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An Empirically Study of Determinants of Capital Structure of Non Financial Listed Companies in KSE

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Abstract
This study investigates the capital structure of nonfinancial firms registered on Karachi Stock Exchange (Pakistan) from 2004 to 2012 to find which independent variables determine the capital structure of Pakistani nonfinancial listed firms. We find a statistically significant Positive relationship between asset tangibility, firm size, growth opportunities and cash flow volatility. We find a statistically significant negative relationship between profitability and leverage. Profitability and leverage were shown an insignificant relationship with leverage. The existence of strong positive relationships between asset tangibility and size to leverage to be supporting the theoretical predictions of trade-off theory. So the findings of this study are consistent with the predictions of the pecking order theory, trade - off theory which shows that the capital structure models are derived from developed countries which present some help in understanding of corporate financing behaviour of Pakistan nonfinancial listed companies. So research has been conducted in developed countries is also valid in Pakistan.
Keywords: Pecking order theory, trade - off theory, Capital Structure, tangibility, firm size, growth opportunities, cash flow volatility, profitability and leverage.

Introduction:

The theory of capital structure decisions is the most interesting issue in the field of finance. Corporate Capital structure refers to the mix of debt and equity used by a company in financing its assets. They provide the explanation the many questions such like what is the relationship between capital structure and the value of the firm, how much firms should borrow, how firms choose their optimal capital structure and so on. Currently, companies do their business in more competitive and complex environment, therefore it is important to use an optimal capital structure which will increase profitability level of the firms. The capital structure decision is one of the most important decisions made by financial management. The capital structure decision is at the core of many other decisions in the area of corporate finance. These include project financing, dividend policy, the issue of long term securities and so on. Corporate financing is one of the most important decisions made in financial management because these decisions eventually affect the wealth of stockholders. Therefore, financial manager's one of the most important objectives is to make sure the lower cost of capital to maximize the value of the company (Shah, Hijazi, & Javed. 2004). Financial managers attempt to find out the optimal capital structure where a company can meet its financial requirements (Tong & Green. 2005). The task of maximizing of the firm value can be achieved once financial mangers identify the right determinants of capital structure. It has been generally observed that most of the empirical research on capital structure of the firm is conducted in developeing world (Mazur 2007) and a comparatively a little research work on firms' financing decision has been made in developing countries (Graham & Harvey 2001) (Shah & Khan 2007), (Tong & Green 2005).

The major purpose of this study is to carry out an empirical testing and by using the panel data methodology to determine the firm-specific factors affecting the capital structure decisions of Pakistani non financial listed companies in KSE, in the light of the capital structure theories such as Pecking Order theory, Trade-Off theory.

Research question

What are the determinants of capital structure of Pakistani non-financial listed companies?
Is firm specific characteristic effect the capital structure of Pakistani non-financial listed companies?

Research objective

To determine the determinants of capital structure of Pakistani non-financial listed companies
To investigate the relationship between firm specific characteristic effect the capital structure of Pakistani non-

financial listed companies.

Significant of study

The capital structure of a company are more specifically the company's debt-to-equity ratio, explain insight into how risky a company is. Generally a company are more heavily financed by debt pose larger risk, as this company is comparatively extremely levered. Hence the concept and an understanding of the capital structure of a company are really very important because it can influence not only the return of the company, although whether or not companies survive in a different economic condition. Firm's capital structure decisions are very difficult to make in uncertain economies. In developing economies in particular, the existence of macro environment factors such as high and soaring interest rates, volatility in economic and political situations are important factors that determines the capital structure of firms. The current literature about capital structures have mostly derived from the data in developed economies that have many institutional similarities (Boot &, Demirguc-Kunt, Maksimovic, 2001). Since different countries have different institutional arrangements, mainly with respect to tax and bankruptcy, In addition, there are differences in social and cultural issues and in the levels of economic development thus the need to examine differently the determinants of capital structure for firms in developing economies.

Literature review

Capital structure refers to the mix of debt and equity use by a company to financing its assets. It is a mix of a company's short-term debt, long-term debt, common equity and preferred equity and it simply explain how a company finances its whole operation and growth by using different source of funds. Generally speaking, there are two main forms of capital: equity capital and debt capital. Each has its own benefits and drawbacks and a substantial part of wise corporate management is attempting to find the optimal capital structure in terms of risk/reward payoff for shareholders. The capital structure decision is one of the most important decisions made by financial management.

It has been generally observed that most of the empirical research on corporate capital structure is conducted in developed world (Mazur 2007). According to (Shah & Khan 2007) relatively little research work on firms' financing decision has been done in developing countries. For example, Singh (1995) and Singh and Hamid (1992) was used data on the largest companies in selected developing countries and found that companies in developing countries significantly more use of external capital to finance their growth opportunity than is normally the case of the industrialized countries. In a later study, they found that companies in developing countries rely largely on internal finance as compare to debt finance. Cobham & Subramaniam (1998) was used a sample of larger companies and shows that Indian companies use significantly lower external and equity financing. Margaritis & Psillaki (2007) examine capital structure of 12,240 companies in New Zealand and find consistent with agency cost model. Frank & Goyal (2009) study capital structure of publically traded US companies from 1950-2003 and supporting some versions of trade-off model. Beattie, Goodacre, & Thomson (2006) examine the capital structure of listed companies in UK and support the predictions of trade-off model as well as pecking order theories. Huang & Ritter (2009) shows that US companies finance their operations more with external equality than debt if cost of equity capital is low. Lipson & Mortal (2009) consider the relation between liquidity and capital structure of US companies and find out a negative relation between liquidity and debt. Cook & Tang (2010) study the financing behaviour of US companies in good and bad economic condition and find that US companies adjust their capital structure more quickly in good economic condition as compare to bad. Antoniou, Guney, & Paudyal (2008) study capital structure of companies and find out the evidences supporting both trade-off model and packing order model of capital structure. Bancel & Mittoo (2004) study in 16 European countries and find the evidences consistent with trade-off model of capital structure. (Barry, Mann, & Rodríguez, Autumn (2008) examine capital structure of more than 14000 nonfinancial US companies and find evidences supporting MTT. Rajan & Zingales (1995) explore the capital structure of companies in G7 countries and find the parallel behaviour of variables of capital structure in all seven countries. Brounen, Jong, & Koedijk, May (2006) also examine the capital structure of companies in Europe and find out the evidences consistent with Packing Order Theory. Allen & Mizuno (1989) study the financing decision of the Japanese firms and find evidences consistent with trade-off model. Pushner (1995) study the capital structure of Japanese companies and finds out the evidence consistent with agency cost theory. The main difference between developing and developed world is that in developed world companies finance their leverage with long term debt and short term debt is mainly contributing in leverage of firms in developing world (Booth, Demirguc-Kunt, & Maksimovic, 2001). Tong & Green (2005) examine capital structure of listed Chinese companies and find evidence in the support of POT. Guihai & Song (2006) study capital structure of 1200 Chinese firms and find the results consistent with both TOT and POT of capital structure. Eldomiaty & Ismail (2009) examine the capital structure of Egyptian firms and find the evidence supporting TOT. Teker, Tukel, & Tasseven (2009) examine capital structure of Turkish companies and find evidence supporting POT and TOT of capital structure. Gurcharan (2010) examines the capital structure firms in selected four developing ASEAN countries and finds significant

negative relationship between profitability and growth in all four counties but other determinants of capital structure are treating differently in each country. Booth et al. (2001) investigate capital structure of 10 developing countries and argue that there is negative relationship between tangibility and leverage in Pakistan, Brazil, India and Turkey unlike the corresponding results in G7 by (Rajan & Zingales, 1995).

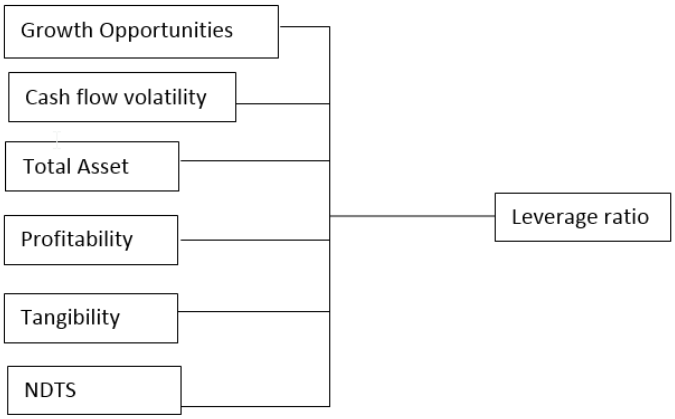
Hypotheses

In the light of literature review following hypothesis has been extracted,
H1: There is positive/negative relationship between leverage and assets tangibility.
H2: There is positive/netative relationship between leverage and non-debt tax shield.
H3: There is positive/negative relationship among leverage, growth and firm size.
H4:There is negative/positive relationship between leverage and profitability.

Data Description and Research Methodology

The sample of this study has focused on twelve industrial sectors of Pakistan and including the non financial listed companies in KSE. This study is based on the financial data of sample firms from 2004-2012 and has been taken from the State Bank of Pakistan Publications balance sheet analysis of joint stock companies listed on the Karachi stock exchange. This study uses panel regression analysis. Panel data analysis facilitates analysis of cross-sectional and time series data. We use the pooled regression type of panel data analysis. The pooled regression, also called the Constant Coefficients model, is one where both intercepts and slopes are assumed constant. The cross section company data and time series data are pooled together in a single column assuming that there is no significant cross section or inter temporal effects.
Therefore the equation for our regression model will be:

$$\mathbf{LEV = \beta_0 + \beta_1 (TG) + \beta_2 (SZ) + \beta_3 (GT) + \beta_4 (PF) + \beta_5 (CFV) + \beta_6 (NDTS) + \varepsilon}$$



This study follows the framework of Rajan & Zingles (1995) and Shah & Hijazi (2005) that use tangibility of assets, firm size, growth and profitability of the firm cash flow volatility and non debt tax shield as explanatory variables to determine the degree of leverage (the response variable). LEV is leverage ratio calculated by total debt to total assets ratio which is used as dependent variable. We use independent variables such as profitability is equal to earnings before interest and tax (EBIT) divided by total assets. Total asset will be use to explain the size of firm we define it as natural log of total assets. We measure tangibility (TNG) as fixed assets over total assets. GROW is the growth opportunities defined as the ratio of Market-To-Book ratio. This is taken as ratio Book value of assets less Book value of equity plus Market value of equity to Book value of assets. NDTS is a ratio of depreciation expense plus investment tax credits to total assets. CFV is cash flow volatility and it is calculated by standard deviation of cash flow to total assets

Empirical result

This table shows the result of the descriptive statistics for the variables used in this estimation.

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Obs.
LEV	0.279	0.3287	0.8969	0.0092	0.371	0.17	2.5055	108
SIZE	0.577	0.4603	0.7998	0.1837	0.421	0.5796	2.918	108
PROF	0.358	0.1792	0.7889	0.151	0.186	0.0597	5.1373	108
TANG	0.586	0.5561	0.8798	0.2003	0.171	0.1096	5.7829	108
GROW	0.287	0.2194	0.8976	-0.849	0.256	1.1819	4.0133	108
NDTS	0.392	0.614	0.9636	0.1739	0.582	1.7925	3.465	108
CFV	19.53	21.6388	80.25	-15.701	18.158	0.2761	3.534	108

Correlation matrix

The correlation matrix with the independent variables is presented in table. A correlation analysis is due to make sure a possible association between the independent variables, in order to test whether there is any linear correlation between variables. Collinearity gives an explanation of the dependence of one variable to another. When these variables are highly correlated they both express basically the similar information. Normally those independent variables having collinearity are at 0.70 or greater should not take in regression analysis. Table shows that highest correlation value is 0.5486 between growth and cash flow volatility. Therefore collinearity should not exist in our regression analysis.

	LEV	**SIZE**	**PROF**	**TANG**	**GROW**	**NDTS**	**CFV**
LEV	1						
SIZE	0.4365	1					
PROF	-0.2863	0.5424	1				
TANG	0.03087	-0.1432	0.3738	1			
GROW	-0.5678	0.0875	0.1047	-0.2728	1		
NDTS	0.2156	0.15656	-0.4738	0.3452	-0.5093	1	
CFV	0.2178	0.3454	0.4082	0.2891	0.5486	0.2986	1

Significance level at 1%(0.01) and 5% (0.05) respectively.

Regression Analysis Results

The following tables present the results of pooled regression analysis. To test hypotheses that we formulated above, we perform regression test. Results below show that while tangibility, profitability and non-debt tax shield are negatively correlated with leverage in listed companies,

Common effect model

Variable	Coefficient	t-Statistic	Prob.
C	-0.209	-1.7805	0.0765
SIZE	0.2687	1.8672	0.0505
PROF	-0.1909	-2.4057	0.0509
TANG	0.0675	39.2414	0.0195
GROW	0.1446	1.6402	0.0013
NDTS	-1.4764	1.2268	0.176
CFV	0.0497	0.506	0.0006
R-squared	0.5836	F-statistic	9.3902
Adj R-squared	0.340589	Durbin-Watson stat	1.8913

The above tables show the results of the regression analysis. The value of R-square 0.58 shows that the explanatory variables i.e. size, growth opportunities, profitability, tangibility, non debt tax shield and cash flow variable explain nearly 58% of variation in the response variable leverage. The Adjusted R-square is slightly below the R2. From the value of the F-statistic we can see that the model is statistically significant. There is a significant positive relationship exist between the firm size and leverage which is consistent with the trade-off theory. These results show that larger firms in Pakistan tend to have more leverage. According to the study of (Castanias, 1983; Titman and Wessels, 1988; Wald, 1999) larger firms are more diversified and so have less variation of earnings. The result of this study is consistent with (Syed Tahir Hijazi Yasir Bin Tariq) (Barclay and Smith, 1996) (Friend and Lang, 1988)(Barton et al,1989) (MacKie-Mason, 1990)(Kim et al., 1998)(Al-Sakran 2001)(Hovakimian et al. 2004)(Huang And Song 2002), (Rajan And Zingales (1995). There is a significant negative relationship exist between the profitability and leverage which shows that profitable Pakistani firms tend to have less leverage. Our result is consistent with packing order theory that was given by

Myers in 1984 which tells that firms prefer internal financing to external financing to support its operations. So the negative sign of the coefficient for profitability is similar to that of (Booth et al 2001) (Tong & Green 2005), (Hijazi & Tariq 2006), (Shah & Khan 2007). There is a significant positive relationship exist between the asset tangibility and leverage. The significant positive coefficient of tangibility is verify the theoretical prediction of the trade-off theory. The result of this study was consistent with (Jensen & Meckling, 1976), (Huang & Song, 2006) (Margaritis & Psillaki, 2007),(Frank & Goyal 2009) from developing country and (Shah & Khan, 2007) and (Jong, et al. 2008) from developing country. There is a significant positive relationship exist between the growth opportunity and leverage. So the results of this study consistent with predictions of Packing Order Theory, which shows that the growing companies are using more debt than equity to finance the new projects. The result of this study is also consistent with studies of (Tong & Green, 2005) but inconsistent with the study of (Huang & Song, 2006), (Titman & Wessels, 1988) (Shah & Hijazi, 2004) (Qureshi, 2009) (Barclay, Smith, & Watts, 1995) and (Shah & Khan, 2007) because all of them find out a significant negative relationship between growth and leverage.There is an insignificant negative relationship exist between the NDTS and leverage. The result of this study is consistent with the study of (Attaullah Shah and Safiullah Khan). There is a significant positive relationship exist between the CFV and leverage. Companies with high cash flow volatility be considered risky because they can go bankrupt.

Conclusion

The aim of this study is to investigate the capital structure of nonfinancial listed firms on Karachi Stock Exchange Pakistan from 2004 to 2012 by using a pooled regression model to find which independent variables determine the capital structure of these firms. The study found a statistically significant positive relationship between asset tangibility, firm size, growth opportunities and cash flow volatility while the profitability and leverage have the significant negative relationship. Non debt tax shield was shown an insignificant relationship with leverage. So the findings of this study are consistent with the predictions of the pecking order theory, trade - off theory, and agency theory which shows that the capital structure models are derived from developed countries which present some help in understanding of corporate financing behaviour of Pakistan nonfinancial listed companies. So research has been conducted in developed countries is also valid in Pakistan.

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