

Firm Characteristics, Macroeconomic Variables and Cash Holdings in Indonesia and Singapore

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This study aims to examine the effect of company characteristic variables including company size, leverage, profitability, dividend payments, capital expenditure, and cash flows as well as macroeconomic variables including inflation rate and economic growth on firms' cash holdings. The sample consisted of 315 non-financial companies listed on the Indonesia Stock Exchange and 535 non-financial firms listed on the Singapore Exchange during the 2011-2016 period. OLS analysis is used to see the influence based on each individual country. The results of this study show that firm size and inflation rate variables indicate differences in the effect of variables on firm cash holdings between Indonesian and Singaporean firms. Meanwhile, the other variables have the same effect on firm cash holdings between both firms located in Indonesia and Singapore.

Key words: *Cash Holdings, Leverage, Firm Size, Profitability, Capital Expenditure, Dividend Payment, Cash Flow, Inflation, Economic Growth.*

Introduction

The global economic crisis in 2008 also had a serious impact on the economy in Indonesia as a developing country and Singapore as a developed country. Indonesia had a change in inflation rate in 2008 to 18.15%, which is considered a moderate level. On the other hand, in 2008, a condition that occurred in Singapore led to a change in inflation rate to -1.492%. This means that developed countries have a different impact on their economies compared to those in a developing, Indonesia in this case, when there was a global economic instability. The event certainly made companies more aware of the importance of maintaining the level of liquidity

of company's assets to reduce exposure to economic instability, especially when operating in developing countries.

Cash and cash equivalents are liquid assets which can be considered the lifeblood of a company that enables it to carry out its daily operations. Cash management is one of the major functions of financial management, in that, on the one hand, the lack of cash could bring about daily estimation problems and, on the other hand, keeping a high level of cash could cause opportunity cost for the company (Mohammadi et al., 2018). It can be said that one of the effective ways of a company to minimise the risk of liquidity is to manage the level of cash held by the company. Cash held or available in the company for investment in fixed assets is called cash holdings (Gill & Shah, 2012). Various opinions arise about the firms' cash holdings, that companies need it to deal with financial distress; cash also can support external funding. This is supported by Ferreira and Vilela (2004) that corporate cash holdings can reduce the possibility of financial distress for unexpected losses. The amount of cash held indicates a good position that the cash can be directly directed to funding the investment, even though it is hard to get funding. Economic conditions that occur within emerging markets are very volatile, so research on the reasons why companies save more cash and factors that explain empirically that have the potential to affect cash holdings policy is very necessary to be carried out periodically and continuously.

Researchers have used a sample of countries in Indonesia and Singapore show consistent results that in developed countries, Singapore has more cash held compared to developing countries such as Indonesia. Chen et al. (2015) showed that the median cash holdings in the period 1989-2009 in Indonesia was 9.5% while in Singapore it was 13.7%. In the research by Fernandes (2016), the mean value of cash holdings in the period 1990-2011 in Indonesia was 12.26%. While, in Singapore, it was 17.31%. In addition, research by Boubakri (2013), which used the period around the Asian economic crisis of 1997-2001, showed the mean value of cash holdings in Indonesia was 17.9% while in Singapore it was 24.2%. For results using the later years of research are not yet available, this study, therefore, wants to see whether this consistency is still proven and what factors influence it between Indonesia and Singapore. Therefore, the determinant of the cash holding is worth investigating because the cash holding has costs. The company may save cash to meet its future needs, but at that time the company missed the opportunity to invest in profitable projects that had positive NPV. This is inseparable from the condition of the phenomenon that occurred between the two countries. The trade-off theory predicts that the optimal liquidity of firms is generated from companies that balance the marginal costs of company liquidity and the marginal costs of a company's liquidity shortages (Keynes, 1936). Pecking order theory states that firms tend to use internal funds because of the asymmetrical information between investors and managers. Agency

theory says the management would save more cash to obtain discretionary power, so that there is no condition such as optimal company liquidity (Jensen, 1986). The three theories that predict the relationship between company liquidity and its determinants are not mutually exclusive, there is no evidence that supports one theory is superior to others but instead all theories are clearly based on the sign of the direction of the coefficient on several company-specific variables (Opler et al., 1999; Kim et al., 2011). Apart from different results, the remaining researches resulting in almost irrefutable proof that supports optimal company liquidity.

Based on previous studies that have been conducted on the determinant of cash holdings shows that many variables are not consistent in explaining their influence on the firm's cash level ratio. In this study using variables that indicate these inconsistencies in order to be able to see a different perspective to be tested again using a sample of two different countries, which is Indonesia as a developing country, and Singapore as a developed country. The characteristics of the company include company size, leverage, profitability, dividend payment, capital expenditure, and cash flow. Inflation in the conditions of the two countries has different reactions in changes to the economic crisis that occurred in 2008. Indonesia shows that inflation is higher after economic instability or the global economic crisis, while Singapore experiences the opposite condition, deflation to the negative inflation rate. In relation to the macro conditions of the country's economic growth it also determines the various opportunities that may be owned by all companies, therefore in this study also wants to see whether the two macro factors can explain the size of the ratio of cash holdings of a company in a certain period.

Literature Review

Cash is often referred to as non-producing assets. Cash is needed to maintain the company's liquidity, such as: paying labour, buying raw materials, paying debt and interest, etc. (Sudana, 2015). Ferreira and Vilela (2004) state that storing cash serves to reduce the possibility of financial distress due to unexpected losses. The level of cash inventory is better if you direct the resource to the investment plan, even when there are difficulties to get extra funds. Cash holdings can be interpreted as cash and cash equivalents owned by companies that are ready to be invested into fixed assets and to be shared with investors (Gill & Shah, 2012) Cash holdings can be measured using the ratio of the amount of cash and cash equivalents the company has to the total assets held (Al-Najjar, 2013; Arfan et al., 2017; Chen & Mahajan, 2010; Ferreira & Vilela, 2004).

The trade-off theory says that companies establish their optimal level of cash holdings by weighting the marginal cost and marginal profit from holding cash. Assuming that firms want

to maximise shareholders wealth, saving cash will bear "cost of carry". Those costs are related to the difference between cash income and interest paid by the company to get additional cash (Mahrt-Smith et al., 2003). There are several advantages associated with cash holdings, first, ownership of cash reduces the possibility of financial difficulties because it has a role as a security reserve to deal with unexpected losses or constraints on external funding. Second, holding cash enable an optimal investment policy to be carried out even when the firms are having financial constraints. Finally, holding cash contribute to minimising costs for collecting funds from outside the firm or liquidating assets because they act as a buffer between company sources and use of funds. The trade-off theory looks for the optimal level of cash ownership that compares opportunity costs and marginal benefits.

In the pecking order theory, cash is available to companies when profits exceed their needs of investment. Pecking order theory describes a financing hierarchy that minimises costs associated with external financing because the issuance of new equity is very expensive for companies because of asymmetric information. When cash is abundant, and companies assure about their profitability of investments, they will pay dividends from their excess cash. Myers and Majluf (1984) assume that there is no optimal cash level, but cash acts as a buffer between retained earnings and firms need to pay their investments.

In agency theory, Jensen (1986) says that managers in companies with lower investment opportunities will tend to save more cash rather than pay a dividend. The agency theory assumes that individuals will be motivated to make decisions that maximise their economic interests, compared to the economic interests of the company (Narsa & Supriyadi, 2018). Agency theory has two hypotheses: First, cash is seen as a free flow asset because cash can be used by managers to their own interests at the expense of shareholders. Managers have incentives and initiatives to form cash to increase assets that managers can control. Increasing assets that are controlled by companies produce managers who have full authority over company decisions and investments (Jensen, 1986). Second, cash holdings are considered as a risk-free investment and because managers avoid risk will hold more cash to reduce the company's risk exposure thus providing positive risks for NPV projects.

Size

Al-Najjar (2013) states that larger companies describe the company as having better performance so that there is more cash that can be saved by the company. The results of this study support the pecking order theory, agency theory and in line with the research conducted by Afza and Adnan (2007) and Kim et al. (2011). However, the research conducted by Opler et al. (1999) in the US states that company size does not influence cash holdings. Additionally,

research by Horioka and Hagiwara (2014) in Asia stated that the size did not significantly influence the company's cash holdings. Other research also states that size variables do not affect the company's cash holdings (Ogundipe et al., 2012; Wasiuzzaman, 2014). The results of the research from Ferreira and Vilela (2004) state that a larger company size will negatively affect cash holdings. It is said that companies that have a larger size will certainly have easier access to obtain loans compared to smaller companies.

Leverage

Leverage reflects the level of ability of the company in using assets or funds that have fixed costs in the form of interest to achieve the firm's goal of maximizing the welfare of the company's shareholders. Ozkan and Ozkan (2004), in empirical testing of UK companies, it is stated that there was strong support for a negative relationship between leverage and cash holdings as companies with higher debt ratios had lower cash positions. In addition, high leverage is a proxy for the ability of companies to issue debt, and companies can use loans instead of cash holdings. Ferreira and Vilela (2004) found that companies with greater leverage can obtain external funding more easily and cheaply, allowing companies to reduce the amount of cash held. Even so, there are studies that show that leverage has a positive effect on corporate cash holdings (Faulkender, 2002; Ogundipe et al., 2012; Gill & Shah, 2012) and leverage has no influence on corporate cash holdings (Kim, Kim and Woods, 2011). The pecking order theory considers cash to be reduced to debt, which means that the amount of cash held by the company is no longer large. Free cash flow theory predicts a negative relationship between leverage and cash holdings, because companies with low leverage are subject to a lack of external supervision and hence allow for more managerial discretion. Most studies show that there is a negative relationship between leverage against cash holdings (Al-Najjar, 2013; Arfan et al., 2017; Chang & Noorbakhsh, 2009; Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004; Wasiuzzaman, 2014).

Profitability

Profitability describes the ability of a company to obtain profits using the resources owned by the company. Assets, capital, and sales can be used as a measure to see how much the company is able to produce a level of profit or profitability. Companies with good financial conditions will borrow less money even though they have the opportunity to borrow more. Arfan et al. (2017) and Ogundipe et al. (2012) states that there is a positive influence between profitability and the level of corporate cash holdings. Consideration of costs incurred when issuing equity is more a consideration of each company so a company that has a greater profit will provide a certain amount of cash to reduce costs arising from the issuance of new equity.

Dividend Payment

Paying dividends has a negative impact on cash holdings because companies can increase available funds if they do not pay shareholders as dividends (Opler et al., 1999; Ferreira and Vilela, 2004; Bigelli & Vidal, 2012). This is also supported by the results of research that show a negative relationship between dividend payments with corporate cash holdings (Al-Najjar, 2013). The results of this study state that the dividends paid will reduce the amount of cash available, because dividends and cash are alternative choices for the company's net income. There is another argument that companies that pay dividends will save more cash. Other studies also prove the positive influence between dividend payments with firm cash holdings (Chang & Noorbakhsh, 2009; Kim et al., 2011; Wasiuzzaman, 2014). Companies save in the form of a number of cash assets to protect against future shortcomings to support dividend payments because reducing future dividends can be viewed as a bad signal to the market (Ozkan & Ozkan, 2004).

Capital Expenditure

The company's capital expenditure is in the form of investments in assets that have long-term life such as factories, equipment and property. In the pecking order theory, capital expenditure is considered as an outflow of cash for the company. On the other hand, in the trade-off, it is assumed that high capital expenditure makes the company need to save more cash as protection from the transaction costs that arise. Bates et al. (2009) stated that capital expenditure can increase a company's debt capacity, thereby reducing cash holdings because of capital expenditure can increase or create new assets for the company and because these assets can become collateral for debt, these assets can also increase loan capacity and weaken the need for cash holdings. Various research results also show results that support the pecking order theory, that is the negative relationship between capital expenditure and corporate cash holdings (Ferreira & Vilela, 2004; Chang & Noorbakhsh, 2009; Wasiuzzaman, 2014; Arfan et al., 2017). With the smaller capital expenditure, the debt capacity of the company will be smaller, and the company will hold a larger amount of cash. In contrast to the results of the study by Kim et al. (2011) which shows that capital expenditure does not affect the cash holdings of the firm.

Cash Flow

Cash flow as the amount of cash that enters and leaves the company due to the company's operations. The cash inflows are greater than the cash outflows that shows positive cash flow,

while if the cash inflows are smaller than the cash outflows indicating negative cash flows. Every operational activity of companies both large and small, generally will require a certain amount of cash, so the cash flow has a relationship with the company's cash holdings. Even so there are studies that show that cash flow does not affect the firms' cash holdings (Ferreira & Vilela, 2004; Wasiuzzaman, 2014). Opler et al. (1999) state that companies that experience an increase in cash flows tend to hold part of their income, increasing cash holdings that can be used as investment funds when the company experiences difficulties. This study was supported by other researchers that show a positive relationship between cash flow and cash holdings (Afza & Adnan, 2007; Chang & Noorbakhsh, 2009; Gill & Shah, 2012; Ogundipe et al., 2012; Ozkan & Ozkan, 2004). Based on the trade-off theory, cash flow is assumed to be a source of liquidity and can be used as a substitute for cash.

Inflation

Macroeconomic variables include systematic risks to companies within a country. The high inflation rate illustrates the risks a country has a major impact on the condition of the company in that country. When macroeconomic conditions change, it will have an indirect impact on the company's cash holdings which are related to the investment interest rates for the company. The tendency of firms to save cash for future investment opportunities and save cash from income becomes stronger when booms occur and subsequently weaken during recessions. A high inflation rate can result in a decline in purchasing power in a country, which has implications for a decrease in corporate income. When the company's income decreases, there will be less available funds to be used as retained earnings. Research by Chen and Mahajan (2010) shows that inflation has a positive effect on cash holdings, with the argument that the available cash value becomes less, but companies increase the amount of investment in larger cash equivalents which increases total value (cash and cash equivalents).

Economic Growth

GDP (gross domestic product) reflects the level of welfare of a country, an increase in the purchasing power of consumers of a country when increasing consumer purchasing power will have an impact on increasing people's consumption of a product. The GDP annual growth rate averaged 5.3 percent from 2000 to 2017; industrial production grew an average of 3.21 percent annually from 1994 to 2017 and accounted for more than 60 percent of total exports (Sugiharti et al., 2017). Increasing product demand will make the company increase investment for effectiveness and efficiency of production so that it requires better funding, one of which is company internal funding. The company also needs to ensure a good level of liquidity to anticipate the economic turmoil that might occur in a country. One way is to ensure that liquid

assets owned are able to meet all short-term needs as well as company investment in the near future. Lower GDP growth within a country will cause the company's cash level to be lower. In the study of Chen and Mahajan (2010) showed that when economic growth measured using GDP increases it will also increase cash held by companies because companies want to hold more cash when economic conditions increase so they have enough internal funds to fund profitable investments in the future.

Research Methodology

The sample in this study is excluding financial firms instead, we use secondary data from listed non-manufacturing firms on the Indonesian Stock Exchange and Singapore Exchange to obtain the sample. This study also uses purposive sampling technique: non-financial firms listed in IDX and SGX in the period of 2011-2016 with unbalanced years' data and having financial statements presented using Indonesia Rupiah currency for IDX and Singapore Dollar currency for SGX. Thus, based on this, this study used the multiple regression model as cross-section data for 2011-2016. Our general form of panel regression model is as follows:

$$CASH_{it} = \alpha_0 + \beta_1 SIZE_{it} + \beta_2 LEV_{it} + \beta_3 PROF_{it} + \beta_4 DIVP_{it} + \beta_5 CAPEX_{it} + \beta_6 CF_{it} + \beta_7 INFLA_{ut} + \beta_8 ECGR_{ut} + e_{it} \quad (1)$$

We use cash holdings as the proxy of firms' level of liquidity. Cash holdings (CASH) is a comparison between the amount of cash and cash equivalents and total assets (Opler et al., 1999). The firms' size (SIZE) is measured by Ln from total assets (Ferreira & Vilela, 2004). Leverage (LEV) is measured by the ratio between total debt and total assets owned by the firm (Arfan et al., 2017). , The profitability of the firm (PROF), is measured by the ratio of net profit after tax or net income to total assets of the firm (Arfan et al., 2017). Dividend payment (DIVP) is stated as a dummy variable, to see whether the firm is paying dividends or not. Firms paying cash dividend will be given code 1, and 0 otherwise (Ferreira & Vilela, 2004; Gill & Shah, 2012). Measurement of capital expenditure (CAPEX) can be calculated by the ratio of fixed assets to the total assets of the firm (Arfan et al., 2017). For cash flow (CF), the measurement uses profit before tax and depreciation of total assets which has been reduced by cash and cash equivalents held by the firm (Gill & Shah, 2012). Inflation (INFLA_{it}) describes the economic conditions faced by a country in a certain annual period. It is seen using the magnitude of the inflation growth ratio by comparing the inflation of each country in the current period with the country's inflation in the previous period (Chen & Mahajan, 2010). Economic growth (ECGR_{it}) is seen using the magnitude of the GDP growth ratio by comparing the GDP of each country in the current year period to that of the country in the previous year period (Chen & Mahajan, 2010).

Empirical Results

Table 1: Descriptive Statistics

Variable	NON-FINANCIAL IDX				
	N	Minimum	Maximum	Mean	Std. Deviation
CASH	1424	0.0100	0.3877	0.1021	0.0825
SIZE	1424	13,5726	24,0612	19,2733	1,6573
LEV	1424	0.0003	0.9846	0.4578	0.2065
PROF	1424	-0.7558	0.5433	0.0547	0.0915
DIVP	1424	0.0000	1,0000	0.5126	0.5000
CAPEX	1424	0.0002	0.9481	0.2900	0.2308
CF	1424	-0.3686	1,8101	0.2911	0.2556
INFLA	1424	-0.5109	0.3229	-0.2076	0.3042
ECGR	1424	-0.0336	0.1826	0.0352	0.0730
	NON-FINANCIAL SGX				
CASH	2236	0.0105	0.4005	0.1573	0.0924
SIZE	2236	7,7664	24,4160	12,4964	2,0187
LEV	2236	0.0081	0.9869	0.4607	0.1985
PROF	2236	-0.8673	0.6452	0.0336	0.1071
DIVP	2236	0.0000	1,0000	0.6614	0.4733
CAPEX	2236	0.0000	0.9394	0.2592	0.2157
CF	2236	-0.6351	1,6875	0.2512	0.2453
INFLA	2236	-28,1342	0.1344	-6,3237	9,6011
ECGR	2236	-0.0239	0.1673	0.0418	0.0526
	NON-FINANCIAL FULL				
CASH	3660	0.0100	0.4005	0.1359	0.0927
SIZE	3660	7,7664	24,4160	15,1331	3,8048
LEV	3660	0.0003	0.9869	0.4596	0.2016
PROF	3660	-0.8673	0.6452	0.0418	0.1018
DIVP	3660	0.0000	1,0000	0.6036	0.4892
CAPEX	3660	0.00002	0.9481	0.2712	0.2222
CF	3660	-0.6351	1,8101	0.2667	0.2501
INFLA	3660	-28,1342	0.3229	-3,9441	8,0769
ECGR	3660	-0.0336	0.1826	0.0392	0.0614

Table 1 reports the descriptive statistics data panel for non-financial firms in Indonesia, Singapore, and full sample; it can be noticed that mean value of cash holdings, size, and inflation is relatively different from IDX and SGX. Mean value of CASH at SGX is 15.73%, which is relatively higher than on the IDX, which is 10.21%, with the average value of CASH in the full sample relatively being the middle value between SGX and IDX, which is 13.59%. A high CASH value indicates that the company has a certain motive in storing large amounts of current assets in the form of cash and cash equivalents, and conversely a low CASH value indicates that the company is not currently unable to generate a certain amount of cash in its business activities.

Descriptive statistics show that the average SIZE value of companies listed on IDX during the 2011-2016 period is 19.2733 which is relatively greater than SIZE in the SGX in the same period, which is 12.4964, with the average SIZE value in the full sample relative to the value middle between SGX and IDX, which is 15.1331. The greater the SIZE value in the sample indicates that the company has a greater number of fixed assets, shows high asymmetric information, and the possibility of liquidation is lower if financial distress occurs. Conversely, if the value of SIZE is lower, it indicates that the company has low asymmetric information, but the possibility of liquidation is high when financial distress occurs.

The characteristics of the INFLA variable in Table 1 between non-financial companies listed on the IDX and SGX show that the conditions of inflation change between the two countries are different, Singapore has relatively decreased inflation compared to Indonesia. In Table 1, the conditions are similar to the sample in Singapore, where the majority of the overall sample comes from the SGX. The high value of INFLA indicates that the state tends to face high risk due to a positive increase in inflation, while a low INFLA indicates a country experiencing growth inflation rate is declining, which means the risk condition of a company in a country is low.

Based on the OLS regression model estimation to identify the determinants of corporate cash holdings, the independent variables were tested for associations with cash level ratios by testing Pearson correlation. Table 2 shows that, in Indonesia, positive CASH is significantly correlated with PROF and CF, but has a significantly negative correlation with LEV and CAPEX. But other variables, such as SIZE, DIVP, INFLA, and ECGR, were not significantly correlated with CASH. For samples in Singapore, positive CASH was significantly correlated with PROF, DIVP, CF, and ECGR, but was significantly negatively correlated with SIZE, LEV, CAPEX, and INFLA. For FULL samples, the independent variables correlated with CASH are similar to those that occur in Singapore as the majority of observations.

Table 2 shows the correlation matrix across industries; it can be noticed that there is no high correlation among the variables across our sample. In overall, multicollinearity is not a big concern, which is supported by the value of its correlations being low and none of them exceeds 0.8. Except it can be noticed in the consumer goods industry showing a positive high correlation between CAPEX to LEV and negative high correlation between CF to LEV. We believe that, in the consumer goods industry, the firms can be interpreted as higher debt used by the firm is in line with high spend on capital and less cash flow.

Table 2: Correlation Matrix

Indonesia									
	CASH	SIZE	LEV	PROF	DIVP	CAPE X	CF	INFLA	ECGR
CASH	1								
SIZE	0.035	1							
LEV	-0.281*	0.168*	1						
PROF	0.288*	0.174*	-0.202*	1					
DIVP	0.049	-0.086*	-0.050	-0.048	1				
CAPE X	-0.203*	-0.049	0.021	-0.087*	-0.005	1			
CF	0.210*	-0.081*	-0.129*	0.384*	-0.015	0.370**	1		
INFLA	0.027	-0.003	0.009	0.002	-0.014	-0.030	-0.042	1	
ECGR	0.034	0.015	0.003	0.007	0.038	0.022	0.061*	-0.605**	1
Singapura									
	CASH	SIZE	LEV	PROF	DIVP	CAPE X	CF	INFLA	ECGR
CASH	1								

SIZE	-0.129*	1							
LEV	-0.395*	0.180*	1						
PROF	0.334*	0.054*	-0.150*	1					
DIVP	0.137*	0.244*	-0.100*	0.323*	1				
CAPE X	-0.330*	0.116*	0.050*	-0.047*	0.013	1			
CF	0.365*	0.161*	-0.351*	0.465*	0.190*	-0.351**	1		
INFLA	-0.110*	0.021	0.015	-0.049*	-0.028	0.051*	-0.057*	1	
ECGR	0.167*	-0.047*	-0.062*	0.135*	0.054*	-0.084**	0.079*	-0.514**	1
Full Sample									
	CASH	SIZE	LEV	PROF	DIVP	CAPE X	CF	INFLA	ECGR
CASH	1								
SIZE	-0.288*	1							
LEV	-0.334*	0.081*	1						
PROF	0.274*	0.132*	-0.168*	1					

DIVP	0.141* *	- 0.067* *	- 0.078* *	0.169* *	1				
CAPEX	- 0.288* *	0.086* *	0.037* *	- 0.054* *	-0.004	1			
CF	0.270* *	0.105* *	- 0.260* *	0.438* *	0.092* *	- 0.046**	1		
INFLA	- 0.187* *	0.329* *	0.008	0.000	- 0.074* *	0.061**	-0.012	1	
ECGR	0.116* *	- 0.055* *	-0.030	0.072* *	0.053* *	-0.036* *	0.065* *	- 0.349**	1

* significant at 5% level, ** significant at 1% level

Table 3: Regression Results

Variable	Cash		
	Indonesia (BEI)	Singapore (SGX)	Full
SIZE	0.003** (0.012)	-0.003*** (0.000)	-0.261*** (0.000)
LEV	-0.092*** (0.000)	-0.144*** (0.000)	-0.232*** (0.000)
PROF	0.100*** (0.000)	0.201*** (0.000)	0.184*** (0.000)
DIVP	0.008** (0.041)	0.007** (0.049)	0.053*** (0.000)
CAPEX	-0.099*** (0.000)	-0.117*** (0.000)	-0.234*** (0.000)

CF	0.081*** (0.000)	0.019** (0.033)	0.139*** (0.000)
INFLA	0.019** (0.016)	-0.000** (0.033)	-0.066*** (0.000)
ECGR	0.071** (0.029)	0.110*** (0.002)	0.038*** (0.009)
R ²	0.214	0.336	0.333
Observation	1424	2236	3660

** significant at 5% level

*** significant at 1% level

The multiple linear regression results in Table 3 show the effect of company characteristic variables, including SIZE, LEV, PROF, DIVP, CAPEX, and CF, as well as macroeconomic variables, namely INFLA and ECGR, on cash level ratios or company cash holdings (CASH). Based on Table 3, the regression result of SIZE variable on the IDX has a significant positive effect on the firm's cash holdings. The measured firm size is used in total assets as a variable to describe asymmetric information in line with Al-Najjar (2013). The results of the research at the IDX support previous research by Al-Najjar (2013) which states that larger companies describe the company as having better performance, so that there is more cash that can be saved by the company. Kim et al. (2011) also stated the same thing; that is, the size of the company has a positive effect on cash holdings. Afza and Adnan (2007) stated that the size of the company has a positive influence on cash holdings. The positive direction between the relationship between SIZE and CASH variables supports the theory of pecking order and agency theory in the case of non-financial companies listed on the stock exchange during the 2011-2016 period.

The results of the research at SGX and FULL state different things in Table 3; that is, the size of the company has a significant negative effect on cash holdings. This result supports the trade-off theory, i.e. a larger company will negatively affect cash holdings. Larger companies will have easier access to obtain loans compared to smaller companies. Therefore, larger companies do not need to save cash to reduce the risk of bankruptcy, because they have access to funds from external parties that are easier (Ferreira & Vilela, 2004). Various previous studies conducted at various periods and different samples have stated that firm size variables have a negative impact on cash holdings (Álvarez et al., 2010; Bigelli & Vidal, 2012; Chang & Noorbakhsh, 2009; Faulkender, 2002; Gill & Shah, 2012).

The results of SIZEs research on cash holdings in Indonesia and Singapore showed different results. Companies on the IDX shows that the firm size has a positive effect on the firm's cash holdings. This indicates that Indonesian non-financial companies describe more bold conditions in making decisions to save more cash when they have a larger pool of total assets. When a company has large total assets, the company will also save larger cash holdings that are directly proportional and in the same direction. This can be caused by the company's vigilance toward uncertain conditions so that it always maintains its level of liquidity in safer conditions by increasing the cash and cash equivalents owned by the company. Companies on the SGX show that the size of the company has a negative effect on cash holdings. This indicates that companies in developed countries like Singapore tend to avoid storing large amounts of cash because it will cause a significant cost of carry. Therefore, large companies in Singapore need not worry if they hold a low amount of cash because they have easy access to additional funds. The results of the FULL study tend to follow the SGX because the number of samples in FULL is more of an observation at SGX than observations on the IDX.

The results of the regression analysis in Table 3 of the leverage variables of the companies on BEI, SGX, and FULL consistently show a significant negative effect on the companies' cash holdings. This supports the research by Ferreira and Vilela (2004) which stated that companies with higher debt levels will save less cash, because they are usually more supervised when compared to companies that have relatively smaller debt levels. Firms with higher leverage have the ability to obtain external funding easier and cheaper so that the company can reduce the amount of cash held (Ferreira & Vilela, 2004).

According to Opler et al. (1999), in companies that have used excess cash, either to pay debts or to accumulate cash, and even though the company has a debt level target, cash still follows the pecking order behaviour. Free cash flow theory also states that low leverage leads to a lack of external oversight and, therefore, allows more managerial discretion so that the amount of cash owned by the company becomes greater.

The results of this study are also supported by various other previous studies conducted at various periods and different samples, suggesting that leverage variables negatively affect cash holdings (Al-Najjar, 2013; Arfan et al., 2017; Chang & Noorbakhsh, 2009; Ozkan & Ozkan, 2004; Wasiuzzaman, 2014). Conditions that occur on the IDX and SGX, according to previous research, can be attributed to two things, namely, high leverage, causing the supervision of external parties to be increasingly high so that management cannot save large amounts of cash, because saving too much cash reduces managerial discretion. The use of high debt can be seen

as an implication for companies that have used their cash before using debt according to pecking-order behaviour.

The results of the regression analysis of the profitability variables of the companies on BEI, SGX, and FULL consistently show a significant positive effect on the firms' cash holdings. This supports the research of Ferreira and Vilela (2004) which states that companies with high profits will avoid issuing equity because of the very high issuance costs, so the company is better off providing more cash. , The positive influence between profitability toward cash holdings, is in accordance with predictions of pecking-order behaviour.

The results of this study are supported by research from Arfan et al. (2017) which states that profitability has a positive effect on corporate cash holdings. Ogundipe et al. (2012) stated the same thing, that profitability has a positive effect on a company's cash holdings. The level of profitability of the company illustrates how much net income the company can produce in a period. The value of net income can be transferred to retained earnings or distributed to shareholders as dividends. Therefore, companies with high profitability are certain to have more available cash that can be used as retained earnings, so companies with high profits allow companies to have more cash.

The results of the regression analysis of the profitability variables of companies on BEI, SGX, and FULL showed a significant positive effect on the companies' cash holdings. This supports the research of Ozkan and Ozkan (2004), which proves that payment of cash dividends will effect higher levels of cash holdings. The results of this study are supported by research from Wasiuzzaman (2014), which states that dividend payments have a positive effect on corporate cash holdings. Chang and Noorbakhsh (2009) stated similarly that dividend payments have a positive effect on a company's cash holdings. Kim et al. (2011) also support the positive influence of dividend payments on corporate cash holdings.

Companies save in the form of an amount of cash to protect against future shortages to support the payment of cash dividends, because reducing dividend payments in the future can be a negative signal for the market (Ozkan & Ozkan, 2004). Companies will consider the cash level highly because the company has a fear that, if it is known to have cash shortages and cannot pay dividends at the promised level, it can make the company save a higher amount of cash. The positive influence between the payment of cash dividends on the company's cash holdings reflects more relevant conditions in the pecking order theory to explain the behaviour of the company.

The results of the regression analysis of capital expenditure variables on BEI, SGX, and FULL consistently show significant negative results for corporate cash holdings. The results of this study support the results of previous studies from Chang and Noorbakhsh (2009) which state that capital expenditure has a negative influence on corporate cash holdings. Other research by Ferreira and Vilela (2004) states that there is a negative influence of capital expenditure on corporate cash holdings. Other studies also prove that capital expenditure has a negative influence on corporate cash holdings (Arfan et al., 2017; Wasiuzzaman, 2014). The results of negative capital expenditure influence on the companies' cash holdings are in accordance with the predictions of pecking-order behaviour.

Bates et al. (2009) stated that high capital expenditure would increase a company's debt capacity, thereby reducing the company's cash holdings. Capital expenditure is the firm's capital expenditure in the form of fixed assets; by increase and creation of new assets, the company can become collateral for debt so that it can increase loan capacity and weaken the need for cash holdings. Conversely, the smaller the capital expenditure, the debt capacity of the company is also small because there is no creation of new assets of the company that can be used as collateral for debt, so that companies tend to hold cash in greater amounts.

The results of the regression analysis of the companies' cash flow variables on IDX, SGX, and FULL consistently show a significant positive effect on the firms' cash holdings. This supports the research of Afza and Adnan (2007), which states that there is a positive effect between cash flows on corporate cash holdings. Much of the literature also supports the results of this study, which states that a company's cash flow has a positive effect on firm cash holdings (Chang & Noorbakhsh, 2009; Gill & Shah, 2012; Ogundipe et al., 2012 Ozkan & Ozkan, 2004).

Opler et al. (1999) also stated that companies that experience an increase in cash flows tend to hold part of their income, thereby increasing cash which can be used as investment funds when the company experiences difficulties. Horioka and Hagiwara (2014) also support the results of this study, finding that cash flows available in the company tend to be transferred into the company's liquid assets compared to physical capital in the form of fixed assets and distribution to shareholders in the form of dividends. So that the company's high cash flow will result in the company having higher cash holdings.

The INFLA variable regression table on the IDX has a significant positive effect on the companies' cash holdings. The inflation rate describes the risks a country has which can have an impact on the condition of the company in that country. The results of this research on the IDX support previous research by Chen and Mahajan (2010) which stated that inflation growth has a positive effect on corporate cash holdings. The tendency of companies to save cash to

meet future investment opportunities is due to high lending rates when inflation increases. Chen and Mahajan (2010) added that, even though a company has a little cash that can be saved when its income decreases due to high inflation, it increases the amount of investment in a larger cash equivalent, which increases total value.

The results of the research at SGX and FULL state that different things in Table 3; the INFLA variable has a significant negative effect on the companies' cash holdings. High inflation growth generally will reduce a company's income in a country. With the decline in the company's net income value, of course, the less the net income that can be used as retained earnings in the form of cash and dividends for shareholders. In this condition, increased inflation will make the company reduce the amount of cash saved.

The results of INFLA variable research on cash holdings in Indonesia and Singapore show different results. The companies on the IDX show that firm size has a positive effect on the cash holdings. This indicates that Indonesian non-financial companies, being those in developing countries, are more concerned about the amount of costs that must be incurred by the company due to increasing loan interest rates caused by rising inflation. So that saving more cash becomes the choice of the company on the IDX to meet its future investment needs. The opposite condition is where companies at SGX show that the size of the company has a negative effect on cash holdings. This indicates that companies in developed countries like Singapore tend not to worry too much about inflation instability. Therefore, large companies in Singapore do not need to worry if they hold a low amount of cash because the likelihood of the loan interest rate is still relatively fluctuating with Singapore's possible inflation conditions.

The results of the regression analysis of the companies' economic growth variables on IDX, SGX, and FULL showed a significant positive effect on their cash holdings. This supports the research of Chen and Mahajan (2010) which stated that there is a positive influence between economic growth as measured by GDP growth in corporate cash holdings. GDP is a reflection of the level of welfare of a country; increasing consumer purchasing power will have an impact on increasing people's consumption of a product. Chen and Mahajan (2010) showed that, when economic growth increases, it will increase the cash held by companies because companies want to hold more cash when economic conditions increase so that they have enough internal funds to fund profitable investments in the future.

The regression results show that the conditions of Indonesia and Singapore, which are seen from the economic variables of the GDP growth rate, have relatively the same behaviour. Economic growth has a positive effect on corporate cash holdings, indicating the tendency of companies to provide large amounts of cash when economic conditions increase. Increasing

GDP means that there is an increasing demand for products in a country, which causes companies to increase their capacity to meet consumer demand for products. Cash is considered as safe and inexpensive funding, so the company chooses to use cash more than other funding sources.

Conclusion

Firms should hold awareness of the importance of maintaining and determining the level of firm liquidity using the level of cash holdings set by the firm. The policy to set the level of cash holdings is necessary to deal with various risks that may occur in the future, especially the risk of financial distress. Cash holdings can be used as a barrier against the risk of corporate bankruptcy, but cash holdings that are considered excessive will cause various kinds of costs that can harm the firm, so firms must be aware what can affect the size of the firm's cash holdings.

Our results can be concluded as follows; firstly, firm size (SIZE) has a significant positive effect on corporate cash holdings (CASH) in the IDX non-financial companies while SIZE variables have a significant negative effect on CASH on SGX and FULL non-financial companies. LEV, PROF, DIVP, CAPEX, CF, and ECGR show a consistent significance and sign-on results between the two countries. The rate of change in inflation (INFLA) has a significant positive effect on corporate cash holdings (CASH) in non-financial companies listed on the IDX, while the INFLA variable has a significant negative effect on CASH on SGX and FULL non-financial companies.

The results showed empirical evidence that corporate cash holdings are influenced by factors in the form of company characteristics and the macroeconomic variables of the country in which the company operates. In general, company behaviour in determining cash holdings is similar both in Indonesia and Singapore; this is reflected in the results of the influence of the variables tested in the study showing certain influences on corporate cash holdings in both countries. As for the variable size of the company and the rate of change in inflation, it shows different effects on the companies' cash holdings. Thus, it gives implications for company managers to pay attention to the variables in this study, especially on company size and inflation changes, which can provide different considerations in determining the level of corporate cash holdings, so that the company is able to maximize its benefits through the cash and cash equivalents owned.

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