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The influence of investment-cash flow sensitivity and financially constrained on investment

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Abstract

Investment decision making is a crucial process influenced by many factors, such as cash flow. Therefore, it is important for potential investors to understand the stability of cash flow. This study aims to examine cash flow and investment-cash flow sensitivity on investment in manufacturing companies listed in Indonesia Stock Exchange from 2011 to 2015. A panel data methodology by a fixed-effect model with cross-section weights, standard errors, and covariance were utilized. It comprises two models, Panel A and B, with each consisting of all samples, and financially constrained grouping by Kaplan and Zingales-index (KZ-index). The finding that investment-cash flow sensitivity and financially constrained had a significant positive on investment. The result suggests it is important for investment decisions. In panel B, Tobin's Q was significantly applied to unconstrained companies to prevent a negative impact on sales, with the application of the closing price. The managerial implication of this research is addressed to company managers, potential investors, and readers. In conclusion, cash flow, long-term debt, working capital investment, leverage, and asset turnover impacts on investment for all estimations.

Abstrak

Pengambilan keputusan investasi adalah proses penting yang dipengaruhi oleh banyak faktor, seperti arus kas. Karena itu, penting bagi calon investor untuk memahami stabilitas arus kas. Penelitian ini bertujuan untuk menguji arus kas dan sensitivitas arus kas investasi pada investasi di perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia dari 2011 hingga 2015. Metodologi data panel dengan model efek tetap dengan bobot penampang, kesalahan standar, dan kovarians dimanfaatkan. Ini terdiri dari dua model, Panel A dan B, dengan masing-masing terdiri dari semua sampel, dan pengelompokan keuangan dibatasi oleh Kaplan dan Zingales-index (KZ-index). Temuan bahwa sensitivitas arus kas investasi dan pendanaan memiliki pengaruh positif signifikan terhadap investasi. Hasilnya menunjukkan itu penting untuk keputusan investasi. Di panel B, Tobin's Q diterapkan secara signifikan pada perusahaan yang tidak dibatasi untuk mencegah dampak negatif terhadap penjualan, dengan penerapan harga penutupan. Implikasi manajerial dari penelitian ini ditujukan kepada manajer perusahaan, calon investor, dan pembaca. Kesimpulannya, arus kas, utang jangka panjang, investasi modal kerja, leverage, dan dampak perputaran aset berdampak pada investasi untuk semua estimasi.

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1. Introduction

Investment and financing are some of the important topics in corporate financial management. In their seminal work, Fazzari et al. (1988) showed that firms with a high degree of investment-cash flow sensitivity (ICFS), and that there is a linear relationship between ICFS and financially constrained. However, the relationship between financially constrained and ICFS is contrary (Kaplan & Zingales, 1997).

Several previous studies on investment continue to debate the origins of ICFS. Brown & Petersen (2009) found during 1970–2006, ICFS was mostly removed for physical investment, relatively strong and even decreased for R&D, but not removed for the total investment. Supported by Chen & Chen (2012), showed ICFS has declined and disappeared, in the period 2007–2009 credit crunch, then ICFS cannot be a good measurement of financially constrained. Prove that this has declined over time (Vadilyev, 2017).

Kim (2014) showed several factors that can explain the negative relationship between financially constrained and ICFS, there is cash holdings and external financing. Referring to the Central Statistics Agency (BPS), Indonesia's economic growth in 2015 of 4.79 percent was the lowest in the last six years, i.e. 6.81 percent in 2010, 6.44 percent in 2011, 6.19 percent 2012, 5.56 percent in 2013, 5.02 percent in 2014. The most effective way to overcome economic competition, protect assets from inflation, and achieve financial freedom is an investment (Sari, 2017). Therefore, financial policies used to maintain the flexibility of insufficient resources (Denis, 2011).

Previous research conducted by (Riaz et al., 2016) used 288 listed firms in Pakistan to investigate the effects of ICFS and financially constrained on investment. Supported by various studies, financially constrained companies to have higher sensitivity than those that are not restricted contributed to understand how companies manage liquidity to face with external finance, uncertain cash flows, and

unexpected growth opportunities (Ek & Wu, 2018; Larkin, Ng, & Zhu, 2018; Vadilyev, 2017). Also, Dogru & Upneja (2019) investigate whether franchising financially constrained.

This paper is to examines the influence of ICFS and financially constrained on investment of manufacturing companies listed on the Indonesian Stock Exchange by supported seven control variables, namely investment opportunities, sales, leverage, working capital investment, change in long-term debt, closing price, and asset-turnover. The research gap is to clearly a pro and contra between ICFS and financially constrained on investment. This study used KZ-index to measure financially constrained, which consists of five variables formulated cash flow, net fixed assets, Tobin's Q, total debt, total capital, dividends, and cash stock. This research, therefore, is addressed to company managers, potential investors, and readers by informing them of misunderstandings that often occur on stock prices and dividend payments. These three variables are powerful and considered in every decision-making process.

2. Hypotheses Development

Managerial agencies and information asymmetry theory provide the same conclusion, that external costs involve premiums that differ from internal costs. Kaplan & Zingales (1997) stated that the investment has a positive impact on internal cash flows, most companies face obstacles in accessing external financing. Riaz et al. (2016) stated that cash flow is used as a proxy for internal finance, which plays an important role in capital decisions made by companies.

Pecking order theory and free cash flow theory predicted a positive effect of cash flows on investments (Vadilyev, 2017), whereas the former suggests that this relationship is due to financially constrained (Dogru & Upneja, 2019; Ek & Wu, 2018). Accordingly, the following hypothesis has been developed:

H_1 : cash flow has a positive effect on investment.

Pindado, Requejo, & de la Torre (2011) defined the ICFS as a proxy of financially constrained, which shows a company's inability to obtain funding sources available for investment. Supported by Riaz et al. (2016) provide new insights about ICFS as a representative of financially constrained. Next, ICFS in understanding the ICFS puzzle of financially constrained by using 45 markets over a sample period from 1991 to 2010 (Vadilyev, 2017).

Larkin, Ng, & Zhu (2018) also examine ICFS across international markets contains 419,318 firm-year observations across 43 countries from 1991 to 2014. Followed by Ek & Wu (2018) used ICFS, a common indicator of financially constrained to estimates the effect of financially constrained on capital misallocation of the Chinese firms. Another research to analyzed and compared ICFS between constrained and unconstrained from the restaurant industry (Dogru & Upneja, 2019).

H_2 : the investment-cash flow sensitivity in financially constrained firms is higher than that of financially unconstrained firms.

Tobin's Q ratio is one of the important information for economic decision making in this regard (Erickson & Whited, 2012). This is reflected in market enthusiasm, which assesses that there is a linear relationship between the investment opportunities companies (Dogru & Upneja, 2019; Larkin et al., 2018; Riaz et al., 2016).

The success of selling a product positively affects a company's cash flow (Ding, Guariglia, & Knight, 2013). This is, however, in contrast with John & Muthusamy (2011) research, which stated that sales have a negative effect on investment.

Leverage has a negative effect on investment, this indicates that debt is the main trigger for a company to improve its quality. Debt is not always a negative connotation, as it has a positive impact (Dogru & Upneja, 2019; Pindado et al., 2011; Riaz et al., 2016). External financing is more expensive compared to internal due to increase in investment sensi-

tivity to cash flow in the degree of financially constrained.

Working capital investment is one of the most basic determinants of calculations in finance (Baños-Caballero, García-Teruel, & Martínez-Solano, 2014). This is easy due to its viewpoint from companies and also very decisive. Many people believe that greater networking capital is better (Ding et al., 2013). Riaz et al. (2016) also confirmed that higher current assets produce a higher net working capital, thereby, reducing investment.

Long-term debt used by companies because and tends to increase its operation. Therefore, the linear relationship attracts potential investors for investment (Brown & Petersen, 2009). Supported that long-term debt has a positive impact on investment (Riaz et al., 2016).

The performance of a company is determined by its shares. A company with rising stock increases investors' interest. Stock is an indicator of an investor's measurement compared with market prices (Zutter & Smart, 2019). Higher stock price indicates good condition, and funding sources are more easily obtained from equity. Investments are proven to be influenced by stock. Furthermore, the positive relationship between investment and company performance indicated that high investment opportunities owned by the company is capable of improving its performance (Chosiah, Purwanto, & Ermawati, 2019). Therefore, it is concluded that the greater the investment made by a company, the higher its value. With this, investors assume the company's profitability has the ability to increase in the future. Therefore, they are more interested in buying shares of companies that invest, leading to an increase in stock prices (Pamungkas & Puspaningsih, 2013).

The total asset turnover is a measure of a firm's efficiency in generating sales. This ratio indicates the number of sales a firm produces for each dollar invested in the business. Generally, the higher a firm's total turnover, the more efficient its assets

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(Zutter & Smart, 2019). This measure interest's management because it indicates the firm's operations. Firth, Malatesta, Xin, & Xu (2012) stated that fixed asset investment is the world's fastest-growing economy.

3. Method, Data, and Analysis

The manufacturing sector is the main segment to support any economy. This sector has a huge impact on the market and familiar to shareholders, creditors, management, employees, customers, sup-

Table 1. Company sample size by business sector

Sector	Total	%	Sector	Total	%
Cement	2	3.6	Automotive	6	10.9
Ceramics, porcelain & glass	4	7.3	Textile & garment	2	3.6
Metal	6	10.9	Cables	3	5.4
Chemical	5	9.09	Food & beverage	6	10.9
Plastic & packaging	2	3.6	Cigarette	2	3.6
Animal feed	2	3.6	Pharmaceutical	6	10.9
Wood & its processing	1	2	Cosmetics & household appliances	3	5.4
Pens & paper	3	5.4	Household appliances	2	3.6

Table 2. Variables and measurements

Variables	Measure	Expected sign	Literature
Investment	$\{(Fixed\ asset_t - fixed\ asset_{t-1}) + Depreciation_t\} / net\ fixed\ asset_{t-1}$		(D'Espallier & Guariglia, 2015; Ding et al., 2013; Firth et al., 2012; Riaz et al., 2016)
Internal finance (cash flow)	$(Net\ income\ before\ extraordinary + Depreciation_t) / net\ fixed\ asset_{t-1}$	Positive	(Ağca & Mozumdar, 2017; Chen & Chen, 2012; Ding et al., 2013; Riaz et al., 2016)
Financially constrained (Kaplan and Zingales-Index or KZ-Index)	$KZ = -1.002 (cash\ flows / net\ fixed\ asset) + 0.283 (Tobin's\ Q) + 3.139 (Total\ Debt/Total\ Capital) - 39.368 (Dividends/net\ fixed\ asset) - 1.315 (cash\ stock/net\ fixed\ asset)$ To assess the company is consistent with the median value (0.6251). While scores above-median values are classified as constrained and below-median values are said to be unconstrained under the KZ-index.		(Ağca & Mozumdar, 2017; Cheng, Ioannou, & Serafeim, 2014; Dogru & Upneja, 2019; Hadlock & Pierce, 2010; Kaplan & Zingales, 1997; Lamont, Polk, & Saa-Requejo, 2001; Riaz et al., 2016)
Control variables:			
Investment Opportunities (Tobin's Q)	$\{(Closing\ price \times number\ share\ outstanding) + total\ debt\} / total\ asset$	Positive	(Baseri & Hakaki, 2018)
Sales	Total sales t/ net fixed asset t-1	Positive	(Ding et al., 2013; Pindado et al., 2011; Riaz et al., 2016)
Leverage	Total debt/ total asset	Negative	(Dogru & Upneja, 2019; Pindado et al., 2011; Riaz et al., 2016)
Working capital investment	Networking Capital t - t-1 Networking capital = $\{Current\ Asset - Current\ Liabilities\} / net\ fixed\ asset\ t-1$	Negative	(Baños-Caballero et al., 2014; Ding et al., 2013; Riaz et al., 2016)
Change in long-term debt	$(Long-term\ debt_t - t-1) / net\ fixed\ asset\ t-1$	Positive	(Brown & Petersen, 2009; Riaz et al., 2016)
Closing price	Closing price	Positive	(Chosiah et al., 2019; Pamungkas & Puspaningsih, 2013; Zutter & Smart, 2019)
Asset turnover	Total sales/ Total asset	Negative	(Firth et al., 2012; Zutter & Smart, 2019)

pliers, and government. In Indonesia, the manufacturing sector is represented by a diversity of enterprises by 16 sub-sectors represents in Table 1.

Data were collected from the Indonesian Stock Exchange (IDX). Only panel balance data from companies that listed in period research by collecting the five years from 2011 to 2015. The final selected sample of 275 firm years. The sample consisted of 55 of 144 manufacture firms recognized by the IDX's database.

Based on Table 1, it is seen that 3.6% came from cement, plastic and packaging, animal feed, textile and garment, cigarette, and household appliances industries. This was followed by 7.3% from the ceramics, porcelain, and glass industries. Furthermore, 10.9% came from the metal, automotive, food, beverage, and pharmaceutical industries. The study sample was 9.09% of the chemical industry. In addition, the research sample is 2% of the wood industry and 5.4% from the pens, paper, cables, cosmetics, and household appliances.

This is followed by an automotive of 10.9%, and 3.6% from the textile & garment industry. Cables industry contributed 5.4% only, and food & beverage still favorite industry for research sample about 10.9%. Next, cigarette companies two companies, only 3.6% and pharmaceutical industry 10.9%. The cosmetics & household appliances are 5.4% and 3.6%, respectively.

Below is the variables and measurement, which are also summarized in Table 2.

The method of data analysis was conducted by balance panel data with fixed effect. Estimates of the regression equation used are as follows:

Panel A

$$\frac{INV}{K_{t-1}} = \alpha + \beta_1 \frac{CF}{K_{t-1}} + \beta_2 Q + \beta_3 \frac{S}{K_{t-1}} + \beta_4 LEV + \beta_5 \frac{WKI}{K_{t-1}} + \beta_6 \frac{DLTD}{K_{t-1}} + \epsilon_{it} \quad (1)$$

Panel B

$$\frac{INV}{K_{t-1}} = \alpha + \beta_1 \frac{CF}{K_{t-1}} + \beta_2 Q + \beta_3 \frac{S}{K_{t-1}} + \beta_4 LEV + \beta_5 \frac{WKI}{K_{t-1}} + \beta_6 \frac{DLTD}{K_{t-1}} + \beta_7 PRICE + \beta_8 AT + \epsilon_{it} \quad (2)$$

Where: I= Investment; CF= Cash flow (internal finance); K= Net fixed asset; Q= Investment opportunities; S= Sales; Lev = Leverage; WKI= Working capital investment; DLTD= Long-term debt; Price = Closing price; AT= Asset turnover

4. Results

The statistic descriptive shows the mean, standard deviation, minimum value, maximum value from 275 observations, and all variables showed in Table 3.

Table 3. Descriptive statistic

	Observations	Mean	Std. Dev	Minimum	Maximum
INV	275	1.6363	3.9840	-1.5637	58.3216
CF	275	1.6991	2.4217	-1.4941	27.8679
Q	275	158.0667	979.8356	0.3326	11.746.6900
S	275	5.9837	5.6473	0.6654	46.9128
LEV	275	0.4481	0.2285	0.0372	2.0542
WKI	275	0.1301	0.6434	-2.2369	5.1058
DLTD	275	0.0574	0.2754	-1.1654	2.1615
PRICE	275	8,122.858	23,375.7200	50.0000	189,000.0000
AT	275	1.1979	0.5077	0.2954	3.6602

INV= Investment; CF= Cash flow (internal finance); Q= Investment opportunities; S= Sales; Lev = Leverage; WKI= Working capital investment; DLTD= Long-term debt; Price = Closing price; AT= Asset turnover

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Table 4. T-test result for Panel A

Variables	All sample		KZ-index Unconstrained		KZ-index Constrained	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
C	-1.1472	0.0015 (0.3570)	-1.991812	0.0000 (0.4346)	-0.0286	0.9215 (0.2904)
CF	1.8898	0.0000* (0.0526)	1.731996	0.0000* (0.0810)	0.6244	0.0000* (0.0605)
Q	3.83E-03	0.8509 (0.0002)	0.060155	0.4552 (0.0802)	-1.90E-03	0.7191 (5.26E-03)
S	-0.1017	0.0003* (0.0273)	0.039851	0.3801 (0.0452)	0.1113	0.0000* (0.0196)
Lev	0.4060	0.5752 (0.7234)	-0.979051	0.5532 (1.6457)	-0.1269	0.7968 (0.4918)
WKI	-0.5808	0.0000* (0.1318)	-0.471490	0.0185* (0.1969)	-0.5674	0.0000* (0.0567)
DLTD	1.1968	0.0001* (0.3019)	4.189674	0.0000* (0.7818)	0.5982	0.0000* (0.0905)
Observation		275		135		140

* Significance level of 0.05, respectively. Standard errors are in brackets.

Notes: The fixed effect model was used. In Panel all sample, 275 observations were found with four variables. These were significant on investment with cash flow, sales, working capital investment, and long-term debt. 27 unconstrained firms 135 observations, and 28 constrained firms 140 observations.

Table 5. T-test result for Panel B

Variables	All sample		KZ-index Unconstrained		KZ-index Constrained	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
C	-0.7001	0.0000 (0.0957)	-0.7481	0.1140 (0.4692)	0.491610	0.0009 (0.1431)
CF	1.4292	0.0000* (0.1096)	1.7172	0.0000* (0.1525)	0.597605	0.0000* (0.0395)
Q	3.15E-03	0.6123 (6.20E-03)	0.0552	0.0021* (0.0174)	-3.85E-05	0.5473 (6.37E-03)
S	-0.0235	0.3968 (0.0277)	-0.0296	0.3462 (0.0313)	0.142735	0.0000* (0.0226)
Lev	0.3766	0.0002* (0.0987)	0.5161	0.0005* (0.1433)	-0.437773	0.0368* (0.2069)
WKI	-0.7461	0.0000* (0.0654)	-0.5633	0.0000* (0.0989)	-0.663962	0.0000* (0.0550)
DLTD	0.9227	0.0000* (0.0582)	2.1647	0.0017* (0.6702)	0.705045	0.0000* (0.0579)
PRICE	1.33E-03	0.0008* (3.91E-04)	1.15E-03	0.2693 (1.04E-03)	-2.34E-06	0.2794 (2.15E-04)
AT	-0.1571	0.0115* (0.0616)	-0.9014	0.0000* (0.1937)	-0.393416	0.0000* (0.0632)
Observation		275		135		140

* Significances level of 0.05, respectively. Standard errors are in brackets.

Notes: Fixed effect model with Cross-section weights and standard errors were used. All sample used 275 sample observations. Six variables were significant on investment with cash flow, leverage, working capital, long-term debt, closing price, and asset turnover. 27 unconstrained firm's 135 observations, this is in line with cash flow, leverage, working capital investment, long-term debt, asset turnover, and investment opportunities. 28 constrained firms 140 observations.

Based on Table 3, the statistics descriptive showed that all variables have almost the same mean value, while the investment opportunities has a big value there is 158.0667 and the highest mean value is the share price IDR 8,122.858. Standard deviation of leverage and asset turnover is very good, the value is closer to zero and the sales is quite same, while the other variable had a greater than the mean value. Besides the highest minimum value is working capital investment -2.2369 for PT Champion Pacific Indonesia Tbk (2012) and the maximum values that need to be highlighted are stock prices which is IDR 189,000 for PT Merck Tbk (2013).

Based on the equations in Panel A and B, there were three estimations for each model, which comprises of all samples, namely constrained and unconstrained companies. All results are shown in Tables 3 and 4

5. Discussion

Cash flow has a positive and significant effect on investment. This shows that high cash flows for internal funding increase the investment made by the company. It is also supported by several studies (Fazzari et al., 1988; Kaplan & Zingales, 1997). The results are in accordance with the findings of Riaz et al. (2016). Followed by the newer research showed the same finding by Chen & Chen (2012), Ding et al. (2013), Larkin et al. (2018); and Dogru & Upneja (2019).

ICFS has a positive and significant effect on investment. All the predicting variables were significant and in line expected signs grouping by KZ-index. The result supported by Fazzari et al. (1988), but contrast with Kaplan & Zingales (1997). According to Pamungkas & Puspaningsih, (2013), funding decisions, capital structure influences company value. The pecking order theory stated that companies with high levels of profitability have low levels of debt. Recently some studies support this finding by Cheng et al. (2014), Riaz et al. (2016), Aça & Mozumdar (2017), and Dogru & Upneja (2019).

All samples had a high KZ Index for Panel A which shows that Tobin's Q has no effect on investment. Contrast with Panel B, Tobin's Q support unconstrained firms. However, this does not affect investment because it is driven by the availability of funds and not the market's response to opportunities for future growth. The findings are compatible with the findings of Riaz et al., (2016) and is supported by Hamidi (2003). All samples in Panel A have a negative influence on investment. The research results for all samples in accordance with John & Muthusamy (2011) found that sales had a negative effect on investment. While for all samples in Panel B there is a positive coefficient on investment. Otherwise, no significant effect on investment in accordance. This is in accordance with Farida & Kartika (2016) study, which found that sales did not have a significant effect on investment. Some KZ Index has a positive and significant effect on investment in accordance with Hamidi (2003). Sales are influential on investment for financially constrained companies because it helps in investment. Therefore, the higher the sales, the higher the investment made by the company.

The estimations in Panel A for all samples stated that the leverage does not have an influence on investment. The results of this study are supported by the research of (Benardi, 2010). In this model closing price, total assets and total sales don't have an impact on investment. When the second models are added to the closing price, the turnover variables in Panel B showed that the leverage significantly impacted on investment. The results are compatible with the findings, which stated that leverage has a negative effect on investment (Pindado et al., 2011; Riaz et al., 2016; Dogru & Upneja, 2019). Working capital has a negative and significant impact on investment in all samples. The results are in accordance with the findings of Riaz et al. (2016), which stated that working capital investment has a negative effect on companies and supported by (Ding et al., 2013; Baños-Caballero et al., 2014).

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The change in long-term debt has a positive and significant impact in all estimations. This is supported by the findings, which stated that working capital investment on all samples (Brown & Petersen, 2009; Riaz et al., 2016). The closing price has a positive and significant impact in Panel B. In Indonesia, it has the highest impact, and investors tend to pay more attention to looking forward to the closing price of companies' performance. Secondly, the closing price is important to financial highlight in the annual report. It's indicating that companies keep increasing performance in stock exchange markets. Finally, the closing price helps manage a company's performance and monitoring its investment (Pamungkas & Puspaningsih, 2013). Asset turnover has a negative impact on all estimations in Panel B. The higher of asset turnover, then the lower of the investment. Indonesian market, especially for manufacturing sector companies, has a unique character, including the asset turnover variable. The market agreed that asset turnover is an important analysis that influences investment (Firth et al., 2012).

6. Conclusion

In conclusion, cash flow, working capital, and long-term debt are the most important variables in this research with a significant positive impact. Therefore, the higher the cash flow and the long-term, the higher the investment and vice versa. While the working capital investment has a nega-

tive impact in Panel A and B, therefore, when the working capital increases, the investment decreases. Furthermore, leverage has a positive and negative impact, while asset turnover has a negative impact on all estimations in Panel B. Investment opportunities (Tobin's Q), sales, and the closing price has all have a positive and negative impact. Finally, results suggest that financially constrained and free-cash-flow problems are important for investment decisions (Lewellen & Lewellen, 2016).

This study was limited to investment opportunities (Tobin's Q) and closing price. However, it is intended to prove it expected to have a strong influence on investment in Indonesia. Similarly, closing prices were expected to affect all estimated. However, it only affected all samples. While the sales variable shows its effect on investment with irregularities due to positive and negative influences. Subsequent researchers need to add some variables as a factor that effects on investment, there is physical investment (Vadilyev, 2017), economic growth (Larkin et al., 2018), and WW index (Dogru & Upneja, 2019).

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