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.

\[
MTB_t \text{ (or } \text{Tobin’s } Q_t) = \beta_0 + \beta_1 \text{LOAN}_D + (\text{or } \text{LOAN}_G, \text{or } \text{LOAN}_R) + \beta_2 \text{SIZE}_t + \beta_3 \text{LEV}_t + \\
\beta_4 \text{OCF}_t + \beta_5 \text{BETA}_t + \beta_6 \text{GW}_t + \beta_7 \text{ROA}_t + \Sigma \text{YD} + \Sigma \text{IND} + \epsilon_t
\]  

(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

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std.</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>9,209</td>
<td>1.082</td>
<td>0.867</td>
<td>0.869</td>
<td>0.142</td>
<td>5.423</td>
</tr>
<tr>
<td>Tobin’s Q</td>
<td>9,209</td>
<td>1.006</td>
<td>0.348</td>
<td>0.952</td>
<td>0.446</td>
<td>2.505</td>
</tr>
<tr>
<td>LOAN_D</td>
<td>9,209</td>
<td>0.569</td>
<td>0.495</td>
<td>1.000</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>LOAN_G</td>
<td>9,209</td>
<td>-0.004</td>
<td>0.120</td>
<td>0.005</td>
<td>-0.340</td>
<td>0.382</td>
</tr>
<tr>
<td>LOAN_R</td>
<td>9,209</td>
<td>0.603</td>
<td>0.386</td>
<td>0.625</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>SIZE</td>
<td>9,209</td>
<td>26.457</td>
<td>1.532</td>
<td>26.194</td>
<td>23.710</td>
<td>30.838</td>
</tr>
<tr>
<td>LEV</td>
<td>9,209</td>
<td>0.054</td>
<td>0.084</td>
<td>0.048</td>
<td>-0.198</td>
<td>0.298</td>
</tr>
<tr>
<td>OCF</td>
<td>9,209</td>
<td>0.050</td>
<td>0.084</td>
<td>0.048</td>
<td>-0.198</td>
<td>0.298</td>
</tr>
<tr>
<td>BETA</td>
<td>9,209</td>
<td>0.892</td>
<td>0.476</td>
<td>0.865</td>
<td>-0.214</td>
<td>2.272</td>
</tr>
<tr>
<td>GW</td>
<td>9,209</td>
<td>0.078</td>
<td>0.056</td>
<td>0.056</td>
<td>-0.544</td>
<td>0.930</td>
</tr>
<tr>
<td>ROA</td>
<td>9,209</td>
<td>0.025</td>
<td>0.024</td>
<td>0.024</td>
<td>-0.250</td>
<td>0.205</td>
</tr>
</tbody>
</table>

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

Table 2. Pearson correlation matrix

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

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

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 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>
<thead>
<tr>
<th>Variables</th>
<th>LOAN_D = 1</th>
<th>LOAN_D = 0</th>
<th>Difference</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>1.027</td>
<td>1.155</td>
<td>0.128</td>
<td>6.98***</td>
</tr>
<tr>
<td>Tobin’s Q</td>
<td>0.976</td>
<td>1.046</td>
<td>0.070</td>
<td>9.67***</td>
</tr>
</tbody>
</table>

(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.
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

\[ \text{Firm Value} = \beta_0 + \beta_1 \text{LOAN} + \beta_2 \text{SIZE} + \beta_3 \text{LEV} + \beta_4 \text{OCF} + \beta_5 \text{BETA} + \beta_6 \text{GW} + \beta_7 \text{ROA} + \Sigma \text{IND} + \Sigma \text{F} + \epsilon \]  

(1)

**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.

AUTHOR BIOGRAPHY

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