

DETERMINANTS OF FIRM VALUE: A CASE STUDY OF CHAMICAL INDUSTRIES OF PAKISTAN

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Abstract- The objective of this paper is to analyze the importance of chemical industries of Pakistan and major factors which affect their working and profitability. We used secondary data, which was extracted from the database of Pakistan Stock Exchange, State Bank of Pakistan and financial statements of selected firms. The variables of study include: Return on Assets (ROA), Earning per share (EPS), Financial leverage, Firm size and Net working capital (NWC). Our findings show that the value of the firm increases with the increase in other variables like NWC and EPS etc. It is also worth noting that some of the variables like “Financial Leverage”, “Firm Size” and “ROA” did not have much influence on the stock prices. However, strong correlation was found between all independent and dependent variables except financial leverage.

Key words: Market price value, Financial leverage, Firm size and EPS.

Type of study: **Original Research Paper**

Paper received: 05.08.2017

Paper accepted: 15.11.2017

Online published: 01.01.2018

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1. INTRODUCTION

1.1. Firm Value

Enterprise value is the total value of the company's assets that determine the market value of a company. It indicates the total wealth of investors, shareholders/owners. The core objective of a capitalist firm is to maximize the wealth of shareholders by increasing profit and stock value.

1.2. What Factors Determine Firm Value?

There are many factors that determine the firm value. The firm value can be determined by the future performance, financial leverage, financial returns, net profits, types of assets, capital structure, etc.

Different factors are used to determine the value of a firm. Some of these factors determine the firm value by capital structure, some determine by stock return, some determine by financial leverage, and determine by profitability. In short, different factors are used to determine the firm value.

1.3. Objective of study

The objective of this research paper are stated as under: -

1. To analyze the importance of chemical industries of Pakistan.
2. To study major determinants that affect their working and profitability.
3. To make suggestions how to improve their working and profitability.

1.4. Scope of Study

The topic of our study is "The Determination of Firm Value: A Case Study of Chemical Industries of Pakistan". The determination of firm value is a wide range topic that has been discussed by different researchers. We analyzed the determinants of firm value of chemical companies operating in

Pakistan. The results of this study will definitely will give benefits to these companies and they will learn how to improve their profitability. This study will also be a guideline for policy makers to frame policies in future about chemical sector of the country.

2. Overview of Chemical Sector in Pakistan

Chemical industries play important role in the economy of any country. The international business of chemical firms has been dated back to ancient times. Different chemicals convert necessary raw material into 70000 different products for industries as well as for the consumer's products. Technology advancement has brought a revolution in chemical industry. The chemical industries divided into two categories: one is primary chemical industries and second one of is secondary chemical industries. The primary chemical industries are produced basic chemicals for secondary industries which is used by secondary industries for many different kinds of products like paint, polymer, Pvc, medicine etc. In Pakistan, the primary sector of chemical industries is wide-spread. These industries are capital intensive industries that comprise refineries, natural gas, petrochemicals, metallurgical and mineral. These primary industries provide supply to secondary industries in Pakistan which used these raw materials for their products. These industries are less capital intensive. Pakistan produce chemicals for textile, leather and polymer companies.

2.1 Types of Chemicals

1.Basic Chemicals

2.Speciality Chemicals

3Consumers chemicals

2.2. Growth of Chemical Sector in Pakistan:

According to the SBP report, 2014 the size of chemical industries increased from Rs.717 billion in 2013 to Rs.874.26 billion in 2014, registering an increase of 21.86%. The size of the equity also increased by Rs.67.71 billion, registering an increase of 25.32% as compared to 2013.

2.3. Total Assets of Chemical Sector of Pakistan

The non-current assets of the sector stood at Rs.578.14 billion in 2014 as compared to Rs.474.25 billion in 2013 and growth was 21.91%. The overall increase of Rs.103.89 billion in non-current assets was mainly attributed to increased value of operating fixed assets after deducting accumulated depreciation. The current assets were Rs.296.12 billion in 2014. This was increased by 21.77%. as compared to previous year of Rs. 243.18 billion. The overall increase of Rs.55.94 billion in current assets was mainly due to Cash & bank balance and short term investment.

2.4 Profitability of Chemical Sector of Pakistan

Sales of Chemical sector in 2014 was Rs.685.63 billion which was increased by 17.76% as compared to 2013. The cost of sales was also increased by Rs 92.23 billion, reflecting an increase of 21.86%. Return on Assets (ROA) and Return on Equity (ROE) and Return on capital Employed (ROCE) all showed decreasing trend in 2014 due to inflating cost vis-à-vis sale.

2.5 Problems of Chemical Industries

At the time of partition of Subcontinent, there was no any chemical industry in Pakistan. Now chemical sector is growing very fast but its growth rate is slow in Pakistan as compared to other countries. The first chemical industrial estate was established in Mianwali, Punjab where leading industrial

units such as Pakistan and USA Fertilizers, Pak Dyes and Chemical, Maple Leaf Cement etc, were established. But now most of chemical industries of are located in major cities such like Lahore, Karachi, Faisalabad, Peshawar, Hattar, Kala Shah Kako, Mianwali, Haripur, Gujrat, Gujranwala, Multan, Sialkot, etc. The bigger chemical industries of Pakistan are Fauji Fertilizers, Fatima Fertilizer, Engro Chemicals, Pak-Arb Fertilizers, Dawood Hercules, Calariant Pakistan. ICI Pakistan, Sitara Chemical Industries, Sitara Proxide, Descon oxygen. Nimir Chemical Industries, Fauji Fertilizer Bin Qasim, Biafo industries.

The major problem of chemical industry is that they basically rely on imported raw material. Another most important problem of chemical industry is transfer of new technology. Due to lack of new technology, the productivity of this sector is low and quality of products is poor. Another problem of chemical industry is lack of Research and Development (R&D). Pakistan is a developing country and development is not being carried out in proper way. The R&D budget is 1.5% of GDP, which is nominal as compared to other countries. There is no safe environment for the workers working in chemical industries and fire incidents are very common.

2.6 Natural disasters and other incidences:

Natural disasters like flood and earthquake was occurred in Pakistan in 2005 and thousands of people lost their lives and assets. According an estimate, on average one worker is died daily due to unsafety and unhygienic conditions in the factories. Due to this reason a large number of workers are died in different incidences and there is no mechanism for payment of compensation to their families.

2: LITERATURE REVIEW

Khan (2012) compared dividend-paying and non-dividend-paying companies and conclude that the companies paying dividend regularly to their shareholders get improved their good will in the market. The author took 29 pharmaceutical companies listed at Pakistan Stock Exchange and analyzed their performance for the period of 2001-2010. The results show that dividend yield and net profit are critical variables while profit retention and return on equity have negative relation with stock price. The also revealed that “Dividend Irrelevant Theory” is not applicable to pharmaceutical industry of Pakistan.

Het et al (2015) carried out the study on the subject of stock price volatility and dividend policy in Pakistan. The objective of study is to test effect of dividend policy on stock price volatility in Pakistan. The study has been carried out a stratified sampling of firms of their respective sectors with respect to market capitalization, listed at PSX. Time series data was selected for the period of 2001-2014. Statistical techniques such as descriptive statistics, correlation and regression methods were used for data analysis. In step with the findings of the regression analysis show that dividend policy had no impact on stock price volatility in Pakistan.

Eisenberg, et al (1998) conducted a research on the topic of Large Board size and Decreasing Firm Value in Small Firms. Their findings show the negative correlation between board size and profitability extends to small firms with small boards in Finland. Their finding were extension of previous finding and has implication for the sources of board-size effect. their sample contained 900 small Finnish corporations. The results highlight the fact that

there is significant correlation between the size of Board and profitability of the firm (jensen, 1993; yermack 1996).

Bhattacharya 2001 McWilliams and Siegel 2001). The author analyzed the issue whether business firm and managers should work for the maximization of the wealth of shareholders or participate in “Corporate Social Responsibility” activities. He concludes that CSR activities of the firm does not reduce the value or profitability of the firms, rather it will improve both.

Carter (2003) revealed that the inclusion of female or minority shareholders’ directors in the Board of firm would enhance its credibility. It will also improve corporate governance.

Jin (2006) explored the Firm Value and Hedging. The fundamental points of Jin's research are that the supporting exercises of 119 U.S. Oil and Gas producing companies for the period from 1998 to 2001 and assess their impact on the firm value. The outcome confirms that supporting diminishes the company's stock value affectability to oil and gas costs. As opposed to past reviews, be that as it may it was found that supporting does not appear to influence MVs for this industry.

4 Research Methodology.

4.1 Data and Types

We used secondary data collected from the data base of Pakistan Stock Exchange, State Bank of Pakistan and financial statement of sampling companies. It is a panel data.

4.2 Sample of study

We took a sample of 19 out of 29 chemical companies listed at Pakistan Stock Exchange and their names are as follows:-

Wah Noble Chemicals Limited. Bawany Air Product Limited, Berger Paints Pakistan Limited, Biafo Industries Limited, Buxly Paints Limited, Colgate Palmolive (Pakistan) Ltd., Dynea Pakistan Limited, Descon Chemicals (Pvt) Ltd. (NimirResinse Ltd.), I.C.I Pakistan Limited, Ittehad Chemical Limited, Leiner Pak Gelatine Limited, Linde Pakistan Limited, Lotte Chemical Pakistan Ltd, Nimir Industries Chemicals Ltd, Pakistan Gum and Chemicals Ltd, Pakistan PVC Ltd, Sardar Chemicals Industries Limited, Shaffi Chemicals Industries Ltd Sitara Chemical Industries Limited, Sitara Proxide Ltd.

4.3 Nature of research

Our research is a quantitative in nature and we have used quantitative techniques to analyze it.

4.4. Selected Variables

Stock Prices is dependent variable, while financial Leverage, Earnings Per Share (EPS), ROA= Return on Assets ROA). Net Working Capital (NWC), and Firm Size are independent variables.

4.5 Statistical Technique

We have used multiple Regression technique to draw the empirical results

3.6 Econometric Model

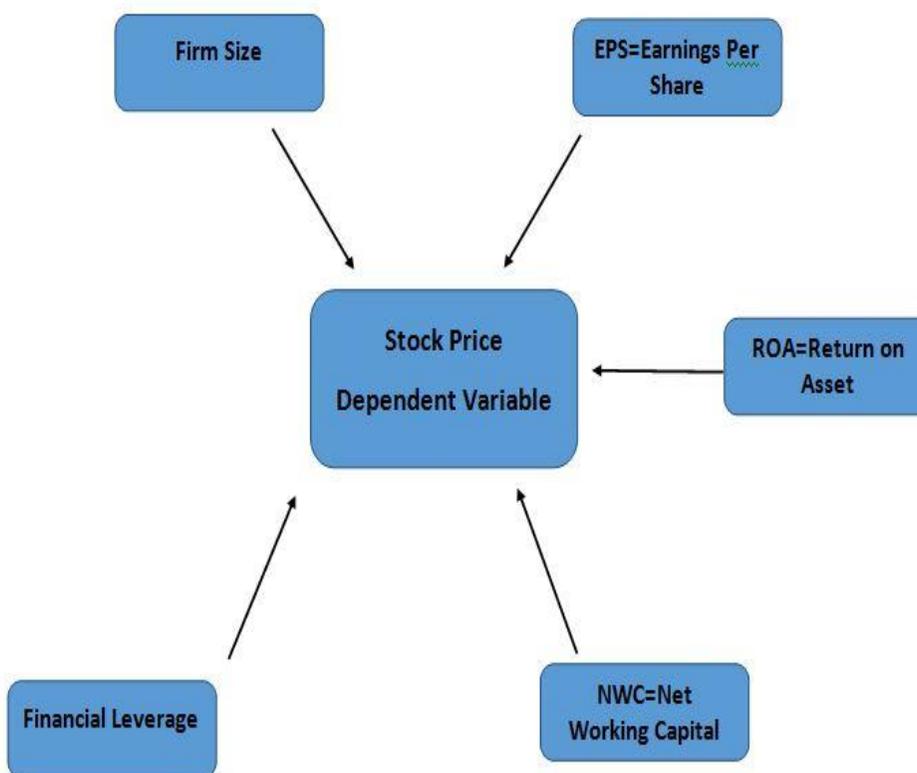
We have shown our econometric model in the following equation.

$$Sp = ad + \beta_1 FS + \beta_2 ROA + \beta_3 EPS + \beta_4 FL + \beta_5 NWC + e$$

3.7. Sketch of model

The sketch of proposed model is shown in Figure 1.

Figure 1: Sketch of proposed model



4: DATA ANALYSIS

The results drawn are shown in the following tables.

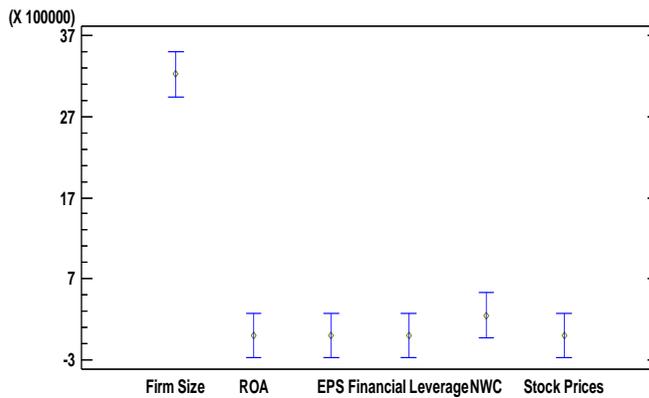
Table 1 Summary of Statistics

	Count	Average	Standard deviation	Coefficient. of variation	Standard error
Firm Size	157	3.22624E6	5.95493E6	184.578%	475255.
ROA	157	6.2042	13.573	218.771%	1.08324
EPS	157	3.92	6.8377	174.431%	0.545708
Financial Leverage	157	0.568425	0.284932	50.1266%	0.0227401
NWC	157	247145.	1.41157E6	571.15%	112655.
Stock Prices	157	42.4114	57.0563	134.531%	4.55359
Total	942	578906.	2.76051E6	476.85%	89942.3
	Minimum	Maximum	Range	Std. skewness	Std. kurtosis
Firm Size	78104.0	2.39004E7	2.38223E7	11.9346	10.5476
ROA	-71.19	46.82	118.01	-3.30547	16.5432
EPS	-14.24	33.49	47.73	7.13146	8.48248
Financial Leverage	0.1626	1.7777	1.6151	9.12708	11.367
NWC	- 5.39948 E6	6.61148E6	1.2011E7	6.99708	25.3364
Stock Prices	1.18	311.0	309.82	11.351	13.9036
Total	- 5.39948 E6	2.39004E7	2.92998E7	77.9475	258.857

The data shows abnormal variations in the standard deviation of variables. The standard of deviation is a measure of the value dispersion. The small value of standard deviation means that values are closer to its means while large standard deviation means that values are spread from its means.

The data in the table shows that the values of variables are widely spread from their means. The standardized skewness and/or kurtosis is out of range between -2 to +2 in the results, showing abnormality in the data. It means that the data is not normally distributed as is shown in Figure 2.

Figure 2 Skewness of values



5.1 Regression Analysis

We have used multiple regression method to draw the results. Our dependent variable is stock prices while independent variables include: Firm Size, ROA, EPS, Financial Leverage and NWC. The results of regression analysis are shown in Table 2.

Table 2 Calculation of Matrix

		<i>Standard</i>	<i>T</i>	
<i>Parameter</i>	<i>Estimate</i>	<i>Error</i>	<i>Statistic</i>	<i>P-Value</i>
CONSTANT	10.4002	5.12196	2.0305	0.0441
Firm Size	-2.38144E-8	3.48772E-7	-0.0682806	0.9457
ROA	-1.12917	0.171404	-6.58776	0.0000
EPS	8.89803	0.323774	27.4822	0.0000
Financial Leverage	6.90138	7.15903	0.964009	0.3366
NWC	0.00000117514	0.00000146984	0.799502	0.4253

Table 3 Analysis of Variance

<i>Sour ce</i>	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F-Ratio</i>	<i>P-Value</i>
Model	438268.	5	87653.7	190.23	0.0000
Residual	69577.6	151	460.779		
Total (Corr.)	507846.	156			

R-squared = 86.2995%

R-squared (adjusted for d.f.) = 85.8458%

Standard Error of Est. = 21.4658

Mean absolute error = 16.3184

Durbin-Watson statistic = 1.4534 (P=0.0003)

Lag 1 residual autocorrelation = 0.264919

The data shows the results of fitting of a multiple linear regression model to describe the relationship between stock prices and five independent variables. The equation of the fitted model is

$$\text{Stock Prices} = 10.4002 - 2.38144\text{E-}8 * \text{Firm Size} - 1.12917 * \text{ROA} + 8.89803 * \text{EPS} + 6.90138 * \text{Financial Leverage} + 0.00000117514 * \text{NWC}$$

Since the p-value in table is less than zero, there is a statistically significant relationship among the variables at 95.0% confidence level. The R² shows that the model is goodness of fit as it explains 86.2995% of variation in the dependent variable. It means if one unit increases in the independent variable about 86 percent increase will occur in dependent variable. The results show that firm size and return on assets have negative relations with stock prices while earning per share, financial leverage and net working capital have positive relationship with stock prices.

Table 4 Results of Correlations Analysis

	Firm Size	ROA	EPS	Financial Leverage	NWC	Stock Prices
Firm Size		0.0877	0.2576	-0.1396	0.5284	0.2592
		0.2746	0.0011	0.0813	0.0000	0.0010
ROA	0.0877		0.5900	-0.5134	0.2042	0.3485
	0.2746		0.0000	0.0000	0.0103	0.0000
EPS	0.2576	0.5900		-0.3909	0.2235	0.9003
	0.0011	0.0000		0.0000	0.0049	0.0000
Financial Leverage	-0.1396	-0.5134	-0.3909		-0.2360	-0.2509
	0.0813	0.0000	0.0000		0.0029	0.0015
NWC	0.5284	0.2042	0.2235	-0.2360		0.2030
	0.0000	0.0103	0.0049	0.0029		0.0108

Stock Prices	0.2592	0.3485	0.9003	-0.2509	0.2030	
	0.0010	0.0000	0.0000	0.0015	0.0108	

The results of table 4 shows correlation between variables. All variables except one variable, financial leverage, have positive correlation with stock prices. It means if firm size, return on assets, earning per shares, net working capital increase the stock prices will also increase. However, if financial leverage increases the stock prices will be effected negatively.

6. Findings

The statistical method used in this research is to estimate the increase or decrease in the stock prices according to “Financial Leverage”, “Firm Size”, “NWC”, “ROA” and “EPS” is Multiple Linear regression. Regression is statistical technique used to study the relationship between dependent and independent variables, and the estimate change in the dependent variable (i.e. Stock Prices) due to change in independent variables (i.e. “Financial Leverage”, “Firm Size”, “NWC”, “ROA” and “EPS”).

The sampling method used for the collection of data was quota sampling, which is a non-probabilistic sampling method. In quota sampling method a sample is collected from multiple larger units of the population (i.e. organizations) and a data is collected from each unit in proportion to the other units. In this research the sampling period was 2005-2014 and sampling companies were 19 relating to chemical sector.

The results obtained from the regression analysis show that the value of the firm increases with the increase in other variables like NWC and EPS etc. It is also worth noting that some of the variables like “Financial Leverage”,

“Firm Size” and “ROA” did not have much influence on the stock prices. However, the value of R indicated high co-relation between the independent and dependent variables. So, as the results shown in tables and scatter diagram, it is concluded that value of the firm increase with the increase in variables like EPS, NWC and dependent variable, stock price has significant relationship with independent variables: earning per share and net working capital.

7.RECOMMENDATIONS

On the basis of the above results we would like to make the following recommendations: -

1. The business firms should concentrate on increasing earnings per share as it increases the company will be able to pay high dividend, which in turn, will increase stock price of the firm in the market. Similarly, when companies pay low rate of dividend or skip it they will lose the loyalty of their shareholders. So the earning per share is the main benchmark for enhancing stock value.
2. Although there is a controversy about financial leverage. However, it a shield against tax liabilities while high financial leverage will increase interest payment. So the companies must use balanced financial leverage.
3. The period of starting business and working environment should be improved so that entrepreneurs can freely invest in new venture or expand in existing projects.
4. The firm must focus on increasing the volume of business rather than increasing the size of firms and assets. If assets are increased, it may be kept in mind that they must be used efficiently and productively. It will enhance profitability of the firm and value of its stock.

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