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## Factors Affecting Corporate Investment Decision: Evidence from Vietnamese Economic Groups\*

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### Abstract

This paper analyzes factors affecting corporate investment decisions in economic groups listed on the Vietnam stock market. The panel data of the research sample includes 39 economic groups listed on the Vietnam stock market from 2009 to 2019. The Generalized Least Square (GLS) is employed to address econometric issues and to improve the accuracy of the regression coefficients. In this research, the investment rate is a dependent variable. Cash-flow (CF), Investment opportunities (ROA), Fixed capital intensity (FCI), Leverage (LEV), Sales growth (GR), Size (SZ), Business risk (RISK) are independent variables in the study. The model results show that cash flow and sales growth have the same impact on investment decisions of economic groups in Vietnam. In addition, investment opportunities have a negative impact on the capital investment decisions of economic groups. The remaining factors include fixed capital intensity, leverage, firm size, and business risks that have a weak and insignificant impact on capital investment decisions of economic groups in Vietnam. The findings of this article are useful for business administrators, and helping business managers make the right financial decisions. Besides, the research results are also meaningful to money management agencies. The authors recommend that the State Bank of Vietnam should maintain a sustainable monetary policy.

**Keywords:** Investment Decision, Economic Group, Vietnam

**JEL Classification Code:** G30, M40, M41

### 1. Introduction

Modern corporate finance theory shows that investment decision is always one of the most fundamental problems in corporate finance (Ross et al., 2008). Researchers Modigliani and Miller (1958) have assumed that, in perfect capital markets and without costs, a firm's investment decision

is not dependent on its financial condition by external funding. The perfect alternative to internal corporate capital and the cost of using these funds is the same. However, in practice, businesses often encounter many limitations when contacting external funding sources, so investment activities will depend heavily on the internal cash flow of businesses. Fazzari et al. (1988), using the dividend payout ratio as a measure of financial constraints, looked at investment under the influence of cash flow, investment opportunities, and the ratio of return to price equity value. The study of this author group shows that firms with limited finances are more sensitive to investments than businesses with little or no financial constraints. Hoshi et al. (1991) studied the relationship between capital structure and investment decisions of firms in Japan, according to the group of firms belonging to Keiretsu (a form of the economic conglomerate in Japan) and non-Keiretsu businesses. The research results show that enterprises that do not belong to Keiretsu (with many financial constraints) will have more cash-sensitive investment than Keiretsu enterprises.

An economic group is a group of enterprises that are linked with each other in terms of capital, technology, and market in order to form links to promote the strengths of the

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units in the group, thereby creating a value chain between enterprises in the same group. Thus, with the integration trend, in order to strengthen participation in global economic activities, it is inevitable that many economic groups must be formed in each country. The capital investment decision is considered as the most important decision in the financial decisions of an enterprise or an economic group because it creates value for economic groups. A right investment decision will contribute to increasing the value of the economic group, thereby increasing the value of assets for the owner, otherwise a wrong investment decision will damage the value of the corporation. Property damage to owners of economic groups.

Vietnam is on the path of development with strong integration into the international economy. In fact, the experience of other countries shows that strong economic groups in both the state economic sector and the private sector will be the “main army” to ensure a successful integration process. The development of economic groups is indispensable for the development cooperation process of all types of enterprises, investment cooperation relationships on the basis of the needs of market development, and international economic integration. Thus, with the integration trend, in order to increase the strength in participating in and participating in global economic activities, it is inevitable that many economic groups must be formed in each country. Finance in economic groups, in which the issue of capital investment in economic groups always needs to be studied.

Therefore, researching and testing the model of factors affecting investment decisions of economic groups listed on the Vietnamese stock market contributes to identifying the influencing factors, thereby creating the basis for Science to propose measures to improve capital investment efficiency is essential. In addition to the introduction, the article includes 4 main contents: Literature Review and Hypothesis, Research methods, Results, Discussions, and Recommendations.

## 2. Literature Review and Research Hypotheses

### 2.1. Literature Review

Representation theory by Jensen and Meckling (1976) explains why a firm facing higher interest costs does not attempt to derive money from other sources (i.e., debt, the stock market). Problems arise when there are conflicts of interest between managers, creditors, and shareholders for different goals. The cost of a transaction combined with debt and equity problems can increase the cost of external financing. Debt is the only external funding channel available to a company. Financial debt allows creditors to enjoy interest on payments and to have their principal on the due date. If the payment is not on time, then the company's

paid assets will be sold for fundraising. There are often assets in an investment project; therefore, it is very difficult to recover capital from the liquidation. In this case, to protect the interests of creditors, they will create a disadvantage for debtors to pay higher interest, limiting the size of loans.

Fazzari et al. (1988) conducted a pioneering study of the sensitivity between cash flow and investment under limited or unrestricted financial conditions, in financially constrained firms that had a relationship between cash flow and investment, are more sensitive than businesses with no financial constraints. Hoshi, Kashyap, and Scharfstein (1991) use the relationship with banks as a measure of financial constraints, also found evidence that firms do not have good relations with banks, implying financial constraints, has a more sensitive relationship than the Keiretsu enterprises - a form of a Japanese corporation.

However, Kaplan and Zingales (1997) rejected the results of Fazzari et al. (1988). They investigated the familiar use of investment's sensitivity to cash flows. Research results show that the less financial constraints have an influence on a company's investment decisions, the more sensitive they are to the availability of cash flows. In addition, Gomes (2001) shows that the presence or absence of financial inconsistencies is not sufficient to exert significant cash flow effects nor is it necessary to obtain these cash flow effects. Hubbard (1998) analyzed various factors including investment inventory, research and development, employment, business formation and existence, valuation, and corporate risk management to identify the relation between cash flows and investment decisions using US Data. Hubbard's results strongly support that there is an important relationship between investment and net value change.

Research by Hall et al. (1998) used the panel data version of the Var methodology to examine the determinants of investment in science firms of the United States, France, and Japan during 1979-1989. They found that there is a closer relationship between investments, and returns, sales and cash flows and that these vary from country to country. Carpenter and Guariglia (2008) also analyzed the financial factors influencing investment decisions with findings supporting previous studies. In particular, they estimate the investment regression that distinguishes the face of financially constrained firms in British firms over the period 1983-2000. They observed that cash flows cannot explain the sensitive nature. Feelings of investment decisions for large companies. However, its interpretability remains the same for small companies. This suggests that the importance of a cash flow variable in the investment equation can be caused by information asymmetry in capital markets.

Bokpin and Onumah (2009) study of micro factors including past investment, firm size, Investment opportunities, cash flow and growth opportunities that affect investment decisions and research results show that all factors are significant in

forecasting investment decisions. Ruiz-Porras and Lopez-Mateo (2011) studied the effects of firm size, cash flow and investment opportunities all have positive implications for investment decisions. However, Saquido (2003) concludes that liquidity and firm size are not significantly related to the investment; but there is still an important relationship between investment and revenue growth and the rate of fixed capital. Aviazian et al. (2005) show that the link between leverage and investment is negative and that the effect is significantly stronger for firms with lower opportunity growth than those with high growth rates. Research shows the relationship between debt and investment decision, using multiple linear regression methods on data from 2006 to 2008 of 60 listed Chinese real estate firms.

The above studies only focus on developed economies and several emerging countries, namely the US, UK, Canada, India, and China. In Vietnam, research on the influence of factors on investment decisions is quite small, especially research on economic groups in Vietnam is not available. Therefore, within the research scope, the study of factors affecting investment decisions at economic groups is studied for verification in Vietnam to identify the factors that influence investment decisions from there. It

contributed towards improving the operational efficiency of economic groups.

## 2.2. Research Hypotheses

Based on the Literature Review, the authors give the following research hypotheses:

**H1:** *There will be a positive relationship between cash flow and investment rate of economic groups*

**H2:** *There will be a positive relationship between investment opportunities and investment rate of economic groups*

**H3:** *There will be a positive relationship between fixed capital intensity and investment rate of economic groups*

**H4:** *There will be a positive or negative connection between leverage and investment rate of economic groups*

**H5:** *There will be a positive link between growth of sales and investment rate of economic groups*

**H6:** *There will be a positive or negative relationship between firm size and investment rate of economic groups*

**H7:** *There will be a positive or negative relationship between business risk and investment rate of economic groups*

**Table 1:** Describe the research hypothesis

Hypothesis	Content	Literature Review	Expectations
H <sub>1</sub>	There will be a positive relationship between cash flow and investment rate	Aivazian et al. (2005), Azzoni and Kalatzis (2006), Adelegan and Ariyo (2008), Jangili and Kumar (2010), Nair (2011), Ruiz-Porras and Lopez-Mateo (2011)	+
H <sub>2</sub>	There will be a positive relationship between Investment opportunities and investment rate	Saquido (2003), Aivazian et al. (2005), Baum et al. (2008), Carpenter and Guariglia (2008), Bokpin and Onumah (2009),	+
H <sub>3</sub>	There will be a positive relationship between Fixed capital intensity and investment rate	Erickson & Whited (2000), Gomes (2001), Saquido (2003), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), , Ruiz-Porras and Lopez-Mateo (2011), and Nair (2011)	+
H <sub>4</sub>	There will be a positive or negative connection between leverage and investment rate	Azzoni and Kalatzis (2006), Adelegan and Ariyo (2008), Jangili and Kumar (2010), and Nair (2011).	+/-
H <sub>5</sub>	There will be a positive link between the growth of sales and investment rate	Erickson & Whited (2000), Gomes (2001), Saquido (2003), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), , Ruiz-Porras and Lopez-Mateo (2011), and Nair (2011)	+
H <sub>6</sub>	There will be a positive or negative relationship between firm size and investment rate	Adelegan and Ariyo (2008), Jangili and Kumar (2010), , Ruiz-Porras and Lopez-Mateo (2011)	+/-
H <sub>7</sub>	There will be a positive or negative relationship between business risk and investment rate	Pindyck (1986)	+/-

### 3. Model and Research Method

#### 3.1. Research Data

The data used in the study were collected from the financial statements of 39 economic groups listed on both the Ho Chi Minh and Hanoi stock exchanges in the period 2009 - 2019 from the database Stoxplus.

#### 3.2. Research Model

Based on the research of Erickson and Whited (2000), Gomes (2001), Saquido (2003), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), Ruiz-Porras and Lopez-Mateo (2011), and Nair (2011), this study proposes the following model to estimate the determinants of investment decision at the economic group.

$$IR_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it}$$

Dependent variable: Investment rate (IR)

The independent variable consists of 7 variables: Cash-flow (CF), Investment opportunities (ROA), Fixed capital intensity (FCI), Leverage (LEV), Sales growth (GR), Size (SZ), Bussiness risk (RISK)

$\epsilon_{it}$  is the error.

#### 3.3. Research Method

The baseline analysis was first performed to screen the sample, to eliminate observations that were too large, too small, or too different from the sample size. This basic

analysis step helps to check the suitability of the sample before performing regression analysis OLS, FEM, REM, to ensure the reliability of quantitative research results. Specifically, the author group conducts statistical description analysis, correlation analysis to eliminate multi-collinear phenomena between independent variables. After selecting the appropriate method to run the model, the author examines the variance of variance, multicollinearity, autocorrelation, endogeneity of the model. In case the model has a defect, the author will use the FGLS (Feasible generalized least squares) method to overcome.

### 4. Empirical Results

#### 4.1. Descriptive Statistics

Table 3 reports the overall observations, mean, standard deviation, minimum, and maximum values. Table 3 presents descriptive statistics including mean, median, and standard deviation as well as minimum and maximum values of variables included in the model. The results of the descriptive statistical analysis presented in Table 3 show that there is a difference in the investment rate and the factors affecting the investment rate among economic groups in Vietnam. On average, the economic groups in the sample had their investment rate near 3.68; the investment rate has a large variation among economic groups in Vietnam, the maximum value reaches 118.31 while the smallest is -14.92. Large disparities also occur in Cash-flow (CF), Investment opportunities (ROA), Fixed capital intensity (FCI), Leverage (LEV), Sales growth (GR), Size (SZ), Business risk (RISK) in Economic groups in Vietnam.

**Table 2:** Description of variables in the research model

Variable name	Code	Notes	Expectations
Investment rate	IR	Investment value/total asset	
Cash-flow	CF	Pick from cash flow statements, cash-flow is normalized by - total fixed assets at the beginning period of the group	+
Investment opportunities	ROA	Net income/ Average asset	+
Fixed capital intensity	FCI	Fixed assets/total assets	+
Leverage	LEV	Total liabilities/Total asset	+/-
Sales growth	GR	(Current period net sales – previous period net sales)/ previous period net sales	+
Size	SZ	Ln(total assets)	+/-
Bussiness risk	RISK	Business risk = standard deviation (Revenue <sub>t</sub> – Revenue <sub>t-1</sub> ) / mean (Revenue)	+/-

## 4.2. Correlation Analysis

Table 4 shows the correlation coefficient between the dependent variable and the independent variables and between the independent variables. The correlation coefficient between the independent variables is not greater than 0.8, so there is no multicollinearity phenomenon. The variables Fixed capital intensity (FCI), Leverage (LEV), Size (SZ) were inversely correlated with the variable Investment rate (IR), while the variables Cash-flow (CF), Investment opportunities (ROA), and Sales growth (GR), Business risk (RISK) are positively correlated with the variable Investment rate (IR).

## 4.3. Regression Results

Multicollinearity test results show that the VIF magnification coefficients are all  $<10$ , the model does not have multi-collinearity phenomenon. The largest VIF is 1.46, showing that the possibility of the phenomenon of multicollinearity is negligible. The White test indicates that the model has heterogeneity ( $p$ -value  $<5\%$ ). Therefore,

the Pool OLS model is not suitable. The Hausman test for  $p$ -value = 0.0076  $<0.05$  rejects  $H_0$ , so the fixed effects model (FEM) is used. After selecting the FEM model, the authors performed a defect test of the model by the Wald test. The results obtained  $\text{prob} > \chi^2 = 0.0000 <0.05$  showed that the FEM model has defects. To overcome the variable variance defect, the authors use the FGLS model to analyze the factors that affect the investment decisions of economic groups in Vietnam.

The Prob value of independent variables such as Cash-flow (CF), Sales growth (GR) has  $p <0.01$ , these are the factors that have the greatest impact on investment decisions of economic groups in Vietnam. In which, Cash-flow (CF), Sales growth (GR) are positively correlated with the investment rate. The investment opportunities factor (ROA) with  $p <0.05$  shows that this factor is also correlated at a quite large level with the investment rate. The remaining factors include Fixed capital intensity (FCI), Leverage (LEV), Size (SZ), Business risk (RISK), which are not correlated with investment decisions of economic groups in Vietnam. ( $p$ -value of these factors are  $> 0.1$ ) (See Table 5).

**Table 3:** Descriptive statistics of the variables

Variables	Obs	Mean	Std.	Min	Max
IR	429	3.68	11.50	-14.92	118.31
CF	429	2.25	4.51	-3.05	32.71
ROA	429	0.06	0.08	-0.41	0.72
FCI	429	0.14	0.12	0	0.55
LEV	429	0.51	0.22	0.006	1.29
GR	429	0.38	1.21	-0.99	10.41
SZ	429	28.34	1.78	24.09	33.63
RISK	429	0.57	2.93	0.0007	55.84

**Table 4:** Correlation coefficient matrix between the variables in the model

	IR	CF	ROA	FCI	LEV	GR	SZ	RISK
IR	1							
CF	0.41	1						
ROA	0.07	0.28	1					
FCI	-0.12	-0.35	0.11	1				
LEV	-0.07	-0.13	-0.22	-0.054	1			
GR	0.29	0.15	0.13	0.055	-0.06	1		
SZ	-0.003	0.02	0.04	0.04	0.49	-0.0003	1	
RISK	0.17	0.017	-0.11	-0.06	-0.13	-0.05	-0.11	1

**Table 5:** Regression results

Variables	VIF	Dependent variable (IR)		
		POLS	FEM	FGLS
CF	1.33	0.995***	0.926***	0.582***
ROA	1.22	-8.198	-8.619	-5.092**
FCI	1.22	1.800	-4.146	1.764
LEV	1.46	0.232	1.257	-0.472
GR	1.04	2.312***	1.915***	1.122***
SZ	1.36	0.052	-1.422*	0.074
RISK	1.04	0.666***	0.460**	0.162
Cons		-1.258	41.29**	-1.741
N	1.24	425	425	425
Significance		F (7, 147) = 20.30	F(7,379) = 11.88	Wald chi2(7) = 36.49
White Test		Chi2 (35) = 201.06 Prob > Chi2 = 0.0000		
Wooldridge Test		F (1, 38) = 1.786 Prob > F = 0.1894		
Hausman Test			chi2(7) = 19.20 Prob>chi2 = 0.0076	
Wald Test			chi2 (39) = 2.0e+06 Prob>chi2 = 0.0000	

Note: (\*), (\*\*), (\*\*\*) represent for the significant level at 1%, 5% and 10%, respectively.

## 5. Discussion and Recommendations

### 5.1. Discussion

The analysis results provide empirical evidence on the factors influencing the investment decisions of economic groups in Vietnam listed on the stock market.

First, the cash flow has a positive impact on the investment decisions of economic groups with a significance of 1%. This result shows that an increase of 1% in cash-flow might lead to an increase of 0.58% in investment whilst other independent variables are constant. In other words, this indicates that cash-flow is an important determinant of economic group investment decisions and can help stimulate investment. This result is also matched with the findings of Aivazian et al. (2005), Azzoni and Kalatzis (2006), Adelegan and Ariyo (2008), Jangili and Kumar (2010), Nair (2011), Ruiz-Porras and Lopez-Mateo (2011). In Vietnam, the method of presenting cash flow statement does not affect the information users in making loan decisions (Nguyen, 2020)

Second, investment opportunities have a negative impact on the investment decisions of the economic group with a significance of 5%. This result shows that an increase of

1% in investment opportunities to a decrease of 5.1% in investment whilst other independent variables are constant. This result is contrary to the research results of Saquido (2003), Aivazian et al. (2005), Baum et al. (2008), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), . This can be explained by the fact that investment opportunities in research are being expressed through book value, not taking into the market value of economic groups.

Third, Fixed capital intensity has a positive impact on investment decisions but is not statistically significant. This result is in line with the studies of Erickson & Whited (2000), Gomes (2001), Saquido (2003), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), Ruiz-Porras and Lopez-Mateo (2011), and Nair (2011). This shows that Fixed capital intensity does not play an important role in the investment decisions of economic groups in Vietnam.

Fourth, Leverage has a negative impact on investment decisions but is not statistically significant. This result is in contrast to the studies of Azzoni and Kalatzis (2006), Adelegan and Ariyo (2008), Jangili and Kumar (2010), and Nair (2011). This shows that the level of debt use does not play an important role in the investment decisions of economic groups. Because the business characteristics of each economic group are different and the level of using

loans is different, this factor does not have a great impact on the investment decisions of economic corporations listed in Vietnam.

Fifth, the sales growth has a positive impact on the investment decisions of economic groups with a significance of 1%. This result shows that an increase of 1% in sales growth might lead to an increase of 1.12% in investment whilst other independent variables are constant. In other words, this indicates that sales growth is an important determinant of economic group investment decisions and can help stimulate investment. This result is also matched with the findings of Erickson & Whited (2000), Gomes (2001), Saquido (2003), Carpenter and Guariglia (2008), Bokpin and Onumah (2009), Ruiz-Porras and Lopez-Mateo (2011), and Nair (2011).

Sixth, firm size has a positive impact on investment decisions but is not statistically significant. This result is in line with the studies of Adele and Ariyo (2008), Jangili and Kumar (2010), Ruiz-Porras and Lopez-Mateo (2011). This shows that the size of the enterprise does not play an important role in the investment decisions of economic groups in Vietnam. Because Vietnamese economic groups are quite large in size compared to other businesses. In Vietnam, firm size (SIZE) is positively related to the company's business performance (Nguyen & Nguyen, 2020), the longer the enterprises have been in operation, the larger the scale of capital (Xuan, 2020).

Seventh, business risk has a positive impact on investment decisions but is not statistically significant for the FGLS model, but statistically significant 1% with the FEM model. This shows that business risks do not have a large impact on the investment decisions of economic groups in Vietnam. Because Vietnamese economic groups have a relatively high-risk appetite compared to other foreign businesses.

## 5.2. Recommendations

By the research model, the authors have given the evidence of factors affecting the investment decisions of economic groups in Vietnam. Based on the empirical results, several suggestions for improvement of investment decisions at the level of an Economic Group are given as follows:

Recommendations for economic groups: Capital in economic groups can come from two channels such as internal and external capital sources. Therefore, for the internal capital of economic groups, economic groups themselves must have transparency in financial information, maintain good cash flow management and business results of the Group. Effective union to create shareholders' confidence to invest more and more continuously. For external capital sources, high sales growth, good cash flow management, and good financial status are essential factors to help economic corporations mobilize external capital sources.

Recommendations for monetary authorities: The authors recommend that the State Bank of Vietnam should maintain a sustainable monetary policy. Any change in monetary policy must be carefully considered in both economic and political aspects. Furthermore, the organization's expansion of monetary policy will encourage investment by businesses; however, it also comes at a cost for 'Inflation'. In addition, banks need to improve their processes and procedures to make it easier for economic groups to use collateral for loans. Ultimately, the government, especially the banking system, will help economic corporations maintain the appropriate standard policy system in order to make their business plans and business strategies consistent. From there, it can improve the exchange of information between businesses and banks.

## 6. Conclusion

Through a data set collected from 39 economic groups including state-owned economic groups and private economic groups listed on the Vietnam stock market in the period 2009-2019, the authors analyzed the impact of factors affecting the investment decisions of economic groups. Experimental results from FGLS regression show that cash flow, sales growth have the same impact on investment decisions of economic corporations. In addition, investment opportunities have a negative impact on the capital investment decisions of economic corporations. The remaining factors include Fixed capital intensity, leverage, firm size and business risks that have weak and insignificant impact on capital investment decisions of economic groups.

The research results of this article are very useful for business executives, helping business managers identify the factors that influence capital investment decisions and make the right financial decisions to improve business efficiency in enterprises. Besides, the research results are also meaningful to money management agencies.

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