Affect of financial leverage on firm performance. Empirical evidence from Karachi Stock Exchange.

Muhammad Wajid Raza

Shaheed Benazir Bhutto University Sheringal

1 September 2013

Affect of financial leverage on firm performance. Empirical evidence from Karachi Stock Exchange.

Muhammad Wajid Raza

Shaheed Benazir Bhuttu University sheringal Dir

Wajidrazauom@sbbu.edu.pk

ABSTRACT

Using panel data analysis, we attempt to find the determinants of capital structure of KSE listed none-financial firms for the period 2004-2009. We first present some descriptive statistics on our selected variables. The most interesting finding of our descriptive statistics is the highest leverage ratio for textile industry whereas the average profitability of textile industry is negatives. The results of this study shows negative relation between performance and leverage**.** Long term debt is more expensive due to certain direct and indirect costs. Therefore employing high level of debt results low profitability**.** The result of second hypothesis shows no significance between leverage and profitability. On the basis of these findings it is concluded that profitability is consistent with picking order theory. In the light of above discussion we can say that the existing theories of capital structure contribute to some extent in decision making process.

Key words: Financial leverage, Capital structure, Return on Assets, Debt to Equity, Picking Order Theory

Introduction

Financial management is all about decision making. Decisions are taken in different paradigms of investment, financing, asset management and dividend policy. Investment decision is mainly concerned with three areas either the manager has to take decision about opening a new venture, or decision may be specific to expansion of current business venture and it may be to replace current assets or machinery. Replacement may be because of technological improvements. Once the investment decision is done next critical and most important decision is to how to finance the investment decision that has been taken by investment manager.

A central issue in finance and macroeconomics is whether leverage affects performance of firm. The existence of separation between ownership and control of firms and the resultant agency cost presents an ugly picture of serious issues in modern corporate governance. Manager's deals with such situation by setting objectives which are different from owner's or firm objectives. And as a result lose value due to the managers chasing their set objectives against those of the owner. To cope with such situation certain mechanism has been proposed. One of them is the use capital structure.

Capital structure of the firm is concerned with financing its assets through different options. A firm can use different mixes of debts, equity or other financial arrangements. For enhancement of high market value, a firm can go for different combinations of bonds, TFCs, lease financing, bank loans or many other options. Capital structure decision is one of the key decisions made by financial management, especially in the area of corporate

finance it serves as the centre for many other decisions like dividend policy, project financing, issue of long term securities, financing of mergers, buyouts and so on.

Corporate financial managers have several objectives one of them is to boost up the wealth of shareholders and lower the cost of capital. By operationalizing the effective tool of Capital structure management manage the cost of capital. Thus it can be concluded from the theory that that high leverage or low equity/assets ratio reduces agency cost of outside equity and thus boost up firms value by compelling managers to act more in the interest of shareholders (Berger and Bonaccorsi di Patti, 2006).

An optimal capital structure is a point where value of the firm is maximum and cost of capital is minimum. Question arises that whether such an optimal capital structure exists? In simple words we can say what are the determinants of capital structure in a given industry or capital market.

Literature Review

The study of capital structure is important to both researchers and managers. The major issues faced by the finance managers are not only to receive or gather the funds but also their meaningful deployment in order to generate maximum returns. Mostly the sources of finance across all the businesses are same, then why some businesses succeed while other fails. This clearly means that there is something beyond financial success of business besides great idea and good geographic presence Madan, (2007). Moreover, financial reforms in most of the south Asian countries in general and Pakistan in particular have bring financial reforms to its financial market, these reforms have significant role in functioning of financial markets (Raza, 2011). Thus making it more attractive to study the effect of leverage in different contexts.

Optimal level of capital structure is still not clear to financial managers. It depends on management how much debt or equity they used to finance their business. There are many theories in the past that tried to describe the optimum level of capital structure.

The pioneer work of Modegliani and Miller (1958) in capital structure provided a concrete base in the development of the theoretical framework which laid out a track for the emergence of theories in the future. Their theory "capital structure irrelevance " was based on certain assumption, under a certain market price, in the absence of taxes, bankruptcy cost, asymmetric information and perfect capital market the value of the firm is unaffected by its mix of securities. As this theory was based on un realistic assumptions due to which in 1963 Modigliani-Miller reviewed their 1958 Theorem and found that the financial market are competitive and corporations are taxed, So the value of the levered firm is equal to the unlevered firm plus the present value of tax shield. If the financial markets are competitive and both corporation and investor are taxed then the value of the levered firm equals that of the unlevered firms.

After M&M theory many researchers suggested alternative choices of capital structure which includes Trade off theory and pecking-order hypothesis theory.

The Trade off theory suggest that the optimal capital structure is determined by balancing benefits and cost associated with debt financing. Debt financing benefits includes tax savings, reducing agency cost and the financial distress cost, and the cost associated to debt financing is direct and indirect bankruptcy costs.

However it is not always the case as Baxter (1967) argue on the cost associated with debt, he suggested that extensive use of debt increases the chances of firms bankruptcy, as firms pays periodic interest and the principal borrowed and these commitments increases

the firm chances of bankruptcy and financial default, as the shareholders demand for extra premium due to risk. Later Miller (1977) however suggests that bankruptcy cost no doubt exists with debt financing but it is relatively small as compared to tax benefits. The above discussion concludes that according to trade off theory profitable firms should borrow more in order to take more tax advantages. This shows that there is expected positive relationship between leverage and profitability. Many studies provide empirical evidence supporting this relationship (kyereboah-Coleman 2007; bonaccorsi di patti, 2006).

After trade off theory another theory which got importance is pecking order theory developed by Myers and Majluf in (1984). This theory states that because of information asymmetry between firms managers and investors it is probable that investors will under value the new issued stock, so to avoid this problem the company first priority is to use its internal sources "retained earnings" to finance its investments, if they are not sufficient then debt is issue and when it is not useful to issue any more debt, then equity is issue. So we can conclude that if firm is profitable its retained earnings will be high and it will use its retained earnings for its financial needs, so it employees that there is negative relationship between leverage and firms profitability. While firms with low retained earnings will relay on debt financing. This theory reflects problems created by asymmetric information between managers and investors. There are number of studies which provide empirical evidence to prove this relation between profitability and leverage. Hung *et* al (2002); Joshua, A (2005); Titman and Wessels, 1988; Rajan and Zingales, 1995; Wald, 1999; Booth et al, 2001; Fama and French, 2002).

Optimum Capital structure is still an issue. It cannot be covered in two or three theories many empirical studies tried to explain this relation (relation between capital structure and profitability). Hung *et* al (2002) examines the interrelationship between profitability, cost of capital and capital structure among property developers and construction companies of Hong Kong. The results suggest that capital gearing is positively related with assets and negatively related with profit margins.

Then Joshua, A (2005) study this relation in less developed country Ghana and investigated the relationship between capital structure and profitability of listed companies on the Ghana stock exchange during 5 years period. The result indicates that there is positive relationship between the ratios of short-term debt to total asset and ROE, and negative relationship between the ratios of long-term debt to total assets and ROE. The research further found a positive association between the ratio of total debt to total assets and return on equity. A similar study was conducted again by Joshau, A (2007), examines the effect of debt-policy (capital structure) on the performance of small and medium sized enterprise in Ghana and South Africa suggest that capital structure especially long-term and total debt ratio negatively affect performance of SMEs.

In the same year Kyereboah-Coleman, A (2007), investigates the impact of capital structure on the performance of microfinance institutions in sub-Saharan Africa showing that most of the Microfinance institutes finance their operation with long-term debt as compared to short-term debt and they usually employ high leverage. The result shows that High leverage firms perform better to deal with risk and they enjoy economies of scale. In the same year however Madan study negate the use of leverage. Madan, K (2007) examines the role of financing decision in the overall performance of the leading

hotels in India showing that Leverage seems to be working only for a few companies, while they affect most of the firms negatively. The research further reveals that those firms which are moderately geared have been able to generate a good return on equity.

Ebaid, E (2009) examines the impact of capital structure choice on firm performance in Egypt which consider as emerging or transitional economy of the period 1997-2005, indicates that capital structure choice decision has weak to no impact of on firm's performance. Capital structure is one of the important determinants of a firm's success (Madan, K 2007).

Richard. H. Fosberg (2004) in their study found that the amount of debt is inversely related to the percentage of firms common stock held by CEO. Direct relation is found between block holder share ownership and debt equity ratio, Richard. H. Fosberg (2004)

DATA AND MEASUREMENT OF VARIABLES

The data for this study is taken from State Bank of Pakistan Publication ''*Balance sheet analysis of joint stock companies listed on the Karachi stock exchange*'' from 2004-2009. This publication provides useful information on key accounts of the financial statements of all listed firms of KSE. A sample of 482 non-financial companies has been selected and it is annual in nature and covers 6 years period.

We excluded financial sector companies, which include all Banking, Insurance and Investment companies. The research is only restricted to 482 industrial firms listed on KSE. The exclusion of financial firms from the study is due to the reason that capital structure of the financial firms is not comparable to the capital structure of non-financial firms (Shah& Khan, 2007; Pandey, 2004). Then we excluded all those firms whose data was missing or whose six year data was not available. In order to avoid outliers in data

financial companies with more then three standard deviation are also excluded. Data with out liars disturb normality which then further disturbs the testing hypothesis process. After the exclusion of firms whose values were missing or whose standard deviation was more then three study limited to 383 non financial companies. The study use convenient sampling as the sample technique for collection of data.

Dependent and Independent variables

After discussing the different theories of capital structure now we discuss the dependent and independent variables for our study. This study uses performance/profitability as dependent variable and leverage as dependent variable.

Dependent Variables Measurement

Profitability/Performance*:*

Profitability/Performance of the firms can be calculated by using accounting measure using firm's financial statements. Performance can normally computed by relating profits of a firm to its investment. Literature uses a number of different accounting measures for calculating firm performance, which include ROE, ROA and GM (Abor, 2005; Karaendiz et al, 2009). Market based measures such as stock return and volatility has also been used for performance measures (Welch, 2004). Both accounting base and Tobin's Q measure has also been used for performance measurement (Abor, 2007). This study uses most commonly used accounting based proxy for performance that is Return on Equity (ROE) to evaluate the firms Performance as dependent variable. ROE computed as the ratio of net profit to total shareholders equity which include ordinary shareholders equity (share premium and reserves & surplus), and preference share capital.

Independent Variables Measurement

Financial Leverage:

Literature uses different measure for the calculation of financial leverage through accounting measures, which includes short term debt, long term debt and total debt as a ratio of total assets (Abor, 2005; Abor, 2007; Kyereboah-coleman, 2007). This study uses two accounting measure for financial leverage as independent variable; that are debt to equity ratio (Debt/Equity) and Total debt to Total assets (Debt/Assets). D/E ratio is an important tool of financial analysis to evaluate the financial structure of firm. It basically indicates the relative proportion of debt and equity in financing the assets of the firms. It has important implication from the viewpoint of creditors, and owner of business and the firm itself (Khan and Jain, 2004). Study shows that researchers have used both book value and market value measure for leverage. In market value measure book value of debt is divided by market value of equity. While in book value measure book value of debt is divided by book value of equity. Book value of debt is calculated as total debt plus accrued interest. The second ratio use for the measure of financial leverage in this study is total debt to total assets also called a capital ratio, which is computed as the ratio of book value of total debt to total assets. We use book value measure of leverage. The reason for this is optimal level of leverage is determined by the trade off between the benefits and costs of debt financing. Companies use leverage to finance there needs because of the tax shield which generates savings. The primary cost of borrowing is it increases chances for bankruptcy. If company is facing financial distress and goes into bankruptcy, then the relevant value of the debt is the book of debt. The use of book value provides accuracy in calculations.

Why this study use Total debt rather then long term debt?

Most of the capital structure theories use long term debt as the proxy for leverage. However we use total debt as proxy for leverage because in Pakistan most firms have access to short term loans as the average size of firm is small which makes it difficult for them to access long term loans. Main reason is the technicality and cost involved in capital markets. Main sources of debt financing in Pakistan is commercial banks, which do not encourage long term loans. In 1994 government remove most of the constraints among which one to amend company law to permit corporate entities to raise long term funds through TFCs (Term finance certificate). This shows that corporate culture is yet to develop in Pakistan.

Hypothesis

According to picking order hypothesis firms tend to use internally generated funds first and than resort to external financing. This shows that profitable firms will have less amount of leverage. We accept a negative relation between ROE and D/E.

Agency theory and free cash flow theory suggest that to decrease the agency problem either increase the ownership of manager in the firm or use a high level of debt. Similarly free cash flow theory also suggests that firms should use high level of debt. Following this we can say that there is positive relation between performance and leverage.

Hypothesis 1. There is negative and significant relation between ROE and D/E.

Hypothesis 2. There is negative and significant relation between ROA and D/E.

Size

The second independent variable is size. Natural log of total sales or natural log of total assets can be used as proxy for size of the firm. We use natural log of total asset as proxy for firm size. There are two contradictory views about size of a firm. First firm with larger size doesn't consider bankruptcy cost as an active variable in deciding the level of leverage. Because it constitute a smaller portion of the total value of the firm. So we can say that level of leverage is directly related to size of the firm, that is firm with larger size will use more debt as a source of financing as compare to small firms. Second, contrary view is that there is less asymmetrical information about the larger firms. This reduces the chances of undervaluation of the new equity issue and thus encourages the large firms to use equity financing. This means that there is negative relationship between size and Leverage of a firm. Following we expect a positive relationship between size and leverage of the firm.

Data Analysis

Type of Data

The study uses panel data, because panel data follows a given sample of individuals over time, and thus covers the whole sample by providing multiple observations on each individual in the sample.

As panel data combines the features of time series and cross-section so, it provides information on a number of statistical units for a number of years. In comparison to time-series or cross sectional sets panel data has numerous advantages. Panel data usually provides the researcher a large number of data points, increasing the degrees of freedom and reducing the collinaerity among explanatory variable; hence improving the efficiency of econometric estimates shah & khan.

Model used

The study uses panel data regression analysis. Pooled regression type of panel data analysis was used. This pooled regression model is also known as the constant coefficient model. It is called so because both intercept and slopes are kept constant. The panel data combines cross sectional company data and time series data on the assumption that there is no significant cross section or temporal effects. The model disregards the time, space or individual effects and all firms are similar with regard to capital structure and there is no significant industry or time effect on leverage. General form of the model used is

$y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$ … … … ……. … (1)

Where

y_{it} = Is the measure of dependent variable of firm i and time t

α = The intercept of the equation

β_i = The change co-efficient for X_{it} variables

X_{it} = The different independent variables for firm i at time t

i = The number of the firms i.e. $i = 1, 2, 3 \ldots N$

t = The time period i.e. $t = 1, 2, 3 \ldots T$

Equations

If we convert the above general equation to this study it will be

$ROE_{it} = \alpha + \beta 1(D/E_{it}) + \beta 2\,(SZ_{it}) + \varepsilon_{it}$ … …….. (2)

ROE = Return on Equity

SZ = Size

D/E= Debt to Equity

ε = The error term.

$ROAit = \alpha + \beta1(D/Eit) + \beta2\ (SZit)\ + \varepsilon it$ … …….. (3)

ROA = Return on Equity

SZ = Size

D/E= Debt to Equity

ε = The error term.

Empirical results: **Descriptive results**

Table 1. Descriptive Statistics

	Mean	Medean	Standard Deviation
ROE	-0.03276	0.14804	7.06579
ROA	-0.04189	0.05977	3.74794
Size	7.059172	0.03890	1.85690
D/E	2.721669	1.24986	59.6539

Descriptive statistic is used to describe the nature and validity of data. Analyzing the table we can see that the average value of (ROE) over six year period is -0.023 which is very low. Similarly (ROA) is also -0.041. This shows a bad performance of the industry in past 6 years. One reason for this may be the Textile sector of Pakistan. Most of the textile sector firms are owned by families. Based on many evidences families take out profit of there firm in other forms rather then in dividends. That's how they save them selves from double taxation. This is done through either inflating cost of production or deflating sales figures, which results in negative profits and negative equity. The mean

value for size is high which shows that companies are growing according to there total assets. Debt to Equity ratio is also very low which may be because of the un developed capital market structure.

Correlation Matrix

Table 2.

	ROA	*ROE*	*Size*	*D/E*
return on assets R/A	1			
Return on equity R/E	0.005971218	1		
Size	0.107768284	-0.044997414	1	
Debt to equity D/E	0.00069632	-0.963470963	0.061262338	1

The correlation matrix result shows that there is positive correlation between profitability and size as well as profitability and leverage. This shows that if size of the firm is increasing its profitability will also increase. There is positive correlation between size and leverage this means that larger firms will use more debt to finance there needs. There is negative relation between Debt to Equity and Return on Equity. It means that if companies are generating more profit on there equity they will use less debt to finance there needs.

Regression Analysis

Regression analysis is discussed in this section. Both equations are checked separately and results are displayed in table below.

Equation 2

$ROEit = \alpha + \beta1(D/Eit) + \beta2\ (SZit) + \varepsilon$ … …….. (2)

Hypothesis 1st. there is negative relation ROE and D/E

In first equation the relationship of leverage and profitability is checked. ROE is used as dependent variable and proxy for performance keeping size as controlling variable. The results shows that performance (ROE) is significantly and positively related with size of the firm, while there is negative and significant relation between performance (ROE) and leverage (D/E). The positive value of coefficient of Beta (0.05) is empirically significant at (t value =2.50) and 99% confidence interval. This suggests that firms with larger size have higher profitability. Similarly the negative value of coefficient of Beta for debt to equity (-0.114) is significant at (t= -171.6) and at 99% confidence interval. This shows that performance (ROE) is negatively related with leverage (D/E). And hence we accept our 1st hypothesis.

$ROEit = \alpha + \beta 1(D/Eit) + \beta 2\ (SZit) + \varepsilon$ … …….. (2)

Regression Statistics	
Multiple R	0.963573451
R Square	0.928473796
Adjusted R Square	0.928410915
Standard Error	1.890533074
Observations	2278

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.1000863	0.155913	-0.6419363	0.520979174
Size	0.0535760	0.021376	2.5063491	0.012267786

debt to equity D/E	-0.1142217	0.000665	-171.65990	0

Equation 3

$ROAit = \alpha + \beta1(D/Eit) + \beta2\ (SZit) + \varepsilon$ … …….. (3)

Hypothesis 2. There is negative and significant relationship between ROA and D/E

In this equation relationship between performance and leverage is checked. In this equation we use ROA as proxy for performance. Result shows that ROE is not significant with D/E ratio. As the coefficient of Beta (V-0.0003) is not significant it P (0.77). This shows that regression analysis is not providing enough support to accept the hypothesis.

The prediction of information asymmetry hypothesis by Myers and Majluf (1984) is approved by the negative sign of coefficient of Beta. Whereas the predictions of bankruptcy theory and free-cash flow hypothesis by Jensen (1984) are not substantiated. It is thus proved that pecking order theory dominates trade-off theory

$ROAit = \alpha + \beta1(D/Eit) + \beta2\ (SZit) + \varepsilon$ … …….. (3)

Regression Statistics	
Multiple R	0.107930594
R Square	0.011649013
Adjusted R Square	0.010780133
Standard Error	3.727688881
Observations	2278

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-1.5815502	0.307424	-5.14451613	2.91155E-07

Size	0.21825061	0.042149	5.178102348	2.43836E-07
debt to equity D/E	-0.0003724	0.001312	-0.28387789	0.776529789

Conclusion

Using panel data analysis, we attempt to find the determinants of capital structure of KSE listed none-financial firms for the period 2004-2009. We first present some descriptive statistics on our selected variables. The most interesting finding of our descriptive statistics is the highest leverage ratio for textile industry whereas the average profitability of textile industry is negatives The results of this study shows negative relation between performance and leverage**.** Long term debt is more expensive due to certain direct and indirect costs. There fore employing high level of debt results low profitability**.** The result of second hypothesis shows no significance between leverage and profitability. On the basis of these findings it is concluded that profitability is consistent with picking order theory. In the light of above discussion we can say that the existing theories of capital structure contribute to some extent in decision making process. The reason is that the capital structure decision is a complex multi dimensional problem. And it is impossible to cope with all relevant factors that are contributing to the confusion in capital structure decisions.

REFRENCES

- Crutchley, C. And hanson, R (1989), "the test agency theory of managerial ownership, corporate leverage, and corporate dividend*", financial management* , vol.18,pp.36-46
- Ebaid, E (2009), 'Impact of capital structure choice on firms performance: empirical evidence from Egypt', *the journal of risk finance,* 10:5, 477-487
- Godfred A. Bokpin and Anastacia C. Arko (2009), "Ownership structure, corporate governance and capital structure decisions of firms", *Studies in Economics and Finance,* Vol. 26 No. 4, 2009 pp. 246-256
- Hung, Y. C, Albert, C. C, and Eddie, C. H (2002), 'Capital structure and profitability of the property and construction sectors in Hong Kong', *Journal of property, Investment and Finance,* 20: 6. 1463-578X
- Joshua, A (2005), 'the effect of capital structure on profitability: an empirical analysis of listed firms in Ghana', *the journal of risk finance,* 6:5, 438-445.
- Joshua, A (2007), 'Debt policy and performance of SMEs: Evidence from Ghanaian and South Africa firms', *the journal of risk finance'* 8:4, 364-379

- Kyerebah-Coleman(2007), 'Impact of capital structure on the performance of micro-finance institutions', *the journal of risk finance,* 8:1, 56-71
- Madan, K (2007) 'An analysis of Debt-Equity structure of leading hotel chains in India', *International Journal of Hospitality Management,* 19: 5, 397-414.
- Modigliani, F. and Miller, M. (1958), "The cost of capital, corporate finance and the theory of investment", *American Economic Review*, Vol. 48, pp. 261-97.
- Modigliani, F. and Miller, M. (1963), "Corporate income taxes and the cost of capital: a correction*", American Economic Review*, Vol. 53, pp. 443-53.

- Raza, M. W., & Mohsin, H. M. (2011). Financial liberalization and macroeconomic performance, empirical evidence from selected Asian countries.