Impact of Liquidity on Profitability in Nepalese Commercial Banks

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Abstract

The aim of this paper is to examine the impact of liquidity on profitability in Nepalese commercial banks. Market price, earning per share, net profit margin and return on assets are taken as the indicators of profitability. Deposit-credit ratio, cash reserve ratio and capital adequacy ratio are taken as the indicators of liquidity. This study has tried to determine the association between liquidity and profitability indicators of 27 commercial banks out of 28 commercial banks in Nepal. The cross-sectional secondary data of these banks were used. Descriptive and causal comparative research strategies were applied to analyse the data. Correlation analysis and multiple general linear regression analysis were applied to establish the association. This study has found that there is no statistically significant association between liquidity and profitability indicators in Nepalese commercial banking industry. The data were analysed using statistical software mini tab.

Keywords: commercial bank, liquidity, profitability, association.

Introduction

1.1 Background

Commercial bank occupies larger space in banking and financial institutions industry in any economy. In Nepal, commercial banks play dominant roles in the financial system. They perform various banking and other financial service activities in the economy. Liquidity and profitability are important aspects of bank management. Banks rely on borrowed funds. The capital or equity ratio of banks is too low compared to other nonbanking institutions. According to GUP and Kolari (2005) "…non-financial firms with capital/ assets ratios commonly in the 30 percent to 60 percent range, banks generally have less than 10 percent of assets funded by capital" (p-345). The debt ratio of banks is high so they have to maintain enough liquidity to meet debt repayment, at the same time they should have strong profitability for their long-term perspective. Banks' debt mainly comes from deposits and it should be refunded on demand. Profitability is another important component of bank management. It insures long term prospects of the bank. There are not any unconditional theories explaining the exact association

between liquidity and profitability of the banks. The general understanding about the association between them is negative i.e. liquidity negatively impacts on profitability of the banks. Various studies have been conducted till now to explain the empirical association between liquidity and profitability of the banks, but the findings are not symmetrical. This study has attempted to estimate the association between liquidity and profitability of the Nepalese commercial banking industry.

1.2 Research Problems

Profitability and liquidity are important aspects of financial performance of any business organization. Banks mainly deal with the money of people, so they need liquidity to win trust of depositors at the time they need profitability to continue the business. The main problem is that what kind of empirical relationship exists between liquidity and profitability in case of Nepalese commercial banks. This study aims to analyze the empirical relationship between some profitability indicators and liquidity indicators. The specific problems are:

- What is the existing liquidity and profitability position of the sample banks?
- What does the correlation coefficient of the stated variable explain?
- To what extent the profitability depends upon the liquidity?

1.3 Research Objectives

The main objective of this study is to measure the relationship between liquidity and profitability of Nepalese commercial banking industry. The specific objectives of this study are:

- To measure aggregate mean and standard deviation of different indicators of liquidity and profitability of sampled banks.
- To measure partial correlation coefficient among different variables of the study.
- To measure the dependability of profitability on liquidity.

1.4 Limitations of the Study

This study involves some limitations. Most of the data were collected from online. The result parts focussed only statistical calculations. There are several indicators of liquidity and profitability, but limited indicators are analysed in this study.

1.5 Significance of the Study

This study is related with the analysis of liquidity and profitability of Nepalese commercial banks. Major proportion of Nepal Stock Exchange is occupied by the commercial banks. The depositors and public shareholders of commercial banks are Nepali people. Liquidity and profitability are major concerns for investors. This study tries to reveal reliable conclusion regarding these concerns that will be beneficial to investors.

1.6 Literature Review

Both liquidity and profitability are important components of bank management. Due to high short term borrowed funds, banks are forced to maintain high liquidity from transaction and regulation point of views. But the attitude of banks towards liquidity maintenance depends on the impact of liquidity on profitability of them. Assuming other things constant, liquidity impact negatively on the profitability of the banks so they try to maintain necessary level of liquidity in order to avoid being less profitable.

> Rose (2002) states liquid securities are, by definition, those investment that have a Market, relatively stable price over time, and high profitability of recovering thebank's original invested capital (I.e. the risk to principal is low.). US governmentsecurities are generally the most liquid and have the most active resale markets,followed by federal agency securities, municipal bonds, and montage securities.
>
> Unfortunately, the purchase of large volume of liquid, readily marketable securitiestend to lower a bank's average yield from its earnings assets and other factors held constant, tends to reduce its profitability (p. 328).

The association between liquidity and profitability is invert but it is not unconditional. Banks need appropriate trade-off between liquidity and profitability for their smooth operations in the long term. According to GUP and Kolari (2005) "excessive asset liquidity offers safety but can decrease bank profit. Each bank must determine appropriate level of assets versus liability management in view of liquidity risk and associated trade-offs in terms of bank profitability (p-313)." Neither high level nor low level of liquidity is preferable from safety and profitability sides of the banks. But it is the problem that there are not any formula or theory in the literature of finance to suggest the appropriate level of bank liquidity.

Mac Donald & Koch (2006) say that "there is a short-run trade-off between liquidity and profitability. The more liquid a bank is, the lower are its return on equity and return on assets, all other things being equal." Rose and Hudgins (2010) sate "the more resources are tied up in readiness to meet demand for liquidity, the lower is that financial firms expected profitability (other factors held constant)." Too much high liquidity erodes the profitability of the banks. So, we can guess the negative impact of liquidity on the profitability.

Aqeel (2017) conducted research on commercial banks of Pakistan and found positive association between investment ratios and profitability ratios, and between liquidity ratios and profitability ratios. Lartey, Antwi and Boadi (2013) conducted a research on seven listed commercial banks of Ghana during the period of 2005 – 2010. During this period both liquidity and profitability of the banks were found to be decreasing. They also found a poor positive association between liquidity and profitability of the listed commercial banks in Ghana. Charmler, Musha, Akomeah & Gakpetor (2018) conducted a research on commercial banks of Ghana and they concluded that bank liquidity is very important as it affects bank's profitability.

They revealed a positive association between bank liquidity and profitability. The banks' liquidity improves profitability, at a same time increases in liquidity could be counterproductive. Sthapit and Maharjan (2012) conducted a research on liquidity and profitability of Nabil Bank Limited and Standard Chartered Bank Nepal Limited. They found positive association between liquidity and profitability in case of Standard Chartered Bank but no association between liquidity and profitability in case of Nabil Bank. Abdullah and Jahan (2014) conducted a research on liquidity and profitability of five private commercial banks of Bangladesh and they found no significant association between liquidity and profitability in their study. Bharti and Singh (2014) conducted a research on Indian commercial banks dividing them into three group's i.e. public sector banks, private sector banks and foreign banks. They found declined liquidity and profitability in public sector banks whereas increased position of other banks. Khan and Ali (2016) state that it has been empirically proved through analysis that liquidity has positive relationship with profitability and has considerable impact on the profitability of commercial banks in Pakistan."

All the above empirical studies indicate positive or no association between liquidity and profitability of the banks. But the association is not unconditional and limitless. To some level, liquidity promotes the profitability of banks but too much excessive liquidity eventually erodes the profitability of the banks. Olagunju, Olanrewaju, Olabode and Samuel (2011) conducted a research on the commercial banks of Nigeria and concluded that there is inverse/negative relationship between bank's liquidity and profitability.

Methods and Materials

Descriptive, correlational and causal comparative research designs are used to analyze cross-sectional secondary data obtained from websites of respective banks. Selected liquidity and profitability indicators are used as the variables of this study.

2.1 Population and Sample

The twenty-eight commercial banks of Nepal constitute the population and 27 of them constitute the sample of the study.

2.2 Sources and Types of Data

Secondary data are collected form the websites of respective banks. The cross-sectional form of data is used. The data of fiscal years 2015/16 and 2016/17 have been used. The data measurement scale is ratio scale.

2.3 Research Model

Multiple general linear regression model is used to estimate the association and to measurement the impact of liquidity on the profitability.

2.4 Independent and Dependent Variables

Various liquidity ratios are independent variables and various profitability ratios are dependent variables of the study.

Results and Discussion

3.1 Descriptive Analysis

Descriptive analysis has produced industry average value of key variables of Nepalese Commercial Banking sector. It has produced average values of net profit margin(NPM), Market price of share(Price),earning per share(EPS), return on asset(ROA), credit-deposit(CD) Ratio, cash reserve ratio(CRR) and adequacy ratio capital(CAR).

Table 1

Descriptive statistics: NPM, Price, EPS, ROA, CD Ratio, CRR, CAR

Variable	N	Mean	St Dev	Variance	Coef. Var	Minimum	Maximum	Range
NPM	27	28.5	10.74	115.34	37.68	7.30	47.29	39.99
Price	27	600.6	457.2	209033.5	46.12	255.0	2295	2040
EPS	27	26.21	11.02	121.34	42.03	6.03	58.41	52.38
ROA	27	1.7659	0.4473	0.2000	25.33	0.55	2.78	2.23
CD Ratio	27	83.43	8.01	0.6412	9.60	62.20	93.99	31.79
CRR	27	15.82	8.65	74.90	54.71	5.49	33.54	28.05
CAR	27	14.458	2.53	6.400	17.50	11.18	21.08	9.90

Source. Websites of respective commercial banks & author's calculations using Mini Tab.

The above table shows the industry average values on various liquidity and profitability of Nepalese commercial banks. The average NPM of Nepalese commercial banks for FY 2016/17 and 2015/16 is 28.5%. Eleven banks' NPM is above industry average and sixteen banks' NPM is below industry average. The NPM of Kumari Bank Limited is the highest and the NPM of Civil Bank Limited is the lowest. The average share price of Nepalese commercial banks is Rs 600.6. Only six commercial banks have experienced above average share price and twenty-one banks' share price is below industry average. There is the greatest variance among the share price of commercial banks. The industry average EPS is Rs 26.21 and majority of banks have EPS greater than industry average. The EPS of 14 banks is above industry average and 13 banks have below industry average EPS. The EPS of Nabil bank is the highest and the EPS of Civil Bank is the lowest. The industry average ROA is 1.7659%. The ROA of 12 banks is above industry average and 15 banks ROA is below industry average. Nepal bank has the

highest ROA and Civil bank has the lowest ROA. The industry average CD ratio is 83.43%, eighteen banks have maintained above industry average CD ratio and nine banks have below industry average CD ratio. The highest CD ratio is 93.995 (JBNL) and the lowest CD ratio is 62.2% (SCBNL). The industry average CRR is 15.82%, eleven banks have above industry average CRR and sixteen banks have below industry average CCR. Global IME bank has the highest CRR and Mega bank has the lowest CRR. All CRRs are above the requirements of Nepal Rastra Bank. The industry average CAR is 14.458%, thirteen banks have maintained above industry average above CAR and fourteen banks have below industry average CAR. Standard chartered bank Nepal has the highest CAR and Prabhu bank has the lowest CAR. All CARs are above the requirements of Nepal Rastra Bank.

3.2 Correlation Analysis

Correlation coefficient measures the degree of relationship between variables. Here, the correlation coefficient with p-value between key liquidity and profitability variable is computed.

Table 2

Correlation matrix

	NPM	Price	EPS	ROA	CD Ratio	CAR
Price	0.168(0.403)					
EPS	0.363(0.063)	0.0624(0.000)				
ROA	0.345(0.078)	0.286(0.149)	0.787*(0.000)			
CD Ratio	-0.372(0.056)*	-0.684(0.149)	-0.626(0.000)	- 0.404(0.037)		
CRR	0.014(0.943)	0.004(0.986)	0.116(0.563)	0.253(0.204)	- 0.040(0.841)	
CAR	-0.380(0.051)*	0.292(6.140)	-0.002(0.943)	0.063(0.576)	0.075(0.709)	0.0224(0.261)

Source. Author' calculations (figures in parentheses indicate p-values).

Net profit margin (NPM), stock price, earning per share (EPS) and Return on Assets (ROA) are measures of profitability credit-deposit (CD) ratio, capital adequacy ratio (CAR) and Cash Reserve Ratio (CRR) are measures of liquidity. Negative association of CD ratio with NPM, stock price, EPS and ROA is found but it is significant in case with EPS and ROA at 5% or less. Positive association of CRR with all profitability measures is found but they are not significant. CAR is positively associated with stock price and ROA but negatively associated with NPM and EPS, but all these associations are statically insignificant.

3.3 Regression of NPM on CAR, CRR and CD Ratio

This regression model measures impact of CAR, CRR and CD Ratio on NPM of Nepalese commercial banking.

NPM= 87.831-0.45653CD Ratio+0.104421CRR-1.5833CAR

Table 3
T-statistics

Term	Coef.	SE Coef.	T	P	VIF
Constant	87.8310	22.2662	3.94459	0.001	
CD Ratio	-0.4565	0.2401	-1.90108	0.070	1.009
CRR	0.1044	0.2273	0.45932	0.650	1.057
CAR	-1.5833	0.7793	-2.03171	0.054	1.061

R-Sq.=26.94%   R-Sq. (adj)=17.41%

Source. Author's calculations.

Table 4
Analysis of variance

Source	DF	SS	MS	F	P
Regression	3	807.82	269.27	2.83	0.061
Residual error	23	2190.44	95.26		
Total	26	2998.76			

Source. Author's calculations.

      CD Ratio and CAR negatively impact NPM and CRR positively impacts the NPM of the banks, but they are not statically significant. The analysis of variance evaluates the significance of the model, but the model is not significant at 5% or less level of significance since all p-values of t are greater than 0.05. There is not strong collinearity among the independent variables since the variance inflating factor (VIF) of each independent variable is less than 10(Gujarati, 2007 p-370). Therefore, it is concluded that the relationship of profit margin with CD Ratio, CRR and CAR is not linear.

3.4 Regression of stock price on CRR, CAR and CD Ratio

The regression model measures impact of CRR, CAR and CD Ratio on stock price.

      Price=3177-40.9CD Ratio-5.72CRR+66.9CAR

Table 5
T-statistics

Predictor	Coef.	SE Coef.	T	P	VIF
Constant	3137.2	703.3	4.46	0.000	
CD Ratio	-40.907	7.585	-5.39	0.000	1.009
CRR	-5.719	7.180	-0.80	0.434	1.057
CAR	66.88	24.61	2.72	0.012	1.061

R-sq.=59.8%   R-sq. (adj)=54.5%
Source. Author's calculations.

Table 6
Analysis of variance

Source	DF	SS	MS	F	P
Regression	3	3249195	1083065	11.40	0.000
Residual	23	2185675	95029		
Total	26	5434870			

Source. Author's calculations.

CD Ratio and CRR negatively impact the stock price. The impact of CD Ratio is statically significant but CRR impact is insignificant. CAR positively impacts stock price and it is statically significant at 5% and above level of significant. The overall significance of the model is tested by R-square and analysis of variance. The R-square and analysis of variance. The R-square is 59.8% and the overall model is significant based on analysis of variance since the p-value of the model is 0.000.

3.5 Regression of EPS of CAR, CD ratio and CRR

This model measures the impact of CAR, CD Ratio and CRR on EPS of Nepalese commercial banking industry.

EPS=94.50-0.859CD Ratio+0.109CRR+0.113CAR

Table 7
T-statistics

Predicator	Coef.	SE Coef.	t	P	VIF
Constant	94.52	20.69	4.57	0.00	
CD Ratio	-0.8589	0.2231	-3.85	0.001	1.009
CRR	0.1085	0.2112	0.51	0.612	1.057
CAR	0.1131	0.7240	0.16	0.877	1.061

R-sq. = 40.1%   R-sq.(adj)=32.2%
Source. Author's calculations.

Table 8
Analysis of variance

Source	DF	SS	MS	F	P
Regression	3	1263.80	421.27	5.12	0.007
Residual Error	23	1891.12	82.22		
Total	26	315492			

Source. Author's calculations.

　　　EPS is negatively impacted by CD ratio and it is significant at 1% level of significance, but EPS is positively impacted by CRR and CAR but not statically significant. The overall model significance is tested by R-square and analysis of variance. The R-square is 40.1% and the overall model is significant at 1% level of significance since the P-value of the model is 0.007.

3.6 Regression of ROA on CRR, CAR and CD Ratio

The analysis shows the relationship among the variables and gives outline and feedbacks to use statistical tools and techniques.
The model measures the impact of CRR, CAR and CD Ratio on ROA.
　　　ROA=33.33-0.0222CD Ratio+0.0117CRR+0.0074CAR

Table 9
T-statistics

Predicator	Coef.	SE Coef.	t	P	VIF
Constant	3.3277	0.9577	3.47	0.002	
CD ratio	-0.02222	0.01033	-2.15	0.042	1.009
CRR	0.011742	0.009779	1.20	0.242	1.057
CAR	0.00736	0.03352	0.22	0.828	1.061

R-sq. = 22.1%　　　　　　　R-sq. (adj) = 11.9%

Source. Author's calculations.

Table 10
Analysis of variance

Source	DF	SS	MS	F	P
Regression	3	1.1477	0.3826	2.17	0.119
Residual Error	23	4.0536	0.1762		
Total	26	5.2013			

Source. Author's calculations.

ROA is negatively impacted by CD Ratio and it is significant at 5% level. But ROA is positively impacted by CRR and CAR, but they are not statically significant. The model significance is tested by R-square and analysis of variance. The value of R-square is too low i.e. 22.1%. the P-value of regression is 0.119 which is not significant even at 10% level of significance and collinearity among independent variables does not exist. So, there is not linear relationship of ROA with CD Ratio, CRR and CAR.

Conclusion

The correlation test does not articulate any symmetrical associations among the indicators of liquidity and profitability of Nepalese commercial banking industries. NPM of Nepalese commercial banking industry is negatively and positively impacted by various liquidity indicators but the impacts are statically insignificant, and the overall model is also insignificant. Stock price is positively impacted by CAR and it is significant at 5%. Stock price is negatively impacted by CD Ratio and CRR, but the impact of CD ratio is significant but not in case of CRR. The overall model is significant, and the value of R-square is also high i.e. 59.8%. EPS is negatively impacted and significant by CD ratio but positively impacted and insignificant by CRR and CAR. The R-square is 40.1% and the overall model is significant at 5%. ROA is negatively impacted by CD Ratio and significant at 5%. ROA is positively impacted by CAR and CRR but insignificant. The R-square is low, and the overall model is not significant.

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