The Analysis of Corporate Diversification and Cash Holdings: A Study on Non-Financial Companies Listed in the Indonesian Stock Exchange during the Period of 2006-2015

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Abstract— **This paper studies the relationship between corporate liquidity and diversification. Researcher develop a measurement related to company diversification through cross-divisional correlation in investment opportunity and cash flow and also intra-divisional correlation between investment opportunity and cash flow. The measurement used is where investment opportunity is measured through Tobin's Q proxy and cash flow is measured with earnings less interests and taxes proxy. Also, this research performs measurement in cash holdings and companies experiencing financial constraint, where cash holdings measured by using cash/assets proxy, while financial constraint measured using payout ratio and firm size proxies. The key finding is that diversified firms hold significantly more cash than stand-alone firms because they are diversified in their cash flow. Lower cross-divisional correlations in cash flow and lower correlations between investment opportunity and cash flow correspond to higher cash holdings. Even in financially constrained firms, the increases of diversification degree through correlations in cash flow and correlations between investment opportunity and cash flow also correspond to higher cash holdings. These results show that the agency motive for cash holdings appears to explain the increase in the corporate cash holdings which means cash may needed in order to make an internal financing to overcome the cost made by agency when companies experiencing financial constraint.**

Keywords—cash holdings, corporate diversification, financial constraint, cash flow, investment opportunity.

I. INTRODUCTION

Keynes (1936) explained that one of the reasons company managers hold cash is to protect themselves from harmful cash flow shock that forces them to forget valuable cash investment opportunity due to the high cost of external funding. This high cost external funding is caused by financial gap.This means, with pressure in cash flow, the company needs to hold more cash to anticipate the loss of investment opportunity.

Modigliani and Miller's (1958) once did a related research that found that cash only affects market value when the market is not shifting. This research by Modigliani and Miller's (1958) is also backed up by a research conducted by Almeida et al. (2004) that stated that cash holdings and cash flows correlate only in companies that have financial constraint. This means investment and growth does not depend on availability of internal capital. After imperfection in capital market was introduced, it turned out that companies cannot always pursue all values that can increase investment opportunity. Therefore, cash holdings can become valuable when other sources of fund, including cash flow, are not enough to meet companies' demand for capital so that companies facing external financial constraint can use available cash to meet necessary expenses.

A diversified company may experience financial constraint if the company holds less cash due to lack of prevention of demand for cash (Duchin, (2010)). Companies that experience financial constraint will generally hold less cash due to diversification that happens to them. As explained by Modiglianiand Miller's (1958), cash has no benefit if the company doesn't have any financial constraint and cash will not be able to penetrate external capital market without causing deadweight costs.

To test how company diversification affects company liquidity, Hyland and Diltz (2002) conducted a study on acquisition affecting cash holdings. Based on the result, the conclusion of this study is that agency consideration becomes a primary aspect in companies to diversify.

Company managers that diversify look to pursue a strategy centered on a large cash balance and pursue growth through that mechanism rather than doing research & development.

Based on explanation of the previous research, the researcher wants to replicate the research into the condition of companies in Indonesia. Specifically, this research refers to the research conducted by Duchin (2010) that studied the correlations between risk, diversification, and cash holdings with the research using data of companies available in Compustat's North America Industrial Annual File and Compustat's Segments File for a period of 17 years, namely 1990-2006. The study found that multidivisional companies have less cash than stand-alone companies because multidivisional companies have diversified their investment opportunities. The level of correlation of investment opportunity and cash flow follows the lower level of cash holding despite the monitoring of cash flow volatility. The effect becomes stronger in companies experiencing financial constraint.

There are several things that researcher wants to discuss in the next sections, such as theoretical review, methodology, results & analysis, implications, and research conclusions.

II. THEORETICAL REVIEW

A. Precautionary Motive

Keynes (1973) explained that the reason for a company to hold cash is to overcome financial obstacles that may harm the company. A company wants to invest in a project with positive value, even though the company cannot generate enough internal cash to fund the project. This happens when the capital market is imperfect, where disadvantageous selection in the capital market makes external capital become expensive and causing the company to pass an investment opportunity that can increase company value (Myers, 1977; Jensen and Mackling, 1976). When external funding is costly, cash holding can ensure that in the future the company can fund a project with positive value. This is an important reason for a company to accumulate cash holding, especially when access to capital market is limited.

B. Agency Motive

Jensen (1986) said that agency problem makes company managers tend to hold cash rather than paying cash to the shareholders, either through dividends or buybacks. Jensen (1986) and Stulz (1990) also predicted that shareholders will limit managers in accessing free cash flow to prevent excessive agency conflict. However,

Opler et al. (1999) revealed that another reason to save cash is that company management tries to avoid financial pressure from the possibility that the company must fund investment activities with the more expensive external funding.

According to a theory by Jensen (1986), which is called free cash flow theory, when a company produces positive cash flow, the management may reinvest the cash in the company or distribute it to the shareholders. Jensen said, managers who act for personal interests will tend to "waste" the free cash flow. The managers will use funds for preconsumption or invest in projects that may provide insufficient returns to the shareholders. The motivation of this strategy is that managers of large companies tend to have high compensation level (Smith and Watts, 1992). Morck, Schleifer, and Vishny (1990) hypothesized that as a company becomes increasingly diversified, it will become unique, allowing managers to become more valuable and get bigger compensation.

Diversification in this case can be seen as company managers try to create internal capital markets. Such companies may mobilize their control to capital investment projects in which they use it as the last funding rather than all projects as subjects monitored by external capital market. By following a methodology of Denis and Thothadri (1999), Hyland and Diltz (2002) conducted a test that showed that companies that have bigger growth opportunities tend to diversify. Furthermore, if the intention for internal capital market is an important motivation for diversification, Hyland and Diltz (2002) would make a hypothesis that observed the increase of research & development and capital expenditure following diversification. However, the result of their study showed that diversified companies tend to reach a strategy around balance in cash holding rather than conducting research & development.

Stulz (1990) stated that diversified companies will invest too much in their business lines with bad investment opportunities. Jensen (1986) stated that company managers with weak borrowing power and big free cash flow will prefer to perform value reduction in their investments. Related to business lines may have more access in free cash flow. Jensen predicted that diversified companies make excessive investment in projects with negative net present value compared to stand-alone companies. Meyer, Milgrom, and Roberts (1992) made an argument about that through cross-subsidization on failed business segments. Since a failed business cannot get a value below zero if the company operates alone, it can get a negative value if it is a part of a business group that provides cross-subsidies. Meyer,

Milgrom, and Roberts (1992) predicted that companies that don't have profits in a diversified business line will create bigger loss than stand-alone companies. Lastly, Myers on (1982) and Harris, Kriebel, and Raviv (1982) discussed the asymmetric information cost that emerged between central managers and division level managers in decentralized firms. This cost will be higher in group companies compared to stand-alone companies, therefore diversified companies become less profitable compared to stand-alone companies.

III. RESEARCH METHODOLOGY

A. Research Sample

To see whether there is a correlation between company diversification measured using correlation between investment opportunity and cash flow and correlation between cash flow and cash holdings, this research employs secondary data indirectly collected from object of research. This research has a population of all public companies listed in Indonesian Stock Exchange in the period of 2006-2015 and the samples in this research were taken using purposive sampling method in collecting data. Therefore, using this technique the researcher has found 192 companies qualified as research samples.

B. Research Hypotheses

Previous literature such as Opler et. al (1999) has found that companies that have strong growth opportunities and relatively more dangerous cash flow hold higher cash to total asset ratio. However, holding excessive cash resource can bring negative implications if the manager uses the liquid resource inefficiently. Therefore, one of the reasons companies hold surplus cash is that managers want to build cash reserve to protect themselves from the eyes of the financial market (Mahrt-Smith, 2004).

In line with the findings of Rajan et. al (2002), Duchin (2010) found evidence that multidivisional companies hold significantly less cash than stand-alone companies because multidivisional companies are diversified in their investment opportunities. In fact, Duchin (2010) found that each one time increase in the standard deviation in cross-divisional correlation in investment opportunity triggers an increase in average company cash holdings by 4.4%.

Based on the above explanation, the first hypothesis in this research is **H1: Company diversification has positively affects company cash holdings.**

Modigliani and Miller (1958) stated that cash only has an impact on company value when there is no friction in the market. This proves that the cash prevention motive only applies when companies are faced with expensive external funding. Therefore, if a diversified company holds less cash due to low cash demand then this behavior will be stronger in a company that is experiencing financial constraint. Almeida et. al. (2004) found that cash flow and cash will correlate only when companies are faced with expensive external funding that causes them to experience financial constraint.

The above explanation leads to the second hypothesis in this research is **H2: Diversification in companies experiencing financial constraint has stronger positive effect to company cash holdings compared to companies experiencing financial unconstraint.**

C. Research Variable and Definitions of Operational Variables

This research consists of four types of variables, namely dependent variable, independent variable, control variable, and measurement variable. Dependent variables in this research are cash/assets. Independen variables in this research are Q-correlation, cash flow correlation and Q-cash flow correlation. Control variables in this research are industry Q volatility, industry cash flow volatility, investment opportunities, cash flow, networking capital, and firm size.

Measurement variables in this research are variables used to measure the second hypothesis measurement about the effect of diversification on cash holdings in companies with financial constraint. Referring to research by Duchin (2010), variables to be used to measure the effect of diversification on cash holdings in companies with financial constraint are payout ratio and firm size. The researcher uses these two variables because the researcher intends to make a comparison of the two approaches in the research result. Both approaches have their own criteria in classifying financial constraint companies and financial unconstraint companies.

D. Research Model

Referring to research by Duchin (2010), the researcher further divides financial constraint companies and unconstraint companies based on annual median value for each approach. Therefore, the regression equation of the research model is as follows:

$$\text{CASHOLD}_{it} = \alpha + \beta1(\text{QCORR}) + \beta2(\text{CFCORR}) + \beta3(\text{QCFCORR}) + \beta4(\text{INDUQV}) + \beta5(\text{INCAFVOL}) + \beta6(\text{CF}_{it}) + \beta7(\text{TOBINSQ}_{it}) + \beta8(\text{NWC}_{it}) + \beta9(\text{FSIZE}_{it}) + \varepsilon_{it}$$

Remarks:

α	= constant coefficient
$\beta1,2,3\ldots9$	= coefficient of independent variables
CASHOLDit	= cash holdings of company i in year t
QCORR	= q-correlation
CFCORR	= cash flow correlation
QCFCORR	= q-cash flow correlation
INDUQV	= q-industry volatility
INCAFVOL	= industry cash flow volatility
CFit	= cash flow of company i in year t
TOBINS'Qit	= inv. opportunity of company i in year t
NWCit	= net working capital of company i in year t
FSIZEit	= size of company i in year t
ε_{it}	= error i in year t

IV. ANALYSIS AND DISCUSSION

A. Corporate Diversification and Cash Holding

This section will discuss regression model test and regression model analysis for hypothesis 1, namely the effect of company diversification on company cash holdings. In short, the following is a table showing research regression parameter estimation result of the effect of company diversification on cash holdings:

TABLE I. **RESULT OF RESEARCH REGRESSION MODEL PARAMETER ESTIMATION FOR THE FIRST PROBLEM OF THE RESEARCH**

Independent Variables	Panel Data Regression		
	AllFirms	*Balanced Firms*	*Diversified Firms*
QCORR	0.1098 [0.5846]	0.0903 [0.5119]	0.0484 [0.2266]
CFCORR	-1.7224* [-1.9060]	-1.7073* [-1.8580]	-2.3600** [-2.3834]
QCFCORR	-0.0603*** [-2.4214]	-0.0633*** [-2.6077]	-0.0610*** [-2.6215]

a. Symbols ***, **,and * are representations of 1%, 5%, and 10% significance level respectively

Table I above, studies the overall company diversification measurements and also makes estimates by using fixed effect model (FEM) regression specification. The primary finding is that diversification in cash flow is a factor that determines cash holdingsin

companies listed in Indonesian Stock Exchange. This result is even proven to be significant both statistically and economically: For example, based on balanced firms sub samples in Table 4.9, it can be explained statistically that each reduction by one unit in the correlation in cash flow (symbolized by CFCORR) will increase company cash holdings by 1.7073. The result also shows consistently significant results both in all firms and diversified firms sub samples.

It is also important that the table above also indicates that diversification in Indonesian companies also affects cashholdings, especially through cash flow. This happens because diversification in investment opportunity is statistically found to be insignificant in this research. However, industry volatility in investment opportunity is in fact an important factor that determines cash holdings. Furthermore, it is found that diversification in investment opportunity can still affect cash holdings through correlation between cash flow and investment opportunity, namely financing gap. The effect of this result can be explained statistically that based on balanced firms sub sample, each reduction by one unit in the correlation between cash flow and investment opportunity (symbolized by QCFCORR) will increase company cash holdings by 0.0633.

The statistical explanation above shows an increase in cash holdings if companies in Indonesia become more diversified, especially through diversification around cash flow. The condition of company diversification around cash flow proves that when cross-divisional correlation around cash flow is low (the company has high diversification level) then the company can optimally hold more cash. This research result backs up the research conducted by Hyland & Diltz (2002), namely diversified companies have more cash because they tend to adopt the higher cash holding strategy to pursue company growth opportunity. This happens due to the presence of agency cost. Hyland & Diltz (2002) found that cash flow and diversification have a negative and significant correlation which shows empirical proof about agency statement especially related to the theory of free cash flow. As stated by Jensen (1986), managers will manage company cash according to their own personal interests wehere they will tend to use cash for preconsumption or invest in projects that may provide insufficient returns to the shareholders. Smith and Watts, (1992) said that this motive occurs because company managers tend to have high compensation levels. As a company becomes increasingly diversified, it will become increasingly unique, allowing managers to

become more valuable and get bigger compensation. (Morck, Schleifer, and Vishny (1990)).

Furthermore, this research also backs up the research conducted by Duchin (2010), especially his research on financing gaps. Duchin found that less correlation between investment opportunity and cash flow (bigger financing gaps) is in line with higher levels of company cash holdings. According to Duchin (2010), correlation at division level between investment opportunity and cash flow is important, because if investment opportunity and cash flow are correlated positively then the company must hold less cash even though at that time the company has high volatility level, but the investment at that time can be funded wholly through internal cash flow. Conversely, when investment opportunity and cash flow are correlated negatively then the company must hold more cash because cash flow doesn't reach sufficient availability of investment even though at that time the level of industry volatility is low. Therefore, this result backs up the theory by Keynes (1936) that states that companies hold cash to protect themselves from harmful cash flow shock that forces them to forget valuable cash investment opportunity due to the high cost of external funding.

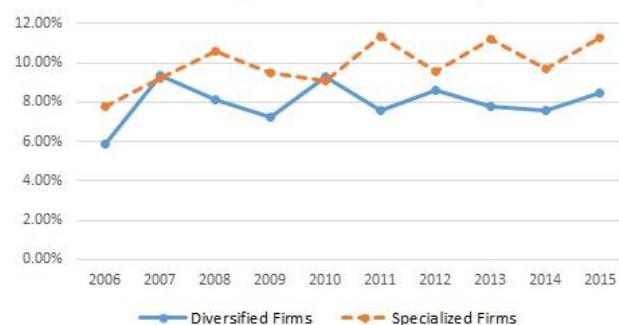### B. Corporate Diversification and Cash Holdings in Financial Constrain Companies

The researcher found inconsistent levels of cash holdings in the comparison between diversified firms and specialized firms when financial constraintis measured based on firm size and payout ratio. By looking at Picture 1 below, it is evident that the level of cash holdings in diversified firms with financial constraint, in terms of payout ratio measurement, is higher than specialized firms, while the opposite cash holdings characteristic occurs in terms of firm size measurement, where cash holdings level in diversified firms is lower compared to specialized firms. This cash holdings level characteristic is another reason for the inconsistent regression occurring in this research. The following is a graph of cash holdings level comparison between financial constraint companies with samples of diversified firms and specialized firms in terms of payout ratio and firm size:
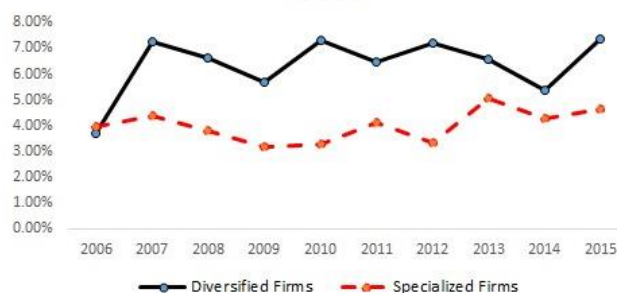
Graph 1.1 Characteristics of Cash Holdings Level in Diversified Firms and Specialized Firms with Financial Constraint Measurement by Payout Ratio


Graph 1.2 Characteristics of Cash Holdings Level in Diversified Firms and Specialized Firms with Financial Constraint Measurement by Size

The researcher needs to further analyze the data of cash holdings, Tobin's q correlation, and cash flow correlation among the samples of financial constraint and unconstraint companies in terms of both firm size and payout ratio measurements. This is necessary because it is possible that inconsistent correlation occurs due to a significant difference in average cash holdings levels between financial constraint companies and financial unconstraint ones, which also contaminates the regression result. Therefore, the researcher will detail once again the descriptive data obtained by the researcher by looking at the comparison of average annual cash holdings levels in companies having financial constraint and unconstraint based on the measurements of firm size and payout ratio, and then compare the average annual cash holdings levels with the degree of diversification which is measured by cross-division correlation proxy in investment opportunity and cash flow. The following is a

graph of cash holdings level comparison between constraintand unconstraint companies in terms of both measurements:
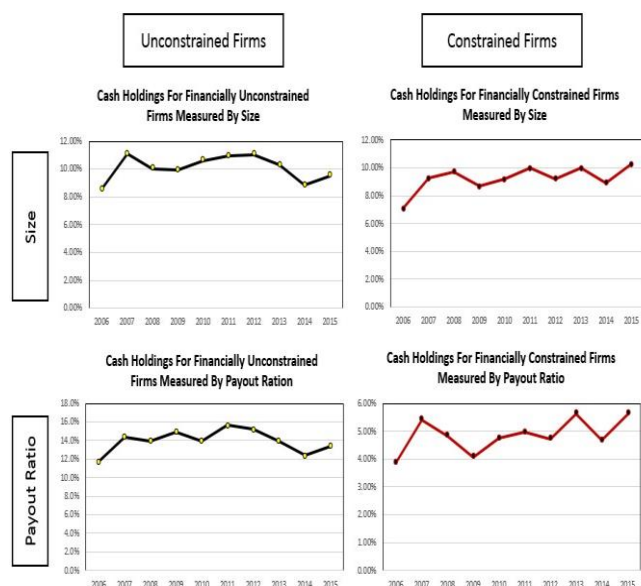

Graph 2.1 Average Annual Cash Holdings Level of Financially Constrained & Unconstrained Companies

Graph 2 above shows that financial unconstraint companies have higher average cash holdings levels compared to companies that have financial constraint. Financial unconstraint companies have nearly double the cash holdings of financial constraint companies based on payout ratio. However, the comparison of cash holdings conditions of constraint and unconstraint companies is still insufficient in explaining the correlation of diversification and cash holdings in financial constraint companies.

In order to explain the correlation between diversification and cash holdings in financial constraint companies, the researcher still needs to look at the degree of interaction between diversification and cash holdings in companies having such conditions. The researcher tries to look again at the annual average data between the proxy of diversification around investment opportunity and cash flow and compare it with average annual level of cash holdings. The result turns out to be consistent with the regression analysis result in the analysis of the first problem: it is found that the increasing trend in diversification proxy in financial constraint companies is followed by increase in cash holdings. The following is Graph 3.1 & 3.2 that shows the degree of diversification through investment opportunity and cash flow correlation proxy:
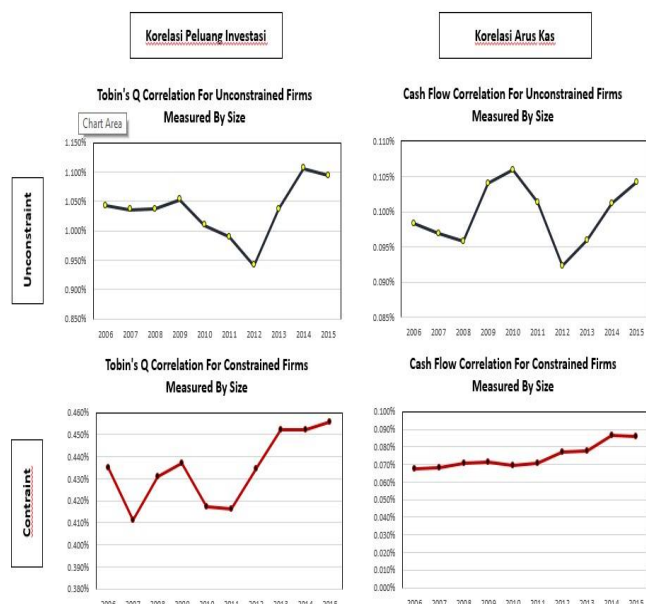
Graph 3.1 Annual Average of Correlation between Investment Opportunity and Cash Flow Based on Firm Size Constrained Firm Measurements
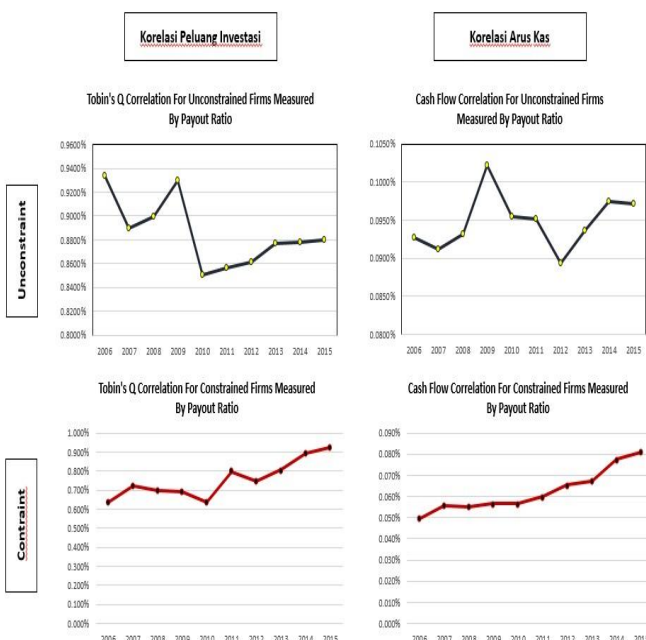
Graph 3.2 Annual Average of Correlation between Investment Opportunity and Cash Flow Based on Payout Ratio Constrained Firm Measurements

If graphs 2 and 3 are compared it is evident that based on *financial constraint firm size* and *payout ratio* measurements there is a trend of increase in company *cash holdings* followed by increase in company diversification level especially around cash flow, where the more diversified a company or followed by decrease

of correlation in investment opportunity and cash flow is followed by increase in company *cash holdings*. This result is inversely proportional with the study by Duchin (2010) and also with the previous theory as stated by Modigliani & Miller (1958) that friction in the capital market causes cash to have zero *net present value* therefore the motive to hold cash only applies when the company is faced with expensive external funding.

This result statement which is the opposite of the theory by Modigliani & Miller (1958) is also backed up by correlation variable around investment opportunity (symbol QCFCORR) which is found to be negatively correlated with cash holdings, but is not found to be always significant in all existing sub samples. This is a proof that it is possible that correlation between investment opportunity and cash flow is not a dominantly strong proxy when the company is faced with financial constraint. This reinforces the proof that the interaction between diversification and financial constraint on cash holdings of companies in Indonesia is not consistent with the hypothesis of anticipation motive.

The researcher finds another proof that this result is consistent with the research by Campello, Graham, and Harvey (2010) who found that companies with financial constraint tend to have less cash holdings compared to companies with financial unconstraint. Even though the cash holdings of financial constraint companies are lower than those with financial unconstraint, it turns out that the cashholdings trend of financial constraint companies also increases along with the increase in the degree of company diversification. This condition according to Campello, Graham, and Harvey (2010) happens because companies that are experiencing financial constraint tend to spend their cash for company funding activities. It is possible that the cash-intensive funding activities happen because the companies invest a lot in projects that have negative value. This is consistent with Shin & Stulz (1990) that states that diversified companies invest too much in their business lines with bad investment opportunities. Meyer, Milgrom, and Roberts (1992) predicted that companies with bad investment projects or without profit in diversified lines of business will create big losses. A failed business cannot gain profit if the business operates alone. Therefore, when the company is in a diversified business then the business can get a negative value because they must provide cross-subsidies to the losing business (Meyer, Milgrom, and Roberts, 1992). This result further explains the emergence of agency problem especially from the presence of asymmetrical information (Stein (1997)). Therefore, when external capital market fails to allocate resources efficiently, managers may create internal funding in order to overcome the asymmetrical information problem (Hyland & Diltz (2002)).

V. MANAGERIAL IMPLICATIONS

This research is expected to contribute managerial implications to practitioners, especially investors and companies.Investorsor prospective investors must always be wary of companies' liquid asset reports (especially cash as one of the components) before investing. Besides that, investors must also pay attention to external factors, such as global economy, which also influences companies' motives in holding cash. The amount of change in companies' cash holdings must always be considered by investors because a significant change in cash level may indicate a company management's mischievous behavior.

The implication for companies is that companies need to improve managerial interests, namely improve company ownership for managers to put them on the same level as the shareholders. Increase in managers' percentage of ownership will motivate them to perform and make them responsible to the company and also to the shareholders. This can be done because the motive of managers in diversified companies in holding a lot of cash is to make them more valuable and to increase their compensation. Therefore, increasing managers' ownership of the company may reduce agency problem.

Companies also need to conduct a review, especially when they want to diversify, where they must be careful in analyzing the feasibility of the business they want to invest in. This consideration is necessary because wrong investment will cause the business value of the company becomes negative.Therefore, decisions made by company managers must be considered by the stakeholders, namely directors, commisioners, managers, and also shareholders to prevent them from making decisions merely for their own interests.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The objective of this research is to analyze the correlation between company diversification and cash holdings and to analyze the effect of diversification on cash holdings when a company is having a financial constraint. Several conclusions can be drawn to answer the research questions based on the results of the analyses in the previous sections:

1. This research found a proof that diversified companies on average have a little more cash holdings compared to specialized companies, and this difference can be explained through diversification in investment opportunity and cash flow. This research shows that uncertainty in investment opportunity and cash flow affects cash holdings. Specifically, diversification affects cash through cross-divisional correlation around cash flow (symbolized by CFCORR) and financing gap (symbolized by QCFCORR), which is a correlation between company investment opportunity and cash flow. The more diversified a company is, which means the lower the correlation around cash flow followed by increase in financing gap, the more cash the company will hold.

2. Another top finding is that an increase in diversification level in a company that is experiencing financial constraintis followed by increase in the level of company cash holdings. Therefore, in a company that is experiencing financial constraint, the theory on agency problem of company cash holdings is applicable in this finding. As stated by Hyland & Diltz (2002), cash is needed by managers so that they can create internal funding to overcome the problem of asymmetric information when the company is experiencing financial constraint.

Referring to the research hypothesis, it turns out that diversification in Indonesian companies doesn't make them lower their cash holdings, but instead it makes them increase their cash holdings even when they are in financial constraint. This research is not consistent with the finding by Duchin (2010), who found that diversification reduces cash holdings because reduction of cash holdings is something optimal because companies can save the cost of holding cash. However, this research is consistent with Hyland & Diltz (2002), who concluded that diversified companies tend to increase cash holdings due to agency consideration.

B. Recommendations

Recommendations from the researcher to relevant parties based on the results of this research are:

Academics

Interactions between diversification and demand for bank credit will be an interesting topic in the next research. Besides that, perhaps the next research can investigate the interactions of diversification and cashholdings in companies with good governance or interactions of diversification and cash holdings in internal capital market as conducted by Duchin (2010).

Practitioners

•Companies

This research is expected to become a consideration for company management in managing cash optimally. With the existence of this agency problem, the researcher recommends companies to minimize agency problem between companies and investors because analysis results show that this is harmful both for companies and investors.

•Investors

Cash is the most liquid asset. Therefore, the researcher recommends investors to pay attention to this liquid asset before deciding to make an investment. A significant change in cash may indicate that something mischievous is happening in the company. With the finding of agency problem, which is a reason for the company to increase cash holdings, it is quite possible that the managers of the company are not using cash effectively and efficiently.

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