Impact of Firm Size, Asset Tangibility and Retained Earnings on Financial Leverage: Evidence from Auto Sector, Pakistan

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Abstract

This objective of this study is to investigate the impact of firm size, asset tangibility and retained earnings on the financial leverage. In this regard, auto sector was taken as case consisting of sub-sectors namely motor vehicles, trailers and auto parts. Data pertaining to 22 firms was collected from the financial statement analysis document issued by the State Bank of Pakistan (SBP). The multiple regression model was used to determine the relationship between the underlying variables. The results indicated that firm size and asset tangibility significantly affect the financial leverage. Moreover, negative relationship was noted between the respective variables. It was found that retained earnings have no significant impact on financial leverage.
Keywords: firm size, asset tangibility, retained earnings, financial leverage.

The firms need finances to support their operations. The main sources of finances include debt and equity financing which relies on use of the underlying investment instruments to generate the capital. There is ongoing debate in the existing literature with regard to use of the alternatives modes of financing available to a firm. In this context, numerous studies have been conducted discussing the factors or determinants affecting a firm's capital structure. The pioneering work on capital structure can be traced to the Modigliani & Miller (1958) which further laid foundation for further academic discussion. However, no unanimous theory has evolved so far on the capital structure determination, although different researchers have identified a number of factors affecting the capital structure including firm size, liquidity, profitability, tangibility, growth, retained earnings, industry specific factors and dividend policy. Kumar (2008) reviewed the pertinent studies and identified a number of factors affecting the firm's capital structure, however, he also supported the view of lack of consensus on the universality of factors affecting the financial leverage which is the one of the principle constituent of the firm's capital structure. This study is conducted with the same purpose to investigate the impact of three factors namely firm size, asset tangibility and retained earnings on financial leverage.

Financial leverage is one of the key elements of the capital structure of most of the firms which may be taken as an opportunity to maximize the shareholders' wealth. However, if not used with care, this choice may result in bankruptcy endangering the survival of the firm. On the positive side, the use of financial leverage can act as a control for managers to prudently use the financial resources and to pay obligations on time. Thus, the managers tend to act in line with the shareholders' interests as failing to do so may call for their replacement by the new managers. This may also strengthen the principal and agent relationship in view of the agency theory. All this have implications for the firms' managers to decide the optimal level of financial leverage so that on one hand, the threats of financial risk may be avoided or minimized and on the other hand, funds acquired through the leverage may be used in the best possible manner to benefit the firm and contribute towards the shareholders' interests. Therefore, use of financial leverage itself is not a bad thing as far as financing decision of corporate finance is concerned. Rather, it is linked to the key decisions which the finance managers take to acquire financing.

Auto sector is an important sector contributing towards the GDP of Pakistan. All firms in this industry use debt financing. The underlying benefits mainly include increasing returns on equity and tax saving among others. This is the main source of revenue of the national exchequer in the form indirect taxes next to the Petroleum Sector. The auto sector consists of three sub-sectors consisting of motor vehicle (cars/light vehicles), trailers (heavy vehicles) and auto parts. After deregulation in 1990s, foreign investment in this sector has increased.

Objectives
Objectives of the study are as under:-
- To investigate the impact of firm size, asset tangibility and retained earnings on financial leverage.
- To help the managers to control or focus on the underlying variables so that an optimal level of financial leverage may be selected in order to maximize the shareholders' wealth.
- To enhance the relevant literature to provide further base for future research.

Literature review

The available literature is mixed with regard to effects of firm size on capital structure. Yadav (2014) noticed the negative correlation between firm size and financial leverage for Indian Firms as measured through debt to equity ratio. Gill & Mathur (2011) found positive relationship between firm size and financial leverage in a study conducted on Canadian Firms. Lim (2012) also noted the said relationship in case of Chinese Financial Services Firms. Moreover, the same results are also documented in another study carried out by the Richard & Oluwatosin (2014) on the Small and Medium Enterprises in Nigeria. It was also noted that asset tangibility is negatively correlated with the leverage. Fernandez, Kumar & Mansour (2013) also noted that increase in firm size results in more use of leverage for Omani listed companies.

Handoo & Sharma (2014) investigated the factors affecting the financial leverage related to Indian firms including government and private sector companies. The time period covered was from 2001 to 2010. The results demonstrated that asset tangibility and firm size have significant impact on financial leverage. Wahab & Ramli (2014) also noted the same relationship of tangibility and size in case of Malaysian Government Companies.

Onofrei, Tudose, Anton & Durdureanu (2015) found negative relationship between leverage and asset tangibility for Romanian small and micro enterprises. Their results also indicated that to a less extent the firm size negatively affects the leverage. K (2012) carried out a study on Nepalese Automobile Manufacturing Sector and identified that the firm size is the insignificant determinant of financial leverage. However, negative effect of the former on the later was also noted. Baral (2004) also conducted a research on Nepalese commercial banks, finance companies and insurance companies and finance companies. Using the multiple regression model it was noted that firm size significantly affects the financial leverage.

Karadeniz, Kandır & Iskenderoğlu (2011) documented significant relationship between firm size and financial leverage for Turkish Lodging Companies. They also found that firms with big size have tendency to have low targeted debt in their capital structure. Gweyi & Minoo (2013) investigated the relationship between financial leverage, and firm size and asset tangibility. The Kenyan Savings & Credit Cooperative Societies were taken as study case. Multiple regression model was applied to analyze the data. It was found that there is significant relationship between the pertinent variables.

Prime & Qi (2013) carried out a study on Chinese manufacturing sector for the period from 2003 to 2006. Their results indicated that financial leverage is negatively related to the firm size.

Srivastava (2014) undertook a research on Indian Cement Sector and found negative correlation between firm size and financial leverage whereas asset tangibility was noted to have positive effect on financial leverage. Kavitha (2014) carried out another study on Indian Pharmaceutical Companies and found that firm size and asset tangibility are significantly related with financial leverage.

Vithessonthi & Tongurai (2015) carried out a study on Thai Firms and used the panel regression analysis. They documented that the relationship between leverage and operating performance is dependent on the firm size. It was also found that in case of small firms leverage has positive effect on performance whereas for large firms the effect was negative.

Olakunle & Oni (2014) based on Nigerian Study, noted a positive non-significant relationship between asset tangibility and firm's financial leverage. The same relationship is also identified by Anjanthan (2013) for Hotel & Restaurant Sector in Sri Lanka.

Zare, Farzanfar & Boroumand (2013) conducted a study on Iranian Stock Market taking into the account the Pecking Order Theory & Tradeoff Theory and identified the effects of firm's size and asset structure on financial leverage. Wachilonga (2013) also found a relationship between firm size and debt financing for Kenyian Hotel and Lodging Industry. However, debt was considered a choice followed the internal financing and preceded by the equity financing. Alkhatib (2012) undertook a research on Jordanian Firms. The results revealed relationship between asset tangibility and financial leverage for industrial sector and service sector. Odit & Gobardhun (2011) noted tendency for Mauritian SMEs to finance fixed assets with long-term debt which means that asset tangibility is an important dominant of financial leverage.

Çekrezi (2013) conducted a study on Albanian Firms and found that size and tangibility are significantly related with financial leverage. Regasa (2014) based on a research conducted on Ethiopian Insurance Sector documented that asset tangibility and firm size have significant impact on financial leverage. The time period of the research was from 2002 to 2011. Franklin & Muthusamy (2011) demonstrated that asset structure and retained earnings are positively related to the financial leverage. Their study was based on the Indian Pharmaceutical Sector.

Theoretical Framework

Firm Size

Asset Tangibility	→	Financial Leverage

Retained Earnings
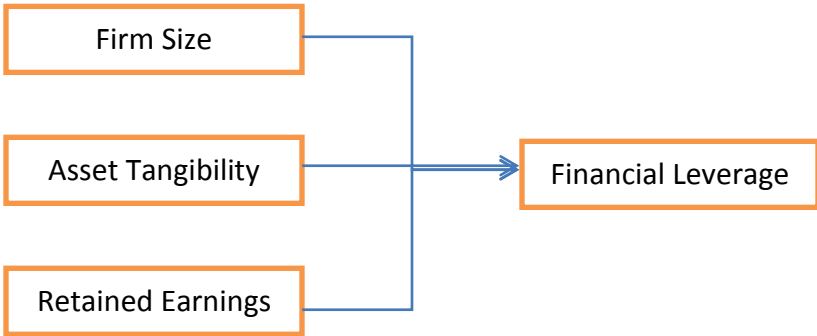
Data and methodology

The data in the study was secondary which was collected from the financial statement analysis document of non-financial companies listed on the Karachi Stock Exchange (KSE) covering the period from 2006 to 2011. The rationale behind selection of this period among others includes the steady growth which the auto industry experienced in the said period particularly in 2006-2007 when sales was at the record peak possibly may be due to increase in car financing by the banking sector. The data is related to auto sector which consists of sub-sectors including motor vehicles, trailers and auto parts. The collected data uses the selected ratios and retained earnings figure which is based on the financial data of 22 firms operating in the auto sector.

Variables of the study

The composition of variables of the study is as follows:-

Financial Leverage

Financial leverage refers to the use of debt financing by the firms. It is used to positively affect the firm's return. The common ratio used as proxy of financial leverage is long-term debt to shareholders' equity and the same is used in this study. The levered firms have more opportunity to increase return on equity as others' money is being used to increase earnings instead of equity financing. However, use of leverage exposes firms more to the

financial leverage as extensive use of debt may endanger the a firm's capacity to pay their liabilities on time including the principal amount and interest. Therefore, use of financial leverage calls for research to identify the relevant determinants so that an optimal level of financial leverage may be used to positively affect the shareholders' wealth, being the prime goal of a firm.

Firm Size

Firm size is measured using the natural logarithm of total assets. Larger firms may be less susceptible to bankruptcy as they are more diversified as compare to smaller firms which often tries to overcome the costly gap of information when they try to better deal with the lenders of the firms for external financing. As a result smaller firms often less rely on outside sources of financing than firms with big size which have lower information asymmetries,in turn increasing their access to the debt market as the associated cost of debt financing is low in such cases. Moreover, larger firms may have lower variations in earnings which make financial leverage a good option of financing.

Asset Tangibility

Tangibility refers to the degree to which the firm is financed by the fixed assets. The fixed assets to total assets ratio is used as proxy to measure the firm's tangibility. Generally, firms with more tangible assets tend to have low leverage and therefore it becomes difficult for them to use such assets as collateral for generating the extra funds which may expose the firm towards the bankruptcy. On the other hand, tangibility may also enhance the firm capacity to use fixed assets as collateral whenever external funds are required owing to the reason that investment in assets are diversified which may untimely decrease the chances of bankruptcy. Therefore, a mixed relationship prevails between tangibility and leverage which may be specific to the underlying studies.

Retained Earnings

Retained earnings are portion of net income which is not paid as dividends to the shareholders. They are rather retained by the firm and re-invested in the business. They are recorded in the balance sheet under the heading of the shareholders' equity. The figure of retained earnings is obtained by deducting the dividend paid from the net income after taxes. The existing literature on

relationship between retained earnings and financial leverage is scarce. However, based on the pecking order theory, it may be inferred that retained earnings being internal source of funds may be used before the debt financing. When the firms has low balance in the retention reserve, or when there is strain on the same, then to finance the investment projects, financial leverage may be used.

Hypotheses

In light of the study objectives to determine the relationship between the financial leverage and associated variables, the hypotheses of the study are as follows:-

Hypothesis1: There is no relationship between the firm size and financial leverage or alternatively firm size does not affect the financial leverage.

Hypothesis 2: There is no relationship between the asset tangibility and financial leverage or alternatively asset tangibility does not affect the financial leverage.

Hypothesis 3: There is no relationship between the retained earnings and financial leverage or alternatively retained earnings do not affect the financial leverage.

The model used in the study

The multiple regression analysis was done to study the impact of firm size, asset tangibility and retained earnings on financial leverage. The regression model is as follows:-

Financial Leverage = $\beta_0 + \beta_1$Firm Size+ β_2Asset Tangibility+ β_3Retained Earnings+ e

Where;

Financial Leverage = Total debts divided by total assets.

Firm size =Natural logarithm of total assets is used to measure firm size.

Asset Tangibility = It is the ratio of the fixed assets to total assets.

Retained Earnings = It equals net income after taxes − dividends paid.

e =Error term or residual which represents the factors affecting the dependent variable not accounting for by the model. Its average value is taken as zero (Gujrati, 2004).

Data Analysis and Results

　　　The "Statistical Package for Social Sciences (SPSS)" is used to analyze the data. The descriptive statistics of the study are as follows:

Table 1
Descriptive Statistics

	Debt to Equity	Natural Log of Total Assets (Firm Size)	Fixed Assets / Total Assets (Asset Tangibility)	Retained Earnings
Mean	1.1167	18.4574	.2517	3.3532E6
Median	1.0950	18.4050	.2472	3.2795E6
Standard Deviation	.21134	.11976	.03198	2.75959E6
Minimum	.87	18.34	.22	-1553084.00
Maximum	1.50	18.63	.30	6067099.00

　　　The average debt to equity ratio is greater than one which shows that auto sector firms rely more on debt financing than the equity financing. The range of firm size is about the same showing no change. The asset tangibility also nearly remained the same as the corresponding value of standard deviation is very low. On the other hand, standard deviation and range of retained earnings is very high.

The results pertaining to hypotheses are as under:-

　　　The dependent variable, financial leverage is regressed on the independent variables namely firm size, asset tangibility and retained earnings. As can be seen the value of R, the multiple correlation coefficientis 99.60 percent which shows the good quality of prediction of dependent variable. On the other hand, the value of R^2, the coefficient of determination indicates that 99.1 percent variability in dependent variables is explained by the independent variables.

Table 2

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.996ᵃ	.991	.978	.03115

Note. a. Predictors: (Constant), Retained Earnings, Natural Log of Total Assets , Fixed Assets/Total Assets

The following table shows the significance of the model. The underlying null hypothesis is that the model has no explanatory power or all the co-efficient on independent variables are zero. Alternatively, none of the independent variables help to predict dependent variable which shows that the model used is useless. The p-value is less than 0.05 which shows that the null hypothesis may be rejected to infer that regression model is significant to predict the values of dependent variables using the values of independent variables.

Table-3
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.221	3	.074	76.058	.013ᵃ
	Residual	.002	2	.001		
	Total	.223	5			

a. Predictors: (Constant), Retained Earnings, Natural Log of Total Assets , Fixed Assets/Total Assets

b. Dependent Variable: Debt to Equity

The Table-4 is co-efficient table showing the values related to "t" statistic. The null hypothesis for "t" statistic is that co-efficient for independent variables is zero or independent variables do not help to predict the dependent variables. As shown in table, the "t" statistic value and the significance value computed for the variables indicate that firm size and asset tangibility are significantly related with the financial leverage. The respective p-values for firm size and tangibility are less than 0.05 which shows the significant relationship between these variables and financial leverage. Therefore, the corresponding null hypotheses may be rejected. Moreover, the beta coefficient of firm size and tangibility is negative which shows the negative effect of these variables on the financial leverage. It also shows that for one unit increase in size, the financial leverage will decrease by 1.145 times whereas for tangibility it will decrease by 7.500 times. On the other hand, the p-value for retained earnings is greater than 0.06, therefore, the

null hypothesis cannot be rejected and accordingly we may say that retained earnings are non-significantly related with the financial leverage. This implies that retained earnings do not affect the level of debt choice which the firm may opt for given option to choose from the sources of financing.

In order to detect multicollinearity among the independent variables, various inflation test (VIF) test was used. Multicollinearity may makes it difficult to interpret the regression coefficients as it can increase their variation. The values of VIF test are less than 10 which suggest absence of multicollinearity. Also, VIF values are very close to "1" which may suggest no correlation among the independent variables. The associated regression equation is as follows:-

Financial Leverage = 24.093 + (-) 1.145 Firm Size+ (-) 7.599 Asset Tangibility +1.998E-8 Retained Earnings

Table 4
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Standard Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	24.093	3.091		7.795	.016		
Natural Log of Total Assets	-1.145	.161	-.649	-7.099	.019	.520	1.922
Fixed Assets/Total Assets	-7.599	.613	-1.150	-12.403	.006	.505	1.979
Retained Earnings	1.998E-8	.000	.261	3.690	.066	.869	1.150

Conclusion

This study is aimed to investigate the effect of firm size, tangibility and retained earnings on financial leverage. In this regard, auto sector was selected and data of 22 firms was collected comprising of sub-sectors including motor vehicles, trailers and auto parts. The data source was the financial statement analysis document issued by the State Bank of Pakistan (SBP). The multiple regression model was applied to test the relationship between variables of the study. The regression results showed the significant impact of firm size andasset tangibility on financial leverage.The "β" co-efficient of the variables showed that there exists negative relationship

between the variables. Furthermore, no significant relationship was noted between retained earnings and financial leverage.

Limitations of the study

This study is limited to the auto sector of Pakistan consisting of 22 firms. In this context, its findings may be generalized to the auto sector only. Moreover, researches conducted on firms similar to the firms taken in this study also come under the same purview as far generalizability of the findings is concerned. However, it is recommended that future research may investigate the extent to which the respective findings may be generalized to other sectors as well.

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<div align="right"><u>**Annexure-A**</u></div>

<div align="center"><u>**List of Firms covered in the Study**</u></div>

1. Agriauto Industries Ltd.
2. Al-Ghazi Tractors Ltd.
3. Atlas Battery Ltd.
4. Atlas Engineering Ltd. (Allwin Engineering Industries Ltd.)
5. Atlas Honda Ltd.
6. Baluchistan Wheels Ltd.
7. BelaAutomotives Ltd.
8. Bolan Castings Ltd.
9. Dewan Automotive Engineering Ltd. (Allied Motors Ltd.)
10. DewanFarooque Motors Ltd.
11. Exide Pakistan Ltd.
12. General Tyre& Rubber Co. Ltd.
13. Ghandhara Industries Ltd.
14. Ghandhara Nissan Ltd.
15. Ghani Automobiles Industries Ltd.
16. Hinopak Motors Ltd.
17. Honda Atlas Cars (Pakistan) Ltd.
18. Indus Motor Co. Ltd.
19. Millat Tractors Ltd.
20. Pak Suzuki Motor Co. Ltd.
21. Sazgar Engineering Works Ltd.
22. Transmission Engineering Industries Ltd