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HOW DEBT AND DIVIDEND POLICY MODERATE THE IMPACT OF OVER-INVESTMENT ON FIRM PERFORMANCE?

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Abstract

With the inclusive data of Vietnam's non-financial companies listed on HOSE and HNX from 2006 to 2016, the objective of this paper is to clarify whether overinvestment degrades a company's profitability and analyse whether debt and dividend policy can ease the aforementioned effect by lowering the quantity of excessive free cash flow in the enterprise. By utilizing the two specific approaches in measuring overinvestment via HP filter and the error term obtained from the sub-equation determining investment rates, the negative relationship between overinvestment and profitability is suggested. Furthermore, the adverse impact of overinvestment can be mitigated by debt or dividend policy; however, the aggregate effect of these guidelines is believed to attenuate the positive impact of the two-variable interactions.

Key words: overinvestment, debt policy, dividend policy.

JEL Classification: G31, G35.

Introduction:

The most important triad of financial policies are regarded to be debt policy, dividend policy, and investment policy (Alli, Khan, & Ramirez, 1993; Baker & Powell, 2000). To clarify how much profit a company can earn, it is significant to figure out how much debt a firm should lever, how much dividend should be paid, and how much investment it should make. Within the scientific community, there have been many debates accumulated by the relationships among these three policies. Modigliani and Miller (1958) Modigliani and Miller (1958) demonstrate that investment policy is unsuitable with the opposite guidelines in the context of a flawless capital marketplace with the absence of taxes, transaction costs, liquidation costs, and asymmetric information. Nevertheless, these assumptions are no longer appropriate to an imperfect capital market. As a result, in this case, there is an influence on investment policy originated from debt and the pay-outs of dividends.

A firm's future profitability partly depends on its own investment strategies within a constantly resilient setting overwhelmed with uncertainties (Kannadhasan & Aramvalarthan, 2011). In the process of running a business, a manager is tasked with allocating capital resources so as to reach an optimal level of investment where there is an equality between the marginal benefit and marginal cost of capital investment. The interests between the principles and representatives, however, are not aligned. In order to harness as many private benefits as possible, managers are inclined to broaden financial possessions under their management whereas shareholders aim at maximizing profits. As a consequence, managers may make overinvestment in projects with negative NPV. Moreover, a firm has to pay an expensive cost to bring the interests of managers and shareholders to an agreement in order to solve such an urgent problem. Eventually, through raising agency problems and reducing firm profitability, it is likely that firm performance will be deteriorated by overinvestment (Grazzi, Jacoby, & Treibich, 2016; Gu, 2013; Jensen, 1986; Shima, 2010).

Being conscious of the fact that a costly expenditure has to be incurred to handle the agency problem, a company often looks for another way to efficiently monitor managers' behaviour. This leads to the resolution of using debt in the capital structure and the pay-outs of dividends to shareholders. According to Agency Theory, both financial leverage and dividend payment can turn into beneficial devices in diminishing the free cash flow under the manager's control as managers are obliged to attain more profits to fulfil their commitments towards debt holders and shareholders. Through these two policies, additionally, stakeholders can share the heavy burden of monitoring responsibility in the capital market (Easterbrook, 1984). In the course of time, it is assumed that the harmful effect of overinvestment on firm profitability is to be lightened, as the result of using debt along with dividend policy (DeAngelo, DeAngelo, & Stulz, 2006).

This research aims at identifying the impact of overinvestment on firm profitability and enlightening the effects that debt and dividend policy may have on the overinvestment-performance relationship. Consequently, two main research questions rise: (1) Is overinvestment negatively related to firm profitability? (2) Is such a negative impact can be attenuated with the use of debt and dividend policy?

Due to the following reasons, Vietnam's listed companies are chosen in the study. The first reason is that with the presence of weak legal regulations and a high level of

asymmetric information, Vietnam's financial market remains underdeveloped and financial resources are primarily taken from commercial banks. The second reason is the virtual neglect of overinvestment in this country where the interests between shareholders and managers are in serious conflicts. From the financial statements of all Vietnam's listed companies, the data is collected from 2012 to 2016. In addition, by using HP Filter and taking the positive residuals from the sub-equation including possible determinants of investment policy, two ways of measuring overinvestment existing in each enterprise are suggested. It is expected that these two blooming measures are better proxies for the problem of overinvestment compared with the old method of relying on Tobin's Q.

A tendency of overinvestment to worsen firm profitability can be seen from the estimated statistic from the model. Nevertheless, with the use of either debt or dividend policy, it is possible to minimize its negative relation with firm performance. More surprisingly, at the same time, the combination of these two policies can mitigate the constraining effects of the two-variable interactions. A substitution between financial leverage and dividend payment is implied. The negative sign of a single debt and dividend policy, as well as the positive coefficient of their interaction, also proves the preceding situation. Moreover, the consistence in signs and significant level across two alternative measures of overinvestment and six proxies of firm profitability shows that the results support the solidity of the regression model.

Ultimately, the authors anticipated that the findings of this study greatly contribute to the existing literature review in two aspects. Firstly, having taken into consideration the three-variable interaction of debt, dividend, and investment policy, it is likely to be the first paper to do so. Secondly, once again, it acknowledges the fundamental idea of the interdependence among debt, dividends, and overinvestment, which was introduced by Agency Theory. As a surplus, some recommendations for shareholders in dealing with the agency problem inside their businesses are also suggested.

Section two mentions the overall review of theories and empirical studies to develop research hypotheses. Data collection and description, measurement of overinvestment, and model specification are included in section three. Section four gives a clearer view of the estimated results. In section 5, the research is summarized and some recommendations for corporate managers and shareholders are proposed.

Literature review and hypothesis development:

Based on some presumptions (Miller & Modigliani, 1961; Modigliani & Miller, 1958), it is believed that capital structure, dividend policy, and investment decisions are independent of one another. First, the absence of taxes, transaction costs, and bankruptcy costs all contribute to the perfection of the market. Second, information can be equally accessed by shareholders and managers, which means a market with two-way symmetric information. Third, the costs of debt are a burden both shareholders and debt holders have to bear. The relaxation of any assumption makes way for the imperfections of the capital market. Trade-off Theory, which expresses the benefits and costs of using debt in the capital structure, is formed by the existence of various kinds of taxes (Modigliani & Miller, 1963), and the same thing is applicable to Tax Theory, which illustrates the reduction in dividend pay-outs

(Litzenberger & Ramaswamy, 1979). Pecking-order Theory signifies the hierarchy of financing sources, (Myers & Majluf, 1984), Bird-in-hand Theory supports dividend payments to avoid future uncertainties (Gordon, 1959, 1963), and Agency Theory expresses the interest conflicts between managers and shareholders (Jensen & Meckling, 1976).

What makes their interests diverge is the separation between ownership rights of the principles and management rights of the agents (Jensen & Meckling, 1976). Using their ability to access to internal information, managers often attempt to benefit themselves through getting higher salaries, securer jobs, and bigger properties under their control. These motivations are the reasons behind investment in unprofitable projects, which cause the problem of overinvestment. When a firm has a hard time attaining financing sources from the capital market to invest in projects with positive net present value, it implies that asymmetric information causes not only underinvestment (Brealey, Myers, & Allen, 2008; Myers & Majluf, 1984) but also overinvestment when shareholders find it hard to monitor business activities, which allows managers to possess more freedom to build up their own fortune (Hail, Tahoun, & Wang, 2014). As a consequence, both the destruction of firm value and inefficiency in firm performance are the results of underinvestment and overinvestment (Fu, 2010; Liu & Bredin, 2010; Titman, Wei, & Xie, 2004; Yang, 2005).

Furthermore, through a wide range of empirical studies, the negative relationship between overinvestment and profitability is obviously illustrated. Shima (2010) emphasizes the negative effect of overinvestment on profitability. For Singapore's 360 listed firms from 2005 to 2011, Farooq, Ahmed, and Saleem (2014) suggest three levels of investment which comprise of just-investment, overinvestment, and underinvestment. The research clarifies that only just-investment is effective for a firm, the others considerably reduce firm efficiency. Having analysed all Chinese listed companies in the period of 1998 – 2014, Guariglia and Yang (2016) find that it is a rare possibility that investment reaches the optimal level, as a result of limited financing resources and agency problems. As they claim it to be, agency problems are the main reason behind an enormous amount of investment, harmfully contribute to firm performance. Sharing the same similarity, Liu and Bredin (2010), Titman et al. (2004), Yang (2005) conclude that overinvestment bears a negative influence on firm performance. Ultimately, the research eventually develops the first hypothesis to shed light on the overinvestment-performance relation.

***Hypothesis 1*: Overinvestment negatively influences firm profitability**

Upon reaching its optimal level, the excess of the free cash flow creates an opportunity for managers to benefit themselves. By taking advantage of such situation, they can use such funds to broaden financial resources under their management or strengthen their position with the expansion of the business, all of which make up the reality of overinvestment. Thus, to prevent managers from expropriating compensations and making personal gains, deducting the free cash flow can be the solution to the problem (Jensen, 1986), (Dyck & Zingales, 2004; Nenova, 2003),(Hope & Thomas, 2008). Therefore, not only do the use of debt and the payment of dividends restraint the excessive free cash flow but they also pass the monitoring tasks from inside to outside partners (Alli et al., 1993; Biddle, Hilary, & Verdi, 2009; Easterbrook, 1984; Jensen, 1986; Rozeff, 1982). In addition, according to Richardson (2006) such an action is capable of lowering the free cash flow administered by managers. Lang and Litzenberger (1989) share the same idea that dividend and

investment policy hold a mutual connection. A decrease in overinvestment, which subsequently improves a firm's market value, implies an increase in the distribution of dividend. Grossman and Hart (1982) emphasize that, by utilizing debt, firms can be experience the pressure of financial distress or worse bankruptcy. Moreover, through strict debt covenants, certain constraints are also established on managers' decisions by debt creditors. As a consequence, by continuing to overinvest in bad projects, managers will leave themselves at risk of losing perquisites or their own position in the company. Finally, for the moderate impacts of debt and dividend policy, the second hypothesis is proposed.

***Hypothesis 2*: *financial leverage and dividend payments have a tendency to attenuate the negative influence of overinvestment on profitability*.**

Data methodology:

Data collection:

From Thompson Reuters, all the financial statements of Vietnam's listed firms on HOSE and HNX from 2012 to 2016 are gathered for research data. Due to the enormous differences in the characteristics of products and their services, only non-financial companies are included in the sample data. After the processing operation, there remain 669 Vietnamese listed companies in the final dataset.

Model specification:

Pursuing the trail of Chen, Hung, and Wang (2017) and Altaf and Shah (2017), the study identifies the impact of overinvestment on firm performance as well as moderate effects of debt and dividend policy on the overinvestment-performance relationship.

$$\begin{aligned} ProfitPerformance_{i,t} = \lambda_0 &+ \lambda_1 CompanySize_{i,t} + \lambda_2 Risk_{i,t} + \lambda_3 Liquidity_{i,t} + \lambda_4 Tangibility_{i,t} \\ &+ \lambda_5 DividendPolicy_{i,t} + \lambda_6 DebtPolicy_{i,t} + \lambda_7 OverInvest_{j,i,t} \\ &+ \lambda_8 DividendPolicy_{i,t} \times DebtPolicy_{i,t} \\ &+ \lambda_9 DebtPolicy_{i,t} \times OverInvest_{j,i,t} \\ &+ \lambda_{10} DividendPolicy_{i,t} \times OverInvest_{j,i,t} \\ &+ \lambda_{11} DividendPolicy_{i,t} \times DebtPolicy_{i,t} \times OverInvest_{j,i,t} + \mu_{i,t} \end{aligned}$$

From the above formula, it can be seen that dividend policy is surrogated by cash dividends over earnings after taxes while firm profitability is calculated by six different proxies including earnings before interests and taxes (EBIT), earnings before taxes (EBT), and earnings after taxes (EAT) over total assets and equity. On the other hand, a proxy of total liabilities over total assets determines debt policy.

Table 1: Summary statistics of all research variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
EBIT/Total Asset	5,852	0.06303	0.05617	-0.05633	0.25661
EBT/Total Asset	5,852	0.07616	0.06644	-0.05505	0.30079
EAT/Total Asset	5,852	0.09405	0.06422	-0.02993	0.31353
Company Size	5,852	26.6709	1.28151	23.8265	29.8310
Risk	5,853	0.07834	0.06975	0.00407	0.37840
Liquidity	5,852	1.67759	1.17572	0.25585	6.92789
Tangibility	5,816	0.25386	0.19531	0.00478	0.79431
Dividend Policy	3,996	0.53488	0.44375	-0.05574	3.22060

Debt Policy	6,099	0.50751	0.22459	0.01251	0.94379
Over-Investment ^{REG}	4,366	0.35044	0.47716	0.00000	1.00000
Over-Investment ^{HP}	6,160	0.42305	0.49408	0.00000	1.00000

Sources: calculated by the author

Employing HP Filter and the sub-equation, overinvestment is measured by two different ways. Firstly, by subtracting the real to the fitted value of required investment to get the residual, over-investment can be calculated. This is believed to be unexpected investment. Amidst these residuals, the problem of overinvestment is implied (He & Kyaw, 2018; Richardson, 2006). Secondly, overinvestment is also measured using HP Filter technique (Hodrick & Prescott, 1997). It is proposed to be the points above the trend line of the investment rate. Moreover, to avoid the possibility of lacking some important explanatory variables, some control variables are taken into account, which are firm size, growth, liquidity and tangibility (Altaf & Shah, 2017; Chen et al., 2017; Fosu, 2013). Firm size is none but the natural logarithm of total assets and growth is the rate in which total assets develop. Risk is the standard deviation of return on assets (ROA). The difference between current assets and inventories divided by current liabilities is regarded as liquidity. Tangibility is the tangible assets to total assets ratio. In table 1, all the variable descriptions are expressed.

Compared to those calculated on total assets, according to table 1, it is observable that profitability measured on equity seems to have a stronger variation. The minimum values of profitability vary between -5.6% to -3.0%, and the maximum is from 25.7% to 31.4%. In addition, from the sample measured by HP Filter and the sub-equation, overinvestment exists in roughly 35% and 42%.

Results and discussions:

The aftermath, as estimated in table 2, reveals that both debt and dividend policy hold a negative influence on firm performance. Fascinatingly, compared with Pecking-order Theory and Tax Theory, it seems that these results share the same similarity (Litzenberger & Ramaswamy, 1979; Myers & Majluf, 1984). By displaying a positive sign, the interaction variable between financial leverage and dividend policy astonishingly signifies a substitution between these two policies; in other words, an increase in dividend payments will result in lessened financing resources of a firm, which obliges it to enter the capital market for funding new investments. This puts the company at the higher risk of getting more debt. To limit the negative effects of financial leverage, it is essential that the pay-outs of dividends are executed, as they allow firms to have more incentives to operate effectively in order not to be deep in debt. On the contrary, in the capital market toward business operations, both the establishment of debt covenants and the improvement of the monitoring partners can assist the use of debt in reducing the harmful impacts of dividend policy.

The study discovers that, without a doubt, overinvestment and firm performance are in a negative correlation. Being in harmony with Agency Theory and Free Cash Flow Hypothesis, the findings indicate that investing in projects with negative net present value, i.e. overinvestment, is presumed to bring about the deduction of firm profitability. Reliable proofs are also found, confirming that the harmful effects of overinvestment on firm performance can be moderated by the use of debt and the payment of dividends. Thus, this

is true to the suggestion of cutting down on the excessive free cash flow by using financial leverage and dividends as the necessary devices. Nevertheless, it is possible that the constraining impacts that each single policy can have on the overinvestment-profitability relationship can be diminished by the existence of financial leverage and dividend policy in the three-variable interaction. Once more, the substitution relation between financial leverage and dividend policy is emphasized. Undergoing various models utilizing different proxies for overinvestment and firm profitability, not only do the estimated results finally achieve the consistency in signs, but they also acquire the significance level, which allows the regression model to be further bolstered.

Table 2: Firm performance regression results

$ProfitPerformance_{i,t}$	Over-Investment measured by Sub-Equation			Over-Investment measured by HP-filter		
	EBIT/Total Asset	EBT/Total Asset	EAT/Total Asset	EBIT/Total Asset	EBT/Total Asset	EAT/Total Asset
$CompanySize_{i,t}$	-0.0148***	-0.0125***	-0.0153***	-0.0177***	-0.0169***	-0.0188***
	(0.00275)	(0.00276)	(0.00238)	(0.00228)	(0.00230)	(0.00198)
$Risk_{i,t}$	0.0750***	0.0609***	0.0401***	0.0606***	0.0525***	0.0363***
	(0.0146)	(0.0146)	(0.0126)	(0.0120)	(0.0121)	(0.0104)
$Liquidity_{i,t}$	-0.00279	-0.00157	-0.00138	-0.000590	0.00107	0.00106
	(0.00182)	(0.00183)	(0.00158)	(0.00158)	(0.00159)	(0.00138)
$Tangibility_{i,t}$	-0.0503***	-0.0611***	-0.0503***	-0.0570***	-0.0711***	-0.0587***
	(0.0119)	(0.0119)	(0.0103)	(0.0107)	(0.0108)	(0.00931)
$DividendPolicy_{i,t}$	**-0.000354****	**-0.000312****	**-0.000283****	**-0.000213***	**-0.000204**	**-0.000181***
	(0.000139)	**(0.000139)**	**(0.000120)**	**(0.000127)**	**(0.000127)**	**(0.000110)**
$DebtPolicy_{i,t}$	**-0.109*****	**-0.156*****	**-0.125*****	**-0.0949*****	**-0.133*****	**-0.102*****
	(0.0149)	**(0.0149)**	**(0.0129)**	**(0.0128)**	**(0.0129)**	**(0.0112)**
$DividendPolicy_{i,t} \times DebtPolicy_{i,t}$	**0.00105*****	**0.000987*****	**0.000808*****	**0.000536****	**0.000566****	**0.000454****
	(0.000330)	**(0.000331)**	**(0.000286)**	**(0.000254)**	**(0.000255)**	**(0.000220)**
$OverInvest_{j,i,t}$	**-0.0175****	**-0.0206*****	**-0.0163*****	**-0.0143*****	**-0.0153*****	**-0.0113*****
	(0.00699)	**(0.00701)**	**(0.00606)**	**(0.00484)**	**(0.00487)**	**(0.00421)**
$OverInvest_{j,i,t} \times DividendPolicy_{i,t}$	**0.00309****	**0.00229**	**0.00182**	**0.00189*****	**0.00183****	**0.00158****
	(0.00153)	**(0.00154)**	**(0.00133)**	**(0.000723)**	**(0.000729)**	**(0.000629)**
$OverInvest_{j,i,t} \times DebtPolicy_{i,t}$	**0.0321****	**0.0376*****	**0.0297*****	**0.0284*****	**0.0292*****	**0.0221*****
	(0.0127)	**(0.0127)**	**(0.0110)**	**(0.00885)**	**(0.00891)**	**(0.00769)**
$OverInvest_{j,i,t} \times DividendPolicy_{i,t} \times DebtPolicy_{i,t}$	**-0.00514****	**-0.00388**	**-0.00307**	**-0.00274*****	**-0.00267****	**-0.00227****

	(0.00236)	**(0.00237)**	**(0.00205)**	**(0.00106)**	**(0.00106)**	**(0.000918)**
Constant	0.572***	0.518***	0.557***	0.648***	0.630***	0.646***
	(0.0728)	(0.0731)	(0.0631)	(0.0606)	(0.0611)	(0.0527)
Number of groups	609	609	609	626	626	626
Observations	3,314	3,314	3,314	3,960	3,960	3,960
R-squared - Within	0.088	0.121	0.126	0.071	0.091	0.092
Overall	0.123	0.216	0.179	0.094	0.158	0.121
Between	0.075	0.157	0.126	0.061	0.126	0.091
F-Statistics	21.79	30.89	32.35	21.24	27.74	28.06
Prob.	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

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

Sources: calculated by the author

Conclusion:

Conclusively, it is clear that the three variables including financial leverage, dividend payments, and investment policy are not independent of one another; however, to clarify the efficiency of business operations, they are literally weaved and combined. Having Agency Theory and Free Cash Flow held their implications, the study creates a new way of analysing the moderate effects of debt and dividend policy on overinvestment, for which the conflict of interest between shareholders and managers within a company is responsible.

With the dataset of all non-financial companies listed in Vietnam's stock exchange market from 2012 to 2016, the conclusion that overinvestment wields a negative impact on firm profitability is finally drawn. In a remarkable way, by subtracting the excessive free cash flow, the isolated usage of either dividend policy or debt policy can attenuate the adverse effect of overinvestment. Conversely, by virtue of the substitution effect between financial leverage and dividend payments, when combined, these two policies degenerate the overinvestment-performance relationship. With two substitute measures of overinvestment established under HP Filter technique together with various representatives for firm profitability, consisting of the positive residual taken from the sub-equation and the points over the trend line of the investment rate, the analysis of robustness is administered. Regardless of the replacement in proxies for both independent and dependent variables, not only do all estimated coefficients remain consistent in expected signs, but they also are consistent in the significance level, further bringing about the firmness of the model.

Judged from the outcome, some recommendations are proposed. Firstly, to mitigate the negative effect of overinvestment on firm profitability, financial leverage and dividend payments should be exploited for firms to limit the excess of free cash flow. Secondly, to deduct the possibility of overinvestment, managers should also take the enhancement of their governance into consideration for the agency problem to be lessened.

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Appendixes

Appendix 1: Variable Measurement

Variable	Measurement
Performance	EBIT/Total Asset, EBT/Total Asset, EAT/Total Asset
Company Size	Natural logarithm of total asset
Growth	Growth rate of total sale
Risk	Standard deviation of ROA
Liquidity	Quick ratio (current assets – inventories) / current liabilities
Tangibility	Tangible fixed asset / total asset
Dividend Policy	Cash dividend pay-out over earning after tax
Debt Policy	Total liabilities / total asset
Over-Investment	Investment rate measured alternatively by regression & Hodrick–Prescott filter