



Contributing Factors of Capital Structure: A Case of Non-Financial Companies Listed at KSE 100

¹Sangeen Khan, ²Lala Rukh, ³Hazrat Bilal

¹PhD Scholar Hazara University, Assistant Director Planning and Development, University of Swat, Pakistan.
sangeenkhan@uswat.edu.pk

²PhD Scholar Malakand University, Lecturer, Center for Management and Commerce, University of Swat, Pakistan.
lalarukh@uswat.edu.pk

³Assistant Professor, Center for Management and Commerce, University of Swat, Pakistan.
hbilal@uswat.edu.pk

ARTICLE DETAILS

History

Revised format: October 2018
Available Online: December 2018

Keywords

Tangibility, KSE, Non-Financial Firms, Leverage

JEL Classification:

G30, G32, R53

ABSTRACT

The current study has taken the firms listed on KSE (Karachi Stock Exchange) now called Pakistan stock exchange. The data for the said purpose is collected for five years of time period from 2005 to 2010. The results obtained demonstrate that all the selected variables under study shows a highly significant impact on the determinants of capital structure except the tangibility of the asset. The insignificant relationship of tangibility with the capital structure supports the financing hierarchy theory. While the Growth, Size and profitability shows a significant and negative relationship with leverage. The negative relationship of growth shows that higher the growth of the firms lower will be the leverage maintained by the firm. Similarly, firms with smaller size show that such firms prefer high leverage as compared to firms of larger size. The results reveal that higher the profitability of the firm lower will be the leverage ratio. While the positive relationship of the volatility of the earnings states that firms with higher risks has high leverage ratio. Overall a detailed description and impact of the different variables on leverage is provided in the current study.

© 2018 The authors, under a Creative Commons Attribution-NonCommercial 4.0

Corresponding author's email address: sangeenkhan@uswat.edu.pk

Recommended citation: Khan, S., Rukh, L. and Bilal, H. (2018). Contributing Factors of Capital Structure: A Case of Non-Financial Companies Listed at KSE 100. *Review of Economics and Development Studies*, 4 (2), 127-133

DOI: 10.26710/reads.v4i2.383

1. Introduction

The mix of financing (debt and equity) is known as capital structure and firm chooses its optimal capital structure to maximize its value. A firm can raise its capital by issuing equity or debt. Capital structure is greater of importance because it can affects the firm's value and that is why a lot of research has been done in this area of finance. Modigliani & Miller (1958) described in their paper that a firm's risk can be determined by the standard deviation of its earnings, there are no taxes and bonds and stocks traded in perfect capital markets. Their assumptions are unrealistic but it's providing theoretical grounds. After Miller & Modigliani's work many theories developed about capital structure.

Berle & Means (1933) developed the agency theory. According to Berle & Means (1933) a gap arises among management of the firm and its shareholders because of decrease in equity ownership. Shareholders are the primary owners of the business and management should work to maximise their wealth. But a problem arises when managers start to work for their own interest and ignore shareholders' interest. This self-interest of managers leads them to waste valuable cash flows for unprofitable opportunities. Some research suggests that the debt in financing mix provides a mechanism to control the manager's self-interest and reduce agency problem.

Capital structure decision requires tradeoff between benefit associated with tax shield and the cost of financial distress. When a firm increases percentage of debt the chances of bankruptcy increase with increase of debt. The firm chooses an optimal capital structure where benefit in the form of tax shield is greater.

Modigliani & Miller (1958) assumed that the management and the investors have the same information while in real world managers of the firm have better information about the prospects of the firm. They purchase stock of the firm when it is undervalued and sell the stock if it is overvalued. Investors of the firm perceive this action of purchasing and selling stock by the management as a signal and react accordingly. Investors consider that the firm's prospects are good when management makes an announcement to repurchase the stock and firms' prospects are not good when the firm makes an announcement about issuing new equity.

Whenever a firm needs funds to finance its assets and new projects it has three options. It may reinvest the profits, raise funds through debt or issue new equity. Issuing new equity means bringing new owners to share profits which are not good for existing owners. That is why a firm avoids issuing new equity and considers other options to raise funds. A firm must reinvest from profits when it needs funds to finance its assets. If profits are not enough then it would raise funds through debt and then issue shares.

Objective of the study is to test the validity of determinants of capital structure for nonfinancial companies listed at Karachi Stock Exchange 100 index. This study analyzes the determinants of capital structure for nonfinancial companies listed at KSE 100 index and for this purpose data from 2005 to 2010 is selected for analysis. There are many other variables which may affect the capital structure but in this study five independent variables are selected as described by Rajan & Zingales (1995).

2. Literature Review

First research was conducted by Modigliani & Miller (1958), investigate capital structure and the cost of capital. They found that the decision of capital structure does not affect the firm's value. Results of the study were based on unrealistic assumption but because of their research other capital structure theories came into existence. After Modigliani & Miller (1958) many researchers investigated capital structure and capital structure theories. (Fama & Jensen, 1983) examined agency issues and described how to solve agency problems and features of residual claims. These residual claims cover a part of net cash flows and a conflict arises because of these claims among the states. Those organizations who want survival residual claims are very important for them. They concluded that open organizations have unrestricted residual claims because there is no need for shareholders to require any other right. The factors such as greater benefits of unrestricted risk sharing, specialized management, and the amount of organization specific assets, all in the favour of open organizations. Unrestricted stock residual claims provides the benefits which are helpful to resolve agency problems in the organization.

Myers (1984) tried to solve capital structure puzzle and described that capital structure change convey some information to investors. He studied capital structure in Tradeoff framework and pecking order framework and neglected the Miller's idea of "neutral mutation". He described that investors take interest in the announcements of financing choices which in turn affect stock prices.

Titman and Wessels (1988) analyzed the explanatory power of some optimal capital structure theories which suggest that selection of capital structure by firms depend on factors associated with cost and benefit of debt and equity financing. They discussed the attributes suggested by capital structure theories which may affect the debt to equity ratios, growth and tax shield. They found that the smaller firms most of the time tends to use short term debt and there is no evidence found that the debt ratios are related to volatility, non-debt tax shield or expected growth. The results of the study indicated that the cost may be an important determinant of capital structure decision while short term debt ratios are negatively related to the size of the firms. This may be the firms face highly transaction cost when it issues long term financial instruments.

Harris and Raviv (1990) studied how investors of the firm react to receive information when the firm takes a decision about the debt policy of the firm. They described debt as a tool to restrict managers to take decisions of their own interest. Moreover, debt also conveys some information about future prospects of the corporation to investors. Investors use models such as the static model to evaluate debt policy decisions which convey some information about income benefits due to debt and bankruptcy costs. They argued that the information conveyed by debt to investors is the learning process. Agrawal & Nagarajan (1990) analyzed the family relations of top managers, leverage and capital structure. The sample of 82 all-equity firms from 1979 through 1983 were selected for analysis. The empirical results of the study showed higher median stockholding in equity firms which was greater than leveraged firms. Equity firms also were found to have higher dollar valued stockholdings than leveraged firms. There was a positive relationship of managerial ownership towards family involvement and that evidence was consistent that the managers of the all-equity firms tried to reduce risk associated with diversification.

Agrawal and Knoeber (1996) examined seven mechanisms to reduce and control agency problems. They suggested that the single mechanism may provide misleading results so they tested four of the mechanisms which were separately regressed by OLS method. Sample of the data for analysis included 800 firms in 1987. Results of the study showed significant relationships among performance of the firm and inside ownership and inside ownership has a positive impact on the performance of the firm. Results showed by second OLS indicated insignificant effect of the firm's performance and negative relationship of corporate control activity to firm's performance.

Agrawal & Jayaraman (1994) analyzed the free cash flow theory for all equity firms. They tested the hypothesis that firm's pay out is high if it has low debt in its financing mix. The second hypothesis of the study was about negative relationship among ownership structure and dividends. They tested hypothesis for sample from 1979 to 1983. The results of the study indicated that the all-equity firms were paying higher dividend yields and payouts than levered firms. The results were consistent with that the ownership structure and dividends were substitutes to reduce agency problem.

Baker & Wurgler (2002) studied the impact on capital structure when a firm attempts to time the market and investigated that whether the market timing has long-run or short-run effect on capital structure of the firm. The results of the study indicated persistent impact on capital structure. They also found that low leverage firms are those who raised funds during high valuations and highly leveraged firms are those who obtained funds when their valuations were too low as measured by market to book ratios. They finally concluded that capital structure decisions are largely affected due to fluctuation in valuation of the firms and capital structure decisions are the outcome of past attempts to time the market. In their study Kim, Rhim, & Kang (2005) said that corporate policies can be determined jointly not independently and they included the pension funding decision in to capital structure decision and dividend policy. Pension funding decision is greater of importance because it affects value of the stocks of the firm because of its size and risk. For empirical analysis of these policies various independent variables were selected such as size, growth, risk, tax, and leverage as mentioned in the previous literature about capital. They concluded the results obtained from a three stage least square equation. Finally they concluded that the independent variables were consistent with the dividend yield while blockholdings and institutional variables were not consistent with the ownership variables because of issues other than agency cost. Firm's risk and institutional holdings were inversely related to pension funds.

Joher, Ali and Nazrul (2006) conducted study about ownership structure on KOLAMPUR stock exchange by taking data from 1998 through 2002. The data of 100 companies of KOLAMPUR stock exchange investigated to explore the impact of institutional holdings on ownership structure. They have used 2 stage least square simultaneous model to find the impact and interdependency of ownership structure on debt policy. They found a significant impact of institutional ownership which indicates that institutional ownership helps to solve agency problem. The relationship of the debt and institutional ownership was negative suggesting managerial ownership get decrease as the firm increases its debt level. The relationship between the institutional owners and managerial ownership were also inversely related suggesting institutional investors take better control over the firm.

Roshan (2009) investigated the relationship among ownership structure and capital structure. He reviewed previous literature and theories about capital structure and ownership structure. He described agency theory and free cashflow theory and argued that the main problem is the self interest of managers of the firms. Most of the managers because of their self interest waste some of the free cashflows. He concluded that the ownership structure and capital structure has some relationship but he also described that the researchers failed to find the determinants of capital structure to maximize value while dealing with agency problem as well. He also argued

that the debt financing is better as it provides tax shield and also help to control management. Bortolotti, Cambini, Rondi, & Spiegel (2007) conducted panel study and they took sample from 1994 to 2005 of 96 publically traded companies. They examined how capital structure is affected by the interaction of regulated firms, prices policies and investment. If regulators have not long-term prices then it may have incentives and the regulated firm get benefit of tax shield because of leverage. Debt financing is the source to finance new oppertunities and regulators encourage firm's and also regulators try to avoid price reduction because it can be reason of banckruptcy for highly regulated firms. They found that the European regulated firm were highly leveraged and their interaction depends on regulatory framework and capital structure. The also found that the privatilly controlled firms increased their leverage because of IRA and gor positive affect over regulated prices.

In line with the above discussion there are hypothesis that will be tested in the present study.

H₁= There is a negative relationship between firm's growth and its leverage.

H₂= There is negative relationship between firm's profitability and its leverage.

H₃= There is a negative relationship between firm's size and its leverage.

H₄= There is a positive relationship between firm's tangibility and its leverage.

H₅ = There is a negative relationship between firm's earning volatility and its leverage

3. Research Methodology

3.1 Data Description

This study is based on the financial data which was collected from the official website of State Bank of Pakistan and the official website of Karachi Stock exchange 100. A published data was gathered from "the financial analysis of joint stock companies 2006-2010" available at the website of State bank of Pakistan. Study analyses the capital structure on non-financial companies listed at KSE 100 from 2006 through 2010. The sample of 50 nonfinancial companies was selected to generalize the results for the whole nonfinancial sector listed at KSE 100.

3.2 Model Specification

There are five independent variables which may affect capital structure decision as described by Rajan & Zingales (1995) that are size, Book-to-Market ratio, profitability, tengibility and volatility of earnings. Therefore the following equation would be estimated to test the hypothesis:

$$L = \alpha + \beta_1(T) + \beta_2(S) + \beta_3(G) + \beta_4(P) + \beta_5(V) + \varepsilon$$

L= Leverage

T= Tangibility

S= Size

G= Growth

P= Profitability

V = Volatility of earnings

3.3 Variables

Growth, profitability, size, tangibility and volatility are taken as independent variables and Leverage is taken as dependent variable.

3.3.1 Growth

Growth is independent variable. For this study growth can be calculated as a percentage increase of total assets of the firm.

3.3.2 Profitability

A high profit of the firms provides the ability to finance internally rather debt. According to pecking order theory a firm must finance its assets from profits and then leverage. So we are expecting negative relationship between profits and leverage. Profitability ratio can be calculated as:

$$P = \frac{\text{Net Income Before Taxes}}{\text{Total Assets}}$$

3.3.3 Size

Size is independent variable and for this study it can be calculate as taking natural logarithm of sales of the firm.

3.3.4 Tangibility

The firm having large portion of fixed assets must have the ability to obtain debt from financial institution. So we are expecting positive relationship between tangibility and leverage. Tangibility ratio can be calculated as:

$$T = \frac{\text{Fixed Assets}}{\text{Total Assets}}$$

3.3.5 Volatility of Earnings

The firm with stable earnings would be in a better position to repay debt and cost of debt. So it is expected that the Volatility of earnings is negatively related to leverage. Volatility of earnings can be calculated as:

$$V = \frac{\text{Deviation of net profits from mean}}{\text{Total number of years of each firm in the given year}}$$

4. Results and Discussion

The results of the Fixed-effects are presented in Table 1 and F statistics are given in Table 2. All the variables are significant except tangibility. Coefficient of the firm's growth is -0.0421 is significant as $p = 0.000 < 0.05$. Study accepts the first hypothesis and confirms that the growth does matter to determine the capital structure of Pakistani non-financial financial firms. This relationship is negative between firm's growth and its leverage. The results support the pecking order theory that suggests preferring internal financing over debt when investment needed to finance projects. Managers of the firm's would not hesitate to take risky projects and increase the return of the shareholders of the firm. Debt restricts managers to go for risky projects. On the other hand internal financing provide confidence to managers to go for risky projects and increase shareholders wealth.

Profitability is negatively related to the firm's leverage as its coefficient is -0.241 and significant at 10% significance level ($P = 0.09 < 0.10$). So we accept the H_2 that there is a negative relationship among leverage and profitability of the firm. Profitability does matter to determine the capital structure of Pakistani non-financial firms. The firm with higher profits becomes able to finance their assets from internal investment rather than using leverage to finance assets. So the results are in favor of pecking order theory. So we conclude that the non-financial companies listed at KSE 100 index finance their projects from retained earnings rather than leverage.

There is a positive relationship among size and the leverage of the firm. Coefficient of the size is -0.0426 with $p = 0.018$, shows significant at 5% level so we accept the third hypothesis H_3 . Results of the study prove that the size also an important determinant of the capital structure of non-financial companies listed at KSE 100. Having few assets reduces the small firm's ability to obtain debt from financial institutions. It is required for firm's to provide collateral against loans to secure the lender. On the hand large films will have large amount of assets to secure the lender and it helps large firm to obtain debt from financial institutions.

Coefficient of the tangibility is 0.051 indicating positive relationship but insignificant at 5% significant level as $p = 0.455$ which is less than 0.05. So we reject the fourth hypothesis (H_4). This can be concluded that tangibility is not the determinant of capital structure of Pakistani non-financial companies. It was considered that the higher percentage of fixed assets may make the firm to obtain debt at lower interest rate but study result are insignificant showing tangibility has no relationship with capital structure decision. The results are in line with results found by Shah & Hijazi (2004).

Volatility with coefficient 0.083 indicating significant positive relationship with capital structure with $p = 0.000 < 0.05$. Study accepted the fifth hypothesis that there is a negative relationship of volatility of earnings with leverage of the firm. So it is concluded that the volatility of earning is an important determinant of the capital structure of Pakistani non-financial companies listed at KSE 100 index. Volatility of earnings means risk associated with the earnings of the firm. High risk increases the chances of bankruptcy and financial institutions hesitates to give loans to the firm. On the other hand stable earnings help the firm to obtain debt.

Table 1: Fixed –Effects Statistics

Variables	Coefficient	Std. Error	t-ratio	p-value	
Constant	0.693474	0.0831017	8.3449	<0.00001	***
Growth	-0.0421564	0.0251081	-1.6790	0.09475	*
Profitability	-0.241534	0.0784216	-3.0799	0.00237	***
Size	-0.0426262	0.0179027	-2.3810	0.01823	**
Tangibility	0.0515952	0.0689247	0.7486	0.45502	
Volatility of Earnings	0.0832511	0.0126669	6.5724	<0.00001	***

Table 1: Fixed-effects, using 250 observations, Included 50 cross-sectional units, Time-series length = 5, Dependent variable: L

Table 2: R Square Model, F Statistics

R-squared	0.516714		Adjusted R-squared	0.382881
F(54, 195)	3.860881		P-value(F)	2.64e-12

Test statistic: $F(49, 195) = 1.93961$, with $p\text{-value} = P(F(49, 195) > 1.93961) = 0.00080557$

5. Conclusion

In this study we investigated the determinants of capital structure on the data of non-financial companies listed at Karachi Stock Exchange 100 index. For this purpose five years data from 2006 to 2010 was used to analyze the effect of growth, profitability, size, tangibility and earning volatility on capital structure decision. We found that the all the variables except tangibility were significant. Study concludes that the growth, profitability, size, and earning volatility are important determinants of capital structure of non-financial companies list at Pakistan stock market. Large profitable firms prefer internal financing over leverage and these results support the validity of pecking order theory. On the other hand small and risky firms face difficulty to arrange external financing to finance their projects.

References

- Agrawal, A., & Jayaraman, N. (1994). The Dividend Policies of All-Equity Firms: A Direct Test of The Free Cash Flow Theory. *Managerial And Decision Economics*, 15, 139-148.
- Agrawal, A., & Knoeber, C. R. (1996). Firm Performance And Mechanisms To Control Agency Problems Between Managers And Shareholders. *Journal of Finance And Quantitative Analysis*, 31 (3), 1-21.
- Agrawal, A., & Nagarajan, N. J. (1990). Corporate Capital Structure, Agency Costs, And Ownership Control: The Case of All Equity Firms. *The Journal of Finance*, XLV (4), 1-7.
- Baker, M., & Wurgler, J. (2002). Market Timing and Capital Structure. *The Journal of Finance*, 77 (1), 1-32.
- Berle, Ass. A., & Means, G. C. (1933). The Modern Corporation and Private Property. *University of Pennsylvania Law Review and American Law Register*, 81 (6), 782-785.
- Bortolotti, B., Cambini, C., Rondi, L., & Spiegel, Y. (2007, October). *Capital Structure and Regulation: Does Ownership Matter?* Retrieved from Social Science Research Network Electronic Paper Collection: <http://ssrn.com/abstract=1022342>: <http://ssrn.com/abstract=1022342>
- Fama, E. F., & Jensen, M. C. (1983). AGENCY PROBLEMS AND RESIDUAL CLAIMS. *Journal of Law & Economics*, xxvi, 1-30.
- Harris, M., & Raviv, A. (1990). Capital Structure and the Informational Role of Debt. *The Journal of Finance*, XLV (2), 1-33.
- Joher, H., Ali, M., & Nazrul. (2006). The Impact Of Ownership Structure On Corporate Debt Policy: Two Stage Least Square Simultaneous Model Approach For Post Crisis Period: Evidence From Kuala Lumpur Stock Exchange. *International Business & Economics Research Journal*, 5 (5), 1-14.
- Kim, Y. H., Rhim, J. C., & Kang, J. G. (2005). Agency Costs And Corporate Financial Policies: A Simultaneous Equations Approach. *Journal of Business & Economics Research*, 3 (1), 1-12.
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review*, 48 (3), 261-297.
- Myers, S. C. (1984). The Capital Structure Puzzle. *The Journal of Finance*, 39 (3), 575-592.
- Rajan, R. G., & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from Industrial Data. *The Journal of Finance*, 70 (5), 1-40.
- Roshan, B. (2009). Capital Structure and Ownership Structure: A Review of Literature. *The Journal of Online Education*, 1-8.

- Shah, A., & Hijazi, T. (2004). The Determinants of Capital Structure of Stock Exchange-listed Non-financial Firms in Pakistan. *The Pakistan Development Review* , 43 (4), 605-618.
- Titman, S., & Wessels, R. (1988). The Determinants of Capital Structure Choice. *THE JOURNAL OF FINANCE* , XLIII (1), 1-26.