviating the financial burden related to interest costs during uncertain times. During the COVID-19 period, businesses displayed a trend towards increased conservatism and caution in adopting risky funding sources, such as shadow banking channels, including private lending and leasing. This finding shows that utilizing commercial credit grants as financial resources will help the business to mitigate the adverse impact of the pandemic.

At a 1% significant level, it was discovered that the leverage variable had a negative impact on firm risk-taking as measured by SDROA, but a positive impact on firm risk-taking as measured by SDROE. The regression results consistently indicate that higher leverage is associated with decreased firm risk-taking. Firms with higher leverage ratios tend to adopt more cautious approaches, emphasizing financial stability and debt management to reduce their risk exposure. Higher leverage is accompanied by increases in the likelihood of financial distress including events such as violations of financial covenants, debt defaults, and bankruptcy. When a firm carries a substantial amount of debt, it faces greater financial obligations in the form of interest payments and principal repayments.

This financial burden can limit a firm's flexibility and willingness to take on additional risks, as it must prioritize debt servicing to avoid financial distress. This study is one of the few studies that have examined the relationship between leverage and firm risk-taking especially in the context of Vietnam; we only found (Minh, 2022) investigated this nexus but found no evidence. Our finding is in line with the results of Andries et al. (2020) and John et al. (2008), who also found a negative sign regarding this nexus and suggested more leveraged businesses are more likely to experience credit constraints from banks. As a result, they are trying to avoid high-risk projects to meet their obligations.

At the statistical significance level of 1%, Table 5 also presents negative relationships between Tang and Age variables and firm risk-taking. The results indicate that large firms tend to take risks less than young ones due to the advantage of financial ability, age, experience, market share, and economies of scale (Aldrich & Auster, 1986; Hannan & Freeman, 1984). An increase in tangible fixed assets can be a good indicator of a firm's financial health, but tangible assets are usually less liquid compared to current assets. When the company invests too much in fixed assets, it can increase the possibility of defaults due to insolvency problems.

Table 5. The effect of shadow banking activities on a firm's risk-taking.

	SDROE_Shadow	SDROA_Shadow	SDROE_Credit	SDROA_Credit
Shadow	0.00056***	0.00005***		
	(0.00006)	(0.00001)		
Credit			-0.00184***	-0.00045***
			(0.00033)	(0.00004)
Covid	0.00014	-0.00044*	-0.01420	-0.00523**
	(0.00148)	(0.00023)	(0.01930)	(0.00189)
Covid*Shadow	-0.00004	-0.00001		
	(0.00013)	(0.00001)		
Covid*Credit			0.00054	-0.00021**
			(0.00078)	(0.00007)
Leverage	0.06090***	-0.01171***	0.07700***	-0.00996***
	(0.00304)	(0.00035)	(0.00289)	(0.00034)
Age	0.00001	-0.00003***	0.00003	-0.00003***
	(0.00004)	(0.000001)	(0.00004)	(0.00001)
Tang	-0.00058	-0.00374***	0.00540*	-0.00363***
	(0.00289)	(0.00027)	(0.00269)	(0.00033)
OCF	-0.00002	0.00001	-0.00001	0.00001
	(0.00006)	(0.00001)	(0.00004)	(0.00001)
Sales growth	0.00036	0.00002	0.00012	0.00002
	(0.00047)	(0.00005)	(0.00044)	(0.00003)
Intercept	0.00220	0.02250***	-0.04331***	0.03361***
	(0.00174)	(0.00021)	(0.00789)	(0.00087)
Observations	3100	3100	3100	3100

Note: Columns (5) and (7) display the regression results of the effect of shadow banking activities (proxied by Shadow, Credit) on firm performance (proxied by SDROA). Columns (6) and (8) display the regression results of the effect of shadow banking activities (proxied by Shadow, Credit) on firm performance (proxied by SDROE). ***, ** and * indicate significance level of 1%, 5% and 10%, respectively. Source: Authors' calculation.

CONCLUSION AND RECOMMENDATION

Even while post-pandemic economic indicators point to a robust recovery, many companies are still being dissolved, and support policies for post-pandemic recovery expired in 2023. After benefiting from a two-year payment deferral due to COVID-19, many firms will have to face the burden of repaying loans to banks. Due to a lack of financial regulations and inadequate shadow banking oversight, nonfinancial firms are increasingly taking part in shadow banking operations or indirectly engaging in the shadow credit markets. The size of Vietnamese shadow banking has expanded significantly, and the stability of the financial system may be in danger. In particular, the threat is increasing in light of the global economic crisis and the recession in Vietnam's economy following the pandemic.

As a result of the financial sector's monopoly position and pursuit of excessive profits, businesses eventually engage in shadow banking through a variety of financing avenues, including excessive financing, entrusted agents, entrusted loans, private lending, leasing, and commercial credit. Firm managers may be compelled to hide unfavorable information and potential dangers to their operations in the face of tighter government control. Moreover, after the COVID-19 epidemic, firms encountered a multitude of challenges, including financial hardships. In an effort to boost economic recovery, some firms have opted for financial support from shadow banking, often disregarding the associated risks (Serletis & Xu, 2019; Xiao, 2020). More and more nonfinancial companies in Vietnam are opting to switch from conventional funding sources, such as banks and other financial institutions, to shadow banking sources, which pose a greater risk.

In recent years, shadow banking has been one of the ongoing issues for researchers. Only a few studies in the literature discuss this topic, and they mainly focus on shadow banking activities at the macroeconomic level (Adrian, 2014; Luck & Schempp, 2014; Bengtsson, 2013; Pozsar et al., 2010). While the current literature has mostly concentrated on the off-balance sheet of financial institutions (Adrian & Shin, 2009; Nelson et al., 2018; Tang & Wang, 2016; Zhang et al., 2023), our study fills the gap in the shadow banking literature based on the view of nonfinancial firms, especially in the Vietnam context – a transition economy. To the best of our knowledge, our study is one of the first papers to

tackle this issue from the standpoint of nonfinancial enterprises and their funding strategies employing shadow banking operations. In addition to investigating conventional shadow banking practices such as entrusted agents, entrusted loans, private lending, and leasing, our research also takes into account the form of commercial credit. We have provided a comprehensive view and have analyzed the specific effects of different forms of shadow banking that were used in Vietnamese enterprises. Our research demonstrates that a firm's performance is negatively impacted by the growth of the shadow banking industry. In addition, the impact of firms' shadow banking on their risk-taking is confirmed.

Our findings have several important implications. First and foremost, governments must keep enhancing capital allocation effectiveness to encourage nonfinancial companies to concentrate on their core competencies rather than financial investments, even at the cost of taking on greater risks and uncertainties from shadow banking operations. Greater efforts should be made to preserve stable financial market development and improve the efficiency of macroeconomic policies to achieve this goal. Second, the effectiveness of financial institutions would reduce resource mismatches and financial obstacles, which is useful to stop these businesses from receiving high-cost funding through shadow banking. Third, to reduce the danger that may be brought on by shadow banking operations, financial authorities should strengthen supervision. Fourth, this study is one of the few studies that have provided findings about the relationship between leverage and firm risk-taking.

Finally, among different shadow banking channels, our results state that commercial credit is the only source that reduces firm risk-taking compared to other activities such as entrusted loans, entrusted investments, leasing, and private lending. This new finding also provides organizations with the helpful recommendation that they should strengthen their internal control to lessen managers' short-sighted engagement in shadow banking. During the COVID-19 period, businesses displayed increased conservatism and caution in adopting risky funding sources, such as shadow banking channels, but utilizing commercial credit grants as financial resources appeared to help mitigate the adverse impact of

the pandemic. Proactive measures should be taken to address potential declines in cash reserves and financial difficulties that could harm long-term business relationships, reinforcing the importance of financial stability during crisis periods.

Many emerging countries like Vietnam have seen an increase in the use of shadow banking, especially among small and medium-sized firms (SMEs). More than 90% of all businesses in Vietnam are SMEs which face several obstacles when trying to obtain financing from conventional banks. These difficulties result in small, dispersed loans and higher transaction costs because of a shortage of cash, limited financial capacity, and a lack of collateral. However, for a large number of SMEs in developing nations, shadow banking may present the only workable solution to the challenges they encounter in acquiring money from conventional banks. We are unable to concentrate on these key issues that are vulnerable to being impacted by the expansion of shadow banking, as there is a lack of current information on SMEs. We recommend that future studies examine how shadow banking affects SMEs in light of the fact that even the most successful and creditworthy businesses are subject to financial constraints during difficult economic times.

REFERENCES

- Abu-Abbas, B. M., Alhmod, T., & Algazo, F. A. (2019). Financial leverage and firm performance evidence from Amman stock exchange. *The European Journal of Comparative Economics*, 16(2), 207–237.
- Adrian, T., & Shin, H. S. (2009). The shadow banking system: implications for financial regulation. FRB of New York Staff Report, 382. <https://doi.org/10.2139/ssrn.1441324>
- Aldrich, H., & Auster, E. R. (1986). Even dwarfs started small: Liabilities of age and size and their strategic implications. *Research in Organizational Behavior*. <https://doi.org/10.4337/9781035305759.00021>
- Andries, A. M., Balutel, D., Ihnatov, I., & Ursu, S. G. (2020). The nexus between corporate governance, risk-taking, and growth. *PloS One*, 15(2), e0228371. <https://doi.org/10.1371/journal.pone.0228371>
- Ashraf, D., Rizwan, M. S., & Ahmad, G. (2022). Islamic equity investments and the COVID-19 pandemic. *Pacific-Basin Finance Journal*, 73, 101765. <https://doi.org/10.1016/j.pacfin.2022.101765>
- Asimakopoulou, I., Samitas, A., & Papadogonas, T. (2009). Firm-specific and economy-wide determinants of firm profitability: Greek evidence using panel data. *Managerial Finance*, 35(11), 930–939. <https://doi.org/10.1108/03074350910993818>
- Baek, S., Mohanty, S. K., & Glamboosky, M. (2020). COVID-19 and stock market volatility: An industry-level analysis. *Finance Research Letters*, 37, 101748. <https://doi.org/10.1016/j.frl.2020.101748>
- Bai, J., Gong, X., & Zhao, X. (2020). Credit mismatch and nonfinancial firms' shadow banking activities—evidence based on entrusted loan activities. *China Journal of Accounting Studies*, 8(2), 249–271. <https://doi.org/10.1080/21697213.2020.1822027>
- Bassett, H. R., Lau, J., Giordano, C., Suri, S. K., Advani, S., & Sharan, S. (2021). Preliminary lessons from COVID-19 disruptions of small-scale fishery supply chains. *World Development*, 143, 105473. <https://doi.org/10.1016/j.worlddev.2021.105473>
- Bauer, A., & Weber, E. (2021). COVID-19: how much unemployment was caused by the shutdown in Germany? *Applied Economics Letters*, 28(12), 1053–1058. <https://doi.org/10.1080/13504851.2020.1789544>
- Begley, T. A., & Srinivasan, K. (2023). Risk in the Shadows: Leverage and Liquidity in Nonbanks. Available at SSRN 4388813. <https://doi.org/10.2139/ssrn.4388813>
- Bengtsson, E. (2013). Shadow banking and financial stability: European money market funds in the global financial crisis. *Journal of International Money and Finance*, 32, 579–594. <https://doi.org/10.1016/j.jimonfin.2012.05.027>
- Berger, A. N., Chen, R. R., El Ghouli, S., & Guedhami, O. (2020). Who wins and who loses from bank geographic deregulation? Analysis of financially constrained and

- unconstrained firms. *Journal of Corporate Finance*, 65, 101775.
<https://doi.org/10.1016/j.jcorpfin.2020.101775>
- Chen, H., Li, R., & Tillmann, P. (2019). Pushing on a string: State-owned enterprises and monetary policy transmission in China. *China Economic Review*, 54, 26–40.
<https://doi.org/10.1016/j.chieco.2018.10.005>
- Chen, S., Ratnovski, M. L., & Tsai, P.-H. (2017). Credit and fiscal multipliers in China. International Monetary Fund.
<https://doi.org/10.2139/ssrn.3345433>
- Claver, E., Molina, J., & Tarí, J. (2002). Firm and Industry Effects on Firm Profitability: a Spanish Empirical Analysis. *European Management Journal*, 20(3), 321–328.
[https://doi.org/10.1016/s0263-2373\(02\)00048-8](https://doi.org/10.1016/s0263-2373(02)00048-8)
- Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age? *Structural Change and Economic Dynamics*, 24, 173–189.
<https://doi.org/10.1016/j.strueco.2012.07.002>
- Dalberg, H. (2011). Report on support to SMEs in developing countries through financial intermediaries.
- De Vito, A., & Gómez, J.-P. (2020). Estimating the COVID-19 cash crunch: Global evidence and policy. *Journal of Accounting and Public Policy*, 39(2), 106741.
<https://doi.org/10.1016/j.jaccpubpol.2020.106741>
- Didier, T., Huneus, F., Larrain, M., & Schmukler, S. L. (2021). Financing firms in hibernation during the COVID-19 pandemic. *Journal of Financial Stability*, 53, 100837.
<https://doi.org/10.1016/j.jfs.2020.100837>
- Endri, E., Ridho, A. M., Marlapa, E., & Susanto, H. (2021). Capital structure and profitability: Evidence from mining companies in Indonesia. *Montenegrin Journal of Economics*, 17(4), 135–146.
<https://doi.org/10.14254/1800-5845/2021.17-4.12>
- Fitzsimmons, J., Steffens, P., & Douglas, E. (2005). Growth and profitability in small and medium-sized Australian firms. *Proceedings AGSE Entrepreneurship Exchange*, Melbourne.
<https://doi.org/10.2139/ssrn.1263734>
- Gaur, J., & Gupta, R. (2011). Comparing firm performance on the basis of age, size, leverage, and group affiliation in Indian IT industry. *Romanian Journal of Marketing*, 6(3).
- Geroski, P. A., Machin, S. J., & Walters, C. F. (1997). Corporate growth and profitability. *The Journal of Industrial Economics*, 45(2), 171–189.
<https://doi.org/10.1111/1467-6451.00042>
- Han, X., Hus, S., & Li, J. (2019). The impact of enterprises' shadow banking activities on business performance: a test based on mediator effect of investment scale and investment efficiency. *Emerging Markets Finance and Trade*, 55(14), 3258–3274.
<https://doi.org/10.1080/1540496x.2018.1525358>
- Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review*, 149–164.
<https://doi.org/10.2307/2095567>
- He, J.-L., Luo, L., Luo, Z.-D., Lyu, J.-X., Ng, M.-Y., Shen, X.-P., & Wen, Z. (2020). Diagnostic performance between CT and initial real-time RT-PCR for clinically suspected 2019 coronavirus disease (COVID-19) patients outside Wuhan, China. *Respiratory Medicine*, 168, 105980.
<https://doi.org/10.1016/j.rmed.2020.105980>
- Hsu, J., & Moroz, M. (2010). Shadow banks and the financial crisis of 2007–200. *Social Science Electronic Publishing*.
<https://doi.org/10.2139/ssrn.1772746>
- Hu, S., & Zhang, Y. (2021). COVID-19 pandemic and firm performance: Cross-country evidence. *International Review of Economics & Finance*, 74, 365–372.
<https://doi.org/10.1016/j.iref.2021.03.016>
- John, K., Litov, L., & Yeung, B. (2008). Corporate governance and risk-taking. *The Journal of Finance*, 63(4), 1679–1728.
<https://doi.org/10.1111/j.1540-6261.2008.01372.x>
- Le, T. P. V., & Phan, T. B. N. (2017). Capital structure and firm performance: Empirical evidence from a small transition country. *Research in International Business and Finance*, 42, 710–726.
<https://doi.org/10.1016/j.ribaf.2017.07.012>
- Luck, S., & Schempp, P. (2014). Banks, shadow banking, and fragility.
<https://doi.org/10.2139/ssrn.2479948>

- Mateut, S., Bougheas, S., & Mizen, P. (2006). Trade credit, bank lending and monetary policy transmission. *European Economic Review*, 50(3), 603–629. <https://doi.org/10.1016/j.euroecorev.2005.01.002>
- Medina, L., & Schneider, M. F. (2018). Shadow economies around the world: what did we learn over the last 20 years? *International Monetary Fund*.
- Minh, N. H. (2022). IMPACT OF THE COVID-19 PANDEMIC ON THE RISK-TAKING BEHAVIOR OF NONFINANCIAL FIRMS LISTED IN VIETNAM WITH CASH HOLDINGS AS A MODERATING VARIABLE. *Journal of Eastern European & Central Asian Research*, 9(3). <https://doi.org/10.15549/jeecar.v9i3.849>
- Nelson, B., Pinter, G., & Theodoridis, K. (2018). Do contractionary monetary policy shocks expand shadow banking? *Journal of Applied Econometrics*, 33(2), 198–211. <https://doi.org/10.1002/jae.2594>
- Nguyen, H. T., & Nguyen, A. H. (2020). The impact of capital structure on firm performance: Evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 7(4), 97–105. <https://doi.org/10.13106/jafeb.2020.vol7.no4.97>
- Pantea, M., Gligor, D., & Anis, C. (2014). Economic determinants of Romanian firms' financial performance. *Procedia-Social and Behavioral Sciences*, 124, 272–281. <https://doi.org/10.1016/j.sbspro.2014.02.486>
- Phan, D. H. B., & Narayan, P. K. (2020). Country responses and the reaction of the stock market to COVID-19—A preliminary exposition. *Emerging Markets Finance and Trade*, 56(10), 2138–2150. <https://doi.org/10.1080/1540496x.2020.1784719>
- Pozsar, Z., Adrian, T., Ashcraft, A., & Boesky, H. (2010). Shadow banking. *New York*, 458(458), 3–9. <https://doi.org/10.2139/ssrn.1645337>
- Psillaki, M., & Eleftheriou, K. (2015). Trade credit, bank credit, and flight to quality: evidence from French SMEs. *Journal of Small Business Management*, 53(4), 1219–1240. <https://doi.org/10.1111/jsbm.12106>
- Rizwan, M. S., Ahmad, G., & Ashraf, D. (2022). Systemic risk, Islamic banks, and the COVID-19 pandemic: An empirical investigation. *Emerging Markets Review*, 51, 100890. <https://doi.org/10.1016/j.ememar.2022.100890>
- Safavian, M., & Wimpey, J. (2007). When do enterprises prefer informal credit? *World Bank Policy Research Working Paper*, 4435. <https://doi.org/10.1596/1813-9450-4435>
- Samiloglu, F., & Demirgunes, K. (2008). The effect of working capital management on firm profitability: Evidence from Turkey. *The International Journal of Applied Economics and Finance*, 2(1), 44–50. <https://doi.org/10.3923/ijaef.2008.44.50>
- Serletis, A., & Xu, L. (2019). The demand for banking and shadow banking services. *The North American Journal of Economics and Finance*, 47, 132–146. <https://doi.org/10.1016/j.najef.2018.12.009>
- Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The impact of the COVID-19 pandemic on firm performance. *Emerging Markets Finance and Trade*, 56(10), 2213–2230. <https://doi.org/10.1080/1540496x.2020.1785863>
- Si, D.-K., & Li, X.-L. (2022). Shadow banking business and firm risk-taking: Evidence from China. *Research in International Business and Finance*, 62, 101729. <https://doi.org/10.1016/j.ribaf.2022.101729>
- Tang, J., & Wang, Y. (2016). Effects of Shadow Banking on Return; a Empirical Study Based on Chinese Commercial Banks. *International Journal of Financial Research*, 7(1), 207–218. <https://doi.org/10.5430/ijfr.v7n1p207>
- Tao, S., Lu, Z., Li, H., & Liu, X. (2022). The Impact of Shadow Banking on Small and Medium Enterprise in China—Based on Trust Company Statistics. *2022 7th International Conference on Financial Innovation and Economic Development (ICFIED 2022)*, 1108–1116. <https://doi.org/10.2991/aebmr.k.220307.183>
- Tucker, P. (2010). Shadow banking, financing markets and financial stability. Remarks by Mr Paul Tucker, Deputy Governor for Financial Stability at the Bank of England, at a Bernie Gerald Cantor (BGC) Partners Seminar, London, 21.
- Wang, X., Qiao, S., Shen, C., Wu, M., & Wang, J. (2022). Effect of Shadow Banking Activities on Firm Risk and Performance: Entrusted Loan Evidence from Chinese Listed Firms.

Asia-Pacific Journal of Financial Studies,
51(2), 256–290.

<https://doi.org/10.1111/ajfs.12367>

Xiao, K. (2020). Monetary transmission through shadow banks. *The Review of Financial Studies*, 33(6), 2379–2420.

<https://doi.org/10.2139/ssrn.3166114>

Yang, X. (2011). The role of trade credit in the recent subprime financial crisis. *Journal of Economics and Business*, 63(5), 517–529.

<https://doi.org/10.1016/j.jeconbus.2011.05.001>

Zhang, J., Bi, Z., Hu, M., & Meng, Q. (2023). Shadow banking and commercial bank: evidence from China. *Applied Economics*, 55(1), 72–89.

<https://doi.org/10.1080/00036846.2022.2055741>

Zhou, S., & Tewari, D. D. (2019). Shadow financial services and firm performance in South Africa. *Cogent Economics & Finance*.

<https://doi.org/10.1080/23322039.2019.1603654>

CORRESPONDING AUTHOR

Thy Le-Bao, email: lebaothy@tdtu.edu.vn

Thy Le-Bao teaches in the Faculty of Finance and Banking, at Ton Duc Thang University, Ho Chi Minh City, Vietnam.