

The Relationship between Debt Financing and Reported Earnings Quality: An Empirical Analysis of Non-financial Firms of Pakistan

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ABSTRACT

The purpose of current research is to find the association among debt and quality financing of disclosed earnings. For this purpose the study has employed data from 276 non-financial firms between 1998 to 2009. Reported earnings of the firms are calculated by employing modified Jones mode. Furthermore regression analysis has been employed on panel data. The analysis of the data highlights negative relationship between low amount of debt and disclosed earnings whereas excessive amount is positively related to the earning. Besides establishing relationships between debt and earning current study also issues cautionary signs to the investor regarding their investments decisions

KEY WORDS: Debt financing; Leverage, Accruals, Nondiscretionary Accruals. Modified Jones Model

1. INTRODUCTION

The firms need cash for different purposes including; production, sales, purchases and other expenses which can be provided through different sources. One source to meet the financial requirements is debt financing. Grossman and Hart (1982) argued that debt can be the example of pre-commitment and bonding device. Debt managers act in the favor of firm's shareholders in order to reduce bankruptcy costs and which ultimately results in high market value. They also provide some reasons of managers' discretion of raising debt in order to increase the value of firm. First, through incentive schemes, the salaries of managers normally depend upon the value of firm. Second, the firms having high market value are less likely to be taken over because the acquiring firm has to pay more due to their high market value. Third, managers can raise capital without any substantial effort when firm value is high. In addition, Jensen [1] argued that debt can be used as a monitoring device which can reduce the agency costs because managers have to pay the amounts of interest and principal amount as well therefore free cash flow is normally used for this purpose and managers do not have any free cash flow to make unprofitable investments and they cannot invest in those projects having negative net present value (NPV).

Quality of reported earnings (earnings quality) is referred to the ability of disclosed earnings that can more accurately forecast the future cash flows. If the earnings quality is low then it cannot more accurately forecast the future cash flows because if the reported earnings were manipulated for some purpose then the prediction of future cash flows on the basis of this inaccurate disclosed amount of earnings will also be inaccurate. Earnings can serve more accurately to predict the future cash flows as compare to current cash flows due to accounting accruals because accruals provide more information to better predict the future cash flows. But on the other side they can be manipulated by managers to present the better position of the firm therefore accruals may also be considered as noisy predictors for predicting the future cash flows.

Although only a few number of studies empirically observed the relationship between debt financing and earnings quality while some researchers take an assumption regarding the existence of this relationship e.g. O'Brien [2] argued that; "if financial reporting exists to serve the needs of external capital providers, then we should expect differences in accounting to coincide with differences in the arrangements for providing capital". Similarly Pope [3] suggested that; "the balance between debt and equity financing will produce demands for accounting information and may explain differences in disclosure patterns".

The relationship between corporate debt financing and earnings quality can be positive and negative. In large firms the managers have incentives to expropriate the wealth from shareholders and bondholders [4]. Atomistic shareholders are less likely to monitor the activities of the managers because of high monitoring costs and low benefits. Conversely, the debt holders have incentives to monitor the managerial actions and limit wealth expropriation by managers. The firms have a risk element therefore lenders like commercial banks continuously monitor the business activities of debtors during the maturity period and they also require the accurate information so that they can evaluate the risk associated with their loans [5]. In case where limited capital is available in the

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market, the firms are likely to provide the high quality information to the lenders in order to mitigate the borrowing costs [6]. But on the other hand, low debt is less likely to be attached with debt covenants therefore managers are not reluctant to provide the true information about the firm's performance and due to less information asymmetry, the lenders provide debts on low costs. So, it can be said that the firms with low levels of debt are willing to provide the high quality information instead of manipulating the accruals in order to reduce the borrowing costs and this posits a positive relationship between the debt financing and earnings quality.

On the other side, debt financing can also have negative relation with earnings quality because agency conflicts are often existed between debt holders and managers. Debt holders use the debt covenants to mitigate the managerial wealth expropriation [7]. Debt covenants are the conditions that protect the lenders by restricting actions of the debtors and these covenants give rights to the lenders to; terminate lending agreements, demand immediate repayment, increase collateral, increase interest rates, impose additional debt covenants, and waive the violation [8, 9]. In addition, high debts are attached with strict debt covenants so the managers manipulate the accruals in order to avoid the debt covenants' violations and to reduce the borrowing costs and this suggests a negative relationship between earnings quality and debt financing. Therefore, it can be said that firms with high levels of debt provide low quality information so that they can avoid the covenants' violations and reduce the costs of borrowing by showing the fake picture of good performance of the firm. Most of the previous research mainly focused on the impact of debt financing on earnings management while this study is the first attempt in relating the lenders' monitoring to the possibility of managerial manipulation of earnings in addition to exploring the influence of debt financing on earnings quality. Furthermore, this study will help the investors in observing the truth of financial statements which will be provided by the firm managers. It will also help the Pakistani investors to find those industries which are more lucrative in order to make investments.

Remainder of this study consists of a brief review of previous research studies, research methodology including data source, sample description and statistical technique for analyzing the research models, empirical results and conclusion.

2. LITERATURE REVIEW

Different studies empirically examined the manipulation of earnings and its causes. Such as [10,19] conducted a research on earnings management by considering the debt covenants and debt financing. After statistical analysis they found that firms' managers manipulate the earnings to satisfy the lenders regarding the better performance of the firm.

Francis *et al.* [11] examined the association between the quality of accruals and cost of equity and debt capital. They used a large sample in their study covering the period from 1970 to 2001. They found that low quality of accruals cause higher costs of debt and equity. They also differentiate between the two types of accruals quality; one is the accruals quality derived by economic fundamentals and second is the accruals quality derived by the management choices.

Gupta and Piage Fields [12] observed the relationship between structures of debt maturity and tendency to manage earnings. The results of their study suggested that; 1) firms with more current debt are more subjected to earnings management, 2) this relationship is stronger for those firms which are confronting the constraints of debt market, and 3) auditor attributes like auditor quality and tenure help reduce this relation. In other words, their results suggested that relative amount of current debt in the capital structure of firm influences the earnings management.

Goodwin *et al.* [13] studied the short term debt maturity, checking and earnings management based on accruals and their findings show that earnings management and short term debt are positively related to each other. But when they examined the high creditworthy firms, they found that short term debt negatively influence the earnings management. Ghosh and Moon [14] examined the relationship between debt financing and earnings quality and suggested the positive relation in case of low debt and negative relation in case of high debt level. Liu *et al* [15] evaluated whether the firms manipulate earnings prior to issue bonds in order to get low cost borrowings. The results show that firms increase their earnings by manipulations before issuing the bonds so that they can achieve borrowings at low cost. In addition, the findings also show that like shareholders, bondholders also cannot be able to price the new debt because of manipulated disclosed earnings. Rodriguez-peres and Van Hemmen [16] observed the association between earnings management and debt diversification. They found that marginal increase in the amount of debt let the managers to manipulate earnings of the firm and diversification grants the required framework for making this accounting practice possible.

Linck *et al* [17, 20] examined that earnings management make it easy to lose the financial constraints. They also made the hypothesis that firms having financial constraints, but also have positive net present value projects,

can use the earnings management as a tool to provide the better picture of firms' performance in order to avail capital for investments. And their results show that firms with financial constraints significantly manipulate the earnings in two quarters before investing as compare to those firms which are not financially constrained. Furthermore, Kim et al. [18] observed the association between real earnings management and debt covenants slack. Their findings of this research suggest that the real manipulation of earnings is higher when the debt covenants are strict. They also found that those borrowers having raise in bankruptcy risk in last year increase the level of their real earnings management. The limited literature regarding the debt financing and earnings quality let this area to be researched more. And according to the best of author's knowledge, there is no single research study has been conducted on this dimension in case of Pakistan. So, this is the contribution of this study that it is the first one that explores the impact of corporate debt financing on earnings quality in Pakistani scenario. Furthermore, previous studies mainly focused on the impact of debt financing on earnings management while this study is the first attempt in relating the lenders' monitoring to the possibility of managerial manipulation of earnings in addition to exploring the influence of debt financing on earnings quality.

Hypotheses Development

On the basis of literature gaps the following hypotheses for this study have been developed by dividing the debt into two categories i.e. low debt and high debt. This division is made on the basis of quartiles and firms in first quartile are considered as low debt firms whereas firms in fourth quartile are considered as high debt firms. In case of low debt firms, the debt covenants are not strictly attached with the level of debt, so managers do not have any stress of violation of debt covenants. Therefore, they present the true performance of the firm in order to obtain low cost capital by reducing the information asymmetry problem.

Hypothesis 1: There is a positive relationship between low debt and earnings quality.

While in case of high debt firms, debt covenants are strictly attached with the level of debt, so this is a natural phenomenon that managers will manipulate the earnings in order to avoid the violation costs of debt covenants. But on the other side, creditors are the effective monitors and if they monitor the performance of managers then this relation could be positive.

Hypothesis 2: There is a positive relationship between high debt and earnings quality.

It can also be analyzed that whether there is a possibility of managerial manipulations or not? If the possibility exists then lenders should not take the risk of saving their monitoring costs and vice versa. This possibility of earnings manipulation is checked through the ratio of earnings before interest and taxes to interest expenses. If this ratio is less than 1 then the possibility of earnings manipulation can exist more and vice versa.

3. RESEARCH METHODOLOGY

Sample Set

The total population of this study consisted of all non-financial firms of Pakistan but initially the sample was selected for the non-financial firms listed at Karachi Stock Exchange (KSE). Out of this initial sample those firms which are indulged in financial services have been excluded. In addition, those firms which have been merged or delisted during the study period were also excluded from the initial sample. Furthermore, those firms which have negative equity (debt ratio more than 1) were also excluded. And the final sample set consisted of 276 non-financial firms listed at KSE.

Data Source and Study Period

To test the relationship between debt financing and earnings quality, the data were collected from the various publications of State Bank of Pakistan named "Balance Sheet Analysis of Joint Stock Companies; Listed on the Karachi Stock Exchange". Initially the data for final sample of 276 firms were collected from 1998 to 2009 but 2009 and 1998 have been used as leading and lagging years respectively. Furthermore, 1999 to 2002 have been used to calculate the standard deviation of residuals (proxy for earnings quality). Therefore, the actual statistical analysis has been applied on the panel data of 276 non-financial firms from 2003 to 2008. After the year 2009, the industry classification was changed due to which this study did not consider the data after 2009.

Measurement of Earnings Quality

Earnings quality can be measured by the discretionary accruals and there are different models to estimate the values of discretionary accruals but the most famous is the modified Jones model (1995). Therefore, this study also employed the below mentioned modified Jones model;

$$\text{Total Accruals}_t / \text{Total Assets}_{t-1} = \beta_1 (1/\text{Total Assets}_{t-1}) + \beta_2 (\text{Change in PPE}/\text{Total Assets}_{t-1}) + \beta_3 ((\text{Change in REV}_t - \text{Change in REC}_t)/\text{Total Assets}_{t-1}) + \varepsilon_t$$

Where t = current year and $t-1$ = lagging year. While PPE stands for property plant and equipment and REV and REC are revenues and receivables respectively. Total accruals are equal to current assets minus liquid assets minus current liabilities. This equation has been estimated each year for each firm and the residuals of any firm for a given year are the standard deviation of its residuals (ε) from above equation computed over five years from $t-4$ to t . And larger residuals indicate poorer earnings quality and vice versa.

Research Models

To examine the impact of debt financing on earnings quality, Low debt and high debt have been used as independent variables while size, operating cycle, operating cash flow volatility and cost of debt have been used as controlling variables. Whereas the dependent variable is residuals which is the proxy for earnings quality and more residuals show the low quality and vice versa. The following research models have been used for regression analyses;

For Low Debt;

$$\text{Residuals} = B_0 + B_1(LD) + B_2(\text{Log_Size}) + B_3(\text{Log_OC}) + B_4(\text{OCFV}) + B_5(\text{CD}) + B_6(\text{Ind_Dummy}) + \varepsilon$$

For High Debt;

$$\text{Residuals} = B_0 + B_1(HD) + B_2(\text{Log_Size}) + B_3(\text{Log_OC}) + B_4(\text{OCFV}) + B_5(\text{CD}) + B_6(\text{Ind_Dummy}) + \varepsilon$$

Where;

LD = Low Debt

HD = High Debt

Log_Size = Natural Logarithm of Average Total Assets for the period of $t-4$ to t .

Log_OC = Natural Logarithm of Average Operating Cycle for the period of $t-4$ to t .

OCFV = Standard deviation of Operating Cash Flows for the period of $t-4$ to t .

CD = Average cost of debt for the period of $t-4$ to t .

Ind_Dummy = Industry Dummy.

Operating Cycle = Sum of Days Accounts Receivables and Days Inventory Outstanding.

Cost of Debt = Interest Expense divided by Average Total Assets.

Debt = Average Debt to Asset ratio for the period of $t-4$ to t .

Debt is divided into low debt and high debt on the basis of its quartiles. Firms in first quartile are considered as low debt firms whereas firms in fourth quartile are considered as high debt firms.

4. EMPIRICAL RESULTS AND DISCUSSION

Table 1 shows the regression results in order to test the first hypothesis. F-statistics are significant at 1% therefore one can argue that the models are good fitted. Three models have been estimated where in model (1) only low debt has been considered while in model (2) controlling variables have also been included and finally the industry effects have also been tested in model (3). VIF values show that there is no problem of multi-collinearity.

Table 1: Regression Results for Low Debt

Variables	Dependent Variable: Residuals			VIF
	(1)	(2)	(3)	
Intercept	0.167(***)	0.294(***)	0.298(***)	
<i>Explanatory Variable</i>				
LD	0.117(***)	0.087(***)	0.072(***)	
<i>Control Variables</i>				
Log_Size		-0.008(**)	-0.004	1.590
Log_OC		-0.020(***)	-0.025(***)	1.286
OCFV		3.231E-5(***)	3.449E-5(***)	1.408
CD		0.172	0.296(**)	1.372
<i>Industry Effects</i>				
Ind_Dummy			Yes	
Adjusted R ²	0.013	0.043	0.057	
F-statistics	22.135(***)	14.759(***)	6.880(***)	

(***) Significant at 1%

(**). Significant at 5%

The coefficient of low debt is positive and highly significant in all the three models, therefore, it can be said that there is a negative relationship between low debt and earnings quality. This result does not confirm the hypothesis 1 i.e. there is a positive relationship between low debt and earnings quality. It is argued previously that debt covenants are not strictly attached with the level of debt, so managers do not have any stress of violation of debt covenants. Therefore, they present the true performance of the firm in order to obtain low cost capital by reducing the information asymmetry problem. [14] Also confirmed the existence of this positive relationship between low debt and earnings quality. But the results of current study are not in the favor of this positive relationship and the reason for this discrepancy can be meaningful with the argument that managers can also get

low cost borrowings on the basis of low financial risk as they are low debt firms. Therefore, managers' motive diverts towards attracting the new investors and as they do not have any strict covenants attached with their debt so they will manipulate the earnings to present the improved performance of the firm to attract the investors. Therefore, negative relationship between low debt and earnings quality exists in case of non-financial firms of Pakistan by following the previous argument.

Table 2: Regression Results for High Debt

Variables	Dependent Variable: Residuals			VIF
	(1)	(2)	(3)	
Intercept	0.184(***)	0.318(***)	0.317(***)	
<i>Explanatory Variable</i>				
HD	-0.043(***)	-0.037(***)	-0.028(***)	
<i>Control Variables</i>				
Log_Size		-0.009(***)	-0.005	1.574
Log_OC		-0.020(***)	-0.024(***)	1.292
OCFV		3.276E-5(***)	3.499E-5(***)	1.405
CD		0.116	0.229	1.356
<i>Industry Effects</i>				
Ind Dummy			Yes	
Adjusted R ²	.01	0.043	0.057	
F-statistics	16.236(***)	14.887(***)	6.284(***)	

(***). Significant at 1%

(**). Significant at 5%

Whereas, table 2 observes the impact of high debt on quality of reported earnings. F-statistics are significant at 1% therefore one can argue that the models are good fitted. Three models have been estimated where in model (1) only high debt has been considered while in model (2) controlling variables have also been included and finally the industry effects have also been tested in model (3). VIF values show that there is no problem of multi-collinearity.

The coefficient of high debt is negative and highly significant in all the three models and this result confirms the hypothesis 2 i.e. there is a positive relationship between high debt and earnings quality. Ghosh and Moon [14] found the negative relationship between high debt and earnings quality and the reason for this inverse relationship is that the debt covenants are strictly attached with the level of debt, so this is a natural phenomenon that managers will manipulate the earnings in order to avoid the violation costs of debt covenants. But the results of present study do not match the result provided by Ghosh and Moon [14] because creditors are the effective monitors and if they monitor the performance of managers then the relationship between high debt and earnings quality can be positive. So, this study confirms that creditors perform their role of effective monitors by controlling the managerial manipulations in non-financial firms of Pakistan.

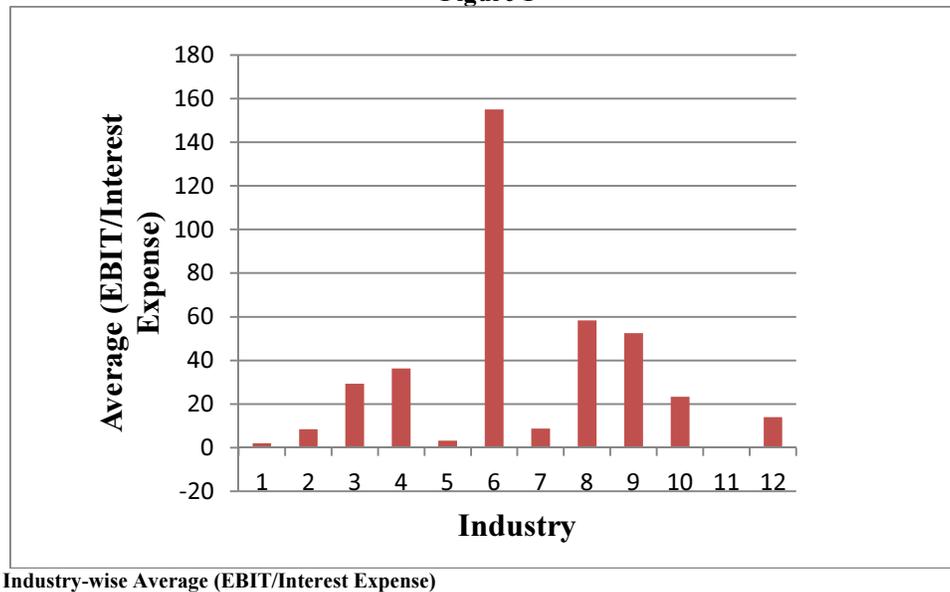
Furthermore, it has also been observed that the possibility of earnings management is high in which industries and the creditors of which industries should not take any risk to mitigate their monitoring costs and which industries are more lucrative for investments. For this purpose, the industry-wise averages of earnings before interest and taxes divided by interest expense were calculated.

Table 3: Industry-wise Average (EBIT/Interest Expense)

Industry	Average (EBIT/Interest Expense)
1 (Textile and other textiles)	2.04
2 (Chemicals)	8.49
3 (Engineering)	29.29
4 (Sugar and allied industries)	36.25
5 (Paper and board)	3.14
6 (Cement)	155.09
7 (Fuel and energy)	8.69
8 (Transport and communication)	58.32
9 (Tobacco)	52.56
10 (Jute)	23.31
11 (Vanaspati and allied industries)	-0.05
12 (Miscellaneous)	14.00

Table 3 shows that the creditors of industry 11(vanaspati and allied industries) must keep continue the monitoring over managerial activities and should not take any risk to save their monitoring costs as there is a high possibility of earnings management because this industry is not in a position to pay the interest to its creditors as its average (EBIT/Interest Expense) is not only less than 1 but it is also negative as well. While the creditors of other industries can take the risk of mitigating their monitoring costs as there is a low possibility of earnings management because the average (EBIT/Interest Expense) is fairly more than 1 and the figure 1 also clearly shows that the creditors of industry 6(cement) have a good opportunity to reduce their monitoring costs over managerial activities as the average (EBIT/Interest Expense) for this industry is too high. So, it can be said on the basis of this analysis that the Pakistani investors should make their investments in cement industry of Pakistan as it is more lucrative one as compare to other industries because it is in a strong position to pay interest to the creditors. On the other hand, investors can also save their monitoring costs by investing in cement industry because managers are less likely to manipulate the earnings and it is due to the fewer chances to bear the violation costs of debt covenants because this industry is earning a sufficient amount of profits to pay interest to its creditors.

Figure 1



5 CONCLUSIONS

Quality of reported earnings (earnings quality) is referred to the ability of disclosed earnings that can more accurately forecast the future cash flows. If the earnings quality is low then it cannot more accurately forecast the future cash flows because if the reported earnings were manipulated for some purpose then the prediction of future cash flows on the basis of this inaccurate disclosed amount of earnings will also be inaccurate. This study tried to explore the relationship between debt financing and quality of reported earnings by using the data of 276 non-financial firms listed at Karachi Stock Exchange. The study used two categories of debt i.e. low debt and high debt in order to check their influence on earnings quality for the period of 2003 to 2008 and the modified Jones (1995) model is used to estimate the residuals which are used as a proxy for earnings quality.

The results imply that low debt is negatively related to earnings quality because managers can also get low cost borrowings on the basis of low financial risk as they are low debt firms. Therefore, managers' motive diverts towards attracting the new investors and as they do not have any strict covenants attached with their debt so they will manipulate the earnings to present the improved performance of the firm to attract the investors. Furthermore, it is also found that high debt is positively related to the earnings quality because lenders are the effective monitors and they restrict the managers from earnings management when they tried to avoid the violation costs of debt covenants by presenting the fake picture of firm performance by manipulating the reported earnings. In addition, this study also suggested that the lenders of industry 11(vanaspati and allied industries) should not take any risk by reducing their monitoring costs as the average of EBIT/Interest Expense is negative for this industry.

Whereas, according to the best of author's knowledge, there is no single research study has been conducted on this dimension in case of Pakistan. So, this is the contribution of this study that it is the first one that explores the impact of corporate debt financing on earnings quality in Pakistani scenario. Furthermore, previous studies mainly focused on the impact of debt financing on earnings management while this study is the first attempt in relating the lenders' monitoring to the possibility of managerial manipulation of earnings in addition to exploring the influence of debt financing on earnings quality.

This study will help the investors in observing the truth of financial statements which will be provided by the firm managers. It will also help the Pakistani investors to find those industries which are more lucrative in order to make investments. Further research can also be done by including other models for calculating the discretionary accruals such as; Jones model, DD model etc. Furthermore, different definitions of debt financing can also be used in future research.

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