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Effect of Consolidation Scope Changes on Bond Returns

Naechul Kang, Hongik University, Korea

Taewon Yang, California State University-San Bernardino

John Jin[1], California State University-San Bernardino

ABSTRACT

The purpose of this study is to examine if financial leverages of the marginal subsidiaries affect bond returns of the parent company. The marginal subsidiaries are those dropped from consolidations with applications of more stringent consolidation scope criterion of 50% ownership interests under IFRS than that under Korean GAAP requiring only 30% ownership interests. This research question was addressed using two methodologies. First, compare the explanatory power of full regression models with financial leverages of the marginal subsidiaries versus that of reduced regression models without financial leverages of the marginal subsidiaries. Second, examine the partial regression coefficient of financial leverages of the marginal subsidiaries, an independent variable, in the full regression models. Empirical results from the two methodologies suggest that financial leverages of the marginal subsidiaries do affect bond returns of the parent company. The results are robust across different measures of variables and methods.

Key words: IFRS, Financial leverage, Korea, Accounting

JEL: M40 M41

[1] The corresponding author, jjin@csusb.edu

1. Introduction

Korean reporting entities have to use International Financial Reporting Standards (IFRS) for their financial reporting purposes from the first fiscal year after January 1, 2011. A conspicuous change in Korean accounting practices with the adoption of IFRS is the one in consolidated financial statements. There are two major changes in accounting for consolidated financial statements. First, consolidated financial statements become integral part of financial reporting: i.e., reporting entities with controlling interests in their subsidiaries have to prepare their own financial statements and their consolidated financial statements and disclose both of them simultaneously under IFRS, while reporting entities' own financial statements and their consolidated financial statements are reported in sequence under Korean GAAP. Second, consolidation scopes changed significantly with the adoption of IFRS. Under Korean GAAP, the parent company which has more than or equal to 30% ownership interests and the largest ownership interest in a subsidiary is required to include the subsidiary in its consolidated financial statements. On the other hand, the parent company can apply more stringent consolidation criteria (e.g., 50% ownership interests) with the adoption of IFRS. In fact during 2010 a good number of parent companies actually applied the 50 % ownership interest criterion so that the subsidiaries with between 30% and 50% ownership interests were dropped from consolidations. And some of those dropped subsidiaries were major business units of the parent companies, consolidated financial statements without these major business units may have less the informational content and hence be useful to the accounting information users.

There are 16 sample firms in this study which prepared their consolidated financial statements complying with IFRS in 2010 when IFRS became effective in Korea. One half

of those 16 sample firms still used traditional 30% ownership interests and the largest ownership interest criteria for consolidations. The other half of the sample firms started applying more stringent 50% ownership interest criterion for consolidations with the adoption of IFRS and hence dropped the subsidiaries of which they have between 30% and 50 % ownership interests. For examples, LG Corporation, the second largest conglomerate following Sam Sung in South Korea, excluded those subsidiaries of which it had between 30% and 50 % ownership interests from its consolidations in 2010. The number of consolidated subsidiaries decreased from 163 in 2009 to 33 in 2010. What makes it more alarming is that major subsidiaries such as LG Electronics, LG Chemicals, LG U Plus, LG Care, and LG Hausys were excluded from LG's consolidated financial statements. Each of these LG subsidiaries is a multi-billion dollars operation and a leading company in its respective industry in Korea As a result, consolidated total assets decreased from about $63,000,000,000 to $13,000,000,000 in 2010, which is not due to poor performances of LG Corporation (the parent company) and its subsidiaries but due to exclusion of its major subsidiaries from consolidations. This is one of many examples where there are totally different consolidated financial statements before and after the IFRS adoption, which may have significant and important implications to accounting policy on consolidated financial statements.

If informational content and usefulness of the consolidated financial statements are indeed hampered with the adoption of IFRS as shown in the above-mentioned example, it will be imperative to revisit the issue of IFRS adoption in Korea: such as whether it was a right thing to do or not; and whether IFRS was adopted in a proper manner in Korea. To resolve this issue, it would be meaningful to investigate whether the consolidation scope

changes with IFRS adoptions actually affect the security performance in Korean capital market.

The purpose of this study is to examine whether financial leverages of subsidiaries dropped from consolidations with applications of more stringent 50% ownership interest criteria (called 'marginal subsidiaries' hereafter) affect bond yields of the parent company. Financial data and market data of those marginal subsidiaries with between 30% and 50% ownership interests are analyzed to address the above-mentioned research question in this study. To be specific, whether financial leverages of those marginal subsidiaries dropped from consolidations affects bond returns were investigated. This research could provide insightful evidence for or against the validity of the current IFRS for consolidated financial statements, which may lead to changes in IFRS or disclosure requirements.

The remainder of this paper is organized as follows. The next section contains literature reviews and hypotheses developments followed by sample selection procedure and research methodology in Section three. The empirical results and interpretations of them are presented in Section four. A summary of the results and some suggestions for future research appear in final section.

2. Literature review and hypotheses developments

2.1 Literature review

With respect to informational contents of consolidation scope changes, there are mixed results in the previous research. Beranek and Clayton (1990) found that betas of firms reporting consolidated financial statements only were higher than betas of firms reporting both their own financial statements and consolidated financial statements. Mian & Smith

(1990) found that users of consolidated financial statements didn't notice the manipulations of reporting entities which exclude their financial subsidiaries from consolidations to hide high financial leverages of financial subsidiaries. On the contrary, Comiskey et al. (1987) found that financial leverages of reporting entities including their financial subsidiaries in the consolidated financial statements had stronger relationships with the systematic risk than those of the reporting entities excluding their financial subsidiaries in the consolidated financial statements did. This may indicate that financial leverage changes due to consolidation scope changes do affect accounting information users' risk assessments and hence do have information content in the capital market.

One of the main topic areas in the previous research on corporate bonds is the effect of risk measures such as financial leverages on the default risk of the bonds and hence on bond yields. The previous studies in this line of research, in general, found that the default risk measured by various financial ratios including financial leverages and current ratios is reflected on the credit ratings which, in turn, affect the corporate bond yields. The higher the default risk, the worse the credit ratings. The worse the credit rating, the higher corporate bond yields due to higher risk premium. Thus, much effort has been exercised to identify financial ratios affecting the default risk in the previous studies. For an example, Lee et. al. (2010) found that the firm's financial leverage did affect the value relevance of earnings and equity book value through the default risk.

However, previous studies on the determinants of corporate bond yields such as Elton et al., (2001), Lamdin (2004), Chen et al. (2004), and Dionne et al. (2009) found that the credit ratings accounted for only a small portion of the default risk. For an example, Elton et al., (2001) showed that only a small fraction of corporate yield spreads could be attributed to the default risk: i.e., the expected default loss explains no more than 25% of corporate spot spreads. The remainder was attributed to a tax premium and a risk premium for systematic risk. Bond characteristics (e.g., stated

interest rates, size of the bond, time to maturity, and taxes), interest rates on treasury bills or treasury notes and their term structures, stock market indices, and macro-economic indices (e.g., inflation rate, exchange rates, GPD growth rate and trade surplus/deficit) collectively explain more of corporate bond yield spreads than the default risk does. Therefore, these variables should be controlled for to examine the effect of financial leverages on bond yields.

In sum, all findings addressed above may imply that financial leverages affect systematic risks which, in turn, affect bond yields. If and when financial leverages change due to consolidation scope changes with the adoption of IFRS, bond performances in the capital market may change with the adoption of IFRS.

2.2 Hypotheses developments

All subsidiaries and the parent company included in the consolidated financial statements are supposed to be one economic unit even if they are legally independent entities. It is because all those consolidated subsidiaries are under the control of the parent company and they should be running like one company for the best interest of the whole and hence the parent company. Regarding subsidiaries of which the parent has between 30% and 50 % ownership interests (i.e., marginal subsidiaries in this study), they should be subject to the consolidation as long as the parent company has significant control over the marginal subsidiaries. Considering the presence of good number of non- voting ownership interest holders and diverse distribution of ownerships, it is highly likely that the parent company has significant control over these marginal subsidiaries. The marginal subsidiaries are indeed an integral part of the whole reporting entity. Thus, financial information about the

marginal subsidiaries should be an integral part of overall financial picture of the whole operations. In other words, the consolidated financial statements without those marginal subsidiaries would not be sufficient enough to fairly represent economic reality of the whole operations. This may lead to sub-optimal decisions by the accounting information users which, in turn, cause different market behaviors than what would have happened to the market if those marginal subsidiaries are included in the consolidated financial statements. Given this being addressed, financial leverages of the marginal subsidiaries should make differences in accounting information users' assessment on the reporting entity's financial risk and bond values, which, in turn, affect their investment decisions. Thus, financial leverages of the marginal subsidiaries should eventually affect bond prices (returns). Since financial leverages may have a direct impact on bond returns and the bond markets are, in general, less efficient than the stock market due to the smaller trading volume and the lower trading frequency, it would be reasonable to expect significant effect of the financial leverages of the marginal subsidiaries on bond returns of the parent companies. A plausible hypothesis here-from would be

> ***Hypothesis****: If other things being equal, financial leverages of the marginal subsidiaries dropped from consolidations with applications of 50% ownership interest criterion under IFRS affect bond returns of the parent companies.*

3. Sample selection and research methodology

3.1 Sample selection

Our sample consists of 96 parent companies over 4 year period from 2007 through 2010:

i.e., total of 384 firm-years. Out of the 384 total sample firm-years only 244 sample firm-years survived the following selection criteria and hence were used in this study:

- Firms' bonds and stocks are traded at KRX (Korea Exchange) and KOSDAQ (Korea Securities Dealers Automated Quotation), respectively.
- Firms should not be in financial sector.
- Firms' financial information and market data such as stock return data should be available at KIS VAULUE database.
- Firms' bond returns data should be available at Debt Security Information Center of Korean Securities Dealers Association.
- Firms' credit ratings should be available at NICE Information Service.
- Firms should have marginal subsidiaries with between 30% and 50% ownership interests that could be dropped from consolidations if 50% ownership interest criterion for consolidation scope is applied.

Distribution of sample firms across industries is presented in Table 1. About 60% of the sample firms are from service, steel & machinery, and chemical industries. The remaining 40% are from such industries as food, paper, timber, electric, electronic, construction, retail, whole sale, gas, and transportation related industries.

- Insert TABLE 1 around here -

3.2 Research Methodology

Since the purpose of this study is to examine if financial leverages of the marginal

subsidiaries dropped from consolidations with 50% ownership interest criterion under IFRS on bond returns of the parent companies, 3 different types of financial leverages were calculated in this study. First, financial leverages of parent companies using consolidated financial statements under more lenient Korea GAAP were computed. The marginal subsidiaries were included in the consolidated financial statements; second, financial leverages of the marginal subsidiaries were computed; third, financial leverages of parent companies using consolidated financial statements under more stringent 50% ownership interest criterion with the adoption of IFRS were computed. Thus, this type of consolidated financial statements do not include the marginal subsidiaries.

3.2.1 Bond return models

Effects of the marginal subsidiaries' financial leverages on bond returns were examined using the following multiple regression models.

Model 1; $R^b_t = a_0+a_1FL^{ifrs}+a_2SIZE+a_3CR+a_{4\sim6}YR+a_{7\sim17}IND+\varepsilon$

Model 2; $R^b_t = a_0+a_1FL^{all}+a_2SIZE+a_3CR+a_{4\sim6}YR+a_{7\sim17}IND+\varepsilon$

Model 3; $R^b_t =a_0+a_1FL^{ifrs}+a_2FL^{sub}+a_3SIZE+a_4CR+a_5CRFL+a_{6\sim8}YR+a_{9\sim19}IND+\varepsilon$

R^b = the bond returns as of the end of the fiscal year.

FL^{all} = the financial leverage using consolidated financial statements under Korean GAAP = consolidated total liabilities/market capital of the parent company.

FL^{sub} = the financial leverage of the marginal subsidiaries of which the parent

company has between 30% and 50% ownership interests.

FL^{ifrs} = the financial leverage using consolidated financial statements under 50% Ownership interest criterion for consolidation scope with the adoption of IFRS

$= FL^{all} - FL^{sub}$,

SIZE = the firm size measured by market capitalization of the parent company.

CR = if the credit score by NICE Information Service is above 8 then CR=1, otherwise CR=0

YR = the dummy for year.

IND = the dummy for industry.

SIZE, CR, YR, & IND are control variables to remove potential effects of firm size, credit ratings, fiscal year, and industry on bond returns, while FL's are measurement variable whose relationships with bond returns are major considerations of this paper.

Effects of the marginal subsidiaries' financial leverages on bond returns are examined two different ways. First, compare the explanatory power of Model 1 and Model 2. If the explanatory power of Model 2 is statistically significantly higher than that of Model 1, then it may indicate that financial leverages of the marginal subsidiaries have significant effects on bond returns of the parent company. χ^2 statistics which are essentially comparative measures of F-values of the two regression models are examined for this purpose. A similar comparison between the explanatory power of Model 1 and that of Model 3 can be conducted for the same purpose. If the explanatory power of Model 3 is statistically

significantly higher than that of Model 1, then it may indicate that financial leverages of the marginal subsidiaries have significant effects on bond returns of the parent company. The other way to investigate the effect of the marginal subsidiaries' financial leverages on bond returns is to evaluate the partial regression coefficient of FL^{sub} in Model 3. If the partial regression coefficient of the FL^{sub} is statically significant, it may imply that financial leverages of the marginal subsidiaries do affect bond returns of the parent company.

4. Empirical Results

4.1 Description of major variables

Summary statistics such as average, standard deviation, maximum value and minimum value of major dependent and independent variables are presented in Panel A of <TABLE 2>. Average bond returns is 0.065. Average financial leverages of the marginal subsidiaries is 1.074, while average financial leverages of the parent company under Korean GAAP is 4.108. Average market capitalization, market to book value, and credit ratings of the sample firms are 29.41, 1.353, and 0.07, respectively.

Correlations between major variables are shown in Panel B of <TABLE 2>. Correlation between financial leverages of the marginal subsidiaries and bond returns is 0.082, which is not statistically significant at any meaningful confidence level. Correlation between financial leverage measures of the marginal subsidiaries and those from consolidated financial statements under Korean GAAP is 0.540, while correlation between

financial leverage measures of the marginal subsidiaries and those from consolidated financial statements under more stringent IFRS is 0.159. Both correlations are statistically significant but not high enough to warrant the control over the multi-colinearity problems between those financial leverage variables. Correlation between financial leverages from consolidated financial statements under Korean GAAP and those under more stringent IFRS is 0.917, which is statistically significant and high enough to warrant the control over the multi-colinearity issue between the two variables. This is why these two variables have never been in the same regression models as independent variables in this study. Correlation between financial leverage measures (FL) and credit score (CR) is 0.271, which is statistically significant and high enough to warrant the control over the multi-colinearity problem between these variables. Thus, a product term of the two variables (CRFL = CR*FL) was introduced in the regression model (3) as a control measure for the multi-colinearity problem.

- Insert TABLE 2 around here -

4.2 Effects of financial leverages of the marginal subsidiaries on bond returns

Empirical results from Model 1, Model 2, and Model 3 for the effect of financial leverages of the marginal subsidiaries on bond returns are presented in <TABLE 3>. χ^2 value that is a measure of difference in explanatory powers of Model 1 and Model 2 is **5.632**, statistically significant at 1% confidence level. It indicates that financial leverages of the marginal subsidiaries do affect bond returns, supporting the Hypothesis. χ^2 value that is a measure of

difference in explanatory powers of Model 1 and Model 3 is **15.537**, statistically significant at 1 % confidence level. It also indicates that financial leverages of the marginal subsidiaries do affect bond returns, supporting Hypothesis. The partial regression coefficient of FL^{sub} in Model 3 is 0.002 with 4.86 t-value, which is statistically significant at 1% confidence level. This result also supports Hypothesis that financial leverages of the marginal subsidiaries dropped from consolidations with applications of 50% ownership interest criterion affect bond returns of the parent company. In sum, all empirical results from Model 1, Model 2, and Model 3 support Hypothesis.

- Insert TABLE 3 around here –

5. Conclusions

This is one of the studies on the effect of consolidation scope changes with the adoption of IFRS on the capital market in Korea. To be specific, the effect of financial leverages of the marginal subsidiaries dropped from consolidations with applications of more stringent consolidation scope criterion of 50% ownership interests under IFRS than that under Korean GAAP on bond returns of the parent company. The empirical results in this study indicate that financial leverages of the marginal subsidiaries do affect bond returns of the parent company, supporting Hypothesis that *financial leverages of the marginal Subsidiaries dropped from consolidations with applications of 50% ownership interest criterion under IFRS affect bond returns of the parent companies.* Results in this study may be useful additions to the evidence on the general research question of whether the adoption of IFRS improves the usefulness of accounting information and hence improves capital allocations.

One potentially serious caveat of this study is insufficient number of sample firms which experienced the changes in consolidation scopes with the adoption of IFRS. Since 2011 is the first year of approving the use of IFRS in Korea, this issue can be resolved as time goes. A plausible extension of this study is to investigate the effect of financial leverage of the marginal subsidiaries on stock returns.

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<TABLE 1>

Industrial distribution of sample firms

Industry\year	2007	2008	2009	2010	Total	
Food, paper, & timber	5	4	6	5	20	9.1%
Chemical	9	9	10	9	37	16.9%
Steel & machinery	10	10	11	6	37	16.9%
Electric & electronic	4	3	6	4	17	7.8%
Construction	7	8	7	5	27	12.3%
Retail & whole sales	7	5	7	5	24	11.0%
Services	14	14	15	14	57	26.0%
Others*	5	5	7	8	25	11.4%
Total	61	58	69	56	244	100%

*summation of transportation, transportation equipment, power & gas industries

<TABLE 2>

Description of major variables

Panel A: summary statistics of major variables

Variables	Average	Standard deviation	Min	Max
Rb	0.065	0.022	0.033	0.178
Re	0.159	0.406	-0.793	0.835
FL_all	4.108	5.539	0.060	47.65
FL_ifrs	3.035	4.724	0.051	45.93
FL_sub	1.074	2.236	0.000	15.25
SIZE	29.41	1.511	25.18	32.40
PBR	1.353	0.937	0.189	7.259
CR	0.070	0.255	0	1

Panel B: correlations between major variables

	Rb	Re	FL_all	FL_ifrs	FL_sub	SIZE	PBR
Re	0.101						
	0.116						
FL_all	0.148	-0.040					
	0.021	0.538					
FL_ifrs	0.135	-0.051	0.917				
	0.035	0.431	<.0001				
FL_sub	0.082	0.009	0.540	0.159			
	0.199	0.892	<.0001	0.013			
SIZE	-0.498	0.030	0.207	0.148	0.200		
	<.0001	0.644	0.001	0.021	0.002		
PBR	-0.025	0.030	-0.114	-0.106	-0.058	0.050	
	0.702	0.638	0.075	0.098	0.363	0.436	
CR	0.379	-0.033	0.271	0.273	0.093	-0.172	0.071
	<.0001	0.607	<.0001	<.0001	0.147	0.007	0.270

<TABLE 3>

Effect of the marginal subsidiaries' financial leverages on bond returns

Model1; $R^b = a_0+a_1FL^{ifrs}+a_2SIZE+a_3INTR+a_3CR+a_{4\sim6}YR+a_{7\sim17}IND+\varepsilon$
Model2; $R^b = a_0+a_1FL^{all}+a_2SIZE+a_3INTR+a_3CR+a_{4\sim6}YR+a_{7\sim17}IND+\varepsilon$
Model3; $R^b =a_0+a_1FL^{ifrs}+a_2FL^{sub}+a_3INTR+a_3SIZE+a_4CR+a_5CRFL+a_{6\sim8}YR+a_{9\sim19}IND+\varepsilon$

	Model 1	Model 2	Model 3
Variable	Estimate (t value)	Estimate (t value)	Estimate (t value)
Intercept	0.116 (4.88)**	0.128 (5.51)**	0.131 (5.73) **
FL^{ifrs}	0.001 (3.18)**		0.001 (2.8)*
FL^{all}		0.001 (5.22)**	
FL^{sub}			0.002 (5.01)**
SIZE	-0.006 (-8.94)**	-0.007 (-9.84)**	-0.007 (-10.18)**
INTR	2.504 (11.82)**	2.548 (12.44)**	2.586 (12.79)**
CR	0.029 (5.43)**	0.028 (5.45)**	0.025 (4.84)**
CRFL	-0.001 (-2.44)*	-0.001 (-3.27)**	-0.001 (-2.34)*
YR	included	included	included
IND	included	included	included
Adj R^2	0.6179	0.6433	0.6540
χ^2(model1 vs 2)		8.392**	
χ^2(model1 vs 3)		12.638**	

R^b = the bond returns as of the end of the fiscal year.
FL^{all} = the financial leverages using consolidated financial statements under Korean GAAP (= consolidated total liabilities/market capitalization of the parent company's equity)
FL^{sub} = the financial leverage of the marginal subsidiaries of which the parent company has between 30% and 50% ownership interests.(= the marginal subsidiaries' liabilities/market capitalization of the parent company's equity)
FL^{ifrs} = the pro forma financial leverage using consolidated financial statements under adoption of IFRS(= FL^{all} - FL^{sub})
SIZE = natural logarithm of market capitalization of the parent company's equity.
INTR = the T-bond returns as of the end of the fiscal year.
CR = if the credit rating score by NICE is above 8, CR get 1, otherwise 0
CRFL =interaction term to minimize a multi-colinearity between CR and FL^{ifrs} = CR*FL^{ifrs}
YR = the dummy for year.
IND = the dummy for industry.

*,** = statistically significant at the confidence level of 5%, & 1%, respectively.
χ^2 = statistics for relative explanatory power between regression models.