IMPACT OF BANK SPECIFIC AND MACROECONOMIC VARIABLES ON INVESTMENT OF COMMERCIAL BANKS IN NEPAL

BISHNU PRASAD BHATTARAI

Faculty of Management, Tribhuvan University, Kathmandu, Nepal
E-mail: abpbhattarai@gmail.com,

Abstract - The main purpose of this study is to analyze the impact of bank specific and macroeconomic variables on investment of commercial banks in Nepal. This study is based on secondary data commercial banks for the period of 2009/10 - 2015/16. The data are obtained from annual report of concerned banks. The descriptive and causal comparative research design has been used for the study. The relationship between investment and size(SZ), non interest income(NII), credit to deposit ratio (CD), Spread, cost of production(COP), cash, return on assets(ROA), profit before tax(PRFT), gross domestic product(GDP), Interest rate, exchange rate(ER), inflation rate has been analyzed with the help of the multiple regression technique from SPSS- 18 version. The limitation of this research is that only sample commercial banks annual reports for the period 2009/2010 to 2015/2016 have been taken in order to address the subject under investigation. The predictors of investment have been limited by size(SZ), non interest income(NII), credit to deposit ratio (CD), Spread, cost of production(COP), cash, return on assets(ROA), profit before tax(PRFT), gross domestic product(GDP), Interest rate, exchange rate(ER), inflation rate(IR). Thus, this study concludes that NII, CD, GDP and ER the major factors are affecting the investment of commercial banks in Nepal. Whereas NII is positive impact on Investment and rest three variables are negative effects. The findings of the study is valuable for bank managers, board of directors and regulator in assessing the strengths and weakness of the banks in the management of investment, where as its impact heading about in the future.

Keywords - Bank, Impact, size, non interest income, credit to deposit ratio, Spread, cost of production, cash, return on asset, profit before tax, gross domestic product, Interest rate, exchange rate, inflation rate.

I. INTRODUCTION

A bank makes investments for the purpose of earning profits. First it keeps primary and secondary reserves to meet its liquidity requirements. This is essential to satisfy the credit needs of the society by granting short-term loans to its customers. Whatever is left with the bank after making advances is invested for long period to improve its earning capacity. Before discussing the investment policy of a commercial bank, it is instructive to distinguish between a loan and an investment because the usual practice is to regard the two as synonymous. The bank gives a loan to a customer for a short period on condition of repayment. It is the customer who asks for the loan. By advancing a loan, the bank creates credit which is a temporary source of fund for the bank. An investment by the bank, on the other hand, is the outlay of its funds for a long period without creating any credit. A bank makes investments in government securities and in the stocks of large reputed industrial concerns, while in the case of a loan the bank advances money against recognized securities and bills. However, the goal of both is to increase its earnings. The investment policy of a bank consists of earning high returns on its un-loaned resources. But it has to keep in view the safety and liquidity of its resources so as to meet the potential demand of its customers. Since the objective of profitability conflicts with those of safety and liquidity, the wise investment policy is to strike a judicious balance among them. Therefore, a bank should lay down its investment policy in such a manner so as to ensure the safety and liquidity of its funds and at the same time maximize its profits (Thirumalai and Chandar, 2014). The question of what are factors to determinant of investment of commercial banks in Nepal? Nonetheless, decisions pertaining to investment especially in a developing country like Nepal require a critical consideration of both internal and external factors. The main purpose of this study is to analyze the impact of bank specific and macroeconomic variables on investment of commercial banks in Nepal. Specifically, it examines the impact of size, non interest income, credit to deposit ratio, Spread, cost of production, cash, return on assets, profit before tax, gross domestic product, Interest rate, exchange rate and inflation rate of Nepalese of commercial banks. The remainder of this study is organized as follows: section two describes the review of literature, section three describes the research methodology, section four presents the result and discussion and final section draw conclusions.

II. REVIEW OF LITERATURE

The major studies related to the issue of impact of bank specific and macroeconomic variables on investment of commercial banks in Nepal have reviewed as follows:

Melink (1970) has explained the demand for liquid assets is a function of asset size, interest rates and deposit instability. The result implies that the various components of the investment portfolios of the sample banks are sensitive to changes in wealth, relative yields and deposit stability.

Roussakis (1977) has revealed that in designing an investment portfolio, the board of directors must consider the quality of the securities to be bought, geographical and industrial diversification of risk, tax considerations, the general level of interest rates at the time that securities are being purchased and maturities in the portfolio.

Nwankwo (1980) has analyzed that commercial banks investments act as a cushion between liquid assets and loans. As a result, banks can use liquid assets to increase liquidity and it resulted into increased loans and advances. Also in periods of excess liquidity and less demand for loans, investments help to absorb excess liquidity.

Jhingan (1993) has asserted that the banking industry, like any other oligopolistic industry, is composed of firms that aim at maximizing their earnings, liquidity and safety.

Vidhyadharan (1999) has explained negative impact of mismatch between long term investments in real estate with short term borrowings by NBFC's and their failure to exit investment under declining real estate market. Alger and Alger (1999) have analyzed large banks having more demand deposit have less liquid assets, because large banks have diversified depositor population and have better access to liabilities to meet to liquidity needs. In contrast small banks depend on liquid assets to meet current liquidity problems. Banks that have sufficient cash can earn market confidence in their risk management practice and attract potential customer and their deposit. Akinlo and Ogo-Temi, (2002) have revealed that commercial banks have expanded and opened many branches over the last few years. This has resulted in a tremendous increase in loans, government securities and placements portfolios. Commercial banks derive their incomes from a combination of investments that are undertaken on the basis of the perceived viability. Usually, the allocation of banks' investible funds is done in accordance with risk considerations and expected yields. Shrestha (2004) has analyzed bank is in good position to meet the daily cash requirement as bank has maintained the average cash & bank balance in respect to total deposit. The performance of NIBL regarding deposit collection granting loan & advance & investment is quite satisfactory but doesn't seem to follow definite policy. NIBL has not efficiently utilized its equity capital hence return on equity is not satisfactory because of lack of sound investment policy for mobilization of its equity capital Maginn et al., (2007) have analyzed on achievement through strategic and tactical asset allocation, and, above all, differentiation of their products to entice customers' strategic asset allocation plays a vital role in converting the investor's objectives, constraints, and long-term capital market expectations into an appropriate portfolio. Tactical asset allocation is a major discipline for attempting to capitalize on perceived disequilibria among asset-class relative values Lielikiene (2008) has revealed that commercial banks must articulate business strategy for excellent performance which reduces credit, liquidity, interest related risk and provide balance in risk, profitability, liquidity and security.

Wildman (2010) has explained on German banks portfolio investment in 30 emerging capital market explained that indicators of financial market development have crucial influence on German banks investment decisions. Determinants influencing German banks portfolio investment over time proved equal among emerging capital market and stock market capitalization is found significant and positive determinant.

Bordeleau and Graham (2010) have examined impact of liquidity on bank profitability, this study found that profitability has increased for banks that hold some liquid assets, however there is a point beyond which holding liquid assets diminishes bank profitability. So holding liquid assets reduces liquidity risk and also generates return for bank, but substantial investment in low return liquid asset adversely affects bank profitability.

Bhavet, Jindal, and Garg (2013) have explained in the study of the financial institutions, the investment and investment problems will revolve around the concept of managing the surplus financial assets in such a way, that will lead to the wealth maximization and providing a significant further source of income. Thus the investment is the management of the surplus recourses in such a way that it works for providing benefits to the supplier of the funds by letting it managed by a third party. However, the investment needs to be a procedural task. It must follow a definite process, to ensure the formulation of proper investment policy. Banks are disbursing their money as investment in trade business and industry. Therefore, banks should be following the principle of investment for profit. An investment policy should ensure maximum profit and minimum Risk. A huge collection and investment policy plays vital role for the economic development of whole economy. The main focus of this study will be towards the investment practices of the banks.

Adhegaonkar (2015) has analyzed that the Indian financial market dynamics have changed after reforms initiated in 1991. Banks are allowed to articulate their credit and investment policy within limits specified by its regulators. Banks are allowed to devise their credit policy after maintaining priority sector lending norms. Banks have to mandate to invest some portion of deposits in SLR securities and are free to invest in non SLR securities. The research work highlights factor affecting investment portfolio in Indian scheduled commercial banks during last 13 years. In scheduled banks SBI group, nationalized

banks, old private, new private and foreign banks are considered. Size of firm, non interest income, CD ratio, spread, cost of production, cash and profitability are considered as determinants of investment portfolio. This study found mix results in all bank groups, but CD ratio and cash is found significantly and negatively related with investment in all bank groups. Another interesting finding of the study is that , regression model is found fit all bank groups but its strength is observed in SBI group, nationalized banks, old private sector banks than new private and foreign banks. The study found that new private sector banks are less experienced than its peer banks, so their investment strategy may be changing as bank specific and economic specific factor changes. Foreign banks function with its branches in India so their investment strategy are devised by their home country bank and evidence also support to that they are more inclined to lending than investment.

III. RESEARCH METHODOLOGY AND MODEL

This study is based on secondary data of seven commercial banks for the period of 2009/10 - 2015/16. The data are obtained from annual report of concerned banks and economic survey published by Ministry of Finance. The data were collected for investment and size, non interest income, credit to deposit ratio, spread, cost of production, cash, return on assets, profit before tax, gross domestic product, Interest rate, exchange rate and inflation rate.

The Model

The study examines the relationship of investment with the size(SZ), non interest income(NII), credit to deposit ratio (CD), Spread, cost of production(COP), cash, return on assets(ROA), profit before tax(PRFT), gross domestic product(GDP), Interest rate(IR), exchange rate(ER), inflation rate(IF) by estimating specific research model.

The equation to be estimated has been specified as under:

$$INV_{it} = \beta_0 + \beta_1 SZ_{it} + \beta_2 NII_{it} + \beta_3 CD_{it} + \beta_4 Spread_{it} + \beta_5 COP_{it} + \beta_6 Cash_{it} + \beta_7 ROA_{it} + \beta_8 PRFT_{it} + \beta_9 GDP_{it} + \beta_{10} IR_{it} + \beta_{11} ER_{it} + \beta_{12} IF_{it} + \varepsilon_{it}$$

The selected study variables, their definition, basis of measurement have been depicted as follows.

Table 1: Variables, Description, Measurement and Expected Sign

Variables	Variables	Measurement	Expected Sign (Hypothesis)
INV	Investment	Total Investment / Total Assets	
SZ	Size of Bank	Log of Total Assets	+
NII	Non Interest Income	Total Operating Income – Interest Income/Total Assets	+
CD	Credit Deposit Ratio	Loan & Advance or Credit / Total Deposit	+
Spread	Spread	Net Interest Income – Net Interest Expenses/Total Assets	+
COP	Cost of Production	Total Operating Expenses/ Total Assets	+
Cash	Cash	Cash/ Total Assets	+
ROA	Return on Assets	Net Profit After Tax/ Total Assets	+
PRFT	Profit Before Tax	Net Profit Before Tax/ Total Assets	+
MS-M2	Money Supply	Annual Money Supply	+
GDP	Gross Domestic Product	Annual Gross Domestic Product Rate	+
ER	Exchange Rate	Exchange Rate with US Dollar	_
IF	Inflation Rate	Annual Inflation	_

The descriptive and causal comparative research design has been used for the data analysis.

IV. DISCUSSION / FINDINGS

Descriptive Statistics

The summary of descriptive statistics of dependent variables (investment) and independent variables of the study is shown in table 2.

The table 2 shows that the investment ranges from 6.19 to 50.51 leading to an average of 17.8789 and the standard deviation is 8.88, meaning that there is substantial variation in sample banks with respect to investment.

Table 2
Descriptive Statistics of Variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Investment	56	6.19	50.51	17.8789	8.89398
Size	56	9.39	11.77	10.6338	.58369
NII	56	.68	2.74	1.2805	.45130
CD	56	38.70	94.17	72.6927	11.12076
Spread	56	-4.94	4.33	-.4198	2.01679
COP	56	.76	2.51	1.5396	.45920
Cash	56	1.15	5.02	2.4877	1.00118
PRFT	56	1.55	21.93	3.3282	2.65937
MS_M2	56	12.30	27.30	19.2250	4.61930
GDP	56	.41	5.99	3.9187	1.55952
ER	56	72.30	106.50	87.1250	12.23104
Inflation	56	7.20	12.60	9.4750	1.45680

Sources: Results are drawn from SPSS 18

The mean size is indication of natural logarithm of total assets is 10.63 with a minimum lagged size of 9.39 and a maximum of 11.77. The NII ranges from minimum value of 0.68 times to the maximum value 2.74 times leading to the average of 1.28 times. CD ratio ranges from 38.70 times to 94.17 times with an average of 72.69 times. Similarly, Spread rate has an average value of negative 0.42 with the minimum and maximum value of 4.33. Exchange rate rages from Rs. 72.30 to Rs 106.50 leading to the average of Rs. 87.13. The inflation in the Nepalese economy varies from 7.20 percent to 12.60 percent with an average of 9.48 percent.

Correlation Analysis

The Pearson Coefficient of Correlation is used to assess the relationship between investment with the size (SZ), non interest income (NII), credit to deposit ratio (CD), spread, cost of production (COP), cash, return on assets (ROA), profit before tax (PRFT), gross domestic product (GDP), interest rate (IR), exchange rate (ER), inflation rate (IF) of the commercial bank at 1% and 5% level of significance. The Pearson correlation analysis results have been presented in Table 3.

Table 3
Pearson Correlation Coefficient of Dependent and Independent Variables

Variables	Investment	Size	NII	CD	Spread	COP	Cash	PRFT	MS_M2	GDP	ER	Inflation
Investment	1											
Size	.169	1										
NII	.539**	-.149	1									
CD	-.774**	-.220	.546**	1								
Spread	.550**	.369**	.623**	.626**	1							
COP	.190	-.261	.584**	-.072	.185	1						
Cash	-.616**	.491**	291*	.529**	-.473**	.255	1					
PRFT	.137	-.214	.580**	-.213	.451**	.232	.109	1				
MS_M2	.048	.046	.045	-.122	.189	.128	-.027	.217	1			
GDP	-.045	.324*	.119	-.041	-.148	.206	.139	.049	-.077	1		
ER	-.127	.567**	-.082	-.098	.268*	.252	-.109	-.105	.274*	-.447**	1	
Inflation	.138	-.360**	.108	.064	.163	.027	.080	.289*	.322*	.081	-.426**	1

****. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).**
Sources: Results are drawn from SPSS 18

Table 3 shows that the investment is significantly positively related to NII and Spread which means that these variable move together with investment. This implies that higher the value of NII and Spread higher would be the investment for the year and vice versa. However, investment is significantly negatively related to CD and Cash. It implies that increase in CD and Cash lead to decrease in investment and vice versa. All correlations coefficients among the independent variables were found to be less than 0.8; implying the absence of multicollinearity.

Regression Analysis

The regression coefficients of model were estimated using multiple regressions analysis. Findings from the regression analysis for the selected banks are depicted in Table 4. The R-Square which is often referred to as the coefficient of determination of the variables is .765. The R-Square which is also a measure of the overall fitness of the model indicates that the model is capable of explaining about 76.5% of the variability in the investment of commercial banks. This means that the model explains about 76.5% of the systematic variation in the dependent variable. That is, about 24.5% of the variations in investment of the sampled banks are accounted for by other factors not captured by the model. This result is complimented by the adjusted R- square of about 70.6%, which in essence is the proportion of total variance that is explained by the model.

Table 4
Regression Result of Investment and Its Determinants

Variables	Coefficients	Std. Error	T	p-value	Collinearity Statistics	
					Tolerance	VIF
(Constant)	47.046	26.945	1.746	.088		
Size	1.646	1.995	.825	.414	.312	3.204
NII	5.681	3.016	1.884	.066	.229	4.376
CD	-.465	.099	-4.683	.000	.347	2.884
Spread	-.093	.679	-.137	.892	.226	4.432
COP	-.786	2.201	-.357	.723	.415	2.412
Cash	-1.717	1.075	-1.598	.117	.366	2.734
PRFT	-.515	.361	-1.426	.161	.458	2.182
MS_M2	.010	.180	.055	.957	.609	1.641
GDP	-.930	.493	-1.885	.066	.715	1.399
ER	-.202	.091	-2.214	.032	.339	2.947
Inflation	.856	.703	1.218	.230	.404	2.476
No of observations: 56 R2 = 0.765, Adjusted R2 = 0.706, F-value = 12.988, F (sig)= 0.000						

Source: Annual report of sample companies and results are drawn from SPSS-18

Similarly, findings from the Fishers ratio (i.e., the F-Statistics/ value) which is a proof of the validity of the estimated model as reflected in Table.4, indicates that, the F is about 12.988 and a p-value or F(sig) that is equal to 0.000, this invariably suggests clearly that simultaneously the explanatory variables are significantly associated with the dependent variable. That is, they strongly determine the behavior of investment.

As a test of the presence of multicollinearity among independent variables in the models, variance inflation factors (VIF) have been computed. The variance inflation factors (VIF) show the values less than 5 for each variable in the model. The larger the value of VIF, the more troublesome or collinear the variables and as a rule of thumb a VIF greater than 10 is unacceptable (Gujarati, 2004). Thus, VIF less than 5 for each variable indicates the non-presence of multicollinearity. Thus, the estimated regression models are free from multicollinearity problem and independent variables chosen for the model is best suited for regression analysis. The beta coefficient of NII is positive and statistically significant with investment which is similar to priori expectation. The beta coefficient of CD is negative but statistically significant with investment which is contrary to priori expectation. The findings strongly favor the result of Adhegaonkar (2015). The beta coefficient of GDP and ER are negative but statically significant with investment which is similar to priori expectation.

SUMMARY AND CONCLUSIONS

Thus, this study concludes that NII, CD, GDP and ER the major factors are affecting the investment of commercial banks in Nepal. Whereas NII is positive impact on Investment and rest three variables are negative effects of Nepalese context.

REFERENCES

[1] Adhegaonkar, V. R. 2015, 'Long run determinants of investment portfolios in commercial banks: Comparative analysis of Indian scheduled commercial banks', Chanakya International Journal of Business Research, 1(2), 89–94

[2] Akinlo, A.E. and Ogo-Temi, J.S. 2002, 'Credit and growth of economic activities in Nigeria: An empirical investigation', Nigerian Journal of Banking and Financial, 5, 13-14.

[3] Alger, G. & Alger, I. 1999, 'Liquid assets in banks: Theory and practice', Working paper no.446. Boston College working paper in economics. Available: http://fmwww.bc.edu/EC-P/ wp446.pdf.

[4] Bhavet, G. Jindal, P. & Garg, S. 2013, 'Investment policy of commercial banks in India', International Journal of Research in Commerce & Management, 4 (1), 62-67

[5] Bordeleau, E. & Graham, C. 2010, 'The impact of liquidity on bank profitability', Bank of Canada working paper no.2010-38. Available:http://www.econstor.eu/bit-stream/10419/53928/1/642546703.pdf, pp.no.1-24

[6] Gonzalez, F. 2004, 'Do equity investments affect bank's profitability? Evidence from OECD countries', Applied Financial Economics, 14(15), 1–26.

[7] Gujarati, D. N. 2004, 'Basic Econometrics (4th ed.)', New Delhi: Tata McGraw-Hill Publishing Company Limited.

[8] Hair, J. F., Anderson, R. E., Tatham, R. L. & Black,W. C. 2006, 'Multivariate Data Analysis (Fifth Edition', Delhi: Dorling Kindersely India Pvt. Ltd

[9] Jhingan, M.L. 1993, 'Money, banking, international trade and public finance, 4ed', Delhi: Konark Publishers PVT. , 255-265.

[10] Lielikiene, A. 2008, 'Analysis of chosen strategies of asset and liability management in commercial banks', Economics of Engineering Records, 2 (57), 32–39.

[11] Maginn, Tuttle, McLeavey and Pinto 2007, 'Managing investment portfolios workbook: A dynamic process', John Wiley & Sons, Inc. 3rd ed. Canada.

[12] Melink, A. 1970, 'Short run determinants of commercial bank investment portfolios: An empirical analysis', Journal of Finance, 25(3), 639–649.

[13] Nwankwo, G.O. 1980, 'The Nigerian financial system. London: Macmillan Press, 170–177.

[14] Roussakis, E.N. 1977, ' Managing commercial bank fund', New York: Praeger Publisher, 1–80.

[15]Someshwar, P. 2015, 'An investment pattern of scheduled commercial banks in India, Abhinav National Monthly Refereed Journal of Research in Commerce & Management, 4(12) 22-37

[16]Thirumalai, K.S. & Chandar, U. 2014, 'Investment policy by commercial banks', Gjra - Global Journal for Research Analysis, 3(11), 80-82.

[17]Vidhyadharan, R. 1999, 'Asset- liability management-issues and trends in Indian contex', ASCI journal of Management, 29(1), 39–48.

[18]Wildman, C. 2010, 'What drives portfolio investment of German banks in emerging capital markets?', .Discussion paper Series 2: Banking and Financial Studies No.4/2010, Deutsche Bundes bank Euro system, 1–59.

★★★