The Effect Of Debt Choice On Firm Value

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ABSTRACT

This study aims to verify the effects of different methods of debt financing on firm value. The most common methods used by firms to finance its operations are directly issuing corporate bonds in the capital market and borrowing through financial institutions such as banks. From the accounting perspective, there is no difference between corporate bonds and bank loans. However, from the economic perspective, corporate bonds and bank loans are different in terms of their characteristics. This study conducts with the assumption that the attributes of the type of debt selected determine its impact on firm value. The results indicate that firms that use corporate bonds more frequently than bank loans have a higher value.

Keywords: Bank Loan; Corporate Bond; Private Debt; Public Debt; Firm Value; MTB; Tobin's Q

INTRODUCTION

Firm value is determined by numerous complex factors. Since Ball & Brown (1968), numerous researchers have conducted studies on the capital market. Most of these studies focus on comparing the value relevance of accounting figures with share prices. The evaluation of firm value becomes an issue when deciding which information has value relevance. Ohlson (1995) investigated firm value using the information of book value of net assets and net earnings from the numerous accounting figures of a firm. However, subsequent researchers have argued that considering other information that reflects a firm's characteristics could not only explain the firm value better, but also intensify the usefulness of Ohlson (1995)'s model (Kwon et al. 2010; Kim, 2005).

Capital structure is the representative accounting figure that influences firm value. Since Modigliani & Miller (1958), a lot of studies related to capital structure have been conducted in the fields of accounting as well as finance. Traditional theories on the determinants of capital structure, such as pecking order theory, trade-off theory, and market timing theory have focused on equity capital and debt capital. However, this study is conducted with the assumption that firm value could differ based on the selected method of financing that is, issuing corporate bonds or borrowing from financial institutions. Prior literatures have verified the various effects that arise from the type of debt being selected. Most of prior studies have focused on verifying the differences in firms' earnings management and conservatism depending on the choice of debt.

Information asymmetry exists between firms and investors. The information asymmetry between corporate bond investors and firms is larger than that between banks and firms. Information intermediaries such as credit rating agencies exist in order to reduce this asymmetry between corporate bond investors and firms. The accounting characteristics of corporate bonds and bank loans, which could be found in financial statements, are identical, but their characteristics are different from the standpoint of economics. As such, this study attempts to verify how the different characteristics influence the firm value.

HYPOTHESES DEVELOPMENT

According to Bhattacharya & Chiesa (1995), private debt investors have greater access to a firm's internal information than public debt investors, as they are provided with its credit condition and investment plans during loan appraisal. Bharath et al. (2008) argued that private debt investors have higher monitoring efficiency than public debt investors. According to them, the agency problem could easily arise when firms issue public debts, but the possibility of bearing agency costs due to information asymmetry is relatively lower when firms issue private debts. Berlin & Loeys (1988), Blackwell & Kidwell (1988) argued that the information cost of corporate bonds is higher than that of bank loans.

Kim & Bae (2006) investigated the relationship between firm's characteristics, such as debt ratio and loan ratio, and conservatism. The results indicate that the inclination towards conservatism becomes stronger as the debt ratio increases and the loan ratio decreases. Haw et al. (2014) argued the effect of public debt on conservatism is stronger than that of private debt. On the other hand, Hong (2016b) directly compared and analyzed the relationship between corporate bond balance and loan balance from financial statements and the results suggested that firms with larger loan balance than corporate bond balance conduct conservative accounting operations.

Chun et al. (2011) compared the absolute value of discretionary accruals of firms that have a high private debt ratio with those that have a high public debt ratio. They argued that the former conduct more earnings management than the latter. Financial institutions, the creditors of private debts, can easily obtain information about a firm, the debtor, monitor its business, and take control by modifying terms and conditions of the contract, thereby reducing any uncertainty. Hence, private debt investors would incur a relatively lower agency cost that arises from information asymmetry. On the other hand, public debt investors cannot easily obtain information about firms, monitor its business, and alter the terms and conditions of the contract. Therefore, they would incur a higher agency cost that arises from information asymmetry. Information intermediaries such as credit rating agencies aim to resolve the problem of information asymmetry faced by public debt investors. Credit rating agencies usually calculate the firm's credit rating based on its financial information. (Black, 1975; Yoon & Park, 1999)

However, Hong (2016c) concluded that firms that usually use corporate bonds conduct more upward earnings management than firms that usually uses loans. Kim (2010) investigated the value relevance between debt characteristics and book value of net assets and net earnings. Park (2013) stated that the characteristics of debt influence audit fees and Jung & Lee (2014) argued that the characteristics of debt influence the firm's future earnings response coefficient. Hong (2016a) reported in detail the presence of differences in terms of earnings management, conservatism, and business performance evaluation between firms that issue corporate bonds through open competitive bidding and firms that do not.

The preceding literatures indicate that firms' accounting and financial characteristics differ depending on types of debt being used. Even though the results differ among researchers, it is clear that types of debt being selected have a differential impact on firms. This study establishes and verifies this hypothesis.

Hypothesis: When debt financing, firm value will differ depending on whether corporate bonds or loans are mainly used.

THE MODEL

The samples used in this study include firms that close their books in December and are listed on the Korea Exchange (KOSPI) from 1990 to 2015. Financial firms, which have different accounting standards, are excluded from the analysis. The data is collected from the databases provided by the TS-2000 of Korea Listed Companies Association and the DataGuide of FnGuide. The extreme values, the upper and lower 1%, are adjusted through winsorization and the total samples used in the final analysis comprise 9,209 firm · year.

In order to analyze the effect of debt choice on firm value, the model of this study is established through equation (1) below. The market-to-book ratio (*MTB*) and *Tobin's Q*, which are usually used as proxies for firm value, are chosen as the dependent variables and *LOAN*, which refers to firms that use more loans than corporate bonds, is chosen as the main variable. The variables that are known to influence firm value are chosen as the control variables. *SIZE* is included to control firm size effect, *LEV* is included to control financial soundness, *OCF* and *ROA* are included to control profitability, *BETA* is included to control risk, and *GW* is included to control growth opportunities.

For robust analysis, the following three types of variables are used in the analysis: *LOAN_D*, the dummy variable that equals 1 if loans are larger than corporate bonds and 0 otherwise; *LOAN_G*, the continuous variable that indicates the value obtained by subtracting corporate bonds from loans; and *LOAN_R*, the loan ratio.

$$MTB_t \text{ (or Tobin's } Q_t) = \beta_0 + \beta_1 LOAN\_D_t \text{ (or } LOAN\_G_t \text{ or } LOAN\_R_t) + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 OCF_t + \beta_5 BETA_t + \beta_6 GW_t + \beta_7 ROA_t + \Sigma YD + \Sigma IND + \varepsilon_t \quad (1)$$

MTB = market to book ratio = market value of equity / book value of equity
Tobin's Q = (market value of equity + book value of debt) / book value of total asset
LOAN_D = 1 if loan is bigger than bond, otherwise 0
LOAN_G = loan – bond, scaled by beginning total asset
LOAN_R = loan / (loan + bond)
SIZE = the natural logarithm of the total asset
LEV = leverage = total debt / total asset
OCF = cash flows from operating scaled by beginning total asset
BETA = 3 year systematic risk measured by market model
GW = sales growth rate
ROA = net income scaled by beginning total asset
YD = year dummy variables
IND = industry dummy variables
ε = residuals

EMPIRICAL RESULTS

Table 1. Descriptive statistics

Variables	N	Mean	Std.	Median	Min	Max
MTB	9,209	1.082	0.867	0.869	0.142	5.423
Tobin's Q	9,209	1.006	0.348	0.952	0.446	2.505
LOAN_D	9,209	0.569	0.495	1.000	0.000	1.000
LOAN_G	9,209	-0.004	0.120	0.005	-0.340	0.382
LOAN_R	9,209	0.603	0.386	0.625	0.000	1.000
SIZE	9,209	26.457	1.532	26.194	23.710	30.838
LEV	9,209	0.545	0.184	0.554	0.125	0.935
OCF	9,209	0.050	0.084	0.048	-0.198	0.298
BETA	9,209	0.892	0.476	0.865	-0.214	2.272
GW	9,209	0.078	0.200	0.056	-0.544	0.930
ROA	9,209	0.025	0.066	0.024	-0.250	0.205

(1) Refer to 'THE MODEL (1)' for the definition of variables.

Table 1 illustrates the descriptive statistics of the total samples. The average of the *MTB* and *Tobin's Q*, the proxies for firm value, is slightly higher than 1. The average of *LOAN_D* is higher than 0.5, which indicates that firms use more loans than corporate bonds. Meanwhile, the values of other control variables are not significantly different from the values derived in the preceding literatures.

Table 2. Pearson correlation matrix

Variables	*MTB*	*Tobin's Q*	*LOAN_D*	*LOAN_G*	*LOAN_R*	*SIZE*	*LEV*	*OCF*	*BETA*	*GW*	*ROA*
MTB	1.000										
Tobin's Q	0.899***	1.000									
LOAN_D	-0.073***	-0.100***	1.000								
LOAN_G	-0.053***	-0.077***	0.728***	1.000							
LOAN_R	-0.088***	-0.115***	0.912***	0.744***	1.000						
SIZE	0.012	0.051***	-0.265***	-0.180***	-0.292***	1.000					
LEV	0.154***	0.113***	-0.194***	-0.038***	-0.221***	0.049***	1.000				
OCF	0.049***	0.087***	0.078***	0.071***	0.085***	0.103***	-0.190***	1.000			
BETA	0.030***	0.039***	-0.047***	-0.003	-0.051***	0.223***	0.089***	-0.067***	1.000		
GW	0.129***	0.144***	0.001	-0.014	0.005	-0.013	0.100***	0.113***	-0.027**	1.000	
ROA	0.088***	0.127***	0.046***	-0.010	0.062***	0.091***	-0.379***	0.432***	-0.097**	0.259***	1.000

(1) Refer to 'THE MODEL (1)' for the definition of variables.
(2) ***, **, and * significant at the 1%, 5%, and 10% levels, respectively.

Table 2 illustrates the correlations among the variables. As expected, the *MTB* has a very strong positive correlation with *Tobin's Q* and *LOAN_D*, *LOAN_G*, and *LOAN_R* have strong positive correlations among themselves. It also illustrates that firm value has a negative correlation with the three *LOAN* variables.

Table 3. Univariate analysis

Variables	***LOAN_D* = 1**	***LOAN_D* = 0**	**Difference**	**t-value**
MTB	1.027	1.155	0.128	6.98***
Tobin's Q	0.976	1.046	0.070	9.67***

(1) Refer to 'THE MODEL (1)' for the definition of variables.
(2) ***, **, and * significant at the 1%, 5%, and 10% levels, respectively.

Table 3 illustrates the results of the univariate analysis that compares the value of firms that use more loans with firms that use more corporate bonds. The results from both proxies of firm value indicate that firms that use more corporate bonds have a higher value.

Panel A and Panel D in Table 4 show that the regression analysis using the dummy variable *LOAN_D* as the main variable supports the hypothesis. The regression analysis that uses the *MTB* and *Tobin's Q* as the dependent variable indicates a significant negative value for every the *LOAN_D* coefficient. It indicates that firms that use more corporate bonds than loans have a higher value. Coefficients of control variables are not materially different from previous studies.

Panel B and Panel E in Table 4 show that the regression analysis using the continuous variable *LOAN_G* as the main variable supports the hypothesis. The regression analysis that uses the *MTB* and *Tobin's Q* as the dependent variable indicates a significant negative value for every the *LOAN_G* coefficient. It indicates that firms that use more corporate bonds than loans have a higher value.

Panel C and Panel F in Table 4 show that the regression analysis using the ratio variable *LOAN_R* as the main variable supports the hypothesis. The regression analysis that uses the *MTB* and *Tobin's Q* as the dependent variable indicates a significant negative value for every the *LOAN_R* coefficient. It indicates that firms that use more corporate bonds than loans have a higher value.

Additionally, in every analysis, F-value is significant and variance inflation factor is low enough to avoid multicollinearity problems.

Table 4. Regression analysis

$$Firm\ Value_t=\beta_0+\beta_1 LOAN_t+\beta_2 SIZE_t+\beta_3 LEV_t+\beta_4 OCF_t+\beta_5 BETA_t+\beta_6 GW_t+\beta_7 ROA_t+\Sigma YD+\Sigma IND+\varepsilon_t \quad (1)$$

Firm Value = MTB

	Panel A *LOAN = LOAN_D*		**Panel B** *LOAN = LOAN_G*		**Panel C** *LOAN = LOAN_R*	
Variables	**Coeff.**	**t value**	**Coeff.**	**t value**	**Coeff.**	**t value**
Intercept	1.958	10.71***	1.781	10.22***	2.130	11.42***
LOAN	**-0.089**	**-4.94*****	**-0.293**	**-4.12*****	**-0.154**	**-6.54*****
SIZE	-0.037	-5.66***	-0.033	-5.17***	-0.041	-6.29***
LEV	1.136	19.64***	1.167	20.20***	1.122	19.38***
OCF	0.437	3.94***	0.432	3.89***	0.453	4.09***
BETA	0.059	3.12***	0.061	3.20***	0.060	3.16***
GW	0.239	5.36***	0.232	5.20***	0.242	5.44***
ROA	2.072	13.24***	2.068	13.21***	2.085	13.33***
YD	Included		Included		Included	
IND	Included		Included		Included	
F value	50.42		50.22		50.90	
Adj. R^2	0.205		0.204		0.206	
N	9,209		9,209		9,209	

Firm Value = Tobin's Q

	Panel D *LOAN = LOAN_D*		**Panel E** *LOAN = LOAN_G*		**Panel F** *LOAN = LOAN_R*	
Variables	**Coeff.**	**t value**	**Coeff.**	**t value**	**Coeff.**	**t value**
Intercept	1.248	17.32***	1.128	16.41***	1.331	18.11***
LOAN	**-0.057**	**-7.98*****	**-0.173**	**-6.16*****	**-0.090**	**-9.70*****
SIZE	-0.008	-2.99***	-0.005	-1.96**	-0.010	-3.78***
LEV	0.366	16.06***	0.386	16.91***	0.359	15.74***
OCF	0.269	6.15***	0.263	6.01***	0.276	6.31***
BETA	0.023	3.08***	0.024	3.20***	0.024	3.15***
GW	0.128	7.29***	0.124	7.03***	0.130	7.40***
ROA	0.881	14.27***	0.878	14.21***	0.888	14.41***
YD	Included		Included		Included	
IND	Included		Included		Included	
F value	59.54		58.84		60.36	
Adj. R^2	0.238		0.232		0.236	
N	9,209		9,209		9,209	

(1) Refer to 'THE MODEL (1)' for the definition of variables.
(2) ***, **, and * significant at the 1%, 5%, and 10% levels, respectively.

CONCLUSION

This study conducted the analysis with the assumption that firm value can differ depending on the types of debt being selected. It went one step further from the debt ratio, which is the representative accounting figure and verified that the debt choice can influence firm value. The correlation, univariate, and regression analyses all indicated identical results, thus verifying that the value of firms that use more corporate bonds than loans is higher. This implies that the capital market's evaluation is more favorable towards firms that use more corporate bonds than loans. Firm value as well as earnings management, conservatism, audit fee and future earnings response coefficient differ depending on the debt choice.

The research conducted by Hong (2016b), who used a similar research design and samples to this study, posited that firms that use more corporate bonds conduct more upward earnings management and less conservative accounting operation as compared to firms that use more loans. The purpose of firms that conduct upward earnings management and non-conservative accounting operation is to obtain better evaluation in the capital market. If capital market

participants realize that firms have conducted upward earnings management and non-conservative accounting operation, firm value will be negatively impacted. However, considering this study's empirical results, which indicate that firm value that use more corporate bonds is higher than that of firms that use more loans, implies that the capital market participants are not aware of upward earnings management and non-conservative accounting operations conducted by firms.

This study is significant because it verifies that the type of debt selected is among the various factors that influence firm value. Therefore, firms should practice caution in selecting the type of debt. Moreover, investors and financial analysts should include the characteristics of debt used for financing firms as a subject of analysis.

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