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Bank Competition and Financial Stability in Nepal

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Abstract: ***This paper examines the casual relationship between bank competition and financial stability in Nepal. The relationship between competition and financial stability in banking system can be explain by two hypothesis: The "competition-fragility" theory holds that increased bank competition weakens profit margins, undermines market power, and lowers franchise value—the continuing concern or market worth of the banks above their book values and "competition-stability" view contends that financial institution stability may benefit from competition. The study used descriptive and causal research design. The random effect panel data of 6 commercial banks of Nepal over the period of 2014-2019. All the data are obtained from NRB monthly statistic and bank annual report. The HHI and n-bank concertration ratio are used as a measure of bank competition while Z-Index and non-performing loan ratio are the proxies of financial stability. The findings confirm the"Competition-frangility" theory by showing a negative association between bank competition and financial stability in Nepal. It states that bank tends to take excessive risks when the competition level increases. It is discovered that competition in the banking industry raises credit risk and reduces capital levels. Riskier policies enhance the likelihood of increased bank bankruptcies and non-performing loan ratios, which adds to fragility and financial instability. Thus, less concentrated banking systems are prone to experiences crisis.***

Keywords: Financial Stability, Bank Competition, Z-INDEX, Concentration.

1. INTRODUCTION

Financial stability policy discussions have revolved on the competitiveness of the banking industry. An effective banking system is usually seen as requiring competition, just like other non-financial industries do. However, a number of theoretical and empirical studies have cast doubt on this assertion, asserting that banks are more motivated to invest in relationships with smaller and more opaque borrowers as a result of monopoly rents (Miskin, 1999). Similarly, theoretical and empirical studies have not reached a conclusive conclusion regarding the connection that exists between banking market competition and stability (Beck, 2008). Financial stability is a condition in which the financial system can facilitate real economic

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activities smoothly and is capable of unravelling financial imbalances arising from shocks. Any instability in the banking system has the potential to cause financial instability and an economic crisis, so banking system is important. As a result, a market economy's foundation is a functioning banking system. In addition to ensuring that the banking system is competitive and effective, policymakers strive to ensure its stability (Claessens, 2009). Recently, there has been discussion over the impact of banking rivalry on the general stability of the financial system. Competition has a favorable effect on financial stability, according to the "competition-stability" perspective, whereas the "competition-fragility" view contends that bank rivalry has a detrimental effect. (Berger, 2008). These relationships have been tested by a lot of authors in different countries and regions, and the results are different. Many research has been conducted research in various developed countries but in the context of Nepal only one research has been done.

2. LITERATURE REVIEW

The competition-fragility thesis and the competition-stability thesis serve as the focal points of discussion on how banking competition affects the stability of the banking system. The competition-stability view contends that financial institution stability may benefit from competition. Keeley (1990) was the first to investigate the positive association between competition and fragility from both a philosophical and experimental standpoint. The conventional "competition-fragility" theory holds that increased bank competition weakens profit margins, undermines market power, and lowers franchise value—the continuing concern or market worth of the banks above their book values. According to Keeley (1990), the U.S. experienced a spike in bank failures due to monopoly rents being reduced by increasing competition and deregulation that followed the loosening of state branching limitations in the 1980s. MD(2017) used 16 national banking systems, where conventional and Islamic banks were active between 2000 and 2012, to perform their study. In the context of Islamic and conventional banks, the primary goal of the research is to examine the relationship between "competition-stability/fragility." A combination of accounting-based metrics, such the Z-score and the NPL ratio, and market-based metrics, like Merton's distance to default, are used by the researcher to gauge the degree of stability and lack of competitiveness. The competition-fragility argument is validated by the outcomes of Islamic and conventional banks alike (Kabir Md. Nurul, 2017). Further research has been conducted using data for 8,235 banks in 23 developed nations by AN Berger (2008). The dependent variables are NPLs, Z-index, E/AT , and explanatory variables are Lerner Index, HHI deposit, HHI loans, Bank size, Foreign ownership, Ln (GDPPC), Legal rights index. The result support traditional "competition-fragility" view banks with a higher degree of market power also have less overall risk exposure. This risk may be offset in part by higher equity capital ratios (Berger, 2008).

Yeyati and Micco (2007) used a sample of commercial banks from eight Latin American nations to investigate the link between risk (as defined by the Z-score) and competition (again evaluated by the Lerner index) throughout the period of 1993–2002. The outcome demonstrates that bank risk has historically been negatively linked with competition, which, when combined with the earlier discovery, accounts for the data's positive association between the stability of

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the banking sector and foreign penetration (Micco, 2007). The aim of the research is to examine, using 270 observations, the effects of efficiency and competition on the financial stability of Bangladeshi banks between 2009 and 2017. The findings have implications for the contentious link between stability and competition, which will help develop suitable policies to support financial stability for developing nations like Bangladesh as well as others (Saha, 2021). GC (2016) conducted a research in Nepal context taking the sample of 26 commercial bank which has been operating at least three years during the study period. This study uses annual data from commercial banks for the years 1999 to 2012 and a fixed effects panel data model to empirically investigate the effects of competition on the banking system in Nepal. The dependent variables is financial stability which is measure by Z-index and NPL and independent variable is bank competition which is proxy of n-bank concentration ratio and Herfindahl Hirschman Index. The findings confirm the "competition-stability" theory, which holds that increased banking competition and financial stability in Nepal are positively correlated. Various researcher has done research in the context of developed country but in the context of Nepal only one research has been done. Since the researcher has conducted research before merger and acquisition of BFIs. Therefore, the study aims to determine if competition in the Nepalese banking sector encourages stability or fragility after merger and acquisition period.

Hypothesis
H1: Bank competition is negatively associated with financial stability.

Conceptual Framework

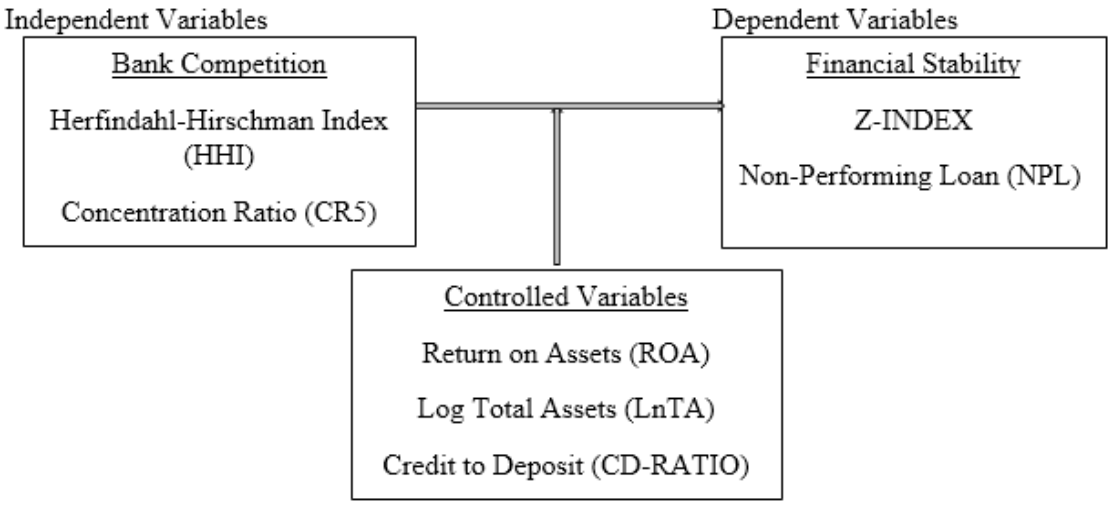

Figure 1: Conceptual framework of variables

Z-INDEX
The Z-Index is a measure of bank stability that may be used as an inverse proxy for total bank risk and as a stand-in for a bank's likelihood of going bankrupt. The Z-Index integrates the three indicators of profitability (ROA), capitalization level (E/TA), and return volatility

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(σ(ROA) into a single indicator. The Z-Index falls with return volatility and rises with profitability, leverage, and capitalization level. (SB GC, 2020; Beck,2008; Berger et al., 2008).

$$Z - INDEX_{it} = \frac{ROA_{it} + {}^{E_{it}}/_{TA_{it}}}{\sigma(ROA)}$$

In this case, σ(ROA) is the standard deviation of return on assets, E/TA is the equity to total assets ratio, and ROA is the return on assets as determined by the ratio of net profit to total assets.

NPL

The ratio of a bank's total loan volume to its volume of non-performing loans is known as the NPL, which is the second measure of bank stability. Greater NPLs are a sign of increased bankruptcy risk, which raises the possibility of bank fragility or instability.The risk of credit or loan profitability is measured by NPL. (Beck, 2008; Berger et al., 2008).

Concentration Ratio (CR)

The total market shares of the n largest banks in the banking system, expressed as asset sizes, is the n-Bank concentration ratio. It is calculated as:

$$CR_{nt} = \sum_{i=1}^{N} S_{it}$$

Where, S_{it} is the market share of bank I in year t and N is the total number of bank which is operated. Total assets are used as a proxy for bank size in the market share computation.

Herfindahl-Hirschman Index(HHI)

HHI is used as a proxy for bank competition. It is the sum of the squares of market share of all the bank in the system. It is calculated as:

$$HHI_t = \sum_{i=1}^{N} S_{it}^2$$

Where, S_{it} is the market share of bank I in year t and N is the total number of bank in the system.

3. METHODOLOGY

The study used descriptive and causal research design. The aim of this research is to examine the relationship between stability and competitiveness in the banking sector of Nepal from 2014 to 2019. The period chosen represents the era of BFI mergers and acquisitions in Nepal. The study used a sample of 6 out of 27 commercial banks in Nepal. Global Ime Bank Ltd, Everest Bank Ltd, NMB Bank Ltd, Standard Chartered Nepal Bank Ltd, Prime Commercial Bank Ltd and Himalayan Bank Ltd are the commercial bank which is used as sample. The empirical investigation is based on individual bank stability measures which are Z-INDEX and nonperforming loan ratio (NPL). As a proxy for bank competiton, structure measures of competiton n-Bank concentration ratio (CR5) and Herfindahl Hirschman Index (HHI) are used. All the data are obtained from NRB monthly statistic and bank annual report. An analysis is conducted using a random effects panel data model to examine the relationship between bank

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stability and competitiveness. The credit to deposit ratio, return on assets, and natural logarithm of total assets—bank-specific variables—are included as explanatory factors in addition to the competitiveness measure.

The panel data model used in this study would be stated as;

$$STAB_{it} = \alpha_0 + \beta_1 COM_{it} + \beta_2 BANKCHR_{it} + \mu_{it}$$

Where, "STAB" stands for bank stability measure, "COM" stands for bank competition measure, "BANKCHR" stands for bank specific indicator and u stands for the error term. The credit to deposit ratio (CD RATIO), return on assets(ROA), and natural logarithm of total assets(LNTA) are used as bank specific variables.

4. RESULT AND DISCUSSION

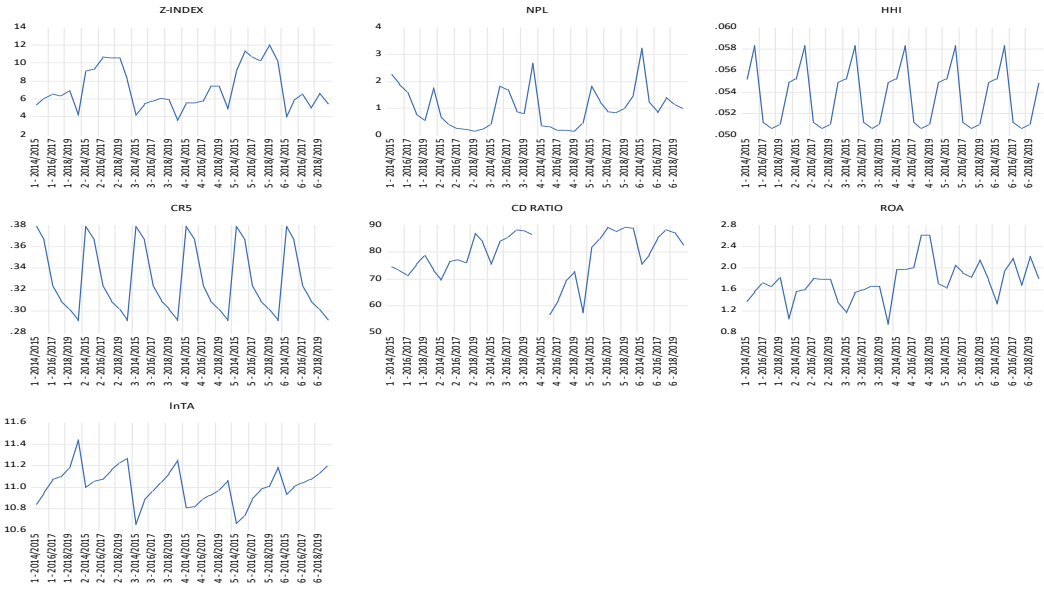

Figure 2: Graphical presentation of all variables

Figure 2 shows the result of stationary of individual variable. Through observation individual variables are found having unit root.

Table 1: Descriptive statistics of variables

	Z-INDEX	NPL	HHI	CR5	CD	ROA	LnTA
Mean	7.200016	1.018333	0.053535	0.328500	78.85371	1.751944	11.01691
Median	6.499712	0.865000	0.053050	0.316500	79.12000	1.750000	11.02417
Maximum	12.09368	3.220000	0.058300	0.379000	89.15000	2.610000	11.43755
Minimum	3.576266	0.150000	0.050600	0.291000	56.88000	0.950000	10.65492
Std. Dev.	2.374486	0.761279	0.002865	0.033292	8.855877	0.358384	0.171321
Skewness	0.517375	0.941562	0.452139	0.483754	-0.82253	0.203556	-0.06140
Kurtosis	2.038003	3.462008	1.760014	1.592770	3.070754	3.641214	3.032342

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Jarque-Bera	2.994218	5.639411	3.532923	4.374553	3.95918	0.865344	0.024190
Probability	0.223776	0.059623	0.170937	0.112222	0.138490	0.648773	0.987978
Sum	259.2006	36.66000	1.927260	11.82600	2759.880	63.07000	396.6089
Sum Sq, Dev	197.3365	20.28410	0.000287	0.038793	2666.503	4.495364	1.027286
Observations	36	36	36	36	35	36	36

Note: Data are calculated using Eviews-12 student version

Table 1 shows that the descriptive analysis of dependent, independent and explanatory variables. The mean value of CD ratio is highest at 78.85 and HHI is lowest at 0.053. the median of CD ratio is highest at 79.12 and HHI is lowest at 0.053.
The probability of all the variables are more than 0.05 which implies the data are normally distributed.

Table 2 : Breush-Pagan Test Dependent variable: NPL

	Cross-section	**Test Hypothesis Time**	**Both**
Breusch-Pagan	11.6367 (0.0006)	2.478442 (0.1154	14.12211 (0.0002)

Note: Number in the parenthesis are the P-value

Table 2 shows the result of POLS. Before we interpret the result, the validity of test is assured using Breush-Pagan test. Null hypothesis is pool is appropriate than fixed and random effect model. The test provides p-value 0.0006, which is less than 0.05. this indicates the rejection of null hypothesis and acceptance of either random or fixed effect.

Table 3: Hausman Test Dependent variable : NPL

Test Summary	**Chi-Sq Stat**	**Chi-Sq d.f.**	**Prob**
Cross-section random	0.0000	5	1.0000

Note: Number in parenthesis are the P-value

Table 3 shows the result of regression equation of random effect model. To test the validity of random effect model Hausman test is applied. The null hypothesis is Random Effect Model is appropriate than Fixed Effect Model. The p-value is greater than 0.05 which indicate acceptance of null hypothesis. So, REM is appropriate.

Table 4: Random Effect Model Dependent Variable: NPL

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CR5	20.41949	8.391445	2.433370	0.0214
HHI	-32.56666	46.61349	-0.698653	0.0303

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LnTA	2.185423	1.498168	1.879244	0.0703
CD RATIO	0.032982	0.022751	1.449699	0.1579
ROA	-1.071289	0.372313	-2.877386	0.0074
C	-35.64744	18.00545	-1.979814	0.0573

R-Square	0.468634
Adjusted R-Square	0.377019
F-Statistic	5.115265
Prob(F-Statistic)	0.001751
Durbin-Watson stat	1.596441

Note: Data are calulted using Eviews-12 student version

Table 4 shows the result of random effect model. It shows that CR5 has the positive significant relation with NPL. Again, HHI has negative significant relation with NPL. ROA shows the negative and signifiacnt relation with NPL. Similarly, LnTA and CD RATIO has positive insignificant relation with NPL. The value of R-square is 46.86% which implies that 46.86% value of dependent variable is explained by independent variables and remaining is explained by other variables. The value of Durbin-Watson stat is greater than R-Square which implies that the variables are free from autocorrelation. The p-value of F-statistic is less than 0.05 so, the model is overall fit.

Table 5 : Breusch-Pagan Test Dependent variable: Z-INDEX

	Cross-section	**Test Hypothesis Time**	**Both**
Breusch-Pagan	78.92450 (0.0000)	3.431184 (0.0640)	82.35569 (0.0000)

Note: Number in the parenthesis are the P-value

Table 5 shows the result of POLS. Before we interpret the result, the validity of test is assured using Breush-Pagan test. Null hypothesis is pool is appropriate than fixed and random effect model. The test provides p-value 0.0000, which is less than 0.05. This indicates the rejection of null hypothesis and acceptance of either random or fixed effect.

Table 6:Hausman Test Dependent variable: Z-INDEX

Test summary	**Chi-Sq. Stat**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	0.00000	5	1.0000

Note: Number in parenthesis are the P-value

Table 6 shows the result of regression equation of random effect model. To test the validity of random effect model Hausman test is applied. Null hypothesis is REM is appropriate than FEM. The p-value is 1.0000 which is greater than 0.05. It indicate acceptance of null hypothesis. So, REM is appropriate.

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Table 7 : Random Effect Model Dependent Variable: Z-INDEX

Variable	Coefficient	Std. Error	t-Statistic	Prob
CR5	-20.93736	5.466281	-0.383028	0.0145
HHI	-16.75753	28.88159	-0.580215	0.0463
LnTA	0.087831	0.960078	0.091483	0.9277
CD RATIO	-0.023642	0.016724	-1.413681	0.1681
ROA	3.597286	0.244069	14.73873	0.0000
C	3.362818	11.70662	0.287258	0.7760

R-Squared	0.937010
Adjusted R-Squared	0.926150
F-statistic	86.27807
Prob(F-statistic)	0.000000
Durbin-Watson stat	2.152685

Note: Data are calulted using Eviews-12 student version

Table 7 shows the result of random effect model. It shows that CR5 and HHI has the negative significant relation with Z-Index. Again, ROA shows the positive significant relation with Z-Index. Similarly, LnTA has positive insignificant relation with Z-Index. CD ratio has negative insignificant relation with Z-Index. The value of R-square is 93.70% which implies that 93.70% value of dependent variable is explained by independent variables and remaining is explained by other variables. The value of Durbin-Watson stat is greater than R-Square which implies that the variables are free from autocorrelation. The p-value of F-statistic is less than 0.05 so, the model is overall fit. The white test for heteroskedasticity indicated the error term is homoskedasticity which validates the assumption of regression.

5. CONCULSION

Numerous significant findings come from the empirical analysis of the relationship between stability and competition in the Nepalese banking sector. The study used descriptive and causal research design. In recent times, Nepal's banking sector has grown more competitive. Competition and stability have a close link. The findings confirm the "Competition-frangility" theory by showing a negative association between bank competition and financial stability in Nepal. Its result is similar to (Keeley, 1990). It states that bank tends to take excessive risks when the competition level increases. It is discovered that competition in the banking industry raises credit risk and reduces capital levels. Riskier policies enhance the likelihood of increased bank bankruptcies and non-performing loan ratios, which adds to fragility and financial instability. Thus, less concentrated banking systems are prone to experiences crisis. Further studies can be undertaken on all BFIs to explore the impact of bank competition and financial stability.

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