

한국과 미국 대기업들의 현금유동성 보유수준에 대한 재무적 결정요인 분석

Inter-country Analysis on the Financial Determinants of Corporate Cash Holdings for the Large Firms With Headquarters in the U.S. and Korea

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요약

본 논문은 기존의 국내자본시장 기업들 대상 현금보유수준에 대한 재무적 결정요인 분석에 대한 확장적 연구이다. 국내 KOSPI 상장기업들과 이에 상응하는 미국의 대기업들에 대한 상호 비교가 실증적으로 검증되었다. 구체적으로는, 동 기업별 현금 보유수준의 적정성을 탐구하기 위하여, 다수의 계량경제적인 모델들을 활용하여 국제금융위기 이후부터 최근까지의 분석기간 (2010년-2015년)동안, 동 현금유동성 수준에 영향을 줄 수 있는 재무적 대응변수들을 활용되었다. 재무적 설명변수들의 선정과 관련하여, 현금유동성 수준의 국제적 기업재무 이론의 근간이 되는 상충관계이론, 자금조달순서이론, 그리고 대리인비용이론을 기준으로 동 변수들이 선별되었다. 각 자본시장별, 현금유동성을 측정하는 종속변수와 동 설명변수들의 계량경제적 관계 분석과 이에 대한 재무이론적 해석 등이 본문 내용 중에 서술되었다. 결론적으로, 동 실증적 결과들은 향후에도 활발히 진행될 것으로 예상되는 국가 간 투자협정들, 특히, 금융서비스 분야에서 자금의 유출입에도 선순환적인 영향을 줄 수 있을 것으로 판단되며, 미시적으로는 동 결과를 응용한 최적 현금 보유수준의 접근을 통하여 기업의 최종 목표인 주주 부의 극대화에 기여할 수 있을 것으로 기대된다.

■ 중심어 : | 현금유동성 수준 | 재무적 결정요인 | 미국자본시장 | 국내자본시장 | 패널자료모형 | 토빗회기모형 |

Abstract

This study investigated one of the controversial issues on debate or even controversial between policy makers at the government and corporate levels: To examine any financial determinants on the cash holdings of the firms in the advanced and emerging capital markets. Futhermore, it focused on the large representative firms headquartered in the U.S. and the Republic of Korea, taking into account scarcity of the previous literature concentrated on the comparative studies on this particular subject. Several legitimate, but robust econometric estimations such as static and dynamic panel data models and Tobit regression, were applied to investigate possible financial factors on the cash liquidity. Given the continued debates or arguments on the excess cash reserves between interest parties at the government and corporate levels in the advanced and/or emerging capital markets, and more accelerated capital transfers among associated nations by engaging in the arrangements of the FTAs, the results of the study may provide a vision to search for the optimal level of corporate cash holdings for firms in the two nations.

■ keyword : | Cash Holdings | Financial Determinants | U.S. Capital Markets | Korean Capital Markets | Panel Data Models | Tobit Regression Model |

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I. Introduction

This study investigates one of the contemporary, but still ongoing subjects in corporate finance for academics and/or practitioners' perspectives, indicating that inter-country financial differences may exist between the advanced capital market and its counterpart, the emerging markets in terms of corporate cash holdings. To specify, two of the major capital markets representing each category in market classification were selected the study such as the U.S. for the former one and South Korea for the latter one to be empirically examined. Methodologically, proposed financial determinants which may affect on corporate cash holdings for firms in the two capital markets, are employed in each corresponding model which will be described later and investigations are then conducted to identify any commonalities or disparities in the financial aspects on the subject of the study for the two capital markets. Moreover, it focuses on relatively large size corporations listed in New York Stock Exchange (NYSE) which are headquartered in the U.S. and those of Korea Composite Stock Price Index (KOSPI) listed in Korea Exchange (KRX), which are headquartered in Korea. By implementing the aforementioned procedures, it is a primary objective of the present study that firms in the two markets or even those in advanced and emerging ones, may financially better understand their counterpart's need or motives on maintaining corporate cash holdings. The followings are the primary motivations to conduct the present empirical study: First, by taking into account a scarcity of the previous literature concentrated on the comparative study of the subject, results in the study as an extended study of the previous literature such as [1] and [2] for Korean chaebols, may contribute to reducing or mitigating any possible adverse effects

towards the further development of each corresponding capital market in association with the objective of the study. Moreover, the present study adopted several proxy variables as proposed financial determinants of the dependent variable, which were differently defined in comparison with those in the preceding studies of [1] and [2] to robustness check. Second, results identifying significant financial attributes on the level of cash holdings may also provide empirical evidence applied to search for an 'optimal' level of cash reserves toward maximizing a firm's value for the best interests of its shareholders. Finally, there are modern finance theories underlying the motivations of cash holdings from a firm's perspective such as trade-off, pecking order, and agency theories, as recapped in [3]. Among these conventional motives, trade-off theory suggests that a level of cash reserves is determined the net benefit (or loss) derived from a trade-off relationship between marginal costs and marginal benefits of cash holdings from a corporate perspective. Marginal cost may, in larger extent, arise from the net difference between earnings and expenses from possessing an extra unit of cash, which are likely to be associated with corporate lending and borrowing interest rate, whereas marginal benefits may be related with minimizing a transaction cost including a cost of liquidating assets considering a precautionary motivation. In the study the explanatory variable representing the theory was proxied by [total liabilities/total assets] in the study, as described later. Second, Myers' pecking order theory suggested that firm's internal financing provided by the type of cash and cash equivalents may have a priority over external financing such as senior debt, debentures and then equity in sequence, to decrease or mitigate a possible information asymmetry in the capital markets. This motive was tested by utilizing a proxy

variable defined as [(earnings before interest and taxes + depreciation & amortization expenses)/total assets]. [4] articulated his theory of the agency costs of free cash flow, in which the costs possessing affluent cash reserves may increase, in the case that corporate manager may not act for his or her shareholders' best interests. To specify, less cash liquidity may have a positive linkage to decreasing possible moral hazard incurred possibly by incumbent management. A proxy variable to account for this phenomenon was utilized as [research & development expenses/sales] in the study. Accordingly, financial implications of the study performed in terms of inter-country differences between the U.S. and Korea, are also analyzed on the basis of these theories. Major differences of the present study in comparison with the majority of the preceding researches of the analogous subject, may be recapped as follows: First, relatively little attention has been drawn on the subject of the study in the context of inter-country analysis (i.e., U.S. vs. Korea or advanced vs. emerging capital markets). Second, most updated data (from the year 2010 to 2015) were employed for representative firms with headquarters in the U.S. and Korea, which may reduce or mitigate any spill-over effects arisen from the global financial turmoil. Finally, by applying contemporarily various econometric methodologies, results from the study are expected to be interpreted in a consistent and robust manner.

II. Literature Review

In the section, several of the primary researches are recapped on the topic of financial determinants of corporate cash holdings. [3] tested financial determinants of corporate cash savings in emerging

capital markets inclusive of the 'BRICs' markets during the period from 2002 to 2008, along with the U.S. and U.K. financial markets. Consequently, the outcome obtained from those emerging nations were compared with the profile of the cash savings derived from the US and the UK markets. By adopting five primary explanatory variables such as leverage, dividend payout ratio, profitability, liquidity, and size along with a control variable of time dummy, the study found that most of the variables tested showed their statistically significant impact on the level of cash holdings across the aforementioned sample capital markets. Some different results among the sample countries were, to some extent, deemed to arise from their various institutional settings. Moreover, he utilized the IV (instrumental variable) analysis depending on the two stage least squares procedure and argued that firm specific financial characteristics such as leverage, dividend payout ratio, and firm size, may be more important factors to determine cash holding decision. [5] examined primary motivations to save in the form of liquid assets instead of capital formation or dividends for firms headquartered in eleven Asian nations during the period from 2002 to 2011. They presented that cash flow sensitivity of cash of financially constrained firms may possess a positive relation with corporate cash holdings to prepare for increased opportunities of future investments. Market price-to-book-value ratio proxied for Tobin's Q showed its positive association with the dependent variable, while firm size effect was stronger on the increase of the cash reserves for smaller size firms than that of larger size counterparts. Overall, it was found that positive cash-flow sensitivity of cash was more pronounced in the case of smaller and presumably more constrained firms in both developed and emerging markets. [6] tested proposed financial factors to examine cash

holdings of Chinese firms during the period, 1999 – 2009, that included the global financial crisis event, that was likely to have a firm exercise its liquidity management on a more conservative basis, in association with severe financial constraints. The regressors such as Tobin’s Q, the existence of a firm’s financial unconstraint not by paying dividend and the event of financial crisis, showed their statistically significant effects on the dependent variable, while the other variables such as firm size, leverage, net working capital, and capital expenditure, were found to inversely affect the level of cash holdings. Moreover, they described that the positive relationship between size and the changes in cash reserves, which is generally consistent with a theoretical expectation in finance, may attributed to relative cash scarcity of small size firms, esp., in their start-up or early stages of business cycle. They concluded that domestic firms headquartered in China may primarily maintain cash holdings as a precautionary motive as in the U.S. A research study performed by [1] conducted empirical procedures to identify any contributable financial determinants on the level of cash holdings of the chaebol firms in Korean capital markets. That is, financial factors such as CASHFLOW, MVBV, REINVEST, and AGENCY were overall found to be significant in a statistical perspective. Assuming that the firms seemed to be subject to domestic financial constrains, it was presented that they may adjust cash reserves for the purpose of internal financing for future investment and repayment of existing debt, rather than external financing loaded by a high cost of capital. Another tests were conducted by [2] towards further investigating any important financial factors to influence on the level of cash holdings for Korean chaebol firms. Being accompanied by various alternative econometric methodologies, Financial

characteristics such as CASHFLOW, MVBV, REINVEST, and AGENCY, statistically showed their significant impact on the level of corporate liquidity, along with cash conversion cycle in the models applied.

III. Data Collection and Estimations

1. Sampling Criteria and Hypothesis Postulations

The following table depicts each corresponding criteria sampling the data for both capital markets examined in the study.

Table 1. Data Selection Criteria for the U.S. and Korea Corporations

<U.S. Corporations>
<ol style="list-style-type: none"> 1. The firms were included in the Annual Industrial Compustat data file in Wharton Research Database Service (WRDS). 2. The corporations were listed on New York Stock Exchange (NYSE) at the fiscal year end of 2015. 3. All the data for each corporation were available for the 6-year period (2010 –2015). 4. Financial and regulated industries were not included in the final sample.
<Korean Corporations>
<ol style="list-style-type: none"> 1. The corporations were included in the KISVALUE database sourced by NICE in Korea. 2. The corporations were a portfolio of Korea Composite Stock Price Index (KOSPI) which were listed in Korea Exchange which at the fiscal year end of 2015. 3. All the data for each corporation were available for at least 6 years (2010–2015). 4. Financial and regulated industries were not included in the final sample.

To represent firms listed in the bourses of the two capital markets, the number of firms finalized for the U.S. sample of the study were 1,204 which are among the 57 industries, while total 613 firms with 25 domestic industries were selected for the Korean sample observations, according to the criteria screened by [Table 1]. For reference, industrial matching for firms with headquarters between the

U.S, and Korea for each corresponding industry, were not performed in finalizing the sample observations, considering a relatively unique and different criteria set for the standard industrial classification (SIC) codes of the two capital markets.

Two hypotheses were postulated to identify significant differences in financial determinants between firms with headquarters in the U.S. and Korea. The following is the first hypothesis on the level of corporate cash holdings to be tested for both capital markets, as described earlier.

H₀: Firms headquartered in the U.S. capital markets may not possess any statistically significant financial determinants which may be discriminated from those of firms with headquarters in Korean capital markets during the investigated period, 2010 - 2015.

Subsequent to the first hypothesis, the second hypothesis was formulated as follows in order to further examine relative importance of proposed independent variables in both capital markets with utilizing econometric methodologies such as logit and complementary log-log regressions.

H₀: U.S. firms listed in NYSE may not, on a relative basis, maintain any statistically discriminating financial factors in comparison to their counterparts listed in the KOSPI stock market of Korea Exchange during the tested period from 2010 to 2015.

2. Econometric Methodologies to Test for Each Hypothesis Postulated

To enhance robustness and validity of the empirical results of the study, several legitimate econometric estimations such as static, dynamic panel data model and Tobit regression as in [1] and [2], were separately applied to examine financial factors for the U.S. and Korean firms. To exemplify, in order to

implement the first hypothesis test with a longitudinal data utilized, dynamic panel data model was employed to estimate each underlying coefficient in the model of the study as also presented in [7]. Dynamic feature of the model may allow any persistent effect to be accounted for in the equation, being involved in the possibility of autocorrelation of the endogenous variable adopted in the model. Major advantages associated with dynamic model were summarized in [8] as follows: First, effective control of endogeneity and higher possibility to mitigate any possible collinearity among the exogenous variables. Second, possibility to reduce the problem of omitted variable and to eliminate unobservable individual effects. Underlying specification of the model is explicated as follows:

$$Y_{it} = a + bY_{i,t-1} + dX_{it} + E_{it},$$

$$E_{it} = V_i + U_{it}$$

, where Y_{it} denotes the profitability index for firm i at time t . a is a constant and b is the coefficient of the one-period lagged dependent variable ($Y_{i,t-1}$) functioned as an instrumental variable (IV). d is the vector of coefficients of a set of the exogenous variables (X_{it}). E_{it} is a disturbance term separated by V_i as an unobserved firm specific effect and U_{it} as an idiosyncratic error. As [2], dynamic panel data analysis in the study was utilized to estimate for each underlying coefficient in the model by using the two-step GMM (Generalized Method of Moments) after transformed into a first differenced equation, as presented in [9].

IV. Analysis and Discussion

1. Analysis on the Empirical Results

Concerning the results obtained from the various econometric estimations such as static, dynamic and

Tobit regression, each consequence is presented in the following table, [Table 2]. Regarding the definition of the variables adopted in the study, **the dependent variable (DV) of the level of corporate cash holdings was measured by [cash + marketable securities / total assets]**, that had also been employed in the preceding studies of [1] and [2], by which robustness check may be consistently performed, as described earlier. The followings are the definitions for each IDV:

CASHFL = [earnings before interest and taxes (i.e., EBIT) + depreciation & amortization expenses] / total assets

MVBV = market value of common equity / book value of equity

NETINV = tangible assets / total assets

AGENCY = research & development expenses / sales

SIZE = natural logarithm of sales amount

LEVER = total liabilities / total assets

PFOF = EBIT / total assets

TOBINQ = [market value of common equity + book value of preferred stock + total liabilities / total assets]

Regarding descriptive statistics, firms with headquarters in the U.S. had an overall mean, median, and standard deviation as 0.118, 0.078, and 0.130, respectively, during the examined period, in terms of the dependent variable of DV, while their counterparts, firms in Korea were estimated as 0.078, 0.057, 0.076 in a corresponding sequence. Moreover, one of the interesting variable, CASHFL, showed its values of 0.129, 0.122, and 0.107, for the U.S. firms in the same sequence, whereas Korean counterparts were calculated as 0.042, 0.041, and 0.072, respectively.

Table 2. Results of Estimation for Each IDV for the U.S. Sample Firms During the Period, 2010–2015

IDV	Static Panel	Dynamic Panel	Tobit Regression
constant	-0.03	-0.37* #	0.09*
CASHFL	-0.54*	-1.53*	-0.51*
MVBV	-0.00001	0.003*	0.00003
NETINV	0.38*	0.39*	0.15*
AGENCY	-0.38*	-8.43*	0.99*
SIZE	-0.01*	-0.23*	-0.01*
LEVER	-0.08*	0.42*	-0.07*
PROF	0.48*	0.97*	0.52*
TOBINQ	0.01*	0.07*	0.03*

(Note) * denotes that the estimated coefficient is statistically significant at the 5% level.
indicate the estimated coefficient of the one period lagged dependent variable of the DV.

Table 3. Results of Estimation for Each IDV for the Korean Sample Firms During the Period, 2010–2015

IDV	Static Panel	Dynamic Panel	Tobit Regression
constant	0.09	0.23* #	0.05*
CASHFL	0.49	7.24*	0.14
MVBV	0.00006	-0.02	-0.0004
NETINV	-0.02*	-0.25*	-0.007*
AGENCY	-0.03	1.38*	0.04
SIZE	0.004	0.04*	0.002*
LEVER	-0.09*	0.06*	-0.10*
PROF	-0.49	-6.36*	-0.10
TOBINQ	0.01*	0.17*	0.02*

(Note) * denotes that the estimated coefficient is statistically significant at the 5% level.
indicate the estimated coefficient of the one period lagged dependent variable of the DV.

Subsequent to the first hypothesis test, the second hypothesis to test for inter-country financial differences between firms with headquarters in the U.S. and Korea, were conducted by utilizing logit, probit, and complementary log-log (CLOG) regressions, as reported in [Table 4].

Table 4. Results to Identify Discriminating Factors of Corporate Cash Holdings Between Firms with headquarters in the U.S. and Korea

IDV	Logit	Probit	CLOG
constant	-8.44*	-3.78*	-3.59*
CASHFL	149.30*	67.84*	34.56*
MVBV	0.004	0.002	0.002
NETINV	3.19*	0.13	0.05
AGENCY	23.33*	13.34*	13.32*

SIZE	0,33*	0,21*	0,19*
LEVER	2,29*	1,20*	1,35*
PROF	-143,00*	-64,57*	-30,36*
TOBINQ	0,40*	0,24*	0,20*
Goodness of Fit	10,375,8*	9,231,46*	7,522,99*

(Note 1) Each coefficient was estimated by the method of maximum likelihood (ML). Test for overall goodness of fit was performed by the likelihood ratio (LR) test, while the Wald test was used to test for the significance of each individual coefficient.

(Note 2) Probability modeled is that firms in the U.S. are set to '1', otherwise '0' for Korean firms.

2. Discussion

With respect to the results on the first hypothesis, several interesting findings were provided in [Table 2] and [Table 3] as empirical evidence: First, similar or unique financial phenomena seemed to exist on the estimated coefficients for each IDV for firms with headquartered in the two capital markets. The coefficients for LEVER and TOBINQ to determine the level of corporate cash liquidity showed their similarities in term of the (5%) level of statistical significance and signs for both capital markets. The outcome may imply that the sample firms in both bourses may, to some extent, suffer from financial constraints for external financing in terms of the negative relationship between the DV and LEVEV measured by the book-value base. The results were not consistent with the findings in [1] and [2] which showed an insignificant relationship between corporate cash holdings and leverage measured by the market-value one. Moreover, Myers' pecking order theory tends to be applied to the sample firms in either advanced or emerging capital market when raising capital associated with information asymmetry. Consequences obtained for Tobin Q with a positively and significantly estimated coefficient may also corroborate the existence of financial constraints and the pecking order theory which is related to underpricing a firm's stock price across the two markets. The results were also consistent with the findings of the study by [5] testing for firms

located in 11 Asian countries. Moreover, MVBV representing a firm's growth opportunities did not demonstrate its statistically pronounced impact on the DV, implying that future profitable investment opportunities were not a primary factor in terms of a firm's strategy to manage its cash holdings. Since the global financial turmoil occurred in 2008, corporations listed in the stock exchange of both capital markets may face few opportunities to look for higher profit in comparison with those before the turmoil, taking into account continued sluggish conditions of the global economy. Moreover, Korean capital market may be in transition to advanced one in the global market classifications, which may indicate that a majority of the sample firms in the markets are in mature stage with less investment opportunities. On the other hand, the proposed variable for size revealed its significant effect on the DV for both sample firms, but showed a opposite direction such as negative one for the U.S. firms and positive one for Korean firms. It was empirically demonstrated that financial constraints possibly faced by the U.S. may dissipate or lessen, as their size increase, whereas the opposite rationale was applied to the latter case for Korea. The outcome was inconsistent with the findings in [1] and [2], which showed an insignificant relationship between the variables. One of the primary reason to have the different result deems to arise from the disparity of the sampling criteria, in which all of the sample firms in the preceding researches, belonged to Korean business conglomerates, 'chaebols, which may have traditionally less financial constraints in external financing. Even if the directions of the estimated coefficient, AGENCY, were mixed for each corresponding model with a positive or negative sign, the costs showed consistently significant effect to determine the DV for the U.S. case as reported in [Table 2], while two out of the three models did not

show its significance relative to the DV for the Korean case. As described in [4], a firm may be theoretically inclined to possess less cash reserves associated with free cash flow, in order to avoid or reduce agency costs relate to moral hazard incurred by incumbent management. The outcome may suggest that firms that belong to emerging markets, may prepare for or be more cautious on the occurrence of agency costs, to a higher degree, as their markets advance to a developed one.

With respect to the consequences of the second hypothesis test, there seems to be interesting financial implications derived from the binary models. As reported in [Table 4], the majority of the estimated coefficients for the financial variables such as CASHFL, AGENCY, SIZE, LEVER and TOBINQ showed their discriminating power between firms in the U.S. and Korea with their positive signs (+). Since the probability modelled was set to '1' for the U.S. firms in the models, it was statistically concluded that the probability to be classified in firms with headquarters in the U.S. is larger, as each of the aforementioned variables increase. It was interesting to empirically detect that a firm's cash liquidity represented by CASHFL and leverage ratio as LEVER showed their higher level in terms of proportions for the U.S. firms than those of their counterparts, Korean firms, during the investigated period. Therefore, from a perspective of corporate manager in Korean capital market, it may not be an effective policy to take a relative conservative position in setting up corporate capital structure, whereas it may be suggested that the level of cash holdings can be extended from the current one, as its market classification continues to move to an advanced level. As reported in [Table 4] the U.S. firms with larger in size were likely to attain higher levels of CASHFL, as the study done by [6] presented

that a firm with small size may have difficulty to access to the credit market due to its stage in a business cycle as a less mature one. The findings on TOBINQ indicated that the U.S. firms have, on average, a higher market value in total assets than their counterparts in Korea. This seems to be consistent with the aforementioned outcome of the study to find smaller sizes of Korean sample firms, considering that the estimated coefficient of MVBV was insignificant. Another interesting evidence provided by the hypothesis test was that the probability to be classified in Korean firms increases, as PROF can be ameliorated, The phenomenon may suggest a financial implication that the amounts of amortization expenses on intangible assets are larger for the U.S. firms than their counterparts in Korea, by taking into account the statistically significant difference in CASHFL, but, insignificant in NETINVEST which is associated with depreciation of tangible assets.

V. Concluding Remarks

The research study addresses one of the ongoing financial phenomena, whose subject is to identify any financial components of corporate cash holdings between firms with headquarters in the U.S. and Korea during the recent period, 2010 - 2015. It is an extended study of the previous literature such as [1] and [2], but has empirically focused on the financial subject for large firms listed in each bourse such as the KOSPI of KRX in Korea and NYSE in the U.S. As previously described, the study are generally distinguished from the previous researches of the analogous subject, in terms of the scope of data collection such as observations (or firms) and sample period, and applications of various econometric

estimations to enhance robustness of the results. Even if the study may suffer from any weaknesses which may result from different research settings of the previous literature as also described in [10], it is expected to contribute to academic and/or practical aspects on the level of corporate cash holdings. Findings evidenced by the study, are anticipated to provide a new benchmark to be compared to or followed by firms belonging to each capital market to approach their optimal levels of cash holdings. For example, the explanatory variables which were found to be statistically significant in the study, may contribute to enhancing corporate value at macro- and micro-level for firms headquarters in the U.S. and Korea, or those located in advanced and emerging capital markets. In other words, by understanding unique financial determinants of cash holdings for firms headquartered in each counterpart's market, domestic firm whose goal is to maximize its shareholders' wealth, may expedite to transfer capital or funds to establish its foreign subsidiaries through the type of FDI (Foreign Direct Investments), given the ongoing global phenomena for pursuing international arrangements such as a bilateral or a trilateral FTAs (Free Trade Agreements). From a practitioner's perspective, it is expected to necessarily control or adjust the level of each pronounced financial factor of corporate cash holdings to aim for approaching its optimal level.

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