

# **CAPITAL STRUCTURE DETERMINANTS OF KSE LISTED AUTOMOBILE COMPANIES**

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## **Abstract**

This study aims to explore the various factors that determine the choice of financing sources for public limited companies in the automobile sector of Pakistan. The impact of firms' profitability, liquidity, tangibility, size and earning variability on capital structure of KSE listed automobile companies is investigated. Panel data of ten out of sixteen companies for five years (2008-2012) is studied through regression analysis. It is found that capital structure has negative correlation with profitability, liquidity, size and tangibility, while it is positively correlated with earning variability. The association with profitability and liquidity is found to be statistically significant while that with size, tangibility and earning variability is reported as statistically insignificant.

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**Keywords:** Capital structure, KSE, Automobile sector, Pakistan

## **Introduction**

Capital structure decision of a firm is one of the key financial decisions reflecting how a firm finances its assets or raises capital for its business. The two primary choices are debt and equity, and most commonly a combination of both.

If a firm finances through debt which is considered to be a cheaper source of financing, it results in elevation of firm's riskiness attributing to reduced financial flexibility, increased likelihood of financial distress, possible downgrade in credit rating among others. There's the requirement of collateral, sustained coverage and liquidity ratios. The benefits of debt financing include tax shelter, improved earnings per share and return on equity.

Equity on the other hand accrues certain benefits too. There's no fixed financial cost (in case of common equity) to worry about freeing up

more cash for reinvesting, and the distribution of risk and losses among larger number of equity holders. On the downside it conveys negative signal to investors reflecting exhausted financial flexibility, denied access to debt financing, overvalued equity, increased expected volatility in earnings or higher perceived riskiness.

Consequently the decision of capital structure choices is of paramount importance for firms and optimal capital structure is such a mix of debt and equity that maximizes the firm's value and reduces the weighted average cost of capital (WACC). There are many factors that affect the capital structure decisions including firm's size, profitability, tangibility, tax rate, growth, industry trend, cost of debt, cost of equity etc. This paper attempts to analyze the capital structure of automobile industry in Pakistan, where the impact of profitability, liquidity, tangibility, size and earning variability on capital structure would be explored.

### **Research Question**

What is the impact of profitability, liquidity, tangibility, size and earning volatility on capital structure of KSE listed automobile companies?

### **Literature Review**

Many studies have been conducted to find out the determinants of capital structure, and the factors affecting capital structure of firm.

Gaud, et al. (2003) found the determinants of capital structure of Swiss companies using sample of 106 companies listed on Swiss stock exchange and data spanning over nine years (1991-2000). The research used variables including size, tangibility, growth, risk and profitability and the findings reported were that business risk, tangibility and size are positively related to leverage whereas growth and profitability are negatively related.

Chen (2003) found the determinants of capital structure of 88 public listed Chinese companies covering the period of 1995-2000. The research gave a significant difference between Chinese companies and others in that the Chinese companies rely more on short term debt rather than long term. The factors that usually affect western economies such as bankruptcy cost and earning volatility were not found to be significant.

Song (2005) studied determinants of capital structure of Swedish companies considering the sample of 6000 companies for the period of 1992-2000. Three different leverage measures used include total debt ratio, long term debt ratio and short term debt ratio. The results were different for these three debt ratios. All three ratios were found to be related to tangibility, profitability, size and income variability, non-debt tax shield was only related to short and long term ratio whereas uniqueness and growth were not related to any of three debt measures. The study also reported differences

between short and long term debt ratios. Tangibility is positively related to long term debt while it is negatively related to short term; non debt tax shield has positive effect on short term ratio whereas negative impact on long term, size is positively related to both total and short term whereas negatively related to long term ratio.

Shah& Khan (2007), Rafique (2011), Masnoon& Anwar (2012) carried out their respective research on determinants of capital structure of KSE listed companies. The findings of these studies were quite similar. For all industries profitability was found to be negatively related to leverage.

Eriotis, et al. (2007) did the similar work on Greek companies listed on Athens stock exchange for the time period of 1997-2001 and their findings reported debt ratio to be negatively related to growth, quick ratio and interest coverage ratio, whereas positively related to size.

Hua Hsu & Yu Hsu (2011) studied the impact financial decisions on capital structure of firms. The sample is created using companies of five countries that are Hong Kong, Japan, Korea, Singapore and Taiwan for the period of 1988-2007. The study is done by applying two stage methods. In the first stage the variables used are: market to book ratio, asset tangibility, profitability. In the second stage leverage deficit and changes in target are used. The conclusion of study was firms in Hong Kong and Singapore follow trade off and pecking order theory in their financing decisions whereas in Japan and Korea pecking order and market timing theory is followed partly, but they follow trade off theory totally. Taiwan obeys market timing theory partly. Consequently the authors concluded that in Asian countries trade off theory is used more than pecking order and market timing theory in their financial decisions.

Pertiwi &Anggono (2013) did their research on optimal capital structure analysis focusing on food and beverages industry based in Indonesia for the period of 2008-2011. The authors have calculated the optimal capital structure at different debt ratio for different years using the weighted average cost of capital approach. The author finds that the optimal debt ratio can be zero because of many reasons. First is food and beverages industry have high turnover and operating income, second is there are many companies with negative earning so it is better for them not to use debt, third is cost of equity of companies is already very high and by adding debt, WACC will increase.

Akinyomi&Olagunju (2013) studied the determinants on capital structure by taking a sample of twenty four companies listed on Nigerian stock exchange. The findings of the study show that leverage have negative relationship with size and tax, and positive relation with tangibility, profitability and growth.Jensen (2013) conducted his research on determinants of capital structure based on Danish listed companies. The

research is done on 106 companies for a period of 2001-2011. The findings of study support trade off theory but not pecking order theory.

An, et al. (2013) did their research on Earnings management, capital structure and the role of institutional environments. They studied 25,798 firms across different countries for the period of 1989-2009. The research concluded that there is positive relation between earnings management activities and corporate leverage. The research concluded that: debt and institutional environment can be served as external control mechanisms for agency cost of free cash flows and to rely on institutional environment is less costly than debt.

Muthama, et al. (2013) did analysis of macroeconomic influences on capital structure of listed companies in Kenya. The research concluded that macro-economic factors have strong influence on capital structure, GDP growth rate have positive influence on long term debt ratio and negative influence on total and short term debt ratio. Inflation have negative influence on short term debt ratio, interest have positive influence on long term and total debt ratio and negative influence on short term debt ratio.

Sarlija&Harc (2012) studied the impact of liquidity on capital structure of firm by taking a sample of 1058 firms. They concluded that there is a negative relation between liquidity and leverage.

### **Scope and Significance of Study**

The automobile sector has not been widely studied in the context of capital structure, with one study being that by Rafique (2011) who studied this sector focusing only on profitability and financial leverage. Our research aims to primarily focus the automobile industry providing valuable insights to potential investors, both domestic as well as foreign.

### **Research Method**

The sample studied for this research comprises of ten out of sixteen KSE listed automobile companies. The entire data is gathered using financial reports of selected companies.

### **Variables Description**

The variables used in this study include the dependent variable as capital structure the independent variables profitability, liquidity, tangibility, size and earning volatility.

### **Capital Structure**

A firm's capital structure is a set or mix of securities by which it fulfills its financing needs. Capital structure is comprised of debt, equity or mix of both. The proxy used for calculating capital structure is debt to equity

ratio (D/E).

### **Profitability**

Profitability expresses the profit or gain of a firm indicating the firm is performing well; it is one of the factors affecting the capital structure of firm. The proxy used for calculating profitability is Profit Margin calculated as earning after tax divided by sales (EAT/SALES). According to the studies conducted by Masnoon and Anwar (2012), Gaud, et al. (2003), Rafique (2011), Velnampy&Niresh (2012) there is a negative relation of profitability with leverage.

### **Liquidity**

Liquidity is another factor affecting capital structure. According to Sarlija&Harc (2012) the more liquid the firm is the less is the risk of bankruptcy and high the confidence of investors in the company. The proxy used for calculating liquidity is current ratio that is current assets/ current liabilities.

### **Tangibility**

Tangibility of assets is calculated as net fixed assets/ total assets. According to Gaud, et al. (2003) and Masnoon& Anwar (2012) there is a positive relation between tangibility and leverage which means that if tangibility of firm is high the firm can add more debt to its capital structure.

### **Size of Firm**

Size of a firm is measured as sales volume of a firm. The proxy used for calculating size is the log of net sales. Many authors (Gaud, et al. (2003), Masnoon& Anwar (2012), Rajan&Zingales (1995) in their research studies have found out a negative relation between size of firm and its leverage as there is more transparency about large firms which reduces the undervaluation of new equity issue and encourages the firms to finance through their equity.

### **Earning Volatility**

Earning volatility characterizes the variations in firm's earnings, high volatility indicate more risk and vice versa. Earning volatility is calculated by percentage change in operating profit margin.

### **Research Model**

The following equation is developed to answer the research question of this study:

$$CS = \alpha + \beta_1 (PM) + \beta_2 (CR) + \beta_3 (TGB) + \beta_4 (SZ) + \beta_5 (EV) + \epsilon$$

Where,  
CS= Capital Structure  
PM= Profitability  
CR= Current Ratio (liquidity)  
TGB= Tangibility  
SZ= Size  
EV= Earning Variability  
 $\alpha$  = Constant Term  
 $\varepsilon$  =error

### **Generation of Hypothesis**

#### **Hypothesis – I**

H<sub>0</sub>: there is positive relation between capital structure and profitability of firm

H<sub>1</sub>: there is negative relation between capital structure and profitability of firm

#### **Hypothesis – II**

H<sub>0</sub>: there is positive relation between capital structure and liquidity of firm.

H<sub>1</sub>: there is negative relation between capital structure and liquidity of firm.

#### **Hypothesis III**

H<sub>0</sub>: there is negative relation between capital structure and tangibility of firm.

H<sub>1</sub>: there is positive relation between capital structure and tangibility of firm.

#### **Hypothesis IV**

H<sub>0</sub>: there is positive relation between capital structure and size of firm.

H<sub>1</sub>: there is negative relation between capital structure and size of firm.

#### **Hypothesis V**

H<sub>0</sub>: there is positive relation between capital structure and earning volatility of firm.

H<sub>1</sub>: there is negative relation between capital structure and earning volatility of firm.

#### **Data Analysis**

This section discusses the results of the test conducted for analysis. Correlation matrix is developed to rule out the problem of multi-collinearity (See Table 2) Regression is then run to test the direction and relationship among variables.

Table 2: Correlation Matrix

	Tangibility	Liquidity	Earning Variability	Profitability	Size
Tangibility	1	-0.426353	0.138827	-0.088285	-0.054425
Liquidity	-0.426353	1	0.032136	0.563971	0.142938
Earning Variability	0.138827	0.032136	1	0.422988	-0.039719
Profitability	-0.088285	0.563971	0.422988	1	0.138793
Size	-0.054425	0.142938	-0.039719	0.138793	1

Table 2 indicates that tangibility shows mild negative relation with all other variables and mild positive relation with earning variability. Similarly liquidity shows mild positive relation with size and profitability, negative relation with tangibility and has no relation with earning variability.

Earning variability shows mild positive relation with tangibility and profitability and its relation with liquidity and size is close to zero that is there is no relation between them. Profitability shows mild negative relation with tangibility whereas mild positive relation with all other variables. Size shows mild negative relation with tangibility, mild positive relation with other variables and it has no relation with earning variability. There is no strong correlation exist among any of the selected variables.

**Regression Analysis**

Then regression test was performed to study the relation of profitability, liquidity, earning variability, size and tangibility with capital structure. The summary of the results are shown in table 3.

Dependent variable = capital structure

Sample size=50

Method= least square method

Table 3: Regression Results

Variable	Coefficient	Standard Error	t-Statistic	Probability
C	4.629728	1.678069	2.758962	0.0084
Profitability	-12.55189	4.162476	-3.015486	0.0042
Liquidity	-0.294636	0.131276	-2.244404	0.0299
Tangibility	-1.152850	1.451754	-0.794108	0.4314
Size	-0.174126	0.165842	-1.049952	0.2995
Earning variability	0.156501	0.141255	1.107926	0.2739

The table 3 shows that profitability is negatively related to capital structure. The coefficient is -12.551 which the highest in all and the value of t statistics is -3.015 whereas p value is .0042 which proves that result is statistically significant. It accepts alternative hypothesis and is consistent with the results of study conducted by Masnoon& Anwar (2012), Shah&

Khan (2007). This result supports the pecking order theory which says that companies finance first from internal equity and then they go for debt. In the event of higher profits, firms fulfill their funding requirements by retaining the earnings. When profit is raising the firm first fulfill its financing needs through retained earning which reduces their debt level so there is an inverse relation between profitability and debt level.

Liquidity is found to be negatively related having the value of t statistics -2.244 and p value of .0299 which proves that this result is statistically significant. It also accepts alternative hypothesis that higher the liquidity, lower the leverage. The same relation has been proved by Sarlija&Harc (2012).

Tangibility is found to be negatively related with t value of -0.794 and p value of .431, whereas earning variability is found to be positively related with t value of 1.10 and p value of .273 which shows that they are statistically insignificant. These relations are inconsistent with expectations as well as the studies done by Masnoon& Anwar (2012), Gaud, et al. (2003) and Shah& Khan (2007). The reason for these results could be attributed to the differences in the industry and/or time period studied. The reason for positive relation of earning variability could be that in Pakistan court process is slow so banks consider earning variability a very weak factor to consider while issuing debt and they more on fixed assets (collateral) and credit rating of company.

Size is found to be negatively related with capital structure with t value of -1.049 and p value of 0.299 which proves that the relation is insignificant and it also rejects null hypothesis. Similar finds were reported by Masnoon& Anwar (2012), Gaud, et al. (2003) and Shah & Khan (2007) in their research.

Table 4: Regression Results

R-squared	0.479387
Adjusted R-squared	0.420226
S.E. of regression	1.100752
Sum squared residual	53.31285
F-statistic	8.103151
Prob.(F-statistic)	0.000017
Mean dependent variable	1.654406
S.D. dependent variable	1.445641

Table 4 further highlights the soundness of research model used in this study.

**Conclusion**

To find out the determinants of capital structure of KSE listed automobile companies ten companies out of sixteen KSE listed companies



are selected. Panel data is used for the research and the time horizon selected is a period of five years from 2008-2012. In this research impact of five variables on capital structure are studied using the regression test, including profitability, tangibility, liquidity, size and earning variability.

Multi co linearity test was performed at first to find out any relation among variables and it was found that none of the variables are strongly correlated, then regression test was run. Profitability and liquidity are reported to have significantly negative impact while size and tangibility are found to have insignificant negative effect on capital structure. Earning variability is reported to have insignificant positive association with capital structure.

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