

THE MODERATING EFFECT OF COMPETITION ON THE LEVERAGE-PERFORMANCE RELATION: EVIDENCE FROM VIETNAM

Nguyen Le Hoa Tuyet¹, Le Tan Nghiem², and Le Khuong Ninh^{2*}

¹*Faculty of Economics and Industrial Management, Can Tho University of Technology,
Vietnam*

²*School of Economics, Can Tho University, Vietnam*

*Corresponding author: lkninh@ctu.edu.vn

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ABSTRACT

This paper examines the moderating effect of competition on the relationship between financial leverage and firm performance in Vietnam. Using a dataset created out of 352 firms listed on Vietnam's stock exchanges in 2015–2019, this paper estimates both the leverage-performance relation and the dependence of this nexus on market competition. The two-step system generalised method of moments is used to tackle the endogeneity, unobserved heterogeneity, and autocorrelation problems in our model estimation. The findings reveal a negative leverage-performance nexus, and increased competition hurts this relationship. In highly competitive markets, debts become more expensive, thus leading to increased financial pressures on leveraged firms. The fiercer competition also creates a risky business environment, so leveraged firms may fail when operating inefficiently and failing to satisfy their debt obligations. Given the results, this paper proposes recommendations on using financial leverage to improve firm performance.

Keywords: competition, leverage, moderating effect, performance, Vietnam

INTRODUCTION

The leverage-firm performance relation appeals to researchers and policymakers since there is no acceptable conclusion. The capital structure irrelevancy theory of Modigliani and Miller (1958) notices the irrelevance of leverage to firm performance, but later studies point out a nexus between them. Some authors (e.g., Detthamrong et al., 2017; Margaritis & Psillaki, 2010; Simamora, 2021; Wassie, 2020) assert that financial leverage determines firm performance. The disciplining effect of debt reduces the amount of idle cash flow controlled by managers and impedes moral hazard, thus reducing agency costs. Leveraged firms can take advantage of the tax-deductibility of debt interest to minimise operating costs and maximise profits. Conversely, other authors find a negative leverage-performance relation (Dalwai & Salehi, 2021; Ibhagui & Olokoyo, 2018; Mahmood et al., 2019; Sethi et al., 2023; Towo et al., 2019; Vithessonthi & Tongurai, 2015). Extreme leverage may lead to suboptimal investment due to the fear of default. Customers may not trust the product quality of highly leveraged firms, resulting in a possible drop in their sales.

Extensions of the abovementioned theories (i.e., Chu & Pham, 2021; Fosu, 2013; Jermias, 2008; Valta, 2012) condition the performance effect of leverage on the competition intensity in the product market. According to the predation theory, the moderating effect of competition on the leverage-performance relation is positive (Chau et al., 2018; Fosu, 2013; Moradi et al., 2017). This theory maintains that highly leveraged firms may suffer more competitive disadvantages and are thus vulnerable to predation in concentrated markets. Other studies assert that competition hurts the leverage-performance nexus (Abu-Abbas et al., 2019; Ahmed & Afza, 2019; Jermias, 2008; Seo, 2018). The limited liability effect of debt may adversely affect the profitability of highly leveraged firms because it induces their aggressive production, leading to overrunning costs. In fiercely competitive markets, firms often reduce their leverage, resulting in a decline in the advantage of the tax-deductibility of debt interest. The higher competition also creates higher-risk business environments and makes debts more costly. Leveraged firms in competitive markets suffer financial pressures resulting from high debts and uncertainty. Thus, higher competition may worsen the effect of leverage on performance.

The existing evidence on the interaction effect of leverage and competition on firm performance mainly comes from developed economies (Fosu, 2013). The findings indicated in developed countries may be of limited use in transition economies since the economic gap still exists significantly (Hoskisson et al., 2000). Furthermore, transition countries seem to be an empirical laboratory to

evaluate changes in economic systems, including shifts in financial systems and competition (Estrin et al., 2009). Thus, it is essential to study the dependence of the leverage-performance nexus on market competition in transition economies, e.g., Vietnam. Distinct from developed countries, Vietnam – a transition country with a strong presence of state-owned enterprises (SOEs), a less robust regulatory and legal environment, and rampant corruption – may be a typical case of countries of this type. Since the Vietnamese capital market remains young (Nasir et al., 2021), it fails to play the full role of a capital channel in the country. As a result, the banking system becomes the principal financing source for its firms (Chau et al., 2018). In other words, debt is vital to Vietnamese firms that face increasing levels of competition resulting from the economic reform (*Doi moi*) initiated in the late 1980s. In such circumstances, it is worthwhile to have empirical studies on the moderating effect of competition on the leverage-performance nexus of firms in this country.

Using a panel dataset of 352 firms listed on Vietnam's stock exchanges in 2015–2019, this paper seeks to examine the direct relationship between financial leverage and corporate performance, estimate the moderating effect of market competition on the leverage-performance nexus, and propose recommendations to improve firm performance under competition pressure. In this paper, market competition is proxied by an indicator based on relative profit differences (RPD), i.e., the Boone indicator (BI) (Boone, 2008), which helps avoid potential drawbacks of the concentration indexes [e.g., the Herfindahl-Hirschman Index (HHI) and the four-firm concentration ratio (CR4)] used in other studies (Campello, 2006; Kovenock & Phillips, 1997; Opler & Titman, 1994).

LITERATURE REVIEW

Leverage and Firm Performance

The capital structure irrelevancy theory proposed by Modigliani and Miller (1958) is the first one that tries to relate firm performance to capital structure. According to the authors, if the capital market is perfect, performance is irrelevant to capital structure. However, this assumption does not hold in the real world. In 1963, they thus revised their earlier theory taking into account the role of the tax shield, arguing that firms can make use of tax deductibility to maximise profits. Agency costs provide another way of explaining the relation between leverage and firm performance. There are two types of agency costs (Jensen & Meckling, 1976). The first is the agency cost of outside equity arising from the conflict of interest between managers (the agent) and shareholders (the principal). Since managers share profits with shareholders, they have an incentive to engage in moral hazards

to maximise their utility. Such behaviour translates into higher costs since it calls for increased monitoring of managers. Higher leverage may mitigate the costs and thus improve performance.

The benefits of leverage are also attributable to the discipline associated with leverage through interest payment precommitments (Jensen, 1986), the threat of bankruptcy (Grossman & Hart, 1982), and the informational content of debt (Harris & Raviv, 1990). Issuing debt enables managers to engage in precommitments related to paying out future cash flows (Jensen, 1986). Concretely, the pressure of incurring debt compels managers to curb mismanaging the idle cash flow and run profitable businesses to ensure the payment of interest and principal. The threat of bankruptcy creates a stimulant effect on the quality of corporate management (Grossman & Hart, 1982). If a firm goes bankrupt, the manager will lose benefits. Hence, this forces the agent to conform to the principal's interest. Debts also convey information about the quality of management and efficiency of business strategy to investors (Harris & Raviv, 1990). The information about the ability of repayment and costly investigations regarding default reveals the firm's income and prospects. Thus, shareholders let firms incur a high level of debt to gain more information.

The second type of agency cost comes from a conflict of interest between shareholders and debtholders (Jensen & Meckling, 1976). Shareholders prefer debt financing and often like excessive risk-taking because they enjoy profits accrued, but losses are shared proportionally with creditors. Since debtholders may foresee such behaviour, they then raise the interest rate, pushing up the cost of borrowing for the firm (Mahmood et al., 2019). Therefore, leverage can harm firm performance, especially highly leveraged ones. Since debtholders capture part of the benefits of investments, the leveraged firm probably rejects valuable investment opportunities if the interest rate is higher, leading to suboptimal investment and reduced market value (Dang, 2010; García Lara et al., 2016). Although debt financing may mitigate overinvestment problems, it can exacerbate the underinvestment problems because regular interest payments to debtholders place further resource constraints on managers (Bourgeon & Dionne, 2013; Dalwai & Salehi, 2021).

The conflict of interest between a firm and its stakeholders also increases agency costs. Customers may have doubts about the product quality of highly leveraged firms, leading to a decline in their sales. Customers only transact with the leveraged firm if its product prices are low (Maksimovic & Titman, 1991). The reluctant transaction implies that customers tend to switch to sellers who benefit them the

most. Moreover, debtholders may impose more restrictions on the firms that have been already highly leveraged (Mahmood et al., 2019). In this case, a high level of financial leverage increases agency costs and thus impedes firm performance.

Empirical conclusions based on these theories are mixed. The effect of leverage on firm performance is negative (Dalwai & Salehi, 2021; Ibhagui & Olokoyo, 2018; Mahmood et al., 2019; Sethi et al., 2023; Towo et al., 2019; Vithessonthi & Tongurai, 2015), positive (Detthamrong et al., 2017; Margaritis & Psillaki, 2010; Simamora, 2021; Wassie, 2020), or insignificant (Phillips & Sipahioglu, 2004). The leverage-performance relation also depends on the degree of agency problems related to firms (Ruland & Zhou, 2005; Schoubben & Van Hulle, 2006). Schoubben and Van Hulle (2006) show a positive effect of leverage on the performance of quoted firms but a negative effect on non-quoted ones. Ruland and Zhou (2005) find that leverage improves the performance of diversified firms, especially small-sized diversified firms that often suffer higher agency costs. Kyereboah-Coleman (2007) indicates that highly leveraged microfinance institutions perform better, enhancing their ability to deal with risk. Detthamrong et al. (2017) confirm a positive leverage-performance nexus, which is in line with the findings by Wassie (2020) and Simamora (2021).

Ghosh (2008) conditions this effect on foreign market participation for Indian firms. According to this author, the negative impact of leverage is higher for firms with foreign debt, and a leveraged firm's performance is more sensitive to changes in the nominal exchange rate. Vithessonthi and Tongurai (2015) divulge that the leverage-performance nexus is adverse for the domestically oriented firms while it is positive for the internationally oriented firms. Ibhagui and Olokoyo (2018) find that the negative effect of leverage on firm performance is more evident in smaller firms. Towo et al. (2019) reveals that higher financial leverage results in lower labour productivity since high levels of debt cause underinvestment problems and high labour costs. Based on the related theories and empirical evidence, the first hypothesis of this paper is as follows:

H1: Financial leverage has a significant impact on firm performance.

Leverage, Competition, and Firm Performance

The interaction effect of leverage and product market competition on firm performance is complex. Clayton (2009) and Smith et al. (2012) suggest that the limited liability effect of debt allows firms to compete more aggressively in product markets. Such behaviour could offset the associated costly agency problems.

However, the impact of such strategic behaviour on profit depends on the nature of competition and product characteristics (Wanzenried, 2003). Then, the limited liability effect of debt could fail to trigger the profitability of the leveraged firm. Specifically, this effect can lead to a drop in profit when Cournot competition exists. That is because limited liability causes more aggressive production resulting in lower realised prices. This drop is higher if the more substitutable the products are.

Predation theories (Campello, 2003, 2006; Chu & Pham, 2021; Fosu, 2013; Valta, 2012) contend that leveraged firms suffer a substantial competitive disadvantage in product markets. Specifically, they may be more vulnerable to predation in concentrated product markets. Because current profits signal prospects in a product market, incumbent firms are motivated to predate new firms (Fosu, 2013). Such action reduces the current profits of the new firms and misinforms prospects. Since leveraged firms are often more financially constrained than less leveraged ones in concentrated markets, their sensitivity to product-market signals is probably higher. Debt contracts designed to make the interests of managers and creditors compatible also create an opportunity for rivalry predation (Campello, 2003; 2006; Fosu, 2013). They entail periodic payment, which induces rivalry predation because it reduces the leveraged firm's current profit, making it more likely to be liquidated and exit the market. This rivalry predation continues unless it cannot accumulate positive net benefits for the rival firm. Each competitive firm has a small market share. Thus, there should be less incentive to predate in more competitive markets.

Bourgeon and Dionne (2013), Dang (2010), and García Lara et al. (2016) note that leverage constrains a firm's incentive to invest because of the fear of default that directs its attention to current period performance. They also show that highly leveraged firms charge higher prices than less leveraged ones during a recession, suggesting that the former face a competitive disadvantage in concentrated or uncompetitive industries. The size of this advantage decreases with the competition intensity in the market.

Opler and Titman (1994) provides direct evidence of the interaction impacts of capital structure and competition, indicating that highly leveraged firms lose market share to less leveraged ones during industry downturns. The lost market share is serious for firms in concentrated markets. Kovenock and Phillips (1997) also find that leverage hurts a firm's investment and induces its plant closure. The authors disclose the significance of these effects closely associated with the capital structure and concentration interaction terms, implying acute agency problems in concentrated markets. An insight drawn from these studies is that highly leveraged firms are more endangered by predatory pricing in concentrated product markets.

Campello (2003) reveals that leverage negatively affects relative-to-industry sales growth of firms in relatively less leveraged industries during a recession. This outcome is attributable to less competitive behaviour associated with macroeconomic downturns. The author also divulges that the effects of leverage largely depend on the severity of agency problems in the product market. This outcome is consistent with his 2006 study in that moderate leverage is associated with high sales performance, and high levels are associated with poor performance. Specifically, this author finds significantly higher effects for firms in concentrated markets than those in competitive markets.

Apart from the predation-mitigating benefits of competition, the discipline associated with competition (Aghion et al., 1997; Chau et al., 2018; Fosu, 2013) fortifies the disciplining effect of leverage or alleviates the agency problems. Aghion et al. (1997) notice that fierce competition reduces leverage levels and thus the disciplining effect. This effect could surpass the direct disciplining effect of competition, suggesting a net drop in product market discipline. Fosu (2013) finds that the leverage-performance relation is positive, and market competition enhances the performance impact of leverage. Similarly, Chau et al. (2018) reveals that competition strengthens the positive relationship between debt ratio and firm performance, but this interaction effect diminishes with over-invested firms. In contrast, Jermias (2008) confirms a negative moderating effect of competition on the leverage-performance nexus, which is in line with the findings by Abu-Abbas et al. (2019), Ahmed and Afza (2019), and Seo (2018). Concretely, the benefits of debt decrease significantly as market competition rises since the highly leveraged firms often incur greater levels of risk in fiercely competitive markets. Thus, the second hypothesis of this paper is as follows:

H2: Competition moderates the relationship between financial leverage and firm performance.

Based on the above arguments and hypotheses, a conceptual framework of this paper is shown in Figure 1, clarifying the impact of financial leverage on firm performance and the moderating effect of competition on the leverage-performance nexus.

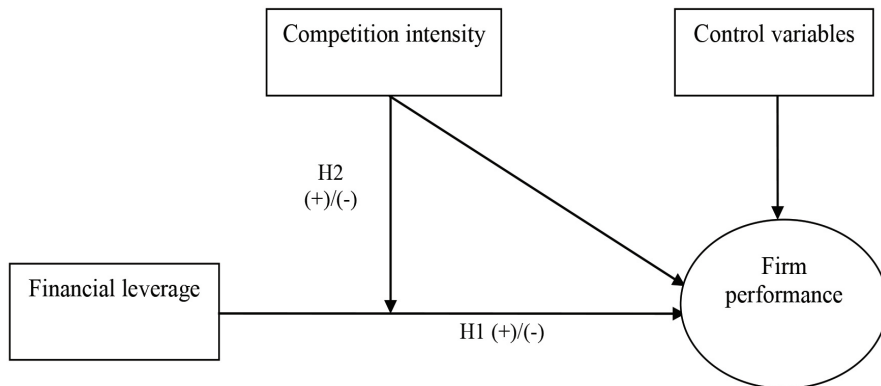


Figure 1. Conceptual research framework

The review of the theoretical and empirical studies presented in this section identifies appealing interactions between leverage, competition, and firm performance. However, the empirical evidence taking this interaction into account uses data from developed countries. To our best understanding, no study focuses on that issue in transition economies with several particularities.

SETTINGS

In 1986, Vietnam initiated the economic reform (*Doi moi*) to transform its centrally planned economy into an oriented market to overcome the macroeconomic turmoil and curb hyperinflation. Distinct from Russia and East-European countries, Vietnam has chosen a gradual transition model to reform its economy (Revilla Diez, 2016). The reform has unleashed economic activities, openly inviting the involvement of households and firms of all ownerships. Such an achievement turns Vietnam into a lower-middle-income country, with a significant contribution of its firms. A sharp rise in the number of firms in Vietnam over the past decades' signals increasing competition amidst the shrinking direct interventions of the government in economic activities. However, a few large SOEs still account for a high proportion of total investment, control key business fields, and enjoy favourite privileges from the government and access to credit of state-owned commercial banks. Thus, the competition appears unfair between SOEs and non-state firms. A high degree of openness in foreign trade also intensifies the competition among domestic firms for the foreign outlet of their output.

Over the past years, the government has made several efforts to enhance market competition. However, many industries remain highly concentrated, such as automobiles, motorbikes, construction, electricity, power electronics, plastics,

industrial and medical equipment, food and beverage, and energy. In Vietnam, the regulation regarding competition is relatively suboptimal, and the enforcement is weak, making unfair competition violations and rivalry predation more likely (Fosu, 2013; Maruichi & Abe, 2019). Rampant corruption harms competition because some big firms manage to pay substantial bribes to public officials to fetch government contracts, land occupation permits, or licenses for natural resource exploitation, producing monopoly or oligopolistic rents (Malesky et al., 2020; Maruichi & Abe, 2019; Rand & Tarp, 2012).

Credit misallocation between private firms and SOEs has been an obstacle to economic growth in many countries transiting from planning to market economies, including Vietnam. Politically connected firms often access resources at preferential terms, including bank credit from state-owned commercial banks, and land use rights from provincial and local governments. The low-interest rates and implicit or explicit government guarantees benefiting those firms squeeze the resources available for other more productive firms. Lower productive efficiency in SOEs and politically connected firms results in resource misallocation that reduces aggregate productivity and economy-wide growth. Vietnam's banking system has shifted to a new business model emphasising lending to private households and firms, including mortgages and other consumer lending. However, a large volume of non-performing loans (NPLs) problems in the banking sector is the legacy of lending to connected firms in Vietnam (Katagiri, 2019).

RESEARCH METHODOLOGY

Empirical Model

Based on the literature review, the model estimating the dependence of leverage-performance nexus on market competition is specified as follows:

$$Perf_{i,t} = \beta_0 + \beta_1 Lev_{i,t} + \beta_2 Lev_{i,t} \times Comp_{i,t} + \lambda \kappa_{i,t} + \varepsilon_{i,t} \quad (1)$$

In Model (1), the dependent variable $Perf_{i,t}$ is the return on assets (ROA) of firm i in year t . ROA is an appropriate proxy since it reveals how efficiently a firm uses its resources (Fosu, 2013). ROA also mitigates size bias in estimation results when using data from different industries and firms of divergent sizes (Lev & Sunder, 1979). $Lev_{i,t}$ is the financial leverage of firm i in year t , measured by the debt-to-assets ratio (Dalwai & Salehi, 2021; Dawar, 2014; Fosu, 2013; Mahmood et al., 2019; Moradi et al., 2017; Sethi et al., 2023). This ratio refers to the level at which firm assets are financed by debt versus equity.

$Lev_{i,t} \times Comp_{i,t}$ is an interaction of $Lev_{i,t}$ and $Comp_{i,t}$, which is included to examine the impact of competition on the relationship between leverage and firm performance. $Comp_{i,t}$ is competitive intensity facing firm i in year t measured by the BI. The BI is the percentage drop in firm profit when the marginal cost rises by 1%. It shows how sensitive a firm's profit is to its efficiency in the output market. Differently stated, highly competitive markets penalise inefficient firms more severely in lost profits. This indicator is free from reallocation effects in product markets, overcoming the setback of the structural approach using the HHI and CR4. The BI that is simple in terms of data requirements appears appropriate for empirical studies in developing and transition economies (including Vietnam), where relevant data is hard to obtain. The BI can be estimated as follows (Boone, 2008; Fosu, 2013; Moyo, 2018):

$$\ln(\pi_{i,t}) = \delta + \psi \ln(MC_{i,t}) + \mu_{i,t} \quad (2)$$

Where $\pi_{i,t}$ is the profit of firm i in year t measured by the ratio of profit to total assets so as to avoid bias due to firm size. $MC_{i,t}$ is the marginal cost of firm i in year t , and $\mu_{i,t}$ is the error term of the Boone model. In Model (2), coefficient ψ is the BI. As just explained, ψ is negative, implying that the larger the absolute value of ψ is, the higher competition intensity will be.

Since firms may incur losses, their profits are negative. Thus, all variables in Model (2) are transformed by using the inverse hyperbolic sine (IHS) transformation, expressed as $\ln^* X = \arcsin h(X) = \ln[X + \sqrt{X^2 + 1}]$. The IHS transformation helps keep null and negative observation values and the properties of the log transformation (Bellemare & Wichman, 2020; Clemens & Tiongson, 2017). Calculating the BI requires marginal cost. The marginal cost is estimated by using the following translog cost function (Phan et al., 2019; Shijaku, 2017):

$$\begin{aligned} \ln TC_{i,t} = & \alpha_0 + \alpha_1 \ln Q_{i,t} + \frac{1}{2} \alpha_2 (\ln Q_{i,t})^2 + \sum_{j=1}^4 \nu_j \ln P_{j,i,t} + \frac{1}{2} \sum_{j=1}^4 \sum_{k=1}^4 \theta_{j,k} \ln P_{j,i,t} \ln P_{k,i,t} \\ & + \sum_{j=1}^4 \gamma_j \ln Q_{i,t} \ln P_{j,i,t} + \tau_{1,t} T + \frac{1}{2} \tau_{2,t} T^2 + \tau_{3,t} T \ln Q_{i,t} + \sum_{j=1}^4 \delta_j T \ln P_{j,i,t} + \omega_{i,t} \end{aligned} \quad (3)$$

Where $TC_{i,t}$ is total cost of firm i in year t . $Q_{i,t}$ is total output of firm i in year t , measured by total revenue to yield the same unit across industries. In Model (3), there are four input prices, including the price of materials ($P_{1i,t}$), the price of labour ($P_{2i,t}$), the price of fixed capital ($P_{3i,t}$), and the price of administration and other operations ($P_{4i,t}$). $P_{1i,t}$ is the ratio of material costs to operating revenue.

$P_{2i,t}$ is the ratio of personnel expenses to total assets. $P_{3i,t}$ is the ratio of fixed asset depreciation to fixed assets. $P_{4i,t}$ is the ratio of administrative and other operating expenses to operating revenue. T is the time trend, used to capture the influence of technological progress and shifts in the business cycle that leads to changes in the cost function over time. The cost function must be homogeneous of degree one in the input prices, so the following restrictions are imposed on its parameters (Phan et al., 2019; Shijaku, 2017):

$$\sum_{j=1}^4 v_j = 1; \quad \sum_{j=1}^4 \sum_{k=1}^4 \theta_{j,k} = 0; \quad \sum_{j=1}^4 \gamma_j = 0; \quad \text{and} \quad \sum_{j=1}^4 \delta_j = 0 \quad (4)$$

The marginal cost is estimated by taking the first derivative of the cost function with respect to $Q_{i,t}$ as follows:

$$MC_{i,t} = \frac{\delta TC_{i,t}}{\delta Q_{i,t}} = \frac{TC_{i,t}}{Q_{i,t}} (\alpha_1 + \alpha_2 \ln Q_{i,t} + \sum_{j=1}^4 \gamma_j \ln P_{j,i,t} + \tau_{3,t} T) \quad (5)$$

In Model (1), $\kappa_{i,t}$ is a set of control variables, and $\varepsilon_{i,t}$ is the error term of the model. The first control variable (*Fage*) is the number of years in operation of firm i at year t . According to previous studies (e.g., Ahmed & Afza, 2019; Detthamrong et al., 2017), the longer this duration is, the better its performance will be. Older firms often have low operating costs and rich market experience. Then, the coefficient of this variable is positive. However, if operating in saturated environments, older firms would become conservative to changes, leading to a lack of creativeness, backwardness in technology, and losing control of costs (Dawar, 2014; Moyo, 2018; Towo et al., 2019). This argument means that the efficiency of older firms is lower, so the coefficient of *Fage* is negative.

Size_{i,t} is the logarithm of total assets of firm i in year t (Mahmood et al., 2019; Dalwai & Salehi, 2021). The economies of scale imply that a larger production scale leads to lower average costs. Upsizing helps firms reduce costs that underpin the decrease of output prices to compete. Larger firms often buy more inputs and attain more long-term contracts. Larger size forces firms to turn to specialisation. Meanwhile, most smaller firms find it hard to access external funds and lack high-quality human resources. Larger firms can also generate greater internal funds or are easier to access external funds (Dalwai & Salehi, 2021). Thus, firm size has a positive effect on performance (Ahmed & Afza, 2019; Wassie, 2020; Towo et al., 2019; Dalwai & Salehi, 2021), or the coefficient of this variable is positive.

$Labor_{i,t}$ (i.e., labour productivity) is the sales-to-labour expenses ratio of firm i in year t . Human resources are vital to competitive advantages (Barney, 1991). High labour productivity helps firms produce output with low costs. Hence, the higher labour productivity is, the better firm performance is (Charoenrat & Harvie, 2014; Pilar et al., 2018). In contrast, low labour productivity may lead to overrunning costs, delayed schedule, and poor planning and managing. Consequently, there should be a positive relationship between labour productivity and firm performance.

$Fass_{i,t}$ is the fixed assets-to-sales ratio of firm i in year t . This ratio shows how well a firm uses fixed assets (property, plant, and equipment) to generate revenue. A high fixed assets-to-sales ratio means that firms use fixed assets less efficiently (Abu-Abbas et al., 2019; Alhassan & Ohene-Asare, 2016). Thus, the coefficient of this variable should be negative.

$Growth_{i,t}$, a proxy for growth opportunities (Maury, 2006; King & Santor, 2008), is measured by equity growth rate of firm i at time t . Since the equity growth rate affects investment opportunities, it can generate profits for firms. Furthermore, firm growth is positively related to subsequent profitability. A higher growth rate means better prospects for firms, so they may capture profitable opportunities and expand market shares (Fuertes-Callén & Cuellar-Fernández, 2019). Therefore, the coefficient of this variable is positive.

$Perf_{i,t-1}$ is a one-year lagged performance of firm i . We include this variable to divulge the persistence of firm performance over time. A positive value of the coefficient of this variable implies that performance is persistent. Firms often use part of the profit in the preceding year to invest and seize profitable opportunities. Therefore, the coefficient of variable $Perf_{i,t-1}$ is positive.

$Trade_{i,t}$ and $Manu_{i,t}$ are included in Model (1) to test for the possible gap in performance among firms in different sectors (i.e., manufacturing, trade, and service). $Trade_{i,t}$ takes a value of 1 for trading firms and 0 otherwise. $Manu_{i,t}$ takes a value of 1 for manufacturing firms and 0 otherwise. The coefficient of $Trade_{i,t}$ and coefficient $Manu_{i,t}$ can be either positive or negative, depending on the environments in which firms operate.

Methodology and Data

Simple random sampling is used to create the panel dataset of 352 Vietnamese firms in 2015–2019. In concrete, the list of firms is retrieved from Vietnam's stock exchanges and then a random number generator (i.e., RAND function) is applied to select firms. Financial firms and those that do not provide sufficient information

are excluded. Although panel data captures the dynamic nature of performance, endogeneity, unobserved heterogeneity, and autocorrelation may lead to econometric bias and inconsistent results if using Fixed Effect (FE) or Random Effect (RE) model. The more appropriate model for solving those problems is the two-step system GMM model (Arellano & Bover, 1995; Blundell & Bond, 1998; Fosu, 2013; Phan et al., 2019). Before running the two-step system GMM, unit-root tests (including the Hadri Lagrange multiplier test and Phillips-Perron test) are implemented to check the stationary of the data. Using the two-step system GMM is appropriate when the data is stationary. Then, post-diagnostic tests are conducted. The regression results will be reliable if significant levels for the post-diagnostic tests are 5% or 1%. Arellano-Bond tests for AR(1) and AR(2) check the first and second-order autocorrelation of the residuals. Hansen’s J-test is used to test the validity of instruments of endogenous variables. The Wald test confirms the goodness of fit for all models.

RESULTS

Sample Description

This paper’s dataset comes from audited financial statements, so it is precise and reliable, helping us investigate the moderating effect of competition on the leverage-performance nexus of Vietnamese firms and propose proper recommendations. Therein, 232 studied firms are manufacturing firms (accounting for 65.91% of the total number of the studied firms), 47 trading firms (13.35%), and 73 service firms (20.74%). In Table 1, the mean ROA of the firms was approximately 6.1% and declined over the studied period.

Table 1
Key indicators of the studied firms

Year	2015	2016	2017	2018	2019	Sample
ROA (%)	6.68 (5.86)	6.66 (6.01)	6.22 (5.63)	5.66 (6.01)	5.27 (5.42)	6.10 (5.81)
Lev	1.58 (2.32)	1.56 (2.12)	1.61 (2.23)	1.64 (2.35)	1.55 (2.13)	1.59 (2.23)
Comp	1.01 (0.73)	0.99 (0.72)	0.88 (0.62)	0.95 (0.54)	0.90 (0.62)	0.95 (0.65)

Note: Standard deviations in parentheses

Service firms that created the highest value-added (Sauian et al., 2011) outperformed manufacturing and trading firms in terms of ROA (Table 2). The mean financial leverage in the trade sector (i.e., 2.16) is highest in the three sectors, implying that the trading firms used more debts to finance their operation than the manufacturing and service ones.

Table 2
Mean values of variables by sector

Sector	ROA	Lev	Comp	Page	Size	Labor	Fass	Growth
Manufacturing	6.15	1.53	1.04	30.28	13.42	3,165.67	0.28	12.46
Trade	4.58	2.16	1.06	24.19	13.79	770.89	0.17	15.92
Service	6.92	1.41	0.58	23.25	13.57	3,353.99	0.40	16.82
Sample	6.10	1.59	0.95	28.01	13.50	2,884.97	0.29	13.82

The mean competition in the service sector (i.e., 0.58) is the lowest of the three sectors. Service mainly runs on human resources that are valuable, rare, irreplaceable, and hard to imitate (Barney, 1991). Managing and using appropriate human resources may help service firms to gain sustained competitive advantages. A firm may find it hard to replicate the services of its competitors. Moreover, services are less tradable and lower the scope for standardisation (OECD, 2005). Hence, service markets are less integrated and competitive than markets for goods. The mean age of the firms is around 28 years, revealing that most firms have relatively rich experience in their field of business. The manufacturing firms are the oldest ones, with a mean age of over 30 years.

The size of the trading firms (with a mean of 13.79) outweighs that of the manufacturing and service ones. The mean labour productivity is 2,884.97, with that in the service sector being the highest of the three sectors. In Vietnam, a large proportion of low-pay and young workforce work in the service sector (World Bank, 2014). The mean fixed assets over sales of trading firms are the lowest (i.e., 0.17), divulging that they better utilise fixed assets to generate sales than manufacturing and service firms. Without production, trading firms invest less fixed assets than the others. The mean growth of firms in the manufacturing sector (12.46%) is the lowest of the three, revealing their unpromising prospects.

DISCUSSION

Before running the two-step system GMM, unit-root tests are implemented to test the stationarity of our panel data. The results show that all panels do not contain unit roots, or our data is stationary. Thus, using the two-step system GMM approach in the next step is appropriate. To solve the endogeneity in our estimation model, following Fosu (2013), Chau et al. (2018), and Phan et al. (2019), the instruments used in the two-step system GMM regression are one-period lag of performance variable and one- or two-period lags of independent variables. Table 3 and Table 4 present the estimation results on the moderating effect of competition on the leverage-firm performance nexus (Model 2). Iterated GMM is used to test the robustness of this paper's findings (Hansen et al., 1996; Hansen & Lee, 2021), which is shown in Model 3 of Table 3. The estimation results in Model 3 robustly confirm the findings in Model 2. The post-diagnostic tests reveal that the instrumental variables are valid, and the estimation models are correctly specified.

Table 3
Estimation results

Variables		Model 1 (2SGMM)	Model 2 (2SGMM)	Model 3 (IGMM)
<i>C</i>	Constant	4.101 (0.970)	-1.498 (-0.300)	-1.121 (-0.220)
<i>Lev</i>	Debt-to-assets ratio	-9.546*** (-2.980)	-7.263* (-1.700)	-7.568* (-1.690)
<i>Lev</i> × <i>Comp</i>	The interaction of <i>Lev</i> and <i>Comp</i>		-5.286* (-1.830)	-4.939* (-1.700)
<i>Comp</i>	The BI	2.560*** (3.130)	5.631*** (2.880)	5.377*** (2.770)
<i>Fage</i>	Firm age (years)	-0.004 (-0.360)	-0.001 (-0.110)	0.000 (0.020)
<i>Size</i>	Logarithm of total assets	0.203 (0.570)	0.521 (1.320)	0.509 (1.240)
<i>Labor</i>	Sales over labor expense	0.000 (1.280)	0.000 (1.400)	0.000 (0.580)
<i>Fass</i>	Fixed assets over sales	-1.978*** (-2.830)	-1.766*** (-2.650)	-1.756*** (-2.830)
<i>Growth</i>	Annual growth in equity (%)	0.030*** (3.030)	0.032*** (3.250)	0.033*** (2.760)
<i>Perf_{i,t-1}</i>	One year-lagged ROA	0.424*** (3.530)	0.376*** (3.320)	0.367*** (3.630)

(Continued on next page)

Table 3: (Continued)

Variables		Model 1 (2SGMM)	Model 2 (2SGMM)	Model 3 (IGMM)
<i>Trade</i>	1 for trading firms and 0 otherwise	-1.911*** (-2.930)	-2.060*** (-2.930)	-2.056*** (-2.830)
<i>Manu</i>	1 for manufacturing firms and 0 otherwise	-0.955* (-1.840)	-1.220** (-2.050)	-1.197* (-1.900)
Observations		1,408	1,408	1,408
Groups		352	352	352
Wald test		1,668.800	1,397.800	125.740
Wald test p-value		0.000	0.000	0.000
AR(1) p-value		0.000	0.000	0.000
AR(2) p-value		0.093	0.170	0.172
Hansen-J test p-value		0.726	0.699	0.713

Notes: 2SGMM = two-step system GMM; IGMM = iterated GMM; values without the parentheses are the coefficients of the independent variables (β_i); values in the parentheses are Z-statistics; ***, **, and * denote significant at 1%, 5%, and 10%, respectively

The estimates indicate a significant impact of financial leverage on firm performance (Table 3), supporting the hypothesis H1. The coefficient of *Lev* is negative at a significant level of 1% in Model 1 and 10% in Model 2. Concretely, the relationship between financial leverage and firm performance is negative, which is in line with the findings by Dalwai and Salehi (2021), Ibhagui and Olokoyo (2018), Mahmood et al. (2019), Sethi et al. (2023), Towo et al. (2019), and Vithessonthi and Tongurai (2015). This negative effect advocates the agency theory arguing that a high level of debt may increase agency costs. The agency theory identifies two conflicts of interest that explain the inverse relationship between leverage and firm performance. They are conflicts between shareholders and debt holders, and between firms and stakeholders (Jensen & Meckling, 1976). Shareholders preferably take high risks by using debts since the creditors should share the risks. To retain benefits, debt holders often set higher lending interest rates to offset their lending risks. Thus, financial leverage impacts firm performance negatively, especially highly leveraged ones. Besides, a high level of debt may lead to suboptimal investment due to a fear of default, which is broadly consistent with the empirical evidence in Bourgeon and Dionne (2013), Dang (2010), García Lara et al. (2016), and Towo et al. (2019). Under certainty, leveraged firms skip valuable investment opportunities since a significant part of the benefits arising from the investment will be transferred to the debt holders. Higher leverage also allows the creditors to impose resource constraints on firm managers. Since customers often doubt the product quality of the highly leveraged firms, they may easily switch

to other providers who benefit them better as noted in Maksimovic and Titman (1991). In line with the pecking order theory, high-leveraged firms often have greater levels of costs than low-leveraged ones since the cost of debt is higher than that of internal funds (Dalwai & Salehi, 2021). Therefore, higher leverage increases agency costs of the firms, leading to a suppressed performance. This finding of the paper indicates that disadvantages of financial leverage overwhelm its benefits because of poor debt management of Vietnamese firms and high lending interest rates in Vietnam.

Table 4
Standard errors and confidence intervals

Variables	Model 1 (2SGMM)			Model 2 (2SGMM)			Model 3 (IGMM)		
	Std. Err.	[95% Conf. Interval]		Std. Err.	[95% Conf. Interval]		Std. Err.	[95% Conf. Interval]	
<i>Constant</i>	4.226	-4.181	12.383	4.913	-11.127	8.131	5.173	-11.259	9.018
<i>Lev</i>	3.208	-15.833	-3.258	4.284	-15.660	1.134	4.487	-16.363	1.227
<i>Lev × Comp</i>				2.890	-10.950	0.378	2.909	-10.641	0.763
<i>Comp</i>	0.819	0.955	4.164	1.958	1.793	9.469	1.939	1.577	9.177
<i>Fage</i>	0.012	-0.028	0.019	0.014	-0.028	0.025	0.015	-0.028	0.029
<i>Size</i>	0.359	-0.501	0.908	0.395	-0.252	1.295	0.409	-0.293	1.311
<i>Labor</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>Fass</i>	0.698	-3.346	-0.610	0.666	-3.073	-0.460	0.620	-2.972	-0.540
<i>Growth</i>	0.010	0.011	0.050	0.010	0.013	0.051	0.012	0.010	0.057
<i>Perf_{t,t-1}</i>	0.120	0.189	0.659	0.113	0.154	0.597	0.101	0.169	0.564
<i>Trade</i>	0.651	-3.187	-0.635	0.703	-3.437	-0.682	0.727	-3.481	-0.630
<i>Manu</i>	0.519	-1.973	0.063	0.595	-2.387	-0.053	0.629	-2.431	0.037

In Table 3 (Model 2), the coefficient of the interaction term *Lev × Comp* is negative at a significance level of 10%, confirming H2. Consistent with previous studies, the results of this study reveal that competition harms the benefits of leverage as argued by Abu-Abbas et al. (2019), Ahmed and Afza (2019), Jermias (2008), and Seo (2018). High-leverage firms produce aggressively due to the limited liability effect of debt, leading to overrunning costs and lower product prices (Clayton, 2009; Smith et al., 2012). The increase in sales due to reduced prices is hard to offset the rise in costs due to aggressive production. Many substitute products existing in highly competitive markets may lead to a significant decrease in the sales of high-leverage firms and short-lived firm-customer relationships. Customers often doubt the product quality of the high-leverage firms. Thus, they have to devote more resources to retaining customers and attracting new ones

as competition intensifies. Under competition pressure, firms may reduce their leverage, leading to a decline in the disciplining effect of debt as indicated in Aghion et al. (1997). There is a noticeable decrease in advantages arising from the tax-deductibility. Using less debt raises the amount of idle cash flow allocated by managers, thereby furthering moral hazard. Besides, higher competition also creates higher-risk business environments, especially for the high-leverage firms (Valta, 2012). Concretely, Vietnamese business environment is characterised as less robust regulatory, and has unfair competition between SOEs and non-state firms and rampant corruption. Under competitive pressure, the leveraged firms thus suffer higher levels of risk and have uncertain outcomes. Debts become expensive as competition rises, giving rise to increases in agency problems and suboptimal investments (Bourgeon & Dionne, 2013; Dang, 2010; García Lara et al., 2016; Towo et al., 2019). When competition becomes intense, the leveraged firms suffer financial and competition pressures, deterring their performance. This negative moderating effect is contrary on the findings of Chau et al. (2018), Fosu (2013), and Moradi et al. (2017) divulging that the predation-mitigating benefits of competition cannot offset the associated costly problems due to low competitiveness of Vietnamese firms.

Consistent with the previous findings of Fosu (2013) and Moyo (2018), the estimation results also indicate a positive relationship between competition and performance. The coefficients of *Comp* are positive at a significant level of 1% in all estimation models. These results mean that increased competition improves the performance of the firms. Higher competition induces the firms to innovate constantly to reduce costs and provide more high-quality products that meet customer preferences. The competition also induces firms to minimise internal conflicts since the firms' members focus more on competing with rivals instead of conflicting with one another. Increased competition creates incentives for the managers to work harder to avoid bankruptcy and losing their job. The coefficients of *Fass* are negative at a significant level of 1% in both models in Table 3. The findings match the expected sign of *Fass*, implying that the higher the fixed assets-on-sales ratio is, the less effective using fixed assets of the firms is (Abu-Abbas et al., 2019; Alhassan & Ohene-Asare, 2016). The coefficients of *Growth* are positive at a significant level of 1% in all estimation models, divulging that the higher firm growth is, the better firm performance is. Firm growth is positively related to profitability. A higher growth rate means better prospects for the firms, so they may invest more to capture profitable opportunities and increase their market shares, supporting for the results of Fuertes-Callén and Cuellar-Fernández (2019). Moreover, the studied firms have higher equity growth rates, implying that they are in good financial health and use less debt than the others. This outcome implies that the firm's performance for the past year continues over the studied period

since the firms used part of the profit in the preceding year to invest and capture profitable opportunities. They also took advantage of the experience gained in preceding-year decisions to mitigate mistakes and risks. Achievements that the firms get in a year enable them to operate more efficiently in the following year.

The coefficients of *Trade* are negative at a significant level of 1% in all models. Similarly, the coefficients of *Manu* are negative at a significant level of 10% in Model 1 and 5% in Model 2. These dummy variables are included to test for the possible discrepancy in performance among firms in different sectors (i.e., manufacturing, trade, and service). The negative values of coefficient *Trade* and coefficient *Manu* divulge that the service firms in our sample operate more efficiently than the manufacturing and trading ones.

IMPLICATIONS

Theoretical Implications

Given many studies on the relationship between financial leverage and firm performance, the dependence of this relation on market competition has not been clear, especially in transition economies. The existing evidence on the moderating effect of competition on the leverage-performance nexus mainly comes from developed and emerging economies (Abu-Abbas et al., 2019; Campello, 2003, 2006; Jermias, 2008; Seo, 2018). Therefore, this study fills the gap by focusing on Vietnam – a typical transition country whose economic system has significantly changed since the 1990s – especially regarding the financial system and competition intensity (Chau et al., 2018). The economic reform to transform its economy from a centrally planned to a socialist-oriented market has unleashed economic activities, openly invited the involvement of firms and boosted competition. However, competition in Vietnam appears unfair between SOEs and small and medium-sized firms due to a few large SOEs that account for a high proportion of total investments, control key business fields, and enjoy favourite privileges from the government. The banking system is the principal financing source for its firms (Chau et al., 2018) since the Vietnamese capital market remains young (Nasir et al., 2021). As a result, debt is vital to Vietnamese firms that face increasing levels of competition. Consistent with previous studies (Abu-Abbas et al., 2019; Ahmed & Afza, 2019; Jermias, 2008; Seo, 2018), the findings of this paper reveal that competition exacerbates the negative leverage-performance nexus. In highly competitive markets, debts become more expensive, thus leading to increased financial pressures on leveraged firms. The fiercer competition also creates a risky business environment, so leveraged firms may operate inefficiently and fail to

satisfy their debt obligations. The results of this paper contribute to an enhanced understanding of the role of market competition in leverage decisions, thus changing the performance. In other words, this paper helps broaden the research scope of the leverage-performance relation by adding market conditions, typically competition intensity.

Practical Implications

From a practical perspective, the negative leverage-performance nexus suggests that firms should avoid extreme debt financing and maintain an appropriate debt level in their capital structure. Lower leverage helps firms reduce financial pressure and customers' suspicion about product quality. The estimates confirm that increased competition exacerbates firm performance given a level of debt. A rationally low level of competition may moderate the negative effect of financial leverage on performance.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This paper estimates the moderating effect of competition on the leverage-performance nexus of Vietnamese firms. The two-step system GMM model is applied to overcome the endogeneity problem. The findings reveal a negative leverage-performance nexus, implying that a higher level of debt results in lower firm performance. Market competition negatively affects the relationship between leverage and firm performance. In highly competitive markets, debts become more expensive, creating pressures for leveraged firms. The higher competition also creates a higher-risk business environment, so leveraged firms may fail when unable to repay their debt obligations. Yet, increased competition encourages firms to innovate and creates more incentives for managers to work harder, thereby improving performance. Besides, firm growth enhances performance while the fixed assets-to-sales ratio hurts performance. Service firms operate more efficiently than their counterparts in manufacturing and trading sectors.

Notwithstanding its contributions, this paper has two limitations that may be the directions for future research. First, BI is the only measure of competition in this paper since it is the most appropriate indicator. Thus, future studies may estimate market competition using different metrics. Second, this paper only conducts research in Vietnam, a typical transition economy to a socialist-oriented market. It would be interesting to validate the findings of this study in other transition and developing economies. This paper, however, provides a helpful reference, especially for future studies about transition economies.

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