Influence of Capital Structure Choice on Firm Performance: A Case of Listed Non-Financial Firms of Pakistan

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Abstract

Capital structure and its relation with firm value continue to attract researcher's interest around the world to get deeper understanding on the matter concerned. The aim of this paper is to empirically investigate whether capital structure choice influences firm profitability or not in listed non-financial firms of Pakistan. Panel data regression (fixed effects model) was used to examine the relationship and effect of capital structure choice and firm performance. Secondary data from 2008-2013 was used for this study. The findings of the study revealed that capital structure choice measured through short-term debt (STD), long-term debt (LTD) and total debt (TD) has a negative but statistically weak relationship with firm performance measured through ROA and ROE. In case of firm performance measured through GPR, capital structure choice measured through LTD and TD shows positive and statistically significant relationship with firm performance whereas in case of STD it is negative but statistically significant.

Keywords: Capital structure; Firm performance; Debt; Profitability

Introduction

Financing a modern organization has become one of the most challenging decisions being faced by the financial manager due its associated risks and its influence on firm value. A good financing decision may benefit the organization resulting in cost savings but at the same time a bad financing decision may severely affect firm value due to increased costs. Financing decisions get even more complicated considering the wide variety of financing options available today to the organization; each having its own benefits and costs.

The theory of capital structure received widespread attention after the "the irrelevance theorem" presented by Modigliani and Miller in 1958. Their

theory was based on certain restrictive assumptions like perfect markets with no transaction costs etc. and argued that capital structure has no relationship with firm value. MM theory received severe criticism from prominent researchers in the area on the grounds that in the real world markets are not perfect hence, capital structure do matter as far as its influence on firm value is concerned. Since then a significant amount of research has been carried out in the area exploring the extent to which capital structure matters and whether there is an ideal mix of debt and equity that maximizes firm value or not. The findings of most of these studies indicate that an optimal capital does exist and firms can maximize their value if they select the appropriate mix of debt and equity. However, these empirical studies failed to assign a definitive value as far as optimal capital structure is concerned (Gitman & Zutter, 2010). Hence, researchers continue to derive motivation in search of exploring that definitive strategy or value of optimal capital structure that will maximize firm value.

Despite the fact that empirical studies fail to identify any definitive value that if achieved will ensure optimal capital structure, yet in the financial literature there is sufficient information to help us understand how capital structure affects firm value. Numerous studies have been carried out to explore and understand how factors influence financing decisions and firm value. Moreover, the empirical evidence on capital structure and its effect on firm performance is rather mixed. Studies from Champion, (1999) Ghosh, Nag and Sirmans (2000), Hadlock and James (2002), Berger and Bonaccorsi di Patti, (2006) indicate that capital structure choice and firm performance is positively related. On the contrary, studies from Fama and French (1998), Simerly and Li (2000) and Salim and Yadav (2012) point towards a negative relationship between the two.

Majority of the studies pertaining to capital structure choice and firm performance have focused on developed countries where financial markets are developed and much more advanced as compared to developing countries. In developing economies adverse selection costs are high due to higher level of information asymmetry and access to finance is not as easy and efficient as in developed countries (Booth et al., 2001). Hence, there is greater need to understand the implications of capital structure decisions on firm performance with respect to developing countries.

The study of capital structure with respect to its effect on the performance of the firm is important for a number of reasons. Firstly, debt levels in the last

few years have risen significantly which requires an explanation as far as its influence on firm performance is concerned. Secondly, both investors and managers have different preferences, hence it is important to know the relative strengths of debt and debt instruments and their effects on firm's performance. Lastly, the most important purpose of examining debt level and firm performance is to examine its influence on shareholder wealth as it is the primary goal of any organization (Kinsman & Newman, 1999).

The study aims at examining the relationship and effect of preferred choice of capital structure selected by the firm on the financial performance of firms listed on Karachi Stock Exchange, Pakistan. Lending rates in Pakistan are quite high as compared to the rest of the region and considering the challenging political and economic environment in Pakistan it makes it very difficult for firms to borrow in these challenging conditions and that also at a higher rate of interest. In the background of these challenging conditions and prevailing higher rates of interest it would be interesting to see what kind of effect the preferred choice of capital structure has on the performance of listed firms in Pakistan.

The study will be useful for both academic as well as business purposes as it provides valuable information with respect to how composition of debt (short-term and long-term) affects the performance of the firm. Academically it adds to the already limited empirical studies on capital structures involving panel data models.

Literature Review

Capital structure choice is one of the many factors that significantly influence firm's performance. Borrowing costs vary over different maturity periods and also from organization to organization due to their respective credit worthiness. Short-term financing comparatively contains less risk than long-term financing thus having lower interest rates (Brigham & Houston, 2001). However, these interest rates cannot be looked at in isolation as firm's creditworthiness is an important factor in getting desirable interest rates on borrowing. While examining the financial literature, we find mix evidence as far as the influence of capital structure choice on performance is concerned.

Roden and Lewellen (1995), while analysing a sample 48 firms, argued that capital structure positively influences firm performance. Studies from Gosh et al. (2000) and Hadlock and James (2002) also found out that firm's having higher debt ratios tend to have higher level of profitability. In a study

involving analysis of capital structure of Ghanian firms, Abor (2005) concluded that both STD and TD are positively related with firm performance. Margaritis and Psillaki (2010) while considering both low and high growth firms in their sample argued that leverage positively influences firm performance both in low and high growth firms. Similarly, while applying a panel data regression model, Fosu (2013) based on sample of 257 South African firms argued that leverage positively influences firm performance.

On the contrary, many empirical studies (Titman & Wessels, 1988; Rajan & Zingales, 1995; Wald, 1999; Gleason, Mathur & Mathur, 2000; Huang & Song, 2006; Pathak, 2011 and Salim & Yadav, 2012) conducted both in developing countries argued that the choice of capital structure and firm performance are negatively related. Similarly, Zeitun and Tian (2007) based on a sample of Jordanian firms argued that debt level has negative effect on firm performance measured through both accounting as well as market based measures. Furthermore, Abor (2007) in sample containing small and medium size firms operating in Ghana and South Africa also supported earlier empirical findings that debt level and firm performance is negatively related.
In another study, Ilyukhin (2015) based on a large sample of Russian joint stock companies concluded that leverage is negatively related to firm performance. Similarly, focusing on transitions economies, empirical studies from Majumdar and Chhibhar (1999) in India and Chiang et al., (2002) and Hung et al., (2002) in Hong Kong also indicate that leverage and firm performance are negatively related. Akhtar et al., (20120 based on sample of listed firms in the fuel and energy sector concluded that leverage and firm performance are positively related whereas in a study of listed sugar firms of Pakistan, Rehman (2013) found out that there is negative relationship between financial leverage and firm performance.

Moreover, Ebaid (2009) argued that capital structure choice has no or weak relation with firm performance. His study comprised of 65 Egyptian firms and measured firm performance by employing three accounting measures (ROA, ROE, GPR) in his study. In another study, Saedi and Mahmoodi (2011) analysed the influence of capital structure choice on firm performance. The findings of their study revealed that EPS and Tobin's Q has a statistically significant positive with level of debt whereas ROA and ROE has negative but statistically weak relationship with level of debt.

METHODOLOGY

Data and Sample

Since the study aimed to empirically examine the relationship between capital structure choice and firm performance, therefore secondary data was used in this study from 2008-2013. The reason for limiting the study to the period from 2008 to 2013 is that some of the data relevant to firms was not available before 2008. Data for the study was collected from the Balance Sheet ratio analysis available on State Bank of Pakistan's database. The sample comprised of listed manufacturing firms of KSE. Firms that remained listed for the entire period of study were chosen. The final sample consists of 280 firms. Currently the manufacturing sector is divided into six broad sectors namely textile, fuel and energy, cement, automobile, pharmaceutical and chemicals and food. Table 1 shows details of firms selected various industrial sectors for this study:

Table 1: Breakup of firms selected from industrial sectors

Textile	Food	Pharma & Chemicals	Cement	Auto & Parts	Fuel & energy
142	44	40	19	22	13

While collecting data, it was found out that some of the data at firm-level was missing. One way of dealing with it was to remove those firms (having missing data) from the final sample. Removal of these firms may have affected the generalizability of our findings. Therefore, firms with missing data were included in the final sample as in the financial literature we find a number of techniques used for handling missing data. These include: multiple imputations, single imputations, available and complete case analysis etc. In this study multiple imputations[1] were used for handling missing as it was more effective in handling missing data compared to other methods (Pigott, 2001).

Measurement of Variables

Firm performance: In literature we find a number of measures that are used to measure the financial performance of firm. These include: accounting measures like ROE, ROA and GPR (e.g Abor, 2005, Ebaid 2009; Salim & Yadav 2012); market based measures like volatility and stock returns (Welch, 2004); Tobin's Q which is a mixture of both market as well as accounting values (Zeitun & Tian 2007; Salim & Yadav 2012). In this study we used three accounting measures to measure the financial performance of the firm. The reason for using three different performance measures as also highlighted

by Mesquita and Lara (2002) is that these performance measures have different interpretations as far as the performance of the firm is concerned. In this kind of study, in order to have solid foundation, it is imperative to use performance measures that are quantifiable, comparable and expressive (Cole & Mehran, 1998). Accounting based measures include ROA measured through profit before interest and taxation divided by total assets *100 , ROE measured through profit after tax divided by share capital plus reserves, Gross profit margin measured through gross profit divided by sales * 100

Financial Leverage: Based on the measures used in previous studies such as Abor (2005), Abor (2007), Ebaid (2009), three ratios were used in this study to measure financial leverage. They are: short-term debt (STD) divided by total assets, long-term debt (LTD) divided by total assets and total debts (TD) divided by total assets.

Control variable: The review of literature related to capital structure and performance of firm suggests that firm size is an important factor that may influence firm performance. Large size offers several advantages to firm such as lower costs resulting from economies of scale, greater influence in the market due to proportionately large market share etc. which may influence the outcome of research and the inferences generated based on these outcomes (Jermias, 2008). Hence, to neutralize the size effects firm size was used as a control variable. Firm size was measured by taking natural log of total assets.
Panel data regression was used in this study. Panel data regression is more beneficial as it is more efficient with greater degrees of freedom and provides data that is informative and also has more data variability (Gujarati, 2004). Applying panel data models also results in lower collinearity among variables. Since panel data combines both cross-sectional data as well as time series data, it is more effective in measuring effects that could not be determined in a pure time series data or cross-sectional data (Gujarati, 2004). Furthermore, panel data enable us to study more complicated behavioural models (Green, 2004). Like any other estimation technique panel data model also has certain limitations that affect data like heteroscedasticity (found in cross-sectional data) and autocorrelation (related to time series data) needs to be addressed. To address these issues and other, several estimation techniques are available among which the most commonly used are fixed effects and random effects. In order to avoid selection bias the final decision on the selection of random effects or fixed effects was based on Hausman test (1978). Based on results from Hausman test (see, Appendix), fixed effects model was adopted for this study.

Model

The following three models were used to test for the relationship between financial leverage and firm performance.

$$Performance_{it} = \alpha + \beta_1 STD_{it} + FS_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots Model\ 1$$

$$Performance_{it} = \alpha + \beta_1 LTD_{it} + FS_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots Model\ 2$$

$$Performance_{it} = \alpha + \beta_1 TD_{it} + FS_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots Model\ 3$$

Where

STD_{it} = short-term debt/total assets for firm *i* at time *t*

LTD_{it} = long-term debt/total assets for firm *i* at time *t*

TD_{it} = total debt/total assets for firm *i* at time *t*

μ_{it} = error term

FINDINGS

Descriptive Statistics

Table 2: Descriptive Statistics

	ROA	***ROE***	***GPR***	***FS***	***STD***	***LTD***	***TD***
Mean	10.98	43.44	18.92	6.42	19.01	13.93	32.94
Median	6.76	19.34	23.18	6.46	21.37	20.41	48.97
Maximum	18.26	60.01	43.73	8.34	74.20	81.23	91.92
Minimum	0.01	0.03	0.04	-1.00	2.33	0.08	0.06
Std.Dev	0.54	0.59	0.68	0.59	0.59	0.72	0.52
Skewness	-1.07	-0.44	-0.66	-0.91	-0.91	-0.27	0.01
Kurtosis	5.10	5.03	4.87	8.00	8.00	5.11	8.07

Descriptive statistics of the variables are shown in Table 2. The measures of firm profitability shown in Table 2 indicate that the performance of firms listed on the KSE remained below average during study period from 2008-2013. It means that the average returns of firms listed on KSE was below that other comparative investment options available to investors i.e. national savings etc. One of the possible reasons for this below average performance of listed firms can be that the last few years have been very challenging for businesses in Pakistan. Energy crisis, rising inflation and poor law and order have contributed to poor performance of the firms. The total debt value of 32.94 indicates that listed firms in Pakistan on average finance 32 of their total assets through debt. On the other hand, the short-term debt value of 24.01 and long-term debt value of 21.72 reveal that listed firms in Pakistan have a preference for short-term debt over long-term debt while financing their operations. A possible explanation for this can be that interest rates in Pakistan are comparatively high and the challenging business environment

currently prevailing in Pakistan makes it difficult for firms to commit themselves to long-term financing.

Panel Regression Analysis

Table 3: Capital structure and firm performance (ROA)

	Model 1(STD/TA)		**Model 2(LTD/TA)**		**Model 3(TD/TA)**	
Variable	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***
Const	0.52	0.00	0.58	0.00	0.66	0.00
FS	0.04	0.02	0.03	0.04	0.03	0.03
STD	-0.04	0.09				
LTD			-0.05	0.13		
TD					-0.08	0.06
R-quare	0.41		0.49		0.43	
F-Stats	3.40		3.43		3.43	
Sig	0.00		0.00		0.00	
Durbin-Watson	1.92		1.89		1.95	

Table 3 shows the results related to the effect of capital structure measured through STD, LTD, TD on firm level performance measured through ROA. The co-efficient value of STD, LTD and TD indicate that firm performance and measures of capital structure choice (STD, LTD and TD) are negatively related. This indicates that an increase in STD, LTD and TD leads to decline in ROA and vice versa. Increase in debt not only increases the financing cost of debt but also the level of financial risk. The p-values of STD, LTD and TD indicate that the relationship is statistically insignificant.

Table 4: Capital structure and firm performance (ROE)

	Model 1(STD/TA)		**Model 2(LTD/TA)**		**Model 3(TD/TA)**	
Variable	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***
Const	1.32	0.00	1.30	0.00	1.36	0.00
FS	-0.01	0.81	-0.01	0.75	-0.01	0.70
STD	-0.04	0.10				
LTD			-0.02	0.55		
TD					-0.04	0.26
R-square	0.37		0.52		0.46	
F-Stats	3.74		3.73		3.74	
Sig	0.00		0.00		0.00	
Durbin-Watson	1.91		1.94		1.98	

Table 4 shows the results related to the effect of capital structure measured through STD, LTD, TD on firm performance measured through ROE. The co-efficient value of STD, LTD and TD indicate that firm performance and measures of capital structure choice (STD, LTD and TD) are negatively related. This indicates that an increase in STD, LTD and TD results in decline in ROA and vice versa. An increase in debt not only increases the financing cost of debt but also the level of financial risk (Harris & Raviv, 1999). The p-values of STD, LTD and TD indicate that the relationship is statistically insignificant. Moreover, the results also indicate that firm size which is used as control variable has weak or no significant effect on firm profitability.

Table 5: Capital structure and firm performance (GPR)

	Model 1(STD/TA)		**Model 2(LTD/TA)**		**Model 3(TD/TA)**	
Variable	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***	***Co-efficient***	***P-Value***
Const	2.79	0.00	0.80	0.00	0.94	0.00
FS	-0.06	0.33	0.06	0.03	0.01	0.56
STD	-0.28	0.00				
LTD			0.65	0.00		
TD					0.59	0.00
R-square	0.50		0.79		0.58	
F-Stats	4.98		18.21		6.87	
Sig	0.00		0.00		0.00	
Durbin-Watson	1.90		1.90		1.83	

Table 5 shows the results related to the effect of capital structure measured through STD, LTD, TD on firm performance measured through GPR. The co-efficient value of STD and its corresponding p-value indicates a statistically strong and negative relationship between STD and firm performance measured through gross profit margin ratio. The co-efficient value of LTD and TD and their corresponding p-values indicate that LTD and TD is not only positively related but also the relationship is statistically significant. Moreover, the results also show that the control variable (firm size) has a strong influence on firm performance in case of model 2 whereas in case of Model 1 and 3 it has no significant effect.

In summary, results from Table 3 and Table 4 indicate that capital structure choice is weakly related to firm performance (measured through ROA and ROE). Moreover, the relationship is negative. However, results from Table 5 indicate that the relationship between capital structure choice and firm performance is statistically strong. The findings of this study with respect to capital structure choice and firm performance measured through ROA and ROE contradicts the earlier empirical findings in developing countries (Abor, 2005; Kyereboah-Coleman, 2007). Whereas the findings of the study with respect to capital structure choice and firm performance measured through gross profit margin ratio are similar to the findings of Gosh et al., (2000), Abor (2005), Zeitun and Tian (2007).

Conclusion

Since the landmark "irrelevance-theorem" of Modigliani and Miller in 1958, a vast majority of literature has been dedicated to study the implications of capital structure decisions on the financial performance of the firms. Most of these investigative studies have focused on developed countries whereas in case of developing countries like Pakistan, empirical research as far as the influences of capital structure decisions on the financial performance of the firm is somewhat under researched. Therefore, the study aimed to explore the effect of capital structure mix on the financial performance of listed manufacturing firms of Pakistan. For this purpose ROA, ROE and GPR were the three accounting measures used to measure firm performance. The empirical results show that all three measures of capital structure (STD, LTD. TD) have a negative but statistically weak relationship with firm performance measured through ROA and ROE. In case of firm performance measured through GPR, capital structure choice measured through LTD and TD shows positive and statistically significant relationship with firm performance; whereas in case of STD it is negative but statistically significant.

In this study only leverage was used as an independent variable whereas there are other macroeconomic variables (GDP growth rates, exchange rates, inflation, taxes etc.) that can exert an influence on firm performance. Data for some of the companies was available before 2008 that's why data was limited to 2008-13.

The findings of the study provide meaningful insights as far as the relationship between compositions of debt and firm performance. This study will help businesses in making financing decisions and provide valuable information to financial managers with respect to how short-term debt and long-term debt influence firm performance.

The study used panel data regression to measure the effect of leverage with firm performance. In future other econometric models can also be applied to measure the effect of leverage on firm performance. Moreover, other country specific factors like interest rates, stock market development, inflation rates, growth rates can also be used along with leverage as these are crucial factors that financial managers consider while making financial decisions.

Note

[1]Multiple imputations is a statistical technique used to find values for missing data in a data set. The researcher generates a number of possible values for each missing value by generating parallel data sets randomly. The researcher then combines the estimated value for the missing value in each parallel data set and takes an average of the value which will be in place of the missing value in the original data set.

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Appendix

Test Summary	***Chi-Sq. Statistic***	***Chi-Sq. d.f.***	***Prob.***
Cross-section random STD/TA (ROA)	231.41	4	0.00
Cross-section random LTD/TA (ROA)	161.77	4	0.00
Cross-section random TD/TA (ROA)	109.85	4	0.00
Cross-section random STD/TA (ROE)	311.33	4	0.00
Cross-section random LTD/TA (ROE)	106.69	4	0.00
Cross-section random TD/TA (ROE)	200.11	4	0.00
Cross-section random STD/TA (GPR)	157.32	4	0.00
Cross-section random LTD/TA (GPR)	96.11	4	0.00
Cross-section random TD/TA (GPR)	112.32	4	0.00