

THE FIT OF DIVIDENDS ON INVESTMENT DECISIONS IN THE VIETNAM CAPITAL MARKET

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ABSTRACT

This paper explores the effect of dividends on the investment decisions of listed firms in Vietnam from 2010 to 2020. The study employs quantitative research methods to reveal the significant effect of dividends on investment decisions. In addition, the phenomena involving endogeneity and over-identifying restrictions are tested to ensure the reliability of the findings. The dividend-investment relationship is explained based on some theories, including the bird-in-the-hand theory, the asymmetric information theory, the signalling theory, and the agency theory. Under control variables, the findings define and support the effects on the dividend-investment relationship.

Keywords: agency theory, asymmetric information theory, dividends, investment, Vietnam.

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INTRODUCTION

Investment plays an important role in businesses that aim to expand their production and increase their productivity (Baddeley, 2003). A company recognizes and takes advantage of investment opportunities that gain a competitive advantage over its competitors (Keynes, 1936). An investment decision, then, is a strategic decision that significantly impacts a company's performance and efficiency. In other words, investment is a business's long-term growth engine.

Dividends are profits after tax that are paid to the existing shareholders. The form of dividend payment or the dividend rate under the company's dividend policy are determined by the board of directors based on the firm's performance. However, the management always aims to retain profits for reinvestment and as a result pay fewer dividends. Dividend policy,

therefore, for many reasons, is one of the most critical policies in corporate finance. First, dividend payments affect the book value of shares, the actual asset value of shareholders, and investment capital. Second, dividend payments also create a signal about the company's prospects because they attract the interest of shareholders and potential investors. Finally, dividend policy is linked to the company's cash usage and liquidity.

The decision to use net income to pay dividends for existing shareholders forces the company to give up potential investment opportunities. This indicates that the dividend growth rate is declining, which could lead to a drop in stock prices in the future. Furthermore, the method of dividend payment or re-investment chosen by a company is determined by its strategy. Large and reputable companies typically can spend a large portion of their profit

after taxes on dividends. Similarly, in the growth stage, some companies may spend most or even all their profits after tax on reinvesting in ways that match their demands.

Based on dividend theories including the dividend irrelevance hypothesis of Miller and Modigliani and other theories such as bird-in-the-hand, agency theory and asymmetric information theory, the relationship between dividend and investment decisions has been focused on since Miller and Modigliani (1961) and Fama and Miller (1972). Many empirical studies worldwide have shown no dividend-investment relationship, but other research has shown that dividend policy affects investment activities positively or negatively. Most of those studies concentrated on developed markets; studies on the impact of dividends on investment in emerging markets like Vietnam have not been widespread. Therefore, this study contributes to the literature by focusing on practical information about Vietnamese listed firms.

This paper estimates the effect of the dividend on the investment decisions of Vietnamese listed firms from 2010 to 2020 based on agency theory, asymmetric information theory, and dividend theories. To achieve this goal, the paper aims to answer the research question "To what extent does dividend affect the investment decisions of Vietnamese listed firms during 2010 – 2020?"

LITERATURE REVIEW AND EMPIRICAL STUDIES

Literature review

Wet (2004) claimed that asymmetric information and agency problems are the leading causes of business investment mistakes. Corporate executives may conduct self-seeking acts in agency problems, affecting shareholder value through high-risk investment decisions that create conflicts of interest between owners and managers (Jensen, 1986). Besides, asymmetric information issues increase the average cost of raising capital and create management pressure for dividend payments. Therefore, to limit the phenomena of asymmetric information and agency problems, thereby creating a positive impact on investors, decision-making in dividend payments plays an important role. Therefore, this research is based on the information asymmetry theory and the agency theory to analyze the impact of dividends on investment decisions.

According to Parker (2010), investment decisions, in the most general sense, allocate current resources such as capital, labor, and intelligence to buy or exchange other resources that can generate profits in the future. From a financial perspective, an investment decision is a series of spending activities by an investor to obtain a cash flow higher than the original amount, thus realizing the goal of a rate of return. At the firm level, investment is the use of money or assets to buy other assets, with the expectation that these assets will provide future (short-term or long-term) benefits to the business. From an accounting perspective, the amount of capital spent is considered an investment expenditure (capital expenditure) when it is used to purchase or upgrade fixed assets. Therefore, Parker (2010) only mentioned investment decisions in fixed assets in the research scope.

Investment can be measured by various methods, including scale on fixed assets, investment spending, or cash flow, all of which are used in many studies worldwide as well as the Vietnamese market. Titman et al. (2001) used capital investment published in enterprises' annual cash flow statements to measure investment decisions. In the study by Tempel (2011), the author used a more general measure of investment, using the total cash flows spent on property, plant, and equipment (PPE), intangible assets, and assets. Vo (2017) measured investment by changing fixed-asset balances (closing balance minus opening balance) and depreciation during the year, so the method for measuring investments includes investments in tangible and intangible fixed assets.

The dividend-investment relationship is explained by using the Agency Theory, the Asymmetric Information Theory, and Bird-in-hand Theory. In an economic relationship, two parties possess an unequal amount of information, and the party with more information has a tremendous advantage in delivering economic decisions. In the business environment, information asymmetry manifests that inside investors with over 10% voting shares are always in a better position to understand the financial position and business activities than outside investors. Asymmetric information, manifested through adverse selection, was first explained by Akerlof (1970). In newly emerging stock markets like Vietnam, investors often rely

on the dividend payout level as a signal to identify the company's prospects in the future because of asymmetric information. Dividend policy thus is considered one of the critical decisions of corporate financial management, having a significant influence on the stock price and the value of the enterprise. Therefore, it can be said that the choice of dividend policy is one of the more crucial decisions that managers need to consider. Compiled from the study by Nguyen (2008), the top three dividend policies favored by managers include (1) passive retained earnings policy, (2) the stable policy dividend, and (3) a dividend policy with a constant payout ratio.

Besides using asymmetric information, the relationship between dividends and investments could be explained based on agency theory. The managers' presence in the entity accelerates the conflicts of interests between owners and managers (Shah, 2014) and is considered a platform for the agency theory found by Jensen and Meckling (1976). Moreover, Jensen and Meckling (1976) have empirically shown how to assign shares between managers and owners that reconcile the shareholders' different interests.

Many studies have shown that managers will try to achieve more incentives and bonuses provided they obtain higher realized performance, especially in the face of uncertainty and asymmetric information in the investment. Paying dividends at a low rate helps managers maintain the number of assets under their control. Retaining profits also helps management be more flexible in investment decisions and actively use internal capital instead of mobilizing external capital at a high cost. Therefore, managers prefer to pay dividends at a low rate, while shareholders prefer to receive more earnings through dividends paid. It is these divergent interests that ultimately lead to many negative consequences. Specifically, in response to the needs of shareholders, the management board will have over-investment behavior, limit dividend payments, and spend most of the profits on investment in projects with low profitability. This goes against the interests of shareholders and reduces the value of the business. Moreover, the agency theory also clarifies the dividend-investment relationship through the effect of cash flow on over-investment. Over-investment is when a firm invests in potential projects and projects with a

negative net present value (NPV). The manager has an incentive to invest more than what is optimal because growth in firm size gives the manager more power, reputation, and high returns (Jensen, 1986). According to Jensen (1986), the phenomenon of investment in excess can be minimized when funding internal businesses is scarce, and this will become particularly acute if the company holds abundant resources inside. Moreover, paying dividends to shareholders will cut the excess cash to avoid the executive board's over-investment for profits.

The Bird-in-hand Theory, mentioned by Lintner (1956) and supported by Gordon (1963), emphasizes that the increase in dividend payments positively affects stock prices, which improves firm value. Investors prefer dividends to retained earnings for capital gains because the current dividends are more predictable through stock prices determined by market factors and not by managers (Keown et al., 2007; Gordon, 1963). According to Gordon (1963), even though future capital gains may earn more money than current dividends, there is uncertainty in future cash flows.

Previous studies by Miller and Modigliani (1961) and Fama and Miller (1972) demonstrated no relationship between dividends and investment. However, the studies of Jensen and Meckling (1976); Dhrymes and Kurz (1967); Brav et al. (2005); and Daniel, Denis, and Naveen (2010) proved a dividend-investment relationship. With diversified approaches from many markets worldwide, our studies are to be carried out to test the relationship between dividend and investment decisions based on dividend theories, namely Dividend Irrelevance and Dividend Relevance. The Dividend Irrelevance theory asserts that paying dividends does not affect a company's potential profitability or stock price. It implies that owning shares of companies paying dividends is no better than companies without dividend payments. This shows that the dividend policy does not affect firm value, which is not influenced by the investing behavior of common shareholders (Sahibzada & Zubair, 2017), but cash flows will create firm value. Many studies have given results that agree with the theory, such as Miller and Modigliani (1961) and Fama and Miller (1972), which proved that dividend policy is entirely independent of the investment decisions of the enterprise.

In contrast, some arguments claim that dividend policy affects the firm's value under the Dividend Relevance theory. Dividend relevance is explained by many theories, including the bird-in-the-hand theory, the signaling theory, and the agency theory. Researchers from different perspectives and aspects have explained these theories, but all of them showed a correlation between dividends and the investment decisions of enterprises. The following studies have supported the above judgments, namely Jensen and Mecking (1976), Brav et al. (2005), and Daniel et al. (2010).

Kato, Loewenstein, and Tsay (2002) demonstrated that after controlling for cash flow, investment opportunities, and external financing, an increase (decrease) in dividends usually accompanies an increase (decrease) in investment in Japan. According to Wang, Huang, and Wang (2010), dividends hurt investment decisions at different stages of a company's life cycle. Moreover, Saddiq, Aliyu, and Kurfi (2018) investigated the impact of dividend policies (dividend per share, dividend payout ratio, earnings per share, and dividend yield) on blue-chip companies' investment decisions in Nigeria. The study found that earnings per share and dividend yield have a negative and significant effect on the investment decisions of blue-chip companies in Nigeria. The payout ratio has a significant positive effect on the investment decisions of these companies in Nigeria. Dividend per share (DPS) has an insignificant positive effect on the investment decisions (ID) of blue-chip companies in Nigeria.

Phan and Phan (2013) and Ngo and Dang (2016) found the influence of dividend policy on stock price fluctuations of companies listed on the Vietnamese stock market. They determined the dividend-investment relationship in the Vietnamese context in their research papers.

Nguyen and Bui (2019) investigated the relationship between investor sentiment and dividend (2019). This paper shows that managers do not consider investor sentiment when making dividend payment decisions, based on data from listed firms on the Ho Chi Minh City Stock Exchange (HSX) from 20010 to 2020.

RESEARCH METHOD

Samples

Yamane's formula (1967) showed the way to

calculate research samples:

$$n = \frac{N}{1 + Ne^2}$$

Where

n: samples.

N: population.

e: error. (In this paper the error is assumed to be 10%.)

The author found 329 firms (except for the financial, banking and insurance sectors) in the Ho Chi Minh Stock Exchange (HOSE), including:

- Consumer Staples: 30 firms.
- Energy: 35
- Health Care: 12
- Industrials: 164
- Materials: 35
- Real Estate: 47
- Information Technology: 4
- Communication Services: 2

The total number of listed firms on HOSE as of December 31, 2020, are 329. HOSE was selected to collect the samples because it has strict requirements for the companies who want to be listed publicly, especially the quality of disclosed information (Le, 2015; Ministry of Finance, 2018). According to Yamane's formula, the required sample is approximately 80 firms using the random non-probability sampling method. The research period is from 2010 to 2020, and the number of firms is 80, so the number of observations is 880 (80 x 11).

Proposed model

$$investment_{i,t} = \alpha_0 + \alpha_1 dividend_{i,t} + \sum \alpha_k control_variables_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Model 1 presents the effect of the independent variable (dividend) on the dependent variable (investment decisions) with the control variables are mentioned and measured in section *Measurement of variables and development of hypothesis*. In addition, the hypotheses of control variables are also proposed.

Measurement of variables and development of hypothesis

Dependent variable

The dependent variable in this paper is

investment decisions. Aivazian et al. (2005) and McNichols and Stubben (2008) used capital expenditure less depreciation for the year, based on the amount published in the cash flow statement of the firm when measuring investment. This variable used in the model will be estimated as the ratio between investment expenditure minus the cash received from the liquidation of fixed assets and total assets of the firm at the beginning of the year:

$$inv_{i,t} = \frac{\text{invest in fixed assets}_{i,t}}{\text{total assets}_{i,t-1}}$$

Independent variable

Dividends are commonly defined as the distribution of earnings in real assets (past or present) among the firm's shareholders in proportion to their ownership. Dividend policy refers to the payout policy, stability dividends and bonus shares, as well as stock splits that managers consider when determining the size and pattern of cash distribution to shareholders over time (Sruthi, Rani, & Lavanya, 2017). Changes in dividends reveal information about a company's cash flows (Kato et al., 2002). An announcement of a dividend increase (decrease) is a statement by management that they are aware of the firm's favorable (unfavorable) future prospects. More enormous changes in the dividends indicate greater variation in the cash flow of the company. Furthermore, dividend policy can impact the firm's value and, as a result, shareholder wealth (Baker, Veit, & Powell, 2001), and it has long-term implications for share prices and, consequently, returns on investment, internal growth financing, the equity base through retentions, and its leverage (Omran & Pointon, 2004). According to the research of Elston (1996), whether dividends are related to investment or not depends on the argument of researchers. For instance, the interaction between dividends and investment was suggested to be irrelevant based on the study by Miller and Modigliani (1961). Dhrymes and Kurz (1967), Jensen and Mecking (1976), and others, however, found that dividends varied negatively with investment. According to Nazir et al. (2010), the index of dividend policy is presented by the following formula:

$$div_{i,t} = \frac{\text{announced dividend}_{i,t}}{\text{total assets}_{i,t-1}}$$

This article only uses cash dividends paid

because paying dividends in cash directly affects the company's capital. It thereby potentially will cause a lack of capital to invest in projects, and, therefore, the expected sign when conducting the effect of dividends on investment is negative.

Control variables

Firm size is used as a control variable in the research of Hennessy and Whited (2007), defined as a reasonable measure for the firm's financial constraints. They found that large firms have low costs of raising external funds, and vice versa. Ali and Yousaf (2013) also admitted that the larger the enterprise, the easier it is to access external capital sources at a lower cost. Therefore, firm size is expected to affect investment positively.

$$size_{i,t-1} = \ln(\text{total assets}_{i,t-1})$$

Leverage ratios are used to determine the degree of financial risk assumed by a business, as it indicates an optimal capital structure, showing that banks have equity ratios and creditors. The debt-to-assets ratio shows the proportion of assets financed by debt and is calculated by comparing total liabilities (short-term + long-term debt) to total assets (Drake & Fabozzi, 2010). The ratio of total liabilities to total assets acts as a complement to equity holders' residual claims. Hovakimian (2009) provided evidence that firms with high leverage will adversely affect future investment, with the argument that when firms take more loans, it will be challenging to receive future financial investment because of high-risk exposure or the maximum credit line to be granted. The following studies by Franck, Huyghebaert, and Hogeschool (2008); Dang (2011); and Aygun, Suleyman, and Sayim (2014) found financial leverage to be negatively related to investment. Therefore, the proposed hypothesis is that leverage hurts the investment of the firms.

$$lev_{i,t-1} = \frac{\text{total liabilities}_{i,t-1}}{\text{total assets}_{i,t-1}}$$

Alzoubi (2015) has considered the role of cash as one factor affecting enterprises' investment. Many previous studies always focused on cash flow but ignored the critical cash factor, Alzoubi (2015) shows that availability of cash is one of the significant explanatory variables for corporate investment, especially for businesses with some constraints of funds resources. As a result, cash affects investment positively.

$$cash_{i,t-1} = \frac{cash\ and\ cash\ equivalent_{i,t-1}}{total\ assets_{i,t-1}}$$

Bikas and Kavaliauskas (2010) examined in their research the relationship between profitability and investments. Their findings showed that financial structure is unimportant to make investment decisions, while the increases in the company's productivity and profitability will promptly reflect the rise of investments. Davis (2018), Bikas and Glinskyte (2021) also argued that a change in profitability can affect a company's investments. From these discussions, the author proposes that the hypothesis is the return on assets.

$$roa_{i,t-1} = \frac{net\ income_{i,t-1}}{total\ assets_{i,t-1}}$$

Many previous studies proved that when a company has many fixed assets, it will increase its investment capacity because the asset structure determines the firm's change of fixed and variable costs, leading to its effective performance. Concretely, the research by Myers (1977) demonstrated that many tangible assets in a firm could assist it to improve activities and increase its investment opportunities. Harris and Raviv (1991) also supported the above conclusion. Therefore, there is a positive correlation between tangible assets and investment.

$$tang_{i,t-1} = \frac{tangible\ assets_{i,t-1}}{total\ assets_{i,t-1}}$$

Companies in different business cycle stages have different discretionary accruals occurring from differences in business models. This has been proved by Biddle et al. (2009) and Zhai and Wang (2016). The proposed hypothesis is that business cycle affects investment.

$$cycle_{i,t-1} = \ln\left(\frac{average\ account\ receivables_{i,t-1}}{net\ sales_{i,t-1}} + \frac{average\ inventory_{i,t-1}}{cost\ of\ goods\ sold_{i,t-1}}\right)$$

Many previous studies have confirmed that the loss in activities of the previous year also significantly impacts enterprises' investment this year (Ramalingegowda, Wang, & Yu, 2013; Zhai & Wang, 2016). Therefore, the loss variable is included in the model to measure the investment with the hypothesis that a loss on activities affects investment negatively.

$$loss_{i,t-1} = \frac{net\ income_{i,t-1}}{total\ assets_{i,t-1}}$$

Revenue growth: Every business field has a different sales growth rate for each period. Positive revenue growth indicates that a company desires more investment (Ghozali, Handriani, & Hersugondo, 2018). With such a high growth rate, the company uses sufficient capital to finance its activities, so increasing sales growth plays a vital role in investment. The hypothesis can be proposed as follows: Revenue growth positively impacts investment decisions.

$$rev_{i,t-1} = \frac{sales\ revenue_{i,t-1} - sales\ revenue_{i,t-2}}{sales\ revenue_{i,t-2}}$$

Methodology

Using Ordinary Least Squares regression (OLS), the fixed-effect model (FEM), and the random effect model (REM), the author estimates the effect of dividends on investment decisions of Vietnamese listed firms from 2010 to 2020. Statistical tests are implemented to determine if the FEM or REM model is chosen. According to the research by Brown and Petersen (2009), however, variables related to cash flow, such as dividends and cash, can cause endogeneity when they are used to examine the dividend-investment relationship. Moreover, Ramalingegowda et al. (2013) investigated the interaction between dividends and investment decisions and found endogeneity in their model. Therefore, the Two-Stage Least Squares method (2SLS) will be implemented to solve that problem.

First developed by Philip G. Wright in 1928, Two-Stage Least Squares (2SLS) is one of the preeminent regression methods to solve the phenomenon of endogenous variables. The general idea of 2SLS is to use instrument variables instead of potentially endogenous variables. The instrumental variables are correlated with the independent variable but not with the residual.

RESEARCH RESULTS AND DISCUSSIONS

Research results

According to Table 1, the maximum value of the "investment" variable is 0.043, while its minimum value is -1.332; its means value is -0.067. Regarding the "dividends" variable, its maximum and minimum values are 0.190 and 0.010, respectively, and its mean value is 0.058.

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
inv	829	-0.067	0.103	-1.332	0.043
div	829	0.058	0.045	0.010	0.190
size	829	15.218	3.227	11.235	29.355
lev	829	0.589	0.365	0.000	3.290
cash	829	0.076	0.084	0.000	0.522
roa	829	0.068	0.074	-0.208	0.539
tang	829	0.250	0.222	0.000	1.783
cycle	829	5.065	0.582	3.060	8.704
loss	829	0.068	0.075	-0.208	0.539
rev	829	0.098	0.675	-1.560	3.040

Source: Results from Stata

The maximum and minimum values of the “size” variable are 29.355 and 11.235, respectively. Following that, “leverage” has a maximum and minimum value of 3.290 and 0.000. The maximum values of “cash, roa, tang, cycle and loss” are 0.522, 0.539, 1.783, 8.704, 0.539 respectively, while their minimum values

are 0.000, -0.208, 0.000, 3.060, -0.208, respectively. In addition, revenue growth has minimum and maximum values of -1.560 and 3.040, respectively, and a mean value of 0.098.

Table 2. Multicollinearity phenomenon test by VIF

Variable	VIF	1/VIF
roa	13.8	0.072
loss	7.24	0.138
cash	2.73	0.367
size	2.61	0.383
lev	1.41	0.709
tang	1.11	0.898
cycle	1.08	0.925
rev	1.05	0.954
div	1.04	0.965
Mean VIF	3.56	

Source: Results from Stata

The multicollinearity phenomenon occurs when two or more predictors in the model are correlated and are measured by variance inflation factors (VIF) and tolerance measured multicollinearity. In this paper, the VIF of all variables is less than 10, except for loss and return on asset variables, which means there is a multicollinearity problem (Montgomery et al., 2001). As a result, one of these variables will be

eliminated from the model, and “roa” is chosen for elimination because its VIF value is the highest. After eliminating “roa”, the VIF of all variables is less than 10 and the correlation matrix table is presented as follows.

Table 3. Correlation matrix

	inv	div	size	lev	cash	tang	cycle	loss	rev
inv	1.000								
div	-0.098	1.000							
size	0.033	0.093	1.000						
lev	-0.484	0.024	-0.047	1.000					
cash	0.612	-0.034	0.036	-0.700	1.000				
tang	0.237	0.018	-0.015	-0.227	0.175	1.000			
cycle	0.371	-0.038	0.094	-0.253	0.477	0.253	1.000		
loss	-0.287	-0.009	-0.039	0.053	-0.443	-0.009	-0.274	1.000	
rev	0.248	0.148	0.150	-0.109	0.166	0.049	0.066	-0.037	1.000

According to the results of the correlation coefficient matrix (Table 3), after removing the variables that have correlation coefficients greater than 0.8 and the remaining correlation

coefficients are all less than 0.8, the model has no defects of multicollinearity phenomenon.

Table 4. Summary results of the 3 methods

Model	OLS	FEM	REM
Test	F	Hausman Test	Breusch and Pagan test
Selection	OLS & FEM	FEM & REM	OLS & REM
Null hypothesis H_0	All fixed effects are jointly 0	The preferred model is random effects	The error variances are all equal
Statistical value	$F(70, 742) = 3.11$	$\chi^2(8) = 18.69$	$\text{chibar}2(01) = 77.25$
p-value	Prob > F = 0.0000	Prob> $\chi^2 = 0.0166$	Prob > $\text{chibar}2 = 0.0000$
α	5%	5%	5%
Decision	Reject H_0	Reject H_0	Reject H_0
Selection	FEM	FEM	REM
<i>Conclusion: FEM model is chosen and considered for further discussions</i>			

Based on Table 4, the FEM model is chosen and considered for further discussion. The p-value in the Modified Wald test equals 0.0000, which is smaller than 5%, so the null hypothesis is rejected. This shows that heteroskedasticity in the fixed-effect model still exists, and the estimation by this method is biased and unreliable. As discussed above, the model contains endogeneity, and the instrument variables could be used to improve the defective issues. In this paper, return on assets and firm size are chosen as instrument variables to apply to the 2SLS method.

The findings show that the dividends variable (div) has a negative coefficient of -0.0002 and has a statistical significance of 0.1% by performing

the 2SLS method. This result is contrary to Fama's (1974) view of the "Dividend Irrelevance theory", but it is in line with the previous empirical studies of Brav et al. (2005), Daniel et al. (2010), and Ramalingegowda et al. (2013), who followed the Dividend Relevance theory (Dhrymes and Kurz, 1967; Peterson and Benesh, 1983). In the practical economy, the result shows that there is a negative relationship between investment and dividends. It means that dividend payments increase, the investment of enterprises decreases, and vice versa. The result is also consistent with the proposed hypothesis.

Table 5. Regression results by 2SLS method

Variable	Coef.	p-value
dividend	-0.0002	0.0000***
leverage	-0.0273	0.0000***
cash	0.0204	0.0000***
tangible assets	0.0975	0.0170*
business cycle	0.0093	0.0030**
loss	-0.1000	0.0200*
revenue growth	0.0010	0.0000***
_cons	-0.1183	0.0000
Instrumented: loss		
Instruments: div lev cash tang cycle rev roa size		
<i>legend: * p<.05; ** p<.01; *** p<.001</i>		

The results prove that asymmetric information in the Vietnamese stock market affects the dividends-investment relationship and strengthens the arguments of Denis, Denis, and Sarin (1994) about the possibility of signaling from dividends. Denis et al. (1994) confirmed that when a firm decides to pay a higher ratio of dividends, future investment opportunities are no longer available because the firm does not have more retained earnings to reinvest. Furthermore, for results to be reliable and unbiased, tests of endogeneity and over-identifying restrictions need to be applied (Table 6 and Table 7).

Table 6. Tests of endogeneity

Tests of endogeneity		
Ho: variables are exogenous		
Durbin (score) chi2(1) =	0.1750	(p = 0.6757)
Wu-Hausman F(1,813) =	0.1733	(p = 0.6773)

Source: Results from Stata

Table 6 shows the results of implementing the Durbin-Wu-Hausman test which is suggested by Cameron and Trivedi (2009). The null hypothesis is proposed for "Return on asset and size are exogenous". Because the p-values are higher than 5%, the hypothesis is not rejected, so we

cannot reject H0, meaning that return on assets and size are the exogeneity. A second test of over-identifying restrictions is applied. This is a requirement when there are more instruments than endogenous variables.

Table 7. Tests of overidentifying restrictions

Tests of overidentifying restrictions:		
Sargan (score) chi2(1) =	0.1152	(p= 0.7343)
Basman chi2(1) =	0.1141	(p= 0.7356)

Source: Results from Stata

Based on the p-values in Table 7, we do not reject the over-identifying restrictions, so at least one instrument variable is valid. We can confirm there is no endogeneity in the model, and the instrument variables are valid. Put another way, according to the Sargan test statistics, the null hypothesis for "over-identifying restrictions are valid" cannot be rejected, hence the instrument variables are uncorrelated with the errors, or variables are not omitted in the model.

Discussions

The research results show that seven variables are statistically significant and impact the investment of listed companies in Vietnam, including dividends, leverage, cash, asset

structure, business operating cycle, loss, and revenue growth. The author has discussed the dividends-investment relationship above, and through that analysis, this research has contributed to solving common inadequacies in the current market, such as information asymmetry, lack of transparency, and agency problems. In particular, the study results also help strengthen the basis for subsequent studies looking at the negative impact of dividends on investment decisions.

Regarding control variables in the model, such as financial leverage, cash, asset structure, cycle, loss and revenue growth, these are also statistically significant variables. The firm size and return on assets variables are used as instrument variables to solve endogeneity, and the research results are reliable and unbiased.

Financial leverage (*lev*) also has a negative correlation coefficient (-0.0022) with investment, and the confidence level is at 0.1%. The research results are consistent with the proposed hypothesis and the findings of Aivazian et al. (2005), Aoun and Hwang (2008), Hovakimian (2009), Dang (2011), Sheng and Hou (2014), and Aygun et al. (2014). According to them, the leverage ratio can have a variety of effects on investment, as it may limit the amount of cash available for investment. Excess leverage may impair a firm's ability to raise additional capital for reasons previously discussed by Myers (1977) and Jensen and Meckling (1976).

Consistent with the hypothesis, the "cash" variable has a positive correlation with the investment of the enterprise (0.0215) at a significance level of 0.1%. In line with early studies, namely Ramalingegowda et al. (2013) and Alzoubi (2015), cash is always considered a motivating factor for businesses to invest and is also one of the causes of over-investment by managers. Aside from a company's cash flow, cash holdings are an important source of internal financing. Cash holding is expected to have a more significant impact on the firm's investments than cash flow, particularly if the firm is experiencing difficulties or limited access to external sources of finance, challenging economic conditions, or both. As a result, managers must consider the right choice when using funds for profitable projects instead of investing in projects with negative net present value and distributing the excess cash to shareholders.

Regarding the "tang" variable (asset structure), the regression coefficient is positive (0.0154) at the confidence level of 5%. The research result is in line with the proposed hypothesis, and also confirmed the argument of Myers (1977) that having more tangible assets helps the company to improve its image and increase investment opportunities. In addition, the relationship between asset structure and investment was proven from the empirical study of Phan and Phan (2013). When fixed capital increases, it means that firms invest more in machinery to satisfy demand for production. Furthermore, tangible assets can be used as collateral assets for bank loans or serve as a guarantee to the investor for the received other funds. The structure of assets reveals the company's management's investment decisions (Harjito & Martono, 2013). Fixed assets are assets that have a longer economic life than a year and are used to support a company's operating activities. Because it relates to the company's costs, the accuracy of the decision made in selecting the type of assets to invest in is critical. The effectiveness of the use of fixed assets is expressed in the high sales of firms (Brigham and Houston, 2006).

Business cycle (*cycle*) has a positive correlation coefficient with investment (0.0112) at a 1% confidence level. This proves that the cycle of Vietnamese enterprises has a positive relationship with investment. Although their interaction is statistically significant, the direction of the impact of the cycle variable on investment is in contrast to the results of Biddle et al. (2009) and Ramalingegowda et al. (2013). They argued that the longer the operational cycle, the more discretionary accruals arise and negatively impact corporate investment. In this study, operational cycle increases will enhance the investment decisions of listed firms in Vietnam.

The revenue growth variable has a coefficient of 0.0010, larger than 0, so it positively affects investment decisions. The findings confirm that companies with high growth rates of sales and profits tend to invest more than companies with low sales growth. The argument is supported by the studies of Ghozali et al. (2018).

The loss variable is statistically significant at 5%. At the 5% significance level, the loss variable is negatively correlated (-0.0786) with investment, which indicates that loss in business in the previous year reduces the level of

investment this year. The findings are consistent with the studies by Ramalingegowda et al. (2013) and Zhai and Wang (2016).

CONCLUSIONS AND LIMITATIONS

Many studies have attested to the relationship between dividends and investment in world markets. However, this paper investigates the relationship in the Vietnamese market with the existence of asymmetric information. It shows that the Vietnamese market cannot fully function as an effective capital channel. Hence, enterprises face high capital mobilization costs, and as investors have to face many risks. In order to overcome these phenomena and improve the investment environment, the Vietnamese State Securities Commission needs to enhance the transparency of information for the market, synthesize, collect, and establish a database system for the whole market so that investors can have a unified and reliable information channel for their investment decisions.

In addition, the dividends, leverage, and loss variables hurt investment decisions, while the remaining variables affect investment positively. The results are unbiased and reliable because the author used the 2SLS method and applied the valid instrument variables to solve the endogeneity.

Despite obtaining specific results, the research suffers from certain limitations. First, the research was limited to HOSE-listed companies. Second, the model ignores the impact of dividends on investment decisions in different industries. Finally, the model does not consider macroeconomic factors when exploring the influence of dividends on investment decisions.

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