

AN EMPIRICAL PERSPECTIVE ON THE FACTORS AFFECTING  
THE CHOICE OF DEBT CAPITAL: A CASE STUDY OF DOMESTIC  
CORPORATIONS OPERATING IN PAKISTAN

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**ABSTRACT**

*One of the most controversial issues encountered by 21<sup>st</sup> century corporate manager is to identify optimal mix of financing sources in capital structure. There have been numerous existing capital structure theories predicting the behaviour of financing patterns and preferences of a corporation but there has not yet been universally accepted one. The results of panel data regression in this study show that age, size, growth, profitability, asset tangibility, business risk and Non debt Tax Shields (NDTS) are significant determinants of leverage ratio of domestic corporations operating in Pakistan. It is evidenced that majority of the important determinants to leverage ratio behave as per predictions of trade off theory of capital structure. The findings of this study have great implications to corporate managers, credit managers of lending institutions, government policymakers, investment analysts, investors, researchers, and academicians.*

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**Keywords:** Empirical Perspective, the Factors, Debit Capital, Domestic Corporations, Pakistan.

**INTRODUCTION**

Capital structure refers to a firm's decisions to finance its total assets, operations and growth opportunities through various financial securities. The financial securities can broadly be classified into equity and debt. The distinction between equity and debt, and the sources of financial securities form the bases of modern corporate capital structure theories. In a time when a firm is in a state of financial deficit, a manager takes financial decisions in order to maintain its financial viability. Capital restructuring is considered an important financial decision. In capital restructuring again leverage restructuring is taken as a key step to put a firm on the road of financial stability. Leverage refers to the debt portion of capital structure of a firm. The leverage decision is important because it

impacts risk which in turn influences a firm's overall cost of capital. The Leverage decision of a firm is ultimately reflective into a firm's cash flows, profitability, share price and valuation of a firm. However, in this study leverage means financial leverage which is denoted through total debt financing a firm uses in its capital structure. In this case leverage is interchangeably referred as gearing or to total debt ratio. The preferred decision under the leverage restructuring is the one which minimizes the overall cost of capital and maximizes a firm's value. However, such decision requires for a manager to be expert and fully and analytically aware of theories of capital structure. There have been various theories (such as Modigliani and Miller theory, the trade-off theory, Pecking order theory, the agency theory, and Signaling theory) that predict the pattern and composition of optimum level of capital structure. The preferred and optimal decisions in the capital structure have been the most controversial in theories of finance ever since the development of capital structure theories. The factors affecting the choice of optimal capital structure are complicated since the effect of each factor on the value of the firm has been conflicting in the literature of capital structure (Emery, et al. 2004). Therefore, it is of utmost importance that capital structure theories must be understood well on the basis of their relevance in each economic development situation across the globe.

#### **PROBLEM STATEMENT**

One of the major issues a financial manager encounter today is to generate funds through best mix of sourcing which determine the optimal level of capital structure. A firm has to make prudential financing decisions to maintain its financial viability. Financial restructuring is considered as an effective mean to maintain financial sustainability especially in the times of financial deficit. The financial restructuring involves changing in equity and debt ratios used in the capital structure of a firm. Financial restructuring especially debt restructuring requires financial and analytical expertise of a manager to make decisions which are right and enhance the value of a firm. Additionally, in order to grow and to maintain growth, corporations raise funds to finance the new investment projects. Hence, financial managers are very careful in applying the predictions of various capital structure theories. Financial managers estimate the cost and

benefits of each capital structure choice which subsequently influence market reaction and which determines the valuation of stock price. After going through comprehensive decision making process considering the influence of various factors as predicted by various capital structure theories a corporation reaches to the optimal level of capital structure. Therefore, it is important to conduct research studies to examine and analyze that capital structure process so that evidence based recommendations, could be given to these corporations for enhancing the effectiveness and efficiency of their financing decisions.

#### **DETERMINANTS OF LEVERAGE AND DEVELOPMENT OF HYPOTHESES**

**Age:** Age has been found to be a significant determinant of a firm. According to Shehu, (2011) age of a company provides a signal of reputation in the capital markets. As a firm ages and stays in business, it builds on reputation which managers use to address the problems of creditworthiness. As a firm grows old as an ongoing business, it increases its ability and capacity to meet efficiently its financing obligations. The older firms have more past track record than younger firms and are thus more likely to stay in business and survive financially. Similarly, Bulan and Yan, (2009) evidenced that it is more likely that older firms are able to avoid unexpected financial crunches because of their accumulated experience than younger firms operating in the same line of business. Vos and Forlong, (1998) showed that agency cost of obtaining debt financing tends to get lower as a firm grows in age. Similarly, use of debt financing mitigates the agency cost emanating from use of equity. Owing to these reasons, older firms are more likely to have higher debt ratios.

Therefore I hypothesize a positive relation between age and Leverage.

**H1:** Corporation age is positively related with leverage for Domestic Corporations.

**Profitability:** Past research has evidenced that one of the most important determinant of capital structure is said to be profitability. According to pecking order theory firms prefer to finance its investment of the project from its profits internally and once that internal source of financing is insufficient then firms resort to external

source of financing such as loan or issuance of equity. Similarly, research studies like Matariano and Fatoki, (2010); Phillips and Sipahioglu, (2004); Myers, (2001); and Negash, (2001) evidenced that higher level of debt financing increases agency problems among shareholders and creditors thereby significantly enhancing agency cost of a firm, therefore a firm with higher profit which has higher retained earnings prefers to use its internal earning first than resorting to external debt financing, thereby establishing negative relation between profitability and leverage. In recent study Ahmad Mohammad, (2015) found that in developing countries, the capital markets are not fully developed and transaction cost of borrowing debt is more, therefore in such financial environment, firms are more likely to follow pecking order implying that firms with higher profit tend to have lower debt ratios. Therefore, it is hypothesized that:

**H2:** Profitability is negatively related with leverage for Domestic Corporations.

**Size:** Size has been an important determinant of capital structure of a firm. However, relationship of size with leverage has been unclear. The trade-off theory has predicted positive relationship between size and leverage financing. Since size of firm reduces the cost of leverage. Larger firms tend to be more diversified and less likely to go bank corrupt. Therefore larger firms prefer to have more leverage compare to small organizations. Fama and French, (2002) determine positive relationship between size and leverage on the ground that larger firms tend to have lower variance in their earnings resulting into more stable cash flows. Bigger firms get better access to debt financing in the financial markets than those of small organizations. The bigger size makes a firm to take full advantage of economy of scale in the process of generating long term debt financing as it also gives bargaining power over its creditors. Fama and Jensen, (1983) argued that lager firms tend to supply more information to creditor than small firms do. Therefore, I hypothesize that:

**H3:** Size is positively related with leverage for Domestic Corporations.

**Growth:** The pecking order theory a firms' first preferred mode of financing to fund its growth projects, is internal financing, (Roos, *et.al.*, 2008). When internal financing is exhausted a firm resorts to external source of financing in which it prefers to borrow through

issuing debt securities focused to less asymmetric information (Tong and green, 2005). Berger *et.al.*, (1997) suggested growth opportunities have a positive relationship with leverage. For a firm to achieve growth objectives the interest of management and shareholders are jointly to be considered on the selection and funding of investment opportunities and for higher growth firms, debt financing tend to limit and moderate that agency cost of conflict of interest between manager and shareholders (Jensen, 1986). Berger *et.al.*, (1997) evidenced that debt financing rises with higher growth opportunities. There have been lots of empirical studies that have also determined positive relationship between leverage and growth opportunities of a firm (Booth *et.al.*, 2001; Frank and Goyal, 2009). Therefore, it is hypothesized that:

**H4:** Growth is positively related with Leverage for Domestic Corporations.

**Tangibility of Assets:** The literature on capital structure evidences that there exists strong positive relationship between tangibility assets and leverage. In the pioneering work on agency cost and capital structure, Jensen and Macklin, (1976) argued that leverage has agency cost and as a firm finances its riskier investment through debt, it is transferring wealth from creditors to shareholders. In such case if a firm has more tangible assets which can be pledged as collateral thereby, diminishing the risk of debt. Therefore, a firm with higher tangible assets can prefer debt financing over equity financing. Similarly, Ross, *et.al.*, (2008) showed that tangibility of assets used as collateral mitigates risk of lender of bearing agency cost of debt. Shah and Khan (2007) found that there is significant positive relationship between tangibility of assets and leverage for Pakistani firms. Therefore, I hypothesize that:

**H5:** Tangibility of assets is positively related with Leverage for Domestic Corporations.

**Non Debt Tax Shield (NDTS):** According to trade off theory a firm prefers to have debt financing because of its tax deductibility. However, there have been many other suggested ways to reduce taxable income of a firm such as depreciation and investment tax credit that are known as non-debt tax shields (NDTS). Rob and Robinson, (2009) showed that firms don't heavily rely on debt financing to reduce their taxable income but they normally rely on those (NDTS) which serve as alternative means for seeking tax

benefits. Chikir and Cosset, (2001) and Deesomsak *et.al.*, (2004) found that higher levels of (NDTS) are associated with lower level of leverage, therefore, (NDTS) has negative relationship with leverage. Empirical studies have also confirmed this negative relationship (Bradley, *et.al.*, 1984; Deanglo and Masulis, 1980). Therefore, I hypothesize that

**H6:** NDTS are negatively related with leverage for Domestic Corporations.

**Business Risk:** The trade off and pecking order theories explain that a corporations' exposure to business risk is based on the degree of volatility it has in its earnings from operations. According to Cools, (1993) ineffective and inefficient operating decisions of management increase intensity of business risk. In either case the volatility in earnings from operations tend to increase the probability of corporation to be in financial distress. The business risk emanates from the probability of financial distress a firm is exposed to (Titman and Wasseles, 1988). Business risk is generally negatively associated with leverage as less debt financing would reduce the potentially high cost of financial distress (Booth, *et.al.*, 2001). Therefore I hypothesize that: **H7:** Business risk is negatively related with leverage for Domestic Corporations. The estimate able equation for leverage is as under:

$$\text{Leverage}_{it} = \beta_0 + \beta_1 \text{Age}_{it-1} + \beta_2 \text{Gr}_{it-1} + \beta_3 \text{Prof}_{it-1} + \beta_4 \text{Tang}_{it-1} + \beta_5 \text{Busrisk}_{it-1} + \beta_6 \text{Size}_{it-1} + \beta_7 \text{NDTS}_{it-1} + \varepsilon_{it}$$

Where

$\text{Leverage}_{it}$  = the level of debt financing of i corporation in t period which is measured as ratio of (Total Debt/Total Assets);  $\text{Age}_{it}$  = Age of i corporation in t period which is measured since year of inception of i corporation;  $\text{Gr}_{it}$  = Growth of i corporation in t period which is measured as percent increase in net total assets;  $\text{Prof}_{it}$  = Profitability of i corporation in t period which is measured as ratio of (net income after taxes/Total Assets);  $\text{Tang}_{it}$  = Tangibility of assets of i corporation in t period which is measured as ratio of (Fixed Assets/Total Assets);  $\text{Busrisk}_{it}$  = Business risk of i corporation in t period which is measured as standard deviation in earnings before interest and taxes (EBIT)

$\text{Size}_{it}$  = Size of corporation in t period which is measured as natural logarithm of total Assets;  $\text{NDTS}_{it}$  = of i corporation in t period which is measured as ratio of (Depreciation/Total

Assets);  $\varepsilon_{it}$ = Error term; In equation all the independent variables are lagged by one time period.

#### METHODOLOGY

The main objective of the study is to find out the key determinants which influence leverage decisions of domestic Corporations (DCs) operating in Pakistan. The purposive sampling technique was used in selection of the sample of DCs and criterion was the size of capitalization value. Therefore, the top 20 DCs in capitalization value at KSE were selected. The total cross section included are 20 and with 15 time periods (i.e. from 1999 to 2013), the total number of panel observations is (N=300). The required data was collected from annual reports of each of the sampled corporations. The annual reports of each of corporations from the year 1999 to 2013 were obtained on request from Karachi Stock Exchange (KSE). Pooled panel data regression was applied to examine the importance and influence of each determinant (Pooled independent Variables) on leverage (pooled dependent variables). Before administering the panel data regression, the data was checked for normality, stationary, autocorrelation, and multicollinearity.

**TABLE-1**  
**DATA NORMALITY: JARQUE-BERA TEST RESULTS**

Variables	Jarque-Bera	P-Values
Age	1.7315	0.4207
Profitability	1.9297	0.3810
Size	1.1357	0.5667
Growth	1.2845	0.5260
Leverage	0.9465	0.6229
Business risk	6.3643	0.0415
Asset Tangibility	1.9458	0.3380
NDTS	0.7196	0.6977

Source: Study

**TABLE-2**  
**DATA STATIONARY: AUGMENTED DICKEY-FULLER**  
**(ADF) TEST RESULTS**

<b>Variables</b>	<b>ADF (Choi-z Stat)</b>	<b>Probability</b>
<b>Age</b>	-5.74187	0.0000
<b>Profitability</b>	-1.81916	0.0344
<b>*Size</b>	-3.93042	0.0000
<b>*Growth</b>	-3.00627	0.0013
<b>Leverage</b>	-2.98259	0.0014
<b>*Business Risk</b>	-3.26769	0.0005
<b>Asset tangibility</b>	-4.19876	0.0000
<b>NDTS</b>	-1.65891	0.0486

\* Stationary at first difference. Other variables are stationary at level

Source: Study

**TABLE-3**  
**HOUSMAN TEST COMPARISONS OF FIXED AND**  
**RANDOM EFFECT MODELS**

<b>Test Summary</b>	<b>Chi Square Statistic</b>	<b>Probability</b>
Cross Section Random	21.210435	*0.0311

\*Significant at .05 level

Source: Study

**TABLE-4**  
**REGRESSION ESTIMATES**

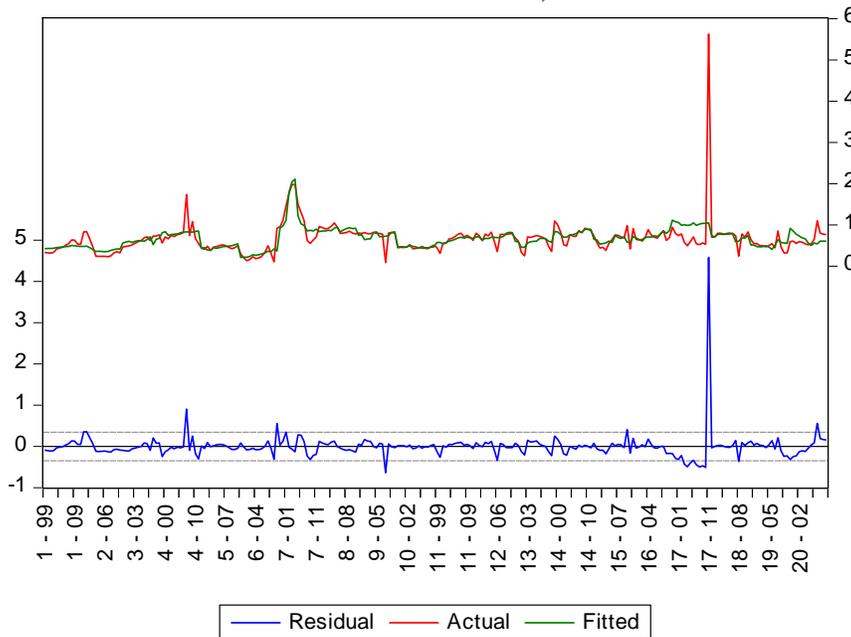
Dependent Variable: LEVERAGE; Method: Panel Least Squares  
Sample: 1999 2013; Periods included: 15; Cross-sections included: 20  
Total panel (balanced) observations: 300

Independent Variables	Coefficients	t-Statistics	p-values	VIF	tolerance
C	0.876331	3.575380	0.0004		
Age	0.252595	2.516195	0.0125	1.261027	0.793
Business risk	-0.87954	-2.950952	0.0038	1.004452	0.996
Growth	0.29713	5.300878	0.0000	1.105122	0.905
NDTS	-0.051105	-2.008024	0.0457	1.046008	0.956
Profitability	-1.24017	-6.119415	0.0000	1.185064	0.844
Size	0.527543	2.950952	0.0038	1.357773	0.737
Asset tangibility	1.152452	5.842978	0.0000	2.054412	0.487

R-squared 0.774974  
Adjusted R-squared 0.748565  
F-statistic 12.66217 Prob (F-statistic) 0.000  
Durbin-Watson stat 1.926319

Source: Study

**FIGURE-1  
ACTUAL, FITTED AND RESIDUAL GRAPH (DOMESTIC  
CORPORATIONS)**



Source: Study

**ANALYSIS OF THE RESULTS**

Through pooled panel least square regression, the impact of seven key factors (age, profitability, growth, size, business risk, non-debt tax shield and tangibility of assets) were determined. Housman Test statistics suggested that fixed effect model is appropriate. The Jarque-Bera (JB) test was administered to check the normality of data. All the data were converted into natural logarithms. In table 1 P-Values of JB test show that all the variables except Business risk are normally distributed. Augmented Dickey-Fuller (ADF) test was used to check the stationary of data. The results in table 2 show that age, profitability, leverage, NDTS and asset tangibility variables are stationary at the level, whereas size, growth and business risk variables are stationary at their first difference. The variance inflation factor (VIF) and Tolerance tests have been used to check the multicollinearity issues. If VIF statistics is greater than 10 and Tolerance value is less than .05 then it means that there is severe

multicollinearity among independent variables. The results of VIF and Tolerance test in table 4 show that VIF statistics for all explanatory variables are below 10 and Tolerance test values are above .05, therefore, there is no multicollinearity problem among the data series of explanatory variables in case of domestic corporations. Durban Watson (DW) test has been used to check autocorrelation in the residuals. If the DW statistics is close to 2 then there is no autocorrelation problem in the residuals. The results in table 4 show that DW statistics is 1.926 which means there is no autocorrelation problem in the residuals of variables in the regression model. The estimates of the panel least square regression model show that adjusted R-square is 0.748 inferring that explanatory variables used in this model explain approximately 75 percent of variation in leverage. The F-statistics of the model is significant at  $p < .001$  entailing that explanatory variables are significant predictors of dependent variable (i. e leverage). The regression coefficient estimates show that age is significantly and positively correlated with leverage ratios of DCs suggesting that as corporation ages, it prefers to have more debt financing in its capital structure. The profitability was found to be strongly negatively associated with the leverage ratio meaning that DCs prefer to fund its operations and projects through retained earnings as predicted by pecking order theory of capital structure. Size positively influenced the leverage ratio of DCs which shows that a larger corporation is likely to have higher debt financing than smaller corporation supporting the assumptions of trade off theory. Growth had positive impact on the leverage ratio DCs which entails that growing corporations tend to have higher levels of debt financing in its capital structure supporting the assumptions of pecking order theory. The asset tangibility was significantly and positively associated with leverage ratio of DCs suggesting that a domestic corporation with higher volume of tangible assets prefer to have more level of debt financing supporting the assumptions of trade off theory. Non-debt tax shield (NDTS) was negatively related with leverage ratio of DCs which means that a corporation with higher level of NDTS is more likely to have lower level of debt financing in its capital structure supporting the assumptions of trade off theory. Finally, business risk is found to be strongly negatively correlated with leverage ratio of DCs suggesting that when a corporation is facing more business risk than in that time period it prefers to have

lower level of debt financing supporting the assumptions of trade off theory. The beta coefficients of growth, profitability and asset tangibility variables in the panel data regression are significant at 99% confidence level where as the beta coefficients of age, business risk, NDTs and size variables are significant at 95% level, therefore all seven hypotheses of this study are supported.

## CONCLUSION

The results show that most of the important determinants to leverage ratio behave as per predictions of trade off theory of capital structure. Therefore, it is recommended that the financial managers should consider assumptions of trade off theory in making leverage decisions which would lead them to optimal level of capital structure. The findings of this study have great implications to corporate managers, credit managers of lending institutions, government policymakers, investment analysts, investors, researchers, and academicians. The corporate financial managers will benefit as they can seek evidenced-based information of the factors that generally influence the leverage decisions in financial market environment of Pakistan. That information can be used to streamline the leverage decisions in corporate sector of Pakistan. The results will help policymakers in concerned quarters of government in formulating palatable and effective policies aimed at facilitating debt financing to the various categories of corporations operating in Pakistan. The findings will be a significant add to the existing literature on determinants of capital structure. Finally, on the basis of arguments, results, and interpretations, researcher can develop more dynamic models to gain deeper insight into this important topic of determinants to leverage.

## REFERENCES

- Ahmad Mohammad, (2015), The Determinants of Capital Structure: Empirical Evidence from Kuwait. *European Journal of Business, Economics and Accountancy* Vol.3, No.6, ISSN 2056-6018, Progressive Academic Publishing, UK.
- Akhtar, S., Oliver, B. (2009), The Determinants of Capital Structure for Japanese Multinational and Domestic Corporations. *International Review of Finance* 9(1-2):1-26.

- Berger, G. Philip, Eli Ofek and David L. Yermack, (1997), Managerial Entrenchment and Capital Structure Decisions. *Journal of Finance* 52:1411-1438.
- Booth, L.V. Aivazian, A. Demirguc-Kunt, and V. Maksimovic, (2001), Capital Structure in Developing Countries. *Journal of Finance*, Vol.56:87-130.
- Bulan and Yan, (2009), The Pecking Order of Financing and the Firm's Life Cycle. *Banking and Finance Letters*, pp.1-16.
- Bradley, Michael, George A. Jarrell, and E. Han Kim, (1984), The Existence of an Optimal Capital Structure: Theory and Evidence. *Journal of Finance*, 39:857-880
- Chkir, I. Cosset, J. (2001), Diversification Strategy and Capital Structure of Multinational Corporations. *Journal of Multinational Financial Management*, 11(1):17-31.
- Cools, Kees (1993), Capital Structure Choice; Confronting: (Meta) Theory, Empirical Tests and Execution Opinion. PhD Dissertation, Tilburg, the Netherlands.
- Deesomsak, R., Paudyal, K., Pescetto, G. (2004), The Determinants of Capital Structure: Evidence from the Asia Pacific Region. *Journal of Multinational Financial Management* 14(4-5):387-405.
- De Angelo, H. and R. W. Masulis, (1980), Optimal Capital Structure Under Personal and Corporate Taxation. *Journal of Financial Economics* 8:3-29.
- Emery D. R., Finnerty J. D. and Stowe J. D. (2004), Corporate Financial Management Second Edition, Pearson Prentice Hall, USA.
- Fama and French (2000), Testing Trade Off and Pecking Order Predictions About Dividends and Debt. University of Chicago (CRSP Working Paper No.506).
- Fama, E.F. and Jensen, Michael, (1983), Agency Problem and Residual Claims, *Journal of Law and Economics*, 26:327-349.
- Frank, M. Z. & Goyal, V. K., (2009), Capital Structure Decisions: Which Factors are Reliably Important? *Financial Management*, pp.1-37.
- Huang, G., and F.M. Song (2006), The Determinants of Capital Structure: Evidence from China. *China Economic Review*, Vol.17:14-36.
- Jensen, M. (1986), Agency Costs of Free Cash Flow, Corporate Finance and Takeovers, *American Economic Review*, 76(2):323-329.
- Jensen, Michael C. and William H. Meckling, (1976), Theory of the Firms: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3:305-360.

- Matarirano O. & Fatoki, O. (2010), Does Debt Really Matter on the Profitability of Small Firms? A Perspective on Small Manufacturing Firms in Bulawayo, Zimbabwe, *African, Journal of Business Management*, 4(9):1709-1716.
- Myers, S.C. (2001), Capital Structure, *Journal of Economics Perspectives*, 15(2):81-102.
- Negash, M. (2001), Debt, Tax Shield and Bankruptcy Costs: Some Evidence From Johannesburg Stock Exchange, *Investment Analysis Journal*, 54(3):114-128.
- Phillips, P.A. & Sipahioglu, M. A. (2004), Performance Implications of Capital Structure; Evidence from Quoted U. K. Organizations with Hotel Interests, *The Services Industry Journal*, 24(5):1-21.
- Ross, S. A., Waster field, R. W., Jaffe, J. F., & Jordan, B. D. (2008), *Modern Financial Management*. McGraw-Hill.
- Robb A. & Robinson, D.T. (2009), The Capital Structure Decision of New Firms [Online] Available: <http://papers.ssrn.com/so13/papers.cfm?abstract-id=1345895>.
- Shehu U. H. (2011), Determinants of Capital Structure in the Nigerian Listed Insurance Firms, *International Journal of China, USA Business Review*, 10(12): 81-98.
- Shah, A., & Khan, S. (2007), Determinants of Capital Structure: Evidence from Pakistani Panel Data. *International Review of Business Research Papers*, 3(4):265-282.
- Titman, S. and Wessels R., (1988). The Determinants of Capital Structure Choice, *Journal of Finance*, 43:1-19.
- Tong, G., & Green, C. J. (2005), Pecking Order or Trade-Off Hypothesis? Evidence on the Capital Structure of Chinese Companies. *Applied Economics*, 37:2179-2189.
- Vos and Forlong, (1998), The Agency Advantage of Debt Over the Lifecycle of the Firm, *Journal of Entrepreneurial and Small Business Finance*, Vol.5, No.3:193-211.
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