



Optimal Number of Banks and Financial Institutions in Nepal



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FOREWORD

Financial sector consolidation has attracted greater attention of policy makers in the recent years. After the financial crisis of 2007-08, the central banks around the world have prioritized this issue, and advocated for a new regulatory framework for strengthening the capital base of the banks and enhanced risk management. After the adoption of liberalization policy by Nepal in the mid-1980's, the number of financial institutions grew as high as 220. However, with the reorientation of policy towards the consolidation of financial sector, the number of such institutions is on declining trend.

This study is an attempt to assess the financial development of Nepal on a cross-country context. In addition, it has examined the issues of concentration and market power of the banks that can result from the consolidation process. Finally, it has attempted to evaluate the current number of commercial banks in Nepal through a number of quantitative tools and survey among the bank management and experts.

The results from the study show that banking market in Nepal has sufficient level of competition as evidenced by the low concentration ratios, low HH and Lerner indices and a high value of Panzer-Rosse statistic. This implies that further consolidation can be done without raising the market power of the banks significantly. In addition, the survey results imply that the current number of the commercial banks in Nepal is more than optimal and should be reduced for better efficiency of the banking system.

I hope that the findings from this study will be helpful to all of us for taking the consolidation process forward and build a healthy and resilient financial system.

Finally, I would like to thank the study team of Economic Research Department comprising Director Ram Sharan Kharel, PhD, Deputy Director Mr. Siddha Raj Bhatta and Assistant Directors Mr. Tika Ram Timilsina, Ms. Pratibha Thapa and Ms. Rekha Ghimire for their tireless efforts to complete the study. I would also like to thank Executive Director Gunakar Bhatta, PhD for his guidance during the earlier phase of the study and Directors Dilli Ram Pokhrel, PhD, Mr. Madav Dangal and Mrs. Arya Joshi for providing suggestions on the report. More importantly, I would like to thank the CEOs and directors of the BFIs and experts for participating in the online survey.

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LIST OF ACRONYMS

ADB	:	Asian Development Bank
ATM	:	Automated Tailoring Machine
BFI	:	Bank and Financial Institutions
CB	:	Commercial Banks
CEO	:	Chief Executive Officer
CR	:	Concentration Ratio
DEA	:	Data Envelopment Analysis
FinTech	:	Financial Technology
GDP	:	Gross Domestic Product
GFC	:	Global Financial Crisis
HHI	:	Herfindahl-Hirschman Index
IFS	:	International Financial Statistics
IMF	:	International Monetary Fund
LI	:	Lerner Index
M&A	:	Merger and Acquisition
NBL	:	Nepal Bank Limited
NPL	:	Non-performing Loan
NRB	:	Nepal Rastra Bank
RBB	:	Rastriya Banijya Bank
RBI	:	Reserve Bank of India
ROA	:	Return on Assets
ROE	:	Return on Equity
US	:	United States of America

EXECUTIVE SUMMARY

1. **Financial sector consolidation has attracted a great deal of attention of the policy makers in the recent decades.** After the global financial crisis of 2007-08, central banks around the world have oriented their policy towards building a resilient financial system and advocated for a new set of regulatory framework with enhanced risk management.
2. **Nepalese banking system experienced a significant growth in the post-liberalized era.** The number of the Banks and Financial Institutions (BFIs) reached as high as 220 in 2012. However, with the policy orientation of the Nepal Rastra Bank (NRB) towards consolidation, the number of the BFIs is on a declining trend.
3. **The theoretical and empirical literature is not conclusive about financial sector consolidation.** One strand of literature advocates that consolidation results in efficiency and resiliency of the banking system. The other line of argument advocates for leaving it to the market as consolidation violates the market principle and reduces consumer welfare by giving market power to the BFIs.
4. The present study is an attempt to assess the financial development of Nepal on a cross-country context, to examine the market power as well as concentration of the banking market and provide suggestions regarding the consolidation going forward. For this purpose, the study has used a number of quantitative as well as econometric techniques and a survey among the bank management and experts.
5. **One of the important findings from the study is that Nepal's banking system is far less concentrated as evidenced by the concentration ratios, HH and Lerner indices, and Panzer-Rosse statistic.** Top five commercial banks occupy 29 percent of the commercial bank assets and the HH index is below 600. In addition, the average Lerner index for the commercial banks stands at 0.41. Moreover, all these measures have declined during the last five years. The Panzer-Rosse statistic for the commercial banks is 0.99. These results indicate a more competitive environment in the market.
6. **Secondly, the results from the survey show that financial consolidation process in Nepal has been effective in many respects at least in the short run.** It has resulted in higher credit as well as deposits growth, a higher earning power and an improvement in risk management capacity. However, operational efficiency has not significantly improved as shown by the results from the data envelopment analysis (DEA) model. It calls for a focus of the regulators as well as the BFIs on enhancing operational efficiency in the post-merger phase.

7. **Thirdly, the number of commercial banks in Nepal is higher compared to many peer countries defined in terms of the size of the economy, per capita GDP and population.** In addition, the survey results show that the existing number of BFIs in Nepal is more than optimum.
8. **Regarding the number of commercial banks, majority of the survey respondents opined that the number should be reduced.** One-half of the respondents opined that the optimal number of commercial banks for Nepal is 11 to 15, another one-fifth preferred 5 to 10 commercial banks, 15 percent preferred 16 to 20 banks and rest preferred 20 to 25 commercial banks. Incentive merger has been indicated as most preferred modality for reducing the number of BFIs and majority of the respondents expressed their favor for the merger between weak and strong institutions.
9. **No statistical model is so far proven to be effective to determine the optimal number of banks in an economy, sufficient level of competition in the banking industry imply that further consolidation in Nepal can be done without creating enough room for monopolistic power.** By concentrating on the efficiency gains, the anti-competitive effect of consolidation can be overpowered by the efficiency gains.
10. **These findings have important policy implications.** They can provide a broad guideline on the nature of the consolidation process going forward. In addition, they provide empirical evidence regarding the level of competition in the market and an assessment of the number of commercial banks in Nepal. Furthermore, the findings could be taken as the basis for determining the appropriate range of the commercial banks to ensure financial stability and enhanced consumer welfare. Lastly, the findings regarding the technical efficiency gains of the merged BFIs indicate for a need to prioritize the efficiency gains of the BFIs in the post-merger period.

CHAPTER I: INTRODUCTION

Background

- 1.1. The global financial system has oriented towards consolidation in the last three decades. Such a movement was reinforced by the Asian Financial Crisis of 1997-98 and the Global Financial Crisis (GFC) of 2007-08. As a consequence of this, new regulatory frameworks have emerged focusing on enlarged capital base and merger of the BFIs.
- 1.2. Europe and American continents have experienced considerable growth and consolidation of the banking industry. The US banking industry experienced a sustained and unprecedented merger movement from 1980 to 1998. During that period, approximately 8,000 bank mergers occurred, involving about \$2.4 trillion in acquired assets. The 1990s, especially 1994-98, was a period of numerous large bank mergers, including several that were among the largest in the US banking history (Rhaodes, 2000). Malaysia successfully adopted the directed merger and reduced 54 banks into 10 banks in 2002 (Ahmad et al., 2005). In Malaysian case, the stronger banks acquired the poorly managed banks. Other countries that intensively participated in the merger movement include Russia, Netherlands, Italy, Ukraine and other European countries.
- 1.3. Nepal's financial system has grown significantly during the last few decades. In 1985, only two commercial and two development banks were in operation. That number grew to as high as 220 in 2012. However, with the introduction of merger policy by the NRB in 2011, the number of such institutions has reduced significantly. At the end of mid-March 2022, the number of commercial banks, development banks and finance companies is 27, 17 and 17 respectively. The number of microfinance institutions (MFIs) is 66 and there is one infrastructure development bank.
- 1.4. Recently, there is a debate among the academicians and policy makers about whether the financial consolidation movement has been successful to attain its intended objectives or not. One line of argument is that the merger movement has increased efficiency in the banking sector and thereby reduced the cost of financial services. This line has also argued for increased resilience of the BFIs through bank mergers. The other, and equally strong, line of argument is that bank mergers have limited competition in the banking sector and is against the market principle.

- 1.5. In this background, this study attempts to assess the present situation of Nepal's banking sector in the international context and evaluate whether further consolidation in the industry is desirable or not.

Objectives

- 1.6. The major objective of this study is to assess the level of financial development of Nepal and evaluate the current number of BFIs. Specifically, it attempts to:
 - Assess the level of financial development on a cross-country context.
 - Measure the level of competition and market power of the Nepalese banking industry.
 - Suggest the optimal range of commercial banks in Nepal.

Rationale

- 1.7. There is wide array of debate regarding the optimum number of the BFIs in national and international context. The merger debate and gradually decreasing number of development banks and finance companies in Nepal urges to determine the optimal number of BFIs. In this backdrop, the findings from this study can be helpful to shape the financial structure of Nepal in the coming days and help the policy makers define the consolidation process going forward.

Organization of the Study

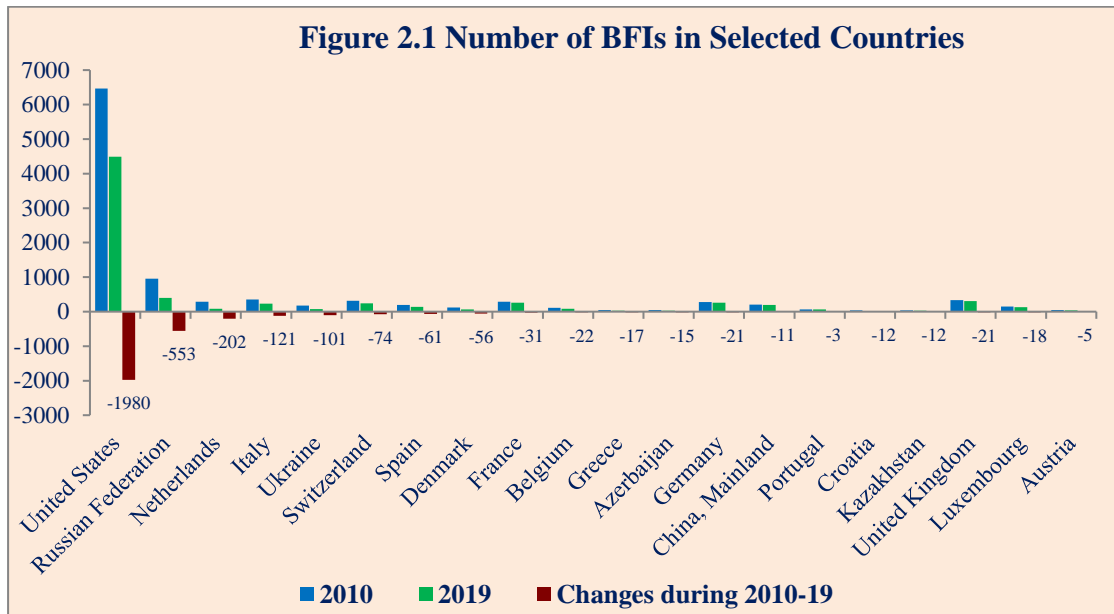
- 1.8. The report is organized as follows. The second chapter discusses the recent trends in global banking industry and evaluates the progress of Nepal in terms of financial access and financial sector consolidation and the third chapter discusses the findings of some empirical studies and country experiences. The fourth chapter presents the tools used in the study, the fifth chapter summarizes the main findings, and the final chapter concludes the study.

CHAPTER II: STRUCTURE AND TRENDS IN BANKING INDUSTRY

Trends in Global Banking Industry

- 2.1. The global banking industry has been undergoing a fundamental transformation from the last one decade. Among others, two trends are prominent. First, the banking industry has been consolidated around the world through enhanced regulations. More stringent capital adequacy and risk management standards are now being imposed upon banks, along with a corresponding increased strain on their traditional business models and operating margins. The consolidation process has been largely supplemented by the merger and acquisition of the banks.
- 2.2. Secondly, accelerated focus on digital transformation and emergence of FinTech has transformed the working modality of the BFIs. Mobile banking, internet banking and digital wallets, among others, have been popular in the industry. At the same time, it has created challenges of new types of risk management.
- 2.3. Bank mergers have reshaped the banking industry in a number of countries. Originated from the US, merger strategies have been taken by bankers since early 1980's. The number of US banks has declined over the past four decades from about 16,000 during 1980's to 4,700 in 2018, and mergers of institutions is so far the reason for bank consolidation. Since the end of the GFC of 2007-08, voluntary mergers have been the primary reasons for the bank consolidation. The number of Russian banks started to shrink from 2007 and by 2018 the number of banks of the country decreased from 2631 to 440. Similarly, the central bank of Malaysia implemented a unique reform strategy; government guided merger in 2002 merging 54 depository institutions to form 10 large banks.
- 2.4. In the aftermath of GFC, banking sector entered into the period of enhanced regulation and structural change because of which banks around the world were encouraged to consolidate. The number of banks of France and Italy was reduced from 326 and 348 in 2004 to 259 and 237 in 2018 respectively. Likewise, the number of banks in Japan and United Kingdom was reduced from 132 and 346 to 117 and 321 respectively (IMF, 2020).

2.5. Merger movement has taken momentum in US, Russia, Netherlands, Italy and Ukraine. As shown in Figure 2.1, the number of banks in those countries have declined significantly during 2010-19.



Source: IMF (2020)

2.6. The Asian financial crisis of 1996-97 also compelled the financial institutions to enter into merger and acquisition process. The number of merger and acquisition in the financial sector in Singapore, Malaysia and Hong Kong before crisis (1990-1997) were 72, 51 and 42 respectively and after the crisis (1999-2006) were 165, 92 and 86 respectively (Shen and Lin, 2007). In addition, cross border merger and acquisition has become an instrument to pursue business in global market in recent years.

Evolution of Banking Industry in Nepal

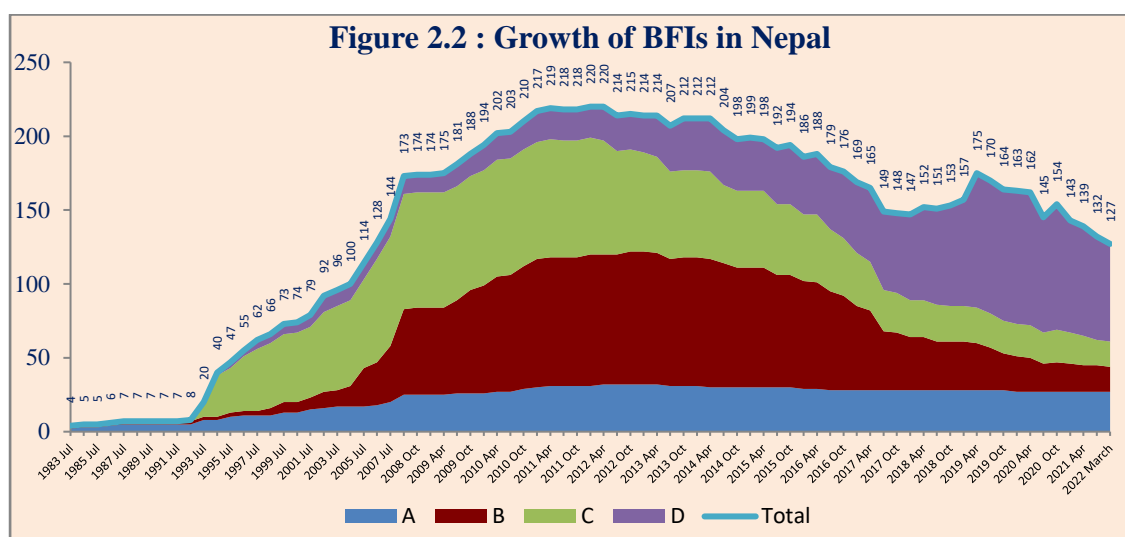
2.7. The modern banking system started in Nepal in 1937 with the establishment of Nepal Bank Limited. It worked as the only financial institution in the country until the establishment of the NRB in 1956. Later on, two other government-owned banks were established in the 1960's. However, the financial system of Nepal remained largely underdeveloped and concentrated until the mid-1980's.

2.8. With the financial liberalization in the 1980s, the participation from the private sector in banking industry significantly increased and the number of BFIs increased up to 220 in 2012. During this period, joint venture banks were also established bringing new

technology in the industry. With the emergence of numerous financial institutions, financial access and inclusion has been enlarged.

2.9. In the post-GFC period, merger waves received prominence across the globe and many countries adopted financial consolidation plans through bank mergers. In Nepal also, merger and acquisition activities took momentum after the introduction of merger by-law in 2011.

2.10. In 2012, there were 220 financial institutions including 32 commercial banks, 88 development banks, 77 finance companies and 23 MFIs. In the meantime, monetary policy of 2015/16 emerged as a pathway for banking sector to adopt merger and acquisition as it instructed the A, B and C class financial institutions to raise paid-up capital by four times. Consequently, the number of BFIs gradually declined thereafter.



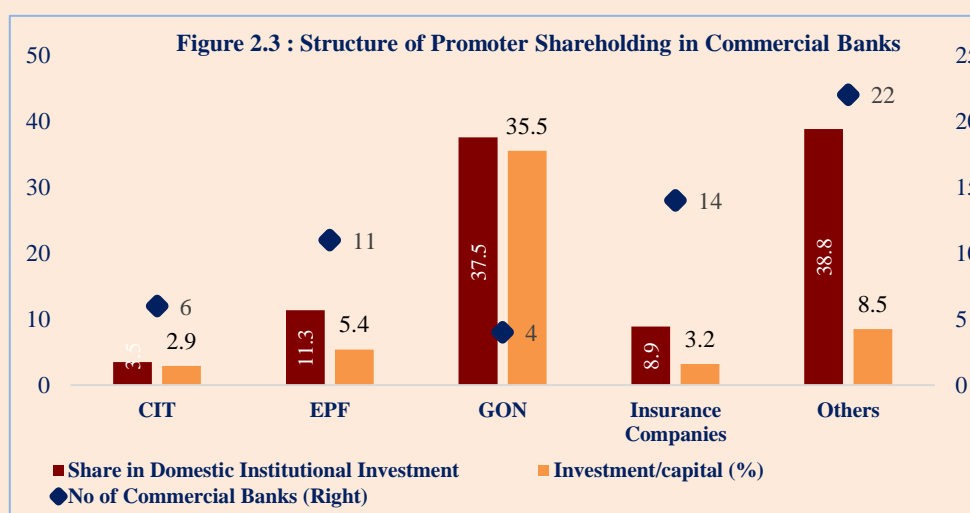
Source: NRB (2021) & NRB (2022)

Structure of Nepalese Financial System

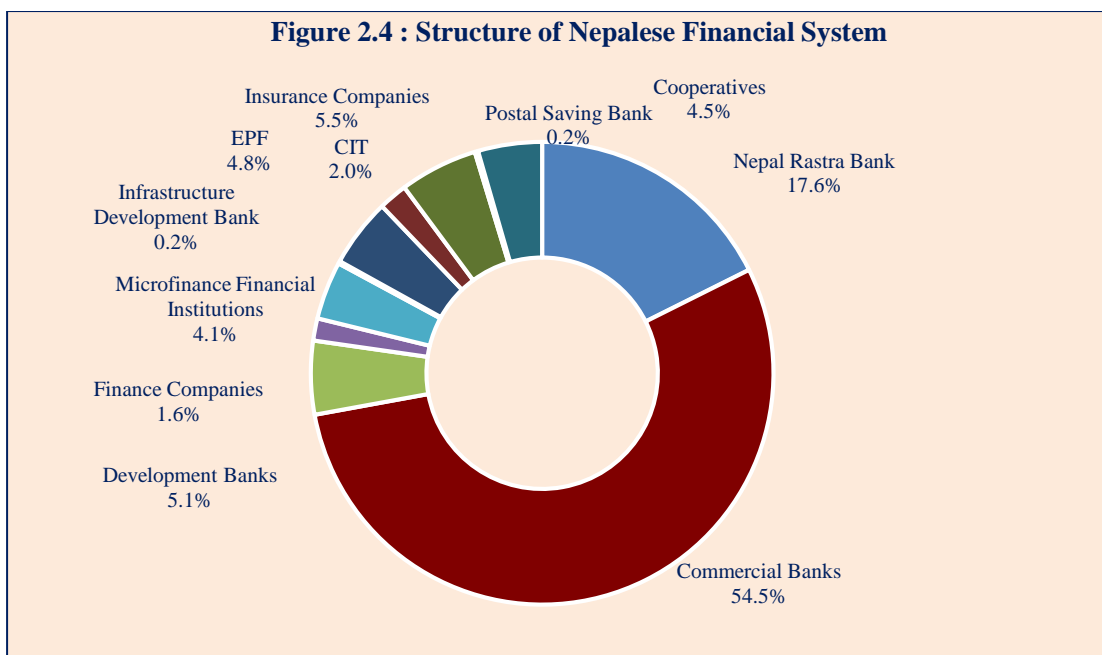
2.11. Nepalese financial system comprises deposit taking and contractual saving institutions. The deposit taking financial institutions include commercial banks, development banks, finance companies and MFIs. Likewise, other financial institutions comprise insurance companies, employee's provident fund, citizen investment trust, postal saving offices, cooperatives, non-government organizations performing limited banking activities and Nepal Stock Exchange. NRB, the central bank of Nepal regulates the banking sector comprising commercial banks, development banks, finance companies and MFIs.

Box 2.1 : Shareholding in Nepali Commercial Banks

- In Nepali commercial banks, 12 foreign institutions, 504 domestic institutions and more than 26 thousands natural individuals have invested in promotor shares. The share of foreign institutions on promoter shares is 13.9 percent, that of domestic institutions is 30.6 percent and the share of natural individuals is 55.5 percent.
- Out of the investment of domestic institutions, the share of Employee Provident Fund (EPF) is 11.3 percent. It has invested in 11 commercial banks and this investment represents 5.4 percent of their total capital. Likewise, the share of Citizen Investment Trust (CIT) is 3.5 percent. It has invested in six commercial banks and this investment represents 2.9 percent of their total capital. In addition, the investment of insurance companies is 8.9 percent. They have invested in 14 commercial banks and this investment represents 3.2 percent of their total capital.



2.12. As of mid-March 2022, there are 27 commercial banks, 17 development banks, 17 finance companies, 66 MFIs, and 1 infrastructure development bank licensed by the NRB. Commercial banks are the largest part of the financial system comprising 54.5 percent of the assets followed by the NRB with 17.6 percent. The share of development banks finance companies and MFIs is 5.1, 1.6, and 4.1 percent respectively. On the non-bank side, the share of insurance companies is 5.5 percent and the share of cooperatives is 4.5 percent.



Source : NRB (2021)

Performance of Nepalese Financial System

Financial Access/Inclusion

- 2.13. With the adoption of financial liberalization policy in the mid 1980's, the number of BFIs in Nepal has expanded and such an expansion has increased the supply of financial services to the people. Financial access has increased with the expansion of branch network of BFIs. As of mid-March 2022, the branch network of the BFIs has reached 11349 compared 5068 five year ago. As a result, per branch population has declined from 5610 to 2572 during this period.
- 2.14. The total number of deposit accounts has increased to 42.4 million as of mid-March 2022 compared 19.8 million five year ago. In addition, the number of loan accounts has increased from 1.2 million to 1.8 million and the number of mobile banking users has increased from 2.7 million to 16.8 million during this period. The number of internet banking users has also increased significantly during this period.
- 2.15. Of the total 753 local levels, commercial banks have extended their branches at 750 levels as of mid-March 2022.

2.16. These indicators reveal that the financial access and outreach of the BFIs has improved a lot during the last decade. Such a progress has been achieved due to the focus of the NRB to expand financial services in the rural area and marginalized sectors.

Table 2.1: Financial Access

	July 2015	July 2016	July 2017	July 2018	July 2019	July 2020	Jul 2021	Mar 2022
No of BFI Branches	3838	4274	5068	6650	8686	9765	10683	11349
Deposit Accounts (in million)	14.9	16.8	19.8	23.5	27.9	32.5	37.8	42.4
Loan Accounts (in million)	1.0	1.1	1.2	1.3	1.4	1.5	1.7	1.8
Mobile Banking Accounts(in million)	-	1.8	2.7	5.1	8.3	11.3	14.2	16.8
No of Debit Cards	4.5	4.7	5.0	5.5	6.7	7.3	8.8	10.2
Internet Banking Users	438950	515465	783751	834302	917344	1031227	1160321	1609209
Population per Branch	7206	6562	5610	4334	3363	3072	2844	2572

Source: NRB (2022)

Financial Sector Growth

2.17. The size of the financial sector has also increased over the last few decades. During the last one decade only, the asset of the financial sector as percent of GDP increased from 106.2 percent in 2011 to 190.9 percent in 2020. The asset of the BFIs only increased from 67 percent to 123 percent during this period (NRB, 2021).

2.18. Total deposits of the BFIs has increased by 19.6 percent on average during July 2011 to July 2021 whereas credit to the private sector has increased by 21 percent. Deposits and credits as percent of GDP have increased from 52.7 percent and 46.5 percent to 97 percent and 109.3 percent respectively during the period (NRB, 2021).

Policy Initiatives Taken for Financial Reforms/Financial Sector Consolidation in Nepal

2.19. After the adoption of liberalization regime in the 1980's, Nepalese financial sector policies focused on expanding financial access and availability of resources in the rural

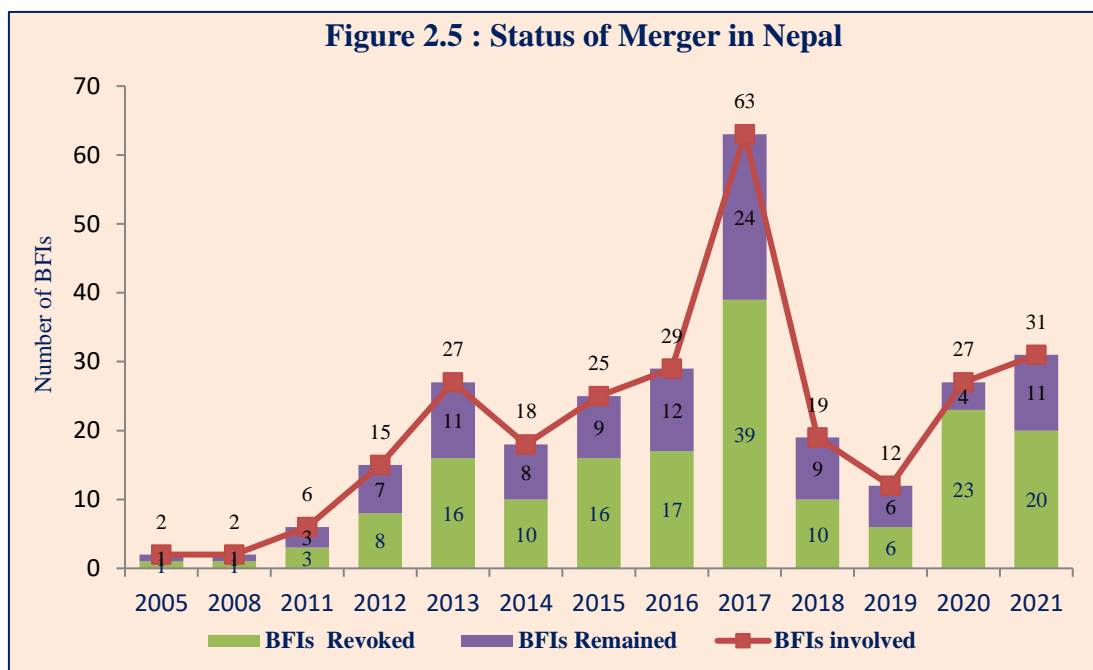
areas. As a result, the number of financial institutions grew significantly in the 1990's and 2000's. This has been accompanied by a number of financial sector reforms at various times.

- 2.20. Reform initiatives undertaken in the past include easing of licensing policies, statutory requirements, foreign exchange exposure, and cash reserve ratios; liberalization of the interest rates; and introduction of various prudential and regulatory reforms.
- 2.21. Nepal embarked on the comprehensive financial reform program after publicly announcing the Financial Reform Strategy in November 2000. The major objectives of the reform program were to reengineer the central bank, restructure the troubled state and commercial banks, and enhance the capacity of the overall financial system including the legislative reforms.
- 2.22. After the GFC of 2007-08, most of the central banks around the world focused on financial sector strengthening and consolidation through a number of measures such as merger and acquisitions, increasing capital base and implementing the BASEL principles. NRB also focused on the financial sector consolidation in the post GFC period.

Merger Guidelines and Bylaws

- 2.23. To facilitate the merger and acquisition of the BFIs, NRB has made a number of regulatory provisions. For the first time, NRB enacted merger bylaw 2011 which was amended further in 2012. In addition, NRB implemented acquisition bylaw in 2013. The two bylaws were integrated into merger and acquisition bylaw 2016. It was further amended on a continuous basis in order to facilitate further merger between the BFIs.
- 2.24. The major objectives of existing bylaw are:
 - i. To enhance the credibility of the BFIs into public by promoting overall banking and financial system.
 - ii. To maintain financial stability by ensuring good governance, secure, healthy, effective and efficient banking and financial system of the country.
 - iii. To develop competitive capacity of financial system by improving capital base.
 - iv. To render modern, high quality and credible banking service to public by promoting financial, human resource, technical and other capacity.
 - v. To protect interest of depositors, borrowers and other stakeholders.

2.25. With the implementation of the bylaw, there has been a significant progress in the merger/acquisition of the BFIs. As of mid-March 2022, the number of institutions involved in merger process has reached 239 out of which the license of 177 BFIs has been revoked (Figure 2.5).



Source: Nepal Rastra Bank

Capital Increment

2.26. The capital fund of the BFIs has increased significantly after the NRB decided to increase the paid-up capital of the BFIs in 2016. The monetary policy of 2015/16 increased the minimum paid up capital of A, B and C class financial institutions by four times. Table 2.2 shows the new capital requirements for the BFIs.

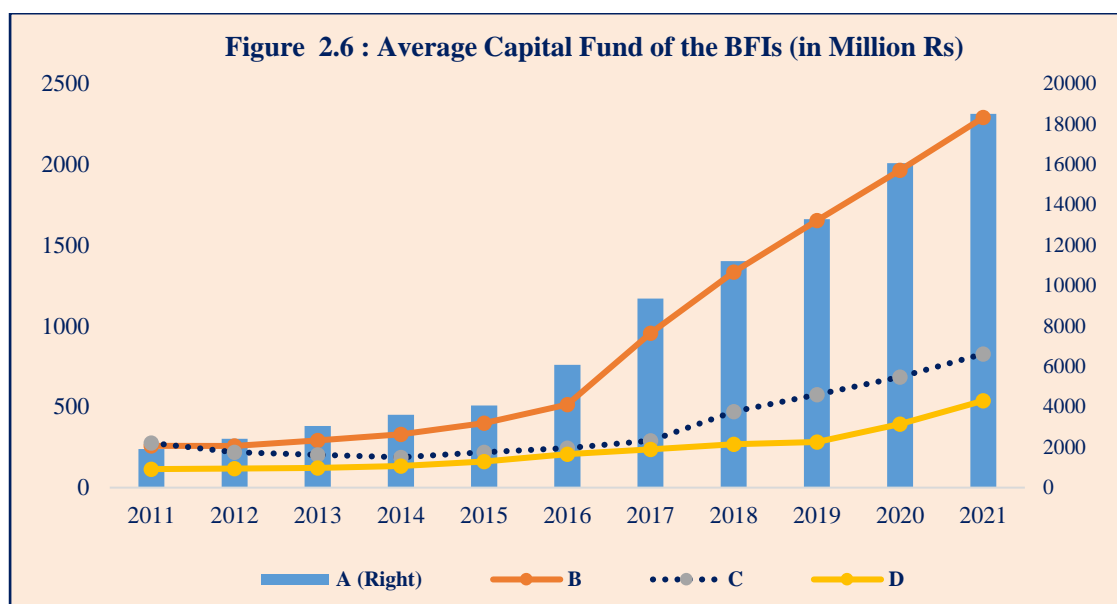
Table 2.2: Paid-up Capital (Rs. in Million)

Class	National level		4-10 districts		1-3 districts	
	Before	After	Before	After	Before	After
A	2000	8000	-	-	-	-
B	640	2500	300*	1200	300*	500
			200		100	
C	300*	800	-	800	300*	400
	200				100	

* Applicable to only those financial institution involve in lease financing.

Source : Nepal Rastra Bank

2.27. As a result of the new capital requirements, the capital base of the BFIs increased significantly. The average capital fund of commercial bank in 2015 was Rs. 4 billion that has increased to almost 4.5 times in 2021. During this period, the average capital fund of the development banks, finance companies and MFIs has increased to five, four and five folds respectively (Figure 2.6).



Source: Nepal Rastra Bank

Incentives for Merger

2.28. NRB has been continuously incentivizing mergers of the BFIs through annual monetary policies in recent years. Some of the incentives provided till date are relaxation in regulatory ratios, waiver in cooling period for the members of board of directors and senior officers of the BFIs, relaxations in maintaining cash reserve ratio (CRR) and credit to capital and deposit (CCD) ratio and relaxations in sectoral lending targets, among others. Such initiatives have encouraged the BFIs for mergers and acquisitions.

CHAPTER III: FINANCIAL SECTOR CONSOLIDATION: PRINCIPLES AND PRACTICES

- 3.1. Both economic theory and empirical evidence are inconclusive about the impact of increasing banking market concentration on financial sector performance and stability. The micro foundations of market theory argues that with the increase in the market share of the banks, they will have more monopolistic power that results in higher price of banking services and reduced customer welfare. Higher market power also limits the expansion of banking services and creates more systemic risk in the economy.
- 3.2. There are two opposite views regarding the impact of banking concentration on financial growth and stability. The first view advocates that larger banks in concentrated banking systems may enhance profits and thus reduce financial fragility by providing higher capital buffers that protect the institutions from external macroeconomic and liquidity shocks (Boyd et al., 2006). Second, larger banks tend to focus on higher quality investment that will increase the return of the singular investment and hence foster financial soundness (Boot and Thakor, 2000). Additionally, these banks are argued to have comparative advantages in providing credit-monitoring services, are able to diversify loan portfolio risks more efficiently due to higher economies of scale and scope (Boyd and Prescott, 1986) and may reap additional economies through geographical risk diversification. It is also argued that supervision of banks tends to be more effective in case of larger banks and the risk of a system-wide contagion may decline (Allen and Gale, 2000).
- 3.3. In contrast, the concentration-fragility view argues that larger banks are often prone to “too big to fail” risk (Mishkin, 1999). Second, higher loan interest charged by monopolistic banks may induce borrowers to take on risky investments to compensate higher loan repayments (Boyd, et al., 2006). Accordingly, the likelihood of loan defaults may increase leading to a higher probability of bank failures. Third, Cetorelli et al. (2007) stress that a higher degree of risk diversification effects may result in reduced managerial efficiency, less effective internal corporate control and increased operational risk that may be prone to supervisory failures. Finally, organizational structure tend to become more complex with the increase in the size of the bank (Beck et al., 2006).

Empirical Evidence

- 3.4. Not many studies have been done in the areas of the impact of banking sector consolidation and the optimal number of banks in the global context. Results from the available literature are mixed. Some studies argue that banking concentration does not increase financial fragility and thus does not change the risk taking behavior of the banks (Boyd et al., 2004). This line advocates for further financial sector consolidation to create a resilient financial system. Another strand of literature including Mishkin, (1999), Cetorelli et al. (2007) and Boyd et al. (2006) argue that consolidation creates market power and is thus not suitable from the welfare point of view.
- 3.5. Laeven et. al. (2014) analyze the relation between bank size and systematic risk and conclude that large banks, on average, create more individual and systemic risk than smaller ones. Similarly, Buchs and Mathisen (2005) assesses the degree of competition and efficiency of the banks of Ghana using Panzer Rosse model and find that banks in Ghana appear to behave non-competitive and are hampering financial intermediation.
- 3.6. In case of Russia, Moiseev (2006) and Grachev (2011) attempt to determine the optimal number of banks with the help of economic theory and market concentration of the banks. Moiseev (2006) shows that the number of banks in a country is influenced by the size of its territory, population and GDP per capita. The study estimates that the equilibrium number of banks in Russia should be in a range of 180-220. In addition, Grachev (2011) uses a systematic approach and conclude that in stable banking systems the number of banks and the structure of the banking sector depend on the size of the dominant bank's assets. The results show the number of banks in Russia should be reduced many times to bring it down to the range of 55-165.
- 3.7. In case of Nepal, there are only few studies regarding the structure of banking industry, impact of financial sector consolidation and the optimal number of BFIs. NRB (2007) evaluates Nepalese financial system in comparison to other neighboring countries in terms of depth and efficiency. The study suggests that there are still underbanked areas in Nepal and financial access in backward region is still required. It has concluded that decisions about the number of financial intermediaries should not be decided by central authority rather it should be left to the market.

- 3.8. Gajurel and Pradhan (2012) analyze the evolution of market concentration and competition of Nepalese banking industry using 'k-bank' concentration ratio, HH index and Panzer-Rosse model and conclude that there is low level of market concentration and monopolistic behavior exist between the banks.
- 3.9. Studies regarding the impact of merger and acquisition in Nepal have mixed results. Studies such as NRB (2015) and Sharma (2018) argue that mergers have led to improved financial performance of the BFIs. However, Raju et.al. (2015) as well as Dwa and Shah (2018) argue that merger has not produced desirable results since the merged entities had poor financial position compared to pre-merger.

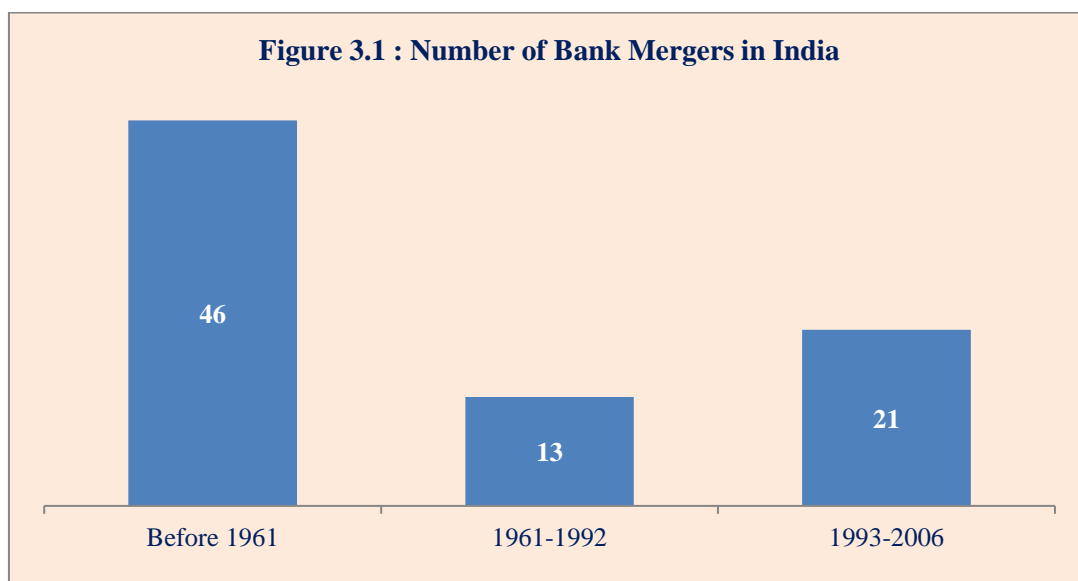
Case Studies of Selected Countries

- 3.10. A number of countries around the world have gone through banking sector consolidation after the 1980's. The following section presents the experience of banking sector consolidation in some selected countries.

India

- 3.11. There are two broad types of bank consolidation in practices in India. The first one is voluntary merger for synergy, growth and operational efficiency. The other type of merger includes the resolution of the weak banks. More than 70 percent of banking system assets in India is held by the public sector banks. It has been argued that India has too many public sector banks with similar features in business model and human resource policies. Thus, consolidation among them would be able to harness benefits of economies of scope and scale. The number of financial institutions involved in merger in different periods before 1961 to 2006 is shown in Figure 3.1.
- 3.12. Government of India announced mega merger of 6 public sector banks with 4 anchor banks namely Punjab National bank, Union bank, Canara Bank and India bank in 2019. The process was completed in 2020. It is the biggest ever consolidation among public banks to make them competitive globally.
- 3.13. As of March 2022, there are 34 scheduled commercial banks in India of which 12 are public sector banks whereas 22 are private sector banks. Similarly, there are 11 small

finance banks and 43 regional rural banks. There are 46 foreign banks currently in operation in India (RBI, 2022).

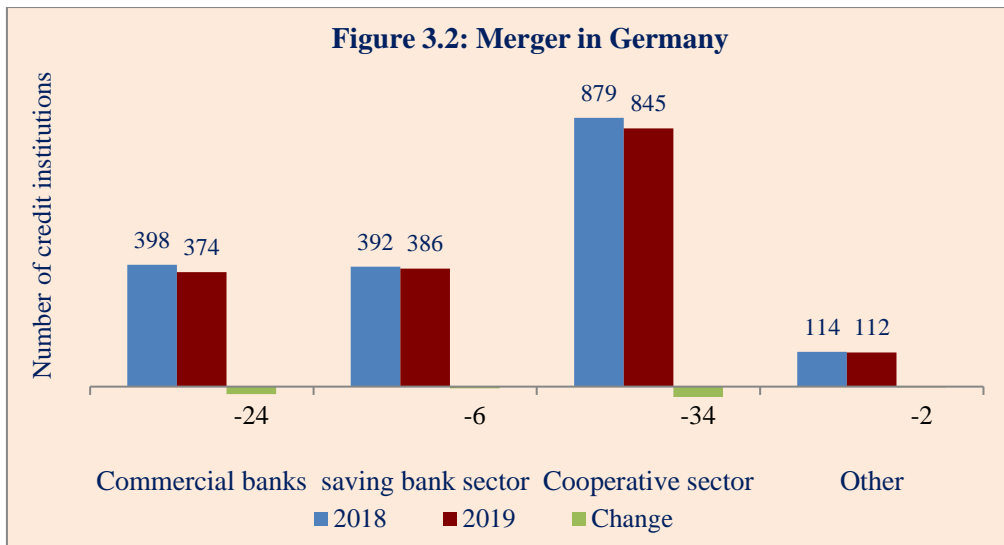


Source: Jayadev and Sensharma (2007)

3.14. In case of India, few studies such as Kaur and Kaur (2010) have shown that bank consolidation is successful to some extent. The studies point that authorities should not promote the consolidation between strong and distressed banks to promote the interest of depositors of distressed banks. It would have adverse impact on the asset quality of the stronger banks.

Germany

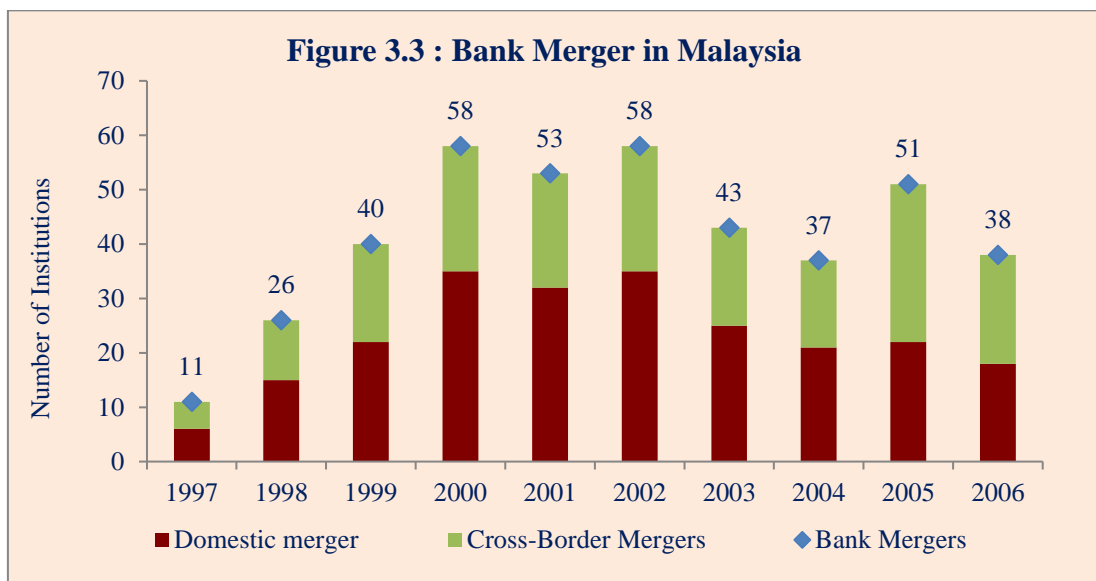
3.15. German banks are appraised for their large universal banking. They also receive praise for their role in corporate governance and involvement in industrial finance. German banking experienced a large merger wave throughout the 1990s and it has been continued till now. The number of credit institutions declined approximately by 35 percent between 1997 and 2003. The M&A is being a topic in European and German banking even after GFC of 2007-08.



Source : Bundesbank (2021)

Malaysia

3.16. After the East Asian financial crisis of 1997, Malaysia pursued massive bank consolidation during 1997-2006. They called it guided merger. The authority encouraged to merge weak institutions with strong ones. Malaysian consolidation is taken as interesting case since the large number of banks were taken for merger just in less than 2 years. About 50 financial institutions were merged and formed 10 large banking groups, which mostly comprises of commercial banks, finance companies and merchant banks.



Source: Bank Negara Malaysia (2020)

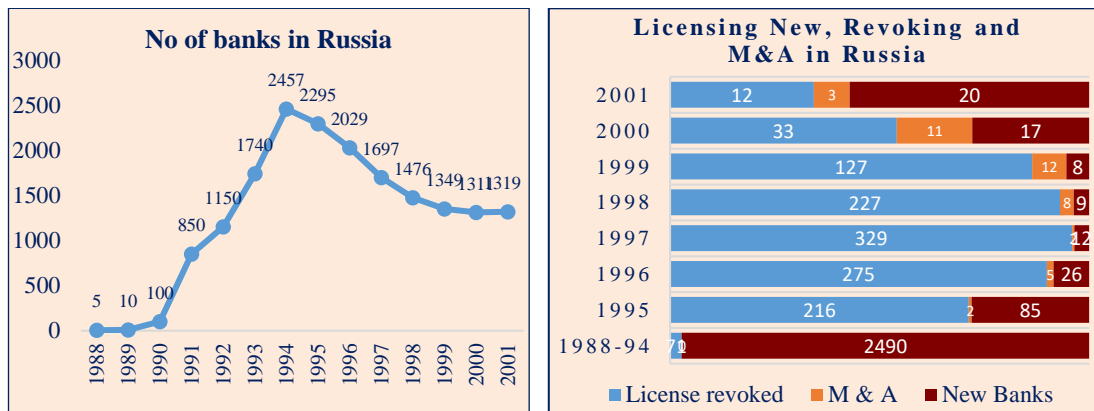
- 3.17. As of 20 October 1999, there were 55 banking institutions, which comprised 20 commercial banks, 23 finance companies and 12 merchant banks. Initially, 10 anchor banks were fixed and the rest were given deadline to forward their comprehensive proposal to Bank Negara Malaysia for the merger.
- 3.18. In case of Malaysia, merger has appeared to be fruitful. The efficiency and productivity of the institutions largely increased after the merger. Devinaga et al. (2014) show that merger had unique advantage in terms of industry efficiency. It supported the conclusion drawn by Bank Negara Malaysia (1999) for M&A increasing the bank's performance, profitability and value creation.
- 3.19. There are five different types of licensed financial institutions in Malaysia at present. They are: Commercial banks, Islamic banks, International Islamic banks, investment banks and other financial institutions. As of April 2022, there are 26 commercial banks of which 18 are foreign banks. Similarly, there are 16 Islamic banks and 1 international Islamic bank.

Russia

- 3.20. In Russia, the August 1998 crisis had significant impact on the banking system. The default of the government for paying domestic debt and excessive devaluation of ruble are the visible cause for the collapse of the system. There were only 5 state-owned banks during the 1980's. With the lax in licensing criteria, the number of banks reached 2457 at the end of 1994. This number was significantly reduced after 1995 due to strict criteria for licensing and removal of license of financial institutions facing difficulties. At the end of 1997, there were only 1697 banks in operation.
- 3.21. There are two types of banking licenses in the Russian Federation: a universal license issued to banks whose equity exceeds 1 billion rubles, and a basic license for banks whose equity ranges from 300 million to 1 billion rubles. As of March 2022, there are 330 operating banks (227 banks with a universal license and 103 banks with a basic license) and 34 non-bank financial institutions in Russia.¹

¹ https://www.cbr.ru/eng/banking_sector

Figure 3.4 : Merger Movement in Russia



Source : Robinson (NA)

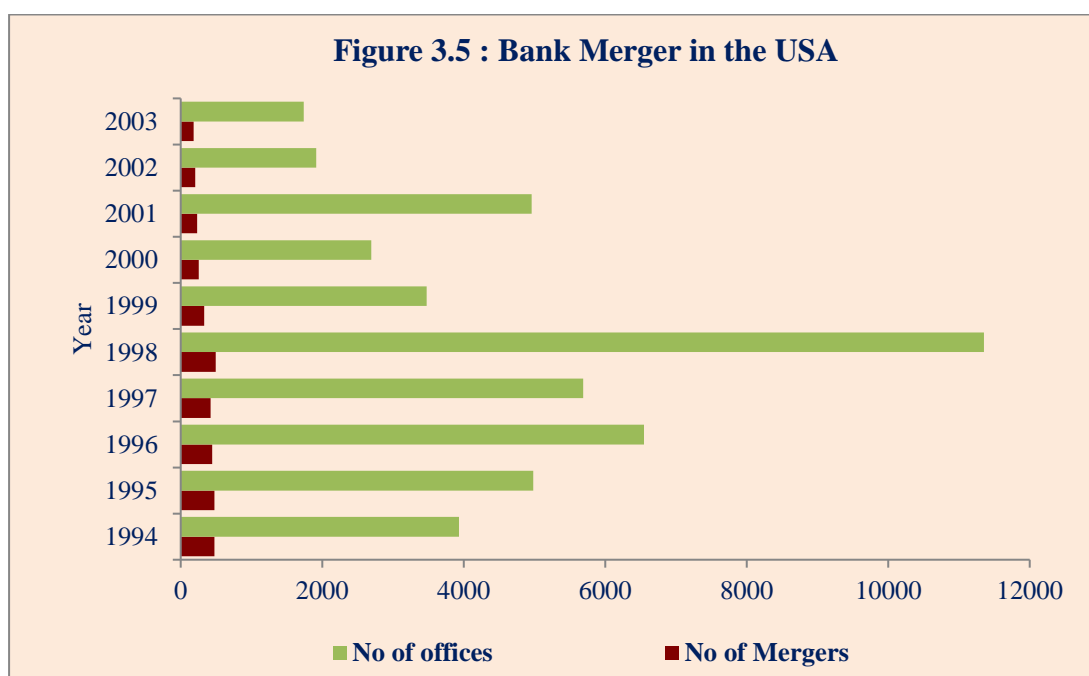
South Korea

- 3.22. In South Korea, bank consolidation started with the financial crisis of 1997. During 1997, Korean government introduced significant reforms in the financial sector in extensive and comprehensive fashion. Two of the large six commercial banks were nationalized. Beginning 1998, financial supervisory commission (FSC) was created which revoked the license and suspended the operation of non-viable financial institutions and cleaned up the balance sheet of financial institutions through merger. The Korean authority was prepared to spend 64 trillion won of public resources for financial reforms, and, at the end, however, it absorbed 40 trillion (Park, 2011).
- 3.23. The market concentration of banks largely increased in South Korea during 1997-98 due to consolidation. With this change, there was a concern for the market power of the banks in Korean Economy.
- 3.24. Banks in Korea are classified into two types viz; commercial banks and specialized banks. As of Feb 2018, there are 8 nationwide banks, 6 local banks and 38 branches of foreign banks. Along with commercial banks there are specialized banks as well. As of Feb 2018 there are 5 different specialized banks in South Korea. The other financial institutions in South Korea includes; Financial holding companies, Non-bank

depository institutions, financial investment business entities, insurance companies, other financial institutions and financial auxiliary institutions³.

United States

3.25. US banking industry had gone through massive merger movement during 1980 to 1998. Almost 8000 mergers occurred during the period. Specially during 1994-1998, large banks merger took place. As a result, the number of banks substantially decreased but the concentration of banks in local markets increased. Financial consolidation reduced the number of banks and thrift organizations by 50 percent. Research evidence shows that bank merger-causing decline in number of banks is the major reason behind the increasing concentration.



Source: Stephen (2000)

3.26. According to Stephen (2000), 3517 mergers between 1993 to 2003 involved an acquisition of about \$ 3.1 trillion in assets, \$2.1 trillion in deposits and 47,283 offices. Three-fourths of the deals involved purchase of one commercial bank by another commercial bank and rest involved the thrift institutions as acquirer. In addition, most deals involve the acquisition of a small organization with operations in limited geographic area.

³ <https://www.bok.or.kr/eng/main/contents.do?menuNo=400097>

CHAPTER IV: METHODOLOGY

- 4.1. This chapter provides an overview of the tools and techniques used in the study in order to assess the level of competition in the banking industry and the impact of merger on technical efficiency gains of the BFIs. In addition, the survey modality adopted in the study has been discussed in brief.

Cross Country Financial Development

- 4.2. In order to assess the level of financial development on a cross country context, financial depth indicators such as private sector credit to GDP, financial access indicators such as proportion of population having a bank account, availability of bank branches and other access and inclusion indicators have been used.

Quantitative and Econometric Tools

- 4.3. Competition and market power of banks has been assessed by using the k-bank concentration ratio, Herfindahl-Hirschman index (HHI), Panzer-Rosse model and Lerner Index. These tools help identify the structure of the market and level of competition in the industry. In addition, Data Envelopment Analysis (DEA) has been used to assess the technical efficiency gains of the commercial banks in the post consolidation phase.

K-bank Concentration Ratio

- 4.4. The k-bank concentration ratio measures the share of largest banks in the financial system. It is defined as the sum of the market share of k largest banks. Large share of top banks yields higher concentration ratio.

$$CR_k = \sum_{i=1}^K S_i$$

Where , S_i = share of bank i

- 4.5. Concentration ratios of three, five and eight banks have been used to assess the market concentration of Nepali banking industry.

Herfindahl- Hirschman index (HHI)

- 4.6. HHI index is widely used measure for firm concentration. It is calculated by summing the squares of market shares (MS) of each firm. Its value ranges from 0 to 10000. In

general, higher HHI indicates a decline in market competition and increase in market power of larger firms. Conversely, a lower HHI implies greater market competition. It contrasts with k-bank ratio since it considers all the firms. It is calculated as :

$$HHI = \sum_{i=1}^n MS^2$$

- 4.7. According to the US merger guideline 2010, a HHI less than 1000 indicates perfect or monopolistic market, a HHI between 1000 and 1800 indicates somewhat concentrated market and a HHI greater than 1800 indicates very concentrated market.

Lerner Index (LI)

- 4.8. Lerner index is a widely used measure of market power of firms and is based on the difference between price (P) and marginal cost (MC). It is defined as:

$$LI = \frac{P - MC}{P}$$

- 4.9. In banking industry, Lerner index is used to measure the market power of banks and the level of competition in the market. Recent applications of such an index include Berger et al. (2009), Carbó et al. (2009), Agoraki et al. (2011), Lozano-Vivas and Weill (2012) and Efthyvoulou and Yildirim (2014), among others.
- 4.10. In this study, the following translog cost function has been estimated from the bank level data to obtain an estimate of the marginal cost.

$$\ln TC = \alpha_0 + \alpha_1 \ln y + \alpha_2 \frac{1}{2} (\ln y)^2 + \sum_{j=1}^3 \beta_j \ln w_j + \sum_{j=1}^3 \sum_{k=1}^3 \beta_{jk} \ln w_j \ln w_k + \sum_{j=1}^3 \gamma_j \ln y \ln w_j + \varepsilon$$

Where,

TC = total cost of the bank

y= total assets of the bank

w₁=price of labor proxied by the ratio of personal expenses to total assets

w₂=price of physical capital proxied by the ratio of non-interest expenses to fixed assets

w₃=price of funds proxied by the ratio of interest expenses to total funds

After estimating the cost function, marginal cost of each bank is calculated as:

$$MC = \frac{TC}{y} (\alpha_1 + \alpha_2 \ln y + \sum_{j=1}^3 \gamma_j \ln w_j)$$

4.11. With the estimated marginal cost, the Lerner index of the BFIs at different times can

$$LI_{it} = \frac{P_{it} - MC_{it}}{P_{it}}$$

be calculated as:

Here, price is proxied by the ratio of total income to total assets.

4.12. The value of Lerner index lies between 0 and 1. A value closer to 0 implies higher competition and a value closer to 1 implies convergence towards monopoly.

Panzer-Rosse Model

4.13. The Panzer-Rosse model is based on the macroeconomic theory of the firm equilibrium. It measures the changes in factor input prices in industry equilibrium or bank specific revenues under different market structure. The model can be expressed as:

$$\ln \text{REVN}_{it} = a + b_1 \ln \text{INTC}_{it} + b_2 \ln \text{LC}_{it} + b_3 \ln \text{OTHC}_{it} + b_4 \ln \text{LEC}_{it} + b_5 \ln \text{LOAN}_{it} + b_6 \ln \text{DEP}_{it} + e_{it}$$

Where,

REVN_{it} = Total interest revenue/Total assets

INTC_{it} = Total interest expenses/ Total Deposit

LNC_{it} = Total staff expenses/ Total Assets

OTHC_{it} = Total other operating expenses/ Total assets

LEC_{it} = Total salaries/ Number of employees

LOAN_{it} = Total loans/ Total assets

DEP_{it} = Total deposit/ Total assets

4.14. The first three independent variables are factor inputs and rests are bank specific control variables. The model follows the log-linear form and the sum of factor price elasticities is termed as “H-statistic”.

$$\text{So, } H = b_1 + b_2 + b_3$$

Table 4.1 : Interpretation of Panzer-Rosse Statistics

Parameter Region	Competitive Environment Test
$H \leq 0$	Monopoly
$0 < H < 1$	Monopolistic Competition
$H = 1$	Perfect Competition

Source: Panzer and Rosse (1987)

4.15. The Panzer-Rosse model has been empirically applied to the banking sector by Shaffer (1983), Molyneux et al. (1994), Coccorese (1998), De Bandt and Davis (2000), Bikker and Haaf (2002), Claessens and Leaven (2004), Gelos and Roldos (2004), Casu and Girardone (2006) and Matthews et.al. (2007), among others.

Data Envelopment Analysis

4.16. Data Envelopment Analysis (DEA) is a tool based on linear programming that measures the efficiency of a set of firms. Such efficiency is obtained as a maximum of a ratio of weighted outputs to weighted inputs. It can allow for multiple inputs and multiple outputs and helps compare the technical efficiency of the firms. A detailed technical treatment about DEA can be found in Said et. al. (2009).

4.17. In this study, DEA has been used to evaluate the technical efficiency of the commercial banks in the post consolidation phase. The output from the model ranks the banks in terms of technical efficiency scores. The banks with lower ranks are the more efficient banks.

Survey Design

4.18. Besides the quantitative and econometric tools, the study has used opinion survey to gather perceptions and opinions of bank officials and experts about the financial consolidation process in Nepal.

4.19. The first set of questionnaire involved the Chief Executive Officer (CEOs), Deputy CEOs, Acting CEOs, Chairman, Directors, and other top management officials of the BFIs. The other set of questionnaire was used to collect opinions from the experts. The sample size and allocation is presented in Table 4.2.

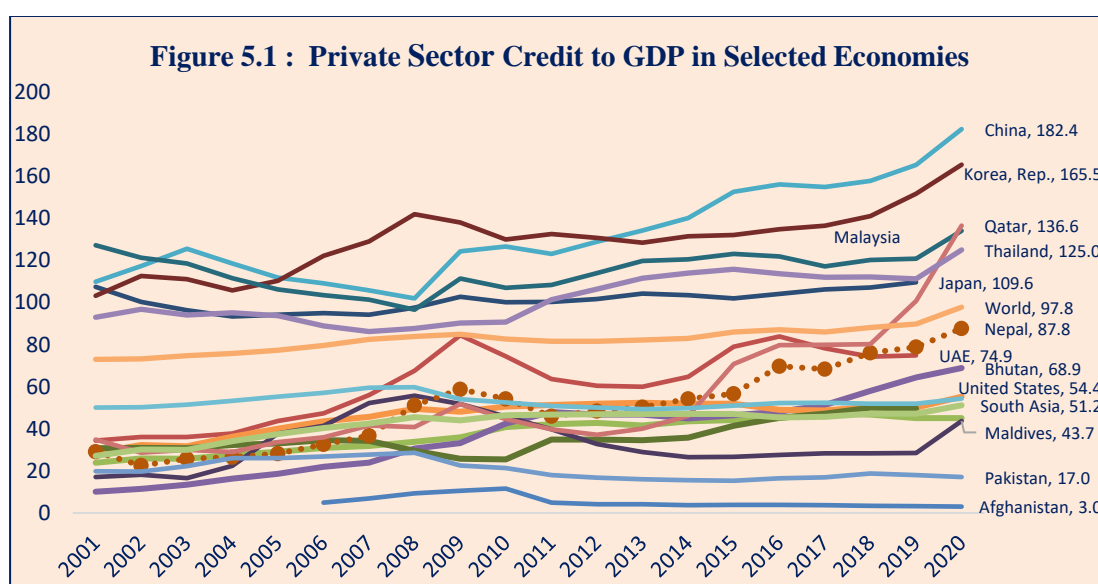
Table 4.2 : Sample Size

Institution Type	Number of Samples
Bank and Financial Institutions	140
Experts	90
Total	230

CHAPTER V: LEVEL OF FINANCIAL DEVELOPMENT AND ADEQUACY OF BFIS IN NEPAL

Cross Country Financial Development

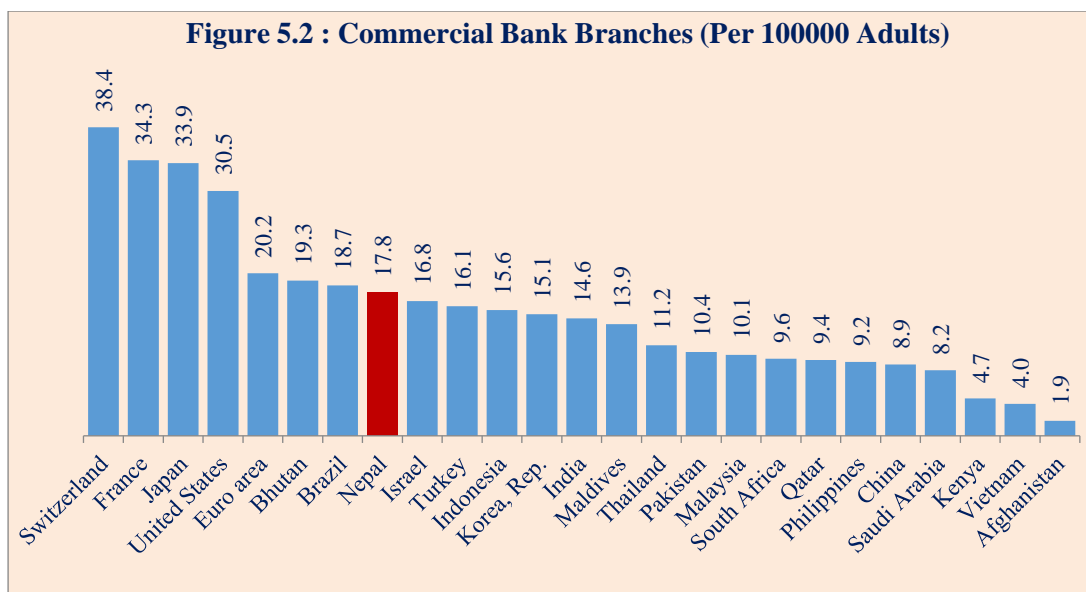
- 5.1. Nepal's banking sector has grown significantly in terms of coverage and depth over the last two decades. It is reflected in an increase in financial resource mobilization by the banking sector. The private sector credit to GDP ratio, which is used as a proxy for the level of financial deepening, has increased from 22 percent in 2002 to 88 percent in 2020. Such a ratio is quite higher than the South Asian average of 51.2 percent in 2020. Private sector credit ratio is 45 percent in Bangladesh, 69 percent in Bhutan, 55 percent in India, 50 percent in Sri Lanka, 44 percent in Maldives and 17 percent in Pakistan (World Bank, 2021).



Source: World Bank (2021)

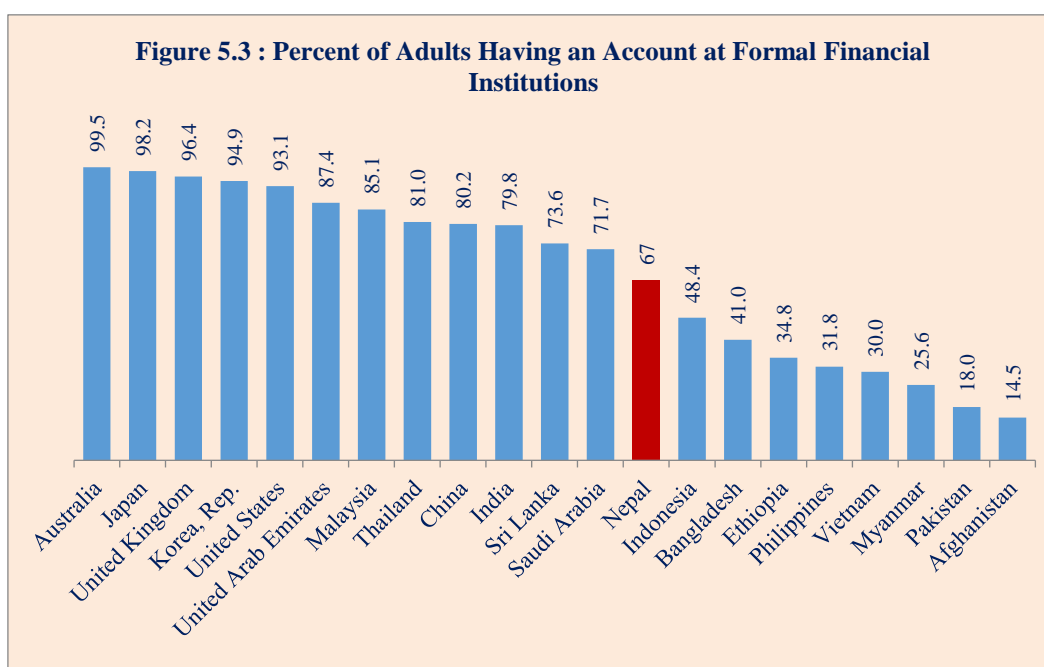
Financial Access (Population per Branch)

- 5.2. In terms of financial access too, Nepal has progressed a lot over the last few years. Measured by branches of commercial banks per 100000 adults, Nepal stands ahead of many south Asian countries. In Nepal, the number of commercial bank branches per 100000 adult stands at 17.8 compared to 14.6 in India, 13.9 in Maldives and 10.4 in Pakistan (Figure 5.2). This number is even larger than the case of some emerging markets such as China, Malaysia, Indonesia and Vietnam (Figure 5.2).



Source: World Bank (2021)

5.3. In terms of the accounts maintained at the formal financial institutions, 67.3 percent of the population in Nepal have account at the BFIs (NRB, 2021^a), which is better than some south Asian economies such as Bangladesh and Pakistan. However, Nepal lags behind Sri Lanka and India in the region. In India, 79.8 percent of the adults have an account at formal financial institutions. Such a number is 73.6 percent in Sri Lanka and 80.2 percent in China (World Bank, 2021).

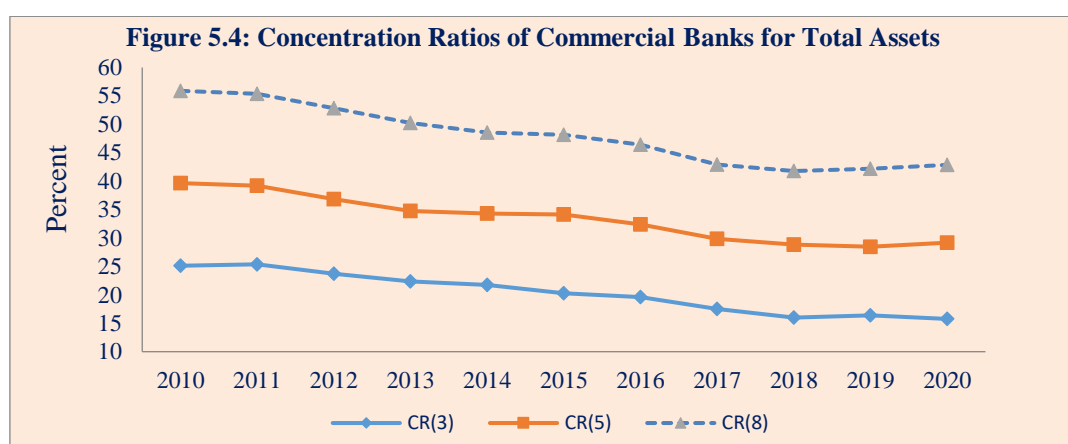


Source: World Bank (2021) and Nepal Rastra Bank (2021^a)

Competition and Market Power of Banks

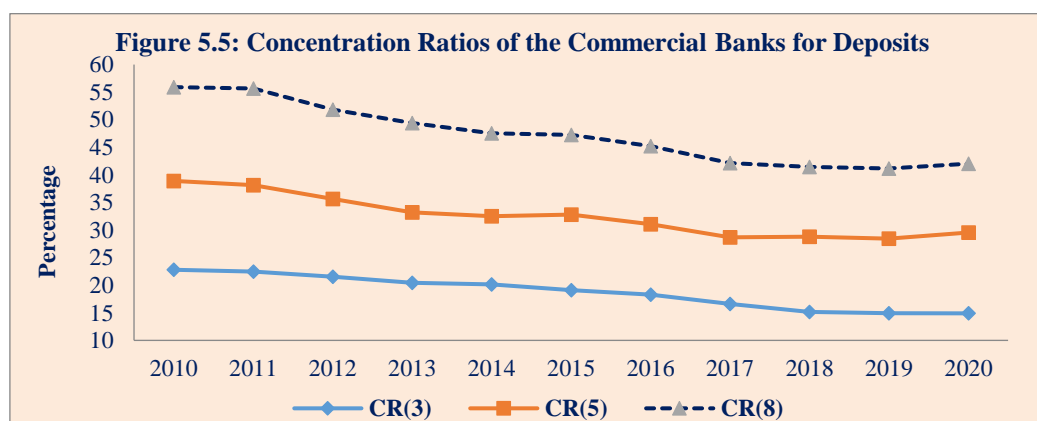
K-bank Concentration Ratio

- 5.4. The k-bank concentration ratios depict the share of assets, deposits or credit held by top k firms and is used to measure the level of concentration in the market. The data from Nepali banking industry show that the k-bank concentration ratios are on a declining trend after 2010 (Figure 5.4). The CR (5) ratio of total assets was 40 percent in 2010 that declined to 29 percent in 2020. Likewise, the CR (3) and CR (8) ratios of total assets declined from 25 and 56 percent in 2010 to 16 and 43 percent respectively in 2020.



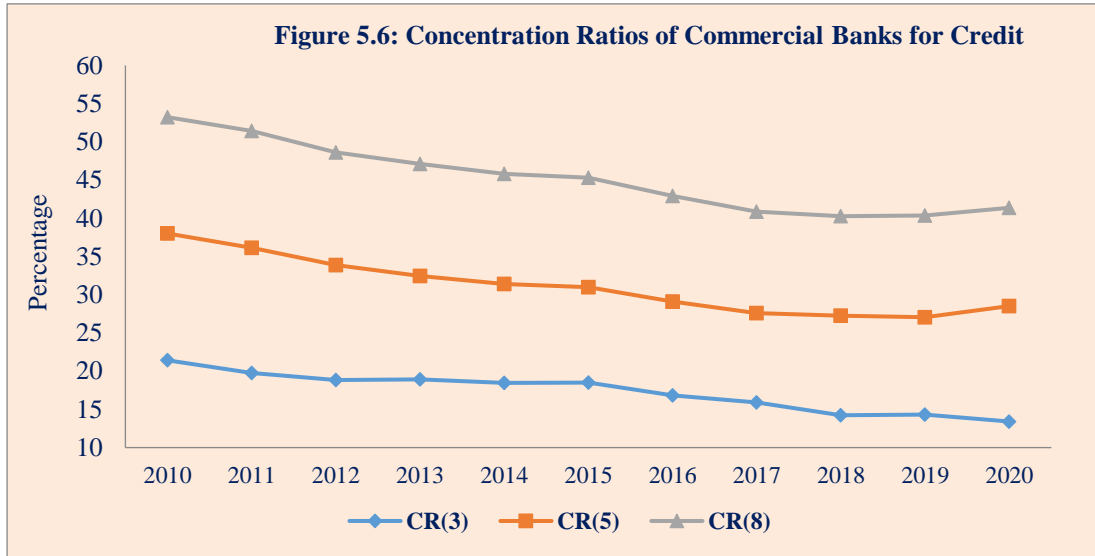
Source : NRB Staff Estimates

- 5.5. Figure 5.5 illustrates the deposit concentration of the largest three, five and eight banks. The ratios show that the concentration of the banks in terms of deposits is similar to the assets. The CR (8) ratio declined from 55.90 percent in 2010 to 42.03 percent in 2020. Similarly, CR (5) was 38.91 percent in 2010, which declined to 29.58 percent in 2020 and the CR (3) declined from 22.80 percent in 2010 to 14.90 percent in 2020.



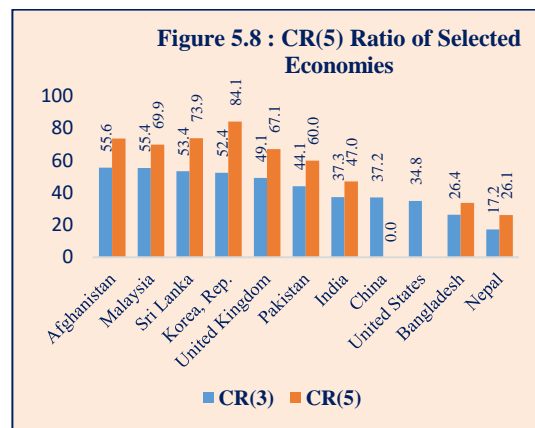
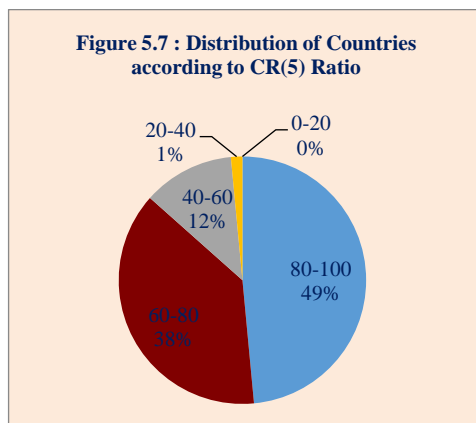
Source : NRB Staff Estimates

5.6. The concentration ratios for the bank credits also declined during the last decade. The CR (8) ratio declined from 53.23 percent in 2010 to 41.36 percent in 2020, the CR (5) ratio declined from 38.01 percent in 2010 to 28.52 in 2020 and the CR (3) ratio declined from 21.42 percent in 2010 to 13.41 percent in 2010.



Source : NRB Staff Estimates

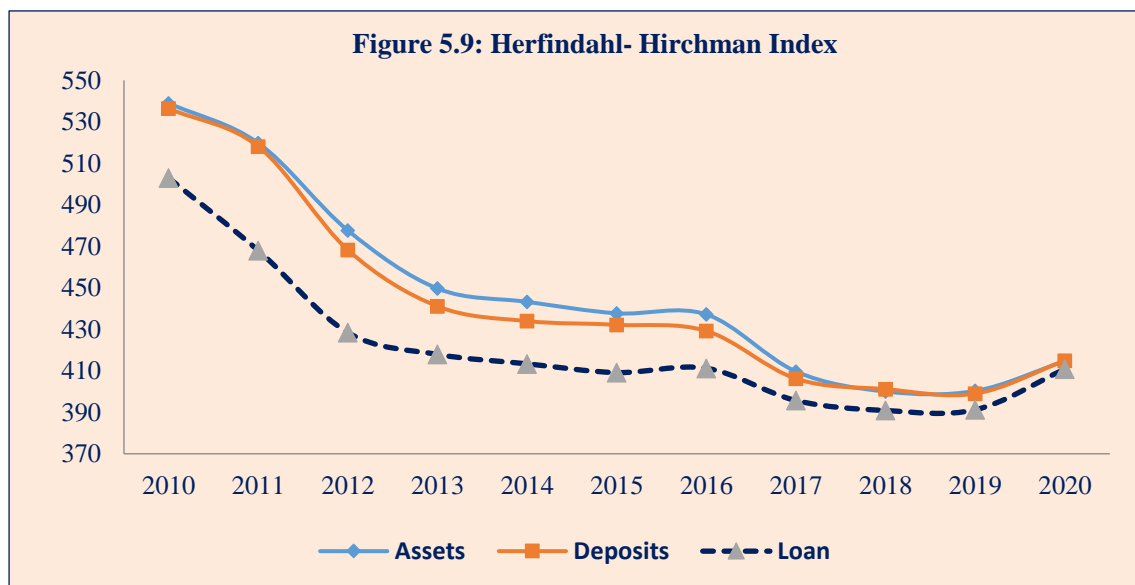
5.7. Compared to other countries, Nepal's banking sector is one of the least concentrated banking sector. While 49 percent of the countries have the CR (5) ratio of 80 to 100 percent, another 38 percent have the CR (5) ratio between 60 to 80 percent. Nepal lies among the bottom 1 percent countries in the group having the CR (5) ratio in the range of 20-40 percent (Figure 5.7 and 5.8).



Source: World Bank (2021)

Herfindahl-Hirschman index (HHI)

- 5.8. While the concentration ratios provide useful information about the market structure, these measures do not take into account the number of banks. The HHI takes into account both the relative size and number of banks in the industry.
- 5.9. The HHI for total assets, deposits and credit of the commercial banks also indicate an increasing level of competition in the banking system. The HHI for credit declined from 502.9 in 2010 to 410.8 in 2020. Likewise, the HHIs for asset and deposit also declined from 539 and 536.4 in 2010 to 414.7 and 414.9 in 2020 respectively. As the value of the HHI is well below 1000 and has followed a declining trend during the last decade, this implies an increasing level of competition among the commercial banks in a monopolistic environment.



Source : NRB Staff Estimates

Panzer-Rosse Model

- 5.10. Panzer and Rosse model is widely used tool to measure the competitiveness of the banking industry. This model attempts to measure the impact of changes in factor prices over revenue under different market settings.
- 5.11. Table 5.1 shows the results from three alternate specifications of the model. The models have been estimated with the commercial bank level panel data from 2011 to 2020. The coefficients from the models are broadly similar. However, the Hausman test shows that the Random Effects model is the preferred model.

Table 5.1: Results from Panzer Rosse Model

Variable	Pooled OLS	Fixed Effect	Random Effect
Inint _{it}	0.587***	0.578***	0.578***
Inlc _{it}	0.268***	0.276***	0.276***
Inoth _{it}	0.139***	0.142***	0.142***
Inlc _{it}	-0.118***	-0.072***	-0.072***
Inloan _{it}	-0.161**	0.002	0.002
Indep _{it}	0.627***	0.565***	0.565***
Constant	0.659***	0.948***	0.948***

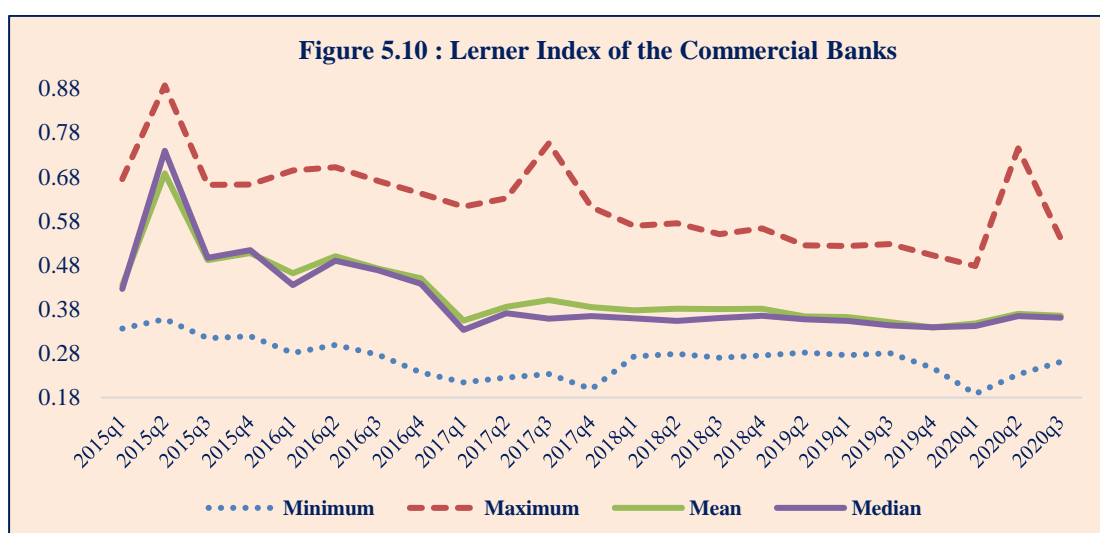
Note : * p<0.05; ** p<0.01; *** p<0.001

Source : NRB Staff Estimates

5.12. The estimation results from the model show that the sum of elasticities of factor prices i.e. cost of fund, office management cost and cost for salaries of employee 0.99. The Wald test for monopoly where $H=0$ is rejected which suggest the prevalence of monopolistic competition in the banking industry. The elasticities for fund, capital and labor are positive and statistically significant. The higher H value exhibit persistence of high competition among the commercial banks.

Lerner Index

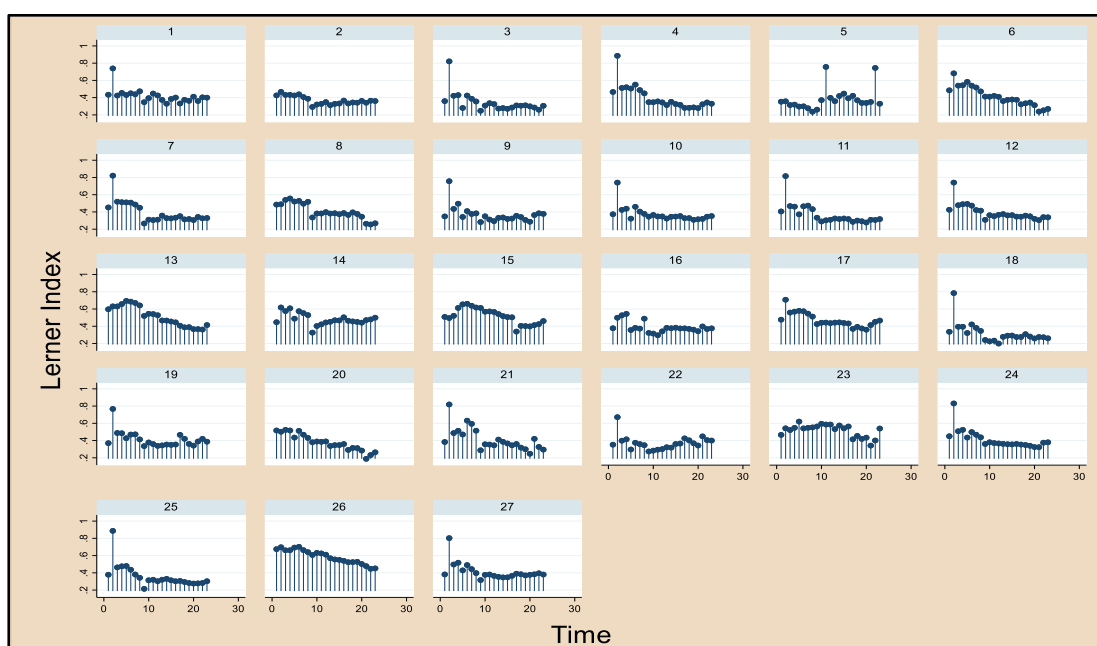
5.13. The estimation results from the Lerner index also support the increasing level of competition in the banking industry (Figure 5.10).



Source : NRB Staff Estimates

- 5.14. The mean Lerner index for the period 2015 to 2020 is 0.41 and the median is 0.38. As the Lerner Index is lower for competitive markets, the results indicate a high degree of competition in the banking industry. Furthermore, the mean of such an index has declined from 0.69 in 2015Q2 to 0.34 in 2019Q4 and then has marginally increased.
- 5.15. The bank level Lerner indices have also declined for most of the commercial banks of Nepal during the sample period. These developments also indicate towards the operation of the banks under increasing competitive environment.

Figure 5.11: Lerner Index for Individual Commercial Banks



Source : NRB Staff Estimates

Technical Efficiency of the Banks Involved in Consolidation

- 5.16. This study has used Data Envelopment Analysis (DEA) model to analyze the technical efficiency improvement of the commercial banks that involved in the consolidation process. It uses three variables: interest expenses (x_1), non-interest expenses (x_2), and loan loss provision (x_3) as inputs and two variables: interest income (y_1) and non-interest income (y_2) as the outcome variables.
- 5.17. The technical efficiency scores have been estimated from the DEA model based on the data of commercial banks from 2015 to 2020. The ranks based on the technical efficiency scores of the 22 commercial banks that went through some form of consolidation are shown in Table 5.2. Lower value of the rank implies higher technical efficiency. The results show that the banks involved in consolidation have not

consistently improved their technical efficiency over the period of 2015-2020 compared to the whole set of banks. This results call for a focus on improving technical efficiency in the post-merger phase.

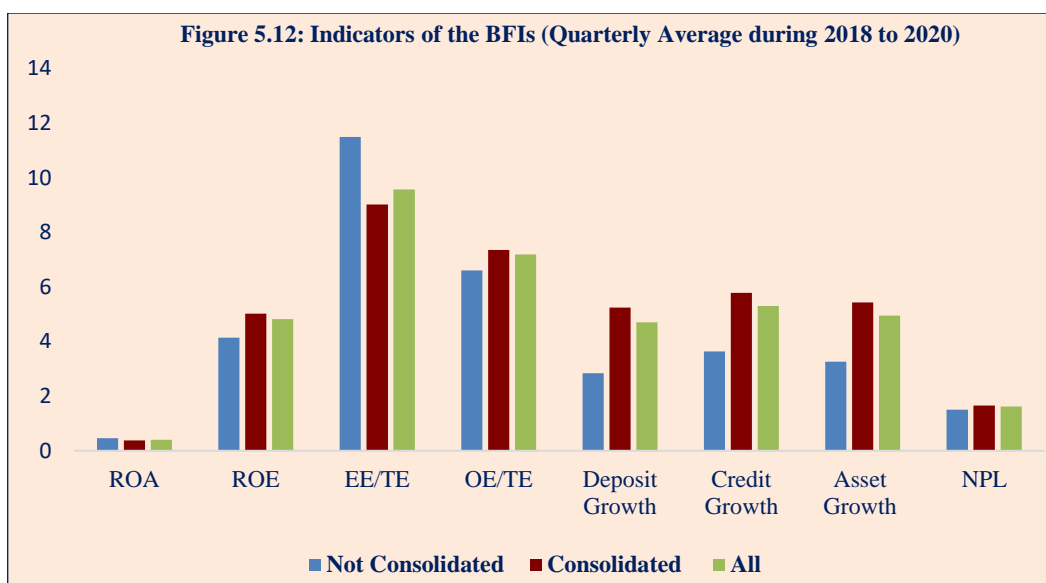
Table 5.2: Technical Efficiency Score Ranks of Commercial Banks

	2015	2016	2017	2018	2019	2020
CB1	1	1	1	1	1	2
CB2	1	1	1	1	12	2
CB3	27	25	18	18	26	24
CB4	26	1	28	1	28	2
CB5	16	26	27	19	15	2
CB6	20	28	20	25	21	26
CB7	21	20	22	1	20	20
CB8	1	1	1	1	24	13
CB9	19	1	23	1	17	16
CB10	22	15	15	1	1	19
CB11	24	13	1	27	1	2
CB12	1	22	16	16	14	18
CB13	25	27	17	13	19	23
CB14	18	19	14	22	1	2
CB15	1	1	1	1	1	17
CB16	30	17	21	28	22	27
CB17	17	24	25	12	18	25
CB18	1	16	1	21	25	2
CB19	15	21	1	20	1	1
CB20	1	1	1	23	23	21
CB21	1	14	1	26	1	2
CB22	1	23	24	24	16	22

Note: CB stands for commercial banks.

Source : NRB Staff Estimates

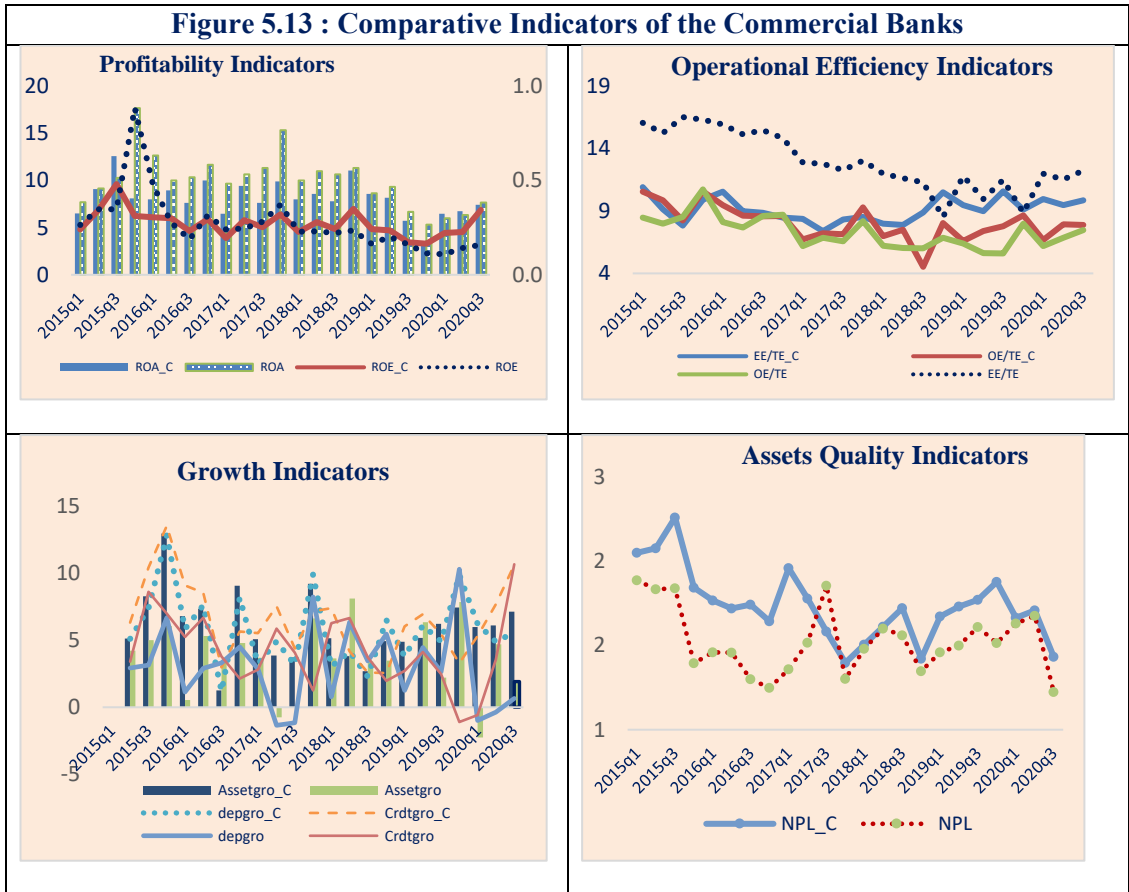
- 5.18. The results from the DEA are supported by the historical performance of the banks as reported in Figure 5.12. While the consolidated banks had higher growth of deposit, credit and total assets on average over the period 2018-2020, they are not able to improve significantly in case of operating efficiency measured in terms of operating as well as employee expense as percentage of total expense. In addition, the non-performing loan (NPL) ratio of the consolidated banks has not improved significantly. The profitability indicators such as return on assets (ROA) and return on equity (ROE) are broadly similar.



Note : OE: Operating Expense, EE=Employee Expense, TE=Total Expense

Source : Nepal Rastra Bank

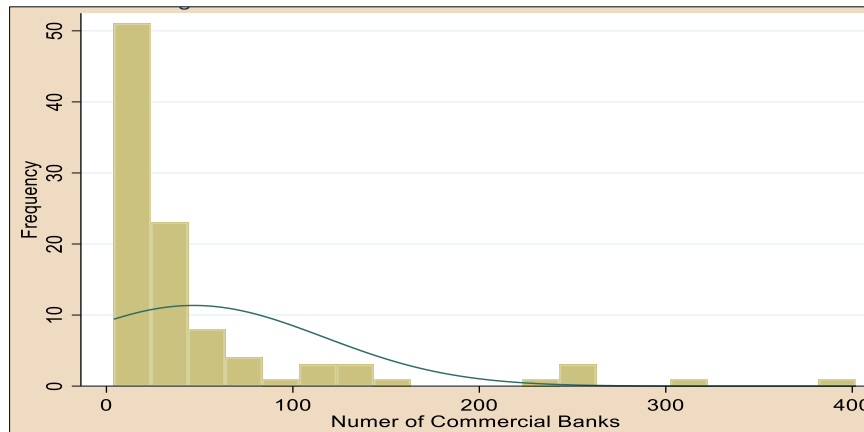
- 5.19. Figure 5.13 shows the historical performance of the banks in terms of asset growth, operational efficiency, asset quality and profitability. Since the consolidation took momentum after 2017, it would be reasonable to focus on the period after 2017 as the post consolidation period for the banks. The indicators exhibit mixed results: while there is improvement in the profitability as well as growth indicators, the operational expenses as well as asset quality indicators of the consolidated banks have not improved significantly compared to the non-consolidated banks.
- 5.20. At least two reasons underlie the performance of the consolidated banks. First, the decision of the NRB to increase capital base for all type of BFIs in 2015/16 strengthened the capital base for all type of BFIs as such investment capacity for all types of institutions grew more or less uniformly. Secondly, many commercial banks acquired development banks and financial companies with lower performance as such it may take a longer time for improving performance of the merged banks above other banks.



Number of Banks and Size of Economy

5.21. The number of commercial banks vary in the countries across the world depending on the size of population, size of the economies, level of financial development and the laws governing such institutions. Figure 5.14 shows that in many economies, the number of commercial banks is smaller than 50.

Figure 5.14: Distribution of Commercial Banks



Source : NRB Staff Estimates from IMF Database

- 5.22. At the world level, the average number of commercial banks stand at 91. Except the USA, the number of commercial banks in the countries ranges from 4 to 400.
- 5.23. The number of commercial banks differ according the level of income. A sample of 101 countries show that low income countries have 5 to 25 commercial banks with an average of 14 banks, lower middle income countries have 5 to 161 banks with an average of 36.
- 5.24. Likewise, the upper middle income countries have 4 to 402 banks with an average of 34 and high income countries have 193 banks on average.

Table 5.3: Number of Commercial Banks by Income Groups

Income Group	Countries	Minimum	Maximum	Mean
Low-income	9	5	25	14
Lower Middle Income	22	5	161	36
Upper Middle Income	33	4	402	34
High Income	37	5	4488	193
Total	101	4	4488	91

Source: World Bank (2021) and IMF (2020)

- 5.25. The number of the commercial banks varies with the size of the economy too. While the 20 percent of the countries with lowest GDP have 8 commercial banks on average, the second and third 20 percent of the countries have 16 and 32 commercial banks on average respectively. Top 20 percent countries in terms of GDP have higher number of commercial banks. Nepal lies in the third quintile of the GDP distribution.

Table 5.4: Number of Commercial Banks by GDP Quintiles

GDP Quintiles	Countries	Minimum	Maximum	Mean
Bottom 20 Percent	21	4	16	8
Second Quintile	20	8	47	16
Third Quintile	20	8	127	32
Fourth Quintile	20	14	132	40
Top 20 Percent	20	25	4488	362
Total	101	4	4488	91

Source: World Bank (2021) and IMF (2020)

- 5.26. Moreover, the number of commercial banks differ according to the size of the population. The average number of commercial banks increase with higher population quintiles. Nepal lies in the fourth quintile in the population distribution.

Table 5.5: Number of Commercial Banks by Population Quintiles

Population Quintiles	Countries	Minimum	Maximum	Mean
Bottom 20 Percent	21	4	127	13
Second Quintile	20	5	132	26
Third Quintile	20	8	246	42
Fourth Quintile	20	14	80	31
Top 20 Percent	20	26	4488	347
Total	101	4	4488	91

Source: World Bank (2021) and IMF (2020)

5.27. Table 5.6 shows the results from a panel regression covering 181 economies. The data is an unbalanced panel ranging from 2011 to 2020. The results show that the size of the economy and population significantly affect the number of banks in an economy.

Table 5.6 : Panel Regression Results

Number of Banks	Coef.	St.Err.	t-value	p-value	[95% conf	Interval]	Sig
GDP (in Million USD)	-0.00014	0.000006	-22.35	.0000	-0.00016	-0.00013	***
Population Density	.002	.025	0.10	.9190	-.0460	.0510	
Bank Capital to Assets Ratio	1.09	1.086	1.00	.3150	-1.0380	3.2170	
Population (in Million)	1.39	.154	9.01	.0000	1.0880	1.6930	***
Constant	86.907	29.896	2.91	.0040	28.3120	145.5020	***
Mean dependent variable		96.624	SD dependent variable			491.663	
Overall r-squared		0.605	Number of obs			1532	
Chi-square		500.750	Prob > chi2			0.000	
R-squared within		0.579	R-squared between			0.630	

*** $p < .01$, ** $p < .05$, * $p < .1$

Source : NRB Staff Estimates from World Bank and IMF Database

5.28. Figure 5.15 shows the number of commercial banks in the peer economies of Nepal. In the countries with a population between 24 and 37 million, the number of commercial banks ranges from 14 to 42. In this range, Niger and Peru have lower commercial banks compared to others (Figure 5.15).

5.29. In terms of the size of the economy, the number of commercial bank ranges from 8 to 47 in the economies with the size of GDP between 20 to 35 billion USD. Uganda and Latvia are the two economies, which have the size of the economy close to Nepal and have 25 and 19 commercial banks respectively (Figure 5.15).

Figure 5.15: Number of Commercial Banks in the Peer Economies

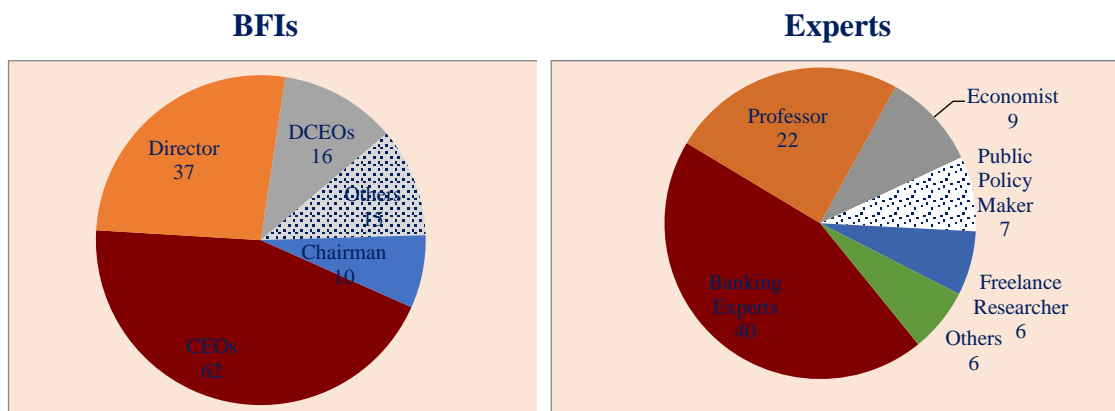


Source: World Bank (2021) and IMF (2020)

Results from Opinion Survey

5.30. This section presents the results of the opinion survey carried out among the top management of the BFIs and experts. Among the 230 respondents, 140 respondents were from the BFIs of which 44 percent respondents were CEOs. In addition, among the 90 experts, 40 were from banking sector, 22 university professors, 9 economists, 7 public policy makers, 6 were freelance researchers and 6 others.

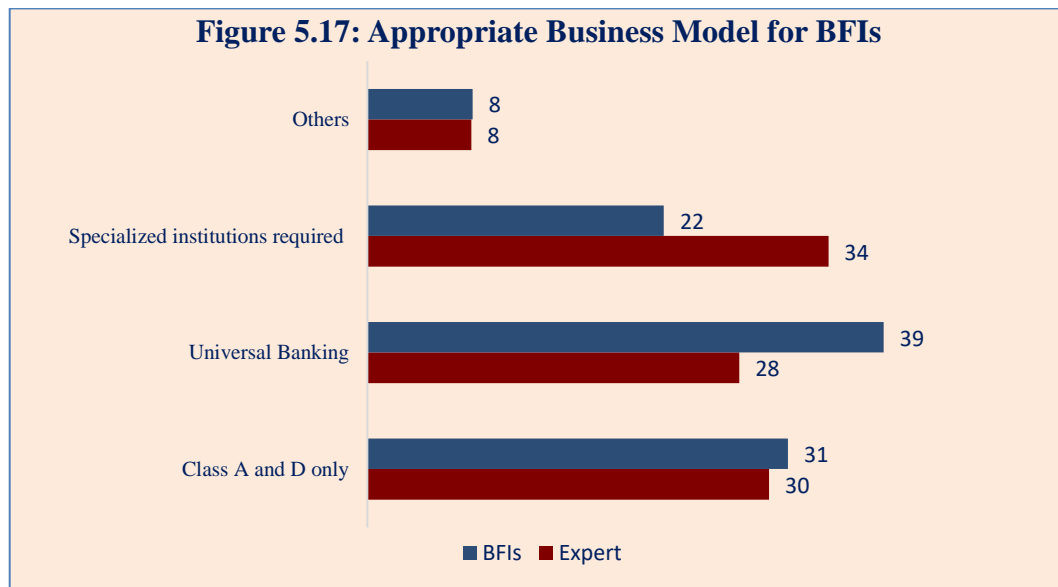
Figure 5.16: Number of Respondents



Source : NRB Online Survey, 2021

Appropriate Business Model for the BFIs in Nepal

- 5.31. The respondents have diverse opinions about the banking business model in Nepal. While 34 percent of the respondents preferred universal banking model, 31 percent preferred the existence of class A and D institutions only and 27 percent preferred the banking model with specialized institutions.
- 5.32. The preference for banking model differs between the BFIs and experts. While 39 percent of the respondents from the bank management preferred the universal model, 34 percent respondents from experts preferred the presence of specialized institutions as the most preferred banking business model for Nepal (Figure 5.17).



Source : NRB Online Survey, 2021

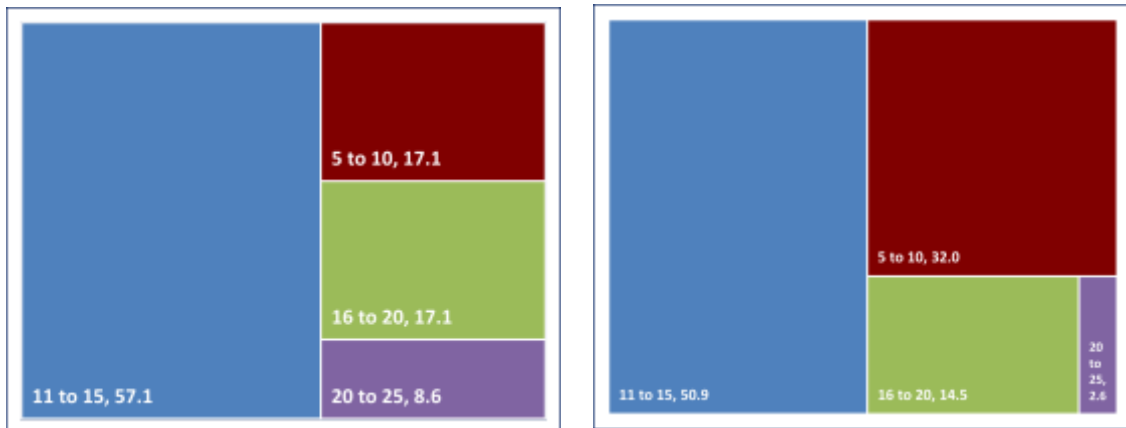
Optimum Number of Commercial Banks in Nepal

- 5.33. Majority of the respondents opined that the current number of BFIs in Nepal is more than optimal. About 84 percent of the respondents from the BFIs and 78 percent of the experts opined that the existing number of the BFIs in Nepal exceeds the optimum number.
- 5.34. One-half of the respondents opined that the appropriate number of commercial banks in Nepal is 11 to 15. Another one fifth of the respondents preferred 5 to 10 commercial banks, 15 percent were in favor of 16 to 20 banks and the rest were in favor of 20 to 25 commercial banks.
- 5.35. Of those respondents who feel that the current numbers of commercial banks is more than optimal, about 57.1 percent of the respondents from the BFIs and 50.9 percent of the experts opined that the optimal number of commercial banks in Nepal should be in the range of 11 to 15.

Figure 5.18: Optimum Number of Commercial Banks

BFI's Survey

Expert Survey

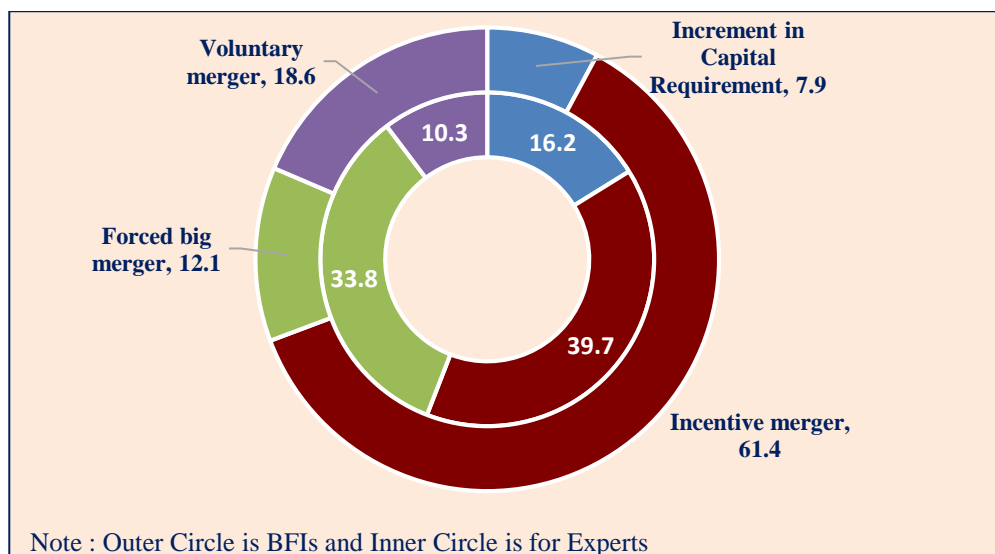


Source : NRB Online Survey, 2021

Most Appropriate Modality for the Reduction of BFIs

- 5.36. Majority of the respondents of the survey opined that the most appropriate modality for reducing the number of BFIs in Nepal could be some kind of incentive merger. About 57 percent of the respondents stood in favor of incentive merger, 20 percent in favor of forced big merger, 17 percent in favor of voluntary merger and the remaining respondents were in favor of merger through capital increment.
- 5.37. While about three fifth of the respondents from the BFIs were in favor of incentive merger as the most appropriate modality, such a share in case of experts is only 40 percent. About one third of the experts opined in favor of forced big merger.

Figure 5.19: Most Appropriate Modality for the Reduction of BFIs



Source : NRB Online Survey, 2021

Appropriate Merger Model in Nepal

- 5.38. Most of the respondents (61 percent) opined that merger should be done between weak and strong institutions. Another one fifth of the respondents were in favor of the merger between small and large institutions, 9 percent were in favor of small institutions only and the remaining respondents were in favor of the merger between weak institutions.

Figure 5.20: Appropriate Merger Model



Source : NRB Online Survey, 2021

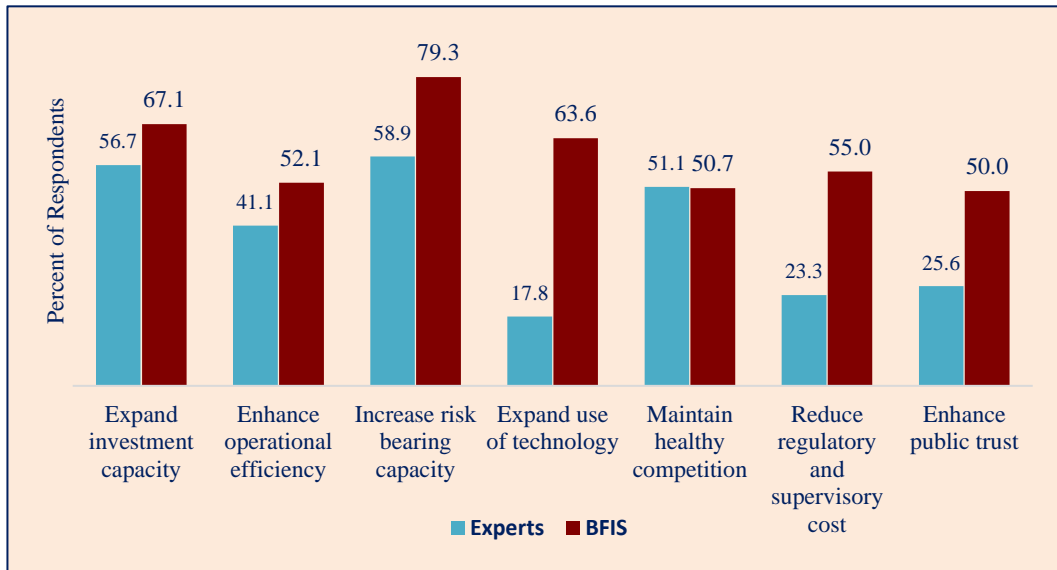
- 5.39. The preference for the merger between weak and strong institutions is similar between the BFI management and experts. About 56 percent of the BFI respondents preferred the merger between weak and strong institutions followed by the preference for the merger between small and large institutions. Among the experts, 70 percent preferred the merger between weak and strong institutions followed by the preference for the merger between small and large institutions.

Positive and Negative Aspects of M&A Policy

- 5.40. The respondents of the survey opined that the merger policy of the NRB has been effective in increasing the risk bearing capacity of the BFIs, expanding investment capacity, maintaining healthy competition and enhancing operational efficiency. Of the respondents, 71 percent opined that the merger policy has enhanced the risk bearing capacity of the BFIs, 63 percent respondents opined that such a policy has increased investment capacity, 51 percent opined that it has helped maintain healthy competition and 48 percent opined that it has helped increase operational efficiency.

5.41. The perception about the merger policy regarding the improvement in risk bearing and investment capacity is similar for both groups of respondents (Figure 5.21).

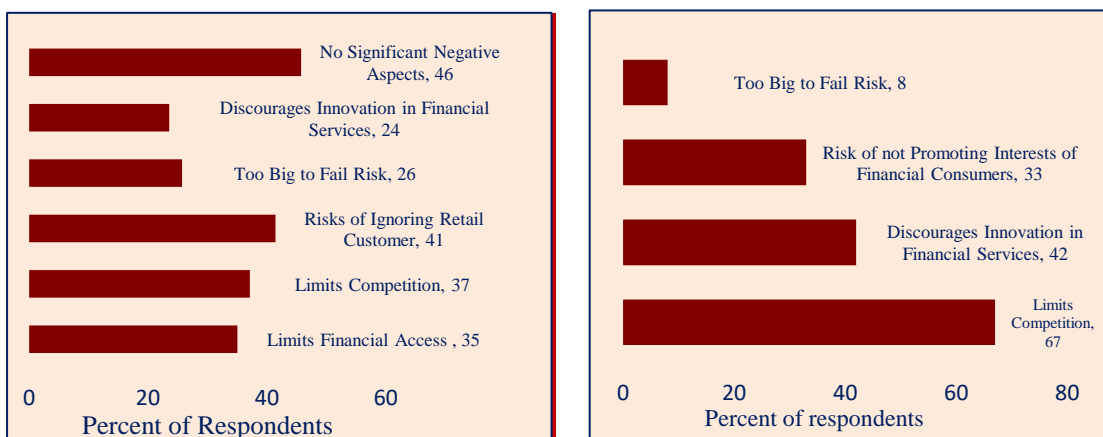
Figure 5.21: Positive Aspects of M&A Policy taken by NRB



Source : NRB Online Survey, 2021

5.42. Regarding the negative effects of the merger policy, about one-half of the respondents from the BFIs opined that merger policy does not have any significant negative effects. On the other hand, about two third of the experts opined that merger could limit competition in the banking sector. Other negative aspects pointed out by the survey are the risk of discouraging financial innovation and risk of ignoring retail customers.

Figure 5.22: Negative aspects on M&A policy Adopted by NRB



Source : NRB Online Survey, 2021

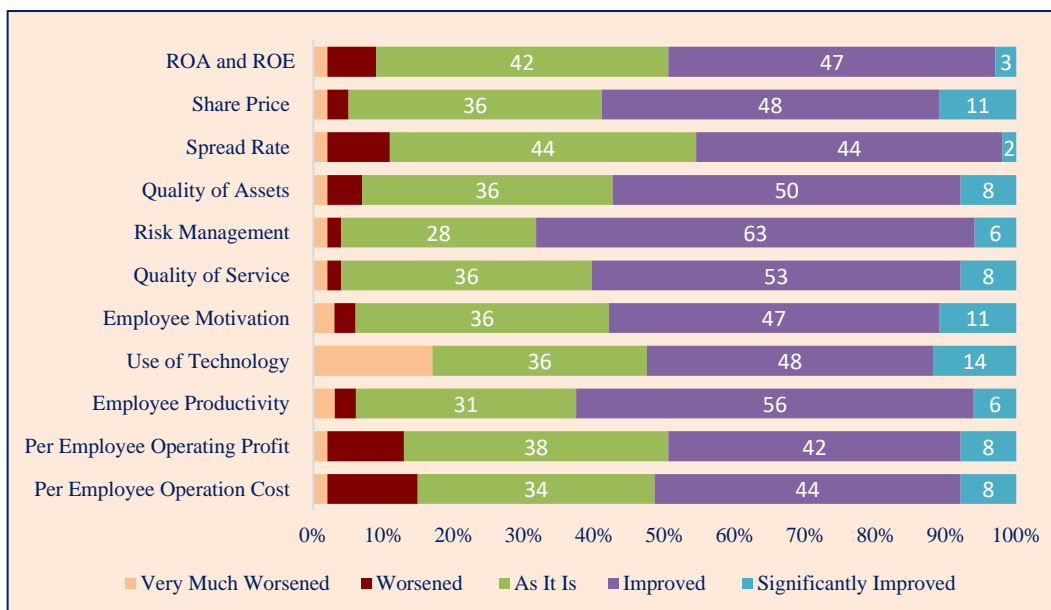
Major areas to be Improved by NRB

- 5.43. The respondents suggested that NRB should promote digital payments, focus on IT risk management and improve the supervisory system of NRB in order to expand financial access and strengthen the financial system. A total of 86 percent of the respondents from the BFIs suggested that NRB needs to focus on further development and promotion of the digital payment system in order to expand the financial access and strengthen the financial sector further. Likewise, majority of the experts suggested for managing the IT risks efficiently and improving the supervision aspects.
- 5.44. Regarding the improvement in the banking services, the major areas identified from the expert survey are improvement in service quality, focusing on FinTech and reducing the cost of financial services.

Impact of Merger on Efficiency and Profitability

- 5.45. The survey results show that merger and acquisition policy of the NRB has improved efficiency as well as profitability of majority of the banks. Among the respondents from the BFIs that have undergone through merger or acquisition process, 52 percent reported that per employee operation cost has declined after the merger, 50 percent reported that per-employee operating profit has increased and 62 percent reported that employee productivity has increased (Figure 5.23).
- 5.46. Likewise, 69 percent of the respondents reported that risk bearing capacity has increased, 58 percent reported that quality of the assets has improved and 46 percent reported that spread rate has declined after the merger process.

Figure 5.23: Impact of M&A on Various Indicators of the BFIs



Source : NRB Online Survey, 2021

- 5.47. Regarding the earning power of the BFIs, 59 percent of the respondents reported that share price increased after the merger process and 50 percent of the respondents opined that Return on capital and assets has improved.
- 5.48. In case of each indicator presented in Figure 5.23, about a third of the respondents reported that there has been no effect of merger and acquisition policy on such indicators. Only around one tenth of the respondents reported that the policy has deteriorated the indicators.

CHAPTER VI: CONCLUSION

- 6.1. The main purpose of this study is to assess the level of financial development in Nepal on a cross-country context, analyze the level of competition in the banking industry and suggest the optimal range of commercial banks in Nepal. It has used various tools to analyze the level of competition and assess the optimal range of BFIs.
- 6.2. **The results show that Nepal has progressed a lot during the last one decade in terms of financial access and deepening compared to its peers.** Private sector credit to GDP ratio has increased to over 88 percent, which is above many south Asian peers. Financial access has widened as shown by the higher availability of the commercial bank branches and the percentage of adults having accounts.
- 6.3. **One another important finding of the study is that Nepal's banking sector is less concentrated compared to other economies.** This result has been supported by the k-bank concentration ratio, HH index, Panzer Rosse model and Lerner's index. The concentration ratios have declined during 2015 to 2020. The value of HH index is below 1000 and has followed a declining trend. The mean Lerner index has declined from 0.69 in 2015q2 to 0.34 in 2019q4 and then has marginally increased and Panzer-Rosse statistic is 0.99. All these results imply that there is sufficient level of competition in the banking industry and the market power of the individual banks is comparatively low.
- 6.4. **The results from the survey show that financial consolidation process in Nepal has been effective in many respects at least in the short run.** It has resulted in higher credit as well as deposit growth, a higher earning power and an improvement in risk management capacity. However, operational efficiency has not significantly improved as shown by the results from the DEA model.
- 6.5. **The survey respondents opined that consolidation process has many positive impacts at least in the short run.** Of the respondents from the BFIs, 79 percent opined that the merger process has enhanced risk-bearing capacity of the BFIs, 67 percent opined that it has increased investment capacity, 51 percent opined that it has helped maintain healthy competition and 52 percent opined that it has helped increase operational efficiency. In addition, 52 percent of the respondents reported that per

employee operation cost has declined after the merger, 50 percent reported that per-employee operating profit has increased and 62 percent reported that employee productivity has increased. Moreover, 69 percent of the respondents reported that risk bearing capacity has increased, 58 percent reported that quality of the assets has improved and 46 percent reported that spread rate has declined after the merger process. These results imply that banking sector consolidation has been beneficial for the BFIs at least in the short run. However, there is a need for the regulator as well as the involved institutions to focus on operational efficiency gains of the BFIs in the post-merger phase.

- 6.6. **One another important result is that in many peer countries measured in terms of the size of the economy, per capita GDP and population size, the number of commercial banks is lower than Nepal.** If we consider the development banks as well as finance companies that carry out the similar roles of commercial banks, the number of banks in Nepal is larger than the peer economies. It has been also supported by the survey results. About 84 percent of the respondents from the BFIs and 78 percent of the experts opined that the existing number of the BFIs in Nepal exceeds the optimum number.
- 6.7. **Regarding the optimal number of commercial banks, one-half of the survey respondents opined that the appropriate number of commercial banks in Nepal is 11 to 15.** Another one fifth of the respondents preferred 5 to 10 commercial banks, 15 percent were in favor of 16 to 20 banks and the rest were in favor of 20 to 25 commercial banks.
- 6.8. **Incentive merger was reported as the most preferred modality for reducing the number of BFIs in Nepal.** About 57 percent of the respondents stood in favor of incentive merger, 20 percent in favor of forced big merger, 17 percent in favor of voluntary merger and the remaining respondents were in favor of merger through capital increment. In addition, most of the respondents (61 percent) opined that merger should be done between weak and strong institutions. The preference for the merger between weak and strong institutions is similar between the BFI management and experts.

- 6.9. **The respondents suggested that NRB should promote digital payments, focus on IT risk management and improve the supervisory system of NRB in order to expand financial access and strengthen the financial system.** Likewise, majority of the experts suggested for managing the IT risks efficiently and improving the supervision aspects. Regarding the improvement in the banking services, the major areas identified from the expert survey are improvement in service quality, focusing on FinTech and reducing the cost of financial services.
- 6.10. **Even though statistical models cannot exactly tell the optimal number of banks in an economy, low level of concentration in the Nepali banking industry imply that further consolidation can be done without creating enough room for monopolistic power.** If a proper balance between efficiency gains from merger and anticompetitive effects is maintained, healthy and resilient financial system can be built with the consolidation while ensuring increase in consumer welfare.

REFERENCES

- Agoraki, M.E.K., Delis, M.D. & Pasiouras, F. (2011). Regulations, competition and bank risk-taking in transition countries. *Journal of Financial Stability*, 7, pp. 38-48
- Ahmad, R., Skully, M., & Ariff, M. (2005). Factors determining mergers of banks in Malaysia's banking sector reform. *Multinational Finance Journal*. 11(1-2), 1-31.
- Allen, F. & Gale, D. (2000). Competition and financial stability. *Journal of Money, Credit, and Banking*, 36 (2004), pp. 453-480
- Bank Negara Malaysia (1999). *Bank Negara Malaysia Annual Report*.
- Bank Negara Malaysia (2020). *Bank Negara Malaysia Annual Report*.
- Beck, T., Demirgüç-Kunt, A. & Levine, R. (2006). Bank concentration, competition, and crises: First results. *Journal of Banking & Finance*, 30 (2006), pp. 1581-1603.
- Berger, A.N., Klapper, L.F. & Turk-Ariss, R. (2009). Bank competition and financial stability. *Journal of Financial Services Research*, 35 (2), 99–118.
- Bikker, J.A. & Haaf, K. (2002). Measures of competition and concentration in the banking industry: a review of the literature. *De Nederlandsche Bank Research Series*, No. 27.
- Boot, A. W. A. & Thakor, A. V. (2000). Banking structure and financial innovation. in I. Walter and A. Saunders (eds.), *Universal Banking: Financial System Design Reconsidered*, Chicago, IL: Irwin, pp. 420-430.
- Boyd, J. H., & Prescott, E. C. (1986). Financial intermediary-coalitions. *Journal of Economic theory*, 38(2), 211-232.
- Boyd, J., De Nicolo, G., Smith, B. (2006). Crises in competitive versus monopolistic banking systems. *Journal of Money, Credit and Banking*, 36(3), pp. 487-506.
- Buchs, T., & Mathisen, J. (2005). Competition and efficiency in banking: behavioral evidence from Ghana. *IMF Working Paper*, wp/05/17.
- Bundesbank (2021)
<https://www.bundesbank.de/resource/blob/829940/eb846bb8bfbd3330dec095ea3010df1e/mL/2020-03-31-bankstellenbericht-anlage-data.pdf>.

- Carbó, S., Humphrey, D., Maudos, J., & Molyneux, P. (2009). Cross-country comparisons of competition and pricing power in European banking. *Journal of International Money and Finance*, 28(1), 115-134.
- Casu, B., & Girardone, C. (2006). Bank competition, concentration and efficiency in the single European market. *The Manchester School*, 74(4), 441-468.
- Cetorelli, N., Hirtle, B., Morgan, D. P., Peristiani, S., & Santos, J. A. (2007). Trends in financial market concentration and their implications for market stability. *Economic Policy Review*, 13(1).
- Claessens, S. & Laeven, L. (2004). What drives bank competition? Some international evidence? *Journal of Money, Credit, and Banking*, 36, 562-583.
- Coccorese, P. (1998). Assessing the competitive conditions in the Italian banking system: some empirical evidence. *PSL Quarterly Review*, 51(205).
- De Bandt, O., & Davis, E. P. (2000). Competition, contestability and market structure in European banking sectors on the eve of EMU. *Journal of Banking & Finance*, 24(6), 1045-1066.
- Devinaga, R., Ming, T.T., & Hamid, A. (2014), Merger improve efficiency of Malaysia commercial banks. *International Journal of Economics and Finance*, 6(8).
- Dwa, S. & Shah, A.K. (2018). A study on merger and operating performance of commercial banks of Nepal. *Journal of Business and Social Sciences Research*, 2(1-2):85.
- Efthyvoulou, G., & Yildirim, C. (2014). Market power in CEE banking sectors and the impact of the global financial crisis. *Journal of Banking & Finance*, 40, 11-27.
- Gajurel, D. P., & Pradhan, P. (2012). Banking, concentration and competition in Nepalese. *Journal of Business, Economics and Finance*, 5-16.
- Gelos, G. & Roldos, J. (2004), Consolidation and market structure in emerging market systems. *Emerging Markets Review*, 5, 39-59.
- Grachev, A.G. (2011). Forecasting the optimal number of the Russian banking system. *Studies on Russian Economic Development*.
- IMF (2020). International financial statistics database. International Monetary Fund.

- Jaydev, M. & Sensarma, R. (2007). Mergers in Indian banking: An analysis. *South Asian Journal of Management*. 14(4), 20-49. <http://www.amdisa.org/publica.html>
- Kaur, P., & Kaur, G. (2010). Impact of mergers on the cost efficiency of Indian commercial bank. *Eurasian Journal of Business and Economics*, 3(5).
- Laeven, L., Lev, R., & Tong, H. (2014). Bank size and systemic risk. IMF staff discussion note. SDN/14/04.
- Lozano-Vivas, A., & Weill, L. (2012). How does cross-border activity affect EU banking markets?. *European Financial Management*, 18(2), 303-320.
- Matthews, K., Murinde, V., & Zhao, T. (2007). Competitive conditions among the major British banks. *Journal of Banking & Finance*, 31(7), 2025-2042.
- Mishkin, F. S. (1999). Global financial instability: framework, events, issues. *Journal of Economic Perspectives*, 13(4), 3-20.
- Moiseev, S. (2006). optimum structure of the banking market: how many banks are necessary for Russia?," *Voprosy Ekonomiki*, N.P. *Redaktsiyazhurnala "VoprosyEconomiki"*,10.
- Molyneux, P., Lloyd-Williams, D. M., & Thornton, J. (1994). Competitive conditions in European banking. *Journal of Banking & Finance*, 18(3), 445-459.
- NRB. (2007). Optimal number determination or regulatory reform. Special publication.http://archive.nrb.org.np/red/publica.php?tp=special_publication&&vw=1000.
- NRB (2015). Situation of merged bank and financial institutions and effectiveness of merger. Nepal Rastra Bank.
- NRB (2020). Quarterly economic bulletin. Nepal Rastra Bank.
- NRB (2021). Quarterly economic bulletin. Nepal Rastra Bank.
- NRB(2021a). Financial access in Nepal. Available at <https://www.nrb.org.np/contents/uploads/2021/08/Financial-Access-Report-2078.pdf>
- NRB (2022). Monthly statistics. Various Issues.

- Panzer, J.C. & Rosse, J.N. (1987). Testing for monopoly equilibrium. *Journal of Industrial Economics*, 35 (4), 443–456.
- Park, K.H. (2011). What Happened to Efficiency and Competition after Bank Mergers and Consolidation in Korea? *KDI Journal of Economic Policy*, 33(3), 33-35.
- Raju, J.K., Manjunath, B.R. & Dhakal, H. (2015). Impact and challenges of merger and acquisition in Nepalese banking and financial institutions. *Journal of Exclusive Management Science*, Vol 4, Issue 8.
- RBI (2022). https://m.rbi.org.in/scripts/bs_viewcontent.aspx?Id=3657
- Rhoades, S.A. (2000,). Bank mergers and banking structure in the United States, 1980-98. Staff studies 174, Board of governors of the Federal Reserve System (U.S.).
- Robinson, D.O. (NA). Banking crisis and recovery. IMF e-library. <https://www.elibrary.imf.org/configurable/content/books>.
- Said G., Al-Muharrami, S. and Al-Kiyumi, A. (2009). The impact of mergers and acquisitions on the efficiency of GCC banks. *Banks and Bank Systems*, 4(4).
- Shaffer, S. (1983). The Rosse-Panzer statistic and the Lerner index in the short run. *Economics Letters*, 11(1-2), 175-178.
- Sharma, K.S. (2018). Effect of banks' merger and acquisition in Nepal: study of selected banks. *Kaav International Journal of Law, Finance & Industrial Relations*, Vol5, 41-52.
- Shen, C.H. & Lin, M.R. (2007). The determinants of cross-border merger and acquisition activity in the banking sector in Asia: did the Asian financial crisis change them? *Financial Sector Development in the Pacific Rim, East Asia Seminar on Economics*, vol. 18.
- Stephen, A.R. (2000). Bank mergers and banking structure in the United States, 1980-98. *Board of Governors of the Federal Reserve System, Staff Studies*, 174.
- World Bank (2021). Global financial development database. www.data.worldbank.org/

Websites

<https://www.bi.go.id/en/default.aspx>

<https://www.bnm.gov.my/>

<https://www.bok.or.kr/eng/main/main.do>

<https://www.bundesbank.de/en>

<https://www.cbr.ru/eng/>

<https://www.federalreserve.gov/>

<https://www.imf.org/en/Home>

<https://www.indonesia-investments.com/>

<https://www.rbi.org.in/>