Existence of an Industrial Optimal Level of Cash Holdings for KOSPI-Listed Firms in the Korean Capital Market

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국내 유가증권 시장 상장기업들의 산업별 최적 현금유동성 수준 존재에 대한 실증분석

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Abstract   This study investigated one of the contemporary financial issues that is still being debated among governmental policy makers, corporate managers, and investors in the domestic capital market. We attempted to identify the most optimal level of cash holdings for firms during the most updated fiscal years (from 2011 to 2015). The study utilized empirical methodologies, such as ANCOVA and RANCOVA, with respect to the 'inter-' and 'intra-industry' analyses for KOSPI-listed firms. Regarding the first hypothesis testing for inter-industry influence, we revealed with statistical significance that there were differences; however, there were only 3 pronounced industries among the 25 industries sampled in this study. Regarding the second hypothesis, only a few (i.e. two) industries showed no statistically significant intra-industry influence. Based on our results, most KOSPI-listed firms still seem to be searching for their optimal levels of cash reserves. Hence, we can anticipate that the value maximization as a corporate goal can be achieved after adjusting the current levels of their cash holdings according to the optimal points.

요 약   본 연구는 국내 자본시장의 이해관계자들 (정책당국자, 기업담당자, 그리고 투자자들) 사이에서 현재까지 적극적 논의가 되고 있는 재무적 관점에서의 최적 현금유동성 수준의 존재 여부에 대한 분석이며, 실증적 연구대상 기간은 최근까지 의 회계연도 자료를 포함한 2011년부터 2015년까지이다. 동 연구의 수행방법으로서 '산업별' 그리고 '산업내' 분석을 기준으 로 한, 모수적 그리고 비모수적 공분산분석 방법론을 활용하였으며, 표본대상은 유가증권시장에 상장된 국내 기업들이다. 산업별 최적 유동성 수준 존재 여부에 대한 첫 번째 가설 검정에서는 총 25개의 표본산업들 간에, 동 유동성 수준의 차별성이 존재하고 있는 것으로 통계적으로 판명되었으며, 동 결과는 일부 산업들 (3개) 에서의 차이에서만 도출된 결과라고 추정되었 다. 두 번째 가설인 산업내의 최적 유동성 존재에 대한 결과 관련, 2개의 산업에 속한 기업들만이 동 차별성에 대한 유의성이 나타나지 않았다. 종합적으로, 현재 국내 상장기업들은 평균적으로 각자의 산업별 그리고 산업내 최적 현금유동성 수준에 접근하기 위한 재무적 과정 중이라고 추정되며, 향후 동 최적 유동성 수준에 도달할 경우 경영의 목표인 기업가치의 극대화 도 성취될 것으로 기대된다.

Keywords : ANCOVA, Inter-industry Effect, Intra-industry Effect, KOSPI-listed Firm, Optimal Level of Cash Holdings, RANCOVA

1. Introduction

This study empirically investigates one of ongoing, but unresolved issues in modern finance, that is, to search for an optimal level of corporate cash holdings for firms in the domestic capital markets. Kim [1] recently provided an evidence that there seems to be an optimal level of corporate cash savings for firms belonging to the chaebols in terms of the trade-off theory. However, little attention may yet be paid to confirming the existence of an optimal level of the subject across the financial borders in an international and domestic context. Therefore, this study attempts to identify any further empirical evidence on the existence of the optimal cash holdings for the firms listed in the KOSPI stock markets. By examining a present financial phenomenon, it is expected that each firm may gradually gain access to searching for the optimal point, which also eventually contributes to its shareholders' wealth maximization as a corporate objective. As for major motivations to conduct the study, the following aspects have been considered to extend the previous study of [2]. First, to date, there are few studies to examine existence of an optimal cash holdings by applying inter- and intra-industry analyses for firms listed in the KOSPI stock market. Even if the preceding research done by [2] had performed similar procedures for intra- and inter-industry analyses, it had adopted firms with headquarters in the U.K. as sample firms and also focused on the subject of a firm's capital structure in finance. Second, it will be interesting to corroborate any findings of the study with the previous outcome obtained from [1], which found an existence of an optimal level of cash holdings for firms belonging to Korean chaebols in terms of the trade-off theory. Based on the theory, there are three major rationale that explain possible factors to affect a firm's level of cash reserves: Trade-off, Pecking order, and Free cash flow theories. As presented in [3], the trade-off theory was postulated by the factors consisting of a firm's marginal cost and benefit on the cash holdings. To specify, the transactional and precautional motives holding cash reserves from a firm's perspective, are involved in the latter factor of the marginal benefit, as presented in [4]. The second rationale of a pecking-order theory is associated with a firm's priority or hierarchy in financing in terms of informational asymmetry, as postulated in [5]. Last rationale of a theory of a free cash flow is related with an agency cost of equity, in which a corporate manager may not exercise his or her discretionary power for non-pecuniary benefit resulting from a managerial moral hazard, as posited by [6]. Third, any empirical findings to identify an existence of the optimal points in terms of a firm's capital structure or cash holdings, may be applied and extended to search for the optimal levels of other financial aspects in the future. For instance, the levels of other financial factors such as research & development (R&D) expenses and asset utilization, can be determined in line with their optimal points associated with the findings of the present study, which may ultimately maximize the wealth of a firm's shareholders.

This paper has organized as follows: First, background and major motivations to conduct this research was introduced, which was then followed by an overview of the previous literature on the financial subject of corporate cash holdings. Data collection criteria and methodologies were described to test for an existence of inter- and/or intra-industry differences for KOSPI-listed firms in the domestic capital market. Analyses and discussion on the empirical results were also presented in Section IV, followed by the concluding remarks in the last section.

2. Review of the Previous Literature

This study chronologically overviews the previous literature on the level of corporate cash holdings in international and domestic context.

[7] empirically tested a relationship between firm structure and the level of cash holdings for the U.S. versified firms and their counterparts, that is, the focused firms. They theorized that diversified firms are likely to maintain lower levels of cash holdings in comparison with the focused firms. Moreover, the study hypothesized three interesting postulations, namely complementary growth, asset sales, and the influence hypothesis which can discriminate the level of cash holdings between diversified and focused firms. In their empirical model, two dependent variables such as industry-adjusted and unadjusted cash scaled by total assets were adopted to represent a level of corporate cashing holdings for the aforementioned two groups during the sample period of 1988 to 2006. In the results obtained, firm size, leverage, Tobin's Q, R&D expenditures, investment, working capital, cash-flow, dividend payment, bond rating, and volatility of cash-flow as the explanatory variables, on average, showed their statistical significance to influence a level of industry-adjusted cash holdings of the U.S. sample firms. [3] investigated the determinants of corporate cash holdings for Canadian firms listed in the domestic bourse for the study period of the global financial turmoil. They tested to find any relationships between the dependent variable of cash reserves and a wide spectrum of independent variables such as market-to-book value ratio, cash flow to net asset ratio, net working capital-to-asset ratio, leverage, firm size, dividends and board size, CEO duality, along with industry dummies. As a result, positive relationships were found between the dependent variable and market-to-book ratio, net working capital, and also board size for the Canadian manufacturing industry, whereas negative associations of market-to-book ratio, net working capital, and firm size in the service industry were found to affect the corporate cash holdings. They also presented that domestic firms in the Canadian capital market may be in an optimal position of corporate board in proportion to a firm's size,

[8] examined the level of corporate cash holdings to save in the form of liquid assets for the sample firms with headquarters in eleven Asian nations during the period from 2002 to 2011. Their test results revealed that firms overall increased their cash savings during the sample period across developed and developing countries, whereas those in the latter category, in particular, saved more liquidity in comparison with the developed ones during the sub-period of 2004-2006. Moreover, Tobin's q, and firm size, in association with the dependent variable of the change in cash holdings to total assets, the results provided an evidence that a firm's cash flow was overall positively related to the exogenous variables, which indicated that income effect may be more important than substitution effect resulting from a high productivity shock. Finally, the market price-to-book-value ratio representing Tobin's Q showed a positive association with the dependent variable, whereas a firm's size effect was stronger in terms of an increase of cash reserves for smaller firms in size than their larger size counterparts.

The study performed by [9] examined one of the ongoing and controversial financial aspects on the level of corporate cash holdings for firms belonging to the chaebols in the Korean capital markets. By applying various econometric estimation techniques, several financial aspects, namely, CASHFLOW, MVBV, REINVEST, and AGENCY, were found to be statistically prominent factors which may affect the level of corporate liquidity for the chaebol firms, coupled with CCC as cash conversion cycle. In the study conducted by [1], to test for the existence of an optimal cash reserves for the Koran chaebol firms, two estimation techniques were employed such as a quadratic regression equation and a relationship between a firm's value and the residuals derived from a static panel date model. Based on the results of the hypothesis test, it was detected that there was an existence of an optimal level of cash holdings for the

sample firms. Furthermore, the study examined to identify statistically significant financial factors which may discriminate the sample firms with a positive residual from their counterparts with and a negative one. The chaebol firms with excessive cash savings seemed to possess the financial attributes such as higher NETINVEST and AGENCY. In terms of the trade-off theory, the study may contribute to searching for an optimal level of corporate cash holdings for the sample firms, in which the statistically significant variables found in the test results, may be employed in a relevant model.

3. Data Sampling and Hypotheses

3.1 Data Sampling

This study utilized most recent data for firms listed in the KOSPI stock market, which comprehended the periods from 2011 to 2015 (for 5 years). Sample selection criteria are described in [Table 1].

Table 1. Sampling Criteria for KOSPI Firms During the Investigated Period

1. The data for the variables were available for at least five years from the year 2011 to 2015.
2. Sample firms were listed in the KOSPI (Korea Composite Stock Price Index) market.
3. The data were included in the population of the database of KisValue provided by the NICE.
4. The firms belonging to the financial and regulated industries were excluded in the final sample data.

To specify, most recent data for the sample firms were employed for the study, which investigated five-year sample period in a post-era of the global financial crisis in 2008. Moreover, as a first screening procedure, all the domestic sample firms were assigned into their corresponding SIC (Standard Industrial Classification) code at the two-digit level, which were established by the National Statistical Office in Korea. As a second step to finalize total sample industries in the study, firms in the manufacturing industry (i.e, the two-digit SIC code from 10 to 33) were partitioned by another criteria for

industry classifications set by the Korea Exchange for finer classification. In summary, total number of the sample firms and industries utilized in the study were 665 firms with 25 industries.

With respect to a variable to measure a level of corporate cash holdings, the study employed a proxy defined as [Cash and Cash equivalents + Marketable securities] which was scaled by total assets. The proxy variable had been frequently used to measure for corporate cash savings, as in [4] and [10]. For the purposes of comparability and consistency, it may be more effective to use the same proxy as in the present study.

3.2 Hypothesis Postulation

As described in the previous section, this study extended the previous study of [2] in terms of the research methodology to identify existence of an optimal level. But, it differs from the latter study in terms of the subject in corporate finance. In other words, the subject of the present study is related to an existence of an optimal level of corporate 'cash holdings' in the Korean capital market, but the latter had tested for any existence of an optimal level of 'capital structures' for the sample firms in the U.K. capital market. Moreover, in terms of the econometric methodology, the present study employed analysis of covariance (ANCOVA) and rank analysis of covariance (RANCOVA) with using a covariate of a firm size measured by its sales amount transformed into the natural logarithm. But, each hypothesis on the capital structure was tested by using the analysis of variance (ANOVA) as a parametric purpose in the study of [2].

Two hypotheses were postulated and tested to investigate an existence of an optimal level of cash holdings as follows:

First, the following hypothesis in terms of inter-industry analysis was postulated to test for an existence of an optimal capital structure among the industries.

H_0: There is no statistically significant differences in the level of corporate cash holdings across the sample industries for KOSPI-listed firms.

If no statistical differences among the industries are found in the variable of concern (i.e., cash holdings), it may be concluded that there is no optimal level of cash reserves maintained by the sample firms. The postulation of the hypothesis resulted from the fact that there may exist an unique level of corporate cash holdings, which was applicable to each corresponding industry, as in [11] and [12] to empirically examine inter-industry differences in the capital structure.

Second, as for the second hypothesis, relatively robust empirical tests were conducted to investigate any differences in cash holdings across the sample firms for each corresponding industry as an intra-industry analysis. In other words, it was assumed that there may be an existence of an optimal level of cash savings that was shared or maintained by the sample firms within the same industry, if no differences are found across firms in the same industry.

H_0: There are no statistically pronounced differences in the level of corporate cash holdings across the KOSPI-listed firms belonging to each sample industry.

As for econometric estimation methodology to test for the inter- and intra-industry analyses on the existence of an optimal cash holdings, two methodologies such as the analysis of covariance for a parametric assumption (ANCOVA) and a non-parametric one (RANCOVA) were employed for a model specification, as utilized in [13]. Natural log transformation of total amount of sales (SIZE1) was used as a covariate and the rank-order method for the sample data was used for the RANCOVA. Finally, as an *a posteriori* test, Scheffe specification test was also subsequently conducted to implement pairwise multiple comparisons.

4. Analysis and Discussion

4.1 Analyses on the Inter- and Intra-industry Effects

The following results were obtained by applying the analysis of covariance (ANCOVA) and its counterpart as a rank analysis of covariance (RANCOVA) as reported in [Table 2] and [Table 3], respectively.

Table 2. Results of the Inter-industry Analysis on the Existence of an Optimal Level of Cash Holdings for KOSPI-listed Firms by Applying ANCOVA

Industry Effect	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	2.16	2.53	1.30	1.73	2.88	8.93
P-value	0.0011	<0.0001	0.1571	0.0169	<0.0001	<0.0001
Covariate	0.59	1.33	2.26	3.97*	8.78*	10.67*

<Note> * indicates that the estimated coefficient of the covariate, SIZE1, is statistically significant at the 5% level.

Table 3. Results of the Inter-industry Analysis on the Existence of an Optimal Level of Cash Holdings for KOSPI-listed Firms by Applying RANCOVA

Industry Effect	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	2.61	2.66	2.28	2.09	2.27	10.75
P-value	<0.0001	<0.0001	<0.0005	0.0019	0.0005	<0.0001
Covariate	6.35*	1.52	1.42	1.02	0.44	9.03*

The consequences of the tests showed that there were overall statistically significant inter-industry effects among the total 25 sample industries for the levels of corporate cash holdings for KOSPI listed firms in the domestic capital market. On the other hand, it will also be of interest to detect any intra-industry differences across the sample firms for each corresponding industry during the sample period, which had been postulated in the second hypothesis.

Table 4. Results of the Intra-industry Analysis on the Existence of an Optimal Level of Cash Holdings for Each Corresponding Industry by Applying ANCOVA

Symbol	Industry Description	no. of Firms	F-statistic
Ind1	Mining	6	11.61*
Ind2	Accommodation and Restaurant	1	(N/A)
Ind3	Art, Sports and Leisure	4	12.11*
Ind4	Association, Repair and Individual Service	1	(N/A)
Ind5	Facilities Management and Support Service	5	10.42*
Ind6	Construction	32	4.28*
Ind7	Educational Service	1	(N/A)
Ind8	Electricity and Gas	11	13.59*
Ind9	Food and Beverage	35	9.5*
Ind10	Textile and Clothing	29	7.5*
Ind11	Paper and Timber	28	28.80*
Ind12	Chemical	85	7.73*
Ind13	Pharmaceutical	37	17.07*
Ind14	Nonmetallic Mineral	21	9.84*
Ind15	Steel and Metal	44	15.01*
Ind16	Machinery	42	8.01*
Ind17	Electric and Electronic	53	6.81*
Ind18	Medical Precision	4	2.30
Ind19	Transportation Equipment	50	16.78*
Ind20	Transportation and Shipping	22	11.35*
Ind21	Publishing, Media, and Information Service	27	6.96*
Ind22	Professional, Science, and Technology Service	67	6.61*
Ind23	Retail Distribution	16	28.91*
Ind24	Real Estate and Lease	2	1.78
Ind25	Wholesale Distribution	42	6.64*

<Note> * indicates that the calculated F-statistic is statistically significant at 5% level. (N.A.) denotes that F-statistic is not available due to a single treatment in model for corresponding industry.

Based on the outcome obtained from the second hypothesis test, intra-industry effects among the sub-sample firms, were existed in only two industries such as Ind18 (Medical Precision) and Ind24 (Real Estate and Lease) amongst the total industries. The results derived from utilizing the RANCOVA were generally consistent with those obtained by the ANCOVA across the industries. (The output from the RANCOVA in the study is available from the author upon request.) To recap, the findings reported in [Table 4] showed that the null hypothesis was not overall accepted in the majority of the sample industries, which may provide an evidence of non-existence of an optimal level of cash holdings targeted by the sample firms in terms of an intra-industry analysis.

4.2 Discussion

With respect to the results obtained from the first hypothesis test, two classified consequences based on the ANCOVA and the RANCOVA were reported in [Table 2] and [Table 3], as previously described. The results testing for the existence of inter-industry influence, revealed that at the 5% level, there was an overall statistically significant industry differences among the sample industries on the level of corporate cash. The study in [2] found that significant differences in capital structure were among their 9 sample industries in the U.K., whose phenomenon was, to a large extent, attributed to the statistical difference in the level of capital structure for the motor vehicle industry (Part & Accessories), when compared to the other sample industries. They suggested that the inter-industry effect may arise from differences in a debt ratio, applicable to only a few industries, not to the majority of the sample industries. Even if the subject of the present study is related to the level of corporate cash holdings, (not in the capital structure), an *a posteriori* test was subsequently conducted for multiple pairwise comparison purposes as also in [2] and [13]. More specifically, Scheffe's test was subsequently implemented for total twenty-five industries for the present study. For instance, the Scheffe test is an estimation methodology that is commonly used for a pairwise comparison purpose with involving two or more treatment means, as presented in [14]. In the following table, the results of inter-industry analysis are describe for the outcome of the pairwise test.

Table 5. Results of the Scheffe's Multiple Pairwise Comparison Test Showing Statistically Different Inter-industry Effects on the Level of Corporate Cash Holdings

Industry Symbol	Statistically Different Industry Symbol at the 5% level
Ind3	Ind9, Ind11-Ind19, Ind23, Ind25
Ind18	Ind22
Ind21	Ind9, Ind11, Ind12, Ind13, Ind15, Ind17, Ind18

Out of the total number of the pairwise comparisons, which were equal to 600 pairs computed by multiplying 25 industries by (25-1) industries, only twenty pairs of relevant sample industries showed their statistically different levels of cash reserves. In [Table 5], average level of cash liquidity maintained by the firms belonging to Ind3 (Art, Sports, and Leisure) revealed its statistically significant differences with its counterparts of other sample industries such as Ind9, Ind11-Ind19, Ind23, and Ind25. (For reference, industry description for each industry symbol is described in [Table 4].) To summarize, only small portion of the industries (i.e., 3.33% = 20/600) were found to maintain statistically different level of corporate cash holdings each other by applying the Scheffe test. Therefore, the inter-industry effects were found to be significant for KOSPI-listed firms in the domestic capital market during the investigated period. Moreover, different effects statistically seemed to arise from the discerned levels of cash holdings centered around only a few industries (i.e., Ind3, Ind18 and Ind21). This phenomenon was consistent with the similar findings by [15] suggesting that inter-industry effect seemed to be existed in only some peculiar industries in terms of capital structure. One of the striking outcome obtained from the inter-industry analysis was that Ind3 showed its distinguished differences from a majority of other domestic industries as reported in [Table 5]. Its mean and least square mean (i.e., LS mean) that accounted for a covariate effect, were estimated as 0.20049 and

0.19765, respectively, whose value was much larger that those obtained from other pairs of the sample industries. Accordingly, its volatility measured by a standard deviation was calculated as 0.19749, that is the largest among total 25 sample industries. The primary businesses associated with the industry (i.e., Ind3) were those for entertainment and sports services. According to the conventional theory of finance associated with corporate cash holdings, there are three motives for a firm to adjust its level of cash liquidity as previously described: Trade-off, Pecking order, and Free cash flow motives. It is plausible that firms in the industry may primarily maintain a high level of cash reserves in association with the trade-off and pecking order ones. To specify, main businesses of the industry belonged to a service sector (not a manufacturing one) which may need to keep higher level of cash liquidity due to a small portion of assets-in-place. In other words, [16] presented that a firm with a small portion of assets-in-place may maintain high debt ratio, due to a limited access to credit market in connection with less collateralized value. On the other hand, firms in a certain industry may suffer from more serious informational asymmetry problem, since most of them still seem to be in their early stage of businesses in the domestic capital market, in comparison with their counterparts belonging to the manufacturing industries with relatively long history and mature stage. [10] found that a level of financial constraints (measured by Tobin's Q) was positively related to a firm's level of cash holdings, implying that a firm without paying dividend may reduce any underpricing problem in terms of information asymmetry. In sum, a higher level of cash holdings possessed by Ind3 may be associated with the following phenomenon: the former one is related to the trade-off motive, while the latter with the unbalanced information can arise from the motive of the pecking order.

Second, concerning the level of corporate cash holdings for Ind21 (i.e., the Publishing, Media, and

Information Service industry) statistically differentiated from the levels fo several other industries as reported in [Table 5]. The industry demonstrated its higher average level of cash holdings positioned at the top tier group amongst total sample industries. To specify, its mean and LS mean were 0.12479 and 0.12429, respectively along with the standard deviation of 0.10495. One of the primary rationale that the industry maintained a tendency to keep high level of cash liquidity, may, to some extent, arise from the following domestic business environments: Large proportion of the industry (in terms of a firm size) consists of the domestic firms engaged in telecommunication service businesses such as SK telecom., LG U⁺, and KT. As in the findings of the study of [17], a firm's net investment was negatively related with the level of corporate cash holdings. Moreover, [8] presented that cash flow sensitivity of cash of a financially constrained firm may have a positive relationship with the cash liquidity to support its future investment opportunities with internal financing. Therefore, it may well preserve a relatively high level of cash reserves for the companies in the industry to provide funds supporting future net investments, which is theoretically consistent with the aforementioned trade-off and pecking order motives.

Concerning the consequence obtained from the second hypothesis testing for intra-industry analysis, the results shown in Table 4 indicated that only two industries such as Ind8 (Medical Precision) and Ind21 (Real Estate and Lease) did not have statistically different intra-industry influence on the level of corporate cash holdings among the 22 sample industries. As postulated in the second hypothesis, existence of an optimal level of cash holdings for firms belonging to the same industry may be statistically verified by finding no intra-industry distinction among the firms. Therefore, it was concluded that the KOSPI-listed firms in the majority of the sample industries in the study, may not yet maintain their optimal levels of cash savings in the

domestic capital market. More importantly, the results obtained for Ind18 (i.e., the medical precision industry) may, to a large extent, arise from a dilution of the existing proportion of the majority shareholders in total shares issued through the sales of their shares possessed, according to [18]. That is, it was reported that the liquidity ratio (defined by total number of shares outstanding over total number of shares issued) for the industry (i.e., Ind8) was estimated as one of the highest ones among the sample industries, due to the sale of exiting shares owned by the majority shareholders to support a firm's R&D (Research & Development) activities. Consequently, the results may suggest that a firm's optimal level of cash holdings may be achieved by a further dilution of an existing proportion of total shares issued that are held by its majority shareholders. This phenomenon can, in turn, maximize its total market value through a lower agency cost of equity as presented by [3].

5. Concluding Remarks

This study investigated an ongoing issue, which has drawn little empirical attention in modern finance so far, as described earlier. It was to identify existence of an optimal level of a corporate cash holdings for firms listed in the KOSPI market in the Korean capital market. As for the procedures to test for the hypotheses in terms of the present subject, inter- and intra-industry analyses as in [2], were conducted for KOSPI-listed 665 firms in the 25 sample industries during the period from 2011 to 2015. The results obtained for the inter-industry analysis showed that there were statistically significant inter-industry differences in the level of corporate cash holdings among the sample industries, whereas very few firms seemed to maintain their optimal levels for each industry under the second hypothesis. Moreover, the pronounced inter-industry effects mostly resulted from the different levels of cash holdings centered only

around Ind3, Ind18 and Ind21. In other word, KOSPI-listed firms in the domestic industries seemed to weakly or barely maintain their optimal levels of cash savings in terms of inter- and intra-industry analyses, which may accordingly limit or restrict a domestic firm's capability in achieving its objective to maximize its shareholders' wealth. Despite possible limitations of the study associated with empirical procedures such as data collection and methodologies adopted, the results obtained from the study may shed new light on the inter- and the intra-industry examinations on the existence of an optimal level of corporate cash holdings. Moreover, the study may warrant further researches to be extended in searching for an optimal level of cash holdings for firms in the international and domestic context.

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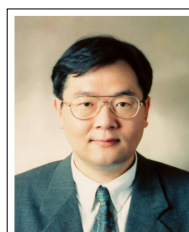
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<Research Interests>
Corporate Finance, M&A, Equity Valuation