

Determinants of Non-performing Loans in Non-Bank Financial Institutions: Evidence from Sri Lanka

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Abstract

This study investigates the factors affecting non-performing loans of non-bank financial institutions in Sri Lanka, employing a panel regression model on data from ten firms from 2011 to 2020. The sample comprises five licensed finance companies and five specialized leasing companies, accounting for 65 percent of the NBFIs industry. The regression model includes profitability, operating efficiency, capital adequacy, company size, GDP growth, inflation, and interest rates as explanatory variables. The results show that capital adequacy and interest rates are positively related, and GDP growth and inflation are negatively related with non-performing loans. Further, it was found that firm size, profitability, and efficiency do not have a significant relationship with NPLs. These findings underscore the important influence of the firm's capital ratio and macroeconomic factors on non-performing loans of non-bank financial institutions in Sri Lanka.

JEL Classification: C33, G21

Keywords: Licensed finance companies, specialized leasing companies, non-performing loans, non-bank financial institutions

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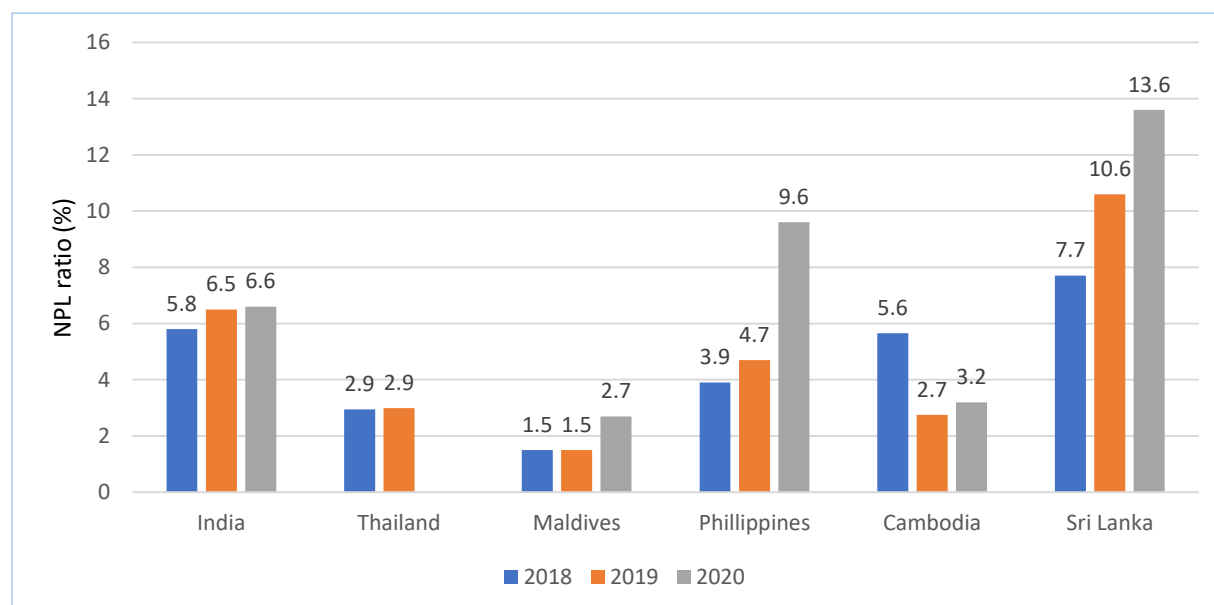
1. Introduction

We study the determinants of non-performing loans (NPLs) in non-bank financial institutions (NBFIs) in Sri Lanka. Nonperforming loans (NPLs) are critical among various indicators of financial stability since they reflect the asset quality, credit risk, and efficiency in allocating resources to productive sectors (Gupta & Kashiramka, 2020). NPLs are those financial assets that do not generate any interest or principal repayment for lending institutions, and they have been identified as a recurring feature in financial crises (Bank for International Settlement, 2018). NPLs are an undesirable cost for financial institutions as they erode the capital and decrease institutions' performance, leading to financial system instability.

NBFIs are represented by licensed finance companies (LFCs) and specialized leasing companies (SLCs), which facilitate alternative financial services such as risk pooling, financial consulting, brokering, money transmission, and long-term deposits. Non-bank financial institutions (NBFIs) act as a source of consumer credit along with licensed banks, insurance firms, venture capitalists, currency exchanges, microloan organizations, pawn shops, etc. The recent rise in NPLs in the financial sector of Sri Lanka has flagged the high credit risk exposure of these institutions and raised questions on the stability of the Sri Lankan banking sector (Central Bank of Sri Lanka, 2021). The collapse of Pramuka Savings and Development Bank in 2002 was the first post-independence bank failure in Sri Lanka. At that time, it had recorded almost 80% of its credit portfolio as non-performing loans (Sivaraja et al., 2017).

Figure 1

Gross Non-performing Loan Ratios of Non-bank Financial Institutions in Asia



Source: Central Bank of Sri Lanka, Annual Reports

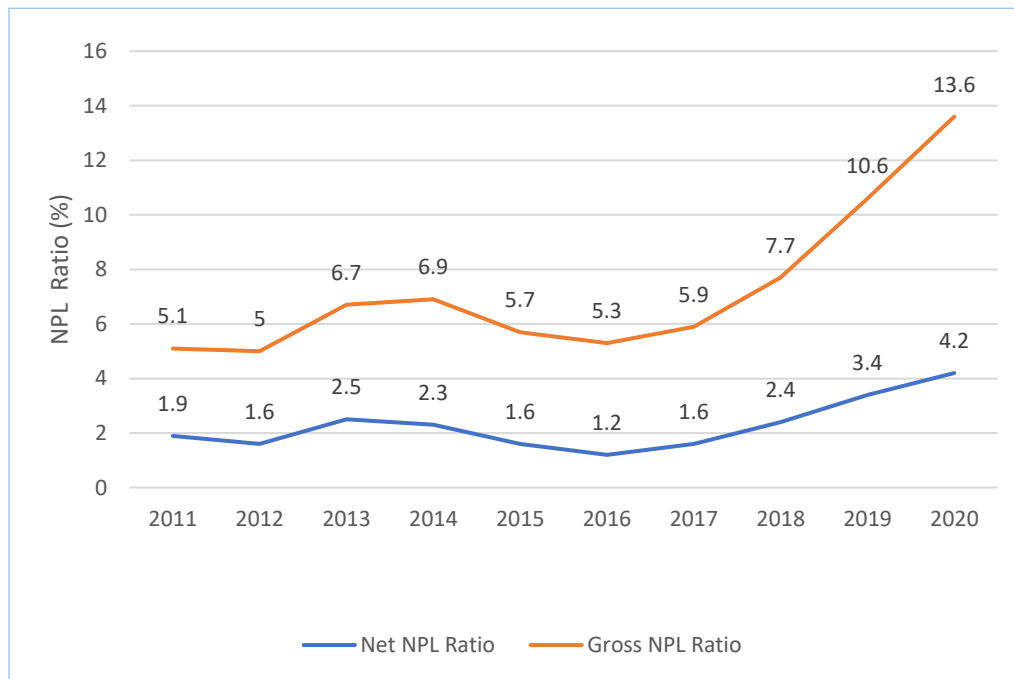
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Asset quality of the Sri Lankan NBFIs has shown a severe deterioration in recent years. Both gross NPL and net NPL ratios deteriorated. The gross NPL ratio increased to 17.5% in 2022 from 13.9% in 2020, while the net NPL ratio increased from 4.2% in 2020 to 12.3% in 2022 (Central Bank of Sri Lanka (CBSL), 2022). Most of the developing countries in the Asian region also show an increased trend in NPLs in the financial sector.

Figure 1 highlights the severity of the NPL problem in NBFIs in Sri Lanka. NPL ratios of NBFIs in Sri Lanka have increased from 2018 to 2020. The gross NPL ratio of the sector reached 10.6% in 2019 compared to 7.7% in 2018. A significant number of LFCs have reported NPL ratios higher than the industry average of 9.7%, for example, 20% in some LFCs leading to severe credit risk exposure, which impacted the performance of the sector (CBSL Financial System Stability Review, 2019). NBFIs with assets of Rs. 1.3 trillion in 2020 were under pressure even before the pandemic struck them as earnings, growth, and asset quality were weaker. According to Fitch (2020), the asset quality deterioration of the NBFIs sector is much sharper than that of the banking sector. As seen from Figure 2, NPL ratios show an increasing trend over the years from 2011.

Figure 2

Non-performing Loan Ratio in the NBFIs Sector from 2011 to 2020



Source: Central Bank of Sri Lanka, Annual Reports

The NPLs have been identified as one of the leading causes of failure of prominent finance companies in Sri Lanka witnessed in 2021. In July 2020, the Central Bank of Sri Lanka suspended ETI Finance Limited due to liquidity problems. ETI Finance recorded nearly 18% NPLs at the

time of the suspension and witnessed an increasing NPL trend from 2017. Credit risk management is a challenging and complex task in the financial industry due to the unpredictable nature of the macroeconomic factors coupled with various microeconomic variables that are peculiar to the banking industry or specific to banks (Garr, 2013). Most of the previous studies focused on the NPL behavior in banking institutions (Ekanayake, 2018; Ekanayake & Azeez, 2015; Ayhan & Kartal, 2021; Gambo et al., 2017; Jayaraman et al., 2019; Koju et al., 2018). Only a few have examined the NPLs in the non-banking sector. For example, Rifat (2016) reviewed the determinants of NPLs in Bangladesh and concluded that firm-specific factors significantly impact the explanation of bad loans. However, there is still a vacuum in the empirical studies on NPLs in Sri Lanka's non-banking sector. With the rising problem of NPLs in NBFIs, represented by LFCs and SLCs in this study, we aim to identify the determinants of NPLs in NBFIs of Sri Lanka. The findings will shed light on the differences between the banking and non-banking sectors in terms of determinants of NPLs.

This study considered ten non-banking financial institutions operating in Sri Lanka over ten years from 2011 to 2020. Secondary data was collected from annual reports of the selected institutions and analyzed using a panel regression model. Out of the selected seven independent variables, the capital ratio was significant at the firm level, while GDP growth, inflation, and interest rates were significant at the macro level in influencing non-performing loans.

The remainder of the paper is organized as follows. Section two reviews the extant literature regarding institutional and macroeconomic determinants of NPLs in financial institutions. Section three discusses the research method, including hypothesis development and the panel regression model. Section four discusses the results with descriptive statistics and panel regression findings. Finally, the paper concludes with a summary of the findings and policy considerations.

2. Literature Review

2.1. Non-performing loans

Non-performing loans occur when the debtor fails to pay—the bank will have bad or impaired credits in its belly. It is the main determinant of credit risk (Foglia, 2022). According to the International Monetary Fund (2016), the loan becomes non-performing when payments of interest or principal amounts are past due by three months or more or interest payments equal to three months or more have been refinanced, capitalized, or delayed by agreement or payments are less than three months behind schedule. Based on the past due dates, the Central Bank of Sri Lanka (2021) identified four categories of NPLs—special mention (payments past due from 90 to 180 days), substandard (payments past due from 180 to 270 days), doubtful (payments past due from 270 to 360 days), and losses (payments past due for more than 360 days). Balgova et al. (2016) defined non-performing loans as a credit that is in default or going to be in default before long, as well as when a loan is impaired where the debt repayment is neglected for more than 90 days by the borrower. Non-performing loans are bad or problem loans (Kumar et al., 2018).

Kumarasinghe (2017) found that non-performing loans have increased in Sri Lanka's financial sector. High NPLs deteriorate the functioning of banks by affecting their profitability and liquidity and may lead to bank failures and crises. Based on Italian institutions, Foglia et al. (2022) mentioned that the need for higher provision levels for bad debts also reduces banks' profitability,

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leading to high expenses related to monitoring costs. Financial institutions fail due to different risks, which have been identified as determinant factors for the banking crisis in the last 20 years (Ergungor & Thompson, 2005).

The first post-independent bank failure happened in Sri Lanka in 2002 when Pramuka Saving and Development Bank collapsed. According to Sivaraja et al. (2017), the bank recorded almost 80% of its credit portfolio as non-performing loans at that time. The crash of Golden Key Ltd, a non-bank institution, in 2008 is another case of interest in the Sri Lankan context. Ekanayake and Azeez (2015) identified bank efficiency as a determinant factor in managing non-performing loans. According to them, it is essential for financial institutions to properly evaluate credit applications and closely monitor the repayment capacity and cash flows of the borrowers to ensure that the expansion of credit will not pose further risks to the financial system's stability. Further, Rifat (2016), in his study on Bangladesh NBFIs, underscores the importance of addressing firm-specific micro variables in managing bad loans. Non-performing loans have always become an interesting issue to study for finance scholars for both developed (Haq & Heaney, 2012; Danisman & Demirel, 2019; Tongurai & Vithessonthi, 2020) and developing economies (El-Maude et al., 2017; Dash & Gosh, 2007; Zariyawati et al. (2021)). Previous research studied the causes of non-performing loans in the banking and non-banking industries from macroeconomic and institutional perspectives. However, this topic is still under-researched, especially in developing countries.

2.2 Institutional-Specific factors

Internal institutional factors were highlighted as influencers in the lending behaviors of financial institutions, including company size (Koju, 2018; El-Maude et al., 2017), profitability (Wood & Skinner, 2018 & Alshebmi et al., 2020), capital (Radivojevic et al., 2017 & Khan et al. 2020), asset growth (Ekanayake & Azeez, 2015), and provision policy (Boudriga et al., 2009).

In terms of the impact of profitability on NPLs, Zariyawati et al. (2021), in the Malaysian context, revealed that profitability positively and significantly affects NPLs of NBFIs. Ahmed and Bashir (2013) and Makri et al. (2014) also found a significant and direct relationship between ROA and NPLs. However, Rachman et al. (2018) found that ROA has a significant negative relationship with NPLs. Using ROA as a performance indicator, Godlewski (2006) found that banks' profitability in emerging market economies negatively impacted NPL. The same results were reported by Radivojevic and Jovolic (2017), Alshebmi et al. (2020), Rahman and Fatmawati (2020), and Bhattarai (2018). Their view is that banks have fewer incentives for high risk-taking when they exhibit better levels of financial performance.

Regarding the impact of efficiency of financial institutions, Ekanayake and Azeez (2015) stated that when the efficiency increases, NPLs decrease. Podpiera and Weill (2008) found strong evidence of bad management as a reason for the rise in NPLs by examining the connection between cost-efficiency and nonperforming assets in the context of Czech banks. Abid et al. (2014), Hosen et al. (2020), and Vatansever and Hepsen (2013) found that inefficiency is positively and statistically significantly related to NPLs. Besides, many prior studies provide evidence of a significant impact on NPLs from other institutional factors such as credit growth (Ekanayake & Azeez, 2015; Boudriga et al., 2010) and non-interest income (Ekanayake, 2018).

In line with the moral hazard theory (Keeton & Morris, 1987), banks with low capital increase the riskiness of their loan portfolio, resulting in higher NPLs (Kleijn, 2013). Radivojevic et al.

(2017) revealed a positive and significant relationship between Prague financial institutions' capital adequacy ratio (CAR) and NPLs, indicating that financial institutions with better capital positions are involved in high-risk activities through risky loan portfolios. These findings are consistent with those of Curak et al. (2013), Vatansever and Hepsen (2013), and Wood and Skinner (2018). However, Koju et al. (2018) found that the investment risk of Nepali banks increases with an increase in the minimum capital adequacy ratio, so the CAR has a negative relationship with NPLs. This means the lower the CAR, the higher the NPLs. This result is similar to the findings of Khan et al. (2020), Bhattarai (2018), and Sun and Purwanto (2021).

The financial institution's size was commonly identified as an influencing factor in bad loans. For example, El-Maude et al. (2017) found that loan-to-deposit ratio and bank size have a significant positive relationship with NPLs. Misra and Dhal (2010) identified a direct association between bank size and NPLs in Indian banks. Abid et al. (2014) found a positive association between size and NPLs in Tunisia. Das and Ghosh (2007) also discovered a positive relationship between NPLs and the company size. Foglia et al. (2022) and El-Maude et al. (2017) also reported similar findings. Zariyawati et al. (2021) found that NBFIs positively affect NPLs in Malaysian financial institutions. In Europe, Chortareas et al. (2013) stated that the size, measured by the number of branches of a bank, can have a positive relationship with the NPL since an increased number of branches as a strategy to be more competitive can, in turn, expose banks to approve loans excessively to manage the operational expenses. However, similar to the findings of Ekanayake and Azeez (2015) and Hu et al. (2006), bank size negatively impacts NPLs. Further, Bhattarai (2018) found that in Nepalese commercial banks, there is a negative association between bank size and NPL ratio, which indicates that higher bank size lowers NPLs. Nevertheless, Rifat (2016) did not find a significant relationship between the size of financial institutions and NPLs in Bangladesh.

2.3 Macroeconomic factors

In addition to the institutional-specific factors, the general economic conditions also affect financial institutions regarding bad loans. Many studies highlight the negative association between Gross Domestic Product (GDP) and NPLs (Ahamad & Bashir, 2013; Karsten & Lenno, 2020; Lubis & Mulyana, 2021). The higher the GDP, the better the economy and the more stable the banking sector (Sun & Purwanto, 2021). Economic growth will increase the ability of the debtor to repay, reducing the level of NPLs (Das & Ghosh, 2007). This highly cited negative relationship between GDP and the NPLs indicates that macroeconomic fluctuations are quickly transmitted to the problem loans of financial institutions.

Studies also suggest that a rise in inflation reduces borrowers' capability to fulfill loan obligations and thus increases the number of bad loans (Khan et al., 2018; Dimitrios et al., 2016; Tony & Shehab, 2015; Farooq et al., 2019). Many other findings relate inflation to fewer NPLs because inflation leads to less borrowing (Mwangi & Esther, 2017; Miso & Neda, 2016; Osei, 2021).

According to Messai and Jouini (2013), interest rates have a significant positive association with NPLs. Wairimu and Gitundu (2017), Ahmed et al. (2021), Osei (2021), and Beck et al. (2013) stated a positive relationship between interest rates and NPLs since rising interest rates causes a reduction in income, and borrowers find it difficult to repay loans. Szarowska (2018), Messai and Jouini (2013), and Dash and Kabra (2010) also found similar evidence. Besides, other macro-

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economic factors such as the unemployment rate (Agic & Jeremic, 2018; Lubis & Mulyana, 2021), public debt level (Makri et al., 2014), and exchange rates (Beck et al., 2013) are identified as important macroeconomic determinants of NPLs of financial institutions.

3. Data and Methods

3.1 Sample and Data

This study aims to identify the determinants of NPLs in NBFIs in Sri Lanka. Sri Lanka's financial sector is primarily dominated by the banking system. The banking sector accounts for 76.3% of total assets in the country's financial system, while the non-banking sector accounts for 23.7% (Central Bank of Sri Lanka, 2022). In the non-banking sector, licensed finance companies and specialized leasing companies make a significant contribution with total assets valued at Rs. 1,611 billion, which equals 5.1% of the financial system's assets. LFCs and SLCs share 22% of the non-banking sector, while Employee Provident Fund and Employee Trust Fund claim 55% (Central Bank of Sri Lanka, 2022). Given their significance in the financial sector, LFCs and SLCs are considered a fair representation of the non-banking financial institutions in Sri Lanka for this study. The sample consists of five LFCs and five SLCs. The sample chosen holds a significant asset base in the NBFIs sector, accounting for 64.77% of the total assets.

We collected data relating to non-performing loans, company size, return on assets, capital adequacy ratio, and operating efficiency of the ten companies in the sample for the ten years from 2011 to 2020. In addition, we collected the macroeconomic variables—GDP growth, inflation rate, and interest rates for the same period. The number of observations is 100.

3.2 Regression Model

We employ a panel regression model to examine the determinants of NPLs of NBFIs. Based on previous studies (Kjosevski and Petkovski (2020); Ferreira (2022); Szarowska (2018); Messai and Jouini (2013); Ahamad & Bashir (2013); Abid et al. (2014); El-Maude et al. (2017), four firm-specific variables—ROA, operating efficiency, capital adequacy ratio, and size—and three macroeconomic variables—GDP growth, inflation rate and interest rate—are tested as possible determinants of NPLs. Table 1 provides the definition of variables.

Following previous literature (Ahmad & Bashir, 2013; Jimenez & Saurina, 2006; Khemraj & Pasha, 2009; Kumarasinghe, 2017), we specify the following model to analyze the impact of the selected determinants on NPLs of NBFIs.

$$NPL_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 OPE_{it} + \beta_3 CAR_{it} + \beta_4 SZE_{it} + \beta_5 GDP_t + \beta_6 INF_t + \beta_7 INT_t + \varepsilon_{it} \quad (1)$$

Where NPL is the non-performing loan ratio for the company i at time t , ROA_{it} is the return on assets for company i at time t , OPE_{it} is operating efficiency for company i at time t , CAR_{it} is capital adequacy ratio for company i at time t , SZE_{it} is the size of the company i at time t , GDP_t is the annual growth in real GDP in time t , INF_t is the annual inflation rate in time t , and INT_t is the interest rate in time t , and ε_{it} is the error term.

Table 1*Variables Used in the Study*

Variable	Literature source	Measure	Expected Sign
Non-Performing Loans (NPL)	Misra and Dhal (2010), El-Maude, et al. (2017), Ekanayake (2018)	NPLs to loans ratio = $\frac{\text{NPL}}{\text{Total loans}}$	
Return on Assets (ROA)	Boudriga et al., (2009), Makri et al., (2014), Radivojevic and Jovolic (2017)	ROA = $\frac{\text{Profit after tax}}{\text{Total assets}}$	Negative
Efficiency (OPE)	Chaibi and Ftiti (2015), Hosen, et al., (2020), Ekanayake and Azeez (2015)	Efficiency = $\frac{\text{Total operating expenses}}{\text{Total operating income}}$	Positive
Capital Adequacy Ratio (CAR)	Curak et al. (2013), Vatansever and Hepsen (2013), Wood and Skinner (2018)	CAR = $\frac{\text{Total equity capital}}{\text{Total assets}}$	Positive
Company Size (SZE)	Hu et al. (2006), Bhattarai, (2018)	Number of branches	Negative
GDP Growth (GDP)	Ahamad & Bashir, 2013, Karsten & Lenno, 2020, Lubis & Mulyana, 2021	Growth in real GDP	Negative
Inflation (INF)	Khan et al., 2018, Dimitrios et al., 2016, Farooq et al., 2019	Annual Inflation rate	Positive
Interest Rate (INT)	Wairimu & Gitundu (2017), Ahmed et al. (2021), Osei (2021)	Lending interest rate	Positive

4. Discussion of Results*4.1 Descriptive statistics*

Descriptive results are presented in Table 2. Accordingly, the average NPL ratio is 3.73, with a deviation of 2.17, which implies the presence of variations of NPLs in NBFIs. The sample's average efficiency is 46.93%, while ROA fluctuates between 0.61% and 5.83%. Meanwhile, the industry average capital adequacy ratio is 16.07, with minimum and maximum values of 4.60 and 38.65, respectively, with a standard deviation of 7.76%. This indicates the presence of high variation among the finance companies' available capital. A high variation can be seen between NBFIs in terms of size, indicating the varying market power of each FI. The average GDP value for the considered time is 4.12%, with minimum and maximum values of -3.60% and 9.30%, respectively. Inflation fluctuated between 2.14% and 7.70%, with the average value of inflation around 5.16%. The average lending rate, a prime factor, was at 10.54%, with the lowest variation of 1.89% over the period.

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Table 2

Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.
NPL %	3.73	3.33	11.10	0.10	2.17
ROA %	3.11	3.01	5.83	0.61	1.25
OPE %	46.94	45.35	81.88	22.25	12.57
CAR %	16.07	13.56	38.65	4.60	7.76
SZE (# of Branches)	60.23	43.00	140.00	7.00	42.23
GDP %	4.12	4.05	9.30	-3.60	3.35
INF %	5.16	5.05	7.70	2.14	1.95
INT %	10.54	10.87	13.30	7.00	1.89

Note: NPL = non-performing loans, ROA = return on assets ratio, OPE = operating efficiency ratio, CAR = capital adequacy ratio, SZE = firm size, GDP = growth in real GDP, INFL = inflation rate, and INT = lending interest rate. The number of observations is 100.

Variance Inflation Factors (VIF) confirmed no multicollinearity among variables, and the likelihood ratio showed no heteroscedasticity problem in the data set. The Durbin-Watson test found no evidence of serial correlation in the model. Jarque-Bera confirmed that the data are normally distributed. Levin-Lin-Chu (LLC) and Augmented Dickey-Fuller (ADF) tests indicated that all variables are stationary and free from unit root issues. Further, the Hausman test suggested that the random effect model is appropriate.

4.3 Regression Results

The regression results are given in Table 3. Regarding firm-specific variables, ROA is negatively related to NPLs. However, it is not statistically significant, suggesting that profitability does not have an impact on NPLs. Similarly, the operating efficiency is not statistically significant either, indicating no effect on NPLs, which is in line with the findings of Rachman et al. (2018). The CAR is positively correlated with NPL with a coefficient of 0.12, which is significant at 10%. This suggests that the higher the capital adequacy, the higher the non-performing loans. This finding is consistent with the empirical results of Radivojevic et al. (2017), Curak et al. (2013), and Vatansever and Hepsen (2013). Firm size is negatively related to NPLs, although it is not statistically significant, indicating that profitability and firm size have no discernible impact on NPLs.

In terms of macroeconomic variables, all three variables are strongly related to NPLS. Among them, GDP is strongly negatively correlated with NPLs with a coefficient of -0,64 and a t-statistic of 6.6. This indicates that during good economic conditions, NPLs are lower. This finding is similar to the findings of Karsten and Lenno (2020), Lubis and Mulyana (2021), and Kjosevski and Petkovski (2020). Inflation significantly negatively impacts NPLs, implying fewer NPLs when inflation is higher. This finding synchronizes with Jayaraman et al. (2019), Mankiw (2006), Dimitrios et al. (2016), and Lubis and Mulyana (2021). The regression coefficient on the interest

rate is 0.38, indicating that if the interest rate increases by one unit, NPLs will increase by 0.38. Therefore, a significant positive relationship exists between NPLs and interest rates at a 1% significance level. This finding is similar to the findings of Mwangi and Esther (2017) and Ahmed et al. (2021). Table 4 provides a summary of the results.

Table 3*Regression Results*

Variable	Coefficient	t-Statistic
Constant	8.174	11.42***
ROA	-0.184	-0.75
OPE	0.0089	0.77
CAR	0.122	1.91*
SZE	-0.005	-0.45
GDP	-0.643	-6.56***
INF	-0.096	-2.22**
INT	0.384	5.20***
Adjusted R-squared	0.66	
F-statistic	13.07	
Durbin-Watson	1.89	

Note: *, **, and *** are significant at 10%, 5%, and 1%, respectively.

The adjusted R-squared of the model is 0.66, implying that the model can explain 66% of the variation in NPLs of NBFIs. Hence, the model explains a significant proportion of the variation in non-performing loan ratios. The F-test indicates that the overall model is statistically significant in explaining the relationship between NPLs and independent variables.

Table 4*Summary of the Results*

Variable	Empirical Results
Firm size	No significant relationship between the firm size and NPLs.
Profitability	No significant relationship between profitability and NPLs.
Efficiency	No significant relationship between operating efficiency and NPLs.
Capital Adequacy	Capital adequacy is significantly positively related with NPLs.
GDP Growth	GDP growth is significantly negatively related with NPLs.
Inflation	Inflation is significantly negatively related with NPLs.
Interest Rates	Interest rates are significantly positively related with NPLs.

5. Conclusions

This paper examines the impact of both institution-specific and macroeconomic determinants on NPLs of non-banking financial institutions in Sri Lanka. The study used secondary data from ten NBFIs covering ten years from 2011 to 2020. The collected data were analyzed using a panel regression model. Seven variables were tested to assess their impact on NPLs. They included profitability, operating efficiency, capital adequacy, firm size, gross domestic product, inflation, and interest rate on NPLs. Among the considered variables, capital adequacy and interest rates were found to be significantly positively related, while GDP growth and inflation were significantly negatively related to NPLs.

These results have important policy implications. The key policy implication is that higher capital adequacy ratios lead to higher non-performing loans, indicating that financial institutions with better capital positions are involved in high-risk activities through risky loan portfolios. This must be considered in regulatory policies relating to financial sector stability. Further, it is evident that macroeconomic factors influence the NPLs: higher economic growth and higher inflation lead to lower NPLs, while higher interest rates lead to higher NPLs. Policymakers should consider these important macroeconomic influences on NPLs in assessing the performance of non-bank financial institutions and designing appropriate regulations governing capital and lending standards.

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