Joint Effect of Debt Financing and Credit Rating on Corporation's Performance

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ARTICLE DETAILS

ABSTRACT

The purpose of this paper is to examine the joint effect of debt financing and credit rating on the corporation's performance. Using a sample of 309 US firm-year observations in the retail industry from year 2011 to 2013, we show that both debt financing and credit rating have positive relationships with corporate performance. Further, when a company has high credit rating, its debt financing ratio has no effect on its performance, while a company with low credit rating; it performs better as debt financing ratio increases. The findings can be applied by CFOs (Chief Finance Officers) in retail companies to build an efficient capital structure when considering the companies' credit ratings. A good combination of these two enables firms to gain a bigger profit and attract more investors.

1. Introduction

When companies face their daily business, they need to think about their capital structure (Kronwald, 2009), thus it is important for companies that need financing to consider whether to raise debt or equity financing. Marsh (1982) found that the choosing of financing methods is influenced by other factors, like the market conditions, historical security prices, company size, bankruptcy risk and asset composition. Gombola (2007) also revealed that managerial over-optimism is a vital factor affecting the choice between debt and equity financing. Theoretically, firms in need of finance will raise equity when they are above their target debt and raise debt when they are below (Marsh, 1982).

A corporate performance is affected by different elements. Yadong and Min (1997) discussed that guanxi in China has a positive effect on firm's growth. Storey (2002) demonstrated that a cluster of education, training and development positively affect middle-sized company performance. Except for these factors, scholars increasingly emphasize the effect of corporate credit rating, because it can access the regulatory work and high-grade firms attract more investors to buy the financial products (Weber & Darbellay, 2008). According to Kronwald (2009), credit rating evaluates the debtor's credibility. Credit rating agencies, such as Standard and Poor's, Moody's, Fitch, gives evaluations on the debtor's ability to pay the debt or probability to default. Cantor, Gwilym and Thomas (2007) summarized that the use of credit rating mainly includes three points. Firstly, it helps to reduce adverse selection between issuers and holders of the debt; next, it mitigates the principal agent problem; and lastly, it can solve the moral hazard problem. Generally speaking, higher credit rating corporations have more complete and direct market. Since credit rating can reduce information asymmetry problems, it can lower the required capital and increase the security prices as well as have a more active market reaction (Chan & Lo, 2011). Because of the significance of debt financing and credit rating, we are motivated to examine whether the relationship between debt financing and corporate performance is affected by credit rating.

2. Research Framework and Hypotheses
2.1 Research Framework

The research model depicted in the figure below shows how debt financing and credit rating can influence the corporation's performance.

Figure 1 Research Framework
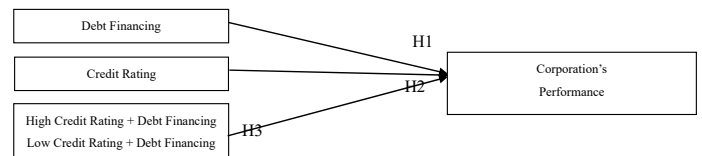
2.2 Hypotheses Development

Debt financing has some advantages compared with equity financing. It helps reducing taxation (Wrightsman, 1978), reducing free cash flow so that it can further limit the principal-agency problem (Laura, 2009) and encouraging managers to work hard to repay the debt. Hence, there is

H1: *Company has a higher portion of debt financing has better performance than the company with lower one.*

Standard and Poor's gives credit ratings for corporates based on many criteria, such as industry risks, company's market share growth, company's revenue, and profitability (Standard and Poor's, 2013). According to Kisgen (2006), credit rating provides a lot of information for investors and represents the quality of the firm. Indeed, a company with higher credit rating gives more confidence for its investors as well as spending less cost for financing. Hence, there is

H2: *Company with a higher credit rating has better performance than the company with lower one.*

Kisgen (2009) found out that firms that have been upgraded will not change their capital structure decisions a lot as the rating changes. On the contrary, firms are more likely to reduce debt financing when they have been downgraded as reducing debt ratio implies more financial stability and less distress, thus avoiding further downgrade. Another research presented by Kemper and Rao (2013) observed that companies that have potential to be upgraded will issue less debt to maintain or enhance ratings while companies that have potential to be downgraded will scale back debt financing to avert potential downgrade. Arrangements on capital structure made by firms in either rating level are to increase firms' profitability. Hence, there is

H3: *For companies with high level credit rating, debt financing ratio has an insignificant relationship with corporate performance while for companies with low credit rating, increase debt financing ratio is related to*

poor performance.

3. Data and Research Method

3.1 Sample Selection and Data Sources

According to Standard & Poor's, there are 244 listed companies in retail industry on the New York Security Exchange. In our study, we chose 118 companies in the retail trade area. According to McMillan and Hanson (2014), it is generally acceptable when sample sizes vary from about 40 to 480 subjects. Therefore, the size of our study observations is acceptable.

Sulong, Gardner, Hussin, Sanusi, and McGowan (2013) used three years (2007-2009) data to examine whether leverage, managerial ownership, and audit quality have impact on firm's performance. Theirdescriptive statistics showed that firms did not perform well in these years. Therefore, we select three-year period (2011-2013) as our study horizon.

After excluding firms with missing data, we have 103 firms in the retail sector for the period of 2011 to 2013. Therefore, the total sample generates 309 firm-year observations. The credit rating used is Standard & Poor's Long-Term Domestic Issuer Credit Rating, whose scale ranges from AAA to CCC+ or below, and measures the ability of the issuers' ability to pay the financial obligation.

3.2 Variable Measurement

Debt Financing. We use debt to total capitalization ratio to measure the portion of debt financing in the sample companies. It was used by Kisgen (2006) to describe the capital structure. It is defined as the ratio of the debt amount to the sum of debt and equity. In addition, data on debt amount is relatively easy to obtain and can be found on the listed corporation's annual report from Yahoo Finance website and Hoover's Company Records. Specifically, it is computed as:

$$\text{Debt financing ratio} = Debt_{i,t} / (Debt_{i,t} + Equity_{i,t})*100\% \quad (1)$$

Where $Debt_{i,t}$ represents the debt amount for the listed corporation i for year t, while the sum of $Debt_{i,t}$ and $Equity_{i,t}$ represents the approximate total capital for listed company i for year t. Higher ratio indicates higher debt financing.

Credit Rating. Similar to Kisgen (2006), we obtain the credit rating of chosen listed corporations. We use different numbers to represent different levels of credit rating.

Table 1: Representations for Credit Ratings

Credit Rating	Represented Number	Credit Rating	Represented Number
AAA	17	BBB-	8
AA+	16	BB+	7
AA	15	BB	6
AA-	14	BB-	5
A+	13	B+	4
A	12	B	3
A-	11	B-	2
BBB+	10	CCC+ or Below	1
BBB	9		

Corporate Performance. Following the work of Weygandt, Chalmers, Mitrione, Kieso, Yuen, Kimmel and Fyfe (2010), return on assets (ROA) is a widely used profitability ratio to evaluate corporations' financial performance. The computations are as below:

Return on Assets: $ROA_{i,t} = Profit_{i,t} / \text{Average Assets}_{i,t}$ （2）

Where $Profit_{i,t}$ represents the profit of the listed corporation for year t, Average $Assets_{i,t}$ represents the average assets of the listed corporation for year t. Average assets is computed as (Asset at the beginning of the year + Asset at the end of the year) / 2. A higher ROA indicates that the

corporations' profitability is higher and therefore performs better.

4 Data Analysis and Findings

Table 2 presents the descriptive statistics for our sample. In terms of our dependent variable, return on assets (ROA), the mean value of it is 0.5394. As for financing ratio, companies averagely require 48.97% of debt financing. On average, the credit rating of our sample firms is 7.43, which is between BBB- and BB+.

Table 2 Descriptive Statistics

Variable	N	Mean	Standard Deviation	Min	Max
ROA	309	0.5394	0.3132	0.06	1.92
Debt Financing Ratio	309	48.9719	43.7128	0.00	589.20
Credit Rating	309	7.4300	3.8240	1	16
Size	309	16542.1693	41848.9781	204.70	376781.00
Operating Cash Flow	307	1648.36	3495.248	-30	26029
Gross Profit Margin	309	0.3538	0.2035	0.00	1

ROA is the return on assets, measures corporate performance. Debt Financing Ratio is measured as the ratio of debt to the sum of debt and equity. Credit Rating used numbers to represent. Size represented by total assets. Operating Cash Flow measured by operating cash inflow minus operating cash outflows. Gross Profit Margin is the ratio of gross profit to total revenue.

Table 3 presents the correlation between the variables used in this study. It is worth noting that debt financing ratio is significantly and positively associated with return on assets, which supports that companies that depend more on debt financing have better profit-efficiency (Kar, 2012). Also, it proves our first hypothesis that "company has a higher portion of debt financing has better performance than the company with lower one". Similarly, credit rating is also significantly and positively related to return on assets, therefore supporting the second hypothesis that "company with a higher credit rating has better performance than the company with lower one". Besides, it shows that the debt financing ratio and credit rating is significantly and negatively correlated, with a correlation coefficient of -0.287, which implies that firms with higher credit rating will require less debt when they need financing, while low credit rating firms prefer to issue debt financing. It is because high credit rating companies tend to maintain their ratings and prevent downgrading (Kemper & Rao, 2013). And for those with low credit ratings, they have over optimistic for their asset acquisition and future stock performance, so they like finance asset by debt better than equity (Gombola & Marciukaityte, 2007).

Table 3 Pearson Correlation Coefficient

Variable	ROA	Debt Financing Ratio	Credit Rating	Size	Operating Cash Flow	Gross Profit Margin
ROA	1					
Debt Financing Ratio	0.118*	1				
Credit Rating	0.124*	-0.287**	1			
Size	-0.169**	-.044	0.359**	1		
Operating Cash Flow	-0.06	-.079	0.471**	0.905**	1	
Gross Profit Margin	0.338**	0.157**	-0.077	-0.145*	-0.132*	1

ROA is the return on assets, measures corporate performance. Debt Financing Ratio is measured as the ratio of debt to the sum of debt and equity. Credit Rating used numbers to represent. Size represented by total assets. Operating Cash Flow measured by operating cash inflow minus operating cash outflows. Gross Profit Margin is the ratio of gross profit to total revenue.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

To have a visual insight on the correlations among debt financing ratio, credit rating and return on assets (ROA), we plot them on the graphs. As depicted in Figure 2, return on assets (ROA) increases with the increase of debt financing ratio. Figure 3 shows that return on assets (ROA) increases with the increase of credit rating. Figure 4 presents the relationship between debt financing ratio and credit rating, which shows that firms with higher credit rating finance less debt than firms with lower credit rating.

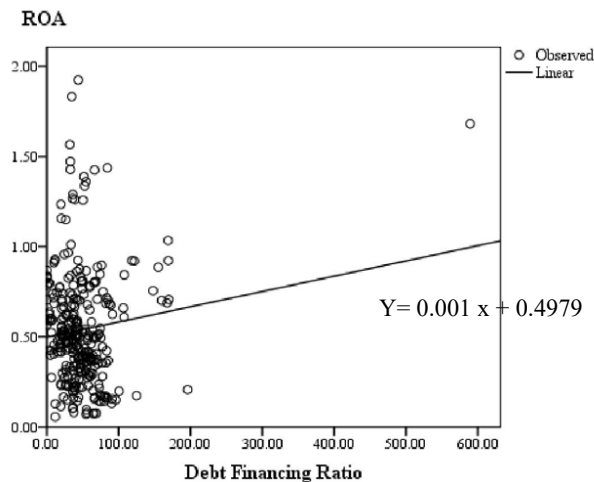**Figure 2   Linear Regression of Debt Financing Ratio and ROA**

$$Y= 0.001 x + 0.4979$$

Figure 3   Linear Regression of Credit Rating and ROA

$$Y= 0.0101x + 0.4641$$
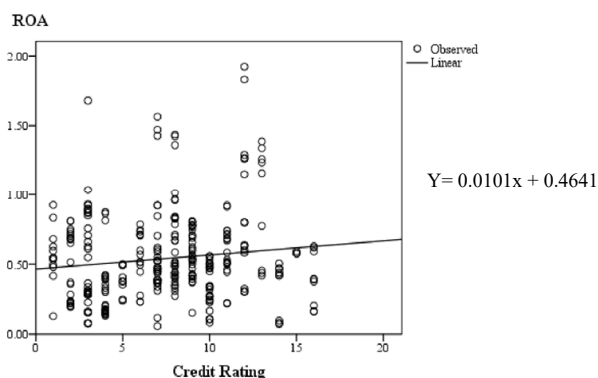
Figure 4   Linear Regression of Credit Rating and Debt Financing Ratio

$$Y= -3.282x + 73.348$$
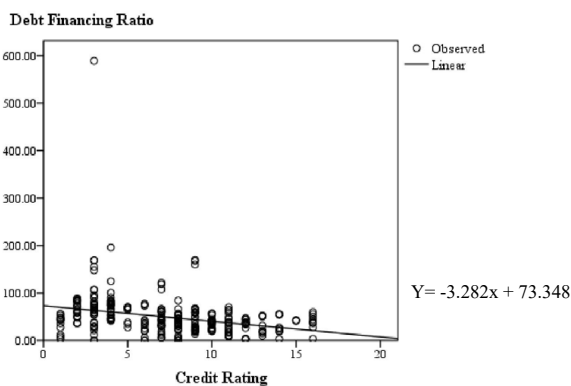
5 Conclusion

For the results shown in the previous chapter, it is apparent that they support the first and second hypothesis, which are "company that has a higher portion of debt financing has better performance than the company with a lower one", as well as "company that has a higher credit rating has better performance than the company with a lower one".

Nevertheless, our result does not support the third hypothesis completely. We find that company with a high level credit rating, its debt financing ratio has no significant relationship with its performance, but the company with low credit rating has better performance when its debt financing ratio increases. Kemper and Rao (2013) stated that when a firm is threatened with a rating decrease, they will issue equity or pay off the debt. According to the Pecking-Order theory, if the internal financing is insufficient, firms prefer to issue debt rather than equity because debt financing can maximize interest tax shield, which is a government subsidy and can be regarded as cash inflow (Ross, Westerfield & Jordan, 2010). Since tax shield benefits debt than equity, debt financing is still a better option than equity financing.

After the financial crisis, company's CFO (Chief Finance Officer) are now concerned more on capital structure. Having an efficient capital structure enables the firm to perform better than its competitors and attracts more investors to expand its business. Meanwhile, credit rating serving as a quality mark of firm raises company's visibility and attractiveness, too. Hence, a study on the joint effect of debt financing and credit rating on corporate performance is deemed to be necessary. We find that both debt financing and credit rating are positively associated with return on assets (ROA). Furthermore, debt financing ratio for company with high credit rating has no relationship with its performance, while a low credit rating company has a better performance when debt financing ratio increases.

References

[1] Cantor, R., Gwilym, W., & Thomas, S. (2007). The use of credit ratings in investment management in the U.S. and Europe. Journal of Fixed Income, 17(2), 13-26.

[2] Chan, K., & Lo, Y. (2011). Credit ratings and long-term IPO performance. Journal of Economics & Finance, 35(4), 473-483.

[3] Dymott, E. (2013). Fidelity's Ed Dymott: How much does size really matter?. Money Marketing (Online Edition), 7.

[4] Gombola, M., & Marciukaityte, D. (2007). Managerial overoptimism and the choice between debt and equity financing. Journal of Behavioral Finance, 8(4), 225-235.

[5] Kar, A. (2012). Does capital and financing structure have any relevance to the performance of microfinance institutions?. International Review of Applied Economics, 26(3), 329-348.

[6] Kemper, K. J., & Rao, R. P. (2013). Credit watch and capital structure. Applied Economics Letters, 20(13), 1202-1205.

[7] Kisgen, D. J. (2006). Credit ratings and capital structure. Journal of Finance, 61(3), 1035-1072.

[8] Kisgen, D. J. (2009). Do firms target credit ratings or leverage levels?. Journal of Financial & Quantitative Analysis, 44(6), 1323-1344.

[9] Kronwald, Christian (2009). Credit rating and the impact on capital structure. Norderstedt, Germany: Druck und Bingdung.

[10] Laura, G. (2009). Mezzanine debt: benefits or drawbacks for firm's financing. Young Economists Journal / Revista Tinerilor Economisti, 7(12), 14-21.

[11] Marsh, P. (1982). The choice between equity and debt: An empirical study. Journal of Finance, 37(1), 121-144.

[12] McMillan, G., & Hanson, T. (2014). Sample size requirements for establishing clinical test-retest standards. Ear and Hearing, 35(2), 283-286.

[13] Ross, S. A., Westerfield, R. W. & Jordan, B.D. (2010). Fundamentals of corporate finance (Ninth edition). New York, America: McGraw-Hill Companies, Inc.

[14] Standard and Poor's. (2013, November 19). Key credit factors for the retail and restaurants industry. Retrieved March 1, 2014 from http:// www.standardandpoors.com/prot/ratings/articles/en/us/? articleType=HTML&a ssetID=1245360972417