

Further Evidence on the Existence of an Inter- and Intra-Industry Optimal Capital Structure for the KOSPI-listed Firms in the Korean Capital Market

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국내 유가증권시장 상장기업들의 산업간 그리고 산업내의 최적 자본구조의 존재에 대한 추가적인 실증 분석

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Abstract This study investigated empirically one of the controversial subjects in modern finance, in that there is an optimal level of capital structure for KOSPI-listed firms in the Korean capital market. Given the major theories on the capital structure, such as Myers' pecking order, trade-off, and agency cost ones, this study applied an analysis of covariance models in parametric and non-parametric statistical methods. In particular, two covariates to control for the possible effects of trade-off and agency cost, were employed separately in each corresponding model, while the other proxy for pecking order rationale was adopted in previous research [1] to conduct inter- and intra-industry analyses. Based on the outcomes obtained from the study, it was demonstrated empirically that there are optimal capital structures for firms in the sample industries at the inter-industry level, whereas statistical differences indicating non-existence of an optimal point, were revealed within the industry. Accordingly, these findings suggest a new vision to potential investors that firms in the domestic market may have financial opportunities to increase their value by gradually adjusting the leverage ratios in terms of the intra-industry perspective.

요약 본 논문은 재무관리 이론에서 현재까지 논의가 지속되고 있는 국내 유가증권시장 상장기업들의 최적자본구조 존재여부에 대한 실증론적 연구이다. 최적자본구조에 대한 주요 이론적 논리인 자금조달이론, 상충이론, 그리고 대리인 이론 등을 전제로, 모수적 그리고 비모수적 방법을 활용한 공분산모형의 분석을 통하여 표본기업들의 최적자본구조 존재 여부를 검정하였다. 구체적으로는, 상충이론과 대리인비용이론과 관련된 통제변수들이 해당모형에서 각각 활용되었으며, 이는 최적자본구조 존재를 위한 산업 간 그리고 산업 내 분석 자금조달이론 통제변수를 활용한 기존의 연구 [1]와도 대비될 수 있다. 연구 결과 관련, 표본산업을 활용한 산업들 간 분석에서는 최적자본구조가 존재하는 것으로 실증적으로 검증된 반면, 산업 내 분석에서는 해당 기업들 간의 통계적인 측면에서 최적자본구조가 존재하지 않는 것으로 나타났다. 이와 복합하여, 본 연구에서 도출된 결과가 잠재적인 투자자들의 측면에서 의미할 수 있는 바는, 향후 국내 기업들이 해당 산업 내의 최적부채비율에 점진적으로 접근할 경우, 기업가치 증대를 위한 재무적 기회가 상존한다는 것이다.

Keywords : Analysis of Covariance, Inter-Industry Analysis, Intra-Industry Analysis, Korean Capital Market, Optimal Capital Structure

1. Introduction

This study addresses one of the unexplored subjects

in the field of modern finance, which is an extension of the previous research done by [1]. That is, it focused on the findings on the existence of an optimal capital

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structure for firms listed the Korea Composite Stock Price Index (KOSPI) market in terms of inter- and intra-industry analyses during the post-era of the global financial turmoil begun in 2008. The precedented study of [1] was also associated with the subject of the present study, in that possibilities of existence of inter- and intra-industry were investigated for the same sample setting in data collection and tested period. However, the study differs from the previous study [1] in which the existence between and within industries were analyzed in terms of the theory of corporate capital structure with and without considering Myers' pecking order theory. On the contrary, the present research attempts to identify existence of the inter- and intra-industry optimal leverage ratio which accounts for other theories such as trade-off and agency cost theory in modern finance. Moreover, the study applied the statistical method of analysis of covariance (ANCOVA) to test for the industrial effects on corporate leverage ratio, in comparison with another study by [2] which only applied the analysis of variance (ANOVA) not accounting for the plausible effect of a covariate which may stem from the aforementioned rationale. Finally, to date, voluminous researches seem to have approached the subject of capital structure in terms of identifying possible financial determinants to affect corporate leverage in the international and/or domestic perspectives. However, findings on the financial factors are expected to be effectively utilized, which may follow the identification of any existence of an optimal capital structure as an *a priori* condition. To exemplify, three propositions such as Myers' pecking order, trade-off, and agency cost one are major theories to explicate corporate optimal capital structure since the seminal article was presented by [3] on the existence of optimal capital structure.

For the period from 1992 to 2001, [4] found that there were statistical linkages between corporate capital structure and the variables relevant to asymmetric information in Korean capital markets. In the study, the variable to measure firm size showed its insignificant

or negative relationship at the higher quantile location in terms of leverage. A negative relationship between profitability and a debt ratio was also found in the majority of quantiles of the employed model, which was generally compatible with the findings of Myers' pecking order theory. They presented that new policies related to industrial and financial restructure which had been adopted after the Asian financial turmoil, may result in a wide shift in the pattern between corporate financing activities and costs relevant to asymmetric information. The study done by [5] attempted to find financial attributes on corporate capital structure for KOSDAQ-listed firms, while the second test was performed to identify any discriminating factors which may distinguish between the firms in the 'prime section' and the 'venture section' in the financial aspects. For the book-value based debt ratios, the variables such as size, growth, market-to book-value of equity, business risk, market value of equity and section classification, showed their statistically pronounced influence on the book-value based leverage ratio, while size, growth, market value of equity, beta and section dummy also showed their statistically significant effects on the market-value one. The study also revealed an interesting result that a firm in each corresponding industry may possess a tendency to revert to its mean and median leverage ratios over the five-year interval. Another recent study conducted by [6] addressed one of the financial issues in modern finance, but, it may differ from the preceding researches in that the sample data for the study consist of firms with headquarters in Chungcheong province in Korean capital markets. By applying static panel data model, profitability, growth rate, and cash holdings of a firm were identified to be important factors to determine corporate leverage. It was also interesting to detect the fact that firms with headquarters in North Chungcheong region showed their higher discriminating power in terms of profitability, cash holding, and foreign ownership relevant to the debt ratios in comparison to their counterparts in South region.

As an extended study of [1], the study is organized as follows: Following the introduction section, the second one consists of data collection criteria and postulation of each relevant hypothesis. In the section, dependent variables measured by the book- and market-value bases are also defined to be applied in each corresponding model. In the following section, analyses and discussion on the consequences obtained from each empirical test, are then illustrated. Finally, concluding comments are presented in the last section.

2. Data Collection and Hypothesis Testing

2.1 Data Collection Criteria

As described in the previous section, inter-temporal reference for the study, covers most recent period since the global financial turmoil. (i.e., from the year, 2010 to 2015). For comparability and consistency, it utilized the same sampling criteria to the previous one performed by [1]. In the following table, sample selection criteria are listed to be applied to each corresponding model.

Table 1. Data Sampling Criteria

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| <ol style="list-style-type: none"> 1. Data for each variable employed in the models are available for at least six years from 2010 to 2015. 2. Sample observations were listed in the KOSPI stock market at the end of the fiscal year, 2015. 3. Data should be included in the whole population of the KisValue database sourced from the NICE. 4. Firms in the financial and regulated industries are excluded in the sample data. |
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After screening the data in terms of the criteria presented in [Table 1], total number of the sample industries and firms were finally chosen to be 24 and 613, respectively. Final sample industries were screened by referring to both KSIC (Korea Standard Industrial Classification) code established by the National Statistical Office and KSE code classified

internally by Korea Exchange. The latter code was utilized for further classification in the manufacturing industries if necessary, which had originally been coded from 10 to 33 at the two-digit SIC according to the KSIC regulations, as also presented in [1] and [7]. On the dependent variable (DV) to measure for the level of an optimal capital structure for KOSPI-listed firms, following ratios in terms of the book-value and market-value bases, were employed in each model, as defined in [1]:

Book-value based leverage ratio (BVLEV)= [Total liabilities/Total assets]

Market-value based leverage ratio (MVLEV) = [Total liabilities/(Total liabilities + Book value of Preferred equity + Market Capitalization of common equity)]

For reference, the market-valued debt ratio was not employed in [2], in which only book-valued leverage ratio had been used to test for inter- and intra-industry differences for UK firms during the period from 1967 to 1986. Two leverage ratios had also been adopted as a proxy for corporate capital structure in the previous literature inclusive of [8-10]. In the meantime, each covariate representing a relevant theory was adopted in the model of ANCOVA in terms of parametric and nonparametric statistical context. That is, by considering the likelihood of non-normal distributions of financial ratios such as debt ratio, nonparametric ANCOVA ordered by rank was also adopted to detect whether the sample data were drawn from identical populations with the same median in comparison with their counterparts possessing the same mean, as described in [11]. The variable such as CINTEREST and AGENCY were separately employed in the model to control for a plausible effect in terms trade-off and agency cost theory, while PFT was used to control a possible effect of Myers' pecking order rationale, as [1]. By separating each effect from other factor associated with industry classification in the model, it

is expected to detect any significant difference in terms of inter- and intra-industry analysis, which is linked to the existence of corporate capital structure for KOSPI-listed firms. Covariates such as CINTEREST (=Interest expense / Sales) and AGENCY (=Research & Development expenses / Sales) were used in the model to control for possible influence which may be associated with the trade-off and the agency cost theory, respectively.

2.2 Hypothesis Formulation

Relevant hypotheses to test for industrial differences in a firm's capital structure are postulated as follows. As for a criterion to accept the null hypothesis, it is assumed that there does not exist an optimal level of financial leverage, if no inter-industry differences are found among the sample industries, as presented in [2]. Academic background supporting the assumption may stem from the theoretical and empirical findings obtained from the previous literature such as [1], [12], and [13]. In other words, postulation of the hypothesis assumes that inter-industry differences are statistically pronounced phenomenon which has been confirmed in a majority of the precedented researches. Without any statistically significant differences in terms of inter-industry analysis, it is assumed that there does not exist an optimal level of corporate capital structure for the sample firms, even after the covariate of CINTEREST or AGENCY is controlled.

<Inter-industry hypothesis >

H₀: Relative to the hypothetical inter-industry influence, any significant differences in capital structure among the sample industries may not statistically exist for KOSPI-listed firms over the period from 2010 to 2015, provided that the factor relevant to the trade-off (or the agency cost) theory is controlled.

To illustrate, the covariates such as CINTEREST and AGENCY were utilized in the ANCOVA model to control for the hypothetical effects associated with the

theories of trade-off and agency costs, respectively, in terms of the existence of an optimal capital structure. Moreover, an *a posteriori* test for the purpose of a pairwise multiple comparison, were subsequently implemented to identify which peculiar industries showed their distinguished aspects in terms of inter-industry differences, as described in [1]. The statistical estimations was performed by Scheffe specification method to implement this procedure.

Couple with the aforementioned hypothesis to test for the inter-industry differences, another hypothesis was postulated to conduct intra-industry analysis as follows:

<Intra-industry hypothesis >

H₀: Relative to the hypothetical intra-industry influence, any significant differences in capital structure among KOSPI-listed firms belonging to the same industry, may not statistically exist during the sample period, provided that the factor of the trade-off (or agency cost) theory is controlled.

It was assumed that no optimal capital structure shared by the firms may exist within the same industry, if statistically prominent differences are found by the ANCOVA model with each relevant covariate in the context of parametric and nonparametric statistical methods, as presented in [1].

3. Analysis and Discussion

3.1 Inter-industry Analysis

3.1.1 Influence of Trade-off Theory

Outcome concerning the analysis on the inter-industry differences across the book- and market-valued debt ratios are presented in the following table, in terms of the relevant theory of the trade-off theory (CINTEREST).

Table 2. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Book-value Base (BVLEV) for KOSPI-listed Firms with ANCOVA Employing CINTERST

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	4.60	4.33	4.62	2.58	3.13	3.05	20.38
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	176.99*	121.58*	196.37*	160.32*	86.94*	111.83*	832.09*

<Note> * denotes a statistically significant at the 5%.

Table 3. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Book-value Base for KOSPI-listed Firms with RANCOVA Employing CINTEREST

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	4.34	4.36	4.89	4.20	4.48	4.97	26.14
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	412.07*	364.54*	469.89*	541.41*	512.19*	519.97*	2,830.17*

With respect to the consequences shown in [Table 2] by utilizing the ANCOVA with CINTEREST, covariate, which was defined as interest expenses scaled by sales in association with the trade-off theory in the capital structure, strong industry impact on the BVLEV was found during the overall period as well as each sample year, respectively. As a complement to the ANCOVA analysis, the outcome from the RANCOVA on the BVLEV, also provided an evidence on the pronounced effect of industry to determine a firm's level of capital structure in the domestic capital markets, as in [Table 3]. Moreover, results from the both tests in terms of MVLEV, are also reported in the followings, which showed a significant differences among the treatments across the models applied in the context of parametric and nonparametric methods.

Table 4. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Market-value Base (MVLEV) for KOSPI-listed Firms with ANCOVA Employing CINTEREST

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	7.72	6.67	7.30	6.42	5.88	6.89	38.90
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	106.14*	79.74*	129.82*	109.02*	52.51*	75.42*	555.35*

<Note> * denotes a statistically significant at the 5%.

Table 5. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Market-value Base for KOSPI-listed Firms with RANCOVA Employing CINTEREST

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	7.22	6.67	7.15	7.09	7.35	8.65	42.12
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	294.85*	284.60*	349.90*	400.55*	409.87*	330.58*	2,123.08*

Given the results on the possible industry and the factor related to the trade-off theory, it seemed to be evident that significant industrial differences among the sample industries existed on the market-value based leverage ratio (MVLEV) during the tested period, even after the covariate (CINTEREST) was controlled in each corresponding model.

3.1.2 Influence of Agency Cost Theory

Likewise, followings are the consequences obtained from each model by using a covariate, AGENCY, to mitigate the effect associated with the theory of agency costs in modern finance.

Table 6. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Book-value Base (BVLEV) for KOSPI-listed Firms with ANCOVA employing AGENCY

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	3.56	3.78	3.20	2.66	2.89	3.43	18.56
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	0.65	0.15	1.65	4.21	1.63	1.36	9.97

<Note> * denotes a statistically significant at the 5%.

Table 7. Results on the Inter-industry Analysis on the Existence of an Optimal Capital Structure Based on the Market-value Base (MVLEV) for KOSPI-listed Firms with ANCOVA employing AGENCY

Industry Effect	FY. 2010	FY. 2011	FY. 2012	FY. 2013	FY. 2014	FY. 2015	Overall
F-statistic	6.46	6.01	5.63	5.71	5.17	6.32	33.75
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Covariate	1.22	1.10	5.53*	7.39*	5.02*	3.95*	24.98*

In regard to the outcome tested by the parametric statistical analysis as reported in [Table 6], it was surprising that the covariate as a proxy to control for a possible effect of a firm's agency costs did not show its significant effect on the book-value based debt ratio during the investigated period. On the results for the MVLEV reported in [Table 7], the effect linked to the covariate seemed to be perverse or conflicting during the inter-temporal period, even if any statistically significant influence from AGENCY was not also found for each tested year according to the nonparametric ANCOVA (RANCOVA) test. (The output derived from the RANCOVA models is available from the author upon request.) However, regardless of any influence controlled by AGENCY, significant industrial effects were consistently found across the tested years. This phenomenon had also been demonstrated by the results in terms of the trade-off theories. In sum, this indicates that there exists an inter-industry optimal capital structure for firms listed in the KOSPI stock market, as hypothesized in the previous section.

3.2 Intra-industry Analysis

3.2.1 influence of Trade-off Theory

Intra-industry differences within industry associated with the trade-off theory are illustrated in the following tables.

Table 8. Results for Intra-industry Analysis on the Existence of an Optimal Capital Structure for the Book-value Base (BVLEV) and the Market-value Base (MVLEV) for KOSPI-listed Firms with ANCOVA Employing CINTEREST

Symbol	Industry Description	no. of Firms	F-statistic (BVLEV)	F-statistic (MVLEV)
Ind1	Agriculture, Fishing and Mining	6	81.09*	23.61*
Ind2	Accommodation and Restaurant	1	(N/A)	(N/A)
Ind3	Art, Sports and Leisure	4	10.97*	8.21*
Ind4	Association, Repair and Individual Service	1	(N/A)	(N/A)
Ind5	Facilities Management and Support Service	5	8.65*	4.15*

Ind6	Construction	30	11.02*	19.28*
Ind7	Educational Service	1	(N/A)	(N/A)
Ind8	Electricity and Gas	10	21.31*	9.84*
Ind9	Food and Beverage	33	47.11*	21.74*
Ind10	Textile and Clothing	28	31.53*	19.11*
Ind11	Paper and Timber	26	28.65*	11.39*
Ind12	Chemical	79	112.22*	20.75*
Ind13	Pharmaceutical	36	25.49*	20.85*
Ind14	Nonmetallic Mineral	20	6.28*	10.28*
Ind15	Steel and Metal	41	25.95*	19.58*
Ind16	Machinery	36	24.12*	22.26*
Ind17	Electric and Electronic	49	34.00*	18.95*
Ind18	Medical Precision	4	1.93	1.59
Ind19	Transportation Equipment	44	46.32*	17.62*
Ind20	Transportation and Shipping	20	35.77*	25.43*
Ind21	Publishing, Media, and Information Service	24	15.05*	32.06*
Ind22	Professional, Science, and Technology Service	64	16.10*	13.83*
Ind23	Retail Distribution	10	44.86*	31.71*
Ind24	Wholesale Distribution	41	31.38*	31.65*

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

Concerning the results derived from all of the ANCOVA models in parametric and nonparametric statistical context, firms in only one industry, IND18 (Medical Precision) seemed to maintain their optimal capital structures, which was controlled by a covariate, CINTEREST, in associated with the trade-off theory. Meanwhile, the results obtained by using the covariate, AGENCY, to control for the possible effect of the agency cost theory, corroborated the previous results that there exists an optimal capital structure within industry, only for the sample KOSPI-listed firms belonging to IND18 (the medical precision industry) with its p-value of 0.0634, when measured by the market-value based leverage ratio. (The output with using the covariate, AGENCY, is available upon request from the author.) Therefore, it can be concluded that existence of intra-industry optimal capital structure may not overall be applicable to KOSPI-listed firms in the domestic capital markets over the whole period investigated in the study.

3.3 Discussion

Financial interpretations on the results obtained from

this study, are conducted in the sequence of the perspectives from inter-industry differences, pairwise multiple comparisons, and intra-industry differences.

First, in regard to the outcome derived from the ANCOVA with covariate of CINTEREST, it was interesting to detect significant inter-industry differences across the industries, implying existence of optimal capital structure for KOSPI-listed firms, even after controlling the effect relevant to the trade-off theory. Besides the anticipated significance of CINTEREST in the model, persistent and prevalent differences among the sample industries in financial leverage were listed in [Table 2] and [Table 3], respectively. The same consequences of strong industry effects are also found to the results related to the market-value based debt ratio as in [Table 4] and [Table 5]. Finally, the phenomenon for the existence of inter-industry differences was corroborated by results obtained from the ANCOVA test with covariate of AGENCY as well, which is reported in [Table 6] and [Table 7]. To recap, based on the results found by testing for the inter-industry differences, it was statistically demonstrated that there exist strong and persistent existence of an optimal capital structure maintained by KOSPI-listed firms in the domestic capital markets, as also found in [1] for the covariate of PFT as a proxy for Myers' pecking order theory. [14] originally presented that firms within each industry may have their commonalities in business risk in terms of the same economic and environmental aspects. Therefore, the existence of an optimal capital structure shared by firms in each industry may arise from the same business risk within industry in the Korean domestic capital markets with more diversity. Second, the Scheffe estimation was performed to conduct a pairwise multiple comparison to examine which industry may show its statistically significant differences from its counterparts in the book- and market-valued leverage ratios.

Table 9. Results of the Scheffe Test for a Multiple Pairwise Comparison for Inter-industry Differences

Leverage Type with Covariate	Industry Different from (at Least 10) Counterparts at the 5% level of Significance*
BVLEV with CINTEREST	Ind3, Ind6, Ind16
BVLEV with AGENCY	Ind6
MVLEV with CINTEREST	Ind3, Ind5, Ind6, Ind8, Ind11, Ind16, Ind18
MVLEV with AGENCY	Ind5, Ind6, Ind8, Ind16

From the above, only a few industries showed their inter-industry differences out of total 24 sample industries. To specify, Ind6 (the construction industry) and Ind16 (the pharmaceutical industry) seem to show their prominent positions differentiating the levels of financial leverage from the other industries. Ind6 (the construction industry) showed its strong difference from other industries across the tests with CINTEREST and AGENCY. The least square means (LSMs) were estimated as 0.63017 and 0.68766 for CINTEREST and AGENCY, respectively, at the book-value base, which maintained the highest level of leverage among the sample industries. Moreover, the LSMs of the industry were found to be 0.6990 with CINTEREST and 0.75041 with AGENCY at the market-value base. The results obtained from the study are compatible with those in [1]. These findings are also supported by the study of [11], presenting that the construction industry had maintained the highest debt ratio, that followed by the food industry during the period from 1987 to 1991 in the domestic capital market,

Moreover, the art, sports and leisure industry (Ind3) showed its one of the lowest LSDs among total 24 industries in the majority of tests of the ANCOVA. Higher level of corporate cash holdings possessed by a firm in this (non-manufacturing) industry, may also be attributed to a small proportion of its collateral value in terms of tangible assets which may be utilized for debt financing, as presented in [7]. Therefore, lower value of adjusted means that were identified for the leverage ratio of the industry (Ind3), seemed to arise from the transactional motive of corporate cash

savings, given the possibility of limited access to credit market. To recap, the results derived from the *a posteriori* test for multiple comparisons provided an overall evidence that statistically significant differences among the sample industries are not pervasive, but centered around only a few industries which are compatible with the phenomenon in [1].

With respect to the intra-industry analysis for KOSPI-listed firms whose results were covered in [Table 8], it seemed that KOSPI-listed firms in only one industry as Ind18 (the medical precision) generally maintained their optimal capital structures in terms of the covariate of CINTEREST and AGENCY. It imply that intra-industry differences among firms were significantly found in almost sample industries except Ind18. The result is also consistent with the finding in [1]. The proportion of total shares held by the major shareholders of a firm belonging to the particular industry, decreased and was accordingly diluted through the sale of their existing shares to support Research & Development (R & D) activities, as reported by [15]. Increase in R&D expenses may be positively associated with adjusting the present level of a firm's capital structure to the optimal point through the virtuous cycle of investments for profitable projects. Overall, the evidence suggested that there are non-existence of an optimal capital structure commonly kept by the subset of KOSPI-listed firms belonging to the same industry except Ind18 in terms of intra-industry analysis. It may suggest a financial implication that, more opportunities to enhance a firm value seem to exist, if the optimal level of capital structure within industry can be attained by the firm, as also described in [1].

4. Conclusion

The study investigated one of the intriguing subjects in modern finance, which is to trace existence of an optimal level of capital structure for KOSPI-listed

firms in the domestic capital markets. Major objective to conduct the study is to enhance a firm's value by establishing its optimal point in terms of financial leverage. As an extended study of [1] which was to identify any inter- and intra-industry differences associated with Myers' pecking order theory, the present study further investigated the existence of those differences related to trade-off and agency cost theory, respectively. One of the noteworthy phenomena associated with the covariate, AGENCY, its influence tends to significantly increase on the level of corporate capital structure in the domestic capital market, as previously presented. Concerning the results obtained from the empirical methods such as ANCOVA and RANCOVA, it was found that there exist inter-industry differences among total industries, indicating that optimal levels of capital structure seemed to be achieved at the inter-industry level. However, the inter-industry differences were statistically attributed to only a few industries, which was not a widespread phenomenon among the sample industries during the tested period. Moreover, based on the intra-industry analysis, the results demonstrated an evidence that only one industry such as Ind18 (the medical precision) maintained its optimal capital structure within industry in the statistical context. Despite the plausible weaknesses of the study adopting different research methodologies and proposed financial variables from the previous or future empirical researches, the outcome of the study may increasingly shed new light to enhance a firm value by adjusting its capital structure towards an optimal point.

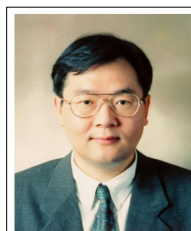
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<Research Interests>

Corporate Finance, Investments, M&A, Equity Valuation