Principal Component Analysis on the Theory of Corporate Cash Holdings for Korean Chaebol Firms

Hanjoon Kim[1*]

[1]**Division of Business Administration, Hoseo University**

주성분분석을 활용한 국내 재벌계열사들의 재무적 현금보유이론에 대한 검정

김한준[1*]

[1]호서대학교 사회과학대학 경영학부

Abstract This study conducted empirical tests on contemporary finance theories for corporate cash holdings, such as trade-off, pecking order, and agency theory. There is ongoing debate on the possibility of excess cash savings by domestic firms, including chaebols in the Korean capital markets. Thus, it may be worthy to identify any financial characteristics based on each aforementioned theory as an extension of previous studies on similar subjects. Two primary hypotheses were postulated and tested, and the following empirical results were obtained. First, principal component analysis (PCA) provides evidence that nine out of the twenty explanatory variables showed a significant influence on the level of corporate cash holdings, such as cash conversion cycle in trade-off theory and leverage in pecking order theory. Second, the chaebol firms that decreased cash holdings after global financial turmoil may be affected by financial factors that include investment opportunities and foreign ownership according to the PCA. The results may reinforce the outcomes derived from previous research on corporate cash holdings. Based on the robust results, large firms in advanced or emerging capital markets could approach the optimal level of the cash reserves.

요 약 본 논문에서는 국내 기업들의 현금보유 동기 관련, 재무적 이론들 (즉, 상충이론, 자본조달순위이론, 그리고자유현금흐름 이론 등)에 대한 실증적 분석이 수행되었다. 국내 자본시장에서 현재까지 진행되고 있는 재벌계열사들을 포함한 국내 기업들의 현금유동성 과다 보유여부 관련, 상기 재무적 이론들과 연관된 해당 재무변수들의 통계적 중요성을 주성분분석 방법론을 활용하여 검정하였으며, 본 연구는 기존의 현금유동성과 관련된 연구들에 대한 확장연구로서의 의미도 갖는다고 판단된다. 본문 중 수립된 2가지 가설과 관련하여, 첫 번째 가설의 검정 결과에서는 연구에 활용된 총 20개의 재무변수들 중, 현금전환주기, 부채비율 등 9개의 재무비율들이 표본기업들의 현금유동성 수준에 영향을 미치는 것으로 판명되었고, 두 번째 검정 결과에서는 국제금융위기 직후와 최근기간을 비교하여, 동 유동성비율이 감소한 동 계열사들의 주된 이유로서는 상충이론의 해당 변수인 미래 투자기회와 연관된 재무적 제약, 그리고 대리인문제 이론의 변수인 동 기업들에 대한 외국인 지분율 등으로 검정되었다. 본 연구결과는 기업의 현금유동성 수준 관련, 기존의 유사주제 연구결과들에 대한 강건성을 보강할 수 있다고도 판단된다. 또한, 동 결과들은 자본선진국 혹은 신흥개발국 기업들의 최적 현금유동성 분석에도 활용되어 기업가치 극대화에 기여할 것으로 기대된다.

1. Introduction

This study addresses on the results of the contemporary theories on corporate cash holdings such as trade-off, pecking order, and agency theory as outlined in the following sections. Moreover, the present study is an extended study of the previous researches in the analogous subject as in [1] and [2]. The sample observations finalized for the study, comprehend subsidiaries belonging to the chaebols, the so-called as the chaebol firms, in the Korean domestic capital markets. It may be noteworthy to further extend the existing researches on this subject in anticipation of deriving any effective solution for the ongoing debates between academics and business practitioners in terms of possible excess cash savings maintained by the chaebol firms. One of the research motivations for the chaebol firms to possess cash reserves may be theorized as a trade-off between any benefits and costs by holding cash liquidity as theorized in the modern finance.

1.1 Research Background

There are three conventional theories on the motivation of corporate cash holdings in finance, which may be the research background of the present empirical study.

First, one of the motivations for the chaebol firms to possess cash reserves may be theorized as a trade-off between any benefits and costs by holding cash liquidity as theorized in the modern finance. It rationalizes that, an optimal level of cash savings which may make a firm attain its maximum market value, is identified on the point equalizing a firm's marginal costs and marginal benefits of cash holdings in terms of the trade-off theory, as described in [3]. A reconciliation to search for the optimal point incorporate a cost of carry, ordering, and running short as in [4]. The first two costs may have a larger proportion than the last one of running short in total cost involved. Moreover, the benefits expected to hold

cash liquidity may, to a large extent, arise from a precautionary or preliminary motive against a shortage of liquidity, especially in the era of financial unstability. A second theory on the motivation of corporate cash holdings is supported by the conventional Myers' pecking order theory in association with a firm's capital structure. Under the condition of financial constraints assuming inefficient capital market, the priority of corporate financing will be given from internal funding to external financing of issuing debt and then equity in sequence. In other words, a firm under informational asymmetry may suffer from more severe financial constraints, which may accordingly prefer internal financing supported by its retained earnings in the type of cash or cash equivalents to external financing, as presented in [1]. Consequently, the motivation to possess a corporate cash reserves seems to increase in proportion to the severity of financial constraints of the domestic capital markets. This phenomenon may be more applicable or appealing to the firms surrounded by the emerging market conditions with a relatively short history and a small size. Finally, in association with a level of cash holdings, free cash flow to the firm (FCFF) modeled by [5] can also be affected by agency costs of equity arising from the possible conflict between a manger and shareholders. If a fim encounters a higher level of the agency cost, it is expected to maintain a lower level of cash savings to minimize the costs as much, as presented in [1]. To exemplify, a manager who may not work for maximizing his or her shareholders' wealth, is deemed to have only limited authority to control for cash liquidity in order to avoid any possible corporate moral hazard.

The primary motivation to implement the study is to investigate any significant or factors associated with the aforementioned theories on corporate cash holdings. To specify, as an extended study of the previous literature such as [1] and [2], the present research aims to identify or discriminate any financial factors among the underlying theories of corporate cash holdings by

employing the explanatory variables which had also beeb tested in the preceding studies. By categorizing these variables as possible determinants of corporate cash holdings under each corresponding theory, most important theoretical variables which may influence on the level of cash holdings, are expected to be identified in the study. Second, by obtaining the results with relevant variables corresponding to each theory, further study will be warranted to test for the level of cash reserves for large firms headquartered in advanced capital markets for a comparison purpose.

2. Data Collection and Estimations

2.1 Date Collection and Explanatory variables

The study as an extended one of the preceding literature as described, the data collection criteria utilized for the previous studies have also been adopted for the present research for setting an empirical framework. The followings were the criteria for the data collection for the chaebol firms over the period of 2009 to 2013 (5 years) comprehending the post-era of the global financial criteria.

Table 1. Criteria to Select the Sample Chaebol Firms Listed on the Domestic Stock Exchanges

1. The data for the variables employed were available for at least five years from 2009 to 2013, which was covering the post-era of the global financial crisis.
2. The sample firms were listed on either the KOSPI or the KOSDAQ stock exchange.
3. They were included in the population of the database of New KisValue provided by the NICE.
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.
5. Financial and regulated industries were excluded in the final screening process for the data collection.

With the aim to identify relevant theories applicable to the major motivations of corporate cash holdings, most of the explanatory variables tested in the previous studies such as [1], [2] and [6] were at first classified

into the three categories. In other words, as for the variables classified into the first category associated with the trade-off theory, total ten exogenous variables, such as CCC, CASHFLOW1, VOLATILITY, BLOAN, NETINVEST1, NWC, DPAYOUT, DSO, DYIELD, FRISK, were included in the corresponding model (PCA) illustrated below. To test for the second motivation of the pecking order theory, five proxy variables such as LIQUID1, BPT, LEVERAGE1, MVBV1, PMARGIN were also employed in the model. Finally, the other variables such as SIZE1, GROWTH, AGENCY1, FOS, and DPAYOUTF, were included in the model to account for the last motivation of agency theory. Therefre, it finally resulted in total twenty control variables entered into the PCA model. Moreover, another PCA model with industry classifications was also applied to test for any changes of significance of the explanatory variables as well as testing for the dummy variables. For a check of robustness, the study was accompanied by another PCA model tested by employing alternative variables such as CASHFLOW2, NETINVEST2, LIQUID2, LEVERAGE2, MVBV2, SIZE2, and AGENCY2, which may substitute for CASHFLOW1, NETINVEST1, LIQUID1, LEVERAGE1, MVBV1, SIZE1, and AGENCY2, respectively.

Table 2. Description of Explanatory Variables

Definition of Explanatory Variables	Symbol	Measurement of Proxy
I. Variables Relevant to the Theory of Trade-off		
Cash Conversion Period	**CCC**	(Accounts Receivable + Inventory – Accounts Payable) / Sales
Cash Flow	**CASHFLOW1**	(Net Income + Depreciation + Amortization) / Total Assets
Cash Flow	**CASHFLOW2**	(Earnings before Interest and Taxed + Depreciation + Amortization) / Total Assets
Volatility of Cash Flow	**VOLATILITY**	(Deviations from the Mean Cash Flow) /

		Mean Cash Flow for a firm at fiscal year-end
Bank Relationship	**BLOAN**	Long term loan / Total Liabilities
Investments	**NETINVEST1**	(Tangible Assetst – Tangible Assetst-1) / Total Assetst
Investments	**NETINVEST2**	(Tangible Assetst – Tangible Assetst-1)/ Non current Assetst
Net Working Capital	**NWC**	(Currnet Assets - (Cash + Cash Equivalents) - Ciurrnet Liabilities) / Total Assets
Dividend Payout	**DPAYOUT**	Dividend per Share / Earnings per Share
Days Sales Outstanding	**DSO**	Accounts Receivable / (Sales / 365)
Dividend Yield	**DYIELD**	Dividend per Share / Common Stock Price a the Fiscal Year-end
Financial Risk	**FRISK**	Z-score = 3.3 x (Earnings before interest & taxes / Total assets) + 1.0 x (Sales / Total assets) + 1.4 x (Retained earnings / Total assets) + 0.6 x (Market value of equity / Book value of equity)
II Variables Relevant to the Theory of Pecking Order		
Liquidity	**LIQUID1**	[Current Assets – (Cash + Cash Equivalents)] / Current Liabilities
Liquidity	**LIQUID2**	[(Cash + Cash Equivalents) + Marketable securities - Inventory] / Current liabilities
Profitability	**BPT**	(Earnings before Interest and Taxed (=EBIT)) / Total Assets
Leverage	**LEVERAGE1**	Book value of liabilities / [book value of liabilities plus book value of preferred equity plus market value of common equity]
Leverage	**LEVERAGE2**	Interest expenses / EBIT
Market- to Book- Value of Assets	**MVBV1**	(Market value of Common Equity + Book Value of Preferred Equity + Book value of Liabilities) / Book value of Total Assets

Market- to Book- Value of Equities	**MVBV2**	(Market Value of Common Equity + Book Value of Preferred Equity) / Book Value of Equity
Profitability	**PMARGIN**	Net Income / Sales
III. Variables Relevant to the Theory of Agency Costs		
Size	**SIZE1**	Logarithm transformation of Total Assets at the Fiscal year-end
Size	**SIZE2**	Logarithm transformation of Sales at the Fiscal year-end
Growth	**GROWTH**	(Sales t – Salest-1) / Salest-1
Agency Costs	**AGENCY1**	(Research & Development Expenses + Advertizing Expenses + Total Assets) / Sales
Agency Costs	**AGENCY2**	[(Research & Development Expenses + Advertizing Expenses] / Sales]
Foreign ownership	**FOS**	Foreign ownership in common stock for each sample firm
Interaction Effect between Foreign Ownership and Dividend Payout	**DPAYOUTF**	FOS x DPAYOUT

2.2 Hypotheses and Estimation Methodology

This study postulated two major hypotheses to be empirically tested on the level of cash holdings for the Korean chaebol firms. First, most prevalent theories applied to determine the levels of the Korean chaebols may be identified by utilizing relevant proxy variables of each category of the theories as classified in [Table 2]. The following is the first hypothesis postulated to be tested:

H_0: There may not be any financial variables which may significantly affect the level of corporate cash savings for the Korean chaebol firms in terms of each relevant theory, by applying the statical methodology of Principal Component Analysis (PCA).

Subsequent to the first hypothesis, it may be also of

interest to further investigate any statistical differences over the sample period, which were supported by the aforementioned liquidity theories. In other words, there may be any different factors affecting the level of corporate cash savings, which were discriminated by the changing pattern of the liquidity during the investigated period (i.e., from 2009 to 2013). For reference. the categorized groups among total sample firms had also been used in the previous literature such as in [6] to apply the conditional quantile regression analysis (CQR).

H_0: Korean chaebol firms belonging to each separate group categorized by the changing pattern of the level of cash savings may not, on average, possess any statistically pronounced financial factors implied by the relevant cash holding theories over the post-era of the global financial crisis.

2.2.1 Statistical Estimation

A general methodology to overview the principal component analysis (PCA) is presented as follows, which was adopted in major previous researches, inclusive of [7]:

The basic rationale of the PCA is to adopt new 'n' variables, C1, C2, ..., Cn-1, Cn. The variables referred to as 'principal components' are the linear functions of explanatory variables (IDVs), as described in [8], which were proposed as major financial factors affecting cash holdings in the study.:

$$C1 = a11X1 + a12X2 + ... + a1nXn$$
$$..$$
$$Cn = an1X1 + an2X2 + ... + annXn$$

3. Analysis and Interpretations

On the analyses and its financial implications on the outcome obtained from the first hypothesis test, [Table 3] showed the PCA results on the cash holdings for the Korean chaebol firms.

Table 3. Results from the principal component analysis (PCA) with employing the explanatory variables (IDVs)

PCA Without Industry Dummy Variables		

1. Eigenvalue of the Correlation Matrix:

Principle Component (PC) No.	Proportion	Cumulative
PC 1	0.1800	0.1800
PC 2	0.1302	0.3101
PC 3	0.1135	0.4236
PC 4	0.0943	0.5179
PC 5	0.0680	0.5859
PC 6	0.0584	0.6443
PC 7 ~ PC 20	0.3557	1.0000

2. Eigenvector:

IDV	PC 1	PC 2	PC3	PC4	PC5
CCC	0.053	- 0.190	0.193	0.314	0.312
CASHFLOW1	0.286	0.282	0.021	0.193	0.142
VOLATILITY	-0.032	-0.058	-0.133	0.024	-0.264
BLOAN	-0.166	0.082	-0.070	0.154	0.220
NETINVEST1	0.236	0.389	-0.034	0.360	0.021
NWC	0.275	-0.333	0.037	0.156	0.254
DPAYOUT	0.027	-0.003	-0.554	0.067	-0.300
DSO	-0.004	-0.184	0.291	0.320	-0.172
DYIELD	0.045	0.014	0.199	0.037	-0.092
FRISK	0.361	0.030	-0.137	-0.234	-0.282
LIQUID1	0.245	0.337	-0.025	-0.180	0.267
BPT	0.346	0.065	0.037	-0.261	0.066
LEVERAGE1	-0.372	0.301	0.042	0.115	-0.085
MVBV1	0.345	-0.177	-0.091	-0.199	-0.161
PMARGIN	0.288	0.396	-0.012	0.327	0.043
SIZE1	-0.097	0.316	0.196	-0.316	0.385
GROWTH	-0.030	0.067	-0.022	-0.005	-0.006
AGENCY1	-0.255	-0.240	0.126	-0.013	0.255
FOS	0.143	0.133	0.307	-0.400	0.353
DPAYOUTF	0.075	0.008	0.571	-0.056	-0.208

As reported in [Table 3], the first PC, PC1 explained 18.0% followed by the other PCs such as PC2 with 13.02% and PC3 with 11.35, respectively, as interpreted by the procedure in [7]. This study selected only the top five PCs (i.e., from PC1 to PC5) in terms of proportion, since they surpassed more than a half of total cumulative eigenvalue with a value of 58.59%. All factors or variables whose coefficient value were greater than 0.30 (in absolute terms) in each corresponding eigenvector in at least two principal component analyses, were finally selected to

significantly affect the level of corporate cash holdings for the chaebol firms. Since the estimation technique of the PCA may be relatively explanatory or subjective as indicated in [8], it may be necessary to examine the results for robustness. Aiming to a robustness check, the study also implemented other separate PCAs by employing industry dummy variables and adopting alternative proxies for aforementioned IDVs, respectively. (The outcomes obtained from the robustness checks are available from the author upon request.) Overall, nine out of the total twenty IDVs were finally found to be the most significant determinants to influence the cash liquidity for the sample firms over the 5 year period.
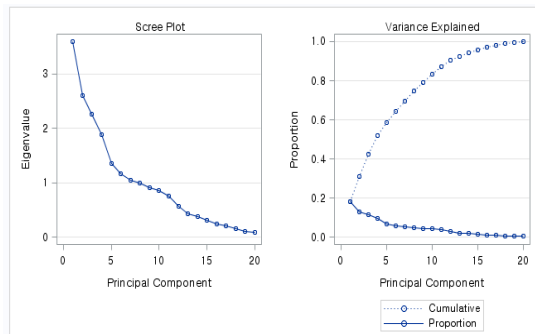

Fig. 1. Results of the PCA in SAS (v. 9.4) Output
(a) Eigenvalue of Each PC (b)(Cumulative) Proportion of Variance Explained by Each PC

On the financial interpretations on the analysis of the first hypothesis test, the most applicable theory on the motives of cash holdings overall seemed to be the trade-off theory associated with the proxy variables of CCC, NETINVEST1, DPAYOUT, and DSO. On the other hand, the theories such as Myers' pecking order and Jensen's free cash flow ones, may be relatively less appleaing to affect the liquidity levels, as fewer financial determinants were statistically siginficant for each corresponding theory. Based the results obtained from the study, CCC as a proxy measuring cash conversion cycle for the chaebol firms, showed its relative significant contribution to account for the level of cash holdings, as the coefficients showed the value of 0.314 and 0.312 in PC4 and PC5, respectively, as

reported in [Table 3]. The finding may be consistent with the those of [2] and [10], both of which reported a significant relationship between CCC and a dependent variable as a level of cash holdings. Accordingly, coupled with the importance of DSO representing (accounts receivable) collection period, the study may suggest to corroborate the significant effect of CCC on the cash level of the Korean chaebol firms. In the one of the previous literature, [10] found that a firm's investment opportunity was a statistically important factor to affect the level of cash savings for the U.S. sample firms. In line with their findings, the chaebol firms in the emerging capital markets seemed to be controlled by the financial factor, NETINVEST1 as presented by PC2 and PC4. Moreover, DPAYOUT as a dividend payout ratio provided an evidence of its significant effect to account for the level of cash reserves with its coefficients such as -0.554 in PC3 and -0.300 in PC5, respectively. Therefore, these two variables such as NETINVEST1 and DPAYOUT being inter-related to the status of a firm's financial constraints in the domestic capital market seemed to be important components when establishing corporate liquidity strategy. For example, [11] presented that a firm's status of financial constraint was found to be a statistically essential factor affecting corporate cash level. One the other hand, significant factors influencing the cash savings were found to be LEVERAGE1, LIQUIDITY2, and PMARGIN, in terms of the pecking order theory. [12] provided an evidence that a firm's leverage and net working capital had statistically significant associations with the level of corporate liquidity, as found in the present study. Based on the results, the Korean chaebol firms were deemed to adjust themselves to approach its optimal level of cash holdings by considering internal financing arising from profitability (PMARGIN) and external financing from financial leverage (LEVERAGE) relevant to the cost of debt in the context of Myers' hierarchy of financing. Finally, SIZE1 representing a firm's size, showed its significant contribution to the

level of cash savings, which may be explicated by the theory of agency costs, as implied in PC2. PC4, and PC5 in [Table 3]. [13] investigated financial determinants of corporate cash holdings for Canadian firms and argued that the sample firms may maintain optimal sizes of board, on the basis of a firm's size, which can be linked to an application of the free cash flow theory. Likewise, the chaebol firms may well consider its size of board in proportion to asset size to reduce possible agency cost of equity. Consequently, it may also be possible that they can facilitate to reduce the costs through corporate restructuring process which may result in higher asset utilization.

Concerning the analysis of the second hypothesis which categorized the whole sample firms into the three groups (i.e., Categ1, Categ2, and Categ3), three separate results obtained from the PCA were provided in [Table 4]. As previously described, the groups were partitioned on the basis of the changing pattern of the level of cash holdings between the two periods (i.e, the year 2009 vs. 2013).

Table 4. Results from the principal component analysis (PCA) for Each Category (Categ1, Categ2, and Categ3)

Result 1: PCA for Categ1

1. Eigenvalue of the Correlation Matrix:

Principle Component (PC) No.	Proportion	Cumulative
PC 1	0.2557	0.2557
PC 2	0.1989	0.4545
PC 3	0.1747	0.6292
PC 4 ~ PC 9	0.3708	1.0000

2. Eigenvector:

IDV	PC 1	PC 2	PC3
CCC	0.206	0.156	0.609
NETINVEST1	0.478	-0.457	-0.076
DPAYOUT	0.215	0.291	0.190
DSO	-0.012	0.087	0.547
LEVERAGE1	0.205	0.311	-0.443
LIQUID2	-0.422	0.027	-0.124
PMARGIN	0.481	-0.454	-0.028
SIZE1	0.353	0.487	-0.266
FOS	0.326	0.366	0.070

Result 2: PCA for Categ2

1. Eigenvalue of the Correlation Matrix:

Principle Component (PC) No.	Proportion	Cumulative
PC 1	0.2529	0.2529
PC 2	0.1800	0.4329
PC 3	0.1567	0.5896
PC 4 ~ PC 9	0.4104	1.0000

2. Eigenvector:

IDV	PC 1	PC 2	PC3
CCC	-0.432	0.277	-0.305
NETINVEST1	-0.212	-0.364	0.187
DPAYOUT	-0.059	0.339	0.589
DSO	-0.352	0.366	0.434
LEVERAGE1	-0.078	-0.434	0.164
LIQUID2	0.261	-0.102	0.505
PMARGIN	0.351	0.494	-0.210
SIZE1	0.475	-0.208	0.009
FOS	0.467	0.234	0.097

Result 3: PCA for Categ3

1. Eigenvalue of the Correlation Matrix:

Principle Component (PC) No.	Proportion	Cumulative
PC 1	0.2401	0.2401
PC 2	0.1944	0.4345
PC 3	0.1374	0.5719
PC 4 ~ PC 9	0.4281	1.0000

2. Eigenvector:

IDV	PC 1	PC 2	PC3
CCC	0.590	0.117	0.111
NETINVEST1	0.009	0.222	-0.001
DPAYOUT	0.253	0.040	0.310
DSO	0.501	-0.124	0.067
LEVERAGE1	-0.229	-0.435	0.559
LIQUID2	-0.373	-0.099	-0.428
PMARGIN	0.118	0.543	-0.131
SIZE1	-0.284	0.328	0.603
FOS	-0.225	0.565	0.101

Overall, the outcome obtained for the Categ3 whose level of corporate cash holdings increased from the level in 2009 to one in 2013, seemed to be congruent with those provided by the analysis of the first hypothesis test in which showed significant effects of LEVERAGE1, LIQUID2, and SIZE1 being estimated by the value of coefficients greater than 0.30 (in

absolute terms). Separately, the firms classified into Categ2 with relatively small changes of the level of cash savings between the two compared periods, also tend to maintain financial elements analogous to the results found in the first hypothesis test, in terms of CCC, DPAYOUT, DSO, and PMARGIN. However, it may be noteworthy to identify that the group belonging to Categ1, whose level of cash holdings decreased from the level in 2009 to 2013, may have been significantly affected by the financial characteristics of NETINVEST1, LEVERAGE1, PMARGIN, SIZE1, and FOS as reported in Result1 of [Table 4]. Among these pronounced factors, financial aspects such as investment opportunities (NETINVEST1) and FOS (Foreign Ownership) seemed to act as driving forces to adjust their levels on cash savings. To specify, the results for the chaebol firms in Categ1, may imply that the changes of the level in cash holdings intervening the two compared periods may be attributable, to the first and third motivations of cash savings as the trade-off and the free cash flow theory, respectively. That is, a firm possessing investment opportunities may be more aware of possible financial constraints on external financing, while a larger proportion of foreign ownership may contribute to decreasing agency costs of equity.

4. Concluding Remarks

This study performed a research in the field of corporte cash holdings for the firms belonging to the chaebol in the Korean capital markets. As an extended study of the previous researches in the analogous subject such as [1] and [2], one of the primary objectives to conduct the study was to identify or detect most relevant financial attributes in the context of the modern finance theories on the motivations of cash holding. On the first hypothesis testing for proposed financial factors affecting the level of cash holdings, the results provided evidences that, under the trade-off theory, CCC, NETINVEST1, DPAYOUT, and DSO were the most pronounced factors to affect the liquidity levels of the firms, while LEVERAGE1, LIQUIDITY2, and PMARGIN, were also related to the pecking order theory, coupled with SIZE1 and FOS for the free cash flow theory, respectively. Subsequent hypothesis tests were also conducted to examine an existence of financially discernable factors among the groups categorized by the changing patterns of the coporate cash level over the two compared preiod after the global financial turmoil. Concerning the empirical findings from the tests, it may be worth noting that a firm in Categ1, may resulted from the financial factors inclusive of NETINVEST1 and FOS. The study may suggest following implications to the academics and practitioners in the field of corporate finance: Despite the legitimate weaknesses of an empirical study which may mainly result from the differences in time and estimation methodologies, each relevant explanatory variable in the study was adopted as a proposed financial factor according to each corresponding theory on corporate cash holdings. By separating financial factors under each theoretical category, the most significant variables in each theory could be identified for the purpose of academics. Moreover, the results may gain weight on robustness, since most variables employed may have commonalities with those in previous researches. Therefore, based on the practical conservatism, the outcome from the study may accommodate to be applied by practitioners in the real world of finance.

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Hanjoon Kim [regular member]
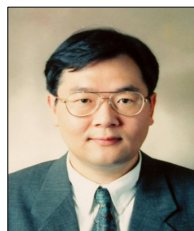
- Sept., 1987 : The George Washington Univ., MBA
- Jan., 1999 : Boston University DBA (Major: Finance)
- Mar. 2010 ~ Present: Hoseo Univ. Dept. of Business Administration, Associate Professor

<Research Interests>
Corporate Finance, M & A, Equity Valuation