Reorienting Banking Focus: From Core to Non-Core Activities for Effective NPL Management

Billal Hossain, CFA[1]
Saima Khan[2]
Tahmid Islam[3]

Abstract:

This paper empirically examines how commercial banks are shifting from traditional interest-bearing lending toward fee- and trading-based operations, and evaluates whether this strategic pivot effectively mitigates non-performing loans (NPLs). This study uses a panel data set of 35 commercial banks listed on Dhaka Stock Exchange for the 12-year period from 2013 to 2024 in the backdrop of rising asset quality pressures in Bangladesh. The study employs econometric modelling frameworks of Ordinary Least Squares (OLS) and Feasible Generalized Least Squares (FGLS) to test the hypothesis that diversification of bank revenue streams can structurally reduce localized default rates. Again, for endogeneity concern, instrumental variable approach (2SLS) model is used here. The empirical estimations show a statistically significant negative relation between NPL ratios and non-core income (NCI). This dynamic leads to a situation where banks with a high level of problem loans deliberately move their business to non-traditional transaction services such as digital fees, brokerage commissions, investment securities to develop low-risk income cushions that are immune to credit defaults. At the same time, the control variables show that the Capital Adequacy Ratio (CAR) has a highly significant negative effect on defaults, but the size of the bank and macroeconomic inflation systematically increase the vulnerabilities to defaults. In the end, these results show that the shift of the operational focus of a bank from traditional asset creation to non-core activities can be an effective internal operational hedging instrument, offering important strategic insights for financial supervisors and central bank policymakers tasked with restoring stability.

Keywords: Non-core income, Non-performing loan, Income diversification, Capital adequacy ratio, Financial stability

JEL classifications: G21, G32, G28, C23, C26, O53

DOI: https://www.doi.org/10.61607/JFB.V22N1-2.A6

Article Info: Submission Date: August 17, 2026; Acceptance Date: October 1, 2026.

[1] Lecturer, Department of Finance, Faculty of Business Studies, University of Dhaka, Dhaka, Bangladesh, Email: billalhossain@du.ac.bd.

[2] Post Graduate Student, Department of Finance, Faculty of Business Studies, University of Dhaka, Dhaka, Bangladesh, Email: saimaasmita97@gmail.com

[3] Lecturer, Department of Finance, Faculty of Business Studies, University of Dhaka, Dhaka, Bangladesh, Email: tahmidislam@du.ac.bd.

1.0 Introduction

As financial intermediaries, banks earn from several sources. These can be broadly categorized into interest income from core activities and non-interest income from non-core activities. Since 2000, one of the more dramatic trends in banking has been the secular shift away from core banking and interest-generating activities to greater reliance on non-interest-generating activities emphasizing fees and trading profits. This has changed the banking model from traditional asset formation such as deposit taking and lending to a model based on fees and non-banking activities mentioned by Saunders (2018). The reasons for this transformation can be for increasing revenue and profitability, diminishing reliance on lending income, tackling increased competition, meeting customer demand of one-stop financial services, diversifying risk and most prominently to manage non-performing loans.

A non-performing loan (NPL) is a loan that is in default or close to default. In a country like Bangladesh, management of NPLs is important because most of the financial assets of the country are owned by commercial banks and the economic growth of the country largely depends on the flow of funds from the banking system. Bangladesh now has the highest NPL ratio in Asia with defaults surging to 20.20 percent of total loans in 2024, according to a new Asian Development Bank report. Despite taking numerous contemporary measures, this problem of increasing NPL is not solved yet. Giving loans is a part of core activities of banks and NPLs can happen when loans are given. Hence banks might try to manage this problem internally by reducing their investment in loan giving and increasing their involvement in non-core activities.

Core income refers to income generated from the traditional banking activities of a bank, particularly from its role as financial intermediary. Such as interest income from Loans and advances, interest income from interbank placements. The most imperative measure of the core income from a bank is its net interest income (NII) which is calculated as net interest income = interest earned - interest paid. Non-core income, also called non-interest income, is the income which a bank earns from sources outside of its traditional lending and deposit-taking operations. Non-core income comes from non-interest income activities, such as income from investment in securities (share, bonds), commission, exchange and brokerage, service charge, fee income and so on.

Non-core income (NCI), in contrast to core income, can assist banks in reducing non-performing loans by diversifying revenue streams beyond traditional lending, providing an alternative source of revenue that is less sensitive to changes in interest

rates and credit quality, diversifying risk exposure, and mainly generating fee income that is not directly tied to the performance of loan portfolios. Generating income through non-core activities can be helpful in both increasing profitability and decreasing NPL.

This study investigates the relationship between NCI and NPL in a sample covering 35 listed Bangladeshi commercial banks from 2013-2024. By examining the relation between non-interest income and non-performing loans, this report contributes to the existing body of literature exploring how income derived from non-traditional as opposed to traditional banking activities influences NPL. This research can be helpful to create a novel knowledge that whether increase in non-core activities can decrease or increase NPL or increase in non-core activities has no impact on NPL.

2.0 Literature Review

NPLs can be affected by various factors. Historically it has been affected by numerous macro variables, such as GDP growth, inflation and unemployment and many bank related variables identified by Anastasiou et al. (2019). Roland Beck et al. (2015) showed that the following variables are found to prominently affect NPL ratios: real GDP growth, share prices, the exchange rate and the lending interest rate. Banks are now diverting to non-core activities and this fact is portrayed by Bian et al. (2015). They showed that banks are moving to NCI to survive in competitive market. Mehzabin et al. (2022) showed that non-interest income has a positive significant impact on the profitability of banking sector. It indicates that a careful distribution of resources in this sector may boost both the income and profitability of the banking arena of Asian countries.

Most of the empirical studies conducted on the effect of NCI on NPL find a positive outcome. Saunders et al. (2014) show that banking system away from traditional core banking system significantly increased the profitability of banking industry. DeYoung and Rice (2004) explore the connection between fee-based activities and earnings volatility across a balanced panel of 472 US commercial banks from 1988 to 1995. Their research indicates that banks emphasizing fee-based activities tend to experience both increased profitability and heightened fluctuations in earnings. Similarly, Stiroh (2004) finds that a greater reliance on non-interest income, particularly trading income, is linked to heightened bank risk and lower risk-adjusted profits in a sample of US banks spanning from 1984 to 2001. Demirgüç-Kunt and Huizinga (2010), in their analysis of 1,334 international banks across 101 countries, discover that a higher ratio of non-interest to interest income is associated with higher profits but also an increased level of bank risk. Elsas et al. (2010)

examine an international sample of banks from nine countries spanning 1996-2008 and demonstrate that a larger share of non-interest income is associated with higher margins, leading to increased profitability and bank stock prices.

Furthermore, DeYoung and Torna (2013) study the relationship between non-interest income and the likelihood of bank failure in a sample of US commercial banks during the financial crisis. Their findings suggest a decrease in the probability of failure with higher non-interest to interest income ratios. Ahmed et al. (2020) investigate the relationship between non-interest income and the concentration of revenue on banks' risk in the countries of South Asia like India, Sri Lanka, Pakistan and Bangladesh. There they used data of 85 banks from 2009 to 2018. The study finds a significant impact of non-interest income on the risk of bank for India, Pakistan and Bangladesh but an insignificant impact for Sri Lanka. This study suggests that the bank managers should focus on generating revenue from different sources in order to minimize risk through diversification. Sun et al. (2017) have conducted a study using the data of 16 listed Chinese commercial banks from 2007 to 2013 and find negative correlation between non-interest income ratio and bank's performance.

Williams B, Prather L (2010) find that the shareholders of banks of Australia will be benefited from an increased exposure to non-interest income via diversification. Dang, V.D. (2021) finds in a study based on data of Vietnamese banks from 2007-2017 that banks which are more involved with activities of non-interest income have less credit risk but also higher bank instability. Hidayat et al. (2012) find that in Indonesia, reliance on non-interest income increases risk for the small-sized banks but diminishes risk for the large-sized banks. Lepetit et al. (2008) show that increase in non-interest income incurs higher risk. This relationship is identified for fee income and commission than for the income from trading. On the contrary, Chiorazzo et al. (2008) find from data of 85 banks of Italy from 1993 to 2003 which showed that an increase in non-interest income brings positive change in risk-adjusted profits.

Although, there are various research conducted on the impact of non-core income on non-performing loan globally, in the Bangladesh perspective, till now there has been no study conducted on this area. Drawing on the theoretical arguments regarding non-core activities outlined in the introduction, together with prior empirical findings, the following research hypothesis is formulated:

H_1: Non-core income negatively affects non-performing loan

The banking sector of Bangladesh as an emerging economy is contributing significantly to the country's GDP with the rapid economic growth. Therefore, the study on the effect of NCI on NPL in Bangladesh can provide useful insight for effective management of banks and policy development.

3.0 Data

3.1 Data Types and Sources of Data

Currently 62 scheduled banks are operating in Bangladesh. Out of these 62 banks, there are 36 banks listed in Dhaka Stock Exchange (DSE) (Considered Shommilito Islami Bank as separate 5 banks as this analysis covers the data period up to 2024). This paper analyses 35 banks from 2013 to 2024 (12 years). Data for this period are available for 35 banks, except ICB Islami Bank, as data were not available due to the critical financial condition of that bank. Total firm-year observations are 418, as some lag variables are used. Some data are calculated; others are taken from the financial statements of these banks.

3.2 Correlation Matrix

For identifying multicollinearity problem between independent variables, Correlation matrix is used. Here, correlation matrix table is given below-

Table 1: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) NPL	1							
(2) NCI	0.085	1						
(3) CI	-0.277	0.400	1					
(4) CAR	-0.480	0.010	0.158	1				
(5) Total assets	0.197	0.622	0.656	-0.066	1			
(6) Lending rate	0.030	-0.052	-0.107	0.008	-0.124	1		
(7) GDP growth rate	-0.250	-0.197	0.074	0.075	-0.158	-0.013	1	
(8) Inflation rate	0.423	0.349	0.006	-0.111	0.285	0.200	-0.486	1

The above Table-1 reports the output of the correlation matrix between the independent variables. It is known that if the correlation value is between -.7 to +.7, the multicollinearity problem doesn't exist between independent variables. If the

value belongs outer this limit, there will be a multicollinearity problem. As all the values in this correlation matrix belong between the limit, there is no multicollinearity issue. The results of VIF test are also given here.

Table 2: Variance inflation factor

Variables	**VIF**	**1/VIF**
Total assets	2.432	.411
NCI	2.075	.482
Inflation rate	1.551	.645
CI	1.544	.648
GDP growth rate	1.341	.746
CAR	1.183	.845
Lending rate	1.105	.905
Mean VIF	1.604	

3.3 Panel Unit Root Test for Stationary Test

We use panel data here. The Levin-Lin-Chu Unit Root test is used to test for stationarity. The null hypothesis of the unit root test is that the series has a unit root or is non-stationary. The alternative hypothesis is that the series is stationary. The p-value is less than the 5% level of significance, so we reject the null hypothesis. Hence the variables used in the study are considered as stationary and appropriate for further econometric analysis.

Table 3: Panel Unit Root Test

Test	**NPL**	**NCI**	**CI**	**CAR**	**Bank Size**	**Lending Rate**	**GDP Growth Rate**	**Inflation Rate**
Levin-Lin-Chu, t	p***	p***	p***	p***	p***	p***	p**	p**

****p<0.01, **p<0.05, *p<0.1*

3.4 Descriptive Statistics

A descriptive analysis of the data has been conducted to have a better understanding of the data. The result of the descriptive analysis is given below-

Table 4: Descriptive statistics

Variables	Observation	Mean	Std. Dev.	Min	Max
NPL	418	0.074	0.11	0	0.953
NCI*	418	6.783	5.336	0.0002894	47.88
CI*	418	5.856	6.236	-22.56	39.29
CAR	418	0.128	0.219	-4.053	0.976
Total assets*	418	322.6	252	7.497	2226
Lending rate	418	0.11	0.048	0.04	0.165
GDP growth rate	418	0.064	0.013	0.035	0.082
Inflation rate	418	0.069	0.017	0.055	0.105

**Note: NCI, CI, Total assets are in BDT Billion*

The average non-performing loan (NPL) ratio is 7.4%, below the industry average (In March 2026, average NPL ratio is 32.26%). This difference might be due to the exclusion of some state-owned commercial banks (which are generally associated with higher NPL ratios and are not listed in the Dhaka Stock Exchange (DSE)). The lowest NPL ratio in the sample is 0% and the highest is 95.3% which is recorded by Union Bank PLC in 2024. The extremely high NPL ratio is reflective of a steep deterioration in the bank's asset quality. During this period, the bank encountered serious problems in managing loans and credit governance which led to the large build-up of non-performing loans.

The average NCI is BDT 6.783 billion where the minimum NCI is BDT 289,400 for Global Islami Bank PLC in 2013. As it was its origination year, they might try to get more involved in core activities rather than non-core activities. The maximum NCI is BDT 47.877 billion which is for Brac Bank PLC in 2024.

The mean core income is BDT 5.856 billion where minimum core income is BDT -22.556 billion, incurred by National Bank in 2024 because of the reasons like the undue involvement of directors in bank management, consolidation of shares within a single family, challenges in electing or re-electing directors, and the board's ineffectiveness in policy formulation have contributed to the financial decline of the bank. The maximum core income is BDT 39.290 billion, earned by Islami Bank Bangladesh PLC in 2024. This is understandable as it is often cited as one of the best shariah based banks of Bangladesh.

The average CAR is 12.8%, which is higher than the requirement as banks should have to preserve minimum 12.5% regulatory capital against risk weighted assets. The minimum CAR is -405.3% which is for Union Bank Bangladesh PLC in 2024. The highest capital adequacy ratio (CAR), recorded at 97.6%, was observed for Midland Bank PLC in 2013, which reflects the relatively higher capital base compared to risk-weighted assets during its initial establishment period.

Bank size which is measured by total assets has a mean of BDT 322.6 billion. The minimum is BDT 7.497 billion BDT for Global Islami Bank and maximum is BDT 2,225.806 billion for Islami Bank Bangladesh PLC in 2024.

The average lending rate is 11%. Minimum rate is 4% charged by NRB Bank PLC in 2023 and maximum rate is 16.5% which was charged by Dhaka Bank PLC in 2013. In 2013, lending rate was relatively higher of almost all banks.

Two macro variables are used here. The average GDP growth rate is 6.4% and average inflation rate is 6.9%.

4.0 Empirical Framework

For the study, the following functional models will be used:

$$NPL = \beta 0 + \beta 1\ NCI + \beta 2\ CI + \beta 3\ CAR + \beta 4\ BS + \beta 5\ LR + \beta 6\ GDP + \beta 7\ Inf + \varepsilon_i$$

For 2SLS, $$NPL = \beta 0 + \beta 1\ \widehat{NCI} + \beta 2\ CAR + \beta 3\ BS + \beta 4\ LR + \beta 5\ GDP + \beta 6\ Inf + \varepsilon_i$$

The measurement procedures for the variables are discussed in detail below:

Non-performing loan: If a loan is not repaid in full, it is called a classified loan or non-performing loan (NPL). The presence of elevated levels of non-performing loans (NPLs) within the banking sector adversely impacts private investment, hinders a bank's capacity to meet its obligations promptly, and limits the availability of bank credit to potential borrowers. Both external and internal economic conditions are recognized as significant factors influencing the prevalence of non-performing loans (Warue, 2013).

$$\text{NPL ratio} = \frac{\text{Non-performing loan}}{\text{Total loan}}$$

Non-core income: Non-core income comes from non-interest income activities, such as- investment income, income from investment in share /securities, commission, exchange and brokerage, service charge, passport endorsement fees, locker fees, documentation charge-IDA, CDBL income, underwriting commission,

BO account closing fees, annual membership fees- premium banking, annual fees-SMS banking, annual fees-internet banking, syndication fees, valuation fees, miscellaneous fees income.

Core income: Core income includes revenue generated from traditional banking activities such as interest income from loans.

Capital Adequacy Ratio (CAR): The Capital Adequacy Ratio (CAR) is a measure used by financial regulators to assess the adequacy of a bank's capital in relation to its risk exposures. The CAR is typically expressed as a percentage and is calculated by dividing a bank's capital by its risk-weighted assets. The capital in this context refers to the funds a bank holds to absorb potential losses, such as shareholders' equity and certain types of reserves.

Bank Size: Bank size refers to the magnitude or scale of a bank, typically measured by various factors such as total assets. Here, logarithm of total assets is used to measure the size of a bank.

Lending rate: The lending rate, or the interest rate charged by banks on loans, can be considered a determinant of NPL.

GDP Growth: GDP growth can be considered a determinant of non-performing loans (NPLs) due to its influence on various economic factors that affect borrowers' ability to repay their loans.

Inflation: This study also considers inflation as a macroeconomic control variable. The data used in this study were collected from the World Bank DataBank for Bangladesh. The measure of the data is annual inflation rate (percentage).

Table 5: Variables' expected outcome

Serial No.	Variables	Notations	Variable Type	Expected sign
1	Non-performing loan	NPL	Dependent	
2	Non-core Income	NCI	Independent	-
3	Core Income	CI	Control	-
4	Lending Rate	LR		+
5	Capital Adequacy Ratio	CAR		-
6	Bank Size	BS		+
7	GDP Growth	GDP		-
8	Inflation Rate	INF		+

5.0 Results

The Effect of non-core activities on NPL is analyzed by using various models. Various models are used to get more robust result. The results of OLS, Random Effect (RE), Fixed Effect (FE), and Feasible Generalized Least Squares (FGLS) models are discussed below.

Table 6: Effect of NCI on NPL (OLS, RE, FE, FGLS)

VARIABLES	OLS	RE	FE	FGLS
	NPL	NPL	NPL	NPL
NCI	-1.181* (0.689)	-1.102 (0.694)	-1.027 (0.728)	-1.181* (0.681)
CI	-1.179* (0.689)	-1.097 (0.694)	-1.019 (0.728)	-1.179* (0.681)
CAR	-0.212*** (0.0201)	-0.208*** (0.0196)	-0.204*** (0.0202)	-0.212*** (0.0198)
Bank size	0.0107* (0.00547)	0.0133** (0.00666)	0.0192** (0.00926)	0.0107** (0.00541)
Lending rate	-0.0545 (0.0930)	-0.0327 (0.0908)	-0.00692 (0.0933)	-0.0545 (0.0920)
GDP growth rate	-0.351 (0.368)	-0.360 (0.349)	-0.363 (0.349)	-0.351 (0.364)
Inflation rate	2.308*** (0.308)	2.270*** (0.296)	2.200*** (0.304)	2.308*** (0.305)
Constant	0.873 (0.693)	0.723 (0.705)	0.493 (0.755)	0.873 (0.686)
Observations	418	418	418	418
R-squared	0.382	0.381	0.377	0.382
Number of Bank	35	35	35	35

*Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

The functional model used for the analysis is:

NPL=f (Non-core income, Core income, Capital adequacy ratio, Bank size, Lending rate, GDP growth rate, Inflation Rate)

From the regression model using OLS method, the following equation is found:

NPL= 0.873 -1.181* NCI -1.179* CI -0.212* CAR+ 0.0107* BS- 0.0545* LR-0.351* GDP+ 2.308* INF

From the regression model, there are 418 observations and the R-squared of the model is 0.382. That means 38.2% variation in the dependent variable can be explained by the independent variables. The p-value of the f statistics is less than 5% which means the model is statistically significant. At least one of the coefficients of the independent variables is significant. From the regression model, it is found that the non-core income, core-income, capital adequacy ratio and GDP growth rate have a significant impact on the non-performing loan of the bank. Also, it is found that core-income, capital adequacy ratio, lending rate and bank type have negative impact on the NPL of the banks. The signs that have been found for NCI, CI, CAR, bank size, inflation match with the expected sign that has been given in empirical framework chapter.

The constant is 0.873 indicating if the entire coefficient is zero, the NPL would be 0.873%. The coefficient of NCI is -1.181. The coefficient indicates that if NCI is increased by 1%, NPL is decreased likely by 1.181% and vice versa considering all the things held constant. The result is statistically significant at 10% level of significance. This is according to our expectation. This is happening because banks with higher NPL are trying to manage their NPLs by diverting into non-core activities and hence increase in non-core activities is causing NPL to decrease.

The coefficient of CI is -1.179. The coefficient indicates that if CI is increased by 1%, NPL is decreased likely by 1.179% and vice versa considering all the things held constant. The finding is statistically significant at 10% level of significance. This is according to our expectation. This is happening because banks with higher NPL are not getting their principal and interest back. As they are not getting interest, their core income is reducing. That's why increase in NPL is decreasing core income.

The estimated coefficient of capital adequacy ratio (CAR) is -0.212, indicating that, ceteris paribus, a 1% increase in CAR leads to a 0.212% decrease in non-performing loans (NPL), and vice versa. This relationship is statistically significant at the 1% level. In contrast, the coefficient of bank size is 0.0107, suggesting that, holding other factors constant, a 1% increase in bank size results in a 0.0107% increase in NPL, and vice versa. This effect is statistically significant at the 10% level of significance.

In the case of the lending rate, the result is the contrary. Holding all other variables constant, the coefficient indicates that if LR increases by 1%, NPL is likely to decrease by 0.0545%, and vice versa. Though this is not statistically significant.

GDP growth rate affects NPL by -0.351% which means keeping other things held constant if GDP growth rate is increased by 1%, NPL is decreased by 0.351% and vice versa. The result is not statistically significant.

Regarding the inflation rate, the estimated coefficient suggests that a 1% increase in inflation leads to a 2.308% increase in non-performing loans (NPL), holding all other variables constant. The effect is statistically significant at the 10% level.

To obtain more robust results, Random Effect (RE) and Fixed Effect (FE) models are also reported here. Hausman Test confirms that here RE model is consistent as we can't reject the null hypothesis based on the p-value of 0.9521. The probability value of the RE Wald Chi square is statistically significant which means that the model is valid. NCI coefficient is -1.102. The coefficient indicates that a 1% increase in NCI is likely to result in a 1.102% decrease in NPL and vice versa, all else being equal. However, the result is not statistically significant and consistent with our expectation. Therefore, in order to reach a reliable conclusion FGLS model is used for performing further analysis which is discussed in next section.

The result of FGLS is homoscedastic, and data set doesn't contain autocorrelation problem. The coefficient value of non-core income in the FGLS model is -1.181. Holding other things constant if NCI is increased by 1%, NPL is decreased likely by 1.181% and vice versa. The result is statistically significant at the 10% level of significance.

We have also conducted year fixed effect for all the 4 models and we found consistent and statistically significant results. These results confirm our hypothesis that non-core income negatively affects non-performing loan. All the models gave similar result that non-core income negatively affects NPL considering the year fixed model. Whereas the RE and FE results are not statistically significant without considering year fixed effect. That means banks in Bangladesh are trying to manage their non-performing loan by focusing on non-core activities.

Table 7: Effect of NCI on NPL (OLS, RE, FE, FGLS using Year Fixed Effect, and 2SLS)

VARIABLES	OLS	RE	FE	FGLS	2SLS
	NPL	NPL	NPL	NPL	NPL
NCI	-1.244***	-1.131***	-1.131***	-1.173*	-0.026*
	(0.294)	(0.284)	(0.284)	(0.681)	(0.037)
CI	-1.244***	-1.125***	-1.125***	-1.171*	
	(0.294)	(0.285)	(0.285)	(0.680)	
CAR	-0.195***	-0.196***	-0.196***	-0.211***	-0.210***
	(0.0213)	(0.0198)	(0.0198)	(0.0197)	(0.0248)
Bank size	0.00513	-0.0267	-0.0267	0.0106**	0.0112**
	(0.00587)	(0.0277)	(0.0277)	(0.00541)	(0.0048)
Lending rate	-0.0275	0.0145	0.0145	-0.0537	-0.0581
	(0.0289)	(0.0233)	(0.0233)	(0.0920)	(0.0382)
GDP growth rate	-1.990***	-3.058***	-3.058***	-0.352	-0.364
	(0.571)	(0.950)	(0.950)	(0.364)	(0.272)
Inflation rate	4.617***	5.607***	5.607***	2.308***	2.258***
	(1.139)	(1.519)	(1.519)	(0.305)	(0.419)
Constant	0.973***	1.647**	1.647**	0.864	-0.306**
	(0.239)	(0.693)	(0.693)	(0.685)	(0.129)
Observations	418	418	418	418	418
R-squared	0.448	0.488	0.488	0.448	0.357
Number of Bank	35	35	35	35	35
Year Fixed Effect	Yes	Yes	Yes	No	No

*Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

For endogeneity concern, instrumental variable approach is used in this model. Our instrumental variable is the industry average NCI and we separate this into two segments, one for conventional bank and another for non-conventional bank. The Cragg-Donald Wald F statistics value is 11.71 indicates that the variable is valid. The coefficient of NCI indicates that NCI negatively affects NPL which is consistent with our other models and the result is statistically significant at 10% level of significance.

6.0 Conclusion and Policy Implications

This study empirically investigates the operational transition in the Bangladeshi banking sector, particularly the shift from traditional interest-based core banking functions to fee- and trading-based non-core activities. The empirical framework is based on a strong sample of 35 listed commercial banks in the Dhaka stock exchange for the period of 2013-2024. This study provides a critical analysis of the impact of revenue diversification on non-performing loans (NPLs). The structural context of this study is very important as Bangladesh has experienced severe asset quality pressures with defaults spiking to historic highs in recent years.

The empirical results of Ordinary Least Squares (OLS) and Feasible Generalized Least Squares (FGLS) regression models validate the central hypothesis, indicating a statistically significant negative relationship between non-core income (NCI) and non-performing loans. Specifically, the baseline models suggest that a 1% increase in non-core income is associated with a roughly 1.181% decrease in the bank's NPL ratio. The 2SLS model also converges with the findings of other models. The structure dynamic indicates that financial institutions experiencing higher loan defaults are intentionally or reactively altering their business profiles away from traditional credit creation. Banks are increasing their footprint in non-traditional services such as investment securities, commission-based activities, brokerage, asset management and digital transaction fees to build alternative buffers to protect their overall financial performance from localized credit degradation.

At the same time, the control variables included in the models offer clarity over the underlying drivers of bank risk in the macro-financial environment. Core income is negatively correlated with NPLs as institutions suffering severe credit defaults experience an automatic contraction in realized interest income. The CAR has a highly significant negative coefficient, confirming the basic thesis that strongly capitalized banks are more subject to underwriting governance and are better protected against severe asset impairment. Conversely, the positive link between bank size and NPLs lends credence to the idea that bigger banking institutions in

Bangladesh are faced with unique operational challenges, structural principal-agent issues, or increased exposure to large, irregular corporate lending syndicates. At the macro level, GDP growth is protective in reducing the pressure for defaults, while inflation is a major destabilizing factor. High inflation systematically erodes the real purchasing power and ability to service debt of retail and corporate borrowers and therefore raises banking defaults.

Overall, the study confirms that non-core activities are no longer peripheral extensions of banking but rather vital strategic tools for modern risk mitigation and revenue survival in a volatile credit environment. Non-core income is a stable alternative to the traditional credit intermediation, which is prone to structural inefficiencies and internal corporate governance failures. It allows banks to create a stream of low-risk fee income that is not associated with any particular loan defaulting, which is a sustainable way forward.

The empirical results obtained from this research provide meaningful, useful policy implications to the regulators of the central bank, institutional heads, and financial supervisors responsible for stabilizing the banking infrastructure in Bangladesh. The findings point to the need for targeted changes in the design of regulation and in corporate financial strategy as the banking sector faces high NPL ratio.

First, the central bank should roll back restrictive fee caps and bureaucratic barriers that delay the roll-out of non-credit financial products. Non-core income has shown itself to be a hedge against default risks, and regulators should therefore create an environment that encourages safe product diversification. This includes reform of the regulatory framework for banc assurance, syndication of financial assets, investment advisory and capital market services. Permitting commercial banks to safely expand their lines of non-credit products can help institutions reduce their reliance on high-risk corporate lending and their risk concentrations.

Secondly, the statistically significant negative relationship between Capital Adequacy Ratio (CAR) and NPLs depicts the need to strictly implement the Basel guidelines. Regulators should not be lenient and should impose heavy penalties on institutions that do not meet minimum capital requirements. Supervisors should operate a dynamic, risk-based supervision system that ties a bank's capacity to broaden its lending portfolio to its capital strength and asset quality. Banks that are underperforming or poorly capitalized should be made to cease expanding credit and to recover non-performing assets. In addition, the positive relation between size and the default rates indicates the need for targeted regulatory attention to large, systemic commercial banks. The central bank should undertake intensive, ongoing

examinations of large banking groups to guard against internal management failures, insider lending and large-scale corporate fraud. Regulatory rules should impose stringent limits on single borrower and group exposure ceilings and insist on fully independent credit risk committees. The steps are necessary to prevent a bank's size from creating unmanageable concentrations of risky debt. However, this study didn't add all the state-owned banks, foreign banks, and some private commercial banks as those are not listed in Dhaka stock exchange. There is a further scope to add those data and further extend the study.

References

A, D.-K., & H. H. (2010), "Bank activity and funding strategies: The impact on risk and returns," *Journal of Financial Economics, 98*, 626-650.

Ahmed, H. I., Qasim, Z., Tayachi, T., & Mehmood, R. (2020), "Impact of non-interest income and revenue concentration on bank risk in South Asia," *Banks and Bank Systems, 15(4)*, 15-25.

Anastasiou, D., Louri, H., & Tsionas (2019), "Non-performing loans in the Euro-area: are core-periphery banking markets fragmented?," *International Journal of Finance & Economics, 24(1)*, 97-112.

Bian, W.-L., X.-N. W., & Q.-X. S. (2015), "Non-interest Income, Profit, and Risk Efficiencies: Evidence from Commercial Banks in China," *Asia Pacific Journal of Financial Studies*, 762-782.

DeYoung, R., & Rice, T. (2004), "Noninterest Income and Financial Performance at U.S. Commercial Banks," *The Financial Review, 39(1)*, 101-127.

Laetitia Lepetit, Emmanuelle Nys, & Amine Tarazi (2008), "Bank income structure and risk: An empirical analysis of European banks," *Journal of Banking & Finance*, 1452-1467.

Ralf Elsas, M. H. (2010), "The anatomy of bank diversification," *Journal of Banking & Finance*.

Robert DeYoung, G. T. (2013), "Nontraditional banking activities and bank failures during the financial crisis," *Journal of Financial Intermediation*, 397-421.

Roland Beck, Petr Jakubik, & Anamaria Piloiu (2015), "Key Determinants of Non-performing Loans: New Evidence from a Global Sample," *Open Economies Review, 26(3)*, 525–550.

Saima Mehzabin, Ahanaf Shahriar, Muhammad Nazmul Hoque, Peter Wanke, & Md. Abul Kalam Azad (2022), "The effect of capital structure, operating efficiency

and non-interest income on bank profitability: new evidence from Asia," *Asian Journal of Economics and Banking*, 25-45.

Saunders, A., Schmid, M., & Walter, I. (2014), "Non-Core Banking, Performance, and Risk," *Working Paper, Swiss Institute of Banking and Finance*.

Saunders, A., Schmid, M., & Walter, I. (2018), "Non-core Banking, Performance, and Risk," *Working Paper, Swiss Institute of Banking and Finance.*, 60.

Stiroh, K. J. (2004), "Diversification in Banking: Is Noninterest Income the Answer?," *Journal of Money, Credit and Banking (JMCB)*, 853-882.

Sun, L., Wu, S., Stephenson, A., & Zihu, Z. (2017), "Noninterest Income and Performance of Commercial Banking in China," *Scientific Programming*.

Van Dan Dang, & Hoang Chung Nguyen (2021), "Bank Liquidity Hoarding Strategies in Uncertain Times: New Evidence from an Emerging Market with Bank-level Data," *Organizations and Markets in Emerging Economies*, 377-398.

Vincenzo Chiorazzo, Carlo Milani, & Francesca Salvini (2008), "Income Diversification and Bank Performance: Evidence from Italian Banks," *Journal of Financial Services Research*, 181–203.

Wahyu Yuwana Hidayat, Makoto Kakinaka, & Hiroaki Miyamoto (2012), "Bank risk and non-interest income activities in the Indonesian banking industry," *Journal of Asian Economics*, 335-343.

Williams, B., & Prather, L. (2010), "Bank risk and return: the impact of bank non-interest income," *International Journal of Managerial Finance*, 220-244.