Recapitalization and Its Impact on Liquidity Position of Commercial Bank: Evidence from Nepal

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Abstract:

Purpose: This paper intends to analyze the impact of recapitalization on liquidity position spanning 10 years of monthly time series data from commercial banks in Nepal from July 2012 to April 2022, including the 5 years preceding and following the recapitalization period.

Design/Methodology/Approach: The paper examines the relationship between recapitalization and liquidity among commercial banks in Nepal using the Ordinary Least Squares method. The independent variable in the analysis is recapitalization, as measured by the growth in total capital of commercial banks, while the dependent variable is liquidity, as measured by the CD ratio. The study also controls for other factors, including the interest rate of loans, interbank rate, and growth in total assets of commercial banks, and includes a dummy variable for policy changes on capital and CD ratio.

Findings: The results of this study demonstrate that recapitalization is positively associated with banks' risk-taking capacity and lending ability, and this relationship is supported by trends observed in Nepal. The study also finds that lending has increased in Nepal due to both the impact of recapitalization and the COVID-19 pandemic.

Practical implications: This paper provides valuable insights for economic development, with findings on the impact of recapitalization on liquidity that can be used by banks, financial institutions, and regulators for policy-making and financial stability.

Originality value: This research fills a gap in the existing literature by examining the impact of recapitalization on the liquidity of commercial banks, a topic that has not been previously explored in Nepal. It is necessary to investigate this relationship in order to understand how recapitalization affects liquidity.

Keywords: Liquidity, recapitalization, lending, OLS regression.

Paper Type: Research article.

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1. Introduction

The financial sector plays a crucial role in the growth and development of an economy by efficiently allocating and mobilizing financial resources (Levine, 1997). Banks, as a key part of the financial system (Ang, 2008), contribute by collecting deposits and lending them to borrowers (Davies, Richardson, Katinaite, and Manning, 2010), while financial institutions provide tools for the exchange of goods and services through financial assets (Allen and Santomero, 1997). These activities increase investment, employment, and productivity, helping to drive economic growth.

A well-functioning banking system is essential for the smooth development of the economy (Claessens and Feijen, 2007) and plays a vital role in gathering resources and providing liquidity for economic growth. Banks are central to modern financial systems and must be safe, secure, and perceived as organized institutions by all stakeholders in order to effectively fulfill their role.

Maintaining sufficient liquidity is crucial for the financial health and growth of a bank (Distinguin, Roulet, and Tarazi, 2013), as a lack of liquidity can lead to a loss of market confidence and panic among depositors (Drehmann and Nikolaou, 2013). This can lead to a bank run and create serious problems. Liquidity can come from cash holdings, central bank accounts, and easily convertible assets such as government bonds or treasury bills. It is important for central banks to monitor liquidity in the banking system, as banks play a central role in the financial system and can have significant impacts on the economy (Szylar, 2013). Insufficient liquidity can have negative consequences for the economy.

It is challenging to determine the appropriate amount of liquidity for a bank to have, as maintaining liquidity incurs costs for the bank and may result in minimal returns on the funds used to maintain it. This creates a dilemma for banks as they must balance the need for greater liquidity with the expense of obtaining it. It is important for banks to find the optimal level of liquidity to ensure safety without incurring unnecessary costs.

In the context of Nepal, the central bank of Nepal, the Nepal Rastra Bank, has implemented measures to improve the stability of the banking industry in the country, including increasing the required minimum paid-up capital for banks and financial institutions to improve their financial stability and corporate governance.

The NRB has also encouraged these institutions to merge or acquire each other in order to improve efficiency. In this context recapitalization, also known as the process of restructuring and reorienting existing banks (Ajayi, 2005), is often used to address insolvency and prevent future financial difficulties (Franks and Sussman, 2005). Increasing the paid-up capital, or recapitalization, has been implemented as a reform in many countries as a way to protect customers and stakeholders (Naceur

and Omran, 2011). In Nepal, the Nepal Rastra Bank has undertaken these efforts as part of its banking industry reform efforts in the country.

For a bank to be financially stable, the value of its assets must significantly exceed its liabilities. This difference represents a "capital" buffer that can be used to cover losses. In addition, banks need a "liquidity" buffer to cover unexpected cash outflows, which is also crucial for financial stability (Douglas J. Elliott, Brookings Institution June 23, 2014).

Research on bank recapitalization has primarily focused on its impact on the performance of banks. Studies by Verma and Herwadkar (2019), Kukurah *et al.* (2014), Ogbola (2020), Mohapatra and Jha (2018), Tahir *et al.* (2017), and VK Parvati (2019) have concluded that recapitalization has a positive impact on both the economy and the performance of banks.

The existing literature is focused on the recapitalization and liquidity position with other outcome variables. But the literature related to impact of recapitalization and liquidity position are very much limited and these papers have not been tested empirically on the issue of recapitalization impact on liquidity.

Furthermore, there have been no prior studies in Nepal that have statistically analyzed the impact of recapitalization on the liquidity position of commercial banks since the implementation of recapitalization related policy adapted by central bank. It is therefore necessary to investigate the relationship in order to address the question of how recapitalization impacts liquidity.

Therefore, this paper attempts to examine how recapitalization affects the liquidity of commercial banks of Nepal spanning 10 years of monthly time series data from commercial banks in Nepal from July 2012 to April 2022, including the 5 years preceding and following the recapitalization period.

In the following sessions, the paper covers a review of relevant literature and studies, a discussion of the research design, data sources and methods, and a presentation and analysis of the data. The literature review will include articles and research from experts and researchers both nationally and internationally, as well as identify any gaps in the existing knowledge. The research design outlines the nature and sources of the data, the variables being examined, and the models being used and lastly presents the data and use appropriate methods to analyze it.

2.   Literature Review

This section reviews prior research on recapitalization and liquidity in the banking sector in order to identify the current state of knowledge on the subject and identify potential gaps in the existing research. A hypothesis and conceptual framework are presented based on this review of past literature on the relationship between

recapitalization and its impact on liquidity.

Verma and Herwadkar (2019) conducted a study in India which found that the deteriorating asset quality of public sector banks in India since 2012 has had multiple negative consequences, including reduced economic growth and a vicious cycle of poor asset quality. The government has provided capital injections to public sector banks, but much of it has been absorbed by the continued decline in asset quality, delaying the resurrection of the credit expansion cycle.

In 2008, the Bank of Ghana increased the minimum capital requirement for banks. Kukurah *et al.* (2014) conducted a study to assess the impact of this recapitalization on bank performance in Ghana using secondary data and performance ratios. The study compared bank performance three years before and one year after the recapitalization exercises and found a positive impact of recapitalization.

Following Ogbola (2020) conducted a study comparing the effects of recapitalization on the economies of Finland and Nigeria and found that it had a positive impact on both countries, including an increase in return on assets, return on equity, net profit ratio, capital investment ratio, and basic earnings per share. Recapitalization also helped to reduce operating costs, increase available funds, and improve international investment opportunities in both countries.

Several studies have examined the impact of recapitalization on the economies and performance of banks, including in India (Mohapatra and Jha, 2018) and in the context of public sector banks (VK Parvati, 2019) and regulation-compelled banking recapitalizations in a cross-country context (Tahir *et al.,* 2017). These studies have generally found that recapitalization has a positive impact on bank performance, including increasing return on assets and improving the earning quality of banks. It is important for governments and central banks to implement policy and preventive measures to reduce the level of non-performing assets and enhance the performance of banks.

According to Akinkoye and Oyelami (2014), a study of the impact of bank recapitalization on the real sector performance of Nigeria between 1986 and 2012 found a significant positive impact on the economy through both direct (bank investment) and indirect (loans and advances) effects.

Drehmann and Nikolaou (2013) define liquidity as a bank's ability to meet obligations immediately, and funding liquidity risk as the likelihood that a bank will not be able to fulfill obligations on time. This risk is measured over time and depends on the bank's funding status. Elliott (2014) also emphasizes the importance of liquidity in a bank's ability to find cash to meet demands, which can come from direct cash holdings or central bank accounts, or from the sale of highly creditworthy, short-term government securities.

Mariathasan and Merrouche (2012) conducted a study on the characteristics of public recapitalizations of banks in 15 OECD countries and the relationship between these recapitalizations and bank lending. They found that larger, higher loss-absorbing capital injections were targeted towards weaker banks and "systemically relevant" banks when the public finances allowed for it.

They also found that higher total regulatory capital ratios and sustained loan growth were only associated with large recapitalizations and infusions of common equity, and there was no significant relationship between the provision of public capital and interbank lending.

Vodova (2011) conducted a study on the liquidity determinants of Czech commercial banks from 2001 to 2009 and found that capital adequacy, the proportion of nonperforming loans, loan interest rates, and interbank transactions had a positive relationship with bank liquidity, while the inflation rate, business cycle, and financial crisis had a negative impact. The relationship between bank size and liquidity was unclear.

Vodova (2012) carried out a study in Poland to determine the factors that influence the liquidity of Polish commercial banks. The data was used for the period of 2001 to 2010. Financial crises, economic downturns, and an increase in unemployment have all contributed to a decrease in bank liquidity, the analysis was made using panel data regression analysis. As banks become more profitable, the amount of money they have available to lend decreases as well. On the other hand, as capital adequacy rises, inflation rises, nonperforming loans rise and interest rates on loans and interbank transactions rise, banks' liquidity increases.

The study by Tran, Nguyen, and Long (2019) was carried out with the purpose to identify the factors that explain the liquidity of commercial banks in the banking system of Vietnam between the years of 2010 and 2015. The OLS regression method was used for the analysis, and it was found that the interbank market assists commercial banks in improving their liquidity; the higher the risk of liquidity, the larger the size of the loan; effective credit risk management has a positive impact on the management of liquidity risk; and the long-term interest rate has a negative relationship with the liquidity of commercial banks.

Fungacova, Turk, and Weill (2021) tested "High Liquidity Creation Hypothesis" (HLCH), which states that an increase in the fundamental activity of bank liquidity creation leads to a greater likelihood of the institution failing. Authors tested the HLCH in the context of Russian banking, which has seen a large number of failures despite the fact that these failures were not caused by swings in business cycles or an exogenous shock such as a crisis.

Researchers found, using the liquidity creation measures provided by Berger and Bouwman (2009), that a high level of liquidity creation is associated with a greater

probability of bank failure. This finding holds up under multiple different types of robustness checks. Our findings imply that regulatory authorities may be able to lessen the severity of systemic distress and cut down on the costs imposed on society as a result of failed banking institutions by performing early identification of high liquidity creators.

Kane and Klingebiel (2004) argue that policy decisions made at the start of a financial crisis, such as providing significant liquidity support and government guarantees, can limit the options for reforming a damaged financial and corporate sector. The data suggests that quickly evaluating and allocating losses during the early stages of a crisis can reduce its impact on a country's financial sector and economy.

The authors argue that the most important tasks during a crisis are to identify insolvent institutions and provide haircuts, guarantees, and liquidity support to protect taxpayers and prevent support for bankrupt institutions. Based on the above literatures, following framework has been developed for the study:

 Figure 1. *Conceptual Framework of the Study*

Dependent variable   *Independent variable*

Control Variable
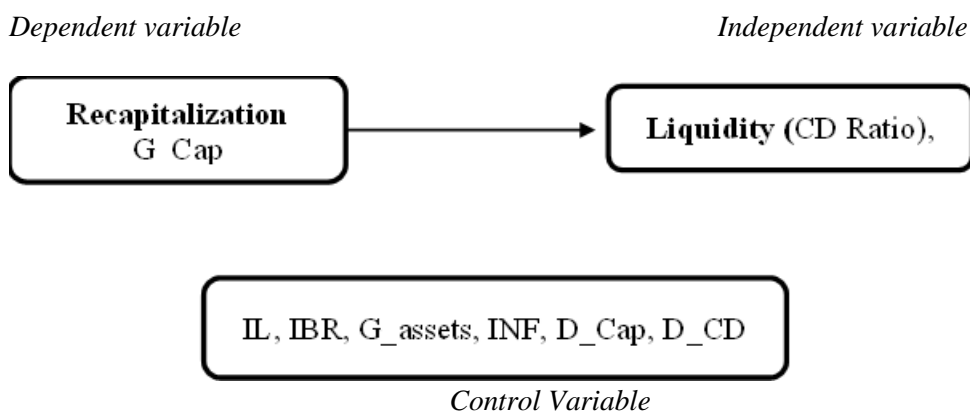
Source: *Own study.*

Figure 1 shows the conceptual framework where recapitalization is indicated by G_Cap and liquidity is proxied by Credit Deposit Ratio (CD Ratio), the relationship of recapitalization with Interest Rate of Loan (IL) Interbank Rate (IBR) Growth in total Assets of Commercial Banks (G_asset), also has been derived by controlling dummy policy change on capital and CD ratio.

Based on a review of the literature and the conceptual framework applied in this study, the following hypotheses were developed to address the research issue and question.

H1: Recapitalization of banks has significant impact on the liquidity of the market.

3. Methodology

This study uses the Ordinary Least Squares method to examine the factors that influence liquidity and the effects of recapitalization on liquidity among commercial banks in Nepal. The analysis is based on 10 years of monthly time series data from commercial banks in Nepal covering the period from July 2012 to April 2022, including the 5 years preceding and following the recapitalization period. The data used in the study pertains specifically to Class A commercial bank, which are considered to be active participants in the money market and are used as a measure of overall money market liquidity. The liquidity is measured using the following equation:

$$L = XB + e$$

Where,

> *L = Credit to Deposit ratio (CD ratio) monthly time-series of 10 years.*
> *X= is a vector of liquidity determinants of our model. It constitutes of the interbank rate, the interest rate on loans, growth in bank capital growth, growth in bank assets, inflation, a dummy for recapitalization and a dummy for change in CD, and time trend.*
> *e= error term.*

The explanatory variables in this study were chosen based on the specific context of Nepal. Previous research has suggested a variety of factors that can impact liquidity in the banking sector, such as political conditions, macroeconomic regimes, and exchange rate regimes. However, the financial industry and market in Nepal are subject to certain restrictions and regulations that are based on national interests, such as capital outflow restrictions for economic stability and exchange rate stability. Given these limitations, this research has identified a set of relevant parameters that will be used to estimate and predict liquidity in Nepal. These parameters take into account the specific characteristics and regulations of the Nepalese financial industry and market.

Definition of variables:
For the study, recapitalization is taken as the independent variable and liquidity is taken as the dependent variable and dummy introduced on policy change on capital and CD ratio are taken as control variables.

Liquidity (CD ratio):
The Credit Deposit Ratio (CD Ratio), also known as the liquidity ratio, is being used as a proxy in this study to understand how much a bank lends relative to the deposits it has mobilized (Ramchandani and Jethwani, 2017). The Nepal Rastra Bank (NRB) has set a maximum CD Ratio of 90.00% for banks operating in Nepal. A low CD Ratio indicates that a bank is not making full use of its resources and has adequate liquidity, while a high CD Ratio suggests that a bank is relying more heavily on

deposits for lending and may be experiencing pressure on its resources and a shortage of liquidity. In this study, data on the CD Ratio of all commercial banks operating in Nepal has been collected from NRB Monthly Statistics on a monthly basis and is being used as the dependent variable.

Growth in Currency Circulation (GCC):

Currency in circulation, which includes narrow money and demand deposits, is an important indicator of the relative significance of money in an economy. Researchers and policy makers often look at various measures to understand the role of currency in circulation, such as the share of currency in circulation in the money supply and the ratio of currency in circulation to nominal gross domestic product (Imamov, 2018). In this study, the growth of currency in circulation is being used as an independent variable, and data on this variable has been collected from NRB Monthly Macro-Economic Statistics. It is expected that the estimated effect of currency in circulation will be negative.

Interest Rate of Loan (IL):

In this study, the weighted average loan rate among commercial banks, referred to as IL, is being used as an independent variable. Data on this variable has been collected from NRB Monthly Macro-Economic Statistics. It is expected that the estimated effect of IL will be positive. IL is a measure of the average rate at which commercial banks lend money to borrowers.

Interbank Rate (IBR):

The interbank rate is a measure of the compensation that a bank receives when it lends money to other banks on the unsecured market. This rate takes into account the credit risk of the borrowing bank, as well as the liquidity risk of the lending bank's own future funding needs (Dubecq, Monfort, Renne, and Roussellet, 2016). In this study, the interbank rate is being used as an independent variable, and data on this variable has been obtained from NRB Monthly Macro-Economic Statistics. It is expected that the estimated effect of the interbank rate will be positive.

Growth in total Capital of Commercial Bank (G_Cap):

In this study, the growth rate of total capital fund on a month-to-month basis for commercial banks, referred to as G_Cap, is being used as an independent variable. Data on this variable has been collected from NRB Monthly data.

Growth in total Assets of Commercial Banks (G_asset):

It is the growth rate of total assets size of the commercial banks on month-on-month basis. In this study G_asset has been considered as the independent variable and the data for the same has been collected from NRB Monthly data.

Inflation (INF):

This study is analyzing the year-on-year change in the price level, using the monthly inflation rate as a measure. In this study INF has been considered as the independent

variable and the data for the same has been collected from NRB monthly macro-economic statistics.

D_recap:
This is the dummy variable indicating the implementation of the recapitalization policy. The dummy 0 is assigned for time period prior to policy change and 1 post to policy change for capital increment.

D_CD:
This is the dummy for change in CD calculation. The dummy assigns the value 1 after policy change where the CCD (Credit to Capital and Deposit) changed to CD (Credit to Capital). Note, although the banks reported CCD prior to this, the paper uniformly has used CD.

TT: TT denotes Time Trend:
The aim of this paper is to investigate the factors contributing to liquidity crises among commercial banks in Nepal and evaluate the effectiveness of policy interventions such as recapitalization and changing the CDD to CD.

4.   Empirical Analysis

4.1 Regression Analysis

In this study, simple OLS regression was used to examine the relationship between various variables and the CD ratio. The results showed that an increase in currency in circulation, capital, assets, and inflation, as well as the presence of a recapitalization policy, were associated with a decrease in the CD ratio. Conversely, an increase in the interest rate on loans, interbank rate, and the presence of a CD policy, as well as the inclusion of a time trend and a constant term, were associated with an increase in the CD ratio. The dummy variables indicate the specific impact of policy interventions on the CD ratio. However, the relationship between the CD ratio and growth in assets was not statistically significant.

Table 1 reveals that seven out of the ten independent variables (interest rate on loans, interbank rate, and growth in capital, dummy for recapitalization, and dummy for CD, time trend, and constant term) have a statistically significant impact on the CD ratio, while the variables for growth in currency in circulation and inflation are significant at a 90% level. The variable for growth in assets is not significant.

The adjusted R^2 value of 93.69% indicates that the majority of the variation in the CD ratio can be explained by the included variables. The CD ratio is composed of both credit and deposits, and the results show that some variables have a positive effect on credit while others have a negative effect on deposits. An increase in the CD ratio indicates that commercial banks are using up their loanable funds and injecting credit into the market, while a decrease in the CD ratio means that the

explanatory variables have increased the credit-creating capacity of the commercial banks or influenced deposits.

Likewise, the result also revealed that the dummy variable for recapitalization has the largest negative coefficient (-2.243933) among the independent variables, indicating that this policy has had a significant impact on increasing the credit-creating capacity or influencing deposits of commercial banks in Nepal.

This is supported by the negative coefficient for growth in capital (-0.088506), which also suggests that an increase in capital has contributed to a decrease in the CD ratio. The dummy variable for CD has the highest coefficient (14.19), indicating a strong positive effect on credit creation and an increase in the CD ratio among commercial banks. This dummy variable represents the joint impact of two policies implemented by the Nepal Rastra Bank indicating recapitalization and the change from CCD to CD.

Table 1. *Result of regression analysis*

```
      Source |      SS        df      MS     Number of obs  =     116
-------------------------------------------  F(9, 106)     =   190.68
       Model | 5816.04426      9   646.22714  Prob > F      =   0.0000
    Residual | 359.233584    106  3.38899607  R-squared     =   0.9418
-------------------------------------------  Adj R-squared =   0.9369
       Total | 6175.27785    115 53.6980682  Root MSE      =   1.8409
```

| CD	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GCC	-0.079364	0.04175	-1.90	0.060	-0.16214	.003412
IL	0.385575	0.13954	2.76	0.007	0.10890	.662244
IBR	0.674450	0.13159	5.13	0.000	0.41355	.935346
G_cap	-0.088506	0.03281	-2.70	0.008	-0.15356	-.023447
G_asset	-0.126339	0.14879	-0.85	0.398	-0.42134	.168665
INF	-0.234552	0.12095	-1.94	0.055	-0.47435	.005251
D_recap	-2.243933	0.77479	-2.90	0.005	-3.78004	-.707820
D_CD	14.19996	0.91280	15.56	0.000	12.3902	16.0096
TT	0.131581	0.01040	12.64	0.000	0.11095	.152212
_cons	62.90774	2.12974	29.54	0.000	58.6853	67.1301

Source: *Own study.*

4.2 Residual Diagnosis Test

To ensure the validity of the OLS results, various diagnostic tests were conducted and the results are presented in the appendix under the heading "Regression Diagnostics." These tests included checks for normality of residuals, multicollinearity, homogeneity assumptions, and serial correlation. The results of these tests indicate that the OLS estimates meet all of the necessary assumptions.

a. Normality Test:

The normality assumption is crucial for the OLS estimates to be reliable for prediction and statistical inference. To evaluate the normality of the residuals in this study, two methods were used: a graphical method and the Jarque-Bera test. These tests are used to ensure that the residuals follow a normal distribution, which is a requirement for the OLS estimates to be valid (Figure 2).

Figure 2. *Normal Distribution*
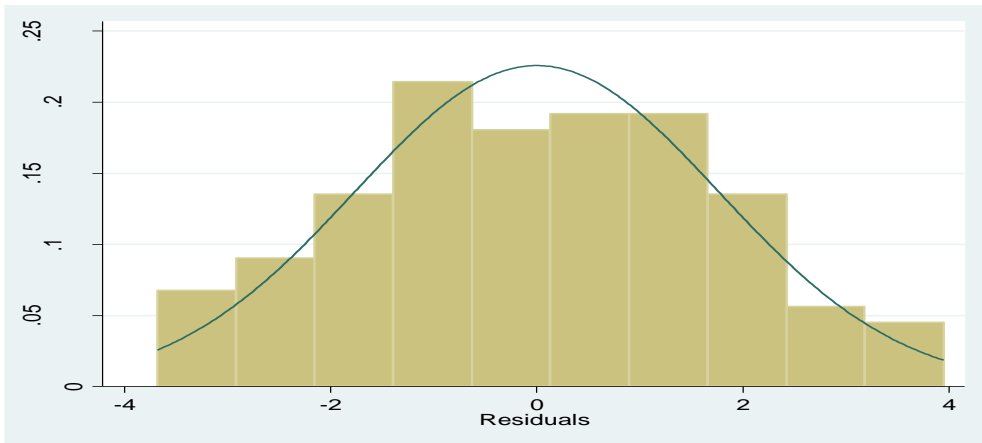
Source: Own study.

To visually assess the normality of the residuals, a histogram was plotted and the density of the sample residuals was compared to a bell-shaped curve. The histogram indicates that the residuals follow a normal distribution. To confirm this result, the Jarque-Bera test was also performed. This test is a statistical test specifically designed to check for normality in a dataset.

b. Jarque-Bera Test:

The Jarque-Bera test provides a chi-squared statistic, which can be compared to a critical value to determine whether the residuals follow a normal distribution. In this case, the estimated chi-squared statistic is greater than 0.05, which indicates that there is sufficient evidence to not reject the null hypothesis that the residuals are normally distributed. This suggests that the normality assumption is met for the OLS estimates in this study

Jarque-Bera normality test: 2.091 Chi(2) .3515
Jarque-Bera test for Ho: normality

c. Multicollinearity Test:

Multicollinearity occurs when the independent variables in a regression model are correlated with each other. This can lead to inflated standard errors, which can affect the statistical significance of the results. To determine if multicollinearity is present in this study, tests such as the variance inflation factor (VIF) and the variance-

covariance matrix were used. These tests can help identify correlations between the independent variables and assess the impact on the regression model.

The results of the variance-covariance matrix and the variance inflation factor (VIF) tests suggest that multicollinearity is not a concern in this study, with the correlation between the independent variables being less than 0.5 for all variables except for the constant term and inflation. The VIF values for each variable also indicate that multicollinearity is not present. These results suggest that the independent variables do not significantly vary with each other and are suitable for use in the regression model (Table 2).

Table 2. *Covariance Matrix*

e(V)	GCC	int_loan	ibr	g_cap	g_asset	inf	d_recap	d_CD	TimeTrent	_const
GCC	1.00									
int_loan	0.06	1.00								
interbankr~e	-0.05	-0.32	1.00							
g_capital	0.10	-0.04	0.19	1.00						
g_assets	-0.18	0.03	0.13	0.09	1.00					
inflation	-0.03	0.15	-0.10	-0.04	-0.03	1.00				
d_recap	-0.01	0.21	-0.30	-0.19	-0.04	0.46	1.00			
d_CD	0.08	0.24	-0.33	-0.00	0.05	-0.14	0.24	1.00		
TimeTrent	0.05	0.14	-0.20	0.08	-0.05	0.29	-0.46	-0.36	1.00	
_cons	-0.04	-0.82	0.27	0.01	-0.10	-0.64	-0.39	-0.07	-0.3443	1.00

Source: *Own study.*

The variance inflation factor (VIF) values for the independent variables in this study are all below 5, indicating that multicollinearity is not present in the model. A VIF value of 1 indicates no multicollinearity, and a score of 5 or higher is often used as a threshold for identifying multicollinearity in a model. These results suggest that the OLS model used in this study is free from multicollinearity and the independent variables are suitable for use in the analysis (Table 3).

Table 3. *VIF test*

Variable	VIF	1/VIF
dummy_reca~n	4.40	0.227384
TimeTrent	4.16	0.240631
inflation	2.84	0.351993
interbankr~e	2.09	0.478358
dummy_CD	1.62	0.618365
int_loan	1.29	0.776177
g_capital	1.10	0.907544
g_assets	1.08	0.925944
GCC	1.07	0.932087
Mean VIF	2.18	

Source: *Own study.*

d. Homoscedasticity Test:

To check if the OLS model used in this study meets the assumption of homoscedasticity, a Breusch Pagan test was conducted. Homoscedasticity is the assumption that the variance of the errors in the model is equal across all values of the independent variables. Violating this assumption can lead to biased estimates. The result of the test is summarized below (Table 4):

Table 4. *Homoscedasticity test*

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
$$\text{Ho: Constant variance}$$
Variables: fitted values of CD
$chi^2(1)$ =   2.78
Prob $>chi^2$ =   0.0956

Source: *Own study.*

The p-value of the Breusch Pagan test is greater than 1%, indicating that there is not sufficient evidence to reject the null hypothesis that the OLS estimates are homoscedastic. This means that the variance of the errors in the model is considered to be equal across all values of the independent variables, and the assumption of homoscedasticity is met.

e. Autocorrelation Test:

The OLS estimates in this study are based on time-series data, which can be affected by auto-correlation. This occurs when the variables in the model are influenced by their past values, resulting in a dependence on lagged events. This can lead to inefficient estimators and reduced predictive power. To check for the presence of auto-correlation, the Breusch Godfrey LM test was conducted. This test helps to identify if there is a relationship between the errors in the model and their lagged values, which can indicate the presence of auto-correlation. The result of the test is as follows (Table 5):

Table 5. *Breusch-Godfrey LM test for autocorrelation*

lags(p)	chi^2	df	Prob > chi^2
1	0.492	1	0.4831

H0: no serial correlation.

Source: *Own study.*

5. Discussions, Conclusions and Implications

As a developing country, Nepal requires a large amount of investment and the Nepal Rastra Bank (NRB) uses various monetary tools and instruments to maintain liquidity in the market. The recent policy interventions of recapitalization and changing the CCD to CD are intended to support economic liquidity.

However, events such as the real estate bubble in the US and the Lehman Brothers collapse highlight the need for stability, diversification, and sustainability in the financial system. To address these issues, it is important for NRB to actively monitor the market and use appropriate tools and instruments.

To finance large, long-term hydropower projects in Nepal, the Nepal Rastra Bank (NRB) introduced consortium financing and encouraged mergers and acquisitions among banks. NRB also increased the required capital for Class A commercial banks from 2 billion to 8 billion as part of a recapitalization policy to strengthen the banks and increase their risk appetite.

The result showed that the growth in capital and the policy of recapitalization have increased the credit capacity and liquidity in the market by decreasing the CD ratio. However, the recent change in policy from CCD to CD has led to an increase in loans and advancements, causing the CD ratio to exceed the 90% threshold set by the Nepal Rastra Bank (NRB).

The average CD since the implementation of CD has been 95.46%, indicating a liquidity crisis. Analysis of the CD ratios over the past 10 years shows that the average CD increased after the adoption of the recapitalization policy, suggesting that it increased the risk-taking capacity and lending ability of commercial banks. The recent decrease in deposits due to the impact of the pandemic on economic activities may also have contributed to the increase in the CD ratio.

Liquidity constraints are a common occurrence in the Nepalese economy and can be attributed to various structural issues, such as the mismatch between the long-term nature of lending and short-term deposits, the lack of channeling of a significant portion of remittances through the banking sector, and Nepal's inability to attract foreign investors due to policy issues. The capital expenditure of the government and the reliance on imports, which can lead to fluctuations in the balance of payments and foreign exchange reserves, also contribute to liquidity problems.

Additionally, the domestic economy's reliance on remittances, which can be affected by international events and decreasing official inflows, and the constant growth in consumption demand can lead to difficulties in mobilizing funds, resulting in a prolonged liquidity crisis.

The Nepal Rastra Bank, the central bank of Nepal, has attempted to inject liquidity into the market through the use of monetary policy instruments such as repos and standing liquidity facilities. However, the bank has limitations on injecting liquidity to meet the increasing demand in the economy. The recapitalization of banks has increased their capacity to lend, but the banks still faced difficulties finding additional sources of funding for their aggressive lending, leading to capital constraints. This paper examined the impact of recapitalization and liquidity in the Nepalese context.

This research provides useful insights for banks, financial institutions, regulators, students, researchers, and educators. The findings on the impact of recapitalization on liquidity can be used by banks and financial institutions for planning and policy-making, and by regulators for making informed policy decisions to ensure financial stability in the country. Additionally, students, researchers, and educators can benefit from this research as it provides valuable literature in this area for further study. Overall, the findings of this research can be used to contribute to the development of the economy.

This research has some limitations that should be considered. The study is based on data from Class A banks and financial institutions operating in Nepal and relies on secondary data from sources such as monthly reports and publications from the central bank, which may not accurately reflect the situation in the field. Additionally, the literature review for this study was limited due to a lack of available materials on the topic. These limitations should be taken into account when interpreting the results of this research.

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