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IMPACT OF DEBT ON PROFITABILITY OF FIRMS; EVIDENCE FROM NON-FINANCIAL SECTOR OF PAKISTAN

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ABSTRACT

This study focuseson expanding the existing empirical knowledge on the impact of debt on profitability of companies. Different sets of variables havebeen used to investigate the relationship between debt and profitability of firms with empirical evidence from the non-financial sector of Pakistan; using panel data of 10 years, ranging between 2003-2012. Return on Assets is used as the profitability measure and is the dependent variable, whereas; Short Term Debt to Asset, Long Term Debt to Asset, Total Debt to Asset are used as independent variables, while Size, Sales Growth, and Growth Opportunity are used as control variables. Random effect regression analysis is used to find out the impact of debt on profitability. Results indicate a significant but negative relationship between short term debt, long term debt, total debt, and return on assets.

Keywords:

INTRODUCTION

1.1. Background of the Study:

In this modern corporate era, every corporation tries to survive the tough competition. Capital structure decision making has become one of the most difficult tasks for the fate of a firm. Capital structure decision plays a vitalrolefor any business organization which aims at maximizing returns and makes it able to compete in its competitive environment (Abor, 2005). Risk taking is inevitable for managers in order to avoid major threats to the firm (Jensen and Meckling,1976). Thus, managers must take into account the causal relationship, find a special solution and make a decision which follows a systematic approach; otherwise it can bring the company to the brink of destruction.

For decades, after Modigliani and Miller(1958)'s theory of capital structure, optimal capital structure remained the center of attention for many researchers. Optimal capital structure is critical to its ability to achieve near-and long-term growth objectives. It ensures that companies should maintain an adequate level of capital in both good and bad times. Firms preferably raise finance by utilizing their internal sources whenever possible, rather than outsourcing the funds from any other source like bank loans or issuing bonds. Whereas; equity financing is considered when there is no other choice because issuing new shares will bring more partners/shareholders into the company and resulting in diluting the existing shareholding. “The use of debt in capital structure of the firm leads to agency costs. Agency costs arise as a result of the relationships between shareholders and managers, and those between debt-holders and shareholders” (Jensen and Meckling, 1976).

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The relationship between debt and profitability of firms has been a center of attention for many researchers over decades, however, there is difference of opinion between different researchers about the role of debt, some researchers found negative (Abor 2005), some found positive (Margrates and Psillaki 2010), while some found mixed results of debt on profitability (Weill 2008). This difference of opinion is due to many reasons including different types of variables, sample size (countries, industries/sectors, firms and periods), and methodologies.

This study focuses on finding the impact of debt on the profitability of firms of Pakistan. Mostly, the reported studies have taken a single sector or a company over a period of time, however; there are a handful studies that had focused on financial or non-financial sector as a whole. This study while using different set of variables investigates the role of debt in profitability of firms with empirical evidence from the non-financial sector of Pakistan. A panel data of companies listed on Karachi stock exchange (KSE) for the period 10 years, ranging from 2003-2012. This study will provide a comprehensive view to finance managers about the relationship between debt and profitability.

LITERATURE REVIEW

2.1. Theoretical background:

Modigliani and Miller's (1958) work on capital structure by was the beginning of new era in Corporate Finance. A theory of capital structure known as MM theory/capital structure irrelevance theory (1958), which states that "under no taxes and transaction costs, the cost of capital and the value of the firm do not change with a change in leverage" Modigliani and Miller's (1958). Lately, a new proof was presented by Modigliani and Miller (1963) stating that "cost of capital effect capital structure, and therefore effect the value of the firm by ignoring the unrealistic assumptions and considering that there exist taxes; which indicate that borrowing gives tax advantage, whereas the interest deducted from the tax will result tax shields, while reducing the cost of borrowing and maximizing the firm performance" (Miller, 1977).

There are four different theories about capital structure which reflect the influence of debt on corporate profitability, namely: Pecking order theory, the agency costs theory, tradeoff theory, and signaling theory.

Pecking order theory states that "firms prefer using internal sources of financing first, then debt and finally external equity obtained through shares" [Shyam-Sunder and Myers (1999)].

"Agency costs arise as a result of the relationships between shareholders and managers, and those between debt-holders and shareholders" (Jensen and Meckling, 1976).According to the agency costs theory, there are both positive as well as negative effects of debt on profitability. In case of agency costs of equity between shareholders and managers, it has positive effect. Whereas; agency costs of debt between shareholders and creditors have negative effect on profitability.

The trade-off theory deals with the idea of choosing capital structure, i.e. what proportion of debt and equity should a company choose. According to Trade-off theory, debt financing can give tax benefit, but on the other hand it also has some costs like bankruptcy cost and financial distress cost etc.

Signaling theory states that, "the debt; in the presence of asymmetric information, should be correlated positively to profitability"(Kebewar, 2013).

2.2. Empirical review:

Modigliani and Miller's work had been inspiration for many researchers despite of its unrealistic assumption; it has attracted the attention of many researchers. Researchers are trying to analyze and find the existence of an optimal capital structure. Optimum capital structure can be defined as "the capital structure at which the weighted average cost of capital is minimum and thereby maximum value of the firm." The difference of opinion between researchers can be observed about the effect of debt on profitability. Some researchers found positive impact of debt on profitability, some found negative, while some had both negative as well as positive results.

2.2.1. Positive relationship between debt and profitability:

Wippern (1966) while using debt to equity ratio and earning to market ratiostudied some industries and found that there is a positive relation between debt and profitability.

Abor (2005) study turned out to be the same. He studied some of the Ghana stock exchange listed firms and found that there is a positive relationship between short-term debt to total assets and Return on Equity. Gill, et al., (2011) tried to expend Abor's (2005) study by investigating a sample of 272 service and manufacturing firms listed on New York. His results showed similarity to Abor's research.

Margrates and Psillaki (2010) also found a positive impact, and proved that debt ratio positively affect the performance of a firm.

Holz (2002), Sarkar and Zapatero (2003), Dessi and Robertson (2003), Baum et al. (2006), and many other researchers also found a positive influence.

2.2.2. Negative relationship between debt and profitability

In contrary to positive relation; negative effect of debt on profitability was also confirmed. Mendell, (2006) studied20 firms of the forest industry. His results reflected that the existence of a negative relationship between debt and profitability.

Mohammad and Jaafer (2012) studied 39Amman Stock Exchange based companies and analyzed the role of debt in profitably. His results indicated significant but negative relationship between short term debt, long term debt, total debt, and return on equity,.

Kebewar (2013) performed a studyonFrench companies. His study was based on2325 trade sector companiesover a period of 8 years between 1999 to 2006 foundthat debt have negative affect on profitability. Anandasayanan&Subramaniam(2013) studied manufacturing firms listed on Colombo stock Exchange and found significantly negative relation between debt and profitability.

Wali, Fatima, and Mehboob(2012) studied seventeen (17) textile companies listed on KSE using longitudinal data from 2003 to 2007 and found that the short term debts negatively affects profitability.

Krishnan and Moyer(1997), Mathur(2000), Goddard et al. (2005), Zeitun and Tian (2007), King and Santor(2008), Kajola(2010), and many other researchers also found negative relationship between debt and profitability.

2.2.3. Mixed results of debt and profitability:

Besides positive and negative impact of debt on profitability; mixed results were also found. Hurdle (1973) using different regression models found different results. According to results, positive results were reported using OrdinayLeast Square (OLS)

method, while two stage least squares (2SLS) indicated a negative effect on profitability. McConnell and Servaes(1995) and Agarwal and Zhao(2007) found that firm with high growth debt has negative effect on profitability, while firms with low growth effect positively.

Weill (2008) studied different European countries to find the effect of leverage on firm performance. His results indicated that debt positively affectsprofitability in countries like Spain and Italy, whereas, Belgium, France, Germany, and Norway showed contrary results.While Portugal gave insignificant results.

Cheng,Liu and Chien (2010) investigated 650 Chinese firms and the results showed positive relationship when the debt ratio between(53.97%-70.48%),on the other hand, negative relationship was found when the debt ratio exceeded 70.48%.

Dwilaksono.H, (2010) investigated the effect of short and long term debt to profitability of Mining industry Companies listed in Indonesia Stock Exchange and 2003-2007 and found the existence of negative but significant relationship between Long Term Debt and profitability.

Mesquita and Lara (2003), Agarwal and Zhao (2007), Li Meng ,Wang and Zhou(2008) found mixed results in their studies.

DATA DESCRIPTION AND METHODOLOGY

3.1.Sample Size:

Entire non-financial sector of Pakistan was selected for this study, but due to unavailability of data of few years in some companies, these companies were eliminated from the analysis. After eliminating such companies, the data consist of 340 firms listed on the KSE for the period 2003–2012 has been used for analysis.

3.2.Variables:

3.2.1. Return on Asset:

It is used as a Dependent variable. ROA is an indicator which shows the ability of a company to generate profitable against its total assets. It reflects the efficiency of management in utilizing its assets to generate earnings. It can be calculated as:

$$ROA=\frac{Net\ Income}{Total\ Assets} \qquad \dots (i)$$

3.2.2. Short-term debt to asset:

Shows the portion of company's assets which are financed with debt payable within one year. Mathematically it can be represented as:

$$STDA=\frac{Short\ Term\ Debt}{Total\ Assets} \qquad \dots (ii)$$

3.2.3. Long-term debt to asset:

Shows the percentage of assets financed with debt which ispayable after more than one year. It includes bonds and long-term loans. Mathematically:

$$LTDA=\frac{Long\ Term\ Debt}{Total\ Assets} \quad \ldots (iii)$$

3.2.4. Total debt to asset:

Total debt is the mix ofshort-term liabilities and long-term liabilities. In balance sheet it is represented as "Total Liabilities"; and can be mathematically expressed as:

$$TDA=\frac{Total\ Debt}{Total\ Assets} \quad \ldots (iv)$$

3.2.5. Size:

It is used as a control variable. Size is calculated by taking the log of sales.

3.2.6. Sales Growth:

Sales growth is the change in sales from one year to another. It is used as a control variable. It can be calculated as:

$$SG=\frac{Current\ Year\ sales-Previous\ Year\ sales}{Previous\ Year\ sales} \quad \ldots (v)$$

3.2.7. Growth opportunities:

Growth opportunity is calculated by the change in total assets from one year to another. It is used as a control variable

$$GRTH=\frac{Total\ Assets\ of\ Current\ Year-Total\ Assets\ of\ previous\ Year}{Total\ Assets\ of\ previous\ Year} \ldots (VI)$$

Table 1. Variables

Dependent	Independent	Control Variables
Return on Assets (ROA)	Short term Debt to Assets (STDA)	Sales
	Long Term Debt to Assets (LTDA)	Sales Growth (SG)
	Total Debt to Assets (TDA)	Growth Opportunities (GRTH)

3.3. Hypothesis:

H1 = There is no relationship between STDA and ROA.

H2 =There is no relationship between LTDA and ROA.

H3 = There is no relationship between TDA and ROA.

3.4. Theoretical Framework:

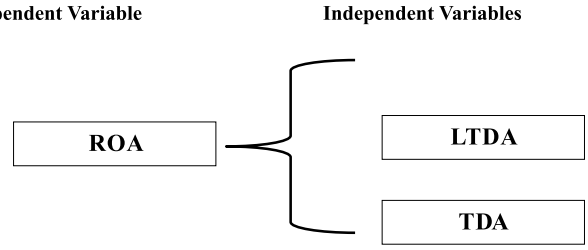

Figure (i)

3.5. Model Specification:

Random effect regression model has been used to find the relationship between dependent and independent variables. Model used in this study is similar to the model used by Abor (2005).

$$Y_{it} = \beta_1 X_{it} + \alpha_i + e \qquad \text{(VII)}$$

Where,

Y_{it} is dependent variable, and i=entity, and t=time
X_{it} is independent variable
β_1 is the co-efficient for that variable
α_i is the intercept for each entity
e is the error term

The following regression models have been used in this study:

1. $ROA_{it} = \beta_i STDA_{it} + \beta_i Size_{it} + \beta_i SG_{it} + \beta_i GRTH_{it} + e$ (VIII)
2. $ROA_{it} = \beta_i LTDA_{it} + \beta_i Size_{it} + \beta_i SG_{it} + \beta_i GRTH_{it} + e$ (IX)
3. $ROA_{it} = \beta_i TDA_{it} + \beta_i Size_{it} + \beta_i SG_{it} + \beta_i GRTH_{it} + e$ (X)

Whereas:

ROA is net income divided by total assets of firm i in time t;
$STDA_{it}$ is short-term debt divided by the total assets of firm i in time t;
$LTDA_{it}$ is long-term debt divided by the total assets of firm i in time t;
TDA_{it} is total debt divided by the total assets of firm i in time t;
$Size_{it}$ is the log of sales for firm i in time t;
SG_{it} is sales growth of firm i in time t; and
$GRTH_{it}$ is change in total assets
e is the error term

RESULTS ANALYSIS

4.1. Diagnostic Regression:

Before interpreting the results, various diagnostic tests were run on data.

4.1.1. Data Normality Test:

For regression, it is necessary that the data should be normal. Therefore, to remove outliers from given set of data, data normality test was run. Few outliers were found and then removed in order to normalize the data.

4.1.2. Hausman Fixed and Random Effect Test:

The test evaluates whether to accept fixed effect or random effect regression model. If the P-value of this test is less than 0.05, then we should accept fixed effect regression model or if it is greater than 0.05, then should follow random effect regression model. In this study, the P-value was greater than 0.05, therefore, random effect regression model is used.

4.2. Random Effect Regression:

This section exhibit the results drawn from the Regression Equations used in the analysis. The results are separately discussed so that comparison can be made between different financing options.

4.2.1. Equation 1:

Table (1) indicates that there is a significant but negative relationship between the STDA and ROA. R-square value indicates 24.82% variation in dependent variable has been explained by variation in independent variables. The results also show that control variables play role inincreasing the profitability. A conclusion can be drawn, that short-term debt is morecostly; therefore increasing in short-term debt in capital structure will result in a decrease in profitability. Therefore, the hypothesis H1 i.e. there is no significant relationship between STDA and ROA; is rejected.

Table 2. Relationship between ROA and STDA

Variables	Coefficient	Standard Error	p value
$LTDA_{it}$	-.0004368	.0000151	0.000
$Size_{it}$	.0100945	.0009826	0.000
SG_{it}	-6.58e-06	5.51e-06	0.061
$GRTH_{it}$	.0000594	.000014	0.000
R-square=0.2279			

4.2.3. Equation 3:

The P-value in table (3) clearly indicates the existence of a significant relationship between TDA and ROA, but the relationship is negative. It shows that increasing the proportion of total debt will results in lowering the profitability of a firm. R-square value indicates 24.19% variation in dependent variable has been explained by variation in

independent variables. This result concur with the pecking order theory i.e. "firms prefer internal funds over the outside financing options".

Hence, the hypothesis H3 i.e. there is no significant relationship between TDA and ROA; is rejected.

Table 4. Relationship between ROA and TDA

Variables	Coefficient	Standard Error	p-value
TDA_{it}	-.0002972	.00001	0.000
$Size_{it}$	.010009	.0009654	0.000
SG_{it}	-6.43e-06	3.50e-06	0.066
$GRTH_{it}$	.0000586	.000014	0.000
R-square=0.2419			

CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion:

Capital structure decision making is vital for the success of a company. Equity and debts are the two main sources of finance for a company. The choice of right proportion of debt and equity in capital structure will help in increasing the company's profitability. Debt on one hand allows companies to do things that they would not be able to do otherwise, but on the other hand it also increases overall risk of the company. There is slight difference of opinion about the role of debt in profitability. The literature reveals different results under different circumstances.

This study reveals a significant but negative relationship between debt and profitability, thus, the higher the debt, the lower the profitability. It concur with Pecking order theory. Debt appears to be more costly due to certain reasons, therefore increasing the proportion of debt in capital structure will results in low profitability. It can be observed that profitability is positively correlated with the control variables. The results of this study concur with Mohammad and Jaafer (2012), and Kebewar (2013).

5.2. Recommendations:

Results indicate a negative relationship between debt and profitability, i.e. increasing debt in capital structure will decrease profitability. Therefore, companies should prefer internal financing or other sources of financing on debt financing.

The time period of this study includes the years (2007-08) of global financial crises, which affected companies' performance over the time. So, there is still room for improvement, therefore, researchers should consider increasing span of study to make the results more reliable.

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