RESEARCH ARTICLE

Impact of COVID-19 Pandemic on Canadian Banks' Performance: Non-Performing Loans, Capital Adequacy, and Profitability

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Abstract

COVID-19 pandemic has impacted many financial institutions due to nonpayment of debt by borrowers and unavailability of funds for further lending. Canadian banks have performed well during COVID-19 pandemic by managing non-performing loans (NPLs) and maintaining capital to risk weighted assets ratio higher than 8%. NPLs of Canadian banks was expected to be high due to high interest rates set by Bank of Canada and soft economic growth during and after COVID-19 pandemic. NPLs are associated with different financial indicators of the bank. As per the guidance issued by OSFI, Government of Canada in October 2023, banks/financial institutions are required to maintain minimum capital to risk weighted assets ratio of 8%. The purpose of this study to check the Canadian banks performance by considering the impact of COVID-19 pandemic based on three financial soundness indicators; regulatory capital to risk weighted assets ratio and earnings, profitability, return on assets ratio and non-performing loans to gross loans ratio. Analysis is done by using multivariate regression model based on last 10 years (Q1 2013 to Q3 2023) quarterly data. Based on the analysis results, it is found that Canadian banks have performed well during and after COVID-19 with little effect of pandemic. Canadian banks have maintained regulatory capital to risk weighted assets ratio above 12% over the study period which is higher than 8% required ratio. Canadian banks' non-performing loan to gross loan ratio is less than 0.5% and return on assets ratio is above 1% during the study period except COVID-19 quarters.

Keywords: Non-Performing Loan, Capital Adequacy, Banks' Profitability, Canadian Banks Performance, Financial Soundness Indicators.

1. Introduction

COVID-19 has impacted many financial institutions due to nonpayment of debt by borrowers and unavailability of funds for further lending. Non-performing loans are the result of default on the payment of interest and principal amount by the borrowers as per the agreed upon terms. Non-performing loans of Canadian banks was expected to be high due to high interest rates set by Bank of Canada and soft economic growth during and after COVID-19. As per Chart 1 (Analysis), this ratio has increased during COVID-19 (Q1 2020 to Q3 2020) but has improved thereafter.

Non-performing loans are associated with different financial indicators of the bank. Higher capitalization, liquidity risks, poor credit quality, cost inefficiency, inflation, unemployment rate, public debt and bank size significantly increase NPLs. While greater bank profitability, high real GDP, real personal income growth, and changes in state housing prices lower NPLs (Ghosh, 2015). Bank size, capital adequacy ratio, bank profitability, GDP growth, unemployment, inflation, and public debt are the main determinants of non-performing loans (Jabbouri and Naili, 2019). In this paper, we have considered three financial soundness indicators i.e. regulatory capital to risk

weighted assets ratio, and earnings and profitability, return on assets ratio, and non-performing loans to gross loans ratio of Canadian banks.

Bank's profitability has been negatively impacted by non-performing loans as observed in different studies. Higher quality of the bank's management based on higher profitability, leads to lower NPLs, while moral hazard incentives, such as low equity, tend to worsen NPLs (Klein, 2013). Non-performing loans variable has a significant negative influence on bank's profitability **(**Martiningtiyas and Nitinegeri, 2020). Occurrence of non-performing loans is negatively associated with the level of profitability: an increase in non-performing loans has a negative impact on the return on assets of banks (Kingu, 2018). High non-performing loans negatively impacted the bank's profitability (Jolevski, 2017). Regulators impose higher capital requirements on banks as regulating bank capital helps to face negative externalizes associated with the failure of large systemic banks. The capital ratios are calculated by dividing regulatory capital by total risk-weighted assets. As per chapter 1 of the guidance issued by OSFI, Government of Canada in October 2023, banks/financial institutions are required to maintain minimum capital to risk weighted assets ratio of 8%. Canadian banks have implemented the regulatory requirements well by maintaining CRWA ratio above than 12% (Analysis: Chart 1).

2. Literature Review

Klein (2013) found in the study based on non-performing loans in the Central, Eastern and South-Eastern Europe (CESEE) region that the NPLs Level tends to be high when unemployment rises, exchange rate depreciates, and inflation is high. Also, it is found that NPLs are sensitive to bank-level factors. Higher quality of the bank's management based on higher profitability, leads to lower NPLs, while moral hazard incentives, such as low equity, tend to worsen NPLs.

Ghosh (2015) found in the study based on US States that bank specific factors: greater capitalization, liquidity risks, poor credit quality, greater cost inefficiency and banking industry size significantly increase NPLs, while greater bank profitability lowers NPLs. Moreover, economic factors: higher state real GDP, real personal income growth rates, and changes in state housing price index reduce NPLs, while inflation, state unemployment rates, and US public debt significantly increase NPLs.

Jolevski (2017) conducted a study to find influence of the non-performing loans ratio on profitability

indicators in the banking system of the Republic of Macedonia for the period 2007-2015. In this study, it is found that moderately high negative correlation between the non-performing loans ratio and rates of return on equity and return on assets. High non-performing loans negatively impacted the bank's profitability.

Pop, Cepoi and Anghel (2018) found in the study based on seven European countries that the non-performing loans of banks with loans-to-deposit ratios surpassing the threshold value of 95% are significantly more sensitive to management performance and ownership concentration. The study also found the noticeable impact of macroeconomic factors like unemployment and budget deficit on the level of non-performing loans of banks.

Kingu (2018) found in the study based on commercial banks in Tanzania that occurrence of non-performing loans is negatively associated with the level of profitability. Increase in non-performing loans has a negative impact on the return on assets ratio of banks.

Lee, Yahya, Habibullah, and Mohd Ashhari (2020) found in their study based on European union conventional banks that Non Performing Loans have a significant positive relationship with the cost efficiency and rapid economic growth of credit-sourced business boom contributes towards low Non Performing Loans. This study also found that Non Performing Loans are driven by the dimensions of country governance along with macroeconomic factors and bank-specific factors.

Martiningtiyas and Nitinegeri (2020) found in the study based on 26 conventional banks of Indonesia that non-performing loans variable has a significant negative influence on bank's profitability, but GDP and Liquidity ratio have significant positive influence on bank's profitability, but no significant influences of capital adequacy ratio have been found on the bank's profitability.

Angsoyiri (2021) found in the study based on commercial banks in Ghana that increase in non-performing loans, operating expense efficiency and return on equity, have a positive and statistically significant relationship with bank's profitability.

Alnabulsi, Kozarević, and Hakimi (2022) investigated non performing loans determinants in the Middle East and North Africa region by considering the impact of COVID-19 pandemic. There study found that level of non performing loans are more sensitive to bank

specific factors than macroeconomic factors including COVID-19 pandemic.

Nguyen (2024) conducted a study to analyzes the determinants of NPLs and its impact on bank's profitability in Vietnam during the period 2005–2020. Based on panel data estimation techniques, it is found that bank specific factors like bank profitability and size improves NPLs and operating cost, loan loss provisions and macro factors deteriorate NPLs. Positive impact of Economic booming, economies of scale and bank returns on the loan quality whereas negative impact of higher policy rate, poor loan monitoring and credit risk has been found. Impact of COVID-19 pandemic effects on NPLs have not been observed and expected a postponed effect.

2.1 Objectives

- To check the performance of Canadian banks based on three financial soundness indicators i.e. regulatory capital to risk weighted assets ratio, earnings and profitability, return on assets ratio, and non-performing loans to total gross loans ratio during and after COVID-19.

- To find the relationship among regulatory capital to risk weighted assets ratio, and earnings and profitability, return on assets ratio and non-performing loans to total gross loans ratio.

- To find the impact of regulatory capital to risk weighted assets ratio, and earnings and profitability, return on assets ratio on non-performing loans to total gross loans ratio.

3. Methodology

For the analysis, last 10 years (Q1 2013 to Q3 2023) quarterly data have been collected from Statistic Canada website. To check the performance of Canadian banks during and after COVID-19, line chart is used, and multivariate regression model has been applied to find the relationship and impact.
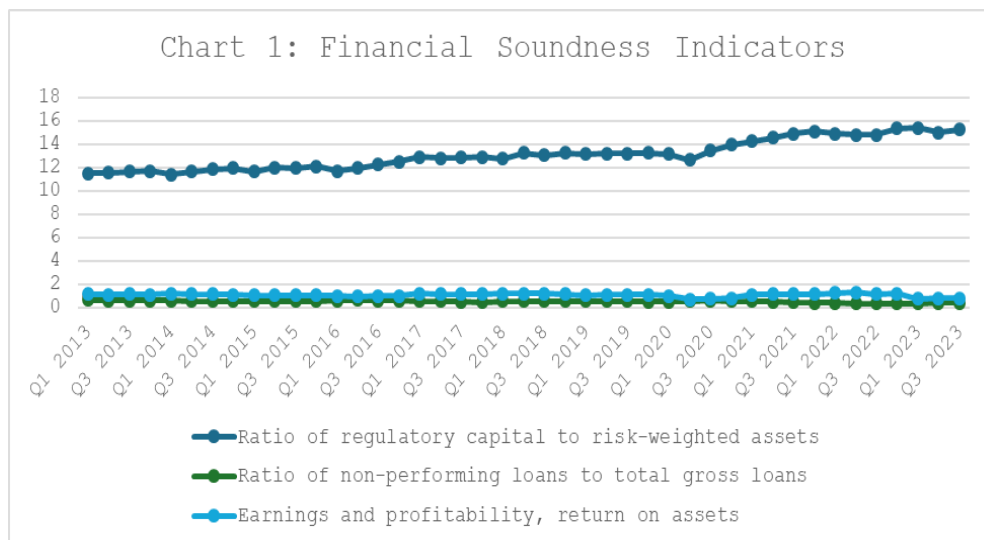
3.1 Analysis

Chart 1. *presents the performance of Canadian banks during the study period (Q1 2013 to Q3 2023). Source: Statistics Canada. Table 10-10-0146-01 Financial Soundness Indicators, Canada*

The above chart has been analysed for the period of Q1 2020 to Q4 2020 to check the impact of COVID-19 pandemic on the Canadian banks' performance. The following results have been observed.

- CRWA ratio was about 13% before COVID-19 (Q1, 2020), decreased in Q2 2020 to 12.65% but it started increasing from Q3 2020 and has reached to 15.24% in Q3 2023.

- NPLGL ratio increased during COVID-19 (Q1 2020 to Q3 2020) from 0.49% to 0.59%. But it has decreased after Q3 2020 till Q3 2022 and reached at 0.32%. This ratio is increasing again after Q3 2022 and has reached to 0.4% in Q3 2023.

- EP, ROA ratio also decreased during COVID-19 (Q1 2020 to Q4 2020) from 1.06% to 0.78% which was above 1% before COVID-19 (2020). This ratio has increased since Q1 2021 and reached to 1.26% (Q2 2022). A decrease has been observed in this ratio again since Q3 2022 and has reached to 0.79% in Q3 2023.

3.2 Multivariate Regression Model Results

Table 1 presents the descriptive statistics about ratio of non-performing loans to total gross loans, ratio of regulatory capital to risk-weighted assets, and earnings and profitability, return on assets.

Table 1. *Descriptive Statistics*

	Mean	Std. Deviation	N
Ratio of non-performing loans to total gross loans	.5023	.08109	43
Ratio of regulatory capital to risk-weighted assets	13.0919	1.26064	43
Earnings and profitability, return on assets	1.0521	.13943	43

From the above table, it is analysed that mean of ratio of non-performing loans to total gross loans is 0.50 with little variation of 0.08 as standard deviation, mean of ratio of regulatory capital to risk-weighted assets is 13.09 which is higher that minimum requirements of 8% with standard deviation of 1.26 and mean of earnings and profitability, return on assets ratio is 1.05% with little variation with 0.13 standard deviation over the study period.

Table 2. *Correlations*

		Ratio of non-performing loans to total gross loans	Ratio of regulatory capital to risk-weighted assets	Earnings and profitability, return on assets
Pearson Correlation	Ratio of non-performing loans to total gross loans	1.000	-.833	-.087
	Ratio of regulatory capital to risk-weighted assets	-.833	1.00	-.110
	Earnings and profitability, return on assets	-.087	-.110	1.00
Sig. (1-tailed)	Ratio of non-performing loans to total gross loans	.	<.001	.290
	Ratio of regulatory capital to risk-weighted assets	.000	.	.242
	Earnings and profitability, return on assets	.290	.242	.
N	Ratio of non-performing loans to total gross loans	43	43	43
	Ratio of regulatory capital to risk-weighted assets	43	43	43
	Earnings and profitability, return on assets	43	43	43

Table 2 presents the correlation results among ratio of non-performing loans to total gross loans, ratio of regulatory capital to risk-weighted assets, and earnings and profitability, return on assets. Column 2, row 1 shows statistically significant high negative correlation ($r = -0.833$, $p < 0.05$) between ratio of non-performing loans to total gross loans and ratio of regulatory capital to risk-weighted assets. Column 3, row 1 shows statistically insignificant low negative correlation ($r = -0.087$, $p > 0.05$) between ratio of non-performing loans to total gross loans, and earnings and profitability, return on assets.

Table 3. *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.852[a]	.726	.712	.0435	.726	52.921	2

From table 3, it is found that the coefficient of multiple determination is 0.726; therefore, about 72.6% of the variation in ratio of non-performing loans to gross loans is explained by ratio of capital to risk weighted assets, and earning and profitability, return on assets.

Table 4. *ANOVAa*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.200	2	.100	52.921	<.001[b]
	Residual	.076	40	.002		
	Total	.276	42			

a. Dependent Variable: Ratio of non-performing loans to total gross loans

b. Predictors: (Constant), Earnings and profitability, return on assets, Ratio of regulatory capital to risk-weighted assets

The F-ratio in the ANOVA (table 4) shows that the ratio of regulatory capital to risk-weighted assets ratio and earnings and profitability, return on assets statistically significantly predict the ratio of non-performing loans to total gross loans, $F(2, 40) = 52.92$, $p < 0.05$.

Table 5. *Coefficientsa*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.330	.091		14.562	<.001
	Ratio of regulatory capital to risk-weighted assets	-.055	.005	-.853	-10.235	<.001
	Earnings and profitability, return on assets	-.105	.048	-.180	-2.160	.037

Dependent variable: Ratio of Non-Performing loans to gross loans. From table 5, following results have been observed.

As per standardized coefficient results

- Ratio of regulatory capital to risk-weighted assets has significant effect on ratio of non-performing loans to gross loans, t = -10.23, p < 0.01.

- Earnings and profitability, return on assets does not have a significant effect on ratio of non-performing loans to gross loans, t = -2.16, p = 0.037.

As per unstandardized coefficient results

- With one unit increase in ratio of regulatory capital to risk-weighted assets, the ratio of non-performing loans to gross loans decreases by 0.05.

- With one unit increase in earnings and profitability, return on assets, the ratio of non-performing loans to gross loans decreases by 0.10.

4. Findings

Canadian banks have performed well during and after COVID 19 with little effect of pandemic. The following results have been found based on the financial soundness indicators considered in this paper.

- Canadian banks have maintained regulatory capital to risk weighted assets ratio above 12% over the study period which is higher than 8% required ratio.

- Non-performing loans to gross loans ratio is less than 0.5% during the study period except COVID-19 quarters.

- Earnings and profitability, return on assets is above 1% during the study period except COVID-19 quarters.

Based on multivariate regression model, we found statistically significant high negative correlation between the ratio of non-performing loans to total gross loans and ratio of regulatory capital to risk-weighted assets. But statistically insignificant low negative correlation found between the ratio of non-performing loans to total gross loans and ratio of earnings and profitability, return on assets. Results shows that ratio of regulatory capital to risk-weighted assets and earnings and profitability, return on assets statistically significantly predict the ratio of non-performing loans to total gross loans. Also, ratio of regulatory capital to risk-weighted assets has significant effect on the ratio of non-performing loans to gross loans as compared to insignificant effect of earnings and profitability, return on assets ratio on non-performing loans to gross loans ratio.

5. Conclusion

Canadian banks have performed well during COVID-19 pandemic with little effect on the performance due to strong capital to risk weighted assets ratio. Now, Canadian banks are moving towards implementing Basel III norms which are helping Canadian banks to manage risk effectively by maintaining adequate capital to risk weighted assets. As discussed in the study, Canadian banks can improve efficiency by maintaining high capital to risk weighted assets ratio and keeping non performing loans to gross loan ratio low.

Limitation of the Study

This study focused on the results of all Canadian Banks without segregating into types of banks. Also, quarterly results were considered for analyzing the impact of COVID-19 pandemic. There are many financial indicators to analyse the Canadian banks performance, but this study considered only three financial indicators i.e. capital to risk weighted assets ratio, non performing loans to gross loan ratio and return on assets ratio. Further studies can be done based on other factors like ratio of non performing loans net of provisions to capital, ratio of regulatory capital to assets and ratio of liquid assets to short term liabilities.

Abbreviations

NPLs – Non Performing Loans

CRWA – Capital to Risk Weighted Assets Ratio

6. References

1. Klein N. 2013. Non-Performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance. IMF Working Paper WP/13/72. International Monetary Fund: Washington, DC, USA.

2. Ghosh A. 2015. Banking-industry specific and regional economic determinants of non-performing loans: Evidence from US states. Journal of Financial Studies. 20: 93–104.

3. Akter R., & Roy J. 2017. The Impacts of Non-Performing Loan on Profitability: An Empirical Study on Banking Sector of Dhaka Stock Exchange. International Journal of Economics and Finance. 9(3): 126-132.

4. Jolevski, Ljube. 2017. Non-performing loans and profitability indicators: The case of the Republic of Macedenia. Journal of Contemporary Economic and Business. 4 (2): 5-20.

5. Pop I.D., Cepoi C.O., Anghel D.G. 2018. Liquidity-threshold effect in non-performing loans. Finance Research Letters. Volume 27: 124-128.

6. Peter Kingu and Gwahula Macha. 2018. Impact of Non-Performing Loans on Bank's Profitability: Empirical Evidence from Commercial Banks in Tanzania. International Journal of Scientific Research and Management. 6. 10.

7. Jabbouri I. and Naili M. 2019. Determinants of Nonperforming Loans in Emerging Markets: Evidence from the MENA Region. Review of Pacific Basin Financial Markets and Policies. 22. 1950026.

8. Lee Y.Y., Dato Haji Yahya, M.H., Habibullah M.S. and Mohd Ashhari Z. 2020. Non-performing loans in European Union: country governance dimensions. Journal of Financial Economic Policy. Vol. 12 No. 2: 209-226.

9. Khan M.A., Siddique A., and Sarwar Z. 2020. Determinants of non-performing loans in the banking sector in developing state. Asian Journal of Accounting Research. 5(1): 135-145.

10. Martiningtiyas C.R. and Nitinegeri D.T. 2020. The Effect of Non-Performing Loans on Profitability in Banking Sector in Indonesia. Advances in Economics, Business and Management Research. volume 151: 64-67.

11. Çollaku B., and Aliu M. 2021. Impact of Non-Performing Loans on Bank's Profitability: Empirical Evidence from Commercial Banks in Kosovo. Journal of Accounting, Finance, and Auditing Studies. 7(3): 226-236.

12. Syed A.A. 2021. Determinants of Nonperforming Loans: A Review of Empirical Evidence. New Challenges for Future Sustainability and Wellbeing. pp. 277-306.

13. Angsoyiri D. 2021. Impact Of Non-Performing Loans on Bank Profitability: Empirical Evidence from Commercial Banks in Ghana. Research on Enterprise in Modern Economy - Theory and Practice. 2(33): 20–35.

14. Alnabulsi, K., Kozarević, E., & Hakimi, A. (2022). Assessing the determinants of non-performing loans under financial crisis and health crisis: Evidence from the MENA banks. *Cogent Economics & Finance*, 10(1), 2124665. https://doi.org/10.1080/23322039.2022.2124665

15. Alfred Lee. 2023. Thinking Long Term? Try Canadian Banks. BMO publication. Working Paper.

16. Nguyen P. Dinh. 2024. Non-performing loans and bank profitability: evidence from Vietnam. Macroeconomics and Finance in Emerging Market Economies. 1-21.

17. Office of the Superintendent of Financial Institutions. 2024. Capital Adequacy Requirements. Chapter 1 – Overview of Risk-based Capital Requirements. Government of Canada. http://www.osfi-bsif.gc.ca/sites/default/files/2023-12/car24_chpt1_0.pdf

18. Statistics Canada. Table 10-10-0146-01 Financial Soundness Indicators, Canada https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1010014601