CHAPTER FOUR

Impact of Loan Portfolio Diversification on Financial Stability of Commercial Banks in Sri Lanka

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Abstract

This study examines the impact of loan portfolio diversification (LPD) on the financial stability of licensed commercial banks in Sri Lanka. The researchers considered the secondary data for the study, which was obtained from the annual reports from 2010 to 2019 of six purposively selected commercial banks in Sri Lanka. Descriptive and inferential statistics, such as correlation and panel data regression analysis, were considered using a random effect model. The findings revealed a positive impact of loan portfolio diversification on financial stability. A positive effect of liquidity on financial stability was identified. Furthermore, the effects of the control variables, such as bank size, non-interest income share, liquidity, and annual GDP growth, were negligible. The findings will contribute to the existing literature on the Sri Lankan context. This paper recommends that commercial banks increase their LPD to become more stable and use the right strategies to boost their loan portfolio. Ultimately, reaching every niche by giving higher priorities to some is possible, which can lead to a higher volume of lending and competitive advantage. Thus, banks should refrain from adverse selection and information asymmetry while extending loans, formulate measures for extending the lending criteria, and not compromise customer relationships. Accordingly, minimising nonperforming loans is crucial as it targets avoiding credit risk.

Keywords: *Commercial banks, financial stability, loan portfolio diversification, Sri Lanka.*

1. Introduction

Credit risk is a significant challenge for banks since those institutions engage in lending on a massive scale as their core activity. Commercial banks diversify their loan portfolio to mitigate credit risks and enhance performance. Providing loans to different sectors without concentrating on one particular industry can be known as Loan Portfolio Diversification (LPD), which can be used to reduce credit risk in loan portfolios. Hence, the loan portfolio is

a significant aspect of the banks. Therefore, banks' call manufacturers should properly manage loan portfolios through numerous methods like diversification and concentration.

Banks may be exposed to operational, liquidity, market, and credit risks when lending. Of the above-mentioned, credit risk can be considered the most significant. Default of payments can be known as a credit risk. Freitakas (2013) has stated that the increase in default payments can lead to a rise in nonperforming loans and loan loss provisions, as well as reduce the profitability of financial institutions. Apart from that, Adina (2015) stated that a negative relationship exists between risk and financial institutions' performance. Hence, the credit risk should be as low as possible to increase organisations' economic performance.

Loan portfolio diversification can be categorised under currency, product, and industry. Currency-wise categorisation can be explained as credit given using different varieties of currencies. The product-wise categorisation can be depicted as leasing, credit cards, housing loans, overdrafts, and term loans. Industry-wise categorisation can be shown concerning different sectors such as construction, tourism, banking and finance, and production. At the same time, loan portfolio concentration (LPC) suggests that financial institutions should pay attention to specialisation when providing loans. Arnegard and Sigve (2017) have stated that the loan portfolio and loan portfolio concentration are more important for financial organisations to ensure economic stability. In some cases, it is noticed that loan portfolio diversification helps to boost a bank’s steadiness, whereas others believe LPC helps boost money stability. The additional mixed proof is seen between these two extremes.

Hayden and Porath (2007) stated that financial institutions should diversify to maintain their economic stability without being set to bankruptcy. Even the same insight has been highlighted in the financial intermediation theory, which says that diversification supports organisations in better screening their borrowers to achieve credibility. However, at times of crisis, it raised the variance. Therefore, banks should focus more on traditional intermediation functions rather than on loans and deposits and diversify their investments and activities.

Moreover, the majority of authorities across the globe advocate for diversification to lower bank risk. The danger of financial instability may be exacerbated or increased by bank diversification. When idiosyncratic occurrences like economic crises happen, the markets crash, as Kim et al. (2020) explained. Freitakas (2013) states that when it comes to commercial bank assets, loan portfolios account for approximately 70% to 80% of the total. Hence, making better decisions concerning loan portfolios is vital to enhance and maintain the bank's financial stability.

The existing body of scholarly research presents conflicting perspectives regarding the influence of loan portfolio diversification on performance and stability. Hence, the primary

objective of this research was to ascertain the impact of loan portfolio diversification on the stability of commercial banks operating in Sri Lanka.

2. Previous Literature

The theoretical and empirical insights concerning loan portfolio diversification and financial stability are shown below.

2.1. Loan Portfolio Diversification

LPD is a system utilised by banks to moderate credit risk. While some banks tend to concentrate their loan portfolios, others diversify them. This is treated as a significant credit portfolio system, which catches the risk of the interrelationship of individual credits as a portfolio. According to the definition provided by the Basel Committee on Bank Supervision in 1991, diversifying risk exposures is the guiding principle in the banking industry. The portfolio hypothesis, the customary financial hypothesis, expresses that broadening can lessen the risk by limiting the expense of observing. Checking expenses can be diminished by alleviating the issues between bank proprietors and lenders. According to portfolio theory, LPD improves a bank's financial position by lowering credit risk and increasing incentives for monitoring.

Avisha and Das (2016) documented that LPD decreases the probability of an organisation's financial performance. As per Maina (2013), LPD assists with improving financial performance and is utilised as a system to make up for lost time to better execution levels. David & Dionne (2005) highlighted that differentiating the advanced portfolio assists with lessening portfolio risk. Further, Russell and Tao (2014) stated that a more concentrated loan portfolio may yield a lower return while increasing credit risk. In contrast, according to Constantinos et al. (2014), concentration risk increases bank credit loss due to the probability of payment defaults in specialised sectors. Arnegrd and Sigve (2017) also mentioned that diversification improves performance. Besides, Eduardas (2013) states that Lithuanian banks' arrangement for terrible advances has expanded because of concentrated credits.

Hayden et al. (2007) express that loan portfolio diversification further develops banks' financial performance at risk levels that are just under average. Banks ought to assess the hazards of the choices while expanding the modern, area-wise, or geological LPD. As per the empirical findings, banks with diversified portfolios can generate funds internally and allocate them appropriately. Basel Board of Trustees on Financial Oversight (2006) referenced that LPC is the primary driver of bank portfolio losses. Avila et al. (2013) express that concentrated credits produce misfortunes in the credit portfolio because a solitary portfolio influences raised fixation risk even though LPC somewhat assists with evaluating capital

sufficiency. Those give LPD a superior approach to diminishing credit risk. Thorsten and De Jonghe (2013) state that systematic risk is strongly linked to loan concentration. As a result, the minor correlated assets provide the advantage of LPD because the objective is to reduce portfolio asset correlation.

2.2. Loan Portfolio Concentration (LPC)

According to Kurincheedaran (2015), LPC focuses only on a few industries where banks have a competitive advantage. The Corporate Money concept upholds this. Most researchers emphasise that concentration reduces firm value and mitigates agency issues. As indicated by Kurincheedaran (2015), expanding LPD prompts the dispensing of assets to wasteful divisions. As a result, poor investment decisions result in lower company value (Shroff et al., 2024). Banks need to accumulate adequate data concerning borrowers so that they can perform loaning exercises straightforwardly.

LPD counters this assertion because it is essential to gather trustworthy information about potential borrowers. Because it is possible to screen borrowers, LPC follows this fact. Data concepts feature the requirement for information about clients. The "know your customer" principle was also introduced by the Basel Committee on Banking Supervision. LPC backs all of these claims. Corporate Money theory recommends that firms should relate to fixation to upgrade benefits and decrease credit risk. Specific banks can get the upper hand by gathering data on that area to turn out to be more learned. This would bring about a decrease in the expense of data deviation through better screening of the credit risk of a specific area. As indicated by Acharya et al. (2006), modern and area-wise LPD impact diminishes return and, at the same time, increments firm risk. LPC prompts upgrading the bank's exhibition. Chen et al. (2013) have chosen mining, fabricating, creation, development, and transport area-wise. According to Chen et al. (2013), LPD may decrease risk and return simultaneously. Even so, the discoveries of nations like Italy, Germany, Brazil, and Argentina should update this. Furthermore, Freitakas (2013) states that LPD negatively impacts asset yield. Essentially, more is expected to diminish the bank risk.

2.3. Bank Stability

Financial stability has received much attention in the finance literature over the years. According to Mishkin (1992), financial stability is the financial system's capacity to control risks, increase and aid in economic operations, and continuously cushion shocks without interruption. Financial distress was characterised (Harlan & Platt, 2002) as the period of declining financial circumstances that would occur before there would be bankruptcy (Harlan & Platt, 2002).

Income diversification is widely used as a predictor to capture the financial stability of banks, as supported by empirical findings (Gupta & Kashiramka, 2020). Other predictors include leverage (Ramzan et al., 2021), bank size (Gupta & Kashiramka, 2020), capital (Bourkhis & Nabi, 2013), profitability (Martynova, 2015), asset quality (Hassan et al., 2019), liquidity (Gupta & Kashiramka, 2020), interest margin (Abbas et al., 2019), and bank age (Ramzan et al., 2021).

Brauers et al. (2014) state that researchers have been interested in evaluating commercial banks' financial health for over a century since the financial crisis. Current strategies range from oversimplifying risk-return relationships to including numerous economic variables at the micro- and macro-economic levels. Kim et al. (2020) investigated the connection between bank diversity and financial stability and discovered that it is significantly nonlinear. These results imply that average-level bank diversification enhances bank stability but that excessive diversification is harmful. We also find that this association has a temporal component.

Deregulation and delicate competition have forced banks to diversify their revenue streams by attempting to engage in new business ventures, including the underwriting and trading of securities, investments, and other ventures that yield income in addition to interest. As a result, numerous studies have examined the effects of banking diversification in developed nations (Mensi & Labidi, 2015).

2.4. Loan Portfolio Diversification Decision on Bank Stability

This study investigates whether market concentration and bank loan diversification choices relate to a bank's financial stability and explores how the degree of banking market concentration or competition affects the impact of loan diversification on bank stability. The study hypothesised that, in line with the "concentration-stability" theory, market concentration is adversely correlated with bank insolvency risk. The findings using interaction terms between market concentration and loan portfolio diversification show that banks that operate in highly concentrated areas are more financially stable than those that operate in less concentrated markets.

On the other hand, the relationship between size and market risk is inverted U-shaped in contrast to its negative impact on market risk, asset tangibility benefits credit risk (Duh et al., 2021). While diversified and profitable MFIs tend to invest more in government assets, high profitability improves credit risk management, resulting in more minor loan losses.

According to Kurincheedaran (2015), Sri Lanka's domestic Licensed Commercial Banks need better performance sector-by-sector due to LPD. Since LPD lessens return and increases risk, the return through LPC should be improved. Behr and Guettler's (2007) discoveries align

more with this end. Kamp et al. (2007) indicate that banks focusing on extraordinary aptitude regions have more significant yields than enhanced banks. Additionally, loan loss provisions and nonperforming loan rates at specialised banks are lower than at diversified banks. Similarly, concentration reduces default risk while increasing return (Tah et al., 2016).

This research extends and complements earlier empirical investigations by examining the impact of banking system features in determining the relationship between loan portfolio diversity and bank stability. Further, this study considers the market concentration level as a potentially important aspect of the banking sector. The relationship between market concentration and bank stability is predicted by many theoretical models in conflicting ways. It is explained that a financial system with high concentrations is more stable than one with low concentrations. Banks have better prospects for profit in less competitive circumstances, and higher charter values brought about by significant earnings lessen the incentives for banks to take unwarranted risks. According to the opposing theory, market concentration and bank instability correlate positively (Shim, 2019).

Larger banks in highly concentrated market structures will likely get more help from the government safety nets when they run into financial trouble. This protective measure would increase the Bank's incentives to take risks and cause moral hazard issues, weakening the economic system. Even though the theoretical literature on this subject has considerably influenced bank regulators and policymakers, there is little empirical data on the banking market concentration and financial stability indicators, and there is no universal agreement on these indicators (Beck et al., 2006).

2.5. Literature Gap of the Study

Although numerous researches exploring the topic of loan portfolio diversification and loan portfolio concentration and, in turn, the stability of credit organisations as well as the interconnection between them have been done across the world, it is still possible to identify a lack of essential research oriented to different market conditions and regulations. In particular, the literature review establishes that a paucity of studies investigated the phenomenon within the Sri Lankan context. Hence, a significant contextual gap exists in the literature. The unique market dynamics and regulatory framework in Sri Lanka offer a distinct environment for studying these aspects, yet this area still needs to be explored. Addressing this gap could provide valuable insights into how loan portfolio strategies impact bank stability within diverse economic settings. Further, the contradictory findings of previous studies highlight a significant gap in the literature, motivating this study.

3. Methodology

To examine the impact of loan portfolio diversification on the financial stability of commercial banks in Sri Lanka, the researchers have adopted the deductive approach (Dewasiri et al., 2018). Loan portfolio diversification is considered the independent variable, and financial stability is the dependent variable. Moreover, some of the bank-specific macroeconomic variables, such as bank size, non-interest income share, liquidity, and annual GDP growth, have been considered control variables for the study. The researchers used secondary data from the annual reports from 2010 to 2019 and considered 06 licensed commercial banks in Sri Lanka as the sample to proceed with. The study data were analysed through quantitative techniques. Therefore, this study used descriptive statistics, correlation analyses, and panel regression using the fixed effect model for analysis.

3.1. Variable Selection and Operationalization

The study's variables have been selected based on empirical findings. The researchers have considered loan portfolio diversification as the independent variable and financial stability as the dependent variable. Moreover, bank size, non-interest income share, liquidity, and annual GDP growth have been considered the control variables.

Loan portfolio diversification can be defined as the varieties or types of credits that will make up the lending portfolio of an organisation. Financial stability is a bank's economic health in meeting its obligations. Total assets, deposits, or other accepted measures can be used to measure the bank's size. At the same time, all the different incomes that could be generated apart from the interest income can be considered non-interest income shares. Liquidity is the measure that can be used to convert assets into cash quickly.

Moreover, annual GPP growth can be based on the changes that could occur in a country's gross domestic production. The equations and the mechanisms used to measure the variables can be shown per the tabling. Table 3.1 shows the operationalisation of the variables selected for this study.

Table 3.1: Operationalization of the Variables

Variable	Calculation
Bank's financial stability (Ln Z-score)	$Ln\left(\frac{ROAit + CARit}{SDROAip}\right)$
Loan diversification (LPD)	1 – loan HHI
Bank size (Size)	Total Asset

Non-interest income shares	$\frac{Non\ Interest\ Income}{Gross\ Income}$
Liquidity	$\frac{Cash + \text{Marketable securities}}{Total\ Asset}$
Annual GDP Growth (GDP Growth)	GDP Growth Rate

Source: Authors' own

4. Results and Discussion

The unit root tests confirmed that the series is integrated or stationary, thus satisfying the initial assumption for dynamic panel regression. The researcher tested the stationary panel using a unit root test in this study. If the p-value is less than 0.5, the null hypothesis can be rejected, and the alternative hypothesis can be accepted.

Table 4.1 shows the stationary level of the panels. According to the results, all panels are stationary at level series. Then, the researcher tested the research objective by using special analytical tools.

Table 4.1: Unit root results of the Levin-Lin-Chu test

Variable name	P Values	Stationary
Banks stability	0.0023	level
Loan diversification	0.0000	level
Bank size	0.0000	level
Non-interest income share	0.0004	level
Liquidity	0.0000	level
GDP	0.0044	level

Source: Authors' own

The Descriptive statistics in Table 4.2 show information relating to the Bank's activities. The above statistics give a general idea concerning the behaviour of commercial banks in the selected industry.

Table 4.2: Summary of the descriptive statistics

Variable	Mean	Std. Dev	Maximum	Minimum	Obs
Banks stability	57.35375	19.06791	102.3135	36.31524	60
Loan diversification	5094.567	999.6353	6988.000	2398	60
Bank size	5.790411	0.291507	6.382938	5.175155	60
Non–interest income share	0.341492	0.248807	1.227292	0.078832	60
Liquidity	4.264758	0.335433	5.149151	3.338461	60

GDP	5.260000	2.291709	9.100000	2.300000	60

Source: Authors' own

As indicated in Table 4.3, a correlation analysis was used to determine the correlation between the dependent and the independent variables. This analysis can determine the strength of the relationship between the variables. A correlation analysis has been done to recognise the connection between credit portfolio enhancement and a bank's financial steadiness. In this instance, the Z–score is a proxy measure of a bank's economic stability. The Z-score of each Bank is estimated by the return on assets (ROA) in addition to the capital-to-asset ratio divided by the standard deviation of ROA. This determines the relationship between LPD, Bank Size, non–interest income share, liquidity GDP growth, and bank stability. Table 4.3 shows that non–interest income share and GDP growth are negatively associated with bank stability in commercial banks. Pearson's correlation shows the values as (-0.109) and (-0.063). It proved that there is a low degree of negative relationship between the non–interest income shares and financial stability in commercial banks of Sri Lanka, and there is a low degree of negative relationship between GDP growth and economic stability in commercial banks in Sri Lanka. All other three variables are positively related to the Bank's stability. LPD, Bank Size, and liquidity have shown values (0.170), (0.425), and (0.265), respectively. Among them, LPD, Bank size, and liquidity have a low degree of a positive relationship with the financial stability of commercial banks in Sri Lanka.

Table 4.3: Summary of the correlation analysis

Correlation probability	**Stability**	**Div**	**Size**	**Non-ints**	**Liq**	**GDP**
Stability	1.000					
Div	0.880030	1.00000				
Size	0.425821	0.478643	1.00000			
Non-ints	-0.109198	-0.044717	-0.603425	1.00000		
Liq	0.265826	0.187194	0.678580	-0.491115	1.00000	
GDP	-0.063691	-0.097836	-0.572683	0.427493	-0.198915	1.00000

Source: Authors' calculations

The panel data regression analysis has been used to identify the impact of loan portfolio diversification on bank stability in commercial banks in Sri Lanka. Ordinary least squares, fixed effects, and random effects models are tested to find the most appropriate model for the estimate and represent this study's results. To select the most suitable method for the study, the researcher used the Housman Test, the Redundant Fixed Effect Test, and the Lagrange

multiplier (LM) Test. The regression analysis has been adapted to measure the relationship between dependent and independent variables. Therefore, this test can be used to measure the impact of loan portfolio diversification on the financial stability of commercial banks in Sri Lanka. The most appropriate and fitted model was found after conducting all other tests using the Housman test. As per the Tao selection, the probability value is considered to select the best model out of the two methods: random and fixed effect models. According to the results of this Housman test, the probability value is 0.328. As a result, the p-value is more significant than 0.05. Therefore, the study used a random effect model as the most appropriate model to measure the impact of loan portfolio diversification on bank financial stability in commercial banks in Sri Lanka.

Table 4.4: Results of the random effect model

Variable	Coefficient	Prob.
C	28.84195	0.4981
DIV	0.012897	0.0000
SIZE	-12.58620	0.1005
NON_INTS	-2.894094	0.5453
LIQ	9.209254	0.0161
GDP	-0.493968	0.4073

Source: Authors' own

According to the Findings of the random effect model, as stated in Table 4.4, loan portfolio diversification has a significant positive impact on the financial stability of commercial banks in Sri Lanka. It shows that loan portfolio diversification significantly affects the Bank's economic stability. Because its coefficient was 0.012, and the probability value showed 0.000 for these variables. This means that if LPD increases by one, it will increase the Bank's financial stability before it can be concluded that LPD is statistically significant.

The co-efficient values of control variables of bank size, non–interest share, and GDP show values of -12.586, -2.894, and -0.493, respectively. When considering the P values, it can be concluded that these three variables are not statistically significant. Another control variable is liquidity, which positively impacts the Bank's financial stability. That means liquidity increases by one per cent, increasing the Bank's stability by 9.209 per cent. The p-value of this same variable shows 0.0161. Hence, the variable is statistically significant.

5. Conclusion

The study's results suggest that having a diversified loan portfolio can support banks or any other financial institution in being financially stable even in a kind of economic downturn.

The most recent studies by Sharma et al. (2023) and Chen et al. (2022) support this insight and confirm that loan portfolio diversification can lead to reduced credit risk. Moreover, the findings revealed a significant impact of loan portfolio diversification on the Bank's financial stability. It also suggests a positive effect of liquidity on the financial stability of the banks. Furthermore, the results indicate no positive impact between bank size and financial stability, non–interest income shares, and bank financial stability regarding GDP growth and financial stability.

Moreover, it is revealed that liquidity is more important to maintain the financial stability of banks when the market is shaky and the economy is not stable. The studies which have conducted by Li et al. (2024) and Wang et al. (2023) highlighted the importance of managing the liquidity of banks and financial institutions. The study's findings also highlight the importance of liquidity.

The literature showed a noticeable connection between bank size and financial stability. For instance, studies conducted by Zhang et al. (2024) and Jiang et al. (2022) highlight that larger-scale banks have many more issues concerning financial stability than small-scale banks. On the other hand, having many more ways to make money, such as non-interest income shares, does not mean that a bank or any financial institution can be more stable, as highlighted in recent studies such as Guo et al. (2023) and Liu et al. (2022).

When considering the connection between economic growth and financial stability, the study's results go against the social normality of thinking that better economies can lead to more financial stability within the countries. Even the empirical findings of Wu et al. (2024) and Zhou et al. (2023) suggest that there is no significant relationship between economic growth and financial stability. Moreover, they highlight that it will depend on several factors, such as monetary policies and market behaviours. Most empirical studies in other countries have concluded that LPD positively affects bank stability. The findings also indicate a positive effect between LPD and bank stability. The Basel Committee on Banking Supervision about credit risk through LPD is more parallel with the findings of this study. Further, Maina (2013) and Tah et al. (2016) suggest the same finding in their studies. However, Kurincheedaran (2015) has found contradictory insights compared to this study’s results.

Commercial banks should raise their LPD to a suitable level to improve their stability. Hence, commercial bank management must employ suitable tactics to enhance their loan portfolio position. Therefore, banks can strengthen their client base by growing their lending activities while retaining their current clientele. Moreover, banks should prioritise sectors outside

lending to specific regions. The emphasis should be placed on certain market segments to maximise lending and gain a competitive edge.

Commercial banks must elevate their LPD to a suitable extent to bolster their stability. Consequently, commercial bank management must employ suitable tactics to boost their loan portfolio standing. This will enable banks to broaden their lending activities, thus attracting a more extensive clientele while maintaining their current customer base. Moreover, banks should prioritise lending across diverse niches rather than confining themselves to limited sectors. By focusing on niche markets, banks can maximise their competitive edge.

According to the results, banks must avoid adverse selection and information asymmetry when providing loans to customers. Banks must implement new policy programs to expand lending regulations and obtain more facts about the customers without harming customer relationships. Moreover, commercial banks should focus on reducing nonperforming loans because there is a high credit risk when concentrating on a loan portfolio. Therefore, bank management should pay more attention to those nonperforming loans and take immediate action to reduce the level of credit risk.

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