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Cash Flow, Profitability, Financial Constraint, and Investment in Indonesia

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ABSTRACT

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This study aims to find the effect of cash flow, profitability, and financial constraint on investment decision in Indonesia. Previous studies have proved that cash flow, profitability, and financial constraint have an effect on company investment level. The utilization of logit regression model to classify the condition of financial constraint and multiple regression on the 123 samples of manufacturing companies during 2012 – 2014 period find that cash flow and profitability has a positive effect on investment level in company that face financial constraint and financial unconstraint company. The moderating test shows that profitability has stronger effect on the investment level that experience financial constraint rather than in financial unconstraint company. Meanwhile, cash flow does not have different effect on financial constraint or unconstraint companies.

INTRODUCTION

One of important decisions for every manager is investment decision because this decision will determine how effective companies manage investor's funds. Investment decision is related with funding decision. In financial management, there are two sources of funds that can be used in investment. The first source of fund is internal source, both from retained earnings and cash. The second source of fund is the external sources from liabilities and stocks. However, the selection of the sources of fund needs serious consideration because each source has the cost of capital that needs to be considered. Thus, the selection of sources of fund becomes an important decision for a

manager. According to Donaldson (1961) in Hovakimian *et al.* (2001) states that manager tends to choose internal sources of funds rather than external sources because its cost of capital is lower. Even though it has lower cost of capital, internal sources of fund usually are more limited than external sources. Thus, to finance their investment, managers always combine it with funds from external sources.

Financial constraint is a condition in which external sources of fund has very high cost of capital. This may happen due to the high cost of debt and expensive cost of equity that appear in the low market to book ratio and cash flow (Fazzari *et al.*, 1988). Thus, generally financial constraint is defined as a constraint that is experienced by company in gathering capital from available sources, and specifically defined as constraint that is experienced by company in gaining funds from external sources. To measure financial constraint, researchers can use several proxies, such as company size, dividend payout, and investment grade rating. These three proxies is traditional proxies that are used to identify whether a company experience financial constraint (Fazzari, *et al.*, 1988). Besides that, to determine whether company experience financial constraint researchers can also employed KZ index (Kaplan and Zingales, 1997).

If company experiences high financial constraint, then they will tend to use higher cash flow for investment and vice versa, due to they have sufficient access to external sources of fund. Thus, the level of cash flow will affect the relationship between financial constraint and company investment decision. Previous studies such as Hovakimian and Hovakimian (2009), find that the level of financial constraint is affected by cash flow. While, Kaplan and Zingales (1997), Almeida and Weisbach (2004), and Fitria (2009) find significant effect of cash flow on the relationship between financial constraint and company investment. The opposite result is reported by Chen and Chen (2012) shows that there is no relationship between cash flow and financial constraint. From those results, we can see that there are inconsistencies of study result among previous studies. Due to this fact, it is interesting to perform a new testing using case study in Indonesia considering that similar studies are still rarely performed in Indonesia. To differentiate this study with other studies, this study will add profitability as independent variable.

Formulation of the Problem

The analysis on the relationship among investment, cash flow, profitability, and financial constraint on various combinations is widely performed outside Indonesia. Wang *et al.* (2008) state that the difference in social system, micro-economic structure, economic development stages, or financial market structure in various countries may lead to the difference in the relationship between sources of fund and investment. Thus, conducting similar study in the developing countries- with different characteristics- such as Indonesia is expected to provide wider understanding on the relationship between financial constraint and investment.

LITERATUR REVIEW AND HYPOTHESIS

Cash flow sensitivity, Profitability, and Investment

As mentioned in various financial literatures, each source of fund used by a company in investment has cost of capital that needs to be considered. That is why a developing company that makes a high number of investments chooses to use internal

sources of fund rather than external sources due to the consideration on the cost of capital (Hovakimian and Titman, 2006). The cost of capital for external sources of fund will be more expensive than the internal sources of fund especially related with the information asymmetry. Thus, the investment level of a company will always related with these internal sources of capital.

Cash flow is often linked to investment performed by a company, which is aimed to increase the financial growth and prosperity of owner. Currently, the literature on corporate finance only focused on the existence of imperfect financial market and its effect on cash flow that determine the investment. Cash flow sensitivity (cash flow and cash holding) and investment can be associated with two terms, overinvestment and underinvestment (Hovakimian and Hovakimian, 2009). Overinvestment is a state in which cash flow from investment is low and underinvestment is a state in which the cash flow from investment is high. The study conducted by Hovakimian and Hovakimian (2009) reveal that on low cash flow, manager tends to invest more resources than they wanted to. This may take place if the marginal investment probability is not low, showed by market to book ratio value and cash flow. While on the high cash flow, the exact reverse condition take place, managers make only small investment so that they can control the probability of financial loss in the future. Besides that, in their study overinvestment and underinvestment is grouped and not based on stock value, but based on the cash flow that will be used to make investment. The other internal sources of fund that can encourage company investment is company profitability. Besides showing company success in performance in previous year, profitability also shows the availability of fund for operation activities, including for the investment activity.

Several studies show that cash flow has strong effect on the level of investment showed in company growth, especially on the companies that experience financial constraint state (Carpenter and Peterson, 2002). Kaplan & Zingales (1997) however, state contrary. They argue that the significant effect of cash flow on growth not only take place on the company that experience financial constraint but also on the company that experience financial unconstraint. With the existence of financing hierarchy in which the cost to acquire external fund is higher than internal fund, the company with financial unconstraint prefers internal fund due to the benefit from cost saving.

H1: Cash flow has positive effect on investment

H2: Profitability has positive effect on investment

Financial Constraint, Cash Flow, Profitability, and Investment

The term financial constraint introduced by Fazzari *et al.* (1988, in Kaaro, 2004) have similarity with the term equity dependency (Stein, 1996; in Chang *et al.*, 2007; and Dong *et al.*, 2007) that refers to company condition that experience difficulties in funding from available sources. Specifically, Kaplan and Zingales (1997) state that financial constraint take place because company is faced to the constraint in financing from external sources capital (Kaaro, 2004). Companies that experience financial constraint is referred to Financially Constraint while companies that do not experience financial constraint referred to Financially unconstrained.

On the previous description, we explain that cash flow is an important factor in investment; however, there are other factors that may affect cash flow sensitivity. This due to cash flow has positive relationship with investment growth (Carpenter and

Peterson, 2002). When cash flow has high sensitivity, it can affect the investment growth and lead it to negative growth. When a company can no longer rely on their cash flow, then they have to find other sources of fund to replace the heavily utilized cash flow. Almeida *et al.* (2004) state that increase in profitability may become one of the alternatives of sources for fund when cash flow is exceptionally low. In line with Ferreira and Vilela (2004), Almeida *et al.* (2004) explain that financial constraint company will tend to perform cash policy optimally to balance their current and future investment profitability. Thus, they anticipate the future financing constraint by stored cash from current profit, which means that financially constraint company will increase their cash holding for their future sustainability. Cash policies in a financially constraint company is always the reverse of those financially unconstraint company. The financially unconstraint company tends to be able to fund their investment that have positive NPV (Net Present Value). When a company experience cash flow sensitivity to invest, they tend to use assets as collateral in investing. The financially unconstraint company tend to maximizing the available cash to perform an investment with a project that has positive NPV. The high profit shows the future growth of a company. The relationship between profitability and investment has been tested by AlNajjar and Belkaoui (2001) who find positive and significant result.

H3: The effect of cash flow on investment in financial constraint company is higher than in financial unconstraint company

H4: The effect of profitability on investment in financial constraint company is higher than in financial unconstraint company

RESEARCH METHOD

The population in this study is all manufacturing companies listed in Indonesian Stock Exchange (IDX) during the period of 2012 - 2014. The samples are selected based on the completeness of information that is needed to run the analysis, which comprised of 123 companies.

Variables

Investment

Investment (*INV*) is computed using following formula (Kaaro, 2004):

$$INV_t = \frac{CashflowInvestment_t}{NetFixedAssets_{t-1}}$$

Financial Constraint

The selected samples are classified into financially constraint and financially unconstraint company (Financially Constraint/FC; Financially Unconstraint/FU). This study adopts the classification approach based on financial constraint employed by Kaaro (2004) that refer to the study conducted by Kaplan and Zingales (1997). Company that pays dividend is classified to financially constraint company, while company that does not pay dividend is classified to financially unconstraint.

This study employs prediction model using the financial variables referring to Kaplan and Zingales (1997) and Kaaro (2004), that consist of Slack, Profitability (changes in profit, retained earnings, profit from operation) and Liquidity (Current Rasio).

The steps to compute it is as follows:

1. Classify the initial samples based on the dividend payment. Companies that pay dividend classified into financially unconstrained (FU), while companies that pay the dividend are classified into financial constraint (FC). The FU group will be assigned with 0 and FC will be assigned with 1.
2. Develop a model analysis to predict the financial constraint (KP) based on the financial variables.

$$KP_i = Ln\left(\frac{P_i}{1-P_i}\right) = \alpha_0 + \beta_1 CR + \beta_2 PROFIT + \beta_3 PLB + \beta_4 SLACK + \beta_5 LD \quad (i)$$

$$Z = \alpha_0 + \beta_k KP_{xk} \quad (ii)$$

$$P_i = \frac{1}{1+e^{-Z}} = \frac{e^Z}{1+e^Z} \quad (iii)$$

Notes:

<i>KP</i>	= Financial constraint
<i>CR</i> (Current Ratio)	= Current Assets/Current Liabilities
<i>PROFIT</i>	= Profit from operation/Total Assets
<i>PLB</i> (Changes in Profit)	= Positive changes: 1, Negative changes: 0
<i>SLACK</i>	= [Cash + Short term investment + (0.5 x Supplies) + (0.7 x Account Receivables) - Short term liabilities]/Assets
<i>LD</i> (Laba ditahan)	= Retained earnings/Assets
<i>P</i>	= Probability

3. The result of probability estimation on financial constraint on formula (iii) is used as objective criteria to differentiate the group of company based on financial constraint. If the probability of KP_i is larger than the cut off probability ($KP_i > KP_c$) then the company will be categorized as FU (0), if $KP_i < KP_c$, the company categorized as FC (1). The determination of cut off value (separator probability) is based on the actual dividend policy. For example, based on the actual observation we find that 35% of companies are included into FU and 65% are included into FC, thus the cut off is 35%.

Cash Flow

The cash flow is measured using following formula (Hovakimian, 2009).

$$CF = \frac{NOPAT + Depreciation}{Total Assets}$$

CF	= Operating Cash flow
NOPAT	= Net Operating Profit After Tax

Depreciation = Depreciation of fixed assets

Total Assets = Total number of assets owned by the company

Profitability

Profitability is the level of profit acquired by a company. The higher the company profitability then the higher is the fund available for future investment. The profitability ratio used in this study is Return on Asset (ROA) with following formula.

$$ROA = \frac{\text{Earning After Tax}}{\text{Total Assets}}$$

Model and Hypothesis Testing Method

According to the hypothesis, thus the model that will be tested is as follows:

$$Investment = \alpha_0 + \beta_1 FC_{it} + \beta_2 CF_{it} + \beta_3 ROA_{it} + \beta_4 FC * CF_{it} + \beta_5 FC * ROA_{it} + \varepsilon$$

Notes:

FC = Dummy Financial Constraint (1 = Financially Constraint, 0 = Financially Unconstraint)

CF = Cash Flow

ROA = Return on Asset

FC*CF = interaction between Dummy Financial Constraint with Cash Flow

FC*ROA = interaction between Dummy Financial Constraint with Return on Asset

The testing on hypothesis 1 proves positive and significant β_1 , together with the testing on hypothesis 2 that shows positive and significant β_2 . Similarly, the test on hypothesis 3 and 4 proves that β_4 and β_5 has positive and significant sign.

RESEARCH RESULT

Regression Model of Financial Constraint

Based on the initial data we formulate a regression model to predict the condition of company financial constraint. The regression result shows that the variable Slack and PLB is not significant, thus, it cannot be included in the prediction model. The prediction model is as follows.

$$KP_i = Ln\left(\frac{P_i}{1-P_i}\right) = 0.256 + 0.654CR + 0.045PROFIT + 1.08LD$$

The actual observation on dividend policy in 369 companies shows that there are 42.05 % of the companies fit to Financially Unconstraint group and 57.95 % of the companies fit into Financially Constraint group. Thus, the cut-off value that used in this study is 42.05 %. Based on the model above and the cut-off value, thus the companies that can be categorized into Financially Unconstraint and Financially Constraint are:

Table 1 Total Companies based on Financial Constraint

Categories	Total
Financially Unconstrained	199
Financially Constrained	170

Descriptive Statistics

Table 2 Descriptive Statistics

Category	Financially Unconstrained			Financially Constrained		
	Min	Max	Mean	Min	Max	Mean
Investment	-0.08	0.89	0.43	-1.55	1.69	0.23
Cash Flow	-0.54	1.00	0.11	-0.68	1.00	0.04
Return on Asset	0.00	0.45	0.11	0.00	0.42	0.05

The total number of samples that categorized into financially constrained is smaller (170) than financially unconstrained (199) and have lower mean investment (0.23) than financially unconstrained (0.43). Similarly, with the availability of cash flow and profitability, financially unconstrained company has higher score than financially constrained company.

Hypothesis Testing and Discussion

The hypothesis testing performed using following formula:

$$Investment = \alpha_0 + \beta_1 FC_{it} + \beta_2 CF_{it} + \beta_3 ROA_{it} + \beta_4 FC * CF_{it} + \beta_5 FC * ROA_{it} + \varepsilon$$

Table 3 Hypothesis Testing

Variable	Constant	Coefficient	Probability
Cash Flow		0.726	4.723 (0.000)***
ROA		0.693	3.352 (0.000)***
Financial Constraint	0.158	0.195	5.789 (0.000)***
Financial Constraint x CF		0.017	1.290 (0.198)
Financial Constraint x ROA		0.811	3.392 (0.000)***

Based on the result of testing above, both cash flow and profitability has positive and significant effect on company investment. Thus, hypothesis 1 and 2 is supported. This shows a consistence on the theory and previous studies that explain that internal sources of funds become the main sources for company to funding their investment because the cost of capital is lower, even though the availability is limited than external sources. From the constant, we can see that cash flow has stronger effect than profitability because profitability contain receivables, which means that company needs to wait for the investment fund. However, cash flow is available fund that comes from profit and depreciation which is a non-cash cost or the excess of cash flow in a company after all investment project that generate positive NPV are taken. The condition that shows that more proportion of company financial need is fulfilled by internal sources

means that the company financial position is stronger (Riyanto, 2001). If company has less dependency on external sources of fund that means that the cost of external financial is lower that must be borne by the company and there will be more internal funds that can be invested to improve company's growth. The conclusion of this result supports hypothesis 1 and 2 that state that cash flow and profitability have positive effect on investment, both for financially constraint and financially unconstraint.

On hypothesis 3 and 4, dummy variable is employed to understand the difference between financially constraint and financially unconstraint. The dummy variable is a qualitative variable that has nominal data stated in 0 and 1 as differentiator. The testing on hypothesis 3, which is a testing on interaction between cash flow and financial constraint condition result in the statistical value of 1.290 with probability of 0.198 that means it is statistically not significant. This means that the effect of cash flow on investment of financially constraint is not different with financially unconstraint company. With other word, the importance of internal funds from cash flow to fund the investment is similar on both groups. Thus, we can assume that the average investment on financially constraint is different from financially unconstraint, however, the changes in average investment caused by cash flow is similar on both group. The conclusion of this result is rejecting hypothesis 3, which states that the effect of cash flow on investment is different between financially constraint and financially unconstraint company.

While on hypothesis 4, which test the interaction between profitability and financial constraint condition shows significant result with probability of 0.000. This means that the effect of profitability on investment in financially constraint is stronger than financially unconstraint. The high profitability on a company will increase investment and growth because the essence of growth for a company is the existence of the probability for profitable investment. Besides that, the high profitability level shows a good company growth in the future. The conclusion of this result is supporting hypothesis 4, which states that profitability on investment is different between financially constraint and financially unconstraint company.

CONCLUSION

From the result of analysis, we can conclude that cash flow and profitability have positive effect on company investment level. The moderation testing shows the effect of cash flow on investment in financially constraint company is not different from financially unconstraint company. In other words, the average change on the investment level caused by cash flow is similar for both groups, while the effect of profitability on investment is stronger in financially constraint company than in financially unconstraint.

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