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RESEARCH ARTICLE

Cash Holdings of Business Group-Affiliated Firms in Indonesia

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This research focuses on the behavior of cash holdings of business group-affiliated firms in Indonesia from 2004 to 2013. We find that business group-affiliated firms hold more cash than that of stand-alone firms. Size of business group, cash holdings of other firms in the same business group, age of the business group, and the degree of diversification of business group have a positive influence on cash holdings of the business group-affiliated firms. However, the correlation of growth opportunities among the same group-affiliated firms has limited effects on the cash holdings of the firm.

Keywords: Cash holdings, business group, Indonesia

JEL Classification: G32, G34, G39

Cash holdings of the firms increase apparently across the countries. Many researchers have revealed the various economic factors that can explain the behaviors of the cash holdings. These factors are mainly related to the precautionary motive and the agency motive of cash holdings (Opler, Pinkowitz, Stulz, & Williamson, 1999; Bates, Kahle, & Stulz, 2009; Harford, Mansi, & Maxwell, 2008; Harford, Kalsa, & Maxwell, 2014). Consequences of cash policy of the firm such as the value of cash holdings (Gamba & Triantis, 2008at, Rapp, Schmid, & Urban, 2014) and effects of cash holdings to the firm's performance (Simutin, 2010) are discussed. The scope of research regarding cash holdings widens to capital structure (Harford et al., 2014), dividend policy (Hoberg, Phillips, & Prabhala, 2014), and competitive advantage of the firm (Fresard, 2010; Hoberg et al., 2014).

Major empirical results of cash holdings, however, are based on the United States and other developed countries. Porta, Lopez-de-Silanes, & Shleifer (1999) mentioned that the majority of firms outside the United States have concentrated ownership structure. Simultaneously, the majority of firms of non-Anglo-Saxon countries do not stand alone, but are affiliated with certain business groups (Claessens, Fan, & Lang, 2006; Locorotondo, Dewaelheyns, & Van Hulle, 2014).

The business group-affiliated firms are legally independent but the owner of the related business group or a group of family members usually manage them. Thus, the characteristics of the business group

will explicitly influence the behaviors of cash holdings of the business group-affiliated firms (Deloof, 2001; Pinkowitz & Williamson, 2001; Locorotondo et al., 2014).

The existing empirical pieces of evidence concerning the cash holdings of business group-affiliates are still scarce. Deloof (2001) showed that cash holdings of intragroup firms negatively affect cash holdings for others in Belgium. Pinkowitz & Williamson (2001) found that *keiretsu* [a type of informal Japanese business group] members hold less cash than stand-alone firms. Locorotondo et al. (2014) showed that business group-affiliated firms have less cash than comparable stand-alone firms. The size and stability of the business group reduce the cash holdings of the individual firm of the business group. These findings are consistent with the notion that a business group can establish the internal capital market that has lower asymmetric information among affiliated firms.

The internal capital market plays more significant roles in developing countries than developed countries, even when the internal capital market of the developing countries has not yet fully developed (Khanna & Tice, 2001). Firm's ownership in developing countries, including business group-affiliated firms, is still concentrated on individuals or families. In that case, the ability to fill institutional voids becomes a sustainable competitive advantage. In the developing markets, for example, conglomerates are also at an advantage as they are able to fill more subtle institutional voids like underdeveloped capital markets, deficient legal systems, or limited availability of venture capital (Rosset, 2012).

Even though professional managers manage a specific firm among business group-affiliated firms, the founder of the business group or their offspring retain a major say in the decisions of top management such as financial policies and allocation of limited recourses in the business group (Claessens, Djankov, Fan, & Lang, 2002). They sustain their voices in management decision via the use of pyramid structures and cross-holdings (Claessens et al., 2002, 2006). To understand the behaviors of cash holdings from developing countries properly, not only the characteristics of an individual firm but also the characteristics of the affiliated business group should be considered.

The objective of this paper is to advance the literature on the firm-level determinants of cash holdings using stand-alone and business group-affiliated firms. More specifically, we widen the literature by examining the cash holdings in Indonesian firms that are mainly affiliated with a specific business group. Indonesia is one of the countries that business groups are dominant in her economy. The behaviors of cash holdings of group-affiliated firms in Indonesia can widen the understanding of cash holding of business group-affiliated firms, especially in Asian emerging markets.

We find that business group affiliated firms hold more cash than stand-alone firms in Indonesia. The majority of business group-affiliated firms in Indonesia are also family firms. They tend to be risk averse to having a higher level of cash holdings than stand-alone firms for long-term stability (Portal & Basso, 2015). The institutional environment also determines the alignment of interest and expropriation by family control (Ball, Kothari, & Robin, 2000). Because Indonesia still has a low level of protection for a minority of investors, a higher level of cash holding indicates that there is a high possibility to utilize the firm's capital for personal use by business owners (Bertrand, Mehta, & Mullainathan, 2002). The agency cost of the business group-affiliated firms is greater than the merits of internal capital markets among the firms within the same business group-affiliated firms (Duchin, 2010).

Second, we have identified the cash holdings of firms in the business group-affiliated firms that relate to the characteristics of a specific business group. We find out that the owner's fame estimated from total wealth can reduce the cash holdings of the business group-affiliated firms because their wealth is regarded as lender of last resort. Cash holdings of the business group have a positive influence on that of a specific firm of the same business group. Correlation of investment opportunities among the same business group has positive effects on the cash holdings of the same business group-affiliated firms. It means that assets among business group-affiliated firms are not allocated efficiently because of agency problems (Rajan, Servaes, & Zingales, 2000).

Third, we capture industry effects on cash holdings of the firm. The financing decisions of a firm, to some extent, are responding to that of peer firms (Leary & Roberts, 2014). Especially, we find that an investment opportunity and cash flow of the same industry have positive effects on cash holdings of the firm. This empirical evidence confirms that cash holdings of

a firm are part of corporate financing policy that is influenced by the peer firms.

The rest of the paper is organized as follows: In Section 2, we discuss our hypothesis regarding the relationship between the characteristics of business group-affiliated firms and their cash holdings. In Sections 3 and 4, we describe the data and cash holdings of Indonesian firms. In Section 5, we discuss the empirical associations between firms' specific, industry, and business group-affiliated factors and cash holdings. In Section 6, we discuss further the empirical evidence focusing on the effects of business group related characteristics on cash holdings of the firms.

Indonesian Business Group

With the start of the industrialization policy of the Soeharto regime (1968–1998), the large-scale business group began to grow in Indonesia. Majorities of the large-scale business group could grow under the leadership of the founders and with support of the government. For example, the textile and flour-milling companies of the Salim Group received direct support of the government (Sato, 1993). On the other hand, Astra Group got some facilities and support from the government in the automotive industry (Sato, 1996).

However, during the financial crisis in 1997, the majority of the business groups in Indonesia had experienced financial difficulties. They did fire-selling of their subsidiaries or surrendered them to the Indonesian Bank Restructuring Agency (IBRA) to pay foreign debts. In the case of the Salim group, it surrendered 108 subsidiaries to IBRA. IBRA sold them to foreign investors or other business groups in Indonesia. There were strong pieces of evidence that the majority of the foreign investors were Indonesian investors cloaked as foreign agents to repurchase their lost firms (Kim, 2008). Several years have passed since the financial crisis in 1997–1998, and these Indonesian investors or business groups had again appeared as one of the main players in the Indonesian economy.

More than 10 years since 1997–1998, the Astra group has been maintaining its position as the number one business group in Indonesia. This group is engaged in most sectors in the Indonesian economy, including automotive, agribusiness, heavy equipment, mining, energy, financial services, information technology, and infrastructure and logistics. The Astra group had up to 128 subsidiaries in 2015. Among them, seven companies are listed in the Indonesian Stock Market (IDX). As shown in Table 1, the Astra group's market capitalization in IDX increased by 9.44% in 2014, reaching US$43.16 billion. The other big business groups are Salim group, Lippo group, and Sinar Mas group. These groups' influence in the Indonesian stock market had also increased in the past 10 years, as shown in Table 1.

Except for the Astra Group of which the founder lost his control in 1992, almost all other business groups in Indonesia are held by family members. As Claessens et al. (2002, 2006) and Kim (2008) mentioned, family-based ownership concentration can be observed through stock-pyramids and cross-ownership. It is also found that the role of relationship-based business as a representative of a cultural tendency toward families and group affiliation from the business group in Indonesia is quite evident (Iu & Batten, 2001). Even if there are improvements in the implementation of corporate governance, the protection of minority shareholders is still low.

Table 1. *Top Business Group in Indonesia Stock Market (IDX)*

Business Group	2005	2014			
	Market Cap in %*	Market Cap in %*	Market Cap in Billion USD	Number of listed Firms	Number of Subsidiaries
Astra International	7.74%	9.44%	43.16	7	128
Salim	3.30%	3.42%	15.64	9	203
Lippo	1.10%	2.40%	10.99	14	525
Sinar Mas	1.20%	2.23%	10.19	13	407

** Percentage of the market capitalization of listed firms from a business group to the market capitalization of IDX.*

Related Literature and Hypothesis Development

Cash holdings of Business Group Affiliated Firm

Business group-affiliated firms hold the cash as the stand-alone firms that hold cash for the transaction motive, the tax motive, the precautionary motive, and the agency motive (Bates et al., 2009). However, each cash holdings motive of each business group-affiliated firm is influenced by the characteristics of the individual firm as well as by the industry-related and business group-affiliated characteristics.

Cash holdings of business group-affiliated firms can be increased for precautionary purposes than stand-alone firms. If the cash flow of an individual firm becomes riskier than before, it tends to increase its precautionary motive of cash holdings (Bates et al., 2009). If the cash flow of the entire business group becomes riskier than before, the owner's concern for the long-term sustainability of the business group also increases. Simultaneously, business group-affiliated firms have more channels to increase their precautionary cash motive than stand-alone firms. Thus, business group-affiliated firms can hold more cash than stand-alone firms for a precautionary motive. Gu & Baizrakhmonov (2016) mentioned that cash holdings are highly related to firms' operation and development because it is an important guarantee to meet the business payment and investment opportunity.

Agency motive of cash holdings of a business group-affiliated firm can also increase its cash holdings. The cross-subsidies in internal capital markets often tend to be "socialist" in nature, which is directly related with the engagement of the manager of each division not only in productive work but also in wasteful rent-seeking activities (Scharfstein & Stein, 2000). For example, in India, intragroup loans are used as an important means of transferring cash across group firms and are typically used to support financially weaker firms (Gopalan, Nanda, & Seru, 2007). Owner of the business group-affiliated firm is also engaged in the same way to manage their business group. The more diversified and complicated the structure of the business group, the stronger is the socialistic nature of the internal capital market. Thus, business group-affiliated firms generate inefficiencies in the allocation of investment spending (Rajan et al., 2000; Maksimovic & Phillips, 2007).

In addition, agency problems in a group-affiliated firm are more complex than a stand-alone firm. Main agency issues of group-affiliated firms are related to conflicts among shareholders because firms that belong to a business group are typically managed by the controlling owner.

In particular, wedges of controlling rights from cash flow rights via stock pyramids are often used to allow a controlling shareholder behind the business group (Sato, 2004; Claessens et al., 2006; Kim, 2008). Even if a professional manager runs a specific business group-affiliated firm, the oblique separation of ownership and management enables the influences of the founder or family members in business group to be strong. Conflicts of interest among top managements from each firm in the same business group make the agency problem more complicated (Maksimovic & Philips, 2007). They like to deploy cash quickly for a project that reduces portfolio risk for family members but does not necessarily give benefits to its minority shareholders. Myers & Rajan (1998) argued that liquid assets could be turned into private benefits at lower costs than other assets.

On the other hand, the CEO of a business group can commit to a future distribution of the value created by investments. However, the decision-making could be redirected by the owner of the firm through negotiations among the CEOs of other same group firms (Rajan et al., 2000). This can result in tunneling problems or agency costs that diminish financing advantages in the internal capital market among business group-affiliated firms (Masulis, Pham, & Zein, 2011). Such cash distributions among business group-affiliated firms can also increase cash holdings of each firm in the business group-affiliated firm because each business group-affiliated firm needs to keep cash reserves not only for its own needs but also for firms in the same business group. Thus, the first hypothesis is:

H1: Business group-affiliated firms hold more cash than stand-alone firms.

Business Group Characteristics

Size of the business group. As the size of a business group increases, the available funds from its internal capital market may grow. In addition, as the size of a business group increases, so does the growth of its debt capacity. These happen because with the growth of the business group, the firm has

more assets that can be used as collaterals. At the same time, with the growth of the size of the business group, asymmetric information level with the external fund providers becomes lower (Manos, Murinde, & Green, 2007; Verschueren & Deloof, 2006). Furthermore, a business group's economies of scale in cash holdings can reduce the precautionary cash holdings for business group-affiliated firms (Locorotondo et al., 2014).

On the other hand, as previously mentioned, even if a professional manager runs a specific group-affiliated firm, oblique separation of ownership and control is still possible for the founder or family members to intervene in the decision-making process of each firm (Ball et al., 2000). With the increase of the business group size, they will have more ways and opportunities to intervene in allocating assets, investment opportunities, and so forth. For example, they like to deploy cash quickly for projects that reduce portfolio risk for family members but do not necessarily benefit minority shareholders. The bigger the size of the business group, the more family members participate in the management process. Thus, the projects that benefit family members may increase. Commitments of the founder and family members to a future distribution out of the value created by investment as top management of group-affiliated firms can also increase cash holdings of each firm in the group-affiliated firm. It happens because each group-affiliated firm not only holds the cash for its own needs but also the needs of the affiliated group. Thus, the second hypothesis is:

H2. The size of the business group has a positive association with the cash holdings of a specific business group-affiliated firm.

Investment opportunity correlation in business group. Rajan et al. (2000) found that business group-affiliated firms invest more in sectors with better opportunities than in sectors with poor opportunities. The distribution of the investment opportunities often tends to distribute among the firms in the same affiliated group with the "socialistic" way (Scharfstein & Stein, 2000). Simultaneously, the family members intervene in deploying cash for projects to reduce their own portfolio risk. Commitments of the founder and their family members to choose value-creating investment projects in the business group make an individual firm in the business group hold more cash than stand-alone firms. This situation makes firms among the same group compete with each other to get the financial resources to invest in their own projects. This competition will increase with more correlated investment opportunities among affiliated firms. To anticipate losing investment opportunities, each firm tends to hold cash not only for their own investment opportunities that may not belong to their group priority and for various needs from the group.

H3: Correlation between the investment opportunities of a business group-affiliated firm and the investment opportunities of other firms in the same affiliated business group has a positive association with the cash holdings of a business group-affiliated firm.

Firm-Specific Determinants

Firm size. Hadlock and Pierce (2010) showed evidence that firm size is a reasonable proxy for the likelihood of facing financial constraints. Generally, less well-known, younger, and smaller firms are more vulnerable to face various capital market imperfections than bigger ones. However, with the increase of the firm size, firms can enjoy the economies of scale of cash reserves (Bates et al., 2009). Thus, large firms tend to hold lower cash reserves (Gao, Harford, & Li, 2013).

Investment opportunities. External or internal funding can be used for investment opportunities. However, the value of new investment projects can create asymmetric information among stakeholders. Firms that have better investment opportunities can increase cash holdings to reduce the cost of funding. Firms with higher market-to-book ratio are expected to have larger growth opportunities, though they also face larger information asymmetry problems with fund providers (Opler et al., 1999; Harford et al., 2014). Underinvestment and external financing are costly for firms with high information asymmetry; thus, firms with high market-to-book ratios reserve more cash. Firms with good investment opportunities regard cash more valuable because it is costly for these firms to raise external funds (Bates et al., 2009).

Cash flow. Cash flows are a substitute for cash reserves. These firms with higher cash flow do not need to hold much cash. However, if firms use internally generated cash to hedge against future cash flow uncertainty, firms with higher cash flow tend to increase cash holdings (Han & Qiu, 2007).

Cash flow volatility. The increase of cash flow volatility means an increase in risk to get future cash flow. These firms tend to increase cash holdings for precautionary motive to anticipate the reverse future market movement. Han and Qiu (2007) showed that an increase of cash holding with the increase of cash flow volatility makes the firm financially constrained. Irvine and Pontiff (2008) found that a secular increase in idiosyncratic risk mirrors an increase in cash flow volatility. This un-hedged risk reflected in cash flow volatility increases cash holdings.

Net working capital. Net working capital consists of assets that substitute for cash. Thus, firms with a higher value for net working capital are expected to reserve less cash (Bates et al., 2009; Harford et al., 2014).

Payout to shareholders. Firms' cash holdings should be positively related to the degree firms expect to face financial constraints in the future. This happens because they can find the external fund less costly; they do not need to hold much cash for precautionary motive. Harford (1999) showed that financially constrained firms increase cash holdings because they face greater costs of external finance than unconstrained firm. Financially unconstrained firms tend to have higher payout ratios than constrained firms. Firms that pay dividends are also likely to be less risky and have greater access to capital markets; they tend to hold less cash (Bates et al., 2009).

Leverage. Bates et al. (2009) argued that if a debt is sufficiently constrained, firms will use the cash to reduce leverage to have financial flexibility. However, because larger cash holdings can allow them to avoid additional refinancing cost to take new investment opportunities, high levered firms could still hold cash rather than pay back the debt (Almeida, Campello, & Weisbach, 2004; Harford et al., 2014). On the other hand, Opler et al. (1999) found that financial leverage negatively affects corporate cash holdings. They explained the negative effects of leverage to cash holdings as the impacts of pecking order theory.

Capital expenditures. I capital expenditure creates assets that can be used as collaterals, capital expenditures could increase debt capacity and reduce the demand for cash. Simultaneously, the firm's capital expenditure is a proxy for a firm's level of investment. Thus, firms that increase their investments are expected to decrease their cash holdings, but firms with greater investment opportunities possibly need more cash holdings to support operations and to avoid the future underinvestment problems (Denis & Sibilkov, 2010). Capital expenditures could also be used as a proxy for financial distress cost or investment opportunities, in which they would be positively related to cash holdings (Bates et al., 2009).

Age of the firm. Brown and Kapadia (2007) found that newly listed firms have permanently higher firm-specific risk. If firms become well-known to the public with the increase of age, the need for safety cash can decline, a decrease of cash holding after S&P 500 Index inclusion firms (Brisker, Colak, & Peterson, 2013). In addition, as a firm stands long, it often has more solid long-term relationships with external fund providers than new ones.

Corporate governance. One of the characteristics of business group-affiliated firms in Indonesia has the pyramid and cross-holding ownership structure that allows the family controller to expropriate the firm's resources for his or her own private interests at the expense of minority shareholders (Cheung, Rau, & Stouraitis, 2006; Kim, 2008). Corporate governance has a relatively minor impact on how firms accumulate cash, but a significant impact on how firms spend their cash reserves (Dittmar & Mahrt-Smith, 2007). As CEO, inside debt, and higher managerial perquisite (Nikolov & Whited, 2014) has a positive association with the cash holdings, the business group-affiliated firms with family control also have the same interest to cash holdings. However, effective internal corporate governance practices can decrease cash holdings (Harford et al., 2008; Nikolov & Whited, 2014). Dittmar & Mahrt-Smith, (2007) also showed that cash levels are generally higher in countries with weak investor protections.

Industry Related Determinants

Firms from the same peer industry face nearly the same production technologies and investment opportunities. These firms' financing decisions, to some extent, are responses to the financing decisions of the peer firms (Leary & Roberts, 2014). With the same arguments, it can be claimed that firms may consider the cash holdings of the peer firms. We define peer firms as same industries with 2-digit industrial classification codes in JASICA (Jakarta Standard Industry Classification) defined by Indonesia Stock Exchange (IDX).

Table 2. *Variable definitions*

Variables	Definitions
Cash	Cash holdings of a firm can be estimated with cash to book value of assets or cash (including cash equivalents) to net assets (net asset equals book assets minus cash). However, cash to net assets has extreme outliers; thus we use Foley et al.'s (2007) cash ratio, namely, logarithm of the cash to total assets ratio.
OWealth	The total wealth estimate of the business group owner as the logarithm of total wealth based on yearly *Forbes* publication of the Richest in Indonesia during 2006–2013.
BSize	Size of the business group is calculated as logarithm of summation of total asset of all public firms in the same group.
BCash	Business group-affiliated firm's cash holdings is the estimated logarithm of total public firm's cash holdings in a business group minus a specific business group-affiliated firm's cash holdings to business group size.
BInvest	Investment opportunity in business group-affiliated firms is estimated canonical correlation between a specific firm's market to book ratio and other firm's market to book ratio in the same business group. We used at least five years of data for estimate canonical correlation.
BDiver	The level of diversification of the business group is calculated as the total number of firms in a business group.
BAge	Age of a business group is estimated logarithm of age from the starting year of the business group.
Size	Size is defined as log of total assets of the firm.
Mtb	Growth opportunity estimates of the firm with market-to-book ratio. Market-to-book ratio is measured as market capitalization over the book value of equity.
Cflow	Cash flow is defined as operating cash flow (earnings before interest and taxes, but before depreciation and amortization, less interest, taxes, and common dividends) to total assets.
Nwc	Net working capital is the difference between current assets (except cash and cash equivalents) and current liabilities to total assets.
Div	Dividend payout ratio is calculated as the sum of cash dividends over market value of equity.
Lev	Total leverage is total debt over total assets.
Capex	Capital expenditures are measured as the ratio of change of net fixed asset to total assets.
Cvol	We compute cash flow volatility of the firm using the previous three years standard deviation of operating cash flow.
Age	Age of a firm is estimated logarithm of age from the IPO.
GCG	Dummy variable 1 if firms that publish the CG score and belong to the top 10% good corporate governance, others 0.
BusG	Dummy variable 1 if the firm affiliated with certain business group, other 0.
IMtb	The industry market-to-book ratio is measured as the average of market-to-book ratio based on 2 digit Jakarta stock industrial classification index (JASICA).
ICflow	The Industry cash flow is measured as the average of individual firm's cash flow based on 2 digit Jakarta stock industrial classification index (JASICA).
IDiv	The Industry dividend payout ratio is calculated as the average of the dividend payout ratio of individual firm in the same industry based on 2 digit Jakarta stock industrial classification index (JASICA).

Table 3. ***Distribution of the Firms Based on Industry***

JASICA	Industry Name	Stand Alone		Business Group Affiliate		Total	
		Obs.	%	Obs.	%	Obs.	%
1	Agriculture	4	2.7	3	5.8	7	3.5
2	Mining	9	6.2	3	5.8	12	6.1
3	Basic Industry and Chemicals	29	19.9	12	23.1	41	20.7
4	Miscellaneous Industry	20	13.7	4	7.7	24	12.1
5	Consumer Goods Industry	20	13.7	6	11.5	26	13.1
6	Property, Real Estate and Building Construction	14	9.6	9	17.3	23	11.6
7	Infrastructure, Utilities & Transportation	12	8.2	1	1.9	13	6.6
9	Trades, Services & Investment	38	26.0	14	26.9	52	26.3
	Total	**146**	**73.7**	**52**	**26.3**	**198**	**100**

Industry investment opportunities. If an industry has better investment opportunities than other industries, firms in that industry want to take them. However, the value of new investment projects for an individual firm can create asymmetric information among stakeholders. These firms belong to an industry that has better investment opportunities than others that can increase cash holdings to reduce the costs of taking new projects.

Industry cash flow. Cash flows are a definite substitute for cash reserves. Firms with higher cash flow do not need to hold much cash. If an individual firm in one industry wants to hold more cash to hedge against the uncertainty of future cash flow (Han & Qiu, 2007), other firms in the same industry respond in the same direction (Leary & Roberts, 2014).

Industry payout to shareholders. If firms belong to a certain industry that has less collateral, they should pay more when they face adverse conditions of the market. They tend to increase cash holdings for a precautionary motive. If they belong to a more financially constrained industry, they will decrease dividend payment to increase cash holding like individual firms. Firms that pay dividends are also likely to be less risky and have greater access to the capital market, where they tend to hold less cash (Bates et al., 2009).

Data

The main data were collected from the Indonesian Stock Exchange (IDX) and from the annual report of each company 2000–2013. The total wealth of ownership of business group and the age of business group were taken from *Forbes Asia* (2006-2011) and *Forbes Indonesia* (2012-2013)[1]. We define business group based on tracking of ownership structure among the related firms. We got the ownership structure of the firm from several data set such as the firm's annual reports and other open resources such as website of the firms, newspapers, and magazines. Even if business group-affiliated firms in the same business group are interrelated via pyramids and cross-holdings, each of them as public firm produces separate financial statements; thus, we can use individual firm level data in business group-affiliated firms.

From a total of 507 public firms listed in the Indonesian Stock Exchange in 2013, we excluded firms from the banking and finance industry because they may keep cash to meet their capital requirement rather than for economic reasons. We also excluded firms that went IPO from 2004 and provided incomplete financial information. Before we excluded firms with IPO since 2004, we calculated industry related and business group related variables to capture the development of the business group and industry during our observation period. The data from 2000 until 2003 made use of several variables such as cash flow volatilities for individual firms and average industry, and investment opportunities for business group-affiliated firms. There are 198 firms were used for analysis.

The sample size to determine business group-affiliated firm decreased. This happened mainly because the number of business group-affiliated firms were limited and also because of the limitation of the

Forbes data set. *Forbes Asia* (2006-2011) and *Forbes Indonesia* (20012-2013) provided data on the wealth of owners of business group-affiliated firm since 2006. The data used for analysis for the characteristics of the business group-affiliated firm were used from 2006–2013. Fifty-two firms from 198 firms were categorized as business group-affiliated firms.

Table 3 shows the distribution of firms based on industry. From the total firms, 26.3% is categorized as business group-affiliated firms. Distribution along the industry shows that trades, services & investment industry has the biggest portion of the sample for stand-alone firms and business group-affiliated firms. There is no major difference in distribution across the industry between stand-alone firms and business group-affiliated firms.

Cash Holdings of the Indonesian Firm

Panel A of Table 4 reflects that the cash holdings of the business group-affiliated firms are significantly higher than that of stand-alone firms in 2004 and 2005, but from 2006 to 2008, there are no differences. Thus, during the subprime mortgage loan crisis, cash holdings of stand-alone firms increase. However, after 2011, the cash holdings of business group-affiliated firms increased again. Except during the financial crisis period, business group-affiliated firms tended to hold more cash than stand-alone firms. Diversity of cash holding from stand-alone firms was increasing, whereas that of business group-affiliated firms did not. Thus, it reveals that the cash holdings of business group-affiliated firms tend to be more stable than that of stand-alone firms.

Panel B of Table 4 reflects the mean and standard deviation of stand-alone and business group-affiliated firms' size and differences between groups. The firm size of business group-affiliated firms is bigger than stand-alone firms. As we earlier mentioned, several big business groups dominated the IDX. Even if the size of the stand-alone firm grows year by year, but because the size of business group-affiliated firms grows faster, the difference in the size between them becomes bigger and bigger.

Panel C of Table 4 also reports that the cash flow of the group-affiliated firms tends to be higher than that of stand-alone. However, the differences in cash flow within business group-affiliated firms are larger than stand-alone firms.

Panel A of Table 5 reports that variable age, capital expenditures, and cash flow volatility are significantly different at 1% level between stand-only and group affiliated firm. Practices of corporate governance also have a different significance at 5% level. Practices of corporate governance are better in the business group than stand-alone firms. Business group-affiliated firms use more capital expenditures than stand-alone firms and have long experiences in the stock market. They also generate higher cash flow than stand-alone firm, but their cash flows are more volatile. On the other hand, there are no differences in leverage level, net working capital, dividend payout ratio, and growth opportunity estimated as a market-to-book ratio.

Panel B in Table 5 reports that the cash flow of business group-affiliated firms is significantly higher than stand-alone firms at 1% level. However, the dividend payout ratio of stand-alone firms is higher than that of business group-affiliated firms at a 10% significance level. On the other hand, there is no difference in variable growth opportunities.

Panel C of Table 5 reveals that the business group's cash has zero minimum value because several business groups only have one listed firm. Investment opportunities in the same business group have zero as a minimum value for the same reason we cannot calculate the correlation between business group market-to-book ratios for several business group-affiliated firms. Correlation using canonical correlation tends to increase if the number of firms in the same group increases and always gives a positive correlation.

Individual and Industry-Level Determinants of the Cash Holdings

Table 6 reveals the results from regressing cash holdings on firm-specific determinants using generalized least squares after correcting heteroskedastic variance and correlation within panel.[2] In column 1, the estimated coefficient on business group dummy is positive and statistically significant at 1% level. Business group-affiliated firms have a higher cash holdings level than stand-alone firms. It may happen partially because the founder or the control of the family's concern for the long-term sustainability of the business group makes an increase in precautionary motive cash holdings. Simultaneously, the cross-subsidies in internal capital markets among group-affiliated firms often tend to be "socialist" in nature (Scharfstein & Stein, 2000), where it is directly related to the engagement of the manager

Table 4. *Descriptive Statistics of Cash Holdings Size, and Cash Flow*

Year	Stand Alone Firm		Group Affiliated Firm		Total		Difference	t-stat
	Mean	Std.	Mean	Std.	Mean	Std.		
Panel A: Cash								
2004	0.1056	0.1342	0.1295	0.1388	0.1119	0.1355	0.0239	2.48***
2005	0.0911	0.1272	0.1171	0.1320	0.0979	0.1286	0.0261	2.85***
2006	0.1136	0.1558	0.1230	0.1310	0.1160	0.1494	0.0094	0.88
2007	0.1261	0.1568	0.1345	0.1267	0.1283	0.1492	0.0084	0.80
2008	0.1316	0.1572	0.1181	0.1052	0.1281	0.1452	-0.0135	-1.31
2009	0.1373	0.1704	0.1184	0.1101	0.1323	0.1567	-0.0189	-1.69**
2010	0.1528	0.1812	0.1283	0.1183	0.1464	0.1670	-0.0245	-2.06**
2011	0.0853	0.1473	0.1040	0.1192	0.0902	0.1404	0.0187	1.87**
2012	0.0932	0.1582	0.1124	0.1227	0.0983	0.1496	0.0192	1.80**
2013	0.0851	0.1519	0.0999	0.1179	0.0890	0.1436	0.0149	1.46
Total	0.1122	0.1559	0.1185	0.1220	0.1138	0.147742	0.0064	0.61
Panel B: Size								
2004	13.0528	1.5511	14.6433	1.2883	13.2780	1.6128	1.5905	14.83***
2005	13.1394	1.5568	14.7555	1.2625	13.3672	1.6176	1.6161	15.02***
2006	13.1505	1.5833	14.8965	1.2472	13.3978	1.6544	1.7460	15.87***
2007	13.2317	1.6691	15.1846	1.1865	13.5201	1.7486	1.9529	16.79***
2008	13.3739	1.7066	15.3552	1.1642	13.6665	1.7810	1.9813	16.72***
2009	13.3875	1.7392	15.3749	1.1800	13.6894	1.8113	1.9874	16.49***
2010	13.5015	1.7569	15.5163	1.2409	13.8003	1.8343	2.0148	16.51***
2011	13.6584	1.8554	15.7469	1.1795	13.9645	1.9189	2.0885	16.36***
2012	13.7656	1.8540	15.8485	1.3103	14.0752	1.9298	2.0829	16.23***
2013	13.9430	1.8311	16.0871	1.2130	14.2563	1.9095	2.1442	16.88***
Total	13.3206	1.6845	15.1350	1.3204	13.5775	1.7556	1.8144	15.54***
Panel C: Cash flow								
2004	0.1005	0.2508	0.1716	0.2800	0.1192	0.2599	0.0711	3.85***
2005	0.1242	0.2926	0.1293	0.2966	0.1255	0.2929	0.0051	0.24
2006	0.0860	0.2726	0.0832	0.2754	0.0853	0.2726	-0.0029	-0.15
2007	0.0722	0.2402	0.0992	0.2516	0.0793	0.2429	0.0270	1.56
2008	0.1243	0.2975	0.2538	0.3536	0.1583	0.3175	0.1295	5.74***
2009	0.1534	0.2816	0.2448	0.2853	0.1774	0.2847	0.0914	4.52***
2010	0.1087	0.2503	0.1478	0.2695	0.1190	0.2554	0.0391	2.15**
2011	0.1025	0.2668	0.1581	0.3100	0.1171	0.2790	0.0556	2.80***
2012	0.1044	0.2720	0.1295	0.2433	0.1110	0.2644	0.0251	1.34
2013	0.0987	0.2625	0.1523	0.3445	0.1128	0.2864	0.0536	2.63***
Total	0.1075	0.2693	0.1570	0.2952	0.1205	0.2771	0.0495	2.51***

*Cash holdings of the firm (Cash) are defined as cash and marketable securities over total assets. Size(Size) is defined as logarithm of market value of the equity. Cash flow (Cflow) is defined as operating cash flow to total assets. Difference is calculated as business group related firm's mean minus stand-alone firm's mean. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.*

Table 5. *Descriptive Statistics of Other Firm Specific-Related, Industry-Related, and Business Group-Related Cash Holding Determinants*

Panel A: Firmspecific-related cash holding determinants								
	Stand Alone Firm		**Group Affiliated Firm**		**Total**			
	Mean	**Std.**	**Mean**	**Std. Div.**	**Mean**	**Std. Div.**	**Difference**	**t-stat**
GCG	0.0110	0.1041	0.0327	0.1780	0.0167	0.1281	0.0057	1.98**
Age	1.0842	0.2529	1.1686	0.1511	1.1064	0.2335	0.0221	4.22***
Capex	0.0095	0.0769	0.0293	0.0775	0.0147	0.0775	0.0052	2.98***
Lev	0.3797	0.3075	0.3664	0.2757	0.3762	0.2995	-0.0035	-0.52
Nwc	0.0385	0.2351	0.0574	0.1918	0.0435	0.2247	0.0049	0.98
Cvol	0.2903	0.3761	0.3846	0.4875	0.3151	0.4103	0.0248	2.69***
Div	0.0553	0.1164	0.0483	0.0991	0.0535	0.1121	-0.0018	-0.73
Mtb	1.9203	2.8638	2.1502	2.7767	1.9806	2.8423	0.0604	0.95
Panel B: Industry-related cash holding determinants								
Imtb	1.6904	1.9036	1.9313	1.9433	1.7537	1.9165	0.0632	1.47
ICflow	0.0507	0.1007	0.0713	0.0999	0.0561	0.1008	0.0054	2.39***
IDiv	0.0442	0.1053	0.0283	0.0836	0.0400	0.1003	-0.0042	-1.85*

Panel C: Business group-related cash holding determinants				
	Mean	**Std. Dev.**	**Min**	**Max**
BCash	0.0830	0.0840	0.0000	0.2109
OWealth	20.7046	1.0754	17.8228	23.0746
BSize	16.4576	2.3474	8.7293	20.3570
BInvest	0.4889	0.4064	0.0000	0.9965
BAge	7.5838	0.0088	7.5575	7.5979

*Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.*

of each division and the CEO of the group not only in productive work but also in wasteful rent-seeking activities. For example, the CEO of the group likes to deploy cash for projects that reduce portfolio risk for family members and commit to determine distribution out of the value created by investment among firms in the business group (Rajan et al., 2000). Then, the CEO's participation to the internal business group can also increase cash holdings of each firm in the same group-affiliated firm because each business group-affiliated firm needs to hold not only the cash for its own needs but also the cash for other firms in the same business group. Later on, we investigate what group characteristics determine the level of cash holdings for group-affiliated firms.

We also found that the estimated coefficient on size of the firm is negative and statistically significant at 1% level. The firm size has negative effects on the level of cash holdings of the firm. This result is consistent with Hadlock and Pierce (2010), Bates et al., (2009), and Gao et al. (2013). Then, it can be said that large size firms are easier to external fund than small firms and also can enjoy the economies of scale of cash holdings.

Investment opportunities measured by market-to-book ratio have positive effects on cash holding and statistically significant at 1%. This result is consistent with the empirical evidence from Opler et al. (1999), Bates et al. (2009), and Harford et al. (2014). To hinder underinvestment and costly external financing, a firm with better investment opportunities than others tends to increase its cash holdings. The coefficient of net working capital also has negative effects on cash holding and statistically significant at 1% level. This result is consistent with the empirical evidence from Bates et al. (2009) and Harford et al. (2014). In other

Table 6. ***Firm-Specific and Industry-Related Determinants of Cash Holding***

	(1)	(2)	(3)	(4)	(5)
Mtb	0.0331	-0.0310	0.0183	0.03297	0.0059
	(4.44)***	(-1.62)	(2.55)**	(4.42)***	(0.30)
Div	-0.1617	-0.1298	0.0634	-0.3384	-0.1766
	(-0.96)	(-0.78)	(0.38)	(-0.78)	(-0.41)
GCG	0.1758	0.1737	0.2430	0.1747	0.2334
	(1.32)	(1.24)	(2.49)**	(1.29)	(2.41)**
Size	-0.8968	-0.8985	-0.8754	-0.8970	-0.8757
	(-134.9)***	(-135.9)***	(-132.2)***	(-134.9)***	(-131.65)***
Age	1.7863	1.7223	1.6858	1.7658	1.7017
	(10.50)***	(10.22)***	(10.37)***	(10.5)***	(10.32)***
Capex	0.4166	0.4167	0.4055	0.4193	0.4390
	(2.48)**	(2.48)**	(2.37)***	(2.46)**	(2.56)**
Lev	-0.0930	-0.0930	0.0925	-0.0467	0.0842
	(-1.07)	(-1.07)	(1.04)	(-0.54)	(0.94)
Nwc	-0.5690	-0.5639	-0.4185	-0.5671	-0.3898
	(-6.34)***	(-6.23)***	(-4.31)***	(-6.24)***	(-3.98)***
Cflow	0.2349	0.2568	-0.2004	0.2249	-0.1816
	(4.59)***	(4.95)***	(-3.01)***	(4.32)***	(-2.65)**
Cvol	-0.3447	-0.3374	-0.2364	-0.3435	-0.2712
	(-5.68)***	(-5.49)***	(-3.51)***	(-5.61)***	(-4.03)***
BusG	2.0099	2.0099	1.8608	1.9873	1.9152
	(25.95)***	(25.95)***	(22.41)***	(25.83)***	(23.04)***
IMtb		0.0936			0.02417
		(3.29)***			(0.85)
ICflow			2.6602		2.5804
			(12.59)***		(12.17)***
IDiv				0.2489	0.2914
				(0.49)	(0.57)
_cons	-45.562	-57.297	-42.328	-53.970	-46.705
	(-2.06)**	(-2.59)***	(-1.92)*	(-2.43)**	(-2.10)**
Industry Effects	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
Wald X^2	27354.39	27716.09	28180.57	27341.20	28431.65
Prob.(Wald)	0.0000	0.0000	0.0000	0.0000	0.0000
Number of obs.	1980	1980	1980	1980	1980

*Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.*

Table 6 reports coefficients and t-value from regressing individual firm's cash holdings from 2004 to 2013 on determinants of individual and industry determinants of cash holdings, using generalized least square with correction of autocorrelation and heteroskedastic problem using balanced panel data. Sample is non-financial 198 listed firms in Indonesian stock market. The model used as follows;

$$Cash_{it} = \alpha + \beta_1 BusG_{it} + \sum_{j=1}^{10} \gamma_j X_{jit} + \sum_{j=1}^{3} \delta_j Z_{jit} + \epsilon_{it}$$

Table 7. ***Business Group-Affiliated Firm's Cash Holding Determinants***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GCG	0.2880	0.2801	0.1833	0.3536	0.2289	0.2861		1.3374
	(2.40)**	(2.22)***	(1.41)	(2.81)***	(2.22)**	(2.35)**		(2.58)***
Size	-0.8767	-0.8781	-0.8895	-0.8888	-0.8855	-0.8745		-0.8660
	(-53.44)***	(-54.22)***	(-55.59)***	(-52.04)***	(-52.42)***	-53.12)***		(-43.14)***
Age	1.8156	2.3615	2.3767	1.5119	1.3173	1.9461		4.2677
	(2.55)**	(3.22)***	(3.58)***	(1.98)**	(1.62)	(2.71)***		(5.89)***
Capex	0.1050	0.0858	-0.0279	0.0256	0.0514	0.0910		-0.7828
	(0.44)	(0.34)	(-0.10)	(0.11)	(0.19)	(0.38)		(-1.16)
Lev	0.0913	0.0574	0.2580	-0.0780	-0.0739	0.0852		0.6684
	(0.50)	(1.32)	(1.27)	(-0.41)	(-0.38)	(0.47)		(2.84)***
Nwc	-0.2911	-0.3170	-0.0658	-0.3542	-0.2155	-0.2901		0.1441
	(-2.22)**	(-2.19)**	(-0.38)	(-2.62)***	(-1.34)	(-2.18)**		(0.44)
Cflow	0.1666	0.1639	0.2477	0.1406	0.2319	0.1699		-0.0480
	(1.29)	(1.52)	(3.45)***	(1.26)	(2.18)**	(1.62)		(-0.22)
Cvol	-0.8398	-0.9191	-0.9357	-0.8491	-0.7694	-0.8474		-1.5855
	(-7.69)***	(-7.97)***	(-7.09)***	(-7.11)***	(-6.28)***	(-7.80)***		(-9.57)***
Div	0.5490	0.5488	1.3088	0.5700	0.6278	0.5516		4.1047
	(1.72)*	(1.61)	(3.15)***	(1.63)	(1.73)*	(1.74)*		(5.13)***
Mtb	0.0173	0.0163	-0.0230	0.0122	0.0131	0.0195		-0.0634
	(1.40)	(1.29)	(-1.75)*	(0.91)	(0.92)	(1.58)		(-3.55)***
OWealth							-0.0025	0.0718
							(-0.02)	(0.92)
BSize			0.1846				0.0805	0.2272
			(7.07)***				(1.08)	(5.09)***
BInvest					0.3829		0.5568	0.2170
					(2.78)***		(2.31)**	(0.89)
BCash				1.2506			3.3837	2.5052
				(2.32)**			(3.61)***	(3.00)***
BDiver		0.0157					-0.0053	0.0536
		(1.86)*					(-0.26)	(6.22)***
BAge						0.0031	0.0164	0.01512
						(0.79)	(3.59)***	(4.27)***
_cons	-170.28	-131.25	-66.843	-179.98	-197.36	-165.77	242.98	136.22
	(-3.26)***	(-2.42)**	(-1.18)	(-3.19)***	(-3.41)***	(-3.18)***	(3.44)***	(2.34)**
Industry	Included	Included	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included	Included	Included
Wald X^2	4104.59	4225.18	4429.43	3852.11	3784.54	4104.26	94.15	4591.51
Prob. (Wald)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Number of obs.	416	416	416	416	416	416	300	300

*Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.*

Table 7 reports coefficients and t-value from regressing individual firm's cash holdings from 2006 to 2013 on determinants of business group-related firm specific determinants of cash holdings, using generalized least square with correction of autocorrelation and heteroskedastic problem using balanced panel data form column (1) to (6). Sample is non-financial 52 business affiliated listed firms in Indonesian stock market. Columns (7) and (8) reports are based on unbalanced panel generalized least square with heteroscedasticity-consistent standard errors because of the characteristics of business group owner's wealth. The empirical model used as follows:

$$Cash_{it} = \alpha + \beta_1 OWealth_{it} + \beta_2 BSize_{it} + \beta_3 BCash_{it} + \beta_4 BInvest_{it} + \beta_5 BDiver_{it} + \sum_{j=1}^{11} \gamma_j X_{jit} + \epsilon_{it}$$

words, net working capital accounts (except cash) are used as a substitute for cash.

On the other hand, the age of the firm has a positive influence on cash holdings of the firm and is statistically significant at 1%. This result is contradictory with the findings of Brown and Kapadia (2007) and Brisker et al. (2013). They mentioned that the increase of firm's age reduces the permanent specific risk of the firm and makes it have a more solid and long-term relationship with fund providers, but not in Indonesia. It may partially happen because in Indonesia, as one of the major emerging market, market frictions in the funding market are still high, and the Indonesian stock market is not yet well developed. The ratio of the stock market over GDP in 2013 is just 37.11%. This ratio is relatively low even if we admit that the banking sectors are the credit providers in Indonesia. The tendency of the cash holdings with age is not negative but could be positive.

Capital expenditures have positive effects on cash holding and its coefficient is statistically significant at 1%. As Denis et al. (2010) mentioned, firms with greater investment opportunities increase their cash holdings to support operations and avoid future underinvestment problems. When we regard capital expenditures as a proxy for investment opportunities (Bates et al., 2009), variable capital expenditures show the same indication with market-to-book ratio as a proxy for investment opportunities included in our analysis.

The cash flow of the firm has a positive coefficient and is statistically significant at 1% level. Intuitively, firms with higher cash flow than others do not need to hold much cash. However, firms hold more cash if they use the increase of their cash flow to hedge against future cash flow uncertainty (Han & Qiu, 2007). On the other hand, variable cash flow volatility has a positive coefficient and is statistically significant at 1% level. This result is consistent with previous empirical results from Han and Qiu (2007) and Irvine and Pontiff (2008). Thus, with the increase of riskiness of cash flow, firms tend to increase their cash holding for precautionary motive.

Leverage of the firm has no influence on cash holdings level. This empirical evidence is inconsistent with Bates et al. (2009), Almeida et al. (2004), and Harford et al. (2014) because they found positive effects of leverage on the cash holdings. The effects of leverage to cash holding is also inconsistent with the findings of Opler et al. (1999) because they found the negative effects of leverage to the corporate cash holding level. It means that for the Indonesian firms, neither substitution effects between cash holdings and leverage based on pecking order theory nor financial flexibility of cash holdings for the highly levered firm are dominant.

Empirical evidence says that dividend payout ratio also has no influence on cash holding level. This result contradicts with the evidence from Harford (1999) and Bates et al. (2009). Our empirical evidence also says that the practice of good corporate governance has no influence on the cash holding level of the firm. This result is contradicts with previous evidence from Harford et al. (2008), Dittmar et al. (2007), and Nikolov and Whited (2014), but it is consistent with the evidence from Kim (2008). Kim (2008) showed that the practice of corporate governance in Indonesia is still not strong enough to influence the firm's value because of several limitations in the implementation of corporate governance policy. Perhaps, the influence of corporate governance is still not strong enough to influence the firm's cash hoarding behavior for the same reason.

In column 2 of Table 6, we include variable industry investment opportunities. When we included industry market-to-book ratio in the regression model, the effect of individual firm market-to-book ratio became statistically significant. This happens because industrial market-to-book ratio captures the growth opportunities in individual firms in the same industry. We can find consistent results from column 3 and 4 in Table 6. There are no meaningful changes for other individual determinants of the cash holding variables except variable market-to-book ratio. As predicted, the industry market-to-book ratio has a positive coefficient and statistically significant at 1% level. Thus, firms that belong to certain industries have better investment opportunities and tend to increase their cash holdings for precautionary motive.

In columns 3 and 5 of Table 6, we include variable industry cash flow. Coefficient of the industry cash flow is positive and statistically significant at 1% level. When we include the variable industry cash flow, there are no meaningful changes that happened to another firm-specific determinant of cash holdings except the practice of corporate governance. The variable practice of corporate governance becomes statistically significant at 5%. As Han and Qiu (2007) mentioned, if several firms in an industry wanted to hold more cash

than peer firms to hedge against the future uncertainty of cash flows, other firms in the same industry would also increase cash holding due to peer pressure (Leary & Roberts, 2014).

In columns 4 and 5 from Table 6, the variable industry payout ratio is included. Although other variables related to the characteristics of an individual firm still show consistent effects, the variable industry payout ratio has no effect on cash holding level of the firm. This evidence is consistent with the individual firm level dividend payout ratio and does not influence the cash holding level. However, it is inconsistent with previous evidence from Bates et al. (2009).

Determinants of the Cash Holdings of Business Group Affiliated Firm

Table 7 reveals the results from regressing cash holding on firm-specific determinants just for a subsample of the business group-affiliated firm using generalized least square after correcting heteroskedastic variance and correlation within the panel. In column 1, some discrepancy is revealed if we compare the results with a full sample. Variables such as the size of the firm, age after IPO, and volatility of the cash flow consistently give the same effects on the cash holding level with the same statistical significance at 1% level. The variable dividend payout ratio is statistically insignificant and has no effect on the cash holding of the firm. On the other hand, the variable net working capital still influences cash holding level, but the statistical significance level decreases from 1% level to 10% level. Effects of variables such as cash flow and market-to-book ratio disappear.

On the other hand, the variable practices of corporate governance show different results if we compare the results of a full sample. The variable practices of corporate governance have significant effects on the cash holdings of the group-affiliated firms at 5% level. Practices of corporate governance show consistency or even more significant results with other additional variables with characteristics of the group in Table 7. It partially means that investors are concerned more with the potential agency problems of group-affiliated firms than stand-alone firms. The group-affiliated firms also show more efforts to give a signal to investors than stand-alone firms.

Column 2 of Table 7 shows that the diversification level of the business group has a positive influence on the cash holdings of the firm. This evidence is inconsistent with Rajan et al., (1998), Scharfstein and Stein (2000), Opler et al. (1999), and Duchin (2010). They underlined the internal capital market of a business group with various arguments and found a negative influence of diversification on the cash holding level. Perhaps the positive relationship between diversification level of the business group and cash holdings happens partially because of the increase in pet projects of family members with the increase in the diversification level of the group. Simultaneously, conflicts of interest between the CEO of the business group and top managers from business group-affiliated firms increase. With the increase of diversification level, the complexities of valuing investment projects in a business group increase (Rajan et al., 2000). Thus, if the diversification level of a business group increases, individual firms in that business group also increase its cash holdings because of conflicts of interest among them.

Column 3 in Table 7 shows the effects of the size of the business group on cash holdings of individual group-affiliated firms. The size of the business group has a positive influence on cash holdings and is statistically significant at 1% level. The evidence contradicts the findings of Manos et al. (2007), Verschueren and Deloof (2006), and Locorotondo et al. (2014). It shows that with the increase of diversification level and the size of the business group, complexities of agency conflicts also increase. Thus, the individual firms of business group-affiliated firms increase their cash holdings if the size of the business group increases.

Column 4 of Table 7 shows that effects of the total cash holdings of the business group except for one specific firm in the same business group on cash holdings of that specific firm. Cash holdings of the business group-affiliated firm have a positive coefficient and is statistically significant at 10% level. This result is contradictive to the argument and evidence of deep pocket effects among group-affiliated firm (Boutin, Genestone, Fumagalli, 2013; Maksimovic & Phillips, 2007). It shows business group-affiliated firms need to hold more cash for needs of individual firms in the business group and for facilitating needs of the whole business group.

In column 5 of Table 7, the finding is that the effects of correlation of investment opportunities with other firms in the same business group have a positive effect on the cash holdings of the individual firms and

is statistically significant at 1% level. The evidence is consistent with the idea that if the investment opportunities across business group-affiliated firms are less correlated, specific firm among the same group-affiliated firms that has good investment opportunity can utilize the cash holdings of other firms for its own investments (Rajan et al., 2000).

Column 7 of Table 7 shows the simultaneous effects of the characteristics of business group-affiliated firms on the cash holding of individual firms in the same business group. There are no major changes except for the variable business group diversification and owner's wealth that becomes statistically insignificant.[3] It contrasts with the common perception that public recognition as a wealthy person can increase accessibility to capital as a well-known and prestigious firm (Brisker et al., 2013). The public recognition effect is not strengthened in Asia, where there is an oblique distinction between ownership and control. The business group owners may not be regarded as a "guarantee" or "lender of last resort" of the business group.

Column 8 of Table 7 shows the simultaneous effects of the determinants of cash holdings of the business group. The size of the group, cash holdings of the business group, and the age of the business group have determined the level of cash holdings of each firm from the business group.

Conclusion

Firm-specific characteristics of cash holdings such as the size of investment opportunities, age, capital expenditures, new working capital, cash flow, and volatility of cash flow have impacts on the cash holding level of the firm. Industry characteristics such as industry growth opportunities and industry cash flow have positive effects on the cash holdings of the firm.

Business group-affiliated firms have a higher cash holding level than that of stand-alone firms. The majority of business group related determinants, such as the size of the business group, cash holdings of other firms in the same business group-affiliated firms, the level of diversification, and the age of business group have positive influence on the cash holding level of the firm. Dominant positive effects on cash holding level from the size of the business group, cash holdings of other firms in the same business group-affiliated firms, and the level of diversification are partially related to the increase of family pet projects. Simultaneously, conflicts of interest in allocating cash among the firm in the same business group and acquiring cash among the CEO of the business group and top managers from group-affiliated firms magnify the agency costs as well as the increase of the cash holdings of the firm.

Notes

[1] Each year *Forbes Asia* published an article with the title 'Indonesia's 40 richest' during 2006-2011. On the other hand from 2012-2013 *Forbes Indonesia* published the related article with the same title. Because *Forbes Asia and Forbes Indonesia* reported the richest every year, we collected the wealth of business group's owner from related issues of *Forbes Asia and Forbes Indonesia* each year that contained the wealth of business owner from 2006-2013. The detail information of *Forbes Asia and Forbes Indonesia* can be founded in references.

[2] Based on Hausman test and Breusch and Pagan test result, we choose random effects model. Based on the modified Wald heteroskedastic test and Wooldridge autocorrelation test, we choose generalized least square with correcting autocorrelation and heteroskedastic problem.

[3] When we run generalized least square regression in columns 6 and 7, we correct the heteroskedastic problem, but we cannot correct the autocorrelation because of data irregularity on owner's total wealth.

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