Does financial leverage matters?

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ABSTRACT

The purpose of this research paper is to determine the utmost significant determinants of capital structure of automobile companies listed in Pakistan stock exchange. Further, this research paper will investigate that whether the capital structure models of developed countries provide convincing explanation for making decisions of capital structure of automobile sector of Pakistan by applying multiple regression models. Capital structure theories; trade-off theory, agency theory, and pecking order theory has been analyzed to develop hypothesis related to determinants of capital structure of automobile sector. In this study the researcher has used the statistical tools of correlation and multiple regression models to investigate the utmost significant determinants related to capital structure through SPSS software for sample 8 companies out of 12 companies listed in Pakistan stock exchange under automobile sector. The results indicate that profitability, asset structure and interest coverage ratio are positively correlated to financial leverage. The firm size ad business risk is negatively correlated with financial leverage. A business risk result indicates that this determinant is insignificant whereas the firm size and asset structure are significant determinants of capital structure. The findings of this research paper would help the managers in decision making that how the optimal capital structure would be beneficial for company. This study consider only Pakistan automobile sector and practical implications potentially limit to Pakistan economies. To the authors' knowledge, the most recent data has been used for this study to investigate utmost significant determinants related to capital structure. Further, this research verifies the same variables that influence on capital structure decisions in underdeveloped economies as observed for firms in developed economies.

I. Introduction

First decade of twenty-first century witnessed the numerous remakes in booms and recessionary phases. These enormous remakes in phases of business cycles have influenced on firm's value. The value of firm depends upon its past and future investment decisions. The successive investment decisions required to select an appropriate optimal capital structure (Kumar, Colombage, & Rao, 2017). The optimal capital structure is a mix of debt and equity. A false decision of capital structure potentially leading to bankruptcy, however, ideal capital structure will maximize the value of firm and minimize overall cost of capital (Sheikh & Qureshi, 2017). Capital structure helps in strengthening of an organization. It also includes how to decide long term investment decisions and to find out an appropriate source of finance. Therefore, capital structure plays a vital role and significantly affects the firm's financial performance.

The Modigliani and Miller (1958) suggest that in the absence of asymmetric information there would be no transaction cost, no tax and no bankruptcy then there is no ideal mixture. In case of existence of taxes, the optimal capital structure matters a great deal. Therefore, financing with only debt not only increase profit after tax but also increase value of the firm. The firm as per trade-off theory (TOT) can consider optimal capital structure by determining the cost and benefits of debt. The cost of debt includes bankruptcy

and agency costs. (Fama & French, 2002). The pecking order theory (POT) suggests that when internal funds are sufficient then no need to raise funds by debt and in case of insufficient funds debt should be taken (Myers & Majluf, 1984).The higher level of debt is beneficial to maximize the value of firm as per free cash flow theory (Jensen & Meckling, 1976). In short, different theories have defined different level of debt and equity was suggested by different theories because every theory has different assumptions.

Many researchers have undertaken the research to find out the relationship between debt equity. Since the issue of capital structure determinants received a great immersion from researchers from many decades which still continue but still no specific method has been identified for optimal capital structure (Kumar, Colombage, & Rao, 2017).

Various researchers have explored the factors that would effect on capital structure and the experimentation provides different predictions on capital structure models but no conclusion were drawn from the findings of these studies that what are the most significant determinants of capital structures in both developed and under developed economies. Now it is to be investigate that what the number of determinants in developed economy that may affect the capital structure of Pakistani automobile sector. The main purpose of this research paper is to determine the utmost significant determinants of capital structure of automobile companies listed in Pakistan stock exchange. This research paper organized with following Chapters: Chapter-2 explain the financial and economic position of automobile sector. Chapter-3 explains the literature review and background of theories. Chapter-4 consists of research methodology. Chapter-5 shows the results of the empirical analysis. Chapter-6 consists of findings. Chapter-7 explains the summery of findings and conclusions.

Automobile industry of Pakistan is a speedy developing industry of the country, which accounts for four percent (4%) of gross domestic product of the country and hiring a labor force of more than 1.8 million persons. "Automobile sector growth rate is 19.58 percent in year 2018 as compared to 10.09 percent in year 2017. There is notable growth has been witnessed in jeeps which is recorded at 1430.7 percent, tractors 44.7 percent, trucks 24.4 percent, LCVs 19.7 percent, two / three wheelers 17.3 percent and cars 16.8 percent" (Pakistan Economic Survey, 2018). In response, Renault, Nissan, Kia, SsangYong, Jac motors, Changan, Baw & Lifan, Ka, Hanteng Motors, Volkswagen, Faw and Hyundai have expressed interest in entering the Pakistani market (Reuters, 2016).

II. Literature Review

Determinant of capital structure has been proposed by many theories and these theories suggest that firm should select the pattern through the analysis basis of cost and gain of both debt and equity (Sofat & Singh, 2017). "The latest theories related to capital structure were introduced by Modigliani and Miller in 1958 and after that many researcher introduce many other theories of capital structure including trade-off theory, pecking order theory, agency theory and bankruptcy theory to study the determinants related to capital structure" (Luigi & Sorin, 2009).

POT tells that when company creates its capital structure it looks for the optimal mix. The most preferable process is to utilize the retained earnings. If the company required funds from outside, then there are two options available i) borrow from bank or from public ii) company can raise equity by issuing new shares. POT explains that successful companies for financing don't like more loans and prefer equity.

POT has significant impact on interest of equity holders rather than combined interest of shareholders and lenders. Myers & Majluf in 1984 suggests that mostly firms hesitate in issuing equity due to miserable problem of selection. Equity issuing has high transaction cost so most of the companies feels uncomfortable due to this high cost (Kaplan, 2019). In short POT explains that companies know well about their financial position and available resources and priority given to utilize internal resources firstly and if it is not possible to issue equity then debt will be issued.

The Jensen & Mecking found the trade-off theory in 1976. TOT suggests that by balancing tax benefits of debt the optimal capital structure can be determined. The debt and equity financing must be determined to reduce agency cost (Alipour, Farhad, Mohammadi, & Derakhshan, 2015). TOT asserts that growth, size and profit are positively related to capital structure due to tax shield on debt. Many researchers analyzed

that private enterprises utilize bank debt and retained higher earning whereas small enterprises use equity and large enterprises focus to retained higher portion of earnings. (Sofat & Singh, 2017). Jensen and Meckling (1976) provide evidence for agency theory with cost of debt and equity. It indicates that higher financial leverage will reduce agency cost and maximize worth of firm by motivating the managers to work for the interest of shareholders.

The most significant determinants found in this research paper are profitability, assets structure, firm size, business risk and interest coverage ratio. The literature review of these determinants discussed below in detail.

2.1 Profitability

Profitability is the most important factor while making decisions for leverage. According to TOT greater profitability leads to more leverage and debt ratio because greater profitability has less bankruptcy risk and creditors will be more confident for funding to these firms. TOT states that profitability and debt equity have a positive relationship while POT suggests negative relation because with an increase in profits, retained earnings are increased which means that companies will rely less on debt finance. It means that when there is asymmetric information, firm will prefer equity financing over debt financing because asymmetric information will lead to more profit and further it will also maximize the retained earnings and less depending on debt finance. This finding was confirmed by (Rajan & Zingales, 1995) in G7 states. Hence as per POT our first hypothesis as follows:

H1. Profitability is negatively associated with leverage.

2.2 Firm Size

TOT suggested a positive relationship with firm size and leverage. The risk of large firms has been diversified with less probability of bankruptcy. (Shah & Hijazi, 2004) and many studies identified the positive relationship and this relation is confirmed by (Abor & Biekpe, 2005). POT predicts negative relationship and suggested that in case of larger firms there is less asymmetries information which leads to use of internal funds or raise equity instead of raising debt. Our second hypothesis based on TOT is as follows:

H2. Size of firm is positively associated to leverage.

2.3 Assets Structure

The firm debt capacity is comprehending with asset structure, which referred as asset structure. TOT predicts positive relationship with assets structure with leverage. Asset structure plays an important role because more tangible assets decrease the probability of bankruptcy due to collateral assets. (Alipour, Farhad, Mohammadi, & Derakhshan, 2015). TOT suggested that asset structure and leverage have a positive relationship whereas POT suggests no such a relationship. Empirical studies confirmed that structure and leverage are positively associated with each other, (Rajan & Zingales, 1995) and (Akhtar & Oliver, 2009). Hence our third hypothesis is based on TOT as follows:

H3. Assets structure of firm is positively related to leverage.

2.4 Business Risk

Business risk can be explained as profit before interest & tax to profit after interest & tax (Ashraf & Rasool, 2013). It is used to measure the degree of financial leverage with risk. TOT suggests positive business risk have a positive association with debt equity while POT suggests negative relationship. Sofat & Singh (2017) states that higher variant in profit means higher the chances of bankruptcy, therefore, higher variation in profit will lead to lower leverage and by decreasing the level of variation in profit the business risk can also be decreased. So, our fourth hypothesis as per TOT theory is as follow:

H4: Business risk is positively related to leverage.

2.5 Interest Coverage Ratio

The ability to pay interest from operating income is called interest coverage ratio. The firm who have higher interest coverage ratio will be able to obtain more debt as lenders focused on firm's ability to pay its annual interest expenses as well as principal amount. TOT found the positive relationship between interest coverage ratio and leverage. Our fifth hypothesis based on TOT is as follows:

H5: Interest coverage ratio is positively related to leverage.

III. Research Methodology

3.1 Data Set

The data has been collected from Pakistan stock exchange website where every listed firm uploads their annual company accounts. There are total 12 companies under automobile sector listed in Pakistan

stock exchange whereas sample includes only10 firms whose complete data was obtainable for five years from 2014 to 2018 and out 10 firms 2 firm's data have outliers. To make the data normal the outlier has been removed and now only 8 firm's data from for five years from 2014 to 2018 used data analysis. This study required the ratios of profitability, assets structure, size of firm, business risk and interest coverage ratio. These ratios formulas were not available in annual reports of all selected companies. MS Excel software was used to develop and calculate the required ratios.

3.2 Multiple regression model

Based on the findings of past studies as mentioned in the literature review, the

following multiple regression model developed to investigate the impact of five selected variables on leverage.

$$D/E = \beta_0 + \beta_1 (PR) + \beta_2 (FS) + \beta_3 (AS) + \beta_4 (BR) + \beta_5 (ICR) + \varepsilon$$

Where

$\beta_0 =$ Constant Coefficient
$\beta_1 =$ Regression Coefficient (Independent Variable)
PR= Profitability
FS= Size of Firm
AS= Asset Structure
BR= Business Risk
ICR= Interest Coverage Ratio
$\varepsilon =$ Error Term

3.3 Measure

In our study the debt equity ratio is dependent variable which measures the degree of debt and equity financing. The firm's capital structure influenced by many variables like profitability, size of firm, assets structure, growth, tax shield, business risk, liquidity, assets utilization ratio, dividend coverage ratio.

Table 1: *Measures of determinants of capital structure*

Variables	Measures	Expected Sign	Empirical Studies Sign	Theory
Profitability	Earnings before interest and taxes to total assets	+/-	-	Pecking Order Theory / Trade-off Theory
Firm Size	Log of assets	+	+	Trade-off Theory
Asset structure	Fixed assets to total assets	+	+	Trade-off Theory/ Agency Theory
Business Risk	Earnings before interest and tax divided by earnings after interest and tax	+	-	Trade-off Theory/ Agency theory
Interest Coverage Ratio	Earnings before interest and tax divided by Interest amount	+	-	Trade-off Theory

Notes: The "+" sign indicates increase in debt equity ratio. "-" sign indicates decrease in debt equity ratio. The "+/-" indicates that both positive and negative relationship.
Sources: Compiled from various studies.

3.3.1 Profitability

Profitability refers to profit before interest & tax to total assets as many researchers including (Agha, 2015), (Awan, 2014), (Alipour, Farhad, Mohammadi, & Derakhshan, 2015), (Sofat & Singh, 2017) used the same in their research.

3.3.2 Size of Firm

There are two different measures to calculate the size of the firm. First measure is by taking log of assets and second measure is by taking the log of sales. The first measure was adopted by many researcher including (Saeed, 2013), (Masnoon, 2014), (Alom, 2013), (Alipour, Farhad, Mohammadi, & Derakhshan, 2015) and (Sheikh & Qureshi, 2017).

3.3.3 Asset Structure

The asset structure of firm calculated as total fixed assets to total assets. This measure adopted by many researchers (Masnoon, 2014), (Hijazi, 2006), (Agha, 2015), (Alipour, Farhad, Mohammadi, & Derakhshan, 2015), (Sheikh & Qureshi, 2017) and (Sofat & Singh, 2017).

3.3.4 Business Risk

Business risk can be explained as profit before interest & tax to profit after interest & tax. This measure adopted by many researchers (Baral, 2004), (Sofat & Singh, 2017) and (Alipour, Farhad, Mohammadi, & Derakhshan, 2015) in their research.

3.3.5 Interest Coverage Ratio

Interest coverage ratio represents the ability of firm to pay its annual interest out of annual operating income. Interest coverage will be calculated by operating income to total interest amount. This measure adopted by (Sofat & Singh, 2017) in his research paper.

3.3.6 Statistical Tools

The statistical analysis used to find out the impact of debt equity ratio on capital structure determinants. The statistical statistics mean, median, standard deviation, maximum and minimum statistics have been calculated. R-Square and adjusted R-Square calculated to find out the variation in dependent variable explained by independent variables. Multicollinearity has been checked through correlation matrix because if there is any multicollinearity among variables then that may alter the regression results.

IV. Findings

The Table-II indicates the descriptive statistics. The average value of each variable has been calculated by taking values from 20014 to 2018 from selected companies. Table II indicates the average value of variables profitability, size of firm, asset structure, business risk and interest coverage ratio and debt equity ratio.

Table 2: *Descriptive Analysis*

Table II indicates the variation of automobile sector, profitability is 16 percent to 37 percent, and the size of firm is from 6.09 percent to 7.72 percent, the asset structure is 16 percent to 59 percent, business risk is 1.01 to 1.20 and interest coverage ratio is from 6.25 to 1230.38. Table II indicates the profitability is 16 percent to 37 percent, the size of firm is from 6.09 percent to 7.72 percent, the asset structure is 16 percent to 59 percent, business risk is 1.01 to 1.20 and interest coverage ratio is from 6.25 to 1230.38.

Table 3: *Correlation Analysis*

Variables	Debt Equity	Profitability	Firm Size	Asset Structure	Business Risk	Interest Coverage
Debt Equity	1					
Profitability	-0.431	1				
Firm Size	-0.793	0.522	1			
Asset Structure	0.596	-0.414	-0.55	1		
Business Risk	0.017	-0.27	-0.188	0.228	1	
Interest Coverage	-0.246	0.564	0.218	-0.363	-0.196	1

The correlation matrix indicates the profitability, firm size and interest coverage are negatively associated with debt equity ratio while asset structure and business risk are positively associated but on the other hand asset structure and business risk are negatively associated with profitability and firm size and interest coverage are positively associated with profitability. Asset structure and business risk are negatively while interest coverage is positively associated with firm size. The assets structure is positively associated with business risk while interest coverage is negatively associated with asset structure and business risk.

The correlation value 0.80 or larger represents the problem of multicollinearity. The above Table III indicates that no variable has correlation.80 or more so it is concluded that there is no multicollinearity. Therefore, all the selected variables are appropriate for testing the determinants of capital structure of automobile sector.

Table 4: *Summary*

Variables	Mean	Median	Minimum	Maximum	Std. Deviation
Debt Equity	0.036	0.02	0.00	0.12	0.036
Profitability	0.218	0.2	0.05	0.47	0.091
Firm Size	6.92	6.93	5.99	7.91	0.48
Asset Structure	0.31	0.26	0.09	0.67	0.15
Business Risk	1.067	1.02	0.91	1.51	0.11
Interest Coverage	224.08	36.24	0.00	3,125.44	657.52

4.1 Summery statistics of sector

The summery statistics of automobile sector listed in Pakistan stock exchange; mean, median, standard deviation, minimum and maximum value of profitability, size of firm, asset structure, business risk and interest coverage ratio and debt equity ratio have been calculated in Table IV.

Company Name	Profitability	Firm Size	Asset Structure	Business Risk	Interest Coverage	Debt Equity
Atlas Honda Limited	0.23	6.84	0.36	1.09	17.31	0.04
Ghandara Nissan Limited	0.19	6.61	0.59	1.07	42.12	0.09
Ghandhara Industries Ltd	0.16	6.76	0.37	1.2	6.25	0.02
HinoPak Motors Limited	0.17	6.99	0.25	1.09	6.46	0.02
Honda Atlas Cars Ltd	0.23	7.27	0.26	1.01	295.07	0.02
Indus Motor Co, Ltd	0.27	7.72	0.16	1.01	144.39	0.00
Millat Tractors Limited	0.37	7.09	0.16	1.03	1,230.38	0.01
Sazgar Engineering Works Limited	0.13	6.09	0.31	1.04	50.66	0.10

4.2 Multiple regression analysis

To investigate the association of debt equity with determinants of capital structure the regression analysis has been used. The Table V showing the regression results. The R-Square value found to be 69.40 per cent which indicates that the 69.40% variation in debt equity ratio has been explained by selected five variables that are profitability, size of firm, asset structure, business risk and interest coverage ratio. The remaining 30.60 per cent is explained by unobserved factors including earning volatility, growth, dividend payout, non-debt tax shield and liquidity.

Profitability and interest coverage ratio have been excluded from the final run model of regression analysis because their contribution is negligible and only three variables were included. Further, first and final run of regression shows that at one per cent level firm size have significant impact on debt equity. Assets structure is significant at five per cent level of significant in the final run. The third variable business risk is insignificant both in first and final run of regression model.

V. Discussion of Findings

It has been found in the first run of regression model that the beta coefficient value is 0.002 which indicate a positive relationship between profitability and debt equity ratio which is in accordance with TOT. Hence there is no strong support to first hypotheses H1 as its beta coefficient value is positive, but its positive value is negligible and have less contribution due to this reason it has been excluded from the final run model of regression. Further, P-value is also 0.965 which is insignificant. These results matched with the findings of (Al-Ajmi, Hussain, & Al-Saleh, 2009) and (Ye, 2010).

There is negative relationship between firm size and leverage with coefficient value -0.052 which is in accordance with POT. However, P-value as 0.000 which is significant. It is also consistent with the similar finding of many researchers including (Sofat & Singh, 2017), (Hijazi, 2006)and (Afzal &

Hussain, 2011). There is a positive relationship between asset structure and leverage with coefficient value 0.059 which is consistent with TOT and these results are confirmed by (Sofat & Singh, 2017), (Alipour, Farhad, Mohammadi, & Derakhshan, 2015), (Nunkoo & Boateng, 2010) and (Chakraborty, 2010). However, P value is 0.048 which is significant.

Business risk and leverage have a negative relationship with coefficient value -0.057 which is according to POT. However, the P value is 0.087 which is insignificant. These results confirmed by researchers (Alipour, Farhad, Mohammadi, & Derakhshan, 2015) and (Sofat & Singh, 2017). Interest coverage ratio have a positive relationship with leverage with coefficient value 0.000 which indicate no strong support for H5. Further, the P value is 0.703 which is insignificant. The finding shows that interest coverage ratio is not significant and not contributing in leverage as per first run of regression analysis. These findings match with the findings of (Sofat & Singh, 2017)but contradict with the finding of (Sheikh & Qureshi, 2017).

VI. Summery and Conclusion

In this study the influence of capital structure has been determined by using multiple regression analysis on Indian manufacturing industries. The finding shows that Pakistani automobile sector use trade-off theory. The researcher concluded that firm size and assets structure are significant and are in accordance with trade-off theory whereas the business risk is insignificant but are in accordance with pecking order theory. It is concluded that the managers in automobile sector using optimal capital structure by balancing the benefits of interest tax shield against the present value of the possible costs of financial distress.

This study was conducted by considering the eight companies out of twelve in total. Complete financial results of two companies were not available and two company's data have outliers. The current research is limited to the firms of automobile assembler sector of Pakistan and not applicable either to other non-financial or financial sector. The reason for its not applicability is that the researcher selected one sector from Pakistan stock exchange.

It is suggested that that the future researches should determine the other factors including earning volatility, growth, dividend payout, non-debt tax shield and liquidity that may impact the leverage in capital structure.

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