

Bank Regulation and Market Risk of Nepalese Commercial Banks

Dhundi Raj Bhattarai, PhD

Asst. Prof. Nepal Commerce Campus
dhundibhattarai@gmail.com

Churamani Pandeya, PhD Scholar

Asst. Prof. Nepal Commerce Campus
churamanipandeya@yahoo.com

Bhanu Bhakta Sharma, PhD Scholar

Asst. Prof. Nepal Commerce Campus
bhanu@ncc.edu.np

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Abstract

The purpose of this study is to measure the impact of banking regulations specifically broad money supply, weighted average spread rate, base rate, bank capital, and loan loss reserve on market risk of commercial banks in Nepal. This study used descriptive, correlational, and casual comparative research design. This study has used secondary sources of data. Data were used of twenty-six, out of twenty-seven commercial banks from fiscal year 2012/13 to 2018/19. After 2019/20 fiscal year to 2021/22, data were collected from nineteen commercial banks. Rastriya Banijya Bank, Government owned bank not included in this study. The statistical methods employed in this investigation for data analysis included mean, range, coefficient of variation, correlation analysis, and regression analysis. This study presented that highest to lowest scattered data as market risk, loan loss reserve, bank capital, broad money supply, base rate, and weighted average spread rate respectively. There is low degree of inverse relationship between market risk and base rate but there is insignificant relationship of market risk with weighted average spread rate, broad money supply, bank capital, and loan loss reserve. There is positive significant impact of broad money supply and weighted average spread rate on market risk but there is negative impact of base rate on market risk, insignificant impact of bank capital and loan loss reserve on market risk of commercial banks in Nepal.

Key words: Market Risk, broad money supply, base rate, spread rate, bank capital, loan loss reserve, commercial bank

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Introduction

Declared banking regulations take into account suggested modifications to capital, resolution planning, customer compliance, supervision, and numerous of other factors. These legal and supervisory developments will also make it more important for banks to establish and maintain efficient frameworks for governance, risk management, and control. Institutions should simultaneously carefully consider how new banking regulations will affect their strategic planning and business model.

A high-level summary of bank governance and supervision is given by banking regulation, which covers laws, regulatory bodies, the function of international standards, licensing, liquidity regulations, foreign investment requirements, liquidation governments, and current developments in bank regulation.

Since market risk is the main subject of the study, it is appropriate to start by defining market risk, which is a

subset of financial risk, a more general category of risk. Ernst and Young (2008) found that market risk refers to the likely effect of price fluctuations on future earnings or the fair value of a financial asset. It includes the following: exchange risk, which arises from fluctuations in currency rates for businesses operating in foreign markets; The risk of price swings in financial assets other than fixed-income assets is due to the potential for price volatility in assets other than fixed income assets.

Interest rate risk can be especially significant if the company deals in fixed-interest financial markets; and commodity price risk, which can result in losses if there, is an unanticipated change in commodity prices. OLS regression and correlation analysis show a favorable association between bank size (as measured by market capitalization) and the level of risk reporting (Savvides & Savvidou, 2012).

Risk is the possibility that an event or decision (such as an investment) will not turn out as planned. This indicates that the financial benefits (or outcomes) from the investment are consistent and that it is feasible to ascertain the probability that each lead will be achieved (Linsley & Shrivs, 2006).

Stress testing and scenario analysis should be prioritized more in risk management systems (Jorion, 2009). Value-at-risk and other quantitative market risk examinations are disclosed is just informative if it is combined with an in-depth explanation of the methodology used to construct the metrics and how they relate to actual performance (Perignon & Smith, 2008). The recent economic downturn has highlighted financial institutions' poor risk management and inadequate risk disclosure (RD) procedures, particularly with regard to their financial risk and, more specifically, their market risk.

Market risk is the possibility that shifts in market prices—for example, interest rates, equity prices, foreign exchange rates, and the prices of other assets—will have an impact on the bank's earnings or the worth of the financial instruments it owns. The source of market risk contains open positions in interest rate, currency, and securities products, all of which are dependent on general and specific market movement as well as variances in the level of uncertainty of the market rates, interest rates, foreign exchange rates, and stock prices. Managing and controlling market risk exposure within allowable bounds while optimizing return is the goal of market risk management.

Pantos and Saidi (2005), Tollison (2001), Peltzman (1976), and Stigler (1971), any deregulatory measures intended to completely remove or significantly reduce a financial system based on a "universal bank" would have an immediate impact on the returns to shareholders and the systematic risk (such as market risk) of the various pillars supporting the system's economic activity. The market risk for investment firms, insurance companies, and commercial chartered banks has increased due to European Union Banking Directives (Pantos, 2008). Peltzman's (1976) claim that an industry's market risk rises when it is deregulated for businesses that were previously protected from outside competition.

Modern banking regulation focuses a significant value on bank capital since it considers that capital will serve as a financial cushion against losses and the capital stake of bank shareholders at risk. This helps to lower moral hazard at the bank level (Keeley, 1990; Lindquist, 2004). These buffers can, taken as a whole and throughout the banking sector, help to partially protect the financing scheme from complete shocks (Distinguin et al., 2013).

Based on data analysis from 2008 to 2016, capital has a negative impact on market risk for old private sector commercial banks in India (Sarkar, Sensarma, & Sharma, 2018).

Minimum capital requirements are a risk management strategy (Arnold et al., 2012; Berger and Bouwman, 2013). However, it was approved that meeting capital requirements may result in a bank losing market share, which in turn lowers the value of the bank's franchise (Frame and White, 2007). Shrieves and Dahl (1992) found a positive correlation between bank capital and risk for a sizable sample of US banks, and Godlewski (2005) found a similar correlation for banks in emerging market economies. Athanasoglou (2011) presents a more nuanced relationship for European nations: risk and regulatory capital have a positive relationship, while risk and equity capital have a negative relationship.

Kwan and Eisenbeis (1997) find that, for US banks, inefficiency has a positive impact on risk-taking as well as capital levels when they expand the risk-capital relationship to include efficiency. This finding is at conflict with that of Altunbas et al. (2007), who examine a sizable sample of European banks and discover a positive correlation between inefficiency and capital but a negative correlation between inefficiency and bank risk-taking. Fiordelisi et

al. (2011) investigate the same relationships for European banking and conclude that higher bank capital results in higher efficiency and lower bank efficiency leads to higher levels of risk. They also indicate that banks with higher levels of efficiency typically have larger capital reserves.

Bank risk is influenced by two primary categories of factors. First, each bank has its own class of risk variables that are often the direct result of decisions taken by managers. Among them are characteristics like size, revenue diversity, profitability, efficiency, capitalization, asset structure, and non-deposit funding. The variables in the second group of determinants, which relate to bank risk in connection to industry structure and the macroeconomic environment in which the banking system operates, include industry concentration, economic growth, inflation, unemployment, and interest rates.

The idea that interest rates have a big impact on bank risk is supported by a lot of research. Hoggarth, Sorensen, and Zicchino (2005) found that interest rate and inflation dynamics have a significant indirect impact on loan portfolio quality and financial stability. Additionally, a recent body of research demonstrates how bank risk-taking in pursuit of yield has been stimulated by the low-interest rate environment of the past ten years (Agur & Demertzis, 2012; Delis & Kouretas, 2011). Baselga-Pascual, Trujillo-Ponce, and Cardone- Riportella (2015) found that there is a negative correlation between bank risk and interest rates. An economic crisis with a shrinking GDP, fewer concentrated markets, lower interest rates, greater inflation rates, and so on all raise the likelihood of bank failure.

In 1996, the Basel-I Accord was modified to include a premium for bank market risk in the requirements for risk-based capital. In an effort to improve risk-based capital regulation and address the shortcomings of Basel-I, the Basel-II Accord was finalized in 2004. Along with credit and market risks, Basel-II added a premium for bank operational risk to risk-based capital calculations. Furthermore, Basel-II introduces mechanisms for market discipline and supervisory review. When the global financial crisis struck in 2007, some nations had already implemented the Basel-II capital standard for their banking industries, while others were just getting started. Basel I and II have been heavily criticized for two reasons: first, financial innovations like securitization may allow for regulatory capital arbitrage (Jones, 2000). The impact of capital adequacy regulations on banks' tendency for taking on risk is a topic of continuous discussion.

The Annual Report for 2021–2022 from Nepal Rastra Bank encompasses an analysis of the comprehensive oversight and financial condition of commercial banks, as presented in the full- scope bank supervision report for 2021–2022, which has now been published. Furthermore, a concise report has been compiled at the conclusion of each quarter, utilizing data related to loan loss provisions sourced from the banks, to indicate whether the loan loss provisions have been upheld as outlined in the supervision report.

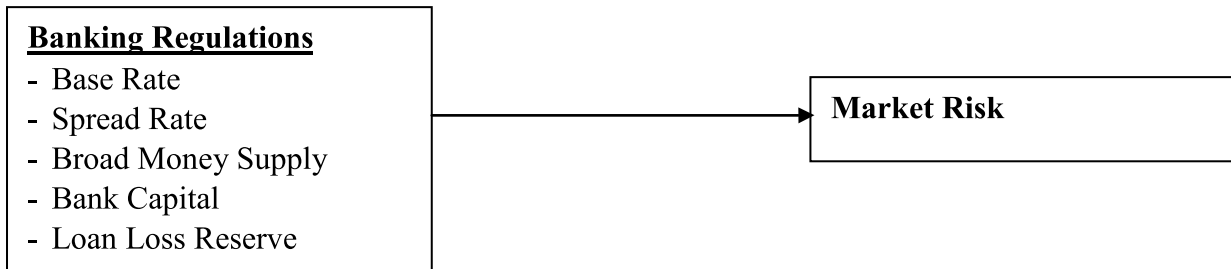
Credit risk, liquidity risk, and operational risk are bank risks related to making provisions for loan losses (Ozili & Outa, 2017; Rasa, 2021). Basel 2 has directed focus on three forms of bank risk that fall under the purview of pillar 1 capital requirements: credit, market, and operational risk. Market risk does not lie in an inaccurate assessment of the loan loss provision; rather, it is the risk associated with balance sheet and off-balance sheet positions, including derivative transactions, that arises from shifts in overall market conditions, including the risk of changes in price options (Klomp & Haan, 2012; Majumder & Li, 2018).

These findings imply that banks must hold larger loan loss provisions relative to their total assets if they have a larger lending market share (Sarkar & Sensarma, 2016).

Sprenkle and Miller (1980) concluded that the demand for broad money will decline in response to an increase in the overdraft rate, even though it will increase the demand for narrow money. The demand for broad money will rise while the demand for narrow money will fall in response to an increase in the market rate, which is currently understood to be an increase in the current deposit (CD) or some comparable deposit rate. Furthermore, a general rate increase will raise broad money demand while decreasing narrow money demand.

In the perspective of Nepal Rastra Bank's regulations, there is no study of impact of interest rate (base rate and weighted average spread rate), loan loss reserve, bank capital, and broad money supply on market risk of commercial banks is still remaining. So, this is the research of this study. This study will fulfil this gap. Based on this research gap, objective of this study is to analyze the impact of spread rate, weighted average spread rate, loan loss reserve, bank capital, and broad money supply on market risk of commercial banks in Nepal. This study also

focused on existing position as well as relationship between them of mentioned variables. So, this study following theoretical framework has been developed.



Methods

This study focused on essential of guideline and monitoring for minimizing market risk of commercial banks in Nepal. It measured existing position of base rate, broad money supply, bank capital, loan loss reserve, and broad money supply. For this purpose, this study has used descriptive statistical tools i.e. mean, maximum value, minimum value, standard deviation, and coefficient of variation. It means this study has employed descriptive research design. Similarly, this study has evaluated the relationship between these variables. So, this study used correlation research design. Again, this study has analyzed impact of weighted average spread rate, base rate, loan loss reserve, bank capital, and broad money supply on market risk. Hence, this study also employed casual comparative research design. For this, following regression model has been tested:

$$MR_{i,t} = \alpha_0 + \beta_1 SR_{i,t} + \beta_2 BR_{i,t} + \beta_3 BCI_{i,t} + \beta_4 BMS_{i,t} + \beta_5 LLR_{i,t} + \epsilon_{i,t}$$

Where, market risk is dependent variable and independent variables are: weighted average spread rate, base rate, bank capital (sum of core capital i.e. Tier 1 capital and supplementary capital i.e. Tier 2 capital), broad money supply and loan loss reserve.

Results

Table 1 has presented maximum value, minimum value, mean, standard deviation, and coefficient variation of market risk, weighted average spread rate, base rate, bank capital, loan loss reserve, and broad money supply.

Table 1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Coefficient of variation
Marketing Risk	243	1248490	425030841000	2461167434.23	1107.21
Weighted average interest rate spread	244	2.49	7.32	4.2038	18.03665
Base rate	203	3.84	12.08	8.5288	21.12648
Bank capital	241	4398193	140232067893	12895637269.82	95.00485
Loan loss reserve	241	-611343157	14789309588	1533545113.22	97.71908
Broad money supply	260	1315376280000	5505400800000	3116325358000.00	44.94161
Valid N (listwise)	195				

Based on result of table 1, highest fluctuation in market risk after that loan loss reserve, bank capital, broad money supply, base rate, and weighted average spread rate respectively have been found.

Table 2 has presented the relationship between bank capital, loan loss reserve, broad money supply, credit risk, base rate, and weighted average spread rate.

Table 2

Correlation Analysis

Variables	MR	BR	SR	BMS	BC	LLR
MR	1					
BR	-.163*	1				
SR	.045	-.128	1			
BMS	.013	.000	-.282**	1		
BC	.012	.024	-.032	.629**	1	
LLR	0.016	.088	.25**	.269**	.387**	1

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

There is low degree of inverse relationship between market risk and base rate at 5 percent level of significance and low degree of inverse relationship between weighted average spread rate and broad money supply at one percent level of significance. But there is moderate degree of direct relationship between broad money supply and bank capital at one percent level of significance. There is low degree of direct relationship of loan loss reserve with weighted average spread rate, broad money supply, and bank capital at one percent level of significance.

Table 3 presented the regression result of market risk regressed on weighted average spread rate, base rate, bank capital, broad money supply, and loan loss reserve.

Table 3

Regression results

	β_0	B1 SR _{i,t}	B2 BR _{i,t}	B3 BC _{i,t}	B4 BMS _{i,t}	B5 LLR _{i,t}
Standardized coefficients		.190	-.137	-.008	.262	-.114
t	-.702	2.559	-1.944	-.091	2.842	-1.475
Sig.	.484	.011	.05	.928	.005	.142
VIF		1.154	1.035	1.707	1.780	1.239

Dependent variable: Market Risk, Independent variables: Weighted Average Spread Rate, Base Rate, Bank Capital, Broad Money Supply, and Loan Loss Reserve, ANOVA: d.f. 5, Residual 189, Total = 194, Sig. at 0.002, F = 3.973, Durbin Watson = 1.887 Adjusted R-Squared = 0.071.

ANOVA results approved that this regression result is statistically significant at one percent level of significance. This regression model has explained seventy-one percent variance. Regression model is free from positive and negative auto correlation. This is approved by value of Durbin Watson this regression model is from positive and negative auto correlation problem. Variance inflation factor of each independent variable is less than 10. So, regression model is not suffered from multicollinearity problem. Coefficient value of weighted average spread rate proved that when weighted average spread rate will be increased by one unit, on an average market risk will be increased by 0.19 unit if other things are same at five percent level of significance. Coefficient value of base rate explained that if base rate will be increased by one unit, on an average market risk will be decreased by 0.137 unit at five percent level of significance under the condition of other things remaining the same. Similarly, broad money supply will be increased by one unit, market risk will be increased by 0.262 unit if other things remain constant at one percent level of significance. There is insignificant impact of bank capital and loan loss reserve on market risk.

Discussion

There is impact of weighted average spread rate and base rate on market risk of commercial banks in Nepal and this result is same with Hoggarth, Sorensen, and Zicchino (2005). There is negative impact of base rate on market risk of commercial banks in Nepal and this in uniform with Basaelga-Pascual, Trujillo-Ponce, and Cardone-Riportella (2015). But there is positive impact of base rate on market risk of commercial banks in Nepal

and this contradicts with Baselga-Pascual, Trujillo-Ponce, and Cardone-Riportella (2015). Broad money supply impacts on market risk of commercial banks in Nepal and this is similar with Sprenkle and Miller (1980). There is insignificant impact of loan loss reserve and bank capital on market risk of commercial banks in Nepal.

Conclusion

Market risk is affected by different factors. This study only focused on impact of regulation fact of Central bank of Nepal: base rate, weighted average spread rate, loan loss reserve, bank capital, and broad money supply on market risk of commercial banks in Nepal. There is positive impact of weighted average spread rate and broad money supply but negative impact of base rate on market share. Out of these, highest influence factor is broad money supply. There is insignificant impact of loan loss reserve and bank capital on market risk. The study findings have approved that Nepal Rastra Bank's guideline as well as monitoring is essential for minimizing market risk. and control market.

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