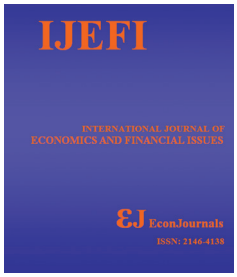


International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2016, 6(S2) 144-152.

Special Issue for "Asia International Conference (AIC 2015), 5-6 December 2015, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia"

What Does Matter? Liquidity or Profitability: A Case of Sugar Industry in Pakistan

Muhammad Zulqarnain Safdar[1]*, Muhammad Zahid Awan[2], Zeeshan Ahmed[3], Muhammad Imran Qureshi[4], Tafakhar Hasnain[5]

[1]Department of Management Sciences, Abbottabad University of Science & Technology, Abbottabad, KPK, Pakistan, [2]Department of Business Administration, Gomal University, Dera Ismail Khan, KPK, Pakistan, [3]Department of Business Administration, Gomal University, Dera Ismail Khan, KPK, Pakistan, [4]Department of Commerce, Gomal University, Dera Ismail Khan, KPK, Pakistan, [5]Department of Business Administration, Gomal University, Dera Ismail Khan, KPK, Pakistan. *Email: zulqarnain.safdar@gmail.com

ABSTRACT

Keeping in mind the Keynes of the Pakistan's Sugar Industry in its overall economic well-being, the current work objects to examine the liquidity-profitability trade off in Sugar Industry of Pakistan. Secondary data of the non-financial companies which are listed on KSE is used for sugar industry over the last 5 years. Present study used different analytical tools like reliability analysis, descriptive statistics, multiple regression analysis, correlation and tests of significance to test the causal linkage in liquidity and profitability. Results of regression analysis showed that, hypothesis one is rejected because liquidity generates positive impact on return on assets (ROA) and found significant at 1% level. Hypothesis two of the current study is rejected because liquidity causes positive impact on return on equity (ROE) and found significant at 1% level. According to regression analysis, hypothesis three is also rejected because liquidity influences return on capital employed (ROCE) positively and found significant at 1% level. Results of correlation analysis discovered that liquidity of sugar mills is positively and significantly correlated with all measures of profitability, i.e., ROA, ROE and ROCE. Findings of current research suggest managers to come out of the dilemma with respect to liquidity and profitability tradeoff. It is further concluded that managers can increase the firm's profitability and shareholder's value if they invest effectively and efficiently in liquid assets. Finally this study's results make it important for the reason that it is one of the fewer researches going in contrast to the existing knowledge base.

Keywords: Liquidity, Profitability, Trade-off, Sugar Industry of Pakistan
JEL Classification: G33

1. INTRODUCTION

One of the basic concerns of managers and different business owners around the globe is to formulate a strategy so that they can manage their company's routine operations to meet the obligations they are subject to, for enhancing shareholder's wealth and profitability (Eljelly, 2004). Liquidity tends to play an imperative role in the smooth running of any business organization (Bhunia, 2010). One of the key issues in liquidity management is the attainment of preferred liquidity-profitability trade off (Raheman et al., 2009). Nwaezeaku (2006) conceptualize liquidity as the feasibility by which assets can be converted in to cash form (when selling is made at market price) or the extent to which an asset is convertible to cash. Bodie and Merton (2000) are of the opinion that relative ease, cost and speed with which an asset can be converted into cash is called liquidity. Owolabi et al., (2011) argued that liquidity of various companies is a necessity to make sure that they are capable to meet their obligations in short-term period of time. Inadequate liquidity potentially forced the firm to liquidate their assets and result in poor credit standing (Zainudin, 2006). Liquidity-profitability trade off is an important aspect regarding working capital management. The organization's working capital is in low amount; it increases profit but reduces liquidity (Dash and Ravipati, 2009). The components of working capital are connected to a firm's liquidity feature (Enyi, 2006). When the revenues a company surpass its expenses then this

called profitability (Ajanthan, 2013). The increase in profits at the expense of liquidity is a threat for the organization that brings hurdles for company. For that reason, there should be maintained a liquidity-profitability trade off, ultimately two main aims of an organization (Raheman and Nasr, 2007). Profitability serves as a tool that measures a company's economic achievement in relation to its capital invested (Pimentel et al., 2010). A company with heavy investment in short-term assets results in reduction of this rate of return (Vishnani and Shah, 2007). Aburime (2008) has been reported to calculate profit by subtracting opportunity cost of factor of production (of the output) from revenue generated from sale (of that output). There is little risk and low level of profitability if the firms have greater amount of liquidity. This is the reason that in routine course of business firms needs to maintain balance in liquidity and profitability (Niresh, 2012). Trade off in liquidity and profitability attracts key conscience in the manufacturing industry (Aminu, 2012). Financial manager's responsibility is to retain a balance between risk and profitability (Ben-Caleb et al., 2013). For maintaining working capital of an organization at optimum level, the managers first evaluate the risk and return trade-off (Sharma, 2001).

Sugar industry, due to nature of its operations, faces many challenges. The volatility in interest rates, foreign exchange fluctuations, unstable commodity (fuel) prices have led to unpredictability of profits and cash flows in these firms. Firm with greater amount of liquidity might be having little risk and at that time low profitability. On the contrary, organizations with low liquidity level might be on the verge of higher risk levels that ultimately confirms higher returns. Liquidity and profitability grabs key attention for their connection with the company's survival, growth and sustainability. These two extremes become sources of different opinions amongst researchers, experts, financial analysts and managements of profit-oriented companies. When making a decision about liquidity or profitability, the authorities of an organization are caught into a dilemma regarding management of company's financials. The problem addressed here stipulates the identification of liquidity profitability trade off in sugar industry.

2. LITERATURE REVIEW

Gallagher and Andrew (2000) argued that to make payments of current liabilities, management of liquidity is very significant for every business organization. Firm's liquidity and profitability are considered an important concepts regarding management of the working capital (Lamberg and Valming, 2009). For any company cash and marketable securities position indicates the liquidity (Brigham and Houston, 2011). The real world is no ideal and some of these limitations incur cost that could have been avoided if the firms were to hold liquid reserves (Deloof, 2001). Effective management of liquidity enables firm to absorb high profit which in turn increase the wealth of stockholders (Ben-Caleb, 2009). It is necessary for a firm that continues to exist must remain liquid in order to stay safe (Bhavet, 2011). The theme behind the liquidity concept is not too straight; it refers to the current/short-term assets and liabilities management (Prasana, 2000). Tsomocos (2003) argued that as per survival growth perspective, organizations ought to think of their survival prior profit generation. Earlier researches spotted the inter relation in working capital management and its constituents, and organizational profitability (Awad and Jayyar, 2013). Narware (2004) stated that size of company's working capital declines with respect to its sales, if a company wishes to face the higher risk for earning maximum profits. Profitability is affected when the firm takes the decisions regarding management of working capital (Raheman and Nasr, 2007). Numerous previous studies had supported the theory regarding trade off in liquidity and profitability. Earlier researches comprised of García-Teruel and Martínez-Solano (2007), Bhunia and Brahma (2011), Falope and Ajlore (2009), Samiloglu and Demirgunes (2008), Mathuva (2009), Dash and Hanuman (2008), Uyar (2009), Raheman and Nasr (2007), Akella (2006), Nobane and AlHajar (2005), Alamer et al., (2015), Lazaridis and Tryfondis (2006), Eljelly (2004), Deloof (2003) and Shin and Soenen (1998).

In above studies, they all showed an indirect association among profitability and liquidity. Chakraborty (2008) analyzed that it is not working capital that has any effect on the improvement of the profitability, rather they are negatively associated. Nobanee and AlHajjar (2005) revealed that decrease in the period of average collection, cycle of cash conversion, period of inventory conversion and lengthening period of deferred payable cause firm's profitability to increase. Samiloglu and Demirgunes (2008) argued that liquidity and profitability are positively associated with each other for the reason that the growth in firm's sales cause liquidity to increase. Don (2009) explored that liquidity is more important because the survival of the company is directly linked with liquidity. Bardia (2004) argued that liquidity and profitability are directly associated with one another and their argument is in line with the study proposed by Narware (2004). Filbeck and Krueger (2005) found that firms must reduce their financing costs, and tie fund in current assets. Lee and Kang (2008) investigated the concept that more risk means more profit. Takon and Ogakwu (2013) examined the impact of liquidity on return on assets (ROA). They stated that liquidity and its management become concerned for company's managers. The study concluded that a firm can enhance its profitability by setting a first-class petite cycle of cash conversion, credit policy and efficiency in the cash flow management procedures. Bolek (2013) examined the liquidity-profitability relationship and risk in promising companies. The results of the study proved that each profitability ratio is influenced by different factors relating to liquidity and risk but the associations are similar and can expect the growth of profitability when free cash flow is increasing and the cycle of cash conversion is in declining pattern. Assets' structure ratio, in each model, was considerable signifying that the higher this ratio is (the current assets grow) the higher the profitability signifying the conservative approach to working capital. Uremadu et al., (2012) found that profitability measure ROA is indirectly affected by liquidity measures, i.e., creditor's payment period, cash conversion period. Bolek and Wiliński (2012) concluded that the development of financial liquidity measured in terms of quick ratio (QR) receivable conversion period/average collection period (ACP) negatively influence ROA. Ben-Caleb et al., (2013) studied that a negative association exists between period of cash conversion and firm's capital employed' return (ROCE).

Based on the above discussion, following model is proposed for the current study (Figure 1).

3. THE RESEARCH HYPOTHESES

3.1. Hypothesis 1

H_1: Liquidity negatively affects ROA.

3.2. Hypothesis 2

H_1: There exists a perception of negative relationship in liquidity and return on equity (ROE).

3.3. Hypothesis 3

H_1: A negative relationship is perceived to be existed in liquidity and return on capital employed (ROCE).

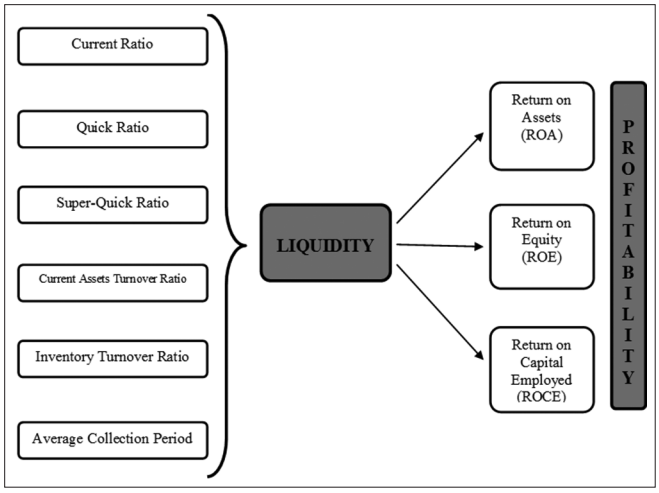
4. RESEARCH METHODOLOGY

Sugar Sector of Pakistan is selected for current research. According to Pakistan Sugar Mills Association (PSMA) there are 83 Sugar Mills in Pakistan; 45 in Punjab, 08 in Khyber Pakhtunkhwa and 30 in Sindh. In present study, a sample of 36 sugar mills was selected which is 43% of total population. The selection of sample is based on the availability of data and listed in Karachi Stock Exchange. Secondary data is used for sugar industry over the last 5 years, starting from 2007 and ending on 2011. Data for current research is extracted from the sampled sugar mill's annual reports, accessible from State Bank's Publication. Apart from these sources, relevant data relating to sugar mills is collected from annual reports of PSMA. The collected data of current work is analyzed through statistical package like SPSS, software Version 22.0. Present study used different analytical tools like reliability analysis, descriptive statistics, multiple regression analysis, correlation and tests of significance to test the causal linkage in liquidity and profitability of Pakistan's Sugar Industry.

4.1. Specification of Variables

In this study liquidity and profitability are two basic indicators used to estimate the relationship and taken as independent and dependent variable respectively. The liquidity position of selected sugar mills is measured by means of liquidity ratios; current ratio (CR), QR/acid-test, SOR/absolute liquid ratio, current assets turnover ratio (CATR), inventory turnover ratio (ITR) and ACP whereas profitability is measured by means of profitability ratios; ROA, ROE and ROCE.

Figure 1: Research framework (Researcher Constructed)



The current study is carried out to test the causal linkage in liquidity and profitability of Pakistan's Sugar Industry. For this purpose following econometric models more technically called linear regression models are specified to test the hypothesis for empirical investigation and analysis:

Model 1: $ROA_{nt}=\beta o+\beta 1CR_{nt}+\beta 2QR_{nt}+\beta 3SQR_{nt}+\beta 4CATR_{nt}+\beta 5ITR_{nt}+\beta 6ACP_{nt}+u$

Model 2: $ROE_{nt}=\beta o+\beta 1CR_{nt}+\beta 2QR_{nt}+\beta 3SQR_{nt}+\beta 4CATR_{nt}+\beta 5ITR_{nt}+\beta 6ACP_{nt}+u$

Model 3: $ROCE_{nt}=\beta o+\beta 1CR_{nt}+\beta 2QR_{nt}+\beta 3SQR_{nt}+\beta 4CATR_{nt}+\beta 5ITR_{nt}+\beta 6ACP_{nt}+u$

Where,

ROA_{nt}: Return on assets of sugar companies n (n = 1, 2, 3,…, 36 companies) at time t (t = 1, 2,…, 5 years)

ROE_{nt}: Return on equity of sugar companies n (n = 1, 2, 3,…, 36 companies) at time t (t = 1, 2,…, 5 years)

$ROCE_{nt}$: Return on capital employed of sugar companies n (n = 1, 2, 3,…, 36 companies) at time t (t = 1, 2,…, 5 years)

βo = The intercept of equation, β1, β2, β3, β4, β5, β6 = Slope coefficient or regression coefficient**,** u = Unexplained variable or error term, CR: Current ratio, QR: Quick ratio, SQR: Super quick ratio, CATR: Current assets turnover ratio, ITR: Inventory turnover ratio, ACP: Average collection period.

5. DATA ANALYSIS

5.1. Reliability Analysis

Theoretically, reliability is "the degree to which measures are free from error and therefore yield consistent results" (Peter, 1979). Cronbach's alpha is a model of internal consistency, based on the average inter-item correlation. According to Nunnally (1978) and Churchill (1979), it is compulsory for data to be reliable, to have in Cronbach's alpha $\alpha > 0.7$.

From the Table 1, it is concluded that all the variables related to liquidity and profitability used in this study are reliable because the Cronbach's alpha α for all the variables listed in the Table 1 exceed 0.7, which are according to the Nunnally's reliability recommendations.

5.2. Descriptive Statistics

In present study, the basic features of a data are portrayed through the utilization of descriptive statistics. The descriptive statistic regarding liquidity indicators showed in Table 2 indicates that the mean value of CR is 2.83 with minimum 2.10 and maximum 3.90 and standard deviation of 42.7%. In case of QR, standard deviation is 20.9% with mean value of 1.77, minimum of 1.14

and maximum of 2.10. The average or mean value of company's SQR is 1.51 with lowest of 0.96 and highest of 1.72 and standard deviation of 18%. The above mean values of Current, QR and SQR are according to the standard rules. This indicates that on average, sugar mills are quite able to meet their short-term or current liabilities as they are matured.

The mean values of CATR and ITR are 9.32, 20.47 times with standard deviations of 1.85, 3.46 respectively. The standard deviation for ACP is about 5 days with an average of 29-30 days. Minimum time to receive cash payments from customers is 22 days whereas it takes maximum 35-36 days to collect cash. The descriptive statistic regarding profitability indicators showed in Table 2 indicates that the mean or average value of ROA is 52.4% with minimum 39.0% and maximum 75.0% with 10.3% of standard deviation. It signifies that the company's profitability can deviate from mean or average to each side by 10.3%. The mean or average values of ROE and ROCE are 53.6%, 54.6% with standard deviations of 10%, 9.2% respectively.

Table 1: Reliability analysis

Serial number	Name of variables	Cronbach's Alpha
1	Current ratio	0.726
2	Quick ratio	0.874
3	Super-quick ratio	0.763
4	Current assets turnover ratio	0.806
5	Inventory turnover ratio	0.817
6	Average collection period	0.717
7	Return on assets	0.792
8	Return on equity	0.709
9	Return on capital employed	0.770

Source: Author's Computations (SPSS, 21.0 Version)

5.3. Correlation Analysis

Table 3 represents the correlation analysis of all the variables investigated in present work. A positive and significant relationship is observed in liquidity indicators; CR ($r = 0.489$, $P < 0.01$), QR ($r = 0.661$, $P < 0.01$), SQR ($r = 0.560$, $P < 0.01$), CATR ($r = 0.475$, $P < 0.01$), ITR ($r = 0.604$, $P < 0.01$), ACP ($r = 0.689$, $P < 0.01$) and profitability measure ROA. The correlation coefficient r values for all the predictor variables CR, QR, SQR, CATR, ITR, and ACP are 0.810, 0.833, 0.852, 0.817, 0.729, and 0.630 respectively. These values indicate positively correlation with profitability measure, ROE and found statistically significant at 1% level.

The relationship between QR, SQR and ROCE is positive but statistically insignificant as observed from their P values. Only the CR is positively correlated with ROCE as evidence from correlation coefficient value $r = 0.541$ and found significant at 1% level. Others variables; CATR, ITR and ACP are also positively correlated with ROCE but significant at 5% level. Overall correlation analysis illustrates that all the liquidity indicators are positively and significantly correlated with profitability. Table 3 exhibits that liquidity indicators showed positive and significant relationship with profitability.

5.4. Regression Analysis

Regression analysis is used to find out the strength of the association or relationship between several independent variables and dependent variable.

Model 1: $ROA_{nt}=\beta o+\beta 1CR_{nt}+\beta 2QR_{nt}+\beta 3SQR_{nt}+\beta 4CATR_{nt}+\beta 5ITR_{nt}+\beta 6ACP_{nt}+u$

Table 4 shows the multiple regression results for Model 1. To assess the overall significance of the model, analysis of variance

Table 2: Descriptive statistics (N=36)

Serial number	Variables	Minimum	Maximum	Mean±standard deviation
1	Current ratio	2.10	3.90	2.8375±0.42684
2	Quick ratio	1.14	2.10	1.7667±0.20905
3	Super-quick ratio	0.96	1.72	1.5089±0.17993
4	Current assets turnover ratio	5.50	11.55	9.3194±1.85908
5	Inventory turnover ratio	14.30	7.50	20.4722±3.46135
6	Average collection period	22.10	35.70	29.6556±4.93451
7	Return on assets	39.00	75.00	52.4167±10.30499
8	Return on equity	34.10	68.20	53.6472±10.02320
9	Return on capital employed	29.70	75.90	54.6333±9.16077

Source: Author's computations (SPSS, 21.0 Version)

Table 3: Correlation analysis

	CR	QR	SQR	CATR	ITR	ACP	ROA	ROE	ROCE
CR	1								
QR	0.746**	1							
SQR	0.779**	0.947**	1						
CATR	0.875**	0.913**	0.950**	1					
ITR	0.641**	0.640**	0.655**	0.592**	1				
ACP	0.600**	0.792**	0.738**	0.716**	0.620**	1			
ROA	0.489**	0.661**	0.560**	0.475**	0.604**	0.689**	1		
ROE	0.810**	0.833**	0.852**	0.817**	0.729**	0.630**	0.613**	1	
ROCE	0.541**	0.318	0.250	0.387*	0.382*	0.376*	0.193	0.388*	1

**P<0.01, *P<0.05. CR: Current ratio, QR: Quick ratio, SQR: Super quick ratio, CATR: Current assets turnover ratio, ITR: Inventory turnover ratio, ACP: Average collection period, ROA: Return on assets, ROE: Return on equity, ROCE: Return on capital employed

also called (ANOVA) test is applied. The value of F-statistic is 11.38 with $P < 0.001$ indicating that current model is statistically significant at 1%. It is observed that tolerance (TOL) values of all the predictor variables are not equivalent to zero or close to zero so these variable are not related to each other. Consequently, all the predictor variables used in present research contribute more information to regression model. Also variance inflation factor (VIF) values of all variables are <4, so there is no multicollinearity among independent variables, and these independent variables are independent. The coefficient of multiple correlations "R" among the dependent variable, ROA and the independent variables, CR, QR, SQR, CATR, ITR and ACP is 0.838, which shows that profitability is exceedingly responded by the indicators of liquidity. It is revealed that value of R^2 is 0.702, shows that 70.2% of variation in ROA was accounted by the mutual variation in CR, QR, SQR, CATR, ITR and ACP. Furthermore, the value of adjusted R^2 is 0.64; indicates that about 64.0% of the variation in ROA is elucidated by the predictor variables, CR, QR, SQR, CATR, ITR and ACP.

It is observed that, CR, QR, SQR and ITR makes the utmost contribution to the prophecy of the ROA with a beta coefficient of ($\beta = 1.681$, $P < 0.01$), ($\beta = 1.057$, $P < 0.01$) ($\beta = 0.394$, $P < 0.05$) and ($\beta = 0.649$, $P < 0.01$) respectively. This means that 1 standard deviation change in CR, QR, SQR and ITR brings about 1.681, 1.057, 0.394, and 0.649 standard deviation change in ROA respectively. As beta coefficients of these variables are positive, so the relationship of these independent variables is positive with criterion variable. Whereas beta coefficients for ACP is ($\beta = 0.330$, $P < 0.05$), showing that this variable makes the least positive contribution to the prophecy of the ROA. Similarly the variable CATR makes the least and negative contribution to the prophecy of the ROA with beta's coefficient ($\beta = -0.046$, $P < 0.05$). To check the autocorrelation between the independent variables, a famous statistical test "Durbin Watson" introduced by statisticians Durbin and Watson is applied in this analysis. The Durbin Watson statistic verify the serial correlation of residuals (i.e., error terms) in several types of regression models. From the Table 4, the value of Durbin Watson d-statistic for Model 1 is 1.929 that is near to 2.0. Thus there is no serial correlation or autocorrelation amongst variables.

Model 2: $ROE_{nt} = \beta o + \beta 1 CR_{nt} + \beta 2 QR_{nt} + \beta 3 SQR_{nt} + \beta 4 CATR_{nt} + \beta 5 ITR_{nt} + \beta 6 ACP_{nt} + u$

Table 5 shows the multiple regression results for Model 2. The value of F-statistic is 24.97 with $P < 0.001$ indicating that current model is statistically significant at 1%. It is observed that TOL values of all the predictor variables are not equivalent to zero or close to zero so these variable are not related to each other. The VIF values of all variables are <4, so there is no multicollinearity among independent variables. The coefficient of multiple correlation "R" among the dependent variable, ROE and the independent variables, CR, QR, SQR, CATR, ITR, and ACP is 0.915, that shows that profitability, is exceedingly responded by the indicators of liquidity. It is revealed that value of R^2 is 0.838, shows that 83.8 % of variation in ROE is accounted by the mutual variation in CR, QR, SQR, CATR, ITR, and ACP. Furthermore, the value of adjusted R^2 is 0.804; indicates that about 80.4 % of the variation in ROE is elucidated by the independent variables, CR, QR, SQR, CATR, ITR, and ACP.

It is observed that CR, QR, CATR and ITR make the utmost contribution to the prophecy of the ROE with a beta coefficient of

Table 4: Regression analysis

Model 1	B	SE	β	t	P<	TOL	VIF
(Constant)	6.269	8.294	2.305	0.024			
Current ratio	23.575	9.604	1.681	3.322	0.002	0.883	1.132
Quick ratio	46.223	15.404	1.057	3.001	0.005	0.741	1.350
Super-quick ratio	18.193	26.232	0.394	2.455	0.020	0.738	1.355
Current assets turnover ratio	−9.318	2.899	−0.046	−2.137	0.043	0.445	2.247
Inventory turnover ratio	0.138	0.495	0.649	2.850	0.007	0.647	1.545
Average collection period	0.823	0.363	0.330	2.269	0.031	0.472	2.119
$R=0.838$, $R^2=0.702$, Df1=6, R^2 change=0.702							
F-statistics=11.385, Durbin Watson=1.929, Df2=29, Adjusted $R^2=0.640$							
Dependent variable: Return on assets							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

Table 5: Regression analysis

Model 2	B	SE	β	t	P<	TOL	VIF
(Constant)	3.269	5.852	2.531	0.018			
Current ratio	17.762	6.298	0.550	2.820	0.009	0.834	1.199
Quick ratio	14.818	10.102	0.699	3.215	0.001	0.940	1.064
Super-quick ratio	34.307	17.202	0.155	2.103	0.040	0.625	1.600
Current assets turnover ratio	3.327	1.901	0.381	2.295	0.023	0.735	1.361
Inventory turnover ratio	0.410	0.324	0.675	3.172	0.002	0.861	1.161
Average collection period	−0.243	0.238	−0.131	−1.023	0.315	0.341	2.933
$R=0.915$, $R^2=0.838$, Df1=6, R^2 change=0.838							
F-statistics=24.969, Durbin Watson=1.901, Df2=29, Adjusted $R^2=0.804$							
Dependent variable: Return on equity							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

($\beta = 0.550$, $P < 0.01$), ($\beta = 0.699$, $P < 0.01$), ($\beta = 0.381$, $P < 0.05$) and ($\beta = 0.675$, $P < 0.01$) respectively. As beta coefficients of these variables are positive, so the relationship of these independent variables is positive with criterion variable. Whereas beta coefficients for SQR is ($\beta = 0.155$, $P < 0.05$), showing that this variable makes the least positive contribution to the prediction of the ROE. Similarly the variable ACP makes the least and negative contribution to the prophecy of the ROE with a Beta Coefficient of $\beta = -0.131$ that is not statistically significant at 1% and 5% level. T-statistic and the significant values in the Table 5 indicate that the variables, CR, QR and ITR cause significant impact on ROE at 1% levels. While the impact of SQR and CATR on ROE is significant at 5% levels. In case of ACP has insignificant impact on ROE. The value of Durbin Watson d-statistic for Model 2 is 1.901 that is near to 2.0. Thus there is no serial correlation or autocorrelation amongst variables.

Model 3: $ROCE_{nt} = \beta o + \beta 1 CR_{nt} + \beta 2 QR_{nt} + \beta 3 SQR_{nt} + \beta 4 CATR_{nt} + \beta 5 ITR_{nt} + \beta 6 ACP_{nt} + u$

Table 6 shows the multiple regression results for Model 3. The value of F-statistic is 4.635 with $P < 0.01$ indicating that current model is statistically significant at 1%. The TOL values of all the predictor variables are not equivalent to zero or close to zero so these variable are not related to each other. VIF values of all variables are <4, so there is no multicollinearity among independent variables. The coefficient of multiple correlation "R" among the dependent variable, ROCE and the independent variables, CR, QR, SQR, CATR, ITR and ACP is 0.70, that shows that profitability, is exceedingly responded by the indicators of liquidity but low as compared with Model 1 and Model 2. It is also observed that value of R^2 is 0.49, shows that 49 % of variation in ROCE is accounted by the mutual variation in independent variables, which show that variation is weak as compared with Model 1 and Model 2. Furthermore, the value of adjusted R^2 is 0.384; indicates that about 38.4% of the variation in ROCE is elucidated by the independent variables, which is low as compared with previous model.

It is observed that, CR, QR and ACP make the utmost contribution to the prediction of the ROCE with a beta coefficient of ($\beta = 0.914$, $P < 0.05$) and ($\beta = 1.690$, $P < 0.01$) and ($\beta = 0.408$, $P < 0.05$) respectively. As beta coefficients of these variables are positive, so the relationship of these independent variables is positive with criterion variable. Whereas Beta Coefficient for CATR and ITR are ($\beta = 0.265$, $P < 0.05$), ($\beta = 0.206$, $P > 0.05$) respectively, showing that this variable makes the least positive contribution to the prediction of the ROCE. Similarly the variable SQR makes the negative contribution to the prediction of the ROCE with a beta coefficient of $\beta = -0.460$ that is statistically significant at 5% level. T-statistic and the significant values in the Table 4 indicate that the variables, CR, QR and ITR cause significant impact on ROCE at 1% levels. While the impact of SQR and CATR on ROE is significant at 5% levels. In case of ACP has insignificant impact on ROCE. The value of Durbin Watson d-statistic for Model 3 is 1.890 that is near to 2.0. Thus there is no serial correlation or autocorrelation amongst variables.

5.5. Uni-dimensional Analysis

In this analysis all the predictor variables, i.e. CR, QR, SQR, CATR, ITR, and ACP are taken together as "liquidity" to measure the liquidity position of all sugar mills, while the profitability measures, i.e., ROA, return on ROE and ROCE remained the same.

5.6. Uni-dimensional Correlation Analysis

Uni-dimensional correlation analysis is used to measure the strength or degree of linear association between independent variable, liquidity and dependent variables, ROA, ROE and ROCE.

In Table 7, the correlation coefficient r values indicate the positive and significant relationship between liquidity and profitability measures, ROA, ROE, ROCE and fount statistically significant at 1% level of significance. Overall correlation analysis shows that liquidity is positively and significantly correlated with profitability.

5.7. Uni-dimensional Regression Analysis

The uni-dimensional regression analysis is used to determine the strength of the relationship between independent or predictor variables, liquidity and a dependent or criterion variables, ROA, ROE and ROCE.

Model 1: $ROA_{nt} = \beta o + \beta Liquidity_{nt} + u$

From the Table 8 the value of F-statistic is 33.41 with $P < 0.01$ indicating that current model is statistically significant at 1%. The multiple correlation coefficients "R" between the dependent variable, ROA and the independent variable, liquidity is 0.754 that shows that profitability is highly responded by the liquidity. The value of R^2 0.569 shows that 56.9% of variation in ROA was accounted by liquidity. The value of adjusted R^2 is 0.554;

Table 6: Regression analysis

Model 3	B	SE	β	t	P<	TOL	VIF
(Constant)	27.661	11.360	2.199	0.032			
Current ratio	16.243	12.225	0.914	2.514	0.015	0.829	1.206
Quick ratio	17.345	19.609	1.690	2.732	0.007	0.917	1.091
Super-quick ratio	−90.723	33.392	−0.460	−2.471	0.019	0.798	1.253
Current assets turnover ratio	4.928	3.690	0.265	2.293	0.030	0.395	2.532
Inventory turnover ratio	0.768	0.630	0.206	1.220	0.232	0.372	2.687
Average collection period	0.419	0.462	0.408	2.435	0.021	0.677	1.477
$R=0.700$, $R^2=0.490$, Df1=6, R^2 change=0.490							
F-statistics=4.635, Durbin Watson=1.890, Df2=29, Adjusted $R^2=0.384$							
Dependent variable: Return on capital employed							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

indicates that about 55.4% of the variation in ROA is explained by the independent variable, liquidity. It is observed that, liquidity makes the high contribution to the prediction of the ROA, with a beta coefficient of 0.754. T-statistic and the significant values indicate that the variables, Liquidity generate significant impact on ROA at 1% level as obvious from P value. As observed the value of Durbin Watson d-statistic for Model 1 is 1.951 that is near to 2.0. Thus there is no serial or correlation autocorrelation amongst variables.

Model 2: $ROE_{nt}=\beta o+\beta Liquidity_{nt}+u$

Table 9 shows uni-dimensional regression results for Model 2. The value of F-statistic is 62.17 indicating that current model is statistically significant at 1%. The coefficient of multiple correlations "R" among the dependent variable, ROE and the independent variable, liquidity is 0.804, which shows that profitability, is highly responded by the liquidity. The value of R^2 0.646 shows that 64.6% of variation in ROE is accounted by liquidity.

The value of adjusted R^2 is 0.636; indicates that about 63.6% of the variation in ROE is explained by the independent variable, liquidity. It is observed that, liquidity makes the high contribution to the prediction of the ROE, with a beta coefficient of 0.804. T-statistic and the significant values in the Table 9 indicate that the variables, liquidity generate significant impact ROE at 1% level as obvious from P value. The value of Durbin Watson d-statistic for Model 2 is 1.890 that is near to 2.0. Therefore, there is no serial correlation or autocorrelation amongst variables.

Model 3: $ROCE_{nt}=\beta o+\beta Liquidity_{nt}+u$

Table 10 depicts uni-dimensional regression results for Model 3. The value of F-statistic is 7.88 indicating that current model is statistically significant at 1%. The coefficient of multiple correlations "R" among the dependent variable, ROCE and the independent variable, liquidity is 0.704 that shows that profitability is highly responded by the liquidity. The value of R^2 0.496 shows that 49.6 % of the variation in ROCE is accounted by liquidity. The value of adjusted R^2 is 0.481; indicates that about 48.1% of the variation in ROCE is explained by the independent variable, liquidity. This model overall shows moderate or low variation in dependent variable as compared with Model 1 and Model 2. It is observed that, liquidity makes the high contribution to the prediction of the ROCE, with a beta coefficient of 0.704. T-statistic and the significant values in the Table 10 indicate that the variables, Liquidity generate significant impact on ROCE at 1% level as obvious from P-value. As seen from the Table 10, the value of Durbin Watson d-statistic for Model 3 is 1.873 that is near to 2.0. Thus there is no serial correlation or autocorrelation amongst variables.

Key findings of the current study are found by testing the different hypothesis of the study. Findings of the study negated the proposition as liquidity positively affects the ROA, ROE and ROCE. T-statistic and the significant values in the multiple and uni-dimensional regression analysis indicate that Liquidity has direct influence on profitability, i.e. ROA, ROE and ROCE which is significant at 1% level.

Table 7: Correlations analysis

	Return on assets	Return on equity	Return on capital employed	Liquidity
Return on assets	1			
Return on equity	0.613**	1		
Return on capital employed	0.193	0.388*	1	
Liquidity	0.704**	0.804**	0.434**	1

**P<0.01, *P<0.05

Table 8: Uni-dimensional regression anaysis

Model 1	B	SE	β	t	p<	TOL	VIF
(Constant)	4.775	8.335	0.573	0.570			
Liquidity	0.712	0.130	0.754	5.780	0.000	1.000	1.000
R=0.754, R^2=0.569, Df1=1, R^2 change=0.569							
F-statistics=33.408, Durbin Watson=1.951, Df2=34, Adjusted R^2=0.554							
Dependent variable: Return on assets							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

Table 9: Uni-dimensional regression anaysis

Model 2	B	SE	β	t	p<	TOL	VIF
(Constant)	5.278	6.208	0.851	0.401			
Liquidity	0.766	0.097	0.804	7.885	0.000	1.000	1.000
R=0.804, R^2=0.646, Df1=1, R^2 change=0.646							
F-statistics=62.170, Durbin Watson=1.890, Df2=34, Adjusted R^2=0.636							
Dependent variable: Return on equity							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

Table 10: Uni-dimensional regression anaysis

Model 3	B	SE	β	t	p<	TOL	VIF
(Constant)	26.080	10.285	2.536	0.016			
Liquidity	0.452	0.161	0.704	2.807	0.000	1.000	1.000
R=0.704, R^2=0.496, Df1=1, R^2 change=0.496							
F-statistics=7.881, Durbin Watson=1.873, Df2=34, Adjusted R^2=0.481							
Dependent variable: Return on capital employed							

TOL: Tolerance, VIF: Variance inflation factor, SE: Standard error

First hypothesis of the study was liquidity negatively affects ROA. The hypothesis is rejected as liquidity positively affects the ROA. The value of F-statistic is 33.41 with $P < 0.01$ indicating that Model 1 is statistically significant at 1%. T-statistic and the significant values in the Table 8 indicate that liquidity has direct influence on ROA and significant at 1% level. Second hypothesis of the study was that there exists a perception of negative relationship in liquidity and ROE. The hypothesis is rejected as liquidity positively affects the ROE. The value of F-statistic is 62.17 with $p<0.01$ indicating that Model 2 is statistically significant at 1%. T-statistic and the significant values in the Table 9 indicate that Liquidity generate positive impact on ROE and significant at 1% level. Third hypothesis of the study was that a negative relationship is perceived to be existed in liquidity and ROCE. The hypothesis is rejected as liquidity positively affects the ROCE. The value of F-statistic is 7.88 with $P < 0.01$ indicating that Model 3 is statistically significant at 1%. T-statistic and the significant values in the Table 10 indicate that Liquidity has positive influence on ROCE and significant at 1% level.

6. POLICY IMPLICATIONS

Current research plays an aide in the existing knowledge base of liquidity profitability trade off particularly in sugar industries. It provides an evidence of the fact that negates negative relationship between the two variables. Findings of the present research make it important for the reason that it is one of the fewer researches going in contrast to the existing knowledge base. Findings of current research will help managers to come out of the dilemma with respect to liquidity and profitability tradeoff. The research suggests that managers need not worry about distinguishing investments into liquid or non-liquid assets, as it suggests investments in more liquid assets do not reduce the profitability of the firm.

7. CONCLUSION

Current study was aimed at investigating the liquidity-profitability trade off in Sugar Industry of Pakistan. On this rationale, a sample of 36 sugar mills was selected which is 43% of total population. Secondary data of the non-financial companies which are listed on KSE is used for sugar industry over the last 5 years, starting from 2007 and ending on 2011. Results of this study articulated that liquidity of sampled sugar mills is positively linked to their profitability.

Results of regression and correlation of current study discovered that liquidity is positively and significantly related with the profitability of sampled sugar mills. Findings of current research suggest managers to come out of the dilemma with respect to liquidity and profitability tradeoff. It is further concluded that managers can increase the firm's profitability and shareholder's value if they invest effectively and efficiently in liquid assets. Finally this study's results make it important for the reason that it is one of the fewer researches going in contrast to the existing knowledge base.

REFERENCES

Alamer, A.R.A., Salamon, H.B., Qureshi, M.I., Rasli, A.M. (2015), CSR's measuring corporate social responsibility practice in Islamic banking: A review. International Journal of Economics and Financial Issues, 5(1S), 198-206.

Aburime, T. (2008), Determinants of bank profitability: Macroeconomic evidence from Nigeria. Available from: http://www.ssrn=1231064.

Ajanthan, A. (2013), A nexus between liquidity and profitability: A study of trading companies in Sri Lanka. European Journal of Business and Management, 5(7), 221-237.

Akella, S. (2006), Working Capital Management in India. In: Gopala K.M.G, editor. Toward Better Working Capital Management. Punjagutta: The ICFAI University Press.

Aminu, Y. (2012), A nexus between liquidity/profitability trade-offs for working capital management in Nigeria's manufacturing sector. International Journal of Arts and Commerce, 1(6), 55-58.

Awad, I., Jayyar, F. (2013), Working capital management, liquidity and profitability of the manufacturing sector in Palestine: Panel co-integration and causality. Modern Economy, 4(10), 662-671.

Bardia, S.C. (2004), Liquidity management: A case study of steel authority of India Ltd. Management Accountant Calcutta, 39, 463-495.

Ben-Caleb, E. (2009), Working capital management and profitability of listed companies in Nigeria. Nigeria Research Journal of Accountancy, 1(1), 44-57.

Ben-Caleb, E., Olubukunola, U., Uwuigbe, U. (2013), Liquidity management and profitability of manufacturing companies in Nigeria. IOSR Journal of Business and Management (IOSR-JBM), 9(1), 13-21.

Bhavet. (2011), Management of liquidity - A case study of Tisco Ltd. International Journal of Research in IT and Management, 1(2), 1-14.

Bhunia, A. (2010), A trend analysis of liquidity management efficiency in selected private sector Indian steel industry. International Journal of Research in Commerce and Management, 1(5), 618-628.

Bhunia, A., Brahma, S.B. (2011), Importance of liquidity management on profitability. Asian Journal of Business Management, 3(2), 108-117.

Bodie, Z., Merton, R.C. (2000), Finance. Upper Saddle River, NJ: Prentice-Hall, Inc.

Bolek, M. (2013), Profitability as a liquidity and risk function basing on the new connect market in Poland. European Scientific Journal, 9(28), 1-15.

Bolek, M., Wiliński, W. (2012), The influence of liquidity on profitability of polish construction sector companies. Financial Internet Quarterly e-Finance, 8(1), 38-52.

Brigham, E., Houston, J. (2011), Fundamentals of Financial Management. Dubai: Cengage Learning.

Chakraborty, K. (2008), Working capital and profitability: An empirical analysis of their relationship with reference to selected companies in the Indian pharmaceutical industry. The ICFAI Journal of Management Research, 34, 112-126.

Churchill, G.A, Jr. (1979), A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16(1), 64-73.

Dash, M., Hanuman R. (2008), A liquidity-profitability trade-off model for working capital management. Available from: http://www.ssrn.com/abstract=1408722.

Dash, M., Ravipati, R. (2009), A liquidity-profitability trade-off model for working capital management. Available from: http://www.ssrn=1408722.

Deloof, M. (2001), Belgian intragroup relations and the determinants of corporate liquid reserves. European Financial Management, 7(3), 375-392.

Deloof, M. (2003), Does working capital management affect profitability of Belgian firms?. Journal of Business Finance and Accounting, 30(3-4), 573-588.

Don, M. (2009), Liquidity v/s. profitability - Striking the Right Balance. In Resolved Question. Available from: http://www.answers.yahoo.com/question. [Last assessed on 2010 Jul 15].

Eljelly, A.M. (2004), Liquidity-profitability tradeoff: An empirical investigation in an emerging market. International Journal of Commerce and Management, 14(2), 48-61.

Enyi, P.E. (2006), Applying relative solvency to working capital management: The break even approach. In: Gopala, K.M.G, editor. Toward Better Working Capital Management. Punjagutta: The ICFAI University Press.

Falope, O.I., Ajilore, O.T. (2009), Working capital management and corporate profitability: Evidence from panel data analysis of selected quoted companies in Nigeria. Research Journal of Business Management, 3(3), 73-84.

Filbeck, G., Krueger, T. (2005), Industry related differences in working capital management. Mid-American Journal of Business, 20(2), 11-18.

Gallagher, T.J., Andrew, J.D. (2000), Financial Management: Principles and Practice. Upper Saddle River, NJ: Prentice Hall.

García-Teruel, P.J., Martínez-Solano, P. (2007), Effects of working capital management on SME profitability. International Journal of Managerial Finance, 3(2), 164-177.

Lamberg, S., Valming, S. (2009), Impact of Liquidity Management of Profitability: A Study of the Adaptation of Liquidity Strategies in a Financial Crisis. Umea: Umea School of Business.

Lazaridis, I., Tryfonidis, D. (2006), Relationship between working capital management and profitability of listed companies in the Athens stock exchange. Journal of Financial Management and Analysis, 19(1), 1-12.

Lee, A.H.I., Kang, H.Y. (2008), A mixed 0-1 integer programming for inventory model: A case study of TFT-LCD manufacturing company in Taiwan. Kybernetes, 37(1), 58-76.

Mathuva, D. (2009), The influence of working capital management components on corporate profitability: A survey on Kenyan listed firms. Research Journal of Business Management, 3(1), 1-11.

Narware, P.C. (2004), Working capital and profitability-an empirical analysis. Management Accountant Calcutta, 39, 491-493.

Niresh, J.A. (2012), Trade-off between liquidity and profitability: A study of selected manufacturing firms in Sri Lanka. Researchers World: Journal of Arts, Science and Commerce, 3(4), 34-40.

Nobanee, H., Al Hajjar, M. (2005), A Note on Working Capital Management and Corporate Profitability of Japanese Firms. Available from: http://www.ssrn.com/abstract=1433243.

Nunnally, J.C. (1967), Psychometric Theory. 1st ed. New York: McGraw-Hill.

Nunnally, J.C. (1978), Psychometric Theory. 2nd ed. New York: McGraw-Hill.

Nwaezeaku, N.C. (2006), Theories and Practice of Financial Management. Owerri: Ever Standard Publishing.

Owolabi, S.A., Obiakor, R.T., Okwu, A.T. (2011), Investigating liquidity-profitability relationship in business organizations: A study of selected quoted companies in Nigeria. British Journal of Economics, Finance and Management Sciences, 1(2), 11-29.

Peter, J.P. (1979), Reliability: A review of psychometric basics and recent marketing practices. Journal of Marketing Research, 16(1), 6-17.

Pimentel, R.C., Braga, R., Casa Nova, S.P.D. (2010), Interação entre rentabilidade e liquidez: Um estudo exploratório. Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ (Online), 10(2), 83-98.

Prasana, C. (2000), Financial Management. New Delhi: McGraw Hill Publishing Company.

Raheman, A., Nasr, M. (2007), Working capital management and profitability - Case of Pakistani firms. International Review of Business Research Papers, 3(1), 279-300.

Raheman, A., Qayyum, A., Afza, T., Iqbal, M.M. (2009), Efficiency dynamics of sugar industry of Pakistan [with comments]. The Pakistan Development Review, 48(4), 921-938.

Samiloglu, F., Demirgunes, K. (2008), The effect of working capital management on firm profitability: Evidence from Turkey. The International Journal of Applied Economics and Finance, 2, 44-50.

Sharma, V. (2001), Liquidity, risk and profitability analysis: A case study of Maruti India Ltd. Search and Research, II(2), 191-193.

Shin, H.H., Soenen, L. (1998), Efficiency of working capital management and corporate profitability. Financial Practice and Education, 8, 37-45.

Takon, S.M., Ogakwu, V.N. (2013), Impact of liquidity on return on assets of firms: Evidence from Nigeria. International Journal of Management and Information Technology, 6(3), 885-894.

Tsomocos, D. (2003), Equilibrium Analysis, Banking, Contagion and Financial Fragility Working Paper 175. Bank of England, London, UK.

Uremadu, S.O., Egbide, B.C., Enyi, P.E. (2012), Working capital management, liquidity and corporate profitability among quoted firms in Nigeria evidence from the productive sector. International Journal of Academic Research in Accounting, Finance and Management Sciences, 2(1), 80-97.

Uyar, A. (2009), The relationship of cash conversion cycle with firm size and profitability: An empirical investigation in Turkey. International Research Journal of Finance and Economics, 24, 186-193.

Vishnani, S., Shah, B.K. (2007), Impact of working capital management policies on corporate performance: An empirical study. Global Business Review, 8(2), 267-281.

Zainudin, N. (2006), Liquidity-profitability trade-off: Is it evident among Malaysian SMEs?. International Journal of Management Studies, 13(2), 107-118.