

# 재벌기업의 현금 유동성 결정요인의 변화와 코스피시장과 코스닥시장 간 결정요인의 변화 차이에 대한 분석

## Financial Aspects of Korean Chaebol Firms in terms of Trend of Cash Holdings and Type of a Domestic Bourse

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### 요약

본 연구목적은 현재 국,내외적인 주요 이슈가 되어 있다고 판단되는, 기업들의 과도한 현금유동성 보유 가능성에 대한 실증론적인 검증이며, 동 이슈는 현재 정부와 기업 (특히, 재벌기업들), 그리고 투자자들 사이에서 가장 관심이 있는 재무분야의 이슈라고도 판단된다. 본 연구에서는 2가지의 가설들이 설정되었고, 첫 번째 가설에서는 국제금융위기의 태동 초기와 최근 기간 동안, 현금유동성의 결정요인들에 대한 통계적인 측면에서의 변화 추이에 대한 검증이 실행되었으며, 두 번째 가설은 거래소시장 별로 각자 상장되어 있는 국내 재벌그룹소속 계열사들의 현금유동성 보유수준에 대한 통계적 결정요인들이 상호 비교, 분석이다. 본 연구의 결과를 종합적으로 분석한다면, 자산크기 면에서 상위에 속한 소수 재벌기업들을 제외하고, 금융위기 이후 최근까지 국내 재벌그룹들의 평균적 수익성이 감소하는 추세와 부합하여 현금흐름도 감소하는 추세이며, 국내 경제성장률의 둔화 추세를 고려하여 순투자의 규모도 감소하는 추세라고 해석되었다.

■ 중심어 : | 현금유동성 | 재벌계열사 | 정적인 패널자료분석 | 프로빗 모형 | 재무적 결정요인 |

### Abstract

This study addresses one of the current issues in modern finance, which investigates financial profile on the levels of the chaebol firms' cash hoardings in the domestic capital market. It may be imperative to search for robust and consistent financial determinants of cash holdings as well as identifying any changes or trend of the determinants affecting the corporate cash reserves in the post-era of the global financial turmoil, considering that interest parties at the government and corporate levels, still seem to have a controversy or debate on excess cash savings. Two hypotheses were postulated and empirically tested for the chaebol firms in the study, such as any transitional changes of the relevant factors on cash holdings and unique attributes of financial factors discriminating between the different type of domestic stock markets.

■ keyword : | Cash Holdings | Chaebol | Static Panel Data Model | Probit Model | Financial Determinants |

## I. Introduction

This study looked into one of the on-going contemporary subjects in modern finance in terms of any changes of cash holdings for the firms belonging

to the chaebols, so-called as the 'chaebol firms' in the Korean domestic capital markets and any financial differentiations for the chaebol firms listed on between the domestic bourses such as the KOSPI and KOSDAQ stock markets. To specify, it may be an

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imperative issue to search for an optimal level of cash holdings for the domestic firms including the chaebol firms since interest parties at the government and corporate levels contemporarily seem to have a controversy or debate on the level of excess cash savings which may be determined by the rationale of the 'precautionary' motive and the macroeconomic policy implemented by the government authorities. The former implies that a corporation may hold their cash reserves for safety reason against any unforeseen fluctuations as presented by [1]. That is, unanticipated events such as the Asian financial crisis in 1997 and the global financial crisis in 2008, may lead a firm to reserve its cash level on a conservative basis, considering more severe or harsh financial constraints faced by the corporation during the periods of the events. The latter argued by the domestic policy makers at the government level, may aim to stimulate the *status quo* economic condition to its peaking point by activating corporate spending on capital investment, dividends, and wage, which may, in turn, keep corporate savings to a relatively lower level. It was recently reported that the amount of total cash holdings held by the largest 500 domestic firms inclusive of the chaebol firms as of the 3rd quarter of 2014, unprecedentedly increased to about 158 trillion won in comparison to the level of 94.5 trillion won as the year-end of 2007[2]. Accordingly, one of the motivations to perform the present study is to identify any changes of financial determinants on the cash holdings for the chaebol firms from the time reference of the outset of the global financial crisis (i.e., the year, 2008) and the updated period of the post-turmoil (i.e., the year, 2013). The second motivation of the present research is to further investigate any financial differences in the level of cash holdings for the chaebol firms which may be discriminated between the type of the domestic

bourses. Based on the type of a bourse the chaebol firms were listed on, Kim[3] found that there was a discerned financial factor, (i.e., 'retention ratio'), among the four components comprising the sustainable growth rate which was theorized in modern finance. Therefore, it may be of interest or even concern to further identify any financially pronounced factors on the liquidity level of the firms listed on each distinct stock market, separately, in connection with the previous finding of the 'retention ratio' presumably associated with the corporate cash holdings in finance theory. Any statistically significant results as important factors discriminated by each bourse in the domestic capital markets, may eventually have contributions on estimating or approaching the optimal level of cash holdings for the chaebol firms, which are on active debate among interest parties, as discussed. Third, little attention may be paid to the subjects of the present study, especially with utilizing the sample firms belonging to the chaebols to date. Therefore, the results obtained from the study may be effectively referred by academics and practitioners in the finance to examine any possibility of excessive cash holdings of concerned. Finally, any existence of an optimal cash holdings may also further looked into for the Korean chaebol firms in terms of trade-off and/or pecking order theory as well.

This paper is organized as follows: First, following the introduction section, previous literature on the related subject (i.e., corporate liquidity) were reviewed in the international context. Second, data collection and econometric estimation techniques for each hypothesis postulated were explicated with the analyses derived from the results obtained. Finally, financial implications based on the analyses were discussed and concluding remarks were summarized.

## II. Literature Review

Al-Najjar[4] examined financial factors comprising corporate cash savings for the firms belonging to the emerging capital markets such as Brazil, Russia, India, and China during the period of 2002 to 2008. In his study, theoretical background to hold cash reserves were explicated with the trade-off theory and the pecking-order theory: The former explained that a firm's value may be maximized by considering the trade-off relationship between a firm's marginal costs and marginal benefits by holding cash, while the latter indicated that there may not be an optimal level of cash holdings arising from the issue of asymmetric information in terms of Myers' hierarchical alternatives of financing. With utilizing five explanatory variables such as leverage, dividend payout ratio, profitability, liquidity, and size, with controlling for time effect, this study found that most of the independent variables were statistically significant effects on the level of cash holdings across the sample countries nations during the sample period. Gill and Shah (2012) investigated financial determinants of corporate cash holdings for the Canadian firms listed on the domestic major bourse for the period of 2008 to 2012. They found that positive relationships existed between cash liquidity as a dependent variable and market-to-book ratio, net working capital, and board size for the firms belonging to the domestic manufacturing industries, whereas negative linkages were revealed between the exogenous variable and market-to-book ratio, net working capital, and firm size for the firms classified in the service industries. Horioka and Terada-Hagiwara [5] examined the primary motivations to reserve cash liquidity for the firms headquartered in 11 Asian countries for the period from 2002 to 2011. They theorized that cash flow

sensitivity of financially constrained firms may show its positive relation to the increase of future investments. Tobin's Q also showed its positive linkage to the dependent variable, while firm size effect was more important on the increase of the cash reserves for smaller size firms than that of larger size counterparts. Lian *et al.* [6] tested possible financial characteristics to examine cash savings of Chinese firms during the period of 1999 to 2009 inclusive of the era of the global financial crisis, Tobin's Q, showed its statistically significant influence on the dependent variable, while firm size, leverage, net working capital, and capital expenditures, may negatively affect it. They also argued that the positive relationship between firm size and the change in cash holdings may be attributed to cash scarcity of relatively small firms and that domestic Chinese firms may sustain their levels of cash holdings as precautionary motive.

The study done by Kim[7] researched one of the contemporary issues in finance to identify any significant financial factors on the cash holdings of the chaebol firms in the Korean capital markets. Presuming that the chaebol firms were overall subject to domestic financial constraints, they may increase cash reserves as internal capital preparing for future investment opportunities or retiring of debt, rather than external financing burdened by a high cost of capital. As an extended study of [7], Kim[8] also examined the level of cash holdings for the Korean chaebol firms to identify possible financial components which may significantly influence on the level. Major theoretical financial characteristics such as cash flow, market-to-book-value of total assets, capital expenditure, and agency cost, were revealed to be statistically significant elements affecting the corporate liquidity, along with cash conversion cycle employed in the model.

### III. Data and Econometric Estimations

#### 1. Data Collection

The followings were the major principle to select the relevant variables representing for their theoretical or practical implication in the field of finance, whose criteria were also referred in the studies of [7] and [8].

**Table 1. Principle to classify the Sample Chaebol Firms Listed on the Domestic Bourses**

<ol style="list-style-type: none"> <li>1. All the data for the variables employed in each corresponding model were available for at least five years from 2009 to 2013, which was covering the post-era of the global financial turmoil.</li> <li>2. The sample firms were listed on either the KOSPI or the KOSDAQ bourses during the studied period.</li> <li>3. They were also included in the population of the database of New KisValue sourced by the NICE.</li> <li>4. The criteria to classify a firm into being the chaebol one during the studied period, were set in accordance with the guidelines by the Fair Trade Commission (FTC) in the Republic of Korea, such that it was the one classified into a 'Large Business Group', subject to the ceiling limits on cross-shareholding mechanism.</li> <li>5. Financial and regulated industries were not included in the final sample.</li> </ol>
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Concerning the selection of the dependent variable (DV) in the study, most legitimate and redundant proxy for corporate cash holdings in the international context were employed, which was defined as [(cash + cash equivalents + marketable securities) / total assets] as in [4] and [6]. As an empirical study suffering usually from measurement error proxying for the 'true' nature of financial characteristic, the present study chose each explanatory or independent variable (IDV) employed in each corresponding model by considering the following rationale: First, they were in general supported by theories and/or empirical results as possible financial determinant influencing the level of corporate cash holdings in modern finance. Second, assuming the availability of

relevant data applicable to each model, the selected IDVs were mostly shared their commonalities with those in the previous literature of the same subject of cash savings in the international and domestic spectrum. The following table listed the IDVs adopted in the study as financial attributes on corporate cash holdings.

**Table 2. List of the Independent Variables Employed in the Study**

Definition of IDV	Symbol	Measurement of Proxy
Liquidity	LIQUID	[(cash + cash equivalents + marketable securities) / current liabilities]
Days Sales Outstanding	DSO	(accounts receivable / (Sales / 365))
Profitability	PMARGIN	(net income / sales)
Cash Flow	CASHFLOW	(earnings before interest and taxed + depreciation + amortization) / total assets]
Agency	AGENCY	((research & development expenses + advertizing expenses) / sales)
Leverage	LEVERAGE	[interest expenses / earnings before interest and taxes]
Size	SIZE	natural logarithm transformation of total sales at the iscal year-end
Market- to Book- value of Equities	MVBV	(Market value of equity / book value of equity)
Investments	NETINVEST	((tangible Assets t -tangible Asset t-1) / non current assetst]
Dividend Yield	DYIELD	[dividend per share / common stock price at the fiscal year-end]
Interaction Effect between Foreign Ownership and Dividend Payout	DPAYOUTF	f[foreign ownership x dividend payout]

Besides the total eleven explanatory variables representing each rationale in modern finance, the study also employed another interesting IDV to measure for a firm's financial distress risk (FRISK) as follow, which was also tested in [9]:  $Z\text{-score} = 3.3 \times (EBIT/\text{total assets}) + 1.0 \times (\text{sales}/\text{total assets}) + 1.4 \times (\text{retained earnings}/\text{total assets}) + 0.6 \times (\text{market value of equity}/\text{book value of equity})$  Moreover, presuming that it may be believed that higher dividend payout may be expected to the domestic firms in proportion of their foreign ownership in the contemporary domestic capital markets, it may be worth investigating any influence of the interaction term between foreign ownership and dividend payout on the level of cash holdings for the firms belonging to the chaebols, as also employed in [8]. Therefore, total comprehending twelve exogenous variables were finally selected and then tested as proposed factors affecting the DV in the study.

## 2. Hypothesis Postulated and Estimations

Two primary hypotheses were postulated relating to the financial characteristics of cash holdings for the chaebol firms from the year, 2008 to 2013.

### 2.1 The First Hypothesis

First, it may be of interest to search for any financial discriminating factors on cash liquidity for the chaebol firms, which may have been changed or transformed between the fiscal year, 2008 and 2013. The former year was selected as the time reference in the onset of the global financial crisis and the five year period ending 2013 may also have its own importance due to the tendency of industry mean or median reversion of financial ratio such as capital structure, as presented in [10] and [11]. To test for any determinants differentiated between the time references, two sub-hypotheses were analyzed by

utilizing the following justifications.

#### <The first sub-hypothesis>

*H<sub>0</sub>: All of the financial determinants comprising a revised 'DuPont' system relevant to cash holdings for the chaebol firms may not have any statistical changes in trend between the pre- and post era of global financial turmoil.*

By identifying any changes or disparities on any of the financial factors in the revised 'DuPont' system between the two possible polarized periods, it is expected to implement any financial strategies at the government and corporate levels to improve any significant factors affecting cash holdings. The following explication specified the revised 'DuPont' formula to be applied in the model:

*Level of Cash Holdings = Short-term Liquidity x Long-term Liquidity x Capital Stability x Long-term Investments x Total Assets Turnover*

The above system may be formulated as follows:

$$\text{Cash \& Cash Equivalents} / \text{Total assets} = [\text{Cash \& Cash Equivalents} / \text{Current Assets}] \times [\text{Current Assets} / \text{Current Liabilities}] \times [\text{Current Liabilities} / \text{Non-current Assets}] \times [\text{Non-current Assets} / \text{Total Assets}] \times [\text{Sales} / \text{Total assets}]$$

By utilizing probit regression analysis for the sub-hypothesis test as for the second sub-hypothesis test, the aforementioned five financial components comprising the level of cash holdings in the model, were tested to examine any differences between the two time references,

#### <The second sub-hypothesis>

*H<sub>0</sub>: Financial determinants found to be prominent factors affecting the cash holdings of the chaebol firms in the majority of the previous literature (inclusive of the Kim's studies ([7], [8])) may not have any statistically significant changes during the global financial turmoil.*

Main objective to implement the second

sub-hypothesis were further investigations on any changes of the five statically important elements during the post-era of the global financial crisis, which had been found in the previous studies of [7] and [8]. In other words, it was to look into any statistically significant changes between the two polarized time references, thereby preparing for further improvement necessary to derive the policy on corporate excess cash holdings into the optimal level, from the perspectives of decision makers at the domestic government and/or corporate entities belonging to the chaebols. Six statistically significant IDVs were entered into the model, which had been found in the previously mentioned studies as follows:

**Cash Flow** [as  $\text{Net Income} + \text{Depreciation} + \text{Amortization} / \text{Total Assets}$ ], **MVBV** [as  $\text{Market value of equity} + \text{Book value of Liabilities} / \text{Book value of Total Assets}$ ], **Net Investment** [as  $\text{Tangible Assets}_t - \text{Tangible Assets}_{t-1} / \text{Total Assets}_t$ ], **Agency** [as  $\text{Research \& Development Expenses} + \text{Advertizing Expenses} + \text{Total Assets} / \text{Sales}$ ], **Cash Conversion Cycle** [as  $(\text{Accounts Receivable} + \text{Inventory} - \text{Accounts Payable}) / \text{Sales}$ ]

## 2.2 The Second Hypothesis

The second hypothesis was to examine financial determinants affecting a firm's capital reserves for the firms listed on the separate domestic stock exchanges, or bourses. As a firm belonging to the same chaebol group, the firm listed on the KOSDAQ bourse may possess any unique financial profile which may be discerned from those listed on its counterpart, the KOSPI one in terms of growth rate and profitability, as described in [12]. It may be of interest or intriguing to make comparisons on any financially different characteristics for the chaebol firms listed on each different type of a domestic bourse, which may, to date, draw very little attention

in the previous literature from a theoretical and/ or a practical perspectives. Accordingly, it was expected that any different financial characteristics identified in the hypothesis test, may be effectively utilized to navigate toward the optimal level of cash holdings on the basis of a different type of a stock exchange.

### <The second hypothesis>

*H<sub>0</sub>: Firms belonging to the chaebol firms listed on the KOSDAQ bourse may not overall possess any financially discerned components, in comparison of those of the firms on the KOSPI one, given the different financial listing requirements regulated by each bourse in the domestic capital markets.*

With respect to the explanatory variables in the model, the present study adopted those shown in [Table 2], which may represent the same financial rationale, but different proxies in comparison to those in the previous studies of [7] and [8], toward reinforcing the validity of the results. That is, taking into account presumable misspecification on the proxy variables adopted in the legitimate and redundant empirical study, it may be plausible to utilize another explanatory variables to mitigate or reduce any measurement errors in the context of econometrics. On the estimation methodology to investigate financially pronounced determinants on the corporate cash holdings for the chaebol firms, the study used a 'static' panel data model with firm-year data, accompanied by a 'stepwise' OLS regression. The latter statistical technique may possess its advantages to obtain more efficient estimations, by deriving relatively parsimonious outcome to mitigate the econometric problems on multi-collinearity, heteroscedasticity and time-series autocorrelation, as presented in [13] and [14].

## IV. Analysis and Discussion

### 1. Analysis

On the results of the 1st sub-hypothesis on the proposed determinants of the revised “DuPont” system discriminating themselves affecting corporate cash holdings between the time reference of 2008 and 2013, the table. [Table 3], depicted the outcome obtained.

**Table 3. Results on the Probit Analysis to examine any Discriminating Factors Comprising the 'Extended' DuPont System Between the Time References (2008 vs. 2013)**

IDV	Coefficient	Chi-square
Intercept	0.4243	3.9625 *
quickliq	-0.7560	1.3585
liquid	-0.0959	2.1245
stabfinance	-0.0656	1.1032
ftturnover	-0.0210	0.5725
turnover	-0.0776	0.5141
Goodness of Fit		0.3577

(Note 1) quickliquid = [Cash & Cash Equivalents / Current Assets], liquid = [Current Assets / Current Liabilities], stabfinance = [Current Liabilities / Non-current Assets], ftturnover = [Non-current Assets / Total Assets], turnover = [Sales / Total assets]

(Note 2) \* indicated the statistical significance in the Chi-square test at the 5% level. Each coefficient was estimated by the method of maximum likelihood (ML) and the overall goodness of fit was estimated by the likelihood ratio (LR) test, while the significance of each individual coefficient was tested by the Wald specification test.

By analyzing the above results in [Table 3], it was interesting to find that all of the employed factors such as short-term liquidity, long-term liquidity, capital stability, long-term investments, and total assets turnover, did not show any differences between the two studied years related to the period of the global financial crisis (2008 vs. 2013), in terms of the statistical context. However, only statistical difference was revealed in the intercept term, which may imply that other financial components may statistically explain any possible differences to influence on the level of the chaebol's cash liquidity.

Therefore, it may be more intriguing to further investigate any financial discriminating factors shifted or changed from the onset of the financial turmoil, 2008, to the recent year, 2013, possibly dissipating any spillover effect after the crisis. To implement the further investigation, the study performed the 2nd sub-hypothesis test with employing the five statistically significant IDVs which had been found in the previous studies of [7] and [8] with robustness and consistency, as described. The followings were the results on the sub-hypothesis test, as reported in [Table 4].

**Table 4. Results on the Probit Analysis to examine any Discriminating Factors By employing the Five IDVs Between the Time References (2008 vs. 2013)**

IDV	Coefficient	Chi-square
Intercept	-0.2288	1.2524
cash flow	-2.0938	3.9742**
mrvbv	0.3532	4.2271**
netinvest	-1230.0	14.7741*
agency	-0.0129	0.3648
ccc	0.0410	0.0076
Goodness of Fit		29.6898*

(Note 1) Cash Flow = [Net Income + Depreciation + Amortization) / Total Assets], MVBV = [Market value of equity + Book value of Liabilities) / Book value of Total Assets], Netinvest = [Tangible Assets-Tangible Assetst-1) / Total Assetst], Agency = Research & Development Expenses + Advertising Expenses + Total Assets / Sales], CCC = [(Accounts Receivable + Inventory - Accounts Payable) / Sales]

(Note 2) \* and \*\* indicate the statistical significances in the Chi-square test at the 1% and 5% levels.

Among the five explanatory variables, only three factors showed their statistical significances shifted from the two periods compared. For reference, when utilizing SAS package for running the probit regression model, probability modeled was the year, 2013. To recap, the probability to be classified into the financial characteristics of the year, 2008, may be higher, if cash flow or netinvest increases with their negative signs of estimated coefficients, while the probability to be classified into the financial element

of the year, 2013, may increase, if *mvbv* is higher. The validity of the results was enhanced by applying alternative probit model which included industry dummy variable along with the aforementioned five exogenous variables. (For parsimony, the outcomes from the model were not provided in the study, however, they are available from the author upon request.)

Concerning the second hypothesis which may be interesting to identify any discriminating factors affecting the level of the chaebol firm's cash hoarding, based on the type of the domestic bourse their shares were listed on, The following table utilizing the explanatory variables reported in [Table 2], depict the results from each corresponding estimation technique such as static panel data model and stepwise regression one.

**Table 5. Results of testing for DV with the predetermined variables (IDVs) for the chaebol firms listed on the KOSPI Bourse**

IDV	The Estimated Coefficient from the Static Panel Data Model (Fixed Effects Model)	The Estimated Coefficient from the Stepwise Regression Model
Constant	-0.02	0.06*
LIQUID	0.15*	0.08*
DSO	-0.00004	-0.0002*
PMARGIN	-0.001	
CASHFLOW	-0.03	
AGENCY	0.11	
LEVERAGE	-0.00006	
SIZE	0.003	
MVBV	-0.01*	-0.01*
NETINVEST	0.01*	
DYIELD	0.001*	0.002*
DPAYOUTF	0.00006	0.0003*
FRISK	0.01*	0.02*

(Note 1) \* indicated the statistical significances in t-value at the 5% level.

**Table 6. Results of testing for DV with the predetermined variables (IDVs) for the chaebol firms listed on the KOSDAQ Bourse**

IDV	The Estimated Coefficient from the Static Panel Data Model (Random Effects Model)	The Estimated Coefficient from the Stepwise Regression Model
Constant	0.45*	0.07*
LIQUID	0.12*	0.11*
DSO	-0.0001	
PMARGIN	-0.02	
CASHFLOW	0.11	
AGENCY	-0.01	
LEVERAGE	-0.00008	
SIZE	-0.01*	
MVBV	-0.01	
NETINVEST	-0.01	
DYIELD	-0.001	
DPAYOUTF	-0.002	0.005*
FRISK	0.003	

(Note 1) \* indicated the statistical significances in t-value at the 5% level.

To specify, all of the *a priori* specification tests such as F (Wald) test, Breusch-Pagan test, and Hausman test were not accepted for the former sample data at the 5% significant level, however, only the last test (i.e., Hausman one) was accepted to be determined the random effects model as the most appropriate one for the KOSDAQ listed chaebol.

Therefore, based on the statistical estimations, LIQUID, MVBV, DYIELD, FRISK, were found to be the most pronounced factors affecting the level of corporate cash savings for the KOSPI listed firms, while LIQUID was the only statistically significant element on the DV for the KOSDAQ listed firms, as in [Table 5] and [Table 6].

## 2. Discussion

Concerning the financial implication on the results obtained from the first sub-hypothesis test to detect any prominent factors comprising the revised 'DuPont' system, it was surprising that there were no any changes between the two periods compared as



the year, 2008 and 2013 in the statistical context, as reported in [Table 3]. It was surprising that they may have been represented as major financial determinants to account for financial aspects in the previous finance literature in terms of capital structure and profitability. Therefore, this study performed a test by employing alternative financial proxies to discern any elements which may be discriminated between the two polarized periods in the transition of the global financial crisis. The control variables which had been found to be statistically significant ones affecting the level of corporate cash holdings for the chaebol firms in the study of [7] and [8] were utilized as possible discriminating factors in the probit model as reported in [Table 4]. Out of the five IDVs, three variables such as CASH FLOW, MVBV, and NETINVEST, showed their discriminating impacts between the two periods. Based upon the results, one of the unique financial characteristics featuring the chaebol firms in cash reserves for the year, 2008, may be higher possession of cash flows and net investment than those in the year, 2013. The phenomenon on the higher cash flows defined as  $[(\text{net Income} + \text{depreciation} + \text{amortization}) / \text{total assets}]$  possessed by the chaebol firms in the onset of the global financial crisis in 2008, may implicate that increase of profitability of the chaebol firms after the global financial turmoil, may be polarized or focused on only a few top chaebol groups in size, which may relate to the possibility of the overall decrease of profitability relative to the cash flow. It was reported by utilizing the market data that the levels of profitability of the sixteen chaebols out of top twenty ones in size were reduced below to the previous level in the onset of the global financial turmoil in 2008. [15] For example, only a few business conglomerates (that is, only four groups among the twenty chaebols) has recovered

their profitability levels in 2011, relative to the level of the year, 2008, such that profitability of Samsung Group drastically increased up to 67.7% points and Hyundai Motor Group with 22.2% points, as reported. On the amount of EBIT during the fiscal year of 2013, it was also reported that the former business conglomerate accounted for 47.9% of total amount of the EBIT of the top ten chaebols in size, which was then followed by the amounts of Hyundai Motor one, SK Group, and LG which 21.7%, 14.3%, and 8.5% for the total amount, respectively. As a conclusion, more than 90% of the total EBIT was recorded by only few major business conglomerates during the year, 2013. [16] Second, it was presented in [Table 4] that NETINVEST showed its statistically significant and negative sign in the analysis of Probit model. That is, there seemed to be a higher possibility of the chaebol firms investing in projects with larger amounts in 2008 than those in 2013. This phenomenon may be, to a large extent, attributed to the domestic macroeconomic situation of stagnant or sluggish trend in terms of real GDP growth rate after the global financial crisis. (The rates were 6.3%, 3.7% and 2.3% in the years, 2010, 2011, and 2012, respectively.) Given the uncertainty of global and domestic economy, it may be expected that domestic firms inclusive of the chaebols, seemed to delay or pass up any profitable, but probable investment projects on a conservative basis. Finally, the positive sign of MVBV with its importance derived from the model, may suggest a reverting process of the domestic stock market rebounded from the abrupt shock arising from the global turmoil, as time passed on.

Concerning the results of the 2nd hypothesis test on identifying any unique financial factors discriminating the chaebol firms, based on the type of the domestic bourse where they were listed, a firm's size measured

in sales amount showed its negatively significant effect on the cash holdings only for the chaebol firms listed on the KOSDAQ market, as reported in [Table 6]. One of the primary interpretations implied by the phenomenon was that the KOSDAQ-listed firms may be, on average, maintain a relatively optimal scale in size toward enhancing efficiency, in comparison to their counterparts on the KOSPI markets, as also presented in [17]. It was argued by Kang *et al.* [18] that the KOSPI-listed firms belonging to the chaebols may not be optimally operated in size, due to possible arbitration incurred by other subsidiaries in the same chaebol group, which operated in similar or related businesses. This might have otherwise been achieved the economies of scale for the KOSPI-listed firms in a competitive capital markets. Moreover, given the different listing requirements on the two domestic bourses, it may be plausible that a firm's size (in sales amount) listed on the KOSDAQ market may be less than that of its counterpart in the KOSPI bourse, which may enable them to have more flexibility in controlling size to increase efficiency thus reducing the aforementioned motivations for cash holdings in modern finance. For example, the requirements for minimum sales amount and market capitalization to be listed on KOSDAQ market were KRW 10 billion & KRW 30 billion, respectively, in comparison with those for the KOSPI bourse requiring a minimum of KRW 200 billion & KRW 400 billion, respectively. [19] Second, MVBV defined as [market value of equity / book value of equity] provided evidence that higher value of the proxy variable reduced the necessity of hoarding for cash reserves for the KOSPI-listed chaebol firms, while it was not statistically significant to have an influence on the level of cash savings for their counterparts listed on the KOSPI bourse. A firm with higher MVBV may be necessary to hoard larger cash reserves for the purpose of its relatively

abundant investment opportunities to support growth rate in the context of modern finance. Holioka & Terade-Hagiwara [5] and Lian *et al.* [6] empirically found a positively significant relationship between cash reserves and MVBV. Moreover, higher ratio of book-value of equity over market-value of equity (BVMV) may be inversely associated with a firm's level of higher profitability as presented by Fama & French [20]. However, the negative relationship between the cash savings and MVBV for the KOSPI listed firms in the study, may suggest an interesting implication that they tend to be subject to less financial constraints to raise external capital when needed to support any future investment opportunities (in comparison with their counterparts on the KOSDAQ bourse) as described in [7]. Thus, it may imply that the financial environment of the domestic capital market may, to some extent, be in transition to a perfect capital market condition, at least, for the chaebol firms listed on the former bourse. Third, the control variables representing dividend yield (DYIELD) and financial risk (FRISK), were found to be statistically pronounced (to influence on the cash liquidity,) only for the case of KOSPI-listed firms, as presented in [Table 5], whose results may commensurate with financial rationale in the context of cash holding theory. That is, they may need to maintain or hoard higher level of cash holdings for the precautionary (for FRISK) and/or transactional (for DYIELD) motives. On the contrary, the insignificant relationship of the two IDVs with a firm's liquidity (as reported in [Table 6]), may result from the fact that most firms in the KOSDAQ market, seemed to be engaged in growth or cyclical fields of business. The characteristics of their businesses may be more involved in the stage of 'Star' according to the product portfolio theory in management, which may maintain larger volatility of

cash flows and higher financial risk than their counterparts in the KOSPI one, as presented in [17]. Therefore, relatively low profitability and high business risk, may result in the insignificant effects of DYIELD and FRISK on the level of liquidity for the KOSDAQ-listed chaebol firms engaged primarily in cyclical businesses. Finally, LIQUID defined as  $[(\text{cash} + \text{cash equivalents} + \text{marketable securities}) / \text{current liabilities}]$  provided evidence that it was persistently important factor affecting on the level of cash hoarding for the chaebol firms across two domestic bourses. While Anjun & Malik [21] and Gill & Shah [1] empirically found a positive association between net working capital and a firm's liquidity, Farinha & Prego [22] presented a negative linkage between net working capital and cash savings. Going through the events of financial turmoil in the late 1990s and 2000s, it may be plausible that Korean chaebol firms may maintain high current ratio or net working capital over investing in long-term investment opportunities from the perspective of a precautionary motive, inducing higher level of corporate cash holdings for the firms across the stock markets.

## V. Concluding Remarks

This study examined one of the contemporary subjects with ongoing debate among interest parties inclusive of managers at the government, corporate entity, and academic levels. Topics on the level of corporate cash hoarding, which may be interrelated one another, were investigated with three hypotheses postulated. On the results of identifying any discriminating financial factors between the periods of the onset of the global financial turmoil and thereafter (2008 vs. 2013), the probability to be classified into the unique financial attributes of the year, 2008, may

be higher, if CASH FLOW or NETINVEST increases, while the probability to be classified into the financial profile of the year, 2013, may increase, if MVBV increases. The outcome from the 2nd hypothesis to compare financial characteristics for the chaebol firms listed on the domestic separate bourses, LIQUID, MVBV, DYIELD, FRISK, were statistically pronounced factors to influence on the level of corporate cash holdings for the KOSPI-listed firms, while LIQUID and SIZE were statistically pronounced determinants on the dependent variable for the KOSDAQ-listed firms.

As a classification belonging to a legitimate empirical one suffering from different settings of the data collection and time references, the present study may need to be further analyzed with utilizing a wide spectrum of data in terms of time period and observation to validate robustness and consistency on the results derived from the study. It may also be more applicable if the coverage of the present study with intra-country analysis, may be extended to the inter-country analyses, which may be compared to the results obtained from firms between advanced and emerging capital markets. However, the outcome of the study may be useful such that corporate objective of maximizing shareholders' value may be achieved by approaching or searching for optimal levels of cash holdings, which may also be supported by identifying significant factors, as analyzed in the study.

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