

# IMPACT OF LIQUIDITY & SOLVENCY ON PROFITABILITY CHEMICAL SECTOR OF PAKISTAN

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## **Abstract:**

*Liquidity management is very important for every organization that means to pay current obligations on business, the payment obligations include operating and financial expenses that are short term however increasing long period debt. The significance of the researcher is determined on the basis of following parameters: applied aspects and theoretical contribution of the body of knowledge. The model developed for the study may be used effectively to increase liquidity for the profitability of the company. The population has been taken from the chemical sector of Pakistan and from 36 companies we have selected Ten listed chemical companies of Pakistan and we have compiled last 9 years data of these companies from (2001-2009). Solvency ratio has negative and highly significant impact on the ROA and ROE. It means that debt to equity ratio increases then performance decreases. It is also concluded that liquidity has high positive effect over Return on Assets of sector (i.e. if liquidity Rate is increased, ROA will also be increased with greater effect and vice versa) as shown in the article Qasim, S., Ramiz, Ur.Rehman, (2011). Stakeholder also interested in solvency ratios of companies. Suppliers check the solvency position of the companies before delivering the goods. The investors are also interested in solvency position how much the company is risky. Liquidity, solvency and profitability are closely related because one increases the other decreases.*

## **Key words:**

*Liquidity, liquidity management, solvency, profitability, chemical sector*

## **1 Introduction**

Liquidity management is very important for every organization that means to pay current obligations on business, the payment obligations include operating and financial expenses that are short term however increasing long period debt. Liquidity ratios are used within the support of liquidity management inside each organization within the form of current ratio and quick ratio with the intention of extremely influence on the profitability of organization. thus business has adequate liquid assets (Cash, Bank) in the direction to meet the payment program by compare the cash and near-cash among the payment obligations. Liquidity ratios work with cash and near-cash assets (together called "current" assets) of a business on one side, and the immediate payment obligations (current liabilities) on the other side. The near-cash assets generally consist of receivables from customers and inventories of complete goods and unprocessed materials. Operating cash flows generate by assets will affect continuing firm liquidity (Soenen, 1993). The compensation obligations include dues to suppliers, operating and financial expenses that ought to be paid shortly and maturing installments under long-term debt.

The significance of the researcher is determined on the basis of following parameters: applied aspects and theoretical contribution of the body of knowledge. The model developed for the study may be used effectively to increase liquidity for the profitability of the company. The research includes the development of a model explaining the relationship between liquidity and the profitability is an original contribution to the body of knowledge. Keeping the above in view, the study appears to be highly significant.

## 2 Literature Review

Qasim Saleem & Ramiz Ur Rehman (2011) examined the relationship between the liquidity ratio and profitability. The study is conducted between the years 2004 and 2009 and later than collecting data about the financial positions as a result of annual activities and the related ratios of 26 enterprises per year which is traded on the Pakistan. Wang (2002) investigated the relationship between liquidity and operating performance and using the sample firms for the period of 17 years it was found that liquidity management would improve the firm worth and its operating performance. They examined the association between profitability and the information system taking the sample. Performance was measured by return on assets and the author found that information system did not enhance the performance of the firm. (Zhang, 2011). A study had been done to investigate impact of working capital management on profitability and market valuation of Pakistani firms. The author found that there was a positive relationship total debt to total assets and profitability but negative relation between cash conversion cycle and profitability (ROA). (Alam, Ali, Akram, Rehman, 2011). Nosa & Ose (2010) examined the relationship capital structure and performance. The sample period was 15 years. Statistical analytical tools had been applied. Author concluded that there is negative relationship between capital structure and performance.

The author examined the sample firms over the period of 10 years of sample data findings were, positive significant relationship between capital structure and firm value (Anup & Suman, 2010). Hadi (2006) investigated the review of capital market efficiency. The authors took the sample of 15 industrial firms; all the sample firms were listed in Stock Exchange. The result showed that stock return high reacted on profitability. A study had been done to examine the effect of debt policy on the performance of small and medium size enterprises. Performance was taken as dependent variables and long term and total debt as independent variables. The results of the study showed that long term and total debt ratio negatively effect on performance. (Abor, 2007). A study had been done to find out the impact of debt financing on performance of microfinance institution. Study was attempted on the sample institution.

A study had been done to find out the determinants of capital structure of listed companies. The results of the study show that no significant relationship between short-term and long-term debt. (Mouamer, 2011). The author examined the effect of risk on the financial policy of emerging market firms. The result shows that proper risk management and how that affects financial policy of emerging market firms. (Abor, Fiawoyife, Kumankoma & Osei, 2009). A study was carried out to find risk exposure and corporate financial policy on the Ghana stock exchange. The results of the study showed negative significant relationship between business risk and capital structure and significant positive relationship between bankruptcy risk and capital structure. (Aboagye, Bokpin, & Osei, 2010). Rocca, (2007) found the influence of corporate governance on the relationship between capital structure and value. The author concluded that to clarifying the relationship between capital structure, corporate governance and firm value. Taking the sample of five companies for the period of 12 years the author concluded that return on assets had negative association with debts ratio. (Balcilar, Karadeniz, Kandir & Onal, 2009). Firm some time hire the external organization to do their project or specific task on the behalf of paying firm. This some time lead to low operating cost and increase the profitability of the firm. (Frazier, Jiang & Prater, 2006). Tian & Zeitun (2007) investigated the effect of ownership on firm performance of sample companies for the period of 13 years. Author found a significant relationship with

the performance. Ebaid (2009) investigated the impact of capital structure choice on firm performance. Multiple regression analysis was used to estimate the relationship between the firm leverage level and performance. The author found that capital structure decision had a weak relationship with the firm performance. Ezeoha (2006) investigated the firm size and corporate financial-leveraged regression model was used to find out the relationship between the firm size and the financial leverage. Companies were taken as sample and the data was taken for the period of 17 years. The author found that firm size is negative and significantly high leveraged. Joshua & Nicholas (2009) examine that what the determinants of capital structure decisions are of small and medium firms in Ghana. The author used the regression to estimate the association between the firm level characteristics and capital structure measured which were by long-term debt and short-term debt ratios. The author concluded that variables like, asset structure, Profitability, and growth affect the capital structure of Ghanaian firms. He further found that Short-term debt was representing an important financing source in Ghana for the firms.

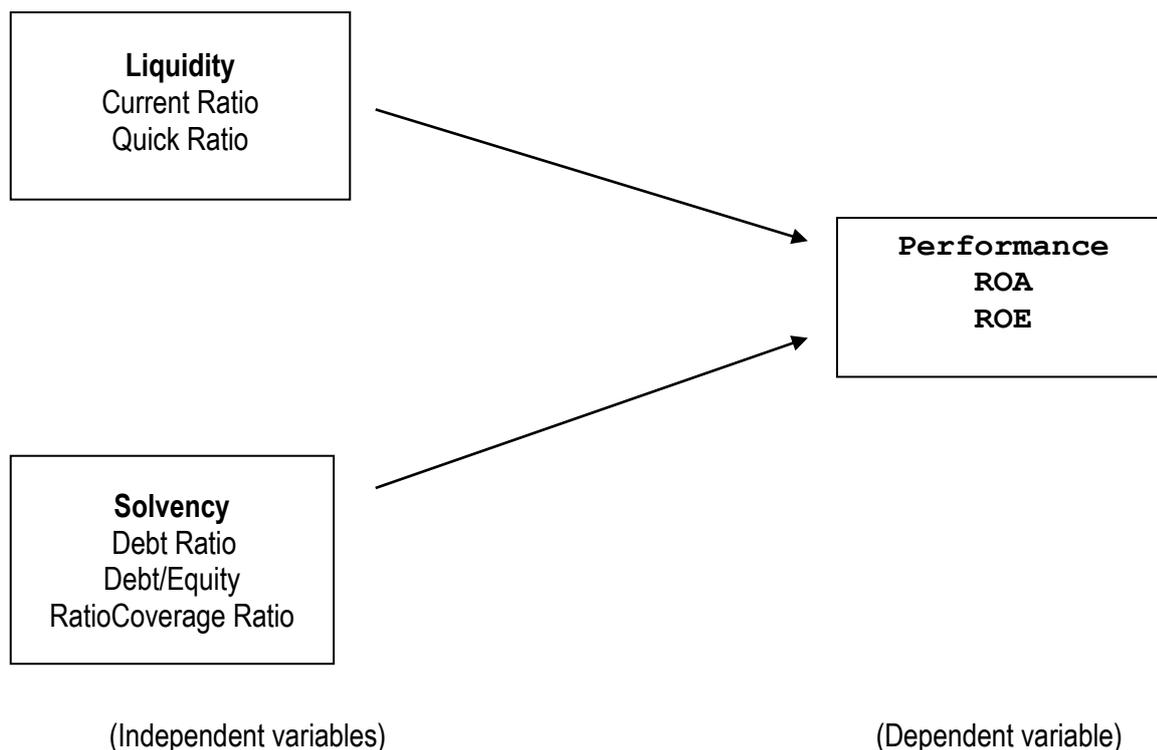
In this study the author examined the effect of working capital management on profitability. The sample period was four years. Dependent variable was taken as return on asset and independent variable was account receivable, account payable, days of inventory, debt ratio, cash conversion cycle. The author found that return on asset was increased by shorten account receivable, account payable and days of inventory. Reduced cash conversion cycle and positive return on assets. (Akbas, Caliskan, Durer & Karaduman, 2011). The study examined the sample companies over the period of 15 years stated that, negative significant relationship exists between market value, cash conversion cycle and performance in the said industry. (Idowu, Lawrencina & Ogundipe, 2012). The author analyzed the impact of working capital management on the profitability of SMEs in Pakistan. The sample size was used 40 firm. The sample period was 2003-2008. The variables were used return on assets, operating profit on sales, inventory conversion period, average collection period, current ratio, cash conversion cycle, financial leveraged. The study result show that the negative relationship between working capital management and profitability. (Afeef, 2011). Ownership of a firm plays a vital role in the operating performance of the firm. To prove this, a study had been done to conclude that firm owned by government could negatively effected their performance but on the other hand if the owner ship given to the management it would effect positively and enhanced the performance . (Ongore, 2011). To increase the motivation level of the employee companies transfer some part of ownership to the employee in the way of employee stock option programs. It would also give a less payment of tax benefit to the firm which would give ownership to the employee. Such companies needed less borrowing. To find some statistical evidence to prove this, a study had been done and, there was a negative association in said variables. (Kahle & Shastri, 2002).

### **3 Research Methodology**

Research methodology shows the parameters in which research data is collected, utilized and interpreted in the current study. It also shows the limitations for researcher's findings. For this thesis the population has been taken from the chemical sector of Pakistan and from 36 companies we have selected Ten listed chemical companies of Pakistan and we have compiled last 9 years data of these companies from (2001-2009). We have taken randomly Nine listed Chemical companies of Pakistan for our thesis which includes Sitara Chemical Industries limited, Otsuka Pakistan Ltd, ICI Pakistan Ltd, Fauji Fertilizer Company limited, Engro Corporation Limited (Engro Chemical Pakistan Ltd), Descon Chemicals Ltd, Berger Paints Pakistan Ltd, Dawood Hercules Limited Fauji Fertilizer Bin Qasim Ltd, Ittehad Chemicals Ltd. but on the other hand unlisted companies are not component of our research and the main source of gathering data as mentioned below through balance sheet analysis of joint stock companies. This study is descriptive, explanatory and analytical research. The main aim of our research is to study the liquidity and solvency in listed chemical companies of Pakistan. For this our dependent variables are Return on Equity and Return on Assets and independent variables are Credit Ratio, Quick

Ratio, Debt Ratio, Debt/Equity Ratio, Coverage Ratio has to be taken. In this research the results are too compiled and get through MS Excel and also the use of SPSS (Statistical Package for social science) software for further analysis. Data will be gathered mainly from balance sheet analysis of joint stock companies and annual reports as generated by different chemical companies. Other different sources will also be used which includes Website of State Bank of Pakistan, Business Recorder, different Journals and through Internet. The data for this research can be analyzed using the instrument stated above and then the analysis tool through which we can get the output will be by Correlation and Regression.

#### 4 Theoretical Framework



Return on Asset is measured as the ratio of profits generated to the total assets under the responsibility of management. Thus, return on asset reflects the net impacts of management decisions and actions along with the businesses environment of the company during a period of time. Since it reflects the efficiency of all the assets under the control of management, return on asset is an intuitively understanding measure of performance. Within the company, return on assets is most common expression of the ROI idea applied to performance.

$$\text{Return on Asset} = \frac{\text{Net Income}}{\text{Total Assets}}$$

**ROE:** The owners of the company supply the equity invested by the company. Return on equity is measured as the ratio of profit generated to the total investment capital provided by the owners of the company. Thus, return on equity measures the profitability with which the owner's money was managed. Since Executive Management is directly answerable to the owners, maximizing return on equity with in tolerable limits of risk is a vital and proper concern of executive management. At the top level of executive management and outside the company, return on equity is the most common expression of the ROI idea applied to company performance.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

**Current Ratio:** The current ratio is a gross measure of liquidity in that simply compares all liquid assets with all current liabilities. The current ratio is calculated by dividing current assets by current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

**Quick Ratio:** The important weakness in the current ratio is the inclusion of inventory as an asset that will be converted to cash with in the next twelve months at book value.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

**Debt Ratio:** Another way of measuring the relative use of debt by a company is to calculate the ratio of total liabilities to total assets. This is known as company's debt ratio.

$$\text{Debt Ratio} = \frac{\text{Total Assets}}{\text{Total Liabilities}}$$

**Debt/Equity Ratio:** Financial and capital structure ratios are intended to bring out the relative importance of debt financing in the firm and the risks in such financing.

$$\text{Debt/Equity Ratio} = \frac{\text{Total Assets}}{\text{Total Liabilities}}$$

**Interest Coverage Ratio:** Coverage ratios focus on the ability of the form to meet its fixed financial obligations with operating earnings. These debt obligations may be defined as all funds committed to debt interest, debt amortization, lease obligations, and dividends requirements.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

## 5 RESULTS AND DISCUSSION

The table 1 below shows the descriptive statistics results for the variables used in the study.

Table 1:

	N	Minimum	Maximum	Mean	Std. Deviation
ROE	90	-32.40	91.80	11.8744	16.69690
ROA	90	-345.00	353.80	21.2756	69.07030
C.R	90	.00	950.10	162.7122	151.92326
Q.R	90	.00	2927.00	173.2322	331.27108

D.E	90	.00	1147.30	186.9989	198.89941
DTA	90	.00	116.89	56.8539	21.17963
ICR	90	-149.40	196.30	18.7611	37.66087
Valid N (list wise)	90				

In this research we have 90 observations and this shows that the range of ROA is lies between - 32.40 to 91.80 and mean is 11.8744 and deviate is 16.69. In the case of ROE the same population range from -345.00 to 353.80 and mean & standard deviation is 21.27, 69.07 respectively. In the case of Current Ratio (CR) it lies between the values 00.00 to 950.10 with a Mean & Standard Deviation 162.71, 151.92 respectively. In the case of Quick Ratio (QR) it lies between the values 00.00 to 2927.00 with a Mean & Standard Deviation 173.23, 331.27 respectively. In debt to equity ratio it lies between the values 00.00 to 1147.30 with a mean & Standard Deviation 186.99, 198.89 respectively. In the case of debt to asset ratio it lies between the values 0.00 to 116.89 with a Mean & Standard Deviation 56.85, 21.18 respectively. The Interest coverage ratio lies between the values -149.40 to 196.30 with a Mean & Standard Deviation 18.76, 37.66 respectively.

Table 2: Correlation analysis

	ROE	ROA	C.R	Q.R	D.E	DTA	ICR
ROE	1						
ROA	.849(**)	1					
C.R	.254(*)	.099	1				
Q.R	.097	.039	.539(**)	1			
D.E	-.405(**)	-.597(**)	-.264(*)	-.189	1		
DTA	-.386(**)	-.235(*)	-.528(**)	-.345(**)	.615(**)	1	
ICR	-.047	.130	.073	.067	-.222(*)	.007	1

\*\* Correlation is significant at the 0.01 level (2-tailed).  
 \* Correlation is significant at the 0.05 level (2-tailed).

From this table it is visible that the relation of ROA (Return on Assets) and CR (Current Ratio) has positively related i.e. there is a positive relationship between these variables.

The table overview that the relationship between Liquidity Ratio and Return on Assets (ROA), Return on Equity (ROE) is positive and significant result. Overall impact of liquidity ratio on performance is positive but quick ratio shows the weak positive impact on the performance.

Solvency ratio has negative and highly significant impact on the ROA and ROE. It means that debt to equity ratio increases then performance decreases. Interest coverage ratio also has a negative impact on the performance but does not show significant impact on the performance.

Table 2: Regression analysis

ROE			
Variable	Model		
	$\beta$		t value
C.R	.152		1.189
Q.R	-.084		-.735
D.R	-.327		-2.543
D.T.R	-.133		-.930
I.C.R	-.124		-1.226
R <sup>2</sup>		.220	
Adj R <sup>2</sup>		.174	
F. Statistic		4.747	

ROA			
Variable	Model		
	$\beta$		t value
C.R	.055		.487
Q.R	-.048		-.472
D.R	-.745		-6.549
D.T.R	.236		1.861
I.C.R	-.038		-.427
R <sup>2</sup>		388	
Adj R <sup>2</sup>		352	
F. Statistic		0.668	

In the coefficient table we observed that Liquidity Ratio has a positive impact on performance in both standardized and Un-standardized and significant. In Solvency Ratio overall values shows the negative impact on performance in both standardized and Un-standardized and significant. In the coefficient table we observed that Liquidity Ratio has a positive impact on performance in both standardized and Un-standardized and significant. In Solvency Ratio overall values shows the negative impact on performance in both standardized and Un-standardized and significant.

## 6 CONCLUSION

The objective of this study was to analyze and explain the relationship between the liquidity, Solvency and Performance which plays a vital role in the Return on Assets (ROA) of the chemical sector in Pakistan.

This analysis explains the relationship between liquidity and Solvency with ROA and is conducted on the data of 10 chemical Companies for the past 9 years (2000-2009) in Chemical sector of Pakistan.

The More generally, this research paper empirically address the relationship between liquid ratios, solvency ratios and profitability. Liquidity helps us to meet their target and objectives. Liquidity ratio shows the positive result. Because we know that every investor interested in the profit and wants to get more profit. Liquidity ratio and solvency ratio is very helpful for the profitability. These ratios tell us the average of current assets and current liabilities of the company. We use a lot of cash to invest in the working capital of the business. These results recommend that managers be capable of create worth for their shareholders via reducing the digit of days accounts receivable and inventories to a rational minimum. The negative relationship between solvency and profitability inconsistent with the view that less profitable firms wait longer to pay the day to day expenses. In this paper we use the ratios like, current ratio, quick ratio, debt ratio, debt to equity ratio and interest coverage ratio. And at the end we conclude that if our current and quick ratio is high it means that company is in good position, because company is cash enrich and easily handle the cash troubles. In the case of solvency ratios tells us the ratio of equity and debts. After application of correlation and regression, it is concluded that liquidity has high positive effect over Return on Assets of sector (i.e. if liquidity Rate is increased, ROA will also be increased with greater effect and vice versa) as shown in the article Qasim, S., Ramiz, Ur.Rehman, (2011). Impacts of liquidity ratios on profitability and then the profitability affect negatively on Return on Assets of sector (which means that if the liquidity is increased, the ROA of a sector will be decrease and vice versa).

On the basis of above conclusions drawn in which liquidity ratio has affects positively and solvency has affects negatively upon ROA and ROE some recommendations are helpful. Every stakeholder has awareness in the liquidity situation of a company. Suppliers of merchandise will verify the liquidity of the company ahead of selling goods on credit. Employees must also be concerned the company's liquidity to identify whether the company be able to meet its workers obligation—salary, pension etc. Thus, a corporation needs to continue sufficient liquidity so that liquidity really affects profits of which a number of portion that will be divided to shareholders. Stakeholder also interested in solvency ratios of companies. Suppliers check the solvency position of the companies before delivering the goods. The investors are also interested in solvency position how much the company is risky. Liquidity, solvency and profitability are closely related because one increases the other decreases.

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