THE IMPACT OF LEVERAGE AND SIZE OF FIRM ON FINANCIAL PERFORMANCE: EMPIRICAL STUDY ON CEMENT AND CHEMICAL INDUSTRY

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Abstract

The study is conducted for the bringing new way and recent information of the industry for the verification of old concepts. We have taken two industries from Karachi Stock Exchange for providing solid grounds to support our hypotheses. The data is collected from the period of 2008-2014. Though this era is consider as most uncertain as many companies were defaulted due incompatibility for operations. After analysis, we can say that Leverage and size effect the performance but not in all cases or in all industries.

Keywords: Return on equity, Leverage, Firm size, and performance of the industry.

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Introduction:

Leverage is a term derived from the topic physics. When a lever is used suitably, a power applied at one point is changed, or magnified, into another, larger force or motion at some other point. This comes most readily to mind when considering mechanical leverage, such as that which occurs when using crowbar. However, in the business context, leverage refers to the use in an attempt to increase or lever up profitability**.** Leverage results from the use of fixed cost assets or funds to magnify returns to the firm's owners. Change in leverage result in change in level of return and associated risk. Generally, increase in leverage result in increase in return and risk, whereas decrease in leverage result in decreased return and risk. The amount of leverage in the firm's capital structure is the mix of long term debt and equity maintained by the firm which can significantly affect its value by affecting return and risk**.**

The organizations are seeking for better performance now days. They do plenty of different works for the value maximization of the firm. They either see operations of the business or the financing aspects of the business. For this purpose we try to find out relationship between firm performance with its size and leverage. For the firm size, we took natural log of the total Assets.

Leverage, is calculated as total of current and noncurrent borrowing divided by total net worth because this way of calculation is more accurate for secured creditors and shareholder to remove conflicts rather than market based method to measure ***(Skinner, 1993).***This ratio indicates the way to select the firm's finance and when this ratio decreases the greater protection for lenders, who rank before shareholders.

When financial leverage increases it may affect managers and reduce the agency costs through the risk of insolvency, which may cause the losses to the managers i.e. the loss of

salaries, position, perquisites, etc. ***(Grossman and Hart 1982, Williams 1987)***, and in the course of pressure it produce cash flows which are used to pay interest cost ***(Jensen 1986)***. Higher level of leverage can reduce conflicts among shareholders and management regarding the investment preference (***Myers 1977***). ***(Hagel 2002)*** proposes leveraging return growth by organizing the network of design, marketing, distribution and supply relations rather than to invest in the assets.

It is rational that low profit organization would be specially observant about how to managing costs ***(Gerald E. Smith 2006)***. This can turn change into a fixation of cost effectiveness that shows many of low profit manager to take on conservative accounting practices ***(Johnson and Kaplan, 1991).***

We start with a discussion of the link between internal and external costs with financial performance. In this article we present a framework for organization of costs and sales volume that is particularly beneficial to business showing good financial performance because it taps the firm's structural ability to enhance profit growth.

Significance of the Study;

Macroeconomic stabilization of any country is achieved through the appropriate microeconomic performance. Microeconomic performance is dependent on the effective industrial policies of a country. The directors, managers and other stakeholder of any organization need proper guidance on their financial decision. Empirical researcher should furnish the proper knowledge of the potential impact of various Financing, Operating and Investing decision regarding the firm performance. Numerous studies and literature on the firm value and capital structure are available based on economics and Finance. Results of one country are not replicable in another country due to variation in their capital market. Unfortunately scarce literature is available on the financing decision of the firm in Pakistan.

Literature Review:

An extensive definition of leverage may be described as the ratio of total liabilities to total assets. It can be seemed as an alternative for the residual claim of shareholders when liquidation takes place. However, it does not provide an adequate measure of looking at the firm's risk of default in near future ***(Raja and Zingales, 1995)***.For the specific time period leverage remain same if earning of the firm are allocated in an independent identical way***(Scott, 1976)***. According to **Barnea, Haugens, and Talmo (1987)**, if the firms have enough earnings, tax benefits of the firms are hurt.**Raymars (1991)** find that "The leverage increases with the ratio of operating earrings to value". In view of **Gibbs (1993)**, as the investment opportunities and initial financial leverage are unrelated, so the free cash flows may divert to the smaller financial leverage. The returns may reduce proportional to the decreased risk of firm if the managers opt to finance the low profitable projects, ignoring the risk of capital market. ***Jensen (1986)*** described that financial leverage is low due to one of the indicators of free cash flows. Degree of operating leverage determine the capital structure, as firm exposed to industry it manipulate at some scale and which have higher degree of operating leverage may have low debt percentage and vice versa ***(Mandelker and Rhee, 1984)***. In an empirical study it is observed that the high debt and low debt firms belonging from the same industry and the outcome exposed in opposition has been proved to reverse case by ***Hatfield, Cheng and Davidson (1994).***

According to ***Ferri and Jones (1979)***it has been observed that the relationship between size of the firm and leverage, it is a general view that larger firms may be more diversifies than smaller firms because they take the benefit of an easy access to the capital markets. Such firms also enjoy higher credit ratings for the issuance of their debt while paying a lower rate of interest on borrowed capital.

Haugens and Senbet (1998) propose that the future value of the firm may reduce by the insinuation of reduced future debt equity. Furthermore, this study explores the relationships between a firm's size and industry category, changeability in income, and leverage. ***Modigliani and Millers (1958, 1963)*** support the judgment by finalizing an insignificant relationship between the financial leverage and the firm's value until and unless the firms operating in a taxable environment where the tax payments may affect the capital structure mix.

Weston's (1989) comments on MM's model which affirms that a perfect, market equilibrium need no change in value by its investing decisions and a straight way rise in the required rate of return in equity. The change in profitability shows a positive correlation with change in leverage if the dividend and investments does not change. If the investment opportunities are provided to the smaller firms, they may enhance their equity base by greater equity issues and the correlation of profitability and leverage may reduce ***(Rajan and Zingales, (1995).***

Furthermore, as a ***Jensen (1989)*** argues that if the low debt firm is not able to make the fixed payments of debt may have various impacts for the firm's control if compared with the firm to meet fixed obligations, operating at high levels of debts. In the first case the low debt firms are more likely to liquidate rather than the high debt firms with same case as they may restructure themselves particularly if they have closely held obligations of debt. The management of such firms may ask for more debts committing the repayments from its future cash flows but may lose the repute at time or become unattractive for the current and potential investors.

This study indicates that if the risk of the firm is rising by leverage, it may lead the firm towards liquidation. We can produce a proposition out of this that the firm may need sufficient profitability

to service the debts. ***Campbell and Whited (1990)*** observed that the streamlining of activity in the 1980s also had considerable impact on the cross-sectional allocation of leverage.

Theoretical Framework:

The focal theory behind the study is the agency cost theory and the free cash flow theory which provide the base to check the effect of leverage on the firm efficiency. The agency cost theory is described on the idea that the interest of the company's managers and its shareholders are not equitable.

Jensen and meckling (1976) stressed the significance of the agency costs of equity in corporate finance arising from the separation of ownership and control of firms whereby managers wants to maximize their own value rather than the value of the firm. This leads us to jensen's(1986) 'free cash flow theory' which explain the problem of the free cash available in the organization and encourage managers how to disgorge the cash rather than investing it at the lower of the cost of capital or wasting it on organizational inefficiencies.

A high level of leverage may be used as a disciplinary device to reduce managerial cash flow waste through the threat of liquidation (**Grossman and Hart, 1982**) or through pressure to generate cash flows to service debt (Jensen, 1986). Agency costs can also exist from conflicts between debt and equity investors. These conflicts arise when there is a risk of default. The risk of default may create what **Myers (1977)** referred to as an 'underinvestment' or 'debt overhang' problem. Alternatively, it could lead to increased risk-taking activity as managers acting on their shareholders' behalf have incentives to take excessive risks as part of risk shifting investment strategies.

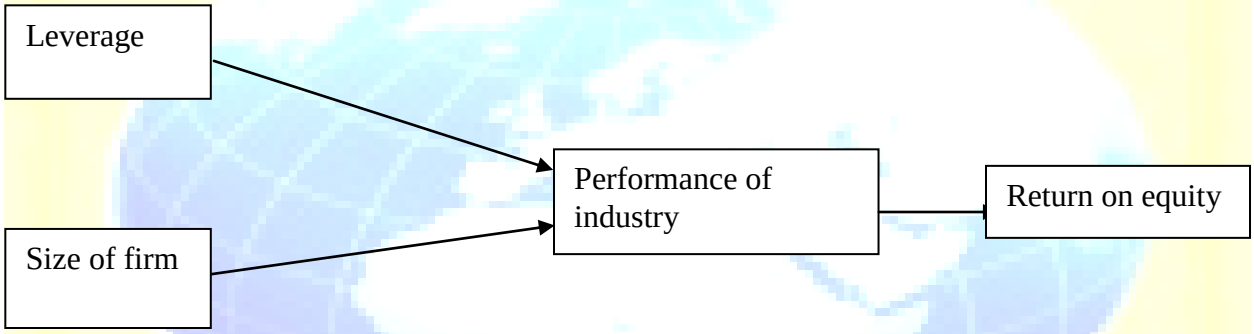
Hypothesis

The hypothesis of this is as follows,

H_0= leverage and size of firm affects the performance of firm.

H_1= leverage and size of firm does not affects the performance of firm

Theoretical Framework Model:



Methodology;

Firstly we should look into the scenario of the chemical and cement industry which is taken as a sample. The data regarding both industries which are purely related to Karachi stock exchange 100 index in Pakistan. This research work has a unique importance because previously the research work on this topic was only done in the service sector but we are going to do in manufacturing. Following is the list of companies listed in Karachi stock exchange:

Chemical industries in Pakistan:

1. Clariant Pakistan
2. Dawood Hercules
3. Engro corporation
4. Engro polymer& chemicals
5. Fauji fertilizer Bin Qasim
6. Arif Habib corporation
7. Fauji fertilizer
8. ICI Pakistan
9. Agriteckh Limited
10. Lotte Pakistan PTA Limited
11. Fatima fertilizer Company

Cement industries in Pakistan:

1. Attack cement
2. Bestway cement
3. D.G. Khan Cement
4. Javedan Corporation
5. Lucky cement

We have used regression analysis for explaining the model of the study. For this study we have taken data from two sectors that are chemical and cement industry. The model of study can be explained as

$ROE_{it}=\propto_1+\beta 1.Firmsize+\beta 2.leverage_{it}+\mu_{it}$

Where as

ROE is return on equity

Firm size is natural log of firm's assets.

Leverage is debt to equity ratio.

The above model clearly explains the relationship between the return on equity & firm size and return on equity and leverage.

Firstly, it is to be checked that either the size of firms positively influence the return on equity or not. It is depends on the result of β1(coefficient of Firm size).

Secondly, we will check either the leverage positively influence the return on equity or not. It is depending on the result of β2 (coefficient of leverage).

Results:

Chemical Industry

Correlations

		Return on equity chemical	Natural log of total assets	Debt to equity ratio
Return on equity chemical	Pearson Correlation	1	.539**	.453*
	Sig. (2-tailed)		.002	.010
	N	31	31	31
Natural log of total assets	Pearson Correlation	.539**	1	.294
	Sig. (2-tailed)	.002		.108
	N	31	31	31
Debt to equity ratio	Pearson Correlation	.453*	.294	1
	Sig.(2-tailed)	.010	.108	
	N	31	31	31

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Interpretation

The results show in case of chemical industry that there is positive correlation of dependent variables that are ROE with Firm size and also positive with its leverage.

Correlation between debt to equity and return to equity is .453 which showspositive correlation. The value of one variable is increase then the value of other variable is also increase. When the amount of return on equity is increase then debt to equity is also increase. Sig. (2-tailed) .010 explains the sig relationship.

Correlation between Natural log of total assets and return to equity is .539. It indicates positive correlation. The amount of changing in natural log of total assets is correlated with the debt to equity ratio.Sig. (2-tailed).002is sig relationship.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.373	.211		2.767	.088
	Natural log of total assets	.080	.028	.444	2.861	.008
	Debt to equity ratio	.029	.014	.322	2.080	.047

a. Dependent Variable: Return on equity chemical

Interpretation

Whereas overall model tells us that there is significant relationship of ROE with leverage and its size. The hypothesis proved here.

The actual model of Chemical industry will be as follow:

ROE = 0.373+ 0.444 (Firm size) +0.322 (leverage) + μ_{it}

Here the co-efficient of firm size is +0.444 which represent the direct relationship between Return on equity and firm size. Another relation of ROE with leverage is positive because the coefficient is positive (β2= 0.322)

Cement Industry

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.499	.298		2.678	.110
	Natural log of total assets	.036	.030	.258	2.174	.255
	Debt to equity ratio	.023	.044	.115	2.522	.608

a. Dependent Variable: Return on equity cement

Interpretation

Whereas overall model tells us that there is insignificant relationship of ROE with leverage and its size. The actual model of Cement industry will be as follow

ROE = 0.499 + 0.258 (firm size) + 0.115(leverage)+ μit

Here the co-efficient of firm size is +0.258 which represent the direct relationship between Return on equity and firm size. Another relation of ROE with leverage is positive because the coefficient is positive(β2= 0.115)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.499	.298		2.678	.110
	Natural log of total assets	.036	.030	.258	2.174	.255
	Debt to equity ratio	.023	.044	.115	2.522	.608

Correlations

		Return on equity cement	Natural log of total assets	Debt to equity ratio
Return on equity chemical	Pearson Correlation	1	.266	.133
	Sig. (2-tailed)		.231	.556
	N	22	22	22
Natural log of total assets	Pearson Correlation	.266	1	.069
	Sig. (2-tailed)	.231		.760
	N	22	22	22

Debt to equity ratio	Pearson Correlation	.133	.069	1
	Sig. (2-tailed)	.556	.760	
	N	22	22	22

Interpretation;

Where as in the case of cement industry both independent variable has positive relationship with ROE. In the case of dependency analysis, both leverage and size has in significant relationship with ROE in the study, so our hypothesis is not proved in this case.

Limitations of the Study:

Firstly, the study is based on the specific time period from 2008 to 2014.

Secondly, the effect of Global Financial Crises in 2008 is not considered in this study.

Thirdly, the growth of the firms is not taken into consideration.

Fourthly, ROA or EPS ratios may be used to check the financial performance.

Fifthly, the manufacturing sector is selected for the study, which is the rationale of this study.

Sixthly, the research is based on the financial sector, non-financial information is not considered in this study.

Finally, the financial data of different firms was not available from 2008, so those firms are included for study whose data and financial information were given.

Conclusions;

From the above empirical evidence, it can be concluded that though size of the firm and leverage is important aspects of the performance, but they may be little influential in some industries, and

may be more in the other. In the whole research analysis it can concluded that the ROE has strong relationship with the firm size and leverage in both industries. The t value which is greater than 2 shows that strong relationship.

Future research;

The firms can get profit by focusing on the concept of leverage and its size In the future it will be done in the banking sector, educational service sector of the Pakistan and all over the world. Firms can increase profit and return by manage the leverage level and size of the firm.

Implication;

This study can provides guidance to firm when a firm make plan for increase or decrease its debt ratio and expand the size of firm. The rises the leverage level will be beneficial for the firm or not. And what is the effect of size of firm on firm return.

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