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The Impact of Leverage and Sales Growth on Firm Performance in Chemical Industry Pakistan

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Abstract

The purpose of this study is to identify the impact of debt financing and sales growth on organization performance of chemical companies listed on PSX. The study adopted quantitative approach. Data was collected through annual financial statement of the company present in annual reports of the company of chemical industry in Pakistan. The data collected was analyzed by using E-VIEWS software. The findings of the research show that there is an significant relationship between debt ratios and company performance ratios. The study contributes to theoretical and the practical knowledge as up till now no researches have been done by using this model on companies listed on PSX. Apart from this, the study conducted on the chemical sector of Pakistan provides originality in the literature of chemical sectors companies listed on PSX. The limitations of the study is that it is limited to chemical industries in Pakistan only and thus direct relationship has been checked using independent and dependent variables but it is recommended for the future researchers to conduct the study. Moreover, the future studies can be conducted on the other sectors listed on PSX belonging to other industries in different cities of Pakistan.

Key Words: Debt Financing, Return on Equity, Sales Growth, Total Debt to Equity

Introduction

The Importance of debt financing can be seen as it is a part of capital structure of the company Nowadays the decision of financing for any company is essential in order to increase the value of the company(Zainab, n.d.).The company should take the decision of financing wisely in order to increase the performance and value of the companythe key to increasing wealth and lowering the cost of capital for any company is its capital structure.(Saeed et al., 2024)The gap among capital structure theories and practices persists despite significant theoretical advancements over the last few years. Scholars of finance have put up a number of hypotheses to explain how firms finance themselves. (Maheshwari, 2024)The connection among firms' financial performance and their financial framework is being empirically investigated in the present research. The progress of Pakistan's chemical sector in respect to capital structure is described in this report. Businesses can choose to finance their tasks and assets from a variety of sources, such as fresh equity, privately produced funds, and other kinds of debt. Pakistan is a growing nation of more than 200 million and a GDP of over $278 billion, about 3% of Pakistan's GDP and 16% of its manufacturing GDP come from the country's chemical sector. One of Pakistan's oldest businesses, the chemical sector is significant due to its numerous connections to other economic sectors. The chemical sector of Pakistan play a vital role of Pakistan economy generating about 12% of all imports and 4.5% of all exports. A number of reasons, including rising domestic demand, raw material accessibility, favorable government regulations, international investment, technological improvement, and globalization, have contributed to Pakistan's chemical industry's notable growth over the years. The chemical industry in Pakistan is broad and expanding, producing a range of goods for various markets.. The quantity of debt in the capital framework of an organization is referred to as financial advantage.Leverage in finance refers to a company's capacity to borrow money, which is used to boost overall returns since borrowing money gives capital structure strength, which in turn improves the company's financial standing.(abdul hameed han, n.d.)

Literature Review

Theoretical Foundation

Solomon (1963) presented the theory named "**Traditional theory"** which stated that the capital structure is the combination of debt and equity the value of the firm increases with the reasonable involvement of debt in the capital structure after which the further increase in the ratio of debt in the capital structure the value of the firms goes down . Another theory given by Modigliani Miller in the year 1958 also proposed in there **"MM proposition 2"** that the investor (Shareholders) should invest their money in unlevered firm in order to get higher return on their investment (ROE) the riskiness level of the company is directly proportional with the leverage level (debt level) of the company which can affect the company's performance (Modigliani and Miller, 1958). (misbah, n.d.)This study examines the impact of debt financing on firm performance in the chemical sector of Pakistan. Suggested that the company should rely less on debt financing because it leads the company towards financial distress so it is advised to rely more on internal source of finance Traditionally in the companies in which debt commands in the funding sources have unfavorable capital structure as a result the risk to the investor and the companies itself increases. But on the other hand according to debt financing for a time being may be highly risky for the business but it can increase the productivity of the business in future. Higher rate of returns on assets and lower rate of equity are earned with the lower level of leverage (debt) in the firm (Pham & Nguyen, 2020). Examined the effects of various loan types, such as short-term and long-term loans, on the oil industry's economic worth in Pakistan. To obtain the examiners also looked at the numerous policy ramifications of this finding for banks, investors, auditors, stock market regulators, and financial management in order to gain an improved grasp of why a corporation's capital structure may have a detrimental impact on its ability to endure. A number of profitability metrics have a positive correlation with the equity ratio. Likewise, there are positive correlations between the Total Debt Ratio and ROA and ROE. Effective working capital management, which includes lowering the time it takes for a company to pay back its short-term loan, has been suggested to have a favorable effect on the efficiency of the company(Ali & Shaik, 2022).

Debt Financing

Debt financing refers to raising the money of the company from the debt instruments. Debt is the external source of financing used by the company to raise the funds of the company when it is formed. The research claimed that over a time period there has been an enormous growth in debt financing specially during the period of corporate economic boom (Aziz & Abbas, 2019)The very major source of external financing in the debt financing about 90% external financing is based on debt financing.

Total Debt to Equity

The Total Debt to Equity Ratio is a financial statistic that compares the total debt of a business to its shareholders' equity in order to assess its financial leverage(Ahmed et al., 2024). It shows the proportion of the company's funding that originates from debt as opposed to equity.A greater ratio suggests that a business is financing its activities on equity is indicated by a smaller ratio, which may be less hazardous but may also point to ineffective leverage use more debt, which could raise the risk of bankruptcy.

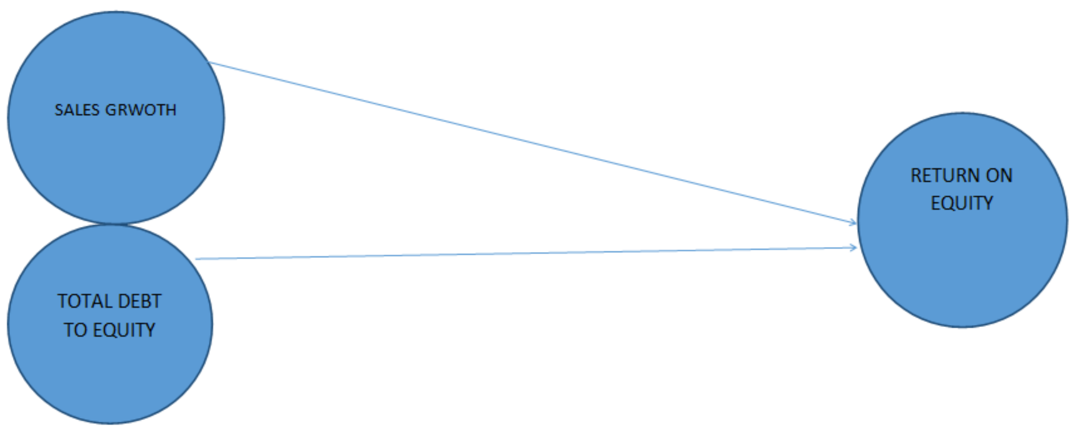
Sales Growth

It describes the rise or fall in a business's sales income over a given period. It gauges how successfully a business is increasing sales, which a key is signed of how well the business is doing and how much demand there is for its offerings. Demonstrates the growth or contraction of a company's operations. The amount change in sales income over time (quarterly, annually, etc.).(Konak & Türkoğlu, 2024)Although negative growth could signify issues, growth shows that the business is growing.

Return On Equity

return on equity (ROE) is used to indicate the performance of the company. It is computed by dividing net income by the total shareholder equity and used in the assess the company's performance & ROE measures the ability of the company to generate the profits from the (Onchong'a, n.d.)Shareholders' investment ROE indicates how efficiently the company utilizes the equity in funding the core business operations and for the growth of the company& ROE is a valuable ratio to calculate the firm performance and efficiency.

Research Model



Variables and Measurement			
S.No	**Variables**	**Measurement**	**Justification**
1	Roe	Net income divided by shareholder equity	(Rafiq et al., 2008)
2	Sales Growth	Current period sales - prior period sales / Prior period sales *100.	(Hu & Ahmad, 2024)
3	Total Debt to Equity	Total liabilities / Total shareholders' equity	(Roger Strange , 2024

Hypothesis Development

Sales Growth and Return On Equity

The correlation between sales growth and return on equity (ROE) indicates how well a business turns revenue growth into returns for shareholders. (agus sukarna, n.d.)Despite measuring distinct facets of a business's achievement, they are linked by financial leverage, profitability, and efficiency. Calculates the revenue growth rate of a business over a given time period. Shows how well the business can grow its market share or product acceptance.

H9: There is a significant relationship between sales growth and Return on equity.

Total Debt To Equity and Return on Equity

The way the financial leverage of a business affects shareholder returns is shown by the link between Total Debt to Equity (D/E) and Return on Equity (ROE). (Saputri et al., 2021)Through revenue and monetary leverage, these two measures are connected. With financial leverage, the D/E ratio affects ROE. When properly handled, debt can increase ROE, but too much leverage carries dangers.

H10: There is significant relationship between Total debt to equity and Return on equity

Data and Methodology

The study adopted quantitative approach. Panel data 5 years from 2019 to 2023 of 17 Companies from chemical sector was collected from the balance sheet present in annual reports of The Company listed on Pakistan stock Exchange. The study is kept limited to Chemical industry keeping in view the fact that financial construction is an industry specific phenomenon thus leading to different financial structures for different industries.The data for this study is extracted from the annual reports listed chemical companies on PSX. The data of 2019 to 2023 was used for this research from the financial statements. The debt ratios values were required for our research so the values of independent variables and dependent variable were taken from the balance sheet and income statement.

Results and Discussions

Table no 1 Unit Root Test					
	Variables	Statistic	Prob.**	Decision	Unit root test
	ROE	-6.68	0.0000	Stationary	Level
	SG	-7.222	0.0000	Stationary	Level
	D/E	-2.096	0.0180	Stationary	Level

Further, this study has measured the direct effect of the dependent, independent variables and random and fixed effect to test the multiple regressions, the contribution of independent variable towards dependent variables is determined through R-squared value, F statistics value and the probability shows the model fitness finally, Durbin-Watson stat value determines the autocorrelation between the dependent and independent variables. Firstly, this study attempts to test the direct effect of data of independent variable with dependent variable (ROE) based on fixed effect.

Table No 2 Regression

Dependent Variable: ROE
Method: Panel Least Squares
Date: 06/26/25 Time: 13:20
Sample: 2019 2023
Periods included: 5
Cross-sections included: 17
Total panel (balanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SG	0.133845	0.023826	5.617661	0.0000
DE	-0.047897	0.006880	-6.962300	0.0000
C	20.40562	3.372975	6.049739	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.889714	Mean dependent var		14.91600
Adjusted R-squared	0.852952	S.D. dependent var		18.62486
S.E. of regression	7.142036	Akaike info criterion		6.988003
Sum squared resid	3213.547	Schwarz criterion		7.620219
Log likelihood	-274.9901	Hannan-Quinn criter.		7.242298
F-statistic	24.20206	Durbin-Watson stat		1.706532
Prob (F-statistic)	0.000000			

ROE is positively and significantly impacted by sales Growth (SG) suggests that increasing sales contributes to higher returns for shareholders. Most likely as a result of improved margins, scaling advantages, or increased revenues. ROE is significantly impacted negatively by debt to equity (DE).The model shows a very good match, explaining almost 89% of the variation in ROE. The results is more reliable because the fixed effect model takes into consideration unobserved variability across companies. statistically significant. Keeping DE constant, ROE rises by 0.1338 units for every unit increase in SG. statistically significant. Keeping SG constant, a 1 unit rise in DE results in a 0.0479 unit decrease in ROE. After the assessment of measurement of model, we assess the quality of model through R squared F-statistics values determine the strength of relationship between independent variable and dependent variable. The studies from various domain have suggested that different ranges of R square values depend on the number of variables, nature and type of research (Hair et al., 2013).Hair et. al. (2014) recommended r-square values of 0.25, 0.50 and 0.75 as low, reasonable and significant respectively. Whereas, Falk & Miller (1992) have proposed that R-square values of 0.10 are acceptable**88.97%** of the variation in ROE is explained by SG, DE, and firm fixed effects. Prob (F-stat) = 0.000 and a high F-value suggest that the model as a whole is statistically significant. Autocorrelation is not significant when it is close to 2 →.The model shows a very good match, explaining almost 89% of the variation in ROE. Durbin-Watson test detect the autocorrelation among variables according to Durbin &Watson (1971) value > 2 suggest that there is no autocorrelation, whereas the value <2 which suggest that no autocorrelation exist between debt ratios and ROE. So in this research the Durbin Watson value is less than 2 which is good and means auto correlation is exist.

Table No 3 Correlation

	ROE	**DE**	**SG**
ROE	1	-0.659221907	0.034845254
DE	-0.659221907	1	0.168841316
SG	0.034845254	0.168841316	1

The capital structure has an impact on return on equity (ROE). Increased debt may reduce returns to shareholders. In this dataset, sales growth is not a good indicator of ROE. If a company cannot guarantee profitability and control the cost of capital, it should not count only on debt to expand. Whole, risk management and investment effectiveness are equally as important to financial health as increased revenue. Weak Positive Correlation; DE and SG => Correlation = 0.169 and The correlation between ROE and SG is 0.035 Zero Very Weak Positive Correlation. Sales Growth (SG) and Return on Equity (ROE) do not significantly correlate.-0.659 is the correlation between ROE and DE Negative Correlation

	TABLE NO 4 DESCRIPTIVE STATISTICS		
	ROE	DE	SG
Mean	14.916	113.0878	22.692
Median	14.81	70.45	21.2
Maximum	50.41	1689	168.55
Minimum	-71.39	-107.81	-88.38
Std. Dev.	18.62486	213.3246	35.13236
Skewness	-1.93031	5.608715	0.795942
Kurtosis	11.03368	38.87918	6.900478
Jarque-Bera	281.3656	5004.893	62.85687
Probability	0	0	0
Sum	1267.86	9612.46	1928.82
Sum Sq. Dev.	29138.37	3822619	103679.7
Observations	85	85	85

All variables are calculated form accounting values and are thus determined concurrently the average ROE for all enterprises and years is 14.9%, which indicates reasonable profitability under the study. Overall, the annual sales growth of 22.6% inspires stating that Chemical industry of Pakistan is spotting a extraordinary growing. Overall 113% assets are financed with the equity that shows chemical industry is abstemiously leveraged.

Conclusion

After gathering and analyzing data it can be concluded that our independent variable short term debt total asset, long term debt , total debt , sales growth and debt to equity has insignificant impact on company's performance and our all hypothesis got rejected. In case of asset utilization the company uses its assets more efficiently and effectively so the impact of debt is insignificant on company's performance because if the company takes debt but on the other hand company utilized its assets and generating more revenue so the debt has no impact on company's performance. It means that firms are efficiently using their assets to get revenue or to pay their payment. As in this condition government lower the interest rates and construction industry get more advantage from it and increases their profit by doing construction which they use to pay their debt. Modigliani and Miller (1958) suggest that debt preference has no impact on business results. The collaboration between capital structure and firm efficiency is contradictory to the debt irrelevance hypothesis. This study limited its scope to secondary data. This study was limited to chemical sector of Pakistan only as the companies were taken from PSX only. The goal of this research is to conclude the impact of firm performance and debt financing on Pakistan's chemical sector. Other industries, such as banks, textiles, oil, and gas, automobile industry and so on, could be examined in the future. Our findings are based on data from 17 companies' annual reports taking 5 years data, but the sample size can be enlarged in the future.

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