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The Impact of Foreign Ownership on Capital Structure: Empirical Evidence from Listed Firms in Vietnam

Van Diep NGUYEN¹, Quynh Nga DUONG²

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Abstract

The study aims to probe the impact of foreign ownership on Vietnamese listed firms' capital structure. This study employs panel data of 288 non-financial firms listed on the Ho Chi Minh City stock exchange (HOSE) and Ha Noi stock exchange (HNX) in 2015–2019. In this research, we applied a Bayesian linear regression method to provide probabilistic explanations of the model uncertainty and effect of foreign ownership on the capital structure of non-financial listed enterprises in Vietnam. The findings of experimental analysis by Bayesian linear regression method through Markov chain Monte Carlo (MCMC) technique combined with Gibbs sampler suggest that foreign ownership has substantial adverse effects on the firms' capital structure. Our findings also indicate that a firm's size, age, and growth opportunities all have a strong positive and significant effect on its debt ratio. We found that the firms' profitability, tangible assets, and liquidity negatively and strongly affect firms' capital structure. Meanwhile, there is a low negative impact of dividends and inflation on the debt ratio. This research has ramifications for business managers since it improves a company's financial resources by developing a strong capital structure and considering foreign investment as a source of funding.

Keywords: Bayesian Linear Regression, Capital Structure, Foreign Ownership, Debt Ratio, Gibbs Sampling

JEL Classification Code: C11, G31, G32

1. Introduction

Foreign investment plays an important role in economies, especially in developing countries (Nguyen & Duong, 2021). In addition to the benefits of foreign investment at the macroeconomic level, there are spillover effects on the firm level, such as the corporate finance aspect (Krkoska, 2002).

In the framework of globalization, many developing economies have progressively unfolded up their financial

marketplaces to draw international investors. The authority has pursued diversified actions to attract foreign investment in Vietnam, such as tax exemptions and incentives, low-interest loans, and other beneficial rules. As a result, Vietnamese companies' percentage of foreign ownership has increased significantly. Also, commitments to open capital markets are increasingly high; transparent mechanisms have created an environment of equal competition between domestic and foreign investors. A report by the State Securities Commission of Vietnam shows the foreign investors' portfolio's value will reach nearly USD 36.6 billion by 2020 (Luc, 2020). Therefore, it is of interest to consider the advantages and disadvantages of foreign ownership in emerging economies like Vietnam.

On the effects of foreign ownership, there are two points of view. First, foreign investors will watch the behavior of business executives and work to enhance corporate governance (Anh et al., 2018). Second, it's unclear whether foreign investors are seeking in emerging economies because foreign ownership rates are generally low due to "house-biased" behavior. Can investment opportunities help

¹First author. Lecturer, Faculty of Finance and Banking, Ho Chi Minh City Open University, Ho Chi Minh City, Vietnam.
Email: diep.nv@ou.edu.vn

²Corresponding Author. Head of Department, Faculty of Finance and Banking, Ho Chi Minh City Open University, Ho Chi Minh City, Vietnam [Postal Address: 35–37 Ho Hao Hon, Co Giang Ward, District 1, Ho Chi Minh City, 71013, Vietnam]
Email: nga.dq@ou.edu.vn

domestic firms monitor and improve corporate governance quality (Do et al., 2020).

Our study investigates the impact of foreign ownership on the capital structure of Vietnamese firms. Specifically, we will explore whether foreign ownership can fortify a supervisory mission, which leads to more effective leverage because the debt restricts the arbitrary use of firm cash flows by managers (Jensen, 1986). We focus on corporate capital structure, and we argue that international investors' supervisory power can replace debt because both are instruments for lowering agency costs. Capital structure decisions have a big impact on a company's financial performance. Capital structure is a difficult-to-define problem in corporate finance literature. In an efficient market with no tax difficulties, the value of a company does not rely on its capital structure, according to Modigliani and Miller (1958). The impact of foreign ownership on a company's capital structure has been investigated. (Do et al., 2020; Mishra, 2013; Sivathaasan, 2013). In this research, we applied a Bayesian linear regression method to provide probabilistic explanations of the model uncertainty and effect of foreign ownership on the capital structure of non-financial listed enterprises in Vietnam.

2. Literature Review

2.1. Theoretical Framework

Agency theory is the most prevalent theoretical framework for understanding the relationship between ownership structures and firm capital structures (Anh et al., 2018; Khasawneh & Staytieh, 2017). Agency theory was developed by Jensen and Meckling (1976) in response to conflicts of interest within a company, particularly between shareholders (owners) and management (agents). While managers are responsible for maximizing shareholder value, in many cases, they can steer the company in a direction that benefits them rather than the owner. It will result in agency costs if management's pay is unrelated to the company's worth. Because the ownership structure has an impact on agency expenses, it will also have an impact on the capital structure (Khasawneh & Staytieh, 2017). Because creditors (such as banks) have a system to monitor the company's performance and operations, managers will prioritize the company's internal finances (retained earnings) and maintain a low debt ratio in the capital structure (Anh et al., 2018).

According to the incentive alignment hypothesis, managers are more likely to employ debt in the capital structure to acquire the trust of owners to commit to the firm's advantage (Jensen & Meckling, 1976). Managers who use debt freely accept to be monitored by creditors. As a result, they are more cautious in their decisions to

avoid default costs, particularly in organizations where the managers are also shareholders. According to the incentive alignment hypothesis, foreign ownership has a positive effect on capital structure, meaning that the higher the debt ratio, the higher the foreign-owned firm.

If the company's ownership structure is spread among many small shareholders, there will be a lot of agency expenses. Because, according to Anh et al. (2018), investors are less willing to risk their money and cannot afford the costs of monitoring and oversight. As a result of the growth in foreign ownership, businesses benefit. Foreign investors have more resources and knowledge, which necessitates stricter corporate governance norms and continuous monitoring. When companies have foreign investors, Aydin et al. (2007) suggested that they can give monitoring, monitor check, or advise managers to avoid incorrect judgments or poor planning, which can diminish the firm's value. As a result, foreign investors will reduce their agency costs in terms of ownership structure. The concentration of foreign ownership can have a positive impact on the capital structure of a company. However, according to the entrenchment hypothesis, managers are more likely to engage in selfish behaviors that damage firm performance (Morck et al., 1989). Even when the managers can be a company shareholders, a conflict can arise between the owner and the owner, with the major shareholder overwhelming the small one. The higher the manager's ownership, the more managers concurrently shareholders are likely to take advantage of wee shareholders. Therefore, the firm that has a higher degree of foreign ownership, will have a lower debt ratio.

2.2. Previous Studies

Experiment studies have shown contradictory results on the impact of foreign ownership on company capital structure.

The first is that research indicates a positive relationship between foreign ownership and company leverage. Phung and Le (2013) investigated the impact of the foreign ownership ratio on the financial structure of listed businesses in Vietnam, particularly the capital structure as measured by the market value of the debt ratio. The results of the empirical analysis of Phung and Le (2013) showed an advantageous linkage between the foreign ownership ratio and the leverage of Vietnam's listed companies. Because of the high level of information asymmetry in Vietnam, the findings suggest that overseas investors have an incentive to compel firms to borrow more to reduce agency difficulties. Mishra (2013) examined the factors affecting Australian firms' foreign ownership in 2001–2009. The book value of the debt ratio is used to describe capital structure. Analytical results from the generalized method of moments (GMM) method showed that the debt ratio

positively affects the foreign ownership ratio and the floating rate of foreign ownership of Australian firms. Sivathaasan (2013) investigated the effect of ownership arrangements (foreign and local ownership) on the capital structure of listed manufacturing companies in Sri Lanka. In this study, Sivathaasan (2013) used the book value of debt ratio to represent capital structure. The ordinary least squares (OLS) method's analytical findings revealed a positive relationship between foreign ownership and the leverage of Sri Lankan listed companies. Harymawan et al. (2020) examined the relationship between foreign ownership and capital structure in 524 Indonesian firms registered on the Indonesian Stock Exchange during three years, from 2014 to 2016. The total debt to total assets ratio was utilized to calculate the capital structure in this research. They demonstrated, using the OLS technique, that foreign ownership had a positive effect on capital structure. Harymawan et al. (2020) found that debt holders in Indonesia prefer foreign-owned companies.

Second, studies show an antagonistic relationship between foreign ownership and corporate leverage. Le and Tannous (2016) examined how foreign ownership impacts capital structure using the debt ratio's book value. The findings of the pooled OLS regression model, fixed effects model (FEM), and random effects model (REM) analysis revealed that foreign ownership had a negative impact on the leverage of Vietnam's listed businesses from 2007 to 2012. Khasawneh and Staytieh (2017) use the debt ratio's market value when considering the effect of foreign ownership on Jordan's listed enterprises' capital structure. The Driscoll-Kraay approach was used to adjust the FEM regression results, which revealed a significant negative relationship between foreign ownership and capital structure measured in three ways. Muñoz—Mendoza et al. (2019) investigated the impact of foreign ownership ratio on the debt maturity of Chilean companies. They used a fractional response model (FRM) to 20,586 companies. The findings indicate that foreign ownership has a negative and curving impact on firm debt maturity. Muñoz-Mendoza et al. (2019) argued that foreign ownership in Chilean businesses is an alternate method of control linked with long-term debt. These findings indicate that big companies are more important in controlling agency contradictions, while small and medium-sized businesses must reduce information asymmetry. Gupta et al. (2020), using the GMM technique, confirmed a negative relationship between foreign ownership and the capital structure of Indian listed companies from 2007 to 2018.

Gupta et al. (2020) use the debt ratio's book value to calculate the capital structure in this research. Do et al. (2020) used GMM, OLS, and fractional dependent variable (DPF) techniques for a sample of Taiwan-listed companies from

1997 to 2016. This study shows that foreign investors serve as a direct replacement for debt by strengthening business governance. Vu et al. (2020) investigated the variables influencing the capital structure of listed businesses in Vietnam. In this research, they utilized the long-term debt to equity ratio to reflect the firm's capital structure. Data processing findings from 2005 to 2019 utilizing Pooled OLS, REM, and FEM estimation techniques revealed that foreign ownership damages the capital structure of Vietnamese enterprises.

Third, studies have shown no relationship between foreign ownership and debt ratio. In 1997–2000, Zou and Xiao (2006) examined the financing activity of Chinese listed firms. The authors of this research evaluate companies' capital structure using the book value and market value of debt ratios, as well as the long-term debt ratio. According to Zou and Xiao (2006), international ownership has a positive effect on firm leverage because international investors are more susceptible to asymmetric information than others in emerging economies, so foreign investors will push companies to use more debt as a control and oversight mechanism. The REM regression findings, however, did not reveal a significant effect on the company debt ratio, including foreign ownership, state ownership, and legal ownership. Huang et al. (2011) used the KMV technique to examine the influence of ownership structure on the capital structure of Chinese listed firms from 2002 to 2005 and discovered that ownership structure had no significant impact on firm capital structure choices. For a more in-depth examination, Huang et al. (2011) classified listed businesses based on their leverage ratio (low or high) and discovered that the foreign ownership ratio has a positive effect on the above debt ratio corporate equity in big leveraged companies. They do, however, point out that foreign investors are often institutional investors who can expertly manage them. As a consequence, foreign ownership helps to limit managers' overinvestment issues or reduces agency costs between managers and shareholders. As a result, leverage and foreign ownership may serve as deterrents to managers from participating in non-shareholder-beneficial actions. Anh et al. (2018) investigated the impact of ownership structure on the capital structure of Vietnamese listed companies from 2009 to 2015. They were making use of the GMM regression model. The findings show that foreign ownership has no effect on a firm's capital structure in all three cases: short-term debt ratio, long-term debt ratio, and debt ratio. Pereira (2020) investigates the impact of foreign ownership on capital structure for a sample of Portuguese firms from 2008 to 2018. She calculates the capital structure by dividing long-term debt by total assets. The FEM analysis findings show little indication that foreign ownership influences the capital structure of Portuguese companies.

2.3. Hypotheses

In undeveloped countries like Vietnam, capital markets are ineffective (Thach & Diep, 2019). Information asymmetry is more common among international investors than it is among local investors (Zou & Xiao, 2006). Furthermore, because foreign investors usually have broad portfolios, the ownership rate of one company is typically low. As a result, having the authority to control and monitor foreign investors is insufficient. As a result, they tend to pressurize businesses to use greater debt as a management monitoring tool. Furthermore, organizations with a big percentage of foreign ownership will have more various financial routes to acquire money than other corporations due to their reputation and ties (Le & Tannous, 2016).

Meanwhile, the foreign owners, according to Huang et al. (2011), are primarily institutional investors with strong supervisory management competence. In particular, institutional or overseas investors take a more sophisticated approach to paperwork and news. The ability to better grasp this information about business operations aids in the control of managers' over-investment or the lowering of shareholder-management agency costs. As a result, foreign ownership and debt may be used to compensate for a manager's self-interested behavior. Hence, companies with a high percentage of foreign ownership rarely employ debt.

Previous empirical research has shown a negative relationship between foreign ownership and capital structure (Do et al., 2020; Gupta et al., 2020; Khasawneh & Staytieh, 2017; Le & Tannous, 2016; Muñoz-Mendoza et al., 2019; Vu et al., 2020). The research hypothesis in the paper will be stated as follows, based on the above explanations and related empirical studies:

H1: Foreign ownership has a contrary impact on the leverage of listed enterprises in Vietnam.

3. Methodology and Model

3.1. Methodology

We examine the impact of foreign ownership on the capital structure using Bayesian linear regression:

$$p(\theta | y) = p(y | \theta) p(\theta) / p(y) \quad (1)$$

Where y is the data set and θ is the model parameter. The term $p(\theta|y)$ is called the posterior distribution. The term $p(y|\theta)$ is the likelihood function. Finally, the term $p(\theta)$ represents the prior distribution. The $p(y)$ is called a normalization coefficient and can be removed from the equation because it does not rely on θ . As a result, the

Bayesian posterior parameter estimation is computed by multiplying the prior distribution times the likelihood.

To perform Bayesian linear regression, we use the distribution of prior conjugate as suggested by Permai and Tanty (2018). This approach makes the results of Bayesian analysis unbiased in the positive direction or negative. We assume the likelihood functions are normally distributed with the parameters derived from our econometric model for the likelihood functions. Finally, the posterior distribution is performed using the Markov chain Monte Carlo (MCMC) algorithm via Gibbs Sampling. The Markov chains on the Monte Carlo technique need to converge (Gelman et al., 2013; Oanh et al., 2022).

3.2. Research Model

The econometric model of the paper will look like this (Table 1):

$$\begin{aligned} LEV_{it} = & \beta_0 + \beta_1 FO_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_4 ROA_{it} \\ & + \beta_5 TAN_{it} + \beta_6 LIQ_{it} + \beta_7 DIV_{it} + \beta_8 GRO_{it} \\ & + \beta_9 INF_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

3.3. Data

We collect data of firms listed on the HOSE and HNX. Specifically, we removed all financial firms listed on these two stock exchanges because financial firms' capital structure differed greatly from non-financial firms. Data is extracted from the annual financial statements independently audited by listed firms from 2015 to 2019. We will collect data on macroeconomic variables (inflation) from the World Bank.

Table 2 shows Vietnam's listed firms' average foreign ownership and debt ratio over the research period. Table 2 indicates that the average foreign ownership percentage varied from 8.50 percent to 9.25 percent; the whole sample's average foreign ownership rate was 8.96 percent. In general, the average rate of foreign ownership in Vietnamese firms is higher than that of firms in China (8.0%), Sri Lanka (25.23%), and Jordan (4.9%), India (19.7%), Taiwan (9.0%). Table 2 also shows that Vietnamese listed firms' average debt ratio is about 50.5%.

4. Results and Discussion

4.1. Posterior Simulation

The posterior simulation results of Bayesian regression are shown in Table 3. Table 3 specifically gives data on three parameters: the mean, the likelihood of the mean, and the 95 percent credible range.

Table 1: Measurement of the Model Variables

Variables	Denotes	Measures
Dependent Variable		
Debt leverage	LEV	The total debt on total assets
Independent Variable		
Foreign ownership	FO	Foreign investors hold common shares over the total outstanding shares of the firm
Control Variables		
Firm size	SIZE	The logarithm of total assets
Firm age	AGE	The difference between the year of observation and the year the enterprise was founded
Profitability	ROA	Net profit on total assets
Fixed assets	TAN	Fixed assets on total assets
Liquidity	LIQ	Short-term assets over short-term liabilities
Dividend ratio	DIV	Annual cash dividend per share divided profit per share
Growth opportunities	GRO	Annual growth in total assets
Inflation rate	INF	Consumer price index

Table 2: Foreign Ownership and Debt Ratio in the Sample

Year	2015	2016	2017	2018	2019	Mean	Std. Dev.	Min	Max
FO (%)	8.50	9.05	9.25	9.15	8.83	8.96	13.08	0.00	80.54
LEV (%)	49.61	50.00	50.98	51.21	50.67	50.49	22.46	1.10	96.69

Table 3: Posterior Simulation Results

Variables	Mean	Probability of Mean	95% Credible Interval
FO	-0.18349	100%**	-0.25384; -0.11186
SIZE	0.04018	100%*	0.03418; 0.04618
AGE	0.00072	79.58%*	-0.00100; 0.00243
ROA	-1.04307	100%**	-1.18293; -0.90187
TAN	-0.07203	99.92%**	-0.11554; -0.02871
LIQ	-0.03608	100%**	-0.03923; -0.03291
DIV	-0.00054	60.89%**	-0.00429; 0.00327
GRO	0.01801	98.81%*	0.00239; 0.03388
INF	-0.14462	64.03%**	-0.90877; 0.61854
_cons	-0.43401	100%**	-0.59757; -0.27081
var	0.02771		0.02576; 0.02984

Notes: * is probability of mean > 0; ** is probability of mean < 0.

Table 3 indicates that the average foreign ownership (FO) is -0.18349 and that the likelihood that foreign ownership (FO) has a significant negative impact on the debt ratio (LEV) of listed companies is 100%. The results show that other predictive variables such as size (SIZE), age (AGE), and growth opportunity (GRO) have a strong positive effect on debt ratio (LEV). In contrast, factors such as profitability (ROA), fixed assets (TAN), and liquidity (LIQ) have a strong and adverse effect on the debt ratio (with a probability range from about 80% to 100%). The results should note that the negative impact of dividend rate (DIV) and inflation (INF) on capital structure is relatively low since these two variables' probabilities are only in the range of 61% to 64%.

4.2. Convergence and Effective Sample Size Tests

MCMC algorithms must converge in Bayesian analysis. Effective sample size (ESS), efficiency index, Gelman-Rubin

Table 4: Convergence and Effective Sample Size Tests

Variables	ESS	Efficiency	Rc
FO	30,000	1.00000	1.00001
SIZE	30,000	1.00000	1.00012
AGE	30,000	1.00000	1.00000
ROA	29,668	0.98890	1.00014
TAN	30,000	1.00000	1.00007
LIQ	30,000	1.00000	1.00003
DIV	30,000	1.00000	0.99998
GRO	30,000	1.00000	0.99999
INF	29,928	0.99760	1.00001
_cons	30,000	1.00000	1.00011
var	29,580	0.98600	1.00003
Acceptance rate: 100%			
Efficiency min: 0.98600			
Rc max: 1.00014			

statistics (Rc), and acceptance rate are all listed in Table 4 as evidence that the MCMC chains are convergent. Furthermore, employing a Gibbs sampler, the acceptance rate is 100%, implying that the Bayesian regression model has reached the acceptance rate (Geman & Geman, 1993). Furthermore, the regression model achieves the ESS because the minimum efficiency index is 0.98600 (greater than 0.05). Meanwhile, the biggest Gelman-Rubin (Rc) value in the model is 1.00014 (less than 1.1), indicating that the MCMCs have converged to the target distribution (Gelman et al., 2013; Oanh et al., 2022). As a result of the preceding tests, the MCMC converges and the Gibbs sampling procedure is efficient, allowing Bayesian inference to be performed.

4.3. Discussion

According to the findings, there is a negative relationship between foreign ownership and the debt percentage of listed firms in Vietnam. In comparison to previous research, our findings are consistent with those of Le and Tannous (2016), Gupta et al. (2020), Khasawneh and Staytieh (2017), Vu et al. (2020), Muñoz-Mendoza et al. (2019), and Do et al (2020). They reveal that foreign-owned businesses in Vietnam use less debt than domestic businesses. This negative relationship can be explained in two ways. First, international investors are typically large and have better supervisory capabilities than domestic investors, which helps them cope with overinvestment concerns among managers or lower agency costs between shareholders and managers.

In such a way, the foreign ownership and debt ratios can act as substitutes for correcting managers' foolhardy behavior. Second, companies with a high proportion of foreign ownership often have access to different financial channels and other channels because of their reputation and extensive relationships. Also, foreign-owned firms will share the capital contributed by foreign investors, so the need for debt financing may be lower than in domestic firms.

Our findings also indicate the impact of control variables on the debt ratio of Vietnamese businesses. We find strong positive effects of company size (SIZE) on debt ratio, which is consistent with Le and Tannous (2016), Khasawneh and Staytieh (2017), Vu et al. (2020), Anh et al. (2018), Muñoz-Mendoza et al. (2019), Do et al. (2020), Gupta et al. (2020), Pereira (2020). This finding implies that businesses have easier access to external debt financing, resulting in a broadening of the capital structure's reach. We discover that firm age (AGE) has a significant impact on debt ratio, similar to Khasawneh and Staytieh (2017). Another finding indicates that a firm's growth opportunities (GRO) have a significant and positive impact on its debt ratio.

Meanwhile, our findings revealed that profitability (ROA) negatively affects the debt ratio. Khasawneh and Staytieh (2017), Zou and Xiao (2006), Huang et al. (2011), Muñoz-Mendoza et al. (2019), and Vu et al. (2019) have found comparable results (2020). Fixed assets (TAN) were also determined to negatively affect capital structure. Previous research by Huang et al. (2011), Anh et al. (2018), and Gupta et al. (2020) corroborates these findings. The impact of liquidity (LIQ) on debt ratio is another important conclusion of this study, which is comparable to the findings of Anh et al. (2018) and Pereira (2020).

In addition, we find that increasing the dividend rate (DIV) reduces company leverage, which is consistent with Zou and Xiao (2006). Dividend yield, on the other hand, is unlikely to have a negative influence on leverage. Finally, we discover that inflation (INF) affects leverage in the other direction. This may be because greater inflation rates diminish the amount of the debt ratio. This result is similar to Khasawneh and Staytieh (2017). However, the chances of this happening are slim.

5. Conclusion and Implications

The impact of foreign ownership on the capital structure of non-financial listed companies in Vietnam is investigated in this study. We employ the Bayesian linear regression approach via the MCMC methodology in combination with the Gibbs sampling strategy to analyze this link. The paper shows that foreign ownership has a significant negative impact on corporate leverage from 2015 to 2019 using data from non-financial companies listed on HOSE and HNX.

This research has ramifications for business managers since it improves a company's financial resources by developing a strong capital structure and considering foreign investment as a source of funding. Companies with a high level of financial leverage may be able to attract funds from outside. Foreign investments promote firm productivity and drive import and export activities through improving technology, managerial skills, and human capital quality. As a result, listed firms in Vietnam may reap the benefits of foreign ownership while also lowering their debt levels.

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