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EFFECT OF COVID -19 PANDEMIC ON THE PERFORMANCE OF SRI LANKAN BANKS

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Abstract

The COVID-19 pandemic has created detrimental effects on the Sri Lankan economy even though several fiscal and monetary policy measures were initiated. Nevertheless, the severity of these effects on the banking system has not been adequately documented in the literature. Thus, this study examined the effect of the COVID-19 pandemic on the performance of Sri Lankan banks using a sample of 18 licensed commercial banks. The data was collected from annual reports published by relevant banks for the ten years from 2012 to 2021. Return on equity, net interest margin and non-performing loans were used as measures of bank performance. Further, the study used liquidity measured using loan-to-deposit ratio, interest rate spread and state of the economy measured using gross domestic product growth rate as control variables. The results of three fixed effects panel regression models suggest that the COVID-19 pandemic has introduced statistically significant adverse effects on bank performance. This indicates that even though policy measures were taken, the banks have remained vulnerable. This implies that developing countries like Sri Lanka need comprehensive policy measures implemented at the initial stage of global pandemic situations to mitigate their adverse effects on the banks.

Keywords: Banking Sector**,** COVID-19, Economic Shock, Financial Performance, Monetary Policy, Sri Lanka

1. Introduction

Financial system stability and macroeconomic stability largely depend upon a strong banking system, particularly in developing countries characterised by bank-dominant financial systems.

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In such countries, the soundness of the banking system primarily determines the availability of credit to the corporate sector of the economy. In this context, the COVID-19 outbreak started in December 2019 in Wuhan, China. This led governments around the world, including Sri Lanka, to take immediate measures to constrain infections and deaths (Fowsar et al., 2022; Zhu et al., 2020). For example, initially, governments in many countries implemented lockdown measures, travel restrictions, and quarantine measures. Moreover, health authorities continuously performed diagnostic tests on those who lived in riskier areas to trace the infected people immediately. Further, with the introduction of vaccines, health authorities started vaccination programmes to boost the immunity level of people against the COVID-19 virus (Kharroubi & Saleh, 2020).

The lockdowns and travel restrictions implemented during the outbreak of COVID-19 resulted in a sudden de-globalization process among many countries. As a consequence, the flow of capital and trade, along with movements across borders were adversely affected. Moreover, these measures not only decreased the economic and financial sector activity but also increased liquidity issues in the firms affected by the crisis (Acharya & Steffen, 2020). Moreover, the burden on the government budget was increased. As a response, governments introduced a combination of monetary, fiscal, and regulatory measures to combat the adverse effects of COVID-19. For example, the government of Sri Lanka, in collaboration with the Central Bank of Sri Lanka, introduced a debt moratorium on loans and interest, provided low-interest rate working capital loans, reduced the interest rate on pawning facilities, distributed an allowance for low-income households, and restricted the import of motor vehicles (CBSL, 2020a). Since the crisis is expected to last even after the lockdowns are lifted and economies reopened, the net effects of these policy measures on the banking sector are largely unknown (Demirgüç-Kunt et al., 2021).

In general, banks are more vulnerable to shocks than other firms (Montgomery et al., 2014). The rapid spread of COVID-19 has hit banks harder than most other industries, owing to the inherent vulnerability of banks during times of crisis (Goodell, 2020). During pandemic periods, increased medical expenditure, and other health and safety-related measures create a strain on deposits which in turn affects the bank reserves (Lagoarde-Segot & Leoni, 2013). This results in a substantial reduction in the interest income of banks (Assous & Al-Najjar, 2021). In the Sri

Lankan context as well, adverse effects of the COVID-19 outbreak on the bank performance were visible (KPMG, 2021). However, a few studies argue that there is no significant negative impact of COVID-19 on banks due to government policies on debt relief, contract relief (Demir & Danisman, 2021), and countercyclical lending to constrain the negative effect (Demirgüç-Kunt et al., 2021).

Nevertheless, the negative effects of COVID-19 on banks are expected to be greater than in previous pandemics (Aldasoro et al., 2020) because at present banking activities are internationally more interconnected (Foglia et al., 2022). Thus, shock in one country can transmit easily across national borders (Park & Shin, 2020). Therefore, the COVID-19 pandemic was often considered the first major test of the G20 global regulatory reforms after the global financial crisis of 2007-2009. Importantly, banks are the main source of finance for firms and individuals in Sri Lanka, even though its financial system is substantially modernised as a result of various reforms initiated during recent decades. However, there is a lack of studies conducted to explore the effects of the COVID-19 pandemic on bank performance in Sri Lanka (KPMG, 2021; Silva & Perera, 2021). Therefore, this study examines the effect of the COVID-19 pandemic on bank performance using a sample of 18 Sri Lankan commercial banks. These commercial banks account for 53 percent of the total assets in the financial system and 75 percent of the total assets in the banking system (CBSL, 2021a).

2. Literature Review

The COVID-19 pandemic is still exerting sizable pressure on the financial system in general and the banking system in particular. Nevertheless, research on the specific effect of the COVID-19 pandemic on bank performance is rare. Particularly in the Sri Lankan context, such a study could not be found. This review of available literature, on the one hand, indicates the potential of the COVID-19 pandemic to hinder bank performance. On the other hand, this literature review highlights the lack of related studies in the Sri Lankan context. Therefore, the necessity of conducting research in this area remains high.

2.1. History of Global Pandemics and COVID-19

Historically, several pandemics have affected different parts of the world. For example, Spanish influenza in 1918, Asian flu (H2N2) from 1957 to 1958, severe acute respiratory syndrome

(SARS -1) from 2002 to 2004, avian flu (N1H1) from 2009 to 2010, the Middle East respiratory syndrome (MERS) in 2012 and the first wave of Ebola virus disease in 1976, the second wave in 2014-2016 and third wave in 2018 -2019 (Baldwin & Di Mauro, 2020) can be identified as major pandemics with a catastrophic consequence on human life and economic wellbeing. Evidence suggests that the repercussions of these pandemics were spread to many sectors at national and international levels, which took a long time to recover from the negative effects (Siu & Wong, 2004; Wong, 2008).

In particular, the novel coronavirus (COVID-19) relates to the SARS virus family and has a unique ability to transmit from person to person faster than SARS-1 and other similar viruses (Keshta et al., 2021). Hence, the severity of the effects of the COVID-19 pandemic on economies around the globe is greater than those of previous pandemics (Aldasoro et al., 2020; Li et al., 2022). In such a context, as Elnahass et al. (2021) argued, financial policymakers underestimated the effect of the pandemic during the initial stage by comparing it with historical statistics of SARS and other crises such as the global financial crisis in 2007–2009 and the Asian crisis of 1997–1998. More importantly, it was difficult for the health authorities and policymakers to predict how long this COVID-19 pandemic will last (Charumilind et al., 2021). Thus, the social and economic impact of this pandemic is still being evaluated (Ibn-Mohammed et al., 2021).

2.2. Bank Performance and Resilience during COVID-19

In general, the COVID-19 outbreak has reduced bank performance across the globe (Elnahass et al., 2021; Jeris & Nath, 2021). For example, the decline in lending caused the performance and stability of the banking sector to decline (Darjana et al., 2022). Furthermore, heavy credit losses and unacceptably low capital ratios made banks financially unsustainable during the pandemic. These negative effects can last for many years from the start of the pandemic (Al-Kharusi & Murthy, 2020). More importantly, the impact will be even more severe in poor financial systems prevailing in emerging and developing economies like Sri Lanka (Silva & Perera, 2021). For example, during the pandemic, Sri Lankan banks were struggling with several operational issues primarily due to the increase in non-performing loans (KPMG, 2021). Moreover, in countries such as India, Nepal, and Sri Lanka, the measures implemented in response to COVID-19 did not provide the anticipated financial resilience (Upadhaya et al., 2020).

In contrast, developed countries have adopted more stringent policy measures to react faster to the potential negative effects triggered by the pandemic on the financial system (Feyen et al., 2021). In general, Basel III banking regulations implemented primarily as a response to the global financial crisis of 2007–2009, improved the ability of banks to withstand the COVID-19 shocks to some extent (Berger et al., 2021; Borri & Giorgio, 2022). Besides, the banks with high intellectual capital (Xu et al., 2022), advanced information technology (Dadoukis et al., 2021), and higher service quality (Lin et al., 2021) during the pre-pandemic period entered the pandemic period with a strong ability to mitigate the adverse effects. Moreover, the banks with high-income diversification were able to withstand the negative effects of the pandemic compared to the banks with low-income diversification (Li et al., 2021).

The reduction in household income due to the COVID-19 pandemic made borrowers unable to pay their debts when falling due (Yue & Cowling, 2021). Moreover, a significant increase in withdrawals by depositors can be expected in a stressed economic situation characterised by income loss (Karim et al., 2021). Therefore, banks that rely heavily on lending activities, can experience serious liquidity issues. Furthermore, during the COVID-19 period, the demand for bank loans increased more than ever experienced (Li et al., 2020). Thus, banks became more aggressive in lending and breached the lending guidelines to grab more customers (Karim et al., 2021). This also contributed to intensifying the liquidity issues in the banking sector.

Additionally, the literature suggests that COVID-19 pandemic-induced macroeconomic shocks may result in a decrease in bank performance. In particular, macroeconomic factors such as economic growth and unemployment rate are major factors that affect bank performance (Saeed, 2014). Stressful situations like the COVID-19 pandemic can worsen economic growth and unemployment in many ways. For example, sharp declines in personal consumption, exports, and business investment reduce economic growth (Pfeiffer & Roeger, 2020). Furthermore, measures such as curfews, lockdowns, quarantines, and the closure of nonessential businesses can reduce economic growth (Şahin et al., 2020). These in turn increase unemployment in the country. Thus, it is imperative for banks and financial policymakers to be efficient and effective in implementing strategies to mitigate their negative effects.

3. Methods

This study examines the effect of the COVID-19 pandemic on bank performance in Sri Lanka. A sample of 18 licensed commercial banks was selected out of the 24 licensed commercial banks operating in Sri Lanka as of 30th September 2021. The remaining six banks were dropped from the sample due to the unavailability of data continually. The data was collected from the annual reports published by the selected banks for the ten years from 2012 to 2021. One bank out of the 18 selected banks had data only for eight years. Thus, the final dataset contains 178 bank-year observations.

The first COVID-19 case was reported in Sri Lanka when a foreign national from China was detected as COVID-19 positive on 27th January 2020. Thereafter, on 11th March 2020, the first Sri Lankan was diagnosed with the virus. Consequently, the virus started spreading across the country. Thus, the government imposed several restrictions from 20th March 2020 onward to reduce the rate of infections. Thus, the COVID-19 period was defined in this study as the period from 2020 to 2021, while the pre-COVID-19 period was defined as the period from 2012 to 2019. Therefore, the study period covers eight years before the COVID-19 pandemic and two years during the COVID-19 pandemic. As shown in Table 1, COVID–19 represents a dummy variable that takes a value of zero if the observation belonged to the pre-COVID-19 period and a value of one if the observation belongs to the COVID-19 period.

Bank performance was measured using the return on equity (ROE), net interest margin (NIM) and non-performing loans (NPL). Furthermore, the study used a set of control variables to control for liquidity, interest rate spread and the state of the economy which are likely to affect the bank performance. Here, liquidity measured using the loan-to-deposit ratio was used as a bank-specific control variable. Moreover, the interest rate spread and the natural logarithm of the GDP growth rate were used as country-specific control variables.

A fixed effects panel regression was performed using the least square dummy variable (LSDV) approach to estimate the effect of the COVID-19 pandemic on bank performance in Sri Lanka. This method has been widely used in similar studies such as Demir and Danisman (2021) and Elnahass et al. (2021). Moreover, panel regression models account for individual heterogeneity and thus remain superior to OLS regression. The regression model used in the study is depicted in equation 1.

$$BP_{it} = \alpha + \beta_1 COVID19_t + \beta_2 LQ_{it} + \beta_3 SPREAD_t + \beta_4 GDP_t + \varepsilon_{it} \quad \text{------ (1)}$$

In equation 1, *BP* is a vector of bank performance measures consisting of *ROE*, *NIM* and *NPL*. Therefore, three separate regression models, namely Model 1, Model 2, and Model 3 were performed taking each bank performance measure as the dependent variable. *COVID-19* is the dummy variable that takes one if *t* belongs to the pandemic period and zero otherwise. *LQ*, *SPREAD,* and *GDP* respectively denote liquidity, interest rate spread, and the natural logarithm of economic growth rate. Further, *i* denotes individual banks and *t* denotes time. Moreover, α, β, and ε denote the intercept, regression coefficients, and error term, respectively.

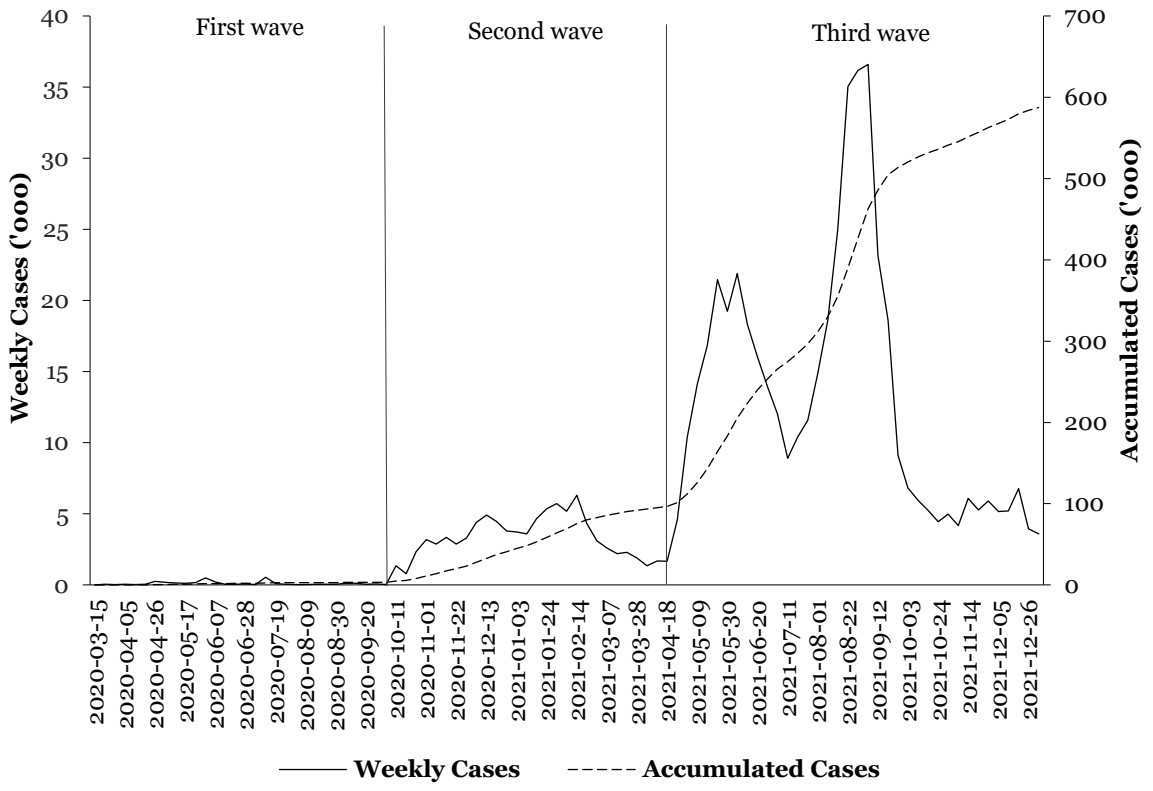
Table 1: Measurement of Variables

Variable	**Symbol**	**Proxies and Measurement**	**Literature**
COVID-19	COVID19	Categorization of the period as pre-pandemic (0) and pandemic (1)	Elnahass et al. (2021)
Bank performance	BP	Return on equity	Demir and Danisman (2021)
		Net interest margin	Lopez-Penabad et al. (2022) Saif-Alyousfi et al. (2021)
		Non-performing loans	Elnahass et al. (2021)
Liquidity	LQ	Loan-to-deposit ratio (Total loans/ Total deposits)	Boďa and Zimková (2021)
Interest rate spread	SPREAD	Standing lending facility rate–Standing deposit facility rate	Mujeri and Younus (2009)
State of-economy	GDP	Economic growth rate (Natural logarithm of GDP growth rate)	Elnahass et al. (2021)

4. Results and Findings

Sri Lanka reported its first local COVID-19 case on 11th March 2020, triggering the first wave of the outbreak. Following that, the Sri Lankan government, in collaboration with the health authorities, took decisive and well-coordinated decisions to limit the spread of the virus. Here, the government initially declared public holidays from 16th March 2020 to 19th March 2020 since more people were found infected with the virus. This was then converted into a nationwide curfew on 20th March 2020. This nationwide curfew lasted till 24th March 2020. Additionally, Sri Lanka closed down the airports and sea ports for passengers on 22nd March 2020 until further notice. The nationwide curfew was also further extended but the curfew was lifted for several hours on specific dates to enable people to fulfil their essential needs. Therefore, along with curfews, the government imposed inter-district travel bans to curtail the movement of people across districts during the curfew-lifted periods. Furthermore, the government of Sri Lanka directed both private and public sectors to implement the work-from-home concept to reduce the movement of people. More importantly, to make these measures more effective, extensive contact tracing was implemented with the help of health authorities and armed forces. Confirmed infected patients were transferred to designated infectious disease hospitals and their close contacts were sent to special quarantine centres managed by the Ministry of Defense. Importantly, the health authorities introduced a set of crucial preventive measures called DReAM (Distancing, Respiratory Etiquette, Aseptic technique and Mask) to mitigate the risk of a second wave.

As shown in Figure 1, with the aforementioned measures, Sri Lanka managed to keep the spread of the virus at a minimum level during the first wave of the pandemic. During the first three months since the detection of the first local case up to the 1st of June 2020, only 1633 infected cases were reported in Sri Lanka. The number of deaths during this period was limited to only 11. Further, during this period, new COVID-19 infections were mostly reported within quarantine centres, while the community spread was negligibly low due mainly to effective contact tracing (EPID, 2020). Thus, the nationwide curfew was completely lifted on 28th June 2020 and the government declared a new normal situation in the country. However, airports and seaports were kept closed due to the rapid spread of the disease in other parts of the world.



Source: Our World in Data (2021)

Note: Accumulated cases are on the right-hand side axis.

Figure 1: COVID-19 Outbreak in Sri Lanka from March 2020 - December 2021

Nevertheless, the second wave of the outbreak started in Sri Lanka in October 2020. During this time, instead of imposing a full-day nationwide curfew, the government implemented an area lockdown focusing on areas with a high risk of virus spread. Alongside, a curfew was implemented in other areas during the night. At the beginning of 2021, most countries around the globe had started vaccination programmes to prevent the spread of the virus. This allowed Sri Lanka to reopen the airports and sea ports on 21st January 2021 for passengers. However, all incoming passengers were required to undergo a mandatory quarantine in designated centres. The period of such quarantine was seven days for vaccinated passengers and 14 days otherwise. More importantly, in January 2021, the Sri Lankan health authorities approved the Oxford-AstraZeneca vaccine. Following this, Sri Lanka received the 1st batch of vaccines under the COVAX facility from the Serum Institute of India on 28th January 2021. With this, Sri Lanka started the vaccination program. A noticeable decrease in infectious cases could be observed

towards April 2021 as shown in Figure 1. The total number of infectious cases reported from October 2020 to April 2021 was 89,236. The number of deaths increased to 557. Thus, the second wave was more severe than the first wave.

Relaxation of restrictions allowed people to celebrate the Sinhala and Tamil New Year in 2021. This resulted in a rapid increase in people's movements around the country. Probably due to this, as shown in Figure 1, the third wave of the virus outbreak started at the end of April 2021. Mainly, area lockdowns were initiated during the third wave of the outbreak to curtail the spread. During this period, health authorities implemented home quarantine for close contact and home treatment for infected individuals with mild symptoms due to the drastic increase in infections given the limited space available in treatment centres. For example, during the third wave, more than a thousand new infections were reported daily. Thus, the government took steps to expedite vaccinations. This resulted in a huge cost to the government. During the third wave ranging from the latter part of April 2021 to December 2021, 487,055 new infections including 14,405 deaths were reported in Sri Lanka.

All these factors collectively disturbed the smooth operations of the economy in general and the financial system in particular. For example, the tourism industry, one of the major foreign exchange-earning industries completely collapsed. Zero tourist arrivals were recorded from April 2020 to November 2020 (SLTDA, 2020). Moreover, the manufacturing purchasing managers' index (PMI) dropped substantially from 53.6 in February to 30.0 in March, and 24.2 in April 2020. At the same time, the service purchasing managers' index also substantially dropped from 50.2 in February to 32.0 in March, and 29.8 in April 2020 (CBSL, 2020b, 2020c). This reflects a sharp decline in the performance of the manufacturing and service sectors during the pandemic period. Moreover, most of the Sri Lankan migrant workers employed in the Middle East, Europe, South Asia, and North Asia lost their employment or had to return home due to the fear of COVID-19 infection. As a consequence, foreign remittances to Sri Lanka dropped by 23 percent, from 7104 million USD in 2020 to 5491 million USD in 2021. This was the lowest figure recorded during the last ten years.

Along with these adverse effects, the Sri Lankan rupee, which was already weakening gradually, was substantially depreciated relative to USD from 182 in February 2020 to 200 in September 2021 (b). With this, the Central Bank of Sri Lanka attempted to prevent further depreciation of

the rupee. This not only created a substantial grey market for foreign currency transactions but also diverted most of the foreign currency transactions away from the formal banking system. Moreover, a large amount of foreign currency reserves was drawn to maintain such a fixed exchange rate. For example, Sri Lankan foreign reserves fell to 3.1 billion USD towards the end of 2021 from 7.6 billion USD in 2019. Furthermore, by the end of February 2022, this was dropped further to 2.3 billion USD. Against this backdrop, the Central Bank of Sri Lanka permitted greater flexibility in the exchange rate in March 2022 (CBSL, 2022). To some extent, this initiative was effective in controlling the activities in the grey market. However, this resulted in a sudden depreciation of the rupee against the USD from around 200 to around 360 towards May 2022. As a consequence, inflation also skyrocketed.

The ultimate burden of these repercussions goes to the financial system since financial institutions are vulnerable to shocks in the economy. During this period, the Colombo Stock Exchange had to halt its trading on several occasions due to huge collapses in the market. For example, on the 12th, 13th, and 20th of March 2020, a 30-minute trading halt was triggered several times per day (CSE, 2020). Further, the stock exchange was closed from 21st March 2020 to 10th May 2020. The Colombo Stock Exchange reported its lowest All Share Price Index of 4247.95 and the lowest S&P SL 20 index of 1685.45 on 12th May 2020 for the last decade. Following that, the All Share Price Index and the S&P SL 20 index showed an increasing trend through December 2021. Thus, despite the policy adjustments made by the government, the capital market was severely hit by the pandemic.

The government took several initiatives through the banking system to provide relief measures to households and firms to mitigate the negative effects resulting from the COVID-19 pandemic. For example, the Central Bank of Sri Lanka introduced a debt moratorium on loans and lease rentals. Moreover, a low-interest-rate working capital loan scheme was also introduced. The interest payments on such loans were waived for six months. Furthermore, credit card interest rates were substantially reduced and the minimum monthly payment was reduced by 50 percent. Additionally, interest rates on pawning facilities, pre-arranged overdrafts, and default loan instalments were reduced. Moreover, the Central Bank of Sri Lanka directed licensed commercial banks to provide liquidity facilities for the construction sector at a concessionary interest rate not exceeding 4 percent per annum. To facilitate this, the Central Bank of Sri Lanka

offered to lend funds to commercial banks at a 1 percent annual interest rate. Nevertheless, these measures resulted in a substantial reduction in earnings while deteriorating the liquidity positions of banks.

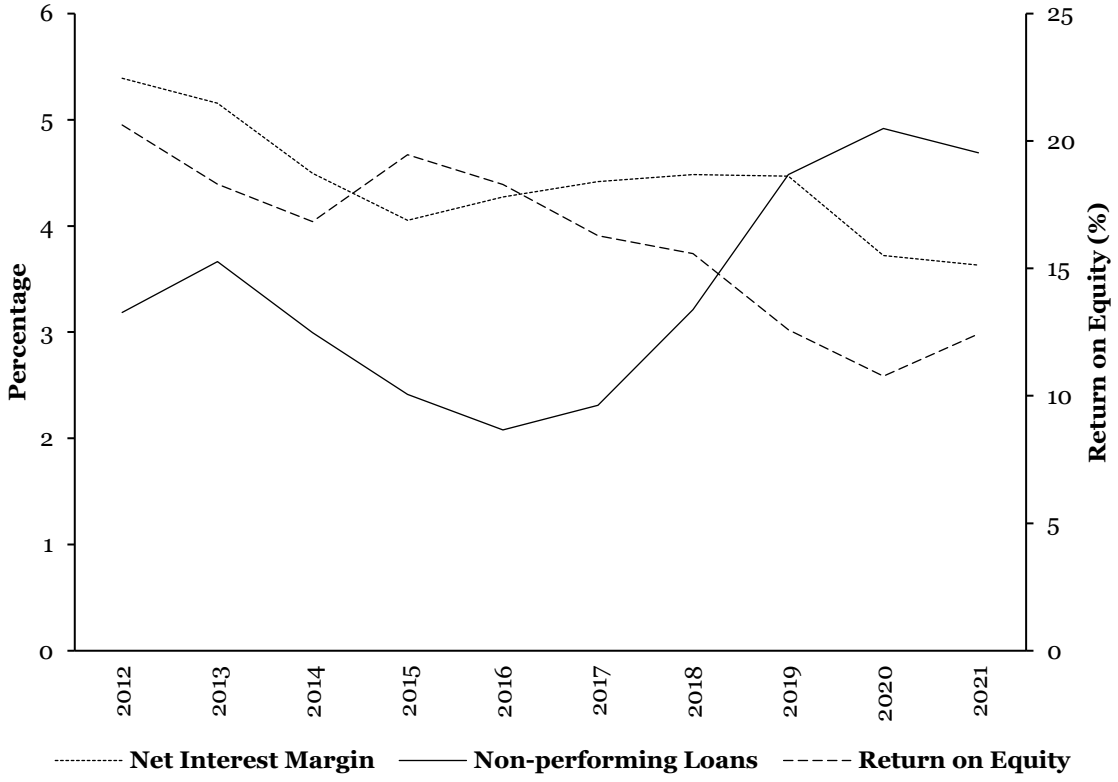
Therefore, the Central Bank of Sri Lanka introduced several measures to improve the liquidity positions of banks. For example, a refinancing facility was introduced to provide additional funds to licensed commercial banks. Moreover, the funds in the Sri Lanka deposit insurance scheme were used to provide liquidity support to the banks. However, the central bank restricted discretionary payments of banks such as cash dividends, share buy-backs, and profit repatriation. Additionally, banks were also advised to refrain from incurring any non-essential expenditures such as expenses on advertising, business promotions, gifts, travelling, sponsorships and entertainment. Moreover, the minimum daily reserve requirement for licensed commercial banks was reduced from 90 percent to 20 percent. This allowed banks to lend at lower interest rates while maintaining liquidity thresholds. Furthermore, when measuring liquidity, the central bank permitted several assets, such as fixed deposits held by a licensed bank in another licensed bank, receivables from employee provident fund concerning loan settlements, and loans secured by the deposits to be considered as liquid assets from May 2020 up to June 2021. Further, the loans extended to the construction sector under the concessionary rate were also permitted to be treated as liquid assets.

Concurrently, a set of regulatory measures was taken to improve the cash inflow to the banks given the substantial reduction in bank earnings. For example, the Central Bank of Sri Lanka amended the terms and conditions applicable to financial derivatives to encourage foreign cash inflows. Furthermore, the central bank allowed multilateral financial institutions to acquire up to 20 percent of the issued capital with voting rights of licensed commercial banks. This was increased up to 15 percent for other shareholders. Moreover, commercial banks were permitted to draw down from capital conservation buffers. Nevertheless, despite these remedial measures, the banking sector has experienced a substantial slump during the COVID-19 pandemic (CBSL, 2020a).

Table 2: Descriptive Statistics

Variable	Minimum	Maximum	Mean	SD	CV (%)
NIM	2.100	10.196	4.399	1.415	32.2
ROE	-9.107	52.215	14.994	10.629	72.1
NPL	0.017	9.280	3.394	2.100	61.9
LQ	9.421	441.814	111.614	63.325	56.7
SPREAD	1.000	2.000	1.393	0.371	26.6
GDP	-3.600	9.100	3.600	2.973	82.6

Note: n = 178; SD stands for standard deviation and CV stands for coefficient of variation

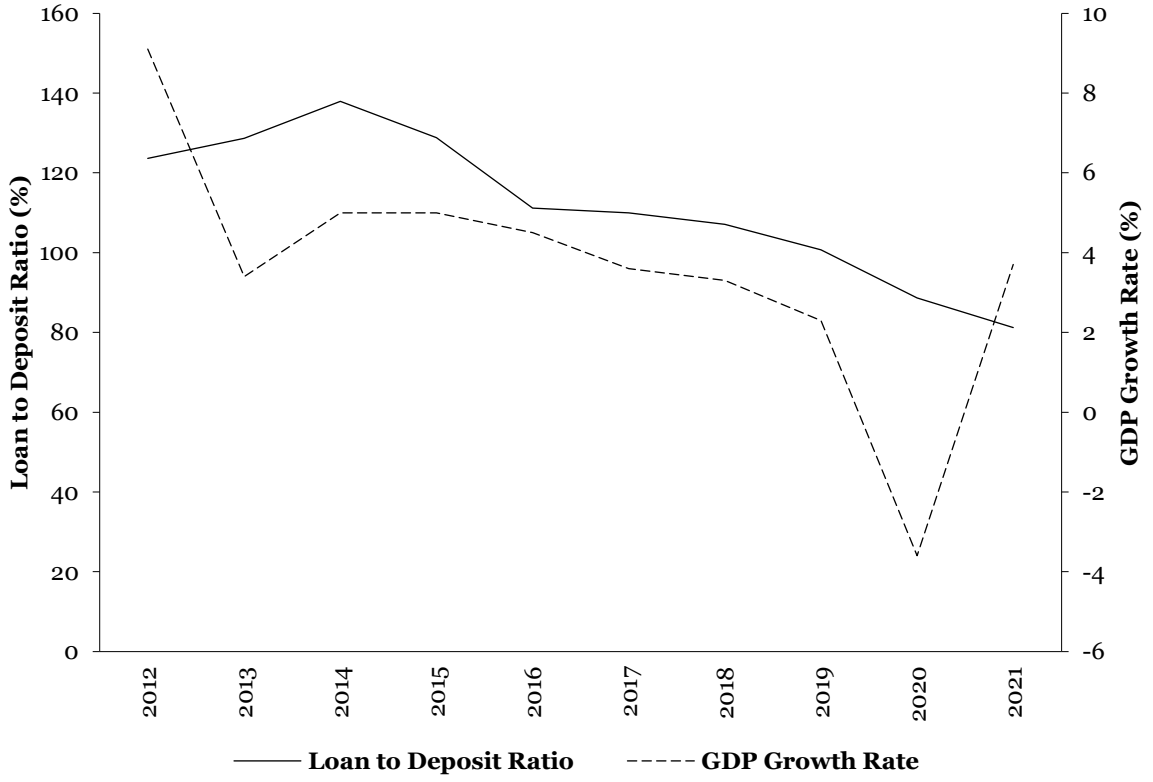


Note: Return on equity is on the right-hand side axis

Figure 2: Bank Performance in Sri Lanka from 2012 to 2021

Descriptive statistics of the variables used in the study are shown in Table 2. Further, as illustrated in Figure 2, NIM shows a marginal decline during the study period. ROE also shows a decreasing trend during the study period. Moreover, NPL which had remained relatively low

during 2015-2017 has substantially increased during 2019-2021. Even though the interest rates were substantially reduced, the interest rate spread remained more or less the same during the study period. Overall, the banking system has experienced a slight decrease in performance since at least 2012. More importantly, as shown in Figure 2, NIM and ROE have reported their lowest averages while NPL reported its highest average in 2020. This indicates that COVID-19 together with the negative effects of the Easter Sunday Attacks[2] have worsened the bank performance in Sri Lanka.



Note: Gross domestic product growth rate is on the right-hand side axis

Figure 3: Average Loan to Deposit Ratio and the Economic Growth Rate

Further, as shown in Figure 3, the loan-to-deposit ratio which reported its maximum in 2014, showed a gradual reduction since 2015. This may be partly due to the gradual increase in the minimum liquidity requirements introduced since the 1st of April 2015 by the Central Bank of Sri

[2] Easter Sunday Attacks refer to a series of bomb attacks took place in Sri Lanka targeting a few catholic churches and popular tourist hotels on 21st of April 2019 (Imtiyaz, 2020).

Lanka as part of the implementation of Basel regulations. Further, as depicted in Figure 3, the economic growth rate, which showed a declining trend even since 2012, has fallen sharply on two occasions, in 2013 and 2020. Importantly, in 2020, Sri Lanka recorded its lowest economic growth rate of negative 3.6 percent indicating the extent of vulnerability of the economy to the pandemic. Nevertheless, there is a widespread belief that mismanagement of the economy by the political leadership is one of the primary reasons behind this sluggishness in the economy in addition to the adverse effects of COVID-19.

A fixed effects panel regression analysis based on the least square dummy variable approach was used to estimate the effect of the COVID-19 pandemic on Sri Lankan bank performance. As illustrated in Table 3, the results of the fixed effects panel regression Model 1 suggest that 74.7 percent of the variation in NIM is explained by the explanatory variables included in the model. Further, COVID-19 shows a statistically significant negative effect on NIM (β = -0.398, p = .034). This indicates that the banks have reported relatively lower net interest margins during the COVID-19 pandemic period compared to the pre-pandemic period. Further, liquidity indicated by the loan-to-deposit ratio shows a statistically significant positive effect on NIM (β = 0.005, p = .002). Even though a positive relationship between loan-to-deposit ratio and NIM is expected, this type of negative relationship is found in several other studies such as Anggari and Dana (2020) and Chowdhury et al. (2016) as well. Furthermore, in Model 1, interest rate spread shows a statistically significant positive effect on NIM (β = 0.691, p = .001). Nevertheless, the GDP growth rate does not show any statistically significant effect on NIM (β = 0.006, p = .836).

Similarly, Model 2 suggests that 81.4 percent of the variation in ROE is explained by the explanatory variables included in the model. Further, COVID-19 shows a statistically significant negative effect on ROE (β = -2.165, p = .077). This suggests that similar to NIM, the banks have recorded lower ROEs during the pandemic. Moreover, similar to the results relating to NIM, liquidity reflected in the loan-to-deposit ratio has a significant negative effect on ROE (β = -0.021, p = .031). Moreover, both interest rate spread (β = 3.806, p = .006) and GDP growth (β = 0.411, p = .021) have a statistically significant positive effect on ROE. This suggests that the economic downturn during the COVID-19 period has reduced the ROEs of banks.

Table 3: Fixed Effect Panel Regression Coefficients

Variable	**Description**	**Model 1 (NIM)**	**Model 2 (ROE)**	**Model 3 (NPL)**
α	Constant	2.980	14.300	3.895
		(7.780)	(5.716)	(5.721)
COVID19	COVID-19 dummy	-0.398**	-2.165*	1.309***
	variable	(-2.137)	(-1.782)	(3.957)
LQ	Liquidity = Loan-to-	0.005***	-0.021**	-0.004
	deposit ratio	(3.149)	(-2.181)	(-1.650)
SPREAD	Interest rate spread	0.691***	3.806***	-0.106
		(3.330)	(2.807)	(-0.287)
GDP	GDP growth rate	0.006	0.411**	-0.056
		(0.208)	(2.331)	(-1.160)
R^2		0.747***	0.814***	0.637***
F- value		12.629	32.434	13.047
Durbin-Watson statistic		2.460	1.576	1.139

Note: The symbols (***), (**), and (*) respectively indicate the statistical significance at 1%, 5%, and 10% levels.
t- statistics are shown inside parentheses

Results of Model 3, suggest that 63.7 percent of the variation in NPL is explained by the explanatory variables included in the model. Further, COVID-19 shows a statistically significant positive effect on NPL (β = 1.309, p <.001). This finding confirms the fact that during crisis periods, the quantity of non-performing loans increases (Konstantakis et al., 2016). This can be due to, on the one hand, poor performance in the non-financial sector during COVID-19 which makes it difficult for banks to recover their loans extended to the business firms. On the other hand, increased unemployment during COVID-19 weakens the household borrower's ability to repay loan instalments when they become due (Konstantakis et al., 2016). Nevertheless, the loan-to-deposit ratio (β = -0.004, p = .101), interest rate spread (β = -0.106, p = .774) and GDP growth (β = -0.056, p = .248) do not show any statistically significant effects on NPL in Model 3.

5. Conclusion

This study investigated the effect of the COVID-19 pandemic on bank performance in Sri Lanka. The results of the three fixed effects panel regression models suggest that COVID-19 has adversely affected the bank performance in Sri Lanka. In general, the results of this study are consistent with studies such as Demirgüç-Kunt et al. (2021), Elnahass et al. (2021) and Jeris and Nath (2021) relating to exploring the effect of COVID-19 on bank performance, especially outside Sri Lanka. Evidence in this study suggests that the bank performance was declining even before the pandemic started and Sri Lankan banks were in a weak position when they entered the pandemic period. The pandemic has worsened this situation. For example, the banks recorded the lowest average performance in 2020, the first year of the COVID-19 pandemic. Furthermore, evidence suggests that banks show a slight recovery towards 2021. The relaxation of restrictions in 2021 may be one of the reasons behind this. However, the prevailing literature suggests that the COVID-19 pandemic entails long-term effects (Al-Kharusi & Murthy, 2020) and may cause a persistent recession across economies, potentially triggering a global economic depression. This would create an even worse situation in Sri Lanka amidst the serious economic downturn.

The findings of this study have three main implications. First, during pandemic situations, a country like Sri Lanka needs more aggressive and comprehensive policy responses implemented at the initial stage to mitigate the adverse effects on the banking sector. This would enable banks to maintain resilience both in the short run and the long run during a pandemic situation. In this sense, the management and other stakeholders of banks need to be able to adopt sudden policy changes immediately. Second, a developing nation like Sri Lanka should maintain a sound monetary policy along with a fiscal policy during normal conditions. This would prepare the country to deal with any unexpected stressful situations, which are uncommon but have a significant impact when they do occur, particularly in developing countries. Third, the negative effects of the pandemic on the banking sector can continue for a considerable period even after a country has returned to normalcy (Demirgüç-Kunt et al., 2021). Thus, it is important to take immediate action to improve Sri Lankan bank performance in an attempt to make the banking system more resilient. Otherwise, the Sri Lankan banking system can experience a crisis in the near future. Importantly, further studies are needed to investigate the behaviour of bank performance on a continual basis since the pandemic period in this study is limited to only two

years. More specifically, even though the evidence in this study suggests that the pandemic has reduced bank performance, the specific channels through which the negative effects of the pandemic were mediated to the banking system remain still unclear.

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