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# Article

# Impacts of ownership structure on stock price synchronicity of listed companies on Vietnam stock market

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# **BANKING & FINANCE | RESEARCH ARTICLE**

# Impacts of ownership structure on stock price synchronicity of listed companies on Vietnam stock market

Nghia Phan Trong<sup>1</sup> and Van Vu Thi Thuy<sup>2</sup>\*

**Abstract:** The purpose of this paper is to examine the impacts of ownership structure on stock price synchronicity in Vietnam stock market. The research has been conducted with a sample of all of those companies listed on Vietnam stock market from 2007 to 2017 and used the multivariate regression method with array data sets. The research findings have shown that in Vietnam, stock price synchronicity is mainly caused by general information of the whole market. In addition, the paper has pointed out that a negative relationship exists between the ownership of large shareholders, the ownership of foreign investors and the stock price synchronicity and that there is a positive relationship between state ownership and the stock price synchronicity. The research findings have indicated more clearly the phenomenon of stock price synchronicity in a developing country and offered corporate executives several important implications to limit synchronicity and enhance the informativeness in the company's stock price.

# Subjects: Microeconomics; Finance; Business, Management and Accounting

Keywords: Ownership of large shareholders; ownership of foreign investors; stock price synchronicity; Vietnam stock market

# 1. Introduction

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finance and stock market.

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Banking and Finance, National Economics

The stock market is effective when the stock price must reflect relevant information, or the stock price must be informative. Empirical studies in the world show that capital is allocated more efficiently in the economy when the stock prices are more informative (Durnev et al., 2004; Wurgler, 2000). When the prices reflect less or incorrectly the information related to the company,



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# PUBLIC INTEREST STATEMENT

The study enriches the theoretical basis of stock price synchronicity in developing countries. The research results show that there exists an influence of ownership structure on stock price synchronicity in Vietnam stock market. Therefore, corporate governance activities should aim at increasing stock price information and thereby reducing market risk for the company. In addition, the market management agency needs to have regulations to accelerate the divestment of state capital, strengthen supervision of the State's capital, increase the foreign ownership ratio and increase ownership by major shareholders in order to limit the phenomenon of synchronicity.

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business & management there exists a tendency of Synchronicity among stock prices and creates the general market synchronicity. (Jin & Myers, 2006; Morck et al., 2000).

In previous studies on stock price synchronicity from a micro perspective, the factors belonging to listed companies have a great focus on the ownership structure factor. The effect of ownership structure on stock price synchronicity can be explained by affecting corporate governance performance, the company's information environment and the information advantage of some investors. Ownership structure helps to improve stock price informativeness, corporate governance efficiency and increase the quality of corporate information disclosed (He et al., 2013; He & Shen, 2014). Besides, the ownership structure helps to solve the agency problem in the activities of listed companies and limit the problem of information asymmetry in the stock market (Gul et al., 2010; Kang & Stulz, 1997; Jiang & Kim, 2004). In addition, the ownership structure also helps to reduce the cost of information gathering, reduce transaction costs for investors and thereby reduce the cost of capital for the listed company (Fernandes & Ferreira, 2009; Henry, 2000). Studies show that differences in the institutional environment and information environment between countries can change the influence relationship of ownership structure to stock price synchronicity. However, most of the studies are conducted in developed countries and very few studies on specific factors belonging to listed companies are carried out in countries with developing and transitioning economies like Vietnam. The research results will clarify the influence of large shareholder ownership, state ownership and foreign ownership on stock price synchronicity in Vietnam.

#### 2. Literature review

#### 2.1. Stock price synchronicity of the stock market

Stock price synchronicity of listed companies depends on the general information of the whole market and specific information of listed companies. When the stock price reflects less or incorrectly the firm-specific information, the stock price synchronicity depends largely on the general information of the whole market, this leads to the stock price increase or decrease subject to the stocks of other companies on the market. At that time, the stock prices of companies will tend to synchronize with each other and create a general trend of market synchronicity (Jin & Myers, 2006; Morck et al. 2000). As such, share price synchronicity is an indicator to reflect the ability of the company to convert information that is specific to the share price. When the stock price reflects less or incorrectly information related to the company's value and the increase (decrease) in prices depends greatly on the general information of the whole market, this leads to the phenomenon of stock prices of companies on the market increasing (or decreasing) together and this phenomenon is called Stock Price Synchronicity (SYNCH).

## 2.2. The ownership structure of listed companies

Ownership structure has an impact on the information environment as well as the management efficiency of listed companies and when being viewed from a micro perspective, the ownership structure is an important factor that has an impact on SYNCH. Ownership structure helps to improve the informativeness in stock prices; enhances the efficiency of corporate governance and increase the quality of published corporate information (He et al., 2013; He & Shen, 2014); enables the problem of representatives in the operation of listed companies to be solved and limits the information asymmetry on the stock market (Gul et al., 2010; Kang & Stulz, 1997; Jiang & Kim, 2004); reduces the cost of information gathering, lowers the transaction costs for investors and thereby decreases the capital costs for listed companies (Fernandes & Ferreira, 2009; Henry, 2000); Ownership structure can explain various degrees of stock price synchronicity (Ding et al., 2013). In addition, the differences in an institutional environment, information environment and the protection of investors' interests among different nations will affect the relationship between ownership structure and stock price synchronicity and can make a difference in the relationship between ownership structure and stock price synchronicity among different countries.

Various approaches have been adopted to the corporate ownership structure. According to the company ownership and control approach, the ownership structure consists of the ratio of equity owned and held by internal members and external investors outside the company. If the equity concentration approach is taken, the ownership structure is composed of: the ratio of equity held by the major and dispersed shareholders of the company (Shleifer & Vishny, 1997). Moreover, the ownership structure is also approached in other aspects such as: according to the characteristics of the investor, the origin of the investor, the ownership structure includes: the ownership ratio of foreign investors and the ownership ratio of institutional investors and the ownership ratio of individual investors; according to the level of state holdings, the ownership structure consists of the state ownership rate and the private ownership rate. In this research, the ownership structure is approached and classified into large shareholder ownership, state ownership and foreign investor ownership.

#### 2.3. Impacts of ownership structure on stock price synchronicity of listed companies

· Impact of large shareholder ownership on SYNCH

The research by Brockman and Yan (2009) has shown that large shareholder ownership increases the liquidity and thereby reduces the stock price synchronicity in the market. Meng et al. (2020) find that block trades are negatively associated with synchronicity. Further analysis indicates that the negative impact of block trades is more pronounced in firms with weaker information environments. Its findings are consistent with that of the study by Morck et al. (2000) and support the view in which large shareholder ownership plays an important role in shaping the corporate information environment. However, according to research findings of Gul et al. (2010), the stock prices of companies with high ownership concentration will carry less specific information of the company that is reflected in the stock price or higher stock price synchronicity. When other factors are constant, centralized ownership will increase SYNCH.

Studies by Fernandes and Ferreira (2008, 2009); Kim & Shi (2012) have revealed that the reason for the higher synchronicity in emerging markets than in developed markets is that the company's ownership structure in emerging markets is characterized by centralized ownership by family members or government ownership. When the information environment is intransparent, large and controlling shareholders are more motivated to try to cover up adverse information in the company's operations (or to disclose in limited way information to external investors) to serve their interests (Fan & Wong, 2005; Kim & Yi, 2006). As a result, the ownership of large shareholders increases the synchronicity of stock prices in the market.

· Impact of state ownership on SYNCH

Research findings of Gul et al. (2010) and Hou et al. (2012) have indicated that the level of synchronicity is higher when the largest shareholders are government-related. This is in line with the view that government ownership leads to the restriction in protecting the interests of minor shareholders and the publication of unclear financial statements. According to a research by Ben-Nasr and Cosset (2014), when the state ownership is high, combined with the less transparent information environment, stock price synchronicity will increase in the market. This study also shows that the state ownership has a positive relationship with the lack of information transparency provided to investors and discourages investors to transact based on information about the company's operations that they have collected. Lin et al. (2015) studied the relationship between government management policy and the information environment as well as stock price synchronicity. A poor management policy can increase stock price synchronicity, especially in state-owned enterprises.

• Impact of foreign ownership on SYNCH

The research findings of Jiang and Kim (2004) are consistent with that of Kang and Stulz (1997), that is, foreign investors tend to hold stocks in large companies of better accounting standards with low financial leverage where foreign investors are better able to collect and process information as well as convert information into stock prices. Research by Jiang and Kim (2004) shows that foreign ownership is inversely related to information asymmetry. In addition, foreign ownership helps improve the quality of information on the domestic stock market in the proper corporate governance environment, and thus significantly reduces transaction costs and risks (Li et al., 2011). Thus increasing the ownership ratio of foreign investors helps reduce the stock price synchronicity in the market. A study by Gul et al. (2010) shows that the presence of foreign investors has improved the information environment, which helps incorporate the firmspecific information into stock prices, thereby reducing the stock price synchronicity. Research by He et al. (2013) and He et al. (2019) suggested that large shareholders being foreign investors can limit the stock price synchronicity through trading based on their information advantages. In addition, foreign investors enable the control of company management board to be more effective than domestic ones, especially in markets with poor corporate governance and the intransparent information environment; therefore lessen the stock price synchronicity (Kho et al., 2009; Vo, 2017).

# 3. Methodology

# 3.1. Analyzing data

The data used in this study include the financial statements of listed companies and data on stock prices of listed companies. The sample includes all companies listed on both Ho Chi Minh Stock Exchange and Hanoi Stock Exchange from 2007 to 2017. The data is provided by StoxPlus—a company specializing in collecting and analyzing financial data in Vietnam.

## 3.2. Research variables in the model

(i) Synch: measures the stock price synchronicity

The stock price synchronicity of each firm is usually measured by adjusted R<sup>2</sup>. Based on the method of Morck et al. (2000), and Jin and Myers (2006). Specifically, in this study, R2 is calculated from the following market regression model:

$$\mathbf{r}_{i,t} = \alpha_i + \beta_i * \mathbf{r}_{\mathsf{M},t} + \varepsilon_{i,t}$$

(1)

In which:

r<sub>i,t</sub>: Return on stock i in the week t of each year

 $r_{\text{M},t}\!\!:$  The return of the market portfolio in the week t of each year. The market portfolio is defined as all stocks listed on the stock market

The  $R^2$  value of model (1) measures the synchronicity of the return of stock i (Ri) due to the fluctuation in market return ( $R_M$ ). According to this explanation, when the value of  $R^2$  is low, the synchronicity of stock return is less subject to market fluctuation but affected by firm-specific information. The value of  $R^2$  is in the range of 0–1. According to the approach of analyzing synchronicity in previous empirical studies such as Morck et al. (2000), Jin and Myers (2006), and Fernandes and Ferreira (2008), the logarithmic changes in  $R^2$  are conducted to measure stock price synchronicity:

$$\Psi_i = \ln(\frac{R_i^2}{1 - R_i^2}) \tag{2}$$

(ii) The variable of Ownership structure

- State ownership (State): Similar to the research by Ben-Nasr and Cosset (2014), state ownership is defined as the percentage of shares held by the state in any form over the total number of outstanding shares of the company.
- Major shareholder (Major): Approach to the measurement of major shareholder ownership according to the research by Heflin and Shaw (2000), Brockman and Yan (2009), and Lâm (2016), a major shareholder is defined as those who hold 5% or more of the total outstanding shares of the company.
- Ownership of foreign investors (Foreign): Approach to the measurement of foreign investors "ownership according to the research by He and Shen (2014), foreign investors" ownership is the ratio of the number of shares held by foreign investors over the total outstanding shares of the company at the end of the fiscal year.

#### (iii) Control variables

To eliminate the potential influence of firm-specific variables on the relationship between ownership structure and stock price synchronicity, controlled firm-specific variables are included in the regression model. Controlling firm-specific variables is aimed at considering the net effect of ownership structure variables on stock price synchronicity, in addition, if firm-specific variables are not controlled, it is likely to encounter inadequate variable controlling issues when building models. Control variables were determined based on previous studies (Piotroski & Roulstone, 2004; Chan & Hameed, 2006; Ferreira & Laux, 2007; Fernandes & Ferreira, 2008; Ben-Nasr & Cosset, 2014; Dang et al., 2015) including:

+ *Company size (MV)*: is determined by taking the natural logarithm of the company's market capitalization, in which the market capitalization is calculated by the market value of the total common outstanding shares at the end of the calculated year;

+ The coefficient of market value on book value (MB): is determined by taking the natural logarithm of the market value ratio over the book value of the company's stock at the end of the calculated year;

+ *Leverage ratio* (*LEV*): calculated by the ratio of long-term debt over the total assets of the company at the end of the calculated year;

+ *Return on assets of the company (ROA*): is calculated by return after tax on the company's total assets at the end of the calculated year.

+ *Turnover*: is determined by the average monthly trading volume of shares divided by the total number of outstanding shares of the company in the year;

+ *Stock return synchronicity* (StdRet): is determined by the standard deviation of the weekly rate of return for stocks in the calculated year;

+ The annual rate of return for stocks (Ret12): is determined by the difference in stock prices on the last trading day of the calculated year from those on the last trading day of the previous year divided by stock prices on the last trading day of the previous year.

To eliminate the effect of outlier observations, the team eliminated observations smaller than quantile 1% and larger than quantile 99% in the sample distribution of each variable.<sup>1</sup>

#### 3.3. Research model

Based on the research overview and research hypotheses, the study variables were determined based on previous studies (Ben-Nasr & Cosset, 2014; Brockman & Yan, 2009; Gul et al., 2010; Hasan

et al., 2013; He et al., 2013; He & Shen, 2014; Lâm, 2016; Jiang & Kim, 2004; Lin et al., 2015). The author has performed the analysis to examine the impact of ownership structure factor on SYNCH based on the rearession model with the following table data:

$$Synch_{i,t} = a + \lambda CTSH_{i,t-1} + \sum_{i,t-1}^{\gamma_i} Controls_{i,t-1}^j + \theta_n + \delta_t + \varepsilon_{i,t}$$
(3)

In particular, Synch<sub>i</sub> is the variable of stock price synchronicity of company i measured by  $\Psi$  that is represented in section (i); CTSH is the ownership structure variable defined in section (ii); Controls<sub>i</sub> are the firm-specific control variables described in section (iii). Model (3) also includes the sector's fixed effect ( $\theta_n$ ) and year's fixed effects ( $\delta_t$ ) to control the sector's and year's dominant effects on the impacts of ownership structure on stock price synchronicity. All of the independent variables were included in the model with a lagged value to minimize the inverse effect of the stock price synchronicity variable on the variable of ownership structure.

Tabular data in finance often had a cross-correlation and autocorrelation phenomenon of variables. If this happens, the standard errors calculated typically in the regression will be deviated and produce inaccurate t-statistics (Petersen, 2009). To address this problem, Robust standard errors are used to solve the heterogeneous variance phenomenon and estimated the standard errors in clusters of each company to solve the autocorrelation problem when calculating t-statistics according to the method of Petersen (2009).

#### 4. Results and discussion

#### 4.1. Descriptive statistics and correlation matrix

Table 1 presents descriptive statistics of stock price synchronicity, ownership structure variable and control variable in the model.

The table shows that among 6,993 observations of the sample, the average state ownership in any form has a value of 0,2586. Thus, the average state ownership ratio accounts for about 25.86% of the total outstanding shares of companies. The highest ownership ratio of major shareholders is 52.48% and the average of large shareholders' ownership ratio accounts for 20.47% of the total outstanding shares of listed companies. The mean of the ownership of small shareholders is 58.99% of the total outstanding shares of the companies in the sample. The mean of foreign investors' ownership is 8.29% and the average ownership of domestic investors is 65.99% of total outstanding shares of listed companies. Thus, there is a big difference between the ownership ratio of foreign investors and that of domestic ones in Vietnam stock market.

Table 2 presents the Pearson correlation coefficient matrix among variables in the research. The correlation coefficient matrix among variables shows that the variable of state ownership and domestic investors are highly correlated with each other (-0.85); domestic investors include state ownership; therefore, these two variables are highly correlated with each other. The correlation among the remaining independent variables representing the ownership structure (state ownership, foreign investors, major shareholder, small shareholder) is low, so the possibility of multi-collinear phenomena in the regression analysis can be eliminated. Regarding the correlation among the control variables in the model, the company's market capitalization and market value on the book value are relatively high correlated (0.538); The remaining control variables are, on the whole, poorly correlated. For the correlation between the independent and the control variables, the variable of foreign investor and the company's market capitalization (MV) are relatively highly correlated (0.525) while the correlation between the independent variables and the remaining control variables is relatively low. As an empirical rule, multicollinearity proves not to be a serious problem if the correlation coefficient between two independent variables is less than 0.8 (Gujarati, 2003) Table 3 and 5.

Table 1. Descriptive statistics of research variables in the model						
Variable	No. of Observations	Mean	Standard Deviation	Min	Max	
Logarit ( $R^2/1-R^2$ ) or ( $\Psi_i$ )	5679	-2.688022	2.452311	-21.74169	2.322745	
State	6993	0.2586079	0.2594817	0	1	
Foreign	6589	0.0829705	0.1332755	0	1	
Domestic	6774	0.6598669	0.27518	0	1	
Major	3477	0.205	1.228	0	0.53	
Small	3394	0.589	2.992	0	1	
MV	7269	-1.675651	1.822857	-8.873868	5.81881	
MB	7266	-0.140657	0.7688079	-2.79004	3.855742	
LEV	6423	0.1105879	0.1469604	0	0.9669347	
ROA	7046	0.0609912	0.0851152	-0.9960087	0.7836993	
Turnover	5888	0.0787735	0.1232393	0	1.285799	
StdRet	5815	0.137464	0.0757619	0.000568	0.7268426	
Ret12	5450	0.008385	0.440838	-0.9995214	2.208623	

Source: Calculation based on Stata

## 4.2. Results

The regression model examines the impact of the ownership structure (major shareholders, state ownership and foreign ownership) on stock price synchronicity in four different approaches to test the sustainability of the research findings. Specifically:

Model (1): Regression of independent variables and control variables in the model.Model (2): Controlling some additional variables to isolate the effect (if any) of the controlled variables on the relationship between the independent variables (state ownership, major shareholder, foreign investors) and stock price synchronicity. The additional control of variables to the model is aimed at determining the net effect of the independent variables on the dependent variable in the model.

In model (3), a lagged variable of the dependent variable is added to solve the possibility that the endogenous relationship may occur between the stock price synchronicity variable and the ownership structure variable.

In model (4), the impact of the lagged variable of the dependent variable and controlled additional variables are tested to isolate the effect (if any) of the controlled variables on the relationship between the independent variable (state ownership, major shareholder, foreign investors) and stock price synchronicity.

## 4.2.1. Impacts of state ownership on stock price synchronicity

The empirical analysis shows that state ownership has a positive effect on the stock price synchronicity with a 10% significance level. The coefficient estimated value of state ownership is 0.334 (t-stat = 1.95). This result is consistent with the argument in which the higher state ownership of an enterprise is, the lower the informativeness in its stock price and this increases the stock price synchronicity in the market. This outcome is also logical with the findings of a number of empirical studies of the impact of state ownership on the stock price synchronicity in the world such as: Gul et al. (2010), Hou et al. (2012), and Lin et al. (2015); Thi-Kim-Dung Bui et al. (2020).

Table 2. C	orrelation c	pefficient m	atrix amon	g variables i	n the mode								
Biến	€	State	Foreign	Domestic	Major	Small	٨٧	MB	LEV	ROA	Turnover	StdRet	Ret12
÷	1.0000												
State	0.0358	1.0000											
Foreign	0.0359	-0.2284	1.0000										
Domestic	-0.0562	-0.8509	-0.3046	1.0000									
Major	-0.0749	-0.1314	0.0459	0.1035	1.0000								
Small	0.0312	-0.0863	-0.0174	0.0932	-0.0103	1.0000							
MV	0.1076	-0.0678	0.5252	-0.2129	0.0705	-0.0120	1.0000						
MB	-0.2014	0.0928	0.2260	-0.2083	0.0557	-0.0290	0.5380	1.0000					
LEV	0.0858	0.1174	-0.0325	-0.0981	-0.0126	-0.0299	0.1768	-0.0204	1.0000				
ROA	-0.0486	0.1198	0.2117	-0.2289	-0.0253	-0.0133	0.1990	0.3205	-0.2034	1.0000			
Turnover	0.3882	-0.2265	-0.0826	0.2641	-0.0410	0.1670	-0.0642	-0.2319	-0.0523	-0.0335	1.0000		
StdRet	0.2043	-0.0099	-0.1214	0.0734	-0.0241	0.0089	-0.2298	-0.1636	-0.0112	-0.0335	0.2822	1.0000	
Ret12	-0.1782	-0.0116	0.0228	0.0006	0.0163	0.0078	0.0403	0.1011	0.0000	0.1647	0.1426	-0.0756	1.0000
Source: Calcu	ilation based oi	n Stata											

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Table 3. State ownership and stock price synchronicity						
Variable	Dependent variable: $\Psi$ = log(R2/(1-R2))					
	Model (1)	Model (2)	Model (3)	Model (4)		
State	0.334*	0.847***	0.285**	0.727***		
	(1.95)	(2.68)	(2.04)	(2.81)		
Domestic investor		0.526*		0.449*		
		(1.73)		(1.79)		
Logmv	0.499***	0.536***	0.397***	0.421***		
	(17.71)	(16.79)	(15.29)	(15.10)		
Logmb	-0.729***	-0.756***	-0.586***	-0.592***		
	(-11.43)	(-11.75)	(-10.27)	(-10.39)		
Lev	-0.063	-0.119	-0.067	-0.139		
	(-0.23)	(-0.43)	(-0.29)	(-0.59)		
Roa	-0.522	-0.414	0.183	0.245		
	(-0.99)	(-0.79)	(0.40)	(0.53)		
Turnover	4.594***	4.496***	3.455***	3.405***		
	(8.44)	(8.07)	(6.90)	(6.63)		
Stdret	0.917*	0.941*	1.874***	1.849***		
	(1.71)	(1.71)	(3.57)	(3.46)		
ret12	-0.239***	-0.232***	-0.220**	-0.239***		
	(-2.79)	(-2.66)	(-2.52)	(-2.73)		
Lagged_ <b>V</b>			0.256***	0.254***		
			(10.60)	(10.39)		
Constant	-0.823***	-1.161***	0.342*	-1.408***		
	(-2.91)	(-3.50)	(1.81)	(-4.68)		
Fixed effects	IY	IY	IY	IY		
Number of observations	4,187	4,056	4,029	3,946		
Adjusted R-squared	0.3764	0.3787	0.4120	0.4136		

Robust t-statistics in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

Source: Calculation based on Stata software

#### 4.2.2. Impacts of major shareholder ownership on stock price synchronicity

The regression result with the estimated coefficient of the major shareholder ownership variable is -1.015 (t-stat = -3.34) with 1% significance level. This indicates there is an inverse relationship between the ownership of major shareholders and the stock price synchronicity. This result supports the argument that a major shareholder with the information advantage over other groups of shareholders and trading based on the information advantage of major shareholders will help reduce stock price synchronicity. In addition, ownership of major shareholders will help enhance corporate governance, improve the corporate information environment and thereby increase the informativeness and limit stock price synchronicity in the market. This outcome is also consistent with those findings of several studies of the impact of major shareholders on stock price synchronicity in the world such as Morck et al. (2000), Jin and Myers (2006), Brockman and Yan (2009), Gul et al. (2010), and Boubaker et al. (2014), and Lâm (2016).

Table 4. Major shareholder ownership and stock price synchronicity						
Variabe	Dependent variable: $\Psi$ = log(R2/(1-R2))					
	Model (1)	Model (2)	Model (3)	Model (4)		
Major shareholder	-1.015***	-1.084***	-0.708**	-0.759***		
	(-3.34)	(-3.62)	(-2.56)	(-2.78)		
Small shareholder		0.543***		0.361**		
		(3.22)		(2.54)		
Logmv	0.536***	0.524***	0.422***	0.417***		
	(15.61)	(15.02)	(11.85)	(11.54)		
Logmb	-0.876***	-0.866***	-0.711***	-0.709***		
	(-9.96)	(-9.85)	(-8.45)	(-8.44)		
Lev	-0.043	-0.031	-0.016	-0.007		
	(-0.13)	(-0.09)	(-0.06)	(-0.03)		
Roa	-0.181	-0.143	0.774	0.788		
	(-0.25)	(-0.20)	(1.28)	(1.30)		
Turnover	6.066***	5.911***	4.635***	4.547***		
	(11.80)	(11.72)	(11.34)	(10.97)		
Stdret	1.133*	1.167*	1.817***	1.837***		
	(1.83)	(1.90)	(2.90)	(2.93)		
ret12	-0.409***	-0.408***	-0.378***	-0.376***		
	(-4.12)	(-4.13)	(-3.55)	(-3.53)		
Lagged_ $\Psi$			0.311***	0.306***		
			(7.39)	(7.39)		
Constant	-0.840***	-0.837***	-0.968***	-1.082***		
	(-2.71)	(-2.73)	(-3.59)	(-3.96)		
Fixed effects	IY	IY	IY	IY		
Number of observations	2,410	2,410	2,272	2,272		
Adjusted R-squared	0.3904	0.3939	0.4461	0.4475		

Robust t-statistics in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

Source: Calculation based on Stata software

#### 4.2.3. Impacts of foreign investor ownership on stock price synchronicity

The result of the experimental analysis shows that foreign investors' ownership has an inverse influence on the stock price synchronicity with a 10% significance level. The coefficient estimated value of foreign investor ownership in Table 4.19 is -0.59 (t-stat = -2.0). This result is consistent with the argument that with the advantages of foreign investors in collecting firm-specific information and experience in corporate governance; Ownership of foreign investors enhances corporate governance, improves the information environment and enables the firm to become more transparent; therefore, foreign investors' ownership has a positive impact and contributes to the increase in the informativeness and thereby reduce stock price synchronicity of companies listed on Vietnam's stock market. The research findings are consistent with many empirical studies in the world of the impact of foreign investor ownership on the stock price synchronicity such as Jiang and Kim (2004), Gul et al. (2010), He et al. (2013), He and Shen (2014), He et al. (2019), Thi-Kim-Dung Bui et al. (2020).

Table 5. Foreign investor ownership and SYNCH						
Variable	Dependent variable: $\Psi$ = log(R2/(1-R2))					
	Model (1)	Model (2)	Model (3)	Model (4)		
Foreign investor	-0.590**	-0.862***	-0.544**	-0.737***		
	(-2.00)	(-2.68)	(-2.21)	(-2.80)		
Domestic investor		-0.322*		-0.279*		
		(-1.81)		(-1.90)		
Logmv	0.523***	0.536***	0.420***	0.422***		
	(17.02)	(16.76)	(15.28)	(15.08)		
Logmb	-0.741***	-0.756***	-0.598***	-0.592***		
	(-11.58)	(-11.75)	(-10.49)	(-10.39)		
Lev	-0.067	-0.118	-0.076	-0.139		
	(-0.24)	(-0.43)	(-0.33)	(-0.59)		
Roa	-0.359	-0.412	0.335	0.246		
	(-0.69)	(-0.78)	(0.72)	(0.53)		
Turnover	4.383***	4.497***	3.266***	3.405***		
	(8.51)	(8.07)	(6.82)	(6.63)		
Stdret	0.799	0.934*	1.782***	1.845***		
	(1.47)	(1.70)	(3.39)	(3.46)		
ret12	-0.233***	-0.232***	-0.216**	-0.239***		
	(-2.75)	(-2.66)	(-2.49)	(-2.73)		
Lagged_ $\Psi$			0.256***	0.254***		
			(10.57)	(10.40)		
Constant	-0.772***	-0.310	0.561***	-0.678***		
	(-2.69)	(-1.18)	(2.92)	(-2.78)		
Fixed effects	IY	IY	IY	IY		
Number of observations	4,187	4,056	4,029	3,946		
Adjusted R-squared	0.3763	0.3787	0.4120	0.4137		

Robust t-statistics in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

Source: Calculation based on Stata software

# 5. Conclusion and research implications

#### 5.1. Conclusion

Thus, by measuring the level of stock price synchronicity, it is shown that stock price synchronicity does exist in Vietnam stock market. The research findings reveal that stock return synchronicity is substantially influenced by macroeconomic information of the whole market or the stock prices of companies listed on the Vietnam stock market have a high degree of synchronicity with the market synchronicity.

Thanks to the regression method for tabular data sets of companies listed on Vietnam stock market from 2007 to 2017, the study has shown the positive relationship between state ownership and stock price synchronicity. The finding of this study is consistent with the argument that the higher the state ownership, the less the transparency in information provided to investors and that it

also means the lower the informativeness in stock prices, which increases the stock price synchronicity in the market.

The research findings also indicate that there is a negative relationship between the ownership of foreign investors and the stock price synchronicity of companies listed on Vietnam stock market. The research findings support the argument that with the advantages of foreign investors in collecting company-specific information and skills in corporate governance, ownership of foreign investors helps to enhance corporate governance. improve the information environment and help increase the informativeness and thereby reduce the stock price synchronicity in the market.

In addition, in the relationship between the ownership of major shareholders and stock price synchronicity, there exists a negative relationship between the ownership of the major shareholder and stock price synchronicity. This result supports the argument that a major shareholder with the information advantage over other groups of shareholders and trading based on the information advantage of a major shareholder will help reduce stock price synchronicity. In addition, ownership of major shareholders will help enhance corporate governance efficiency, improve the corporate information environment and thereby increase the informativeness of stock price and limit stock price synchronicity on the market.

In this study, the degree of the stock price synchronicity in a particular country is considered. Therefore, the study is designed in the direction of fixing the influence of macro factors and only considering the influence of micro factors belonging to the characteristics of listed companies on the stock price synchronicity. Therefore, future studies can add elements of the macro environment and compare the differences in the macro environment of different countries such as: institutional environment, investor protection policy, information environment between Vietnam and other countries.

## 5.2. Research implications

*Firstly*, with the advantages of foreign investors, foreign investor ownership will help improve the informativeness and reduce stock price synchronicity of companies listed on Vietnam stock market by enhancing the quality of corporate governance (improving risk management, increasing operational efficiency and transparency in information disclosure). As a result, investors can make investment decisions based on company-specific information instead of relying heavily on general information of the whole market. Therefore, it is necessary to put forth policies to encourage the participation of foreign investors (especially institutional investors, strategic investors) in Vietnam stock market. Foreign investor ownership contributes to limiting the risks of the stock market. The participation of foreign investors is ensured by legal provisions of the state and, through the ownership of foreign investors, helps to reduce the synchronicity, increase the market liquidity, enhance corporate governance of listed companies, perfect legal regulations related to foreign ownership and facilitate the development of the stock market in the long term.

Secondly, the research findings show that there is a negative relationship between state ownership and stock price synchronicity. Therefore, for those companies with state ownership, it is necessary to improve their information environment, enhance the transparency in the information disclosure, thereby limit stock price synchronicity. As well as dependence on the general synchronicity of the market. In addition, state ownership in enterprises should be lowered through the state divestment roadmap in state-owned corporations and enterprises. By gradually lessening the state ownership in enterprises and enhancing corporate governance at state-owned enterprises, stock price synchronicity in the market shall be weakened.

Thirdly, in the Vietnam market, the ownership of major shareholders has a positive impact on increasing the informativeness of stock prices and limiting the stock price synchronicity compared to general market synchronicity. In addition, there has not existed any negative influence in the relationship between the ownership of major shareholders and stock price synchronicity when

increasing the ownership ratio of major shareholders; therefore, encouragement of an increase in the ownership of major shareholders is of great necessity in Vietnam today.

Fourthly, the influence of company-specific variables on stock price synchronicity is an important indicator to help managers in governing corporate operations to take advantage of the impact of positive information in the market or limit the negative impact of general market information and increase the incorporation of firm's positive information into the price to enhance the informativeness of the firm's stock price in the market.

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#### Note

 The company size (MV) and the coefficient of Market value on book value (MB) do not apply this technique as these two variables are taken natural logarithm, thus limiting the impact

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