Department of Banking & Finance
Wayamba University of Sri Lanka

Sri Lankan Journal of Banking and Finance
An endeavor to share knowledge
Volume: 6 Issue: 01 June: 2023

THE EFFECT OF COVID-19 ON THE PROFITABILITY OF COMMERCIAL BANKS: EVIDENCE FROM SOUTH ASIAN REGION

S A M Ishari
J M R Fernando

SLJBF 06.01.02: pp. 21-39
ISSN 2345-9271 (Print)
ISSN 2961-5348 (Online)
DOI: http://doi.org/10.4038/sljbf.v6i1.39

Abstract

This study aims to examine the effects of COVID-19 on the profitability of commercial banks in the South Asian region. This study investigates and evaluates licensed commercial banks' financial performance in Sri Lanka, Bangladesh, and Pakistan. The data were drawn from quarterly financial statements over 15 quarters from 2018 Q1 to 2021 Q3. Twelve commercial banks in Sri Lanka and Bangladesh and ten commercial banks in Pakistan have been taken as the sample for this study. Capital adequacy ratio, Loan to deposit ratio, Non-performing loan ratio, and COVID-19 are the independent variables. Return on assets and Return on equity are the profitability proxies, and bank size and bank ownership are the control variables. Panel regression was used to analyze the data. The findings revealed that the COVID-19 pandemic significantly impacts the profitability of commercial banks in Sri Lanka. And on the contrary, the COVID-19 pandemic significantly negatively impacts the profitability of commercial banks in Pakistan. Furthermore, Pakistan's banking sector was found as the primarily affected banking sector in the South Asian region in terms of profitability during the pandemic. The outcomes of this study suggest that banks should frame more into risk management strategies and Basel III requirements. In addition, irrespective of the size of the banks, the managers should not underplay the importance of capital adequacy. Hence consistent evaluation of the CAR is vital. And also, this study recommends that bank managers should focus more on credit risk management, particularly in turbulent conditions.

Keywords: Bangladesh, Capital adequacy ratio, Commercial banks, COVID-19, Loan to deposit ratio, Non-performing loan ratio Profitability, Pakistan, South Asia, Sri Lanka

J M R Fernando
(Corresponding Author)
Department of Finance, Faculty of Commerce & Management Studies, University of Kelaniya, Sri Lanka.
Email: ruwani@kln.ac.lk
Tel: +94 71 4491 024
https://orcid.org/0000-0002-1345-4699

S A M Ishari
Email: maduni121@gmail.com
Department of Finance, Faculty of Commerce & Management Studies, University of Kelaniya, Sri Lanka.

1. INTRODUCTION

During the last quarter of 2019 novel coronavirus, referred to as COVID-19, originated in the city of Wuhan in china and later spread all over the world causing tragedy to humanity and huge damage to the economy. The global economy entered 2020 with a mixed yield, forecasting increased growth but was astonished at the pandemic COVID-19 at the beginning of the year. With mobility restrictions in place, the usual business transactions and economic activities were also halted leading to a significant drop in the economies around the world and this was seen in small economies such as Sri Lanka where the economic growth in 2020 was -3.57% (World Bank). On top of this economic context, the banking sector among other primary sectors was drastically affected.

During the year 2019, the total assets holdings of the financial sector of Sri Lanka was dominated by the banking sector with 72.5% while other deposits taking financial institutions and specialized financial institutions held 6.9% and 1.8% of total assets of the financial system respectively. The Central Bank of Sri Lanka highlights that the financial sector performance was also affected during 2019 emphasizing the point that even before the COVID-19 pandemic, the subdued economic activities of Sri Lanka were affecting the financial sector. Hence the banking sector seemed to be under continued stress. When considering different economies in the world, particularly the role and the behavior of the South Asian banking sector need to be assessed in detail. Accordingly, this study analyzes the effects of COVID-19 on the profitability of commercial banks using Sri Lanka, Bangladesh, and Pakistan.

Furthermore, the COVID-19 pandemic affected economies around the world in various ways. Those consequences are still recurring, and the day-to-day adverse effects are affecting human lives and the entire economic system as a whole. Table 1 presents the key indicators for Sri Lanka, Bangladesh, and Pakistan assessing the impact of the COVID-19 pandemic on the macroeconomic conditions in terms of GDP growth rate, unemployment, and inflation rate as well as the overall banking system.

COVID-19 was an unprecedented challenge for our modern societies and health systems. The consequences of the pandemic for our global economy and financial sector are unpredictable. It damaged economies across the world, including financial markets and institutions in all possible dimensions. As with the previous downturns, some level of bank failures would be expected due to the increase in individual and business defaults.

Banks generally face a broader range of risks relative to other financial institutions (in terms of interest rate, liquidity, credit, market, and reputational risks) and are more closely interconnected with the everyday activities of economic agents, namely individuals; firms; and the government (Carey & Stulz, 2007). Banks traditionally deal with a wide range of risks and the pandemic is going to increase their severity through liquidity crunch, credit squeeze, increase in non-performing assets and default rates, reducing returns from loans and investments, declining

market interest rates, and triggering contagious bank-run (Larbi-Odam et al., 2020). This is likely to be worse in developing countries where banks serve millions of individuals and firms with relatively less financial and economic capacity under a weaker policy environment and aggressive market competition. Thus, it tends to be much more vulnerable in developing markets.

Table 1: Key Indicators for Sri Lanka, Bangladesh and Pakistan

	Sri Lanka		**Bangladesh**		**Pakistan**	
	2019	**2020**	**2019**	**2020**	**2019**	**2020**
Economy						
GDP Growth Rate	2.255	-3.569	8.153	3.509	1.145	-0.935
Population Growth Rate	0.6	0.5	1.3	1.3	1.9	1.8
Unemployment Rate	4.8	5.5	4.22	5.3	3.98	4.65
Inflation Rate	4.3	4.56	5.48	5.65	10.58	9.74
Banking Sector						
Interest Rates on Savings Deposits	4.0	3.5	3.3	2.8	8.6	5.9
Interest Rates on Time Deposits	9.8	5.3	8.2	6.5	8.0	6.2
NPLs (% of total gross loans)	3.4	4.7	8.6	9.7	8.6	9.2
ROA	1.4	1.4	1.5	1.9 (June-20)	1.5	1.8
ROE	10.3	11.4	11.3	14.6 (June-20)	11.3	13.8
CAR	17.2	16.5	11.6	11.6 (June-20)	17.0	18.6

The COVID-19 pandemic particularly in developing countries could result in a complex set of simultaneous outcomes: a mass default of loans; recoveries becoming complex and harder; savings exhausted by customers to support daily living; decreased availability of loanable funds and depressed new investment demand (Lagoarde-Segot & Leoni, 2013).

In most developing and many emerging economies, banks are the backbone of the economy as they are the dominant source for both long-term and short-term capital financing. The pandemic could substantially threaten the performance, survival, and growth of banks in developing countries, particularly in those where banks play a dominant role in the economy. Understanding the effects on banks in emerging economies could render valuable information about the implications of the pandemic for developing countries.

By analyzing the extant literature, it was found that very few studies have been conducted researching the effect of COVID-19 on the banking sector's performance. For example, Demirgüç-Kunt, Pedraza, and Ruiz-Ortega (2021) examined the effect of Covid-19 on banking sector performances around the world covering 53 countries. They found that the effect of COVID-19 on banks was more severe compared to corporate and non-bank financial institutions. Gazi et al., in 2022 examine the same issue in the Bangladesh context. They reveal that banks reported a high non-performing loan rate, but held more liquid assets, and utilized a high

amount of hedging capital. Ichsan et al., (2021) also examine the determinants of Sharia Bank's Financial Performance during the Covid-19 Pandemic. Fakhri and Darmawan (2021) conducted a study to compare the performances between Islamic and conventional banking during the covid-19 period.

The current study thus contributes to the extant literature by exploring the impact of bank-specific variables on the profitability of banks and making a comparison between three South Asian countries as there is a dearth of studies in the Sri Lankan context. Moreover, this study tests whether bank size has a moderating effect on the relationship between Covid-19 and the bank's profitability. This study considered capital adequacy ratio, loans to deposit ratio, non-performing loans ratio, and ownership in testing the effect on the bank's profitability. The study findings will help in particular the banking sector in the South Asian region to formulate corrective strategies to face an economic crisis like COVID-19. The rest of the paper is organized in sections. Section 2 reviews the general literature relating to Covid-19 and banking sector performances. Section 3 outlines the research methodology. Section 4 discusses the data analysis, section 5 presents the study findings. Finally, section 6 summarises and concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The Effects of COVID-19 on the Globe

The COVID-19 pandemic has significantly challenged every order of the modern world in a number of ways. Mainly the immediate effects were observed on societal connection, economic degradation, and sudden changes incurred in the psychological status of human beings, followed by many different contexts at national, organizational, and individuals level (Kozak, 2021). This is one of the events which have not been predicted by the society's experts or any organization and therefore took the world a survey (Obeidat et al., 2021). However, it is crucial to understand and dissect its impact on the different sectors since it provides insight into how some industries are dependent on many factors in the external environment (Karim et al., 2021). Thus, with this context, the organizations need to determine how the challenge of COVID-19 has impacted their carefully built structures, understand weaknesses, and hence take immediate measures on protecting the vulnerable grounds.

And also Bobade and Alex (2020) and Lelissa (2020) stated that the impact of COVID-19 on countries such as the Indian banking sector was much more disastrous considering that it created issues such as inability to access the data or infrastructure, leading to reduce serviceability, temporary correction in the valuation of FDIs, with an expected reduction in returns, difficulty in accessing branches for routine operations. Debt default, reduction of non-essential operations, and significant reduction of domestic and cross-border trade.

Also, the effect of COVID-19 has been observed in several economies in the world since it seems that every economy in the world has been affected drastically (World Bank, 2021). The major economies in the world also faced a drastic decline in GDP

growth, as South Korea has seen negative economic growth and hence this was their first such incident during the past fifteen years (Advocata Report, 2021).

In terms of the concerned industries, the effect of the COVID-19, mobility restrictions, and global economic conditions can be observed in many countries. The United Kingdom, with one of the largest banking sectors in the world, can be considered to be a classic example of how COVID-19 has impacted the banking sector. Mainly even before COVID-19, there was a major concern around the world regarding the economic impact due to the USA and China trade wars. However, this will keep on defining more and more regards to the COVID-19 pandemic too. Thus, showcasing that there needs to be a more strategic approach, linking opportunities, threats, weaknesses, and strengths altogether to build a sustainable solution (World Bank, 2021). Therefore, creating a much better stance to understand the use of strategy in terms of managing economic activities amidst a pandemic.

In terms of the impact of COVID-19 on the Sri Lankan banking sector, the effect on financial aspects was immediate (KPMG Report, 2020). However, there tends to be a much broader challenge in terms of the long-haul financial impact of COVID-19 on Sri Lankan banks due to many interventions by the government too (World Bank).

One of the most important considerations given regarding the effect of the pandemic on the banking sector (Disemadi & Shaleh, 2020) that there seems to be long-standing understanding among the scholars and policymakers (including a regulator) that the banking sector is at a better level than other businesses in combating uncertainties and shocks. Yet, the accuracy of such statements does need to be tested after the actual scenario analysis is in the Sri Lankan banking sector.

2.2. COVID-19 and the Sri Lankan Banking Sector

With the start of the pandemic, the banking sector showcased a strong position and hence has been focused on growth orientation. But the 2019 Easter attacks and concurrently the loss of major income from the tourism industry have created a somewhat definite backlog for the economy in the first quarter of 2020. Therefore, this loss of cash flow and revenue has been continuing even after 2020 and thus has a very backlog of events sustaining so far (World Bank, 2021). Especially, Sri Lankan rupee to US dollar depreciated by 6.4% YTD largely due to an outflow of LKR 89.7 billion since the end of January from government securities (Advocata Institute, 2020).

Daily FT (2021) recorded that in May 2020, Fitch revised the Operating Environment (OE) score for banks in Sri Lanka to B- from B. The outlook on the OE score is negative, the same as the outlook on Sri Lanka's long-term issuer default rating, which was downgraded to B- in April 2020. The prolonged impact of COVID-19 has caused ripples in the domestic economy, leaving a substantial responsibility on the banking sector to provide support. This has resulted in significant pressure on banks' asset quality and profitability.

Further, the Daily FT (2020) and KPMG Report (2020) stated that the Sri Lankan banking sector has been affected at a much lower level than the other regional and global economies. Yet the reports highlighted that with the negative economic impact of the April 2019 Easter attacks, Sri Lanka was progressing towards a gradual recovery in early 2020. Thus since April 2019, the banking sector also suffered through the loss of foreign currency and cash flow insurgence in the country with the loss of the tourism industry. However, the occurrence of the COVID-19 pandemic halted such progress, with the economy now likely to experience further downward pressure, as the global economy, as well as the country's main export markets, are yet to fully recover. However, compared to the Asian banking sector, primarily the Indian and Pakistan banking sectors, Sri Lankan banking sector seems to have been less affected (Refer the Table 1).

Thus, the CBSL report (2020) on the banking sector review states that the banking sector profitability was helped by tax reforms introduced in December 2019, in the form of the removal of the debt repayment levy (7%) and nation-building tax (2%). Although an announcement was made that corporate income tax will be reduced from 28% to 24%. As per the KPMG report on the banking sector analysis of the country, out of all major industries affected by the COVID-19, the Sri Lankan banking sector has been heavily affected. Thus, the report states that the banking sector's Net Interest Income (NII) declined by 3.3% Year by Year revenue due to slow credit growth, declining interest rates, and debt moratoriums imposed. Net Interest Margin (NIM) continued to trend lower, falling to 3.2% in 2Q of 2020, from 3.4% in 1Q of 2020, a further decrease from 3.6% recorded in 2019 (KPMG Report, 2020).

2.3. Hypotheses Development

When considering the growing volume of literature review, there is a lack of studies that have examined the effects of COVID-19 on organizational-level performance. Furthermore, the shortcoming is the lack of testing for the impact of the crisis on the overall market level, as such an investigation expects a homogeneous impact on the sector performance. And also the impact of COVID-19 on the performance of the banking sector has been explored by a small number of studies. For example, Demirgüç-Kunt, et al., (2021) examined the effect of Covid-19 on banking sector performances around the world. Their study covers 53 countries. They suggest that the banking sector was affected adversely during COVID-19 compared to corporates as well as other non-bank financial institutions. Their study further reveals that public and larger banks' stocks were largely affected by Covid-19. Gazi et al., (2022), examine the impact of COVID-19 on the financial performance and profitability of the banking sector in Bangladesh. They found that the banks that performed better during the pre-pandemic period of COVID-19 continued the same performances even during COVID-19. Further, inappropriate bank size reduced the banks' profitability. Ichsan et al., (2021) explored the determinant of Sharia Bank's Financial Performance during the Covid-19 Pandemic. Fakhri and Darmawan (2021), compared banking sector performance, in particular the Islamic and conventional banking during the covid-19 period.

However, there is a lack of studies relating to the Sri Lankan banking sector and a study on a comparison between banks in the South Asian region representing emerging market context. Therefore, this research contributes to the literature by examining the impact of COVID-19 on the profitability of commercial banks with evidence from the South Asian region. Using extensive banking-level data primarily focused on the pandemic period, this study will provide insights into how COVID-19 affects the banking sector performance in emerging market contexts. Thus, there are three main hypotheses to test in this study.

H1: COVID-19 pandemic has a significant impact on banks' profitability

H2: Bank size moderate the impact of COVID-19 on banks' profitability

H3: Bank ownership moderate the impact of COVID-19 on banks' profitability

3. RESEARCH METHODOLOGY

3.1. Data, population, sample, and sampling procedure

This study adapts the positivism philosophy and follows a deductive approach. The study used in this study is the experimental research strategy and is based on a quantitative research method. The researchers use a mix of convenience and purposive sampling methods to select banks based on the accessibility of published quarterly financial statements which complete financial information, thus the secondary data gathered from the quarterly financial statements of respective banks over the period from 2018 Q1 to 2021 Q3 used for the data analysis. The population consists of all the Licensed Commercial banks in Sri Lanka, Bangladesh, and Pakistan. There are 24 Licensed Commercial Banks as of 31st March 2021, including 2 state-owned banks, 11 privately owned banks, and 11 foreign banks. Foreign banks were not included as they do not provide the data specifically for Sri Lankan operations and do not provide adequate information on some variables (Udawatta et al., 2017). Bangladesh banks are primarily categorized into two types: Scheduled and Non-Scheduled banks. The population of Bangladesh's banking sector consists of 6 state-owned banks; 33 private conventional banks, 10 Islami Shariah-based private conventional banks; 9 foreign banks; and 5 non-conventional banks respectively. In this study, the researcher excluded 10 Islamic Shariah-based private conventional banks; 9 foreign banks; and 5 non-conventional banks from the sample. And the population of Pakistan's banking sector consists of 5 public sector banks; 15 local private banks; 5 Islamic banks; and 4 foreign banks. And also, Islamic banks and foreign banks of Pakistan will not be included in the sample.

3.2. The Empirical Model and data analysis

The following panel regression model employs to test the hypotheses specified in section 2. The operationalization of the variables is given in the appendix (Table A1).

$$ROA_{it}/ROE_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 LDR_{it} + \beta_3 NPLR_{it} + \beta_4 COVID_{dummyit} + \beta_5 Size_{it} + \beta_6 Ownership_{it} + \beta_7 Size_{it} * COVID_{dummyit} + \beta_8 Ownership_{it} * COVID_{dummyit} + \varepsilon_{it} \quad \ldots\ldots(1)$$

Where,
ROA = Return on Assets
ROE = Return on Equity
CAR = Capital Adequacy Ratio
LDR = Loans to Deposit Ratio
NPLR = Non-Performing Loan Ratio
COVID $_{dummy}$ = 1 if the period belongs to the COVID-19 pandemic period and otherwise zero
Size = Bank Size
Ownership $_{dummy}$ = 1 if the bank is a private sector bank and otherwise zero

4. FINDINGS AND DISCUSSION

4.1. Descriptive Statistics Analysis

Table 2 presents the descriptive statistics of the study variables for the three countries. The mean value of ROA is 1.23% and the standard deviation is 0.68% for the Sri Lankan banking sector. This means commercial banks in Sri Lanka, under the period of study, earned on average 1.23% return from their total assets. The highest ROA for a bank in a particular period is 2.25% and the minimum ratio is -0.74%. The highest value of ROE is 19.72% and the lowest value of the ROE is -4.74%. Furthermore, the mean value of ROE is 10.36% and the standard deviation is 6.15%. This means commercial banks in Sri Lanka, under the period of study, earned on average 10.36% return from their total equity. According to Table 1, the highest value of ROA of selected commercial banks in Bangladesh is 1.61%, the average value of ROA is 0.75% and the lowest value is 0.07%. The highest value of ROE is 16.06%, the average value is 5.83% and the minimum value of ROE is 0.07%. Table 1, illustrates the descriptive statistics of the Pakistan banking sector, with a mean value of ROA is 0.82%, the highest ROA is 1.8% and a minimum ROA ratio is 0.18%. The highest ROE is 16.61%, 1.96% is the lowest value and 7.57% is the average value of ROE. Based on the mean values shown in the above table, the highest mean values of the profitability proxies (ROA & ROE) are recorded in the banking sector in Sri Lanka (1.23%, 10.36%). And also the Bangladesh banking sector has the lowest ROA (0.75%) and ROE (5.83%) values among these countries based on the mean values.

The mean value of the CAR ratio is 15.92%. It reveals that equity represents nearly 15.92% of the total risk-weighted assets. The highest CAR ratio of the Sri Lankan banks in a particular period is 22.99% and the minimum ratio is 13.1%. The standard deviation of the CAR ratio is 2.42%. The highest Loans to Deposit Ratio is 112.55%, the average value is 95.30%, and the lowest 81.95%. The LDR ratio is 81.20%. In the same period, the highest value of NPLR of selected commercial banks in Sri Lanka was 11.14% and the minimum ratio was 2.60%.

Furthermore, the mean value of NPLR is 5.22% and the standard deviation is 1.93%. The highest value of LNTA of selected commercial banks is 21.995 which indicates LKR million 3,566,779 and the lowest value of LNTA is 17.336 which indicates LKR million 33,803. For the same period, the average value of LNTA is 20.031 and the standard deviation value is 1.184.

In Bangladesh's banking sector context, the highest CAR is 15.23%, the average CAR is 13.30% and the lowest CAR is 10.84%. The highest value, the average value, and the lowest value of LDR are 106.5%, 91.74%, and 69.25% respectively in Bangladesh's banking sector. Furthermore, the highest NPLR is 17.90%, the average NPLR is 6.58% and the minimum value of NPLR is 2.55%. The highest LNTA (Bank Size), average LNTA, and lowest LNTA are 27.008, 26.399, and 25.141 respectively. That represents the total assets value of Bangladesh's banking sector as 544,615 BDT million, 291,386 BDT million, and 481,551 BDT million. And also, only private sector commercial banks in Bangladesh are used for this data analysis due to the unavailability of financial statements of the state-owned commercial banks.

In the Pakistan context, the maximum CAR is 22.88%, the lowest CAR ratio is 12.28% and the mean value is 16.46%. And also the highest value, the average value, and the lowest value of LDR are 82.71%, 59.11%, and 44.17% respectively. Furthermore, the highest NPLR is 16.7% of the selected banks in Pakistan and the lowest NPLR ratio is 0.99%. The average NPLR ratio is 7.18%. The highest LNTA, average LNTA, and lowest LNTA are 22.087, 20.768, and 19.137 respectively. When considering the non-performing loans, the highest mean value of NPLR can be seen in the Pakistan banking sector is 7.18%. And the banking sector in Sri Lanka has the lowest mean value of NPLR compared to Bangladesh and Pakistan (5.22%). Accordingly, Pakistan's banking sector has the highest mean value of CAR at 16.46% and Bangladesh has the lowest value which is 13.30%. Furthermore, Sri Lanka has the highest mean value of the LDR ratio (95.30%) compared to Bangladesh and Pakistan. The banking sector in Pakistan has the lowest mean value of LDR among the three countries and that can be stated as 59.11%.

Table 2: Summary Statistics in Sri Lanka, Bangladesh, and Pakistan

Panel	Variable	Mean	Median	Max	Min	Std. Dev.	Obs.
Panel A: Sri Lanka	ROA	1.228	1.255	2.245	-0.74	0.682	180
	ROE	10.361	11.275	19.715	-4.74	6.151	180
	CAR	15.92	15.46	22.99	13.1	2.42	180
	LDR	95.30	95.255	112.55	81.195	8.372	180
	NPLR	5.22	5.135	11.135	2.595	1.925	180
Panel B: Bangladesh	ROA	0.754	0.67	1.61	0.065	0.467	180
	ROE	5.830	5.145	16.06	0.07	3.946	180
	CAR	13.30	13.33	15.23	10.84	1.168	180
	LDR	91.74	93.76	106.5	69.25	9.214	180
	NPLR	6.58	5.595	17.90	2.55	3.774	180
Panel C: Pakistan	ROA	0.816	0.74	1.8	0.18	0.485	150
	ROE	7.573	6.625	16.61	1.96	1.96	150
	CAR	16.46	16.26	22.88	12.28	3.16	150
	LDR	59.11	56.9	82.71	44.17	10.53	150
	NPLR	7.183	6.74	16.7	0.99	4.003	150

4.2. Correlation Analysis

As per panel A (Sri Lanka) of Table 3, there is a significant and negative relationship between CAR and ROA at -0.5328. A significant and negative correlation between CAR and ROE as -0.6551 was also reported in panel A. Furthermore, LDR and ROA; and LDR and ROE have a negative and significant relationship with -0.1925 and -0.3218 correlation coefficients respectively. NPLR and ROA significantly and negatively correlated with the coefficient value of -0.6083. Also, the correlation matrix shows that there is a significant and negative relationship between NPLR and ROE as -0.6129.

According to panel B results, the Bangladesh banking sector, CAR has a significant and positive relationship with both ROA and ROE. The coefficient value between CAR and ROE is 0.3502. And also CAR and ROE are correlated with a coefficient value of 0.3375. Both are significant at a 1% level. Furthermore, LDR and NPLR are negatively correlated with ROA and ROE and they are significant. The coefficient value between LDR and ROA is -0.2811 and -0.2287 indicates the negative relationship between LDR and ROE. They are also significant at 1% level. NPLR and ROA are correlated with a coefficient value of -0.3776 and NPLR and ROE are correlated with a value of -0.4143. Furthermore, NPLR is significant at a 1% level with ROA and ROE.

Table 3: Correlation Matrix

	ROA	ROE	CAR	LDR	NPLR	Covid_D	LNTA	Owner-Dummy
Panel A: Sri Lanka								
ROA	1.0000							
ROE	0.8333**	1.0000						
CAR	-0.5328**	-0.6551**	1.0000					
LDR	-0.1925**	-0.3218**	0.1081	1.0000				
NPLR	-0.6083**	-0.6129**	0.4994**	0.0101	1.0000			
Covid- Dummy	-0.1040	-0.0745	0.0673	-0.1699*	0.3892**	1.0000		
LNTA	0.5162**	0.6568**	-0.5103**	-0.5012**	-0.5332**	0.0810	1.0000	
Owner- Dummy	0.0233**	-0.3390**	0.2290**	0.3628**	0.3228**	0.0157**	-0.5670**	1.0000
Panel B: Bangladesh								
ROA	1.0000							
ROE	0.9147**	1.0000						
CAR	0.3502**	0.3375**	1.0000					
LDR	-0.2811**	-0.2287**	-0.2273**	1.0000				
NPLR	-0.3776**	-0.4143**	-0.6527**	0.2546**	1.0000			
Covid- Dummy	-0.0277	0.0507	0.1832*	-0.0978	-0.0457	1.0000		
LNTA	-0.2344**	-0.0674	-0.0766	0.3125**	0.1206	0.1839**	1.0000	

Panel C: Pakistan								
ROA	1.0000							
ROE	0.8643**	1.0000						
CAR	0.4005**	0.0649	1.0000					
LDR	-0.2721**	-0.1811*	-0.4518**	1.0000				
NPLR	0.1061	-0.0008	0.1221	0.0165	1.0000			
Covid_ Dummy	0.1766*	0.1829*	0.2939**	-0.3410**	0.0401	1.0000		
LNTA	0.2660**	0.1290	0.3970**	-0.5814**	0.3079**	0.1727*	1.0000	
Owner_ Dummy	0.1482*	0.0452	0.1247	-0.1167	-0.5712**	-0.0000**	0.1498	1.0000

Panel C of Table 3 shows the correlation analysis for the selected commercial banks in Pakistan. Accordingly, CAR has a positive relationship with ROA and ROE. Although the relationship between CAR and ROA is significant at a 1% level, the relationship between CAR and ROE is not significant. And there is a negative relationship between LDR and ROA with a coefficient value of -0.2721. It is significant at the 1% level. LDR is negatively correlated with ROE as the coefficient value of -0.1811. It is significant at the 5% level. NPLR and ROA are positively correlated with a coefficient value of 0.1061. This is different from the situations in the banking sectors in Sri Lanka and Bangladesh. Because in both banking sectors, NPLR had a negative relationship with ROA. But, NPLR and ROE have a negative relationship with a coefficient value of -0.0008. And also those are not significant. The correlation results illustrate that there is no multicollinearity problem among the independent variables for the selected commercial banks in Sri Lanka, Bangladesh, and Pakistan.

4.3 Regression Analysis

The panel regression employs the selection of the regression model. As per the analysis, the random effect model was chosen to test the hypotheses relating to the Sri Lankan and Bangladesh banking sector whereas the fixed effect model was chosen for the Pakistan banking sector analysis based on the Hausman test under the model of ROA as the dependent variable. Table 4 shows the results on three panels for each country.

Table 4: Regression Results for ROA

ROA	**Panel A: Sri Lanka**		**Panel B: Bangladesh**		**Panel C: Pakistan**	
	Coef.	**Std. Error**	**Coef.**	**Std. Error**	**Coef.**	**Std. Error**
CAR	0.0108	0.025	0.0598	0.0414	0.0895**	0.0288
LDR	-0.0063	0.0049	-0.0092*	0.005	0.0061	0.0075
NPLR	-0.2361**	0.0247	-0.0211*	0.0137	0.0028	0.0389
Covid_Dummy	3.292**	1.162	3.7207	3.7161	-3.9429*	1.7097
LNTA	0.2473*	0.1137	-0.0409	0.1442	1.5064**	0.3818
Ownership	0.3356	0.2529	0	(omitted)	0	(omitted)
LNTA*Covid-19	-0.161	0.0537	-0.1431	0.141	0.1972*	0.0817
Ownership*Covid-19	0.1057	0.1651	0	(omitted)	0.2874*	0.1386
Constant	-2.4187	2.6052	2.0669	3.805	-32.0246	7.9729

R-sq:	Within	0.3771		0.0036		0.3497	
	Between	0.6228		0.7514		0.2177	
	Overall	0.547		0.2208		0.1281	
Wald chi2 (8)	112.81		19.52		6.99		
Prob > chi2	0.0000		0.0034		0.0000		
Year - 2019					-0.2772*	0.0905	
2020					-0.7388*	0.1615	
2021					-1.1641*	0.1894	

Note: * and ** represents the significance level of the coefficient at 1% and 5% respectively.

According to the above results, the overall model is significant at a 1% level under each panel. The explanatory power of the model is 54%, 22%, and 12% for panels A, B, and C respectively. CAR of panel A has a positive and insignificant relationship with the financial performance measured by ROA. The result shows that LDR has a negative and insignificant effect on the banks' profitability measured by ROA. Furthermore, the probability value of t-test of the NPLR is 0.000 and this explains that NPLR is a highly significant variable. And also, NPLR harms the profitability of commercial banks in Sri Lanka. In this study, the researcher is mainly concerned about the effects of COVID-19 on the profitability of commercial banks. Thus, the researcher considers COVID-19 as a dummy variable in this model. Based on the results this has a positive and significant effect on the financial performance of the banking sector in Sri Lanka ($\beta = 3.2922$, $p = 0.005$). Evidence of this can be seen in the descriptive statistics comparison table and the highest profitability proxies are recorded in Sri Lanka. Furthermore, some recent studies have also found that the COVID-19 pandemic can have a positive impact on the bank's profitability in the short run and they stated that this can be varied across banks and countries (Katusiime, 2021).

When considering the control variables, bank size ($\beta = 0.2473$) and bank ownership ($\beta = 0.3356$) have positive relationships with the profitability of the banks (ROA) and only the bank size is significant which is at 5%. Furthermore, bank ownership does not have a moderating effect on the performance of the banking sector during the COVID-19 pandemic. However, bank size reduces the effect of Covid-19 on a bank's profitability as it shows a negative effect at 5% significance level.

As per panel B, the overall model is significant at 1% level. The only significant variables in this model are LDR and NPLR with a negative impact on ROA. According to panel C of Table 4, CAR has a positive and significant effect on the profitability of the selected commercial banks in Pakistan measured by ROA. Furthermore, the COVID-19 variable has a negative effect on the financial performance of the banking sector in Pakistan measured by ROA. And it is significant at 5% level. The bank size has a positive effect on the profitability of the banking sector in Pakistan and it is significant at 1% level. Bank size and bank ownership show a moderating effect on the profitability of banks in Pakistan during the COVID-19 pandemic. Finally, based on the results the overall model is significant at 1% level.

Table 5 shows the results for the panel regression for Sri Lanka, Bangladesh, and Pakistan under the panel A, B and C. Panel A results show that both LDR and NPLR have a negative and significant effect on the financial performance of the banking industry of Sri Lanka with the coefficient values of -0.1051 and -1.7613 respectively. The results further show that COVID-19 has a significant positive effect on the profitability of the banking sector. That can be implied by the coefficient value of 24.0141 at a significant level of 1%. The bank size also shows a positive and significant effect on the bank's profitability. Bank size also shows a moderating effect with a negative sign on the relationship between Covid-19 and the bank's profitability.

Table 5: Regression Results for ROE

ROE	**Panel A: Sri Lanka**		**Panel B: Bangladesh**		**Panel C: Pakistan**	
	Coef.	**Std. Error**	**Coef.**	**Std. Error**	**Coef.**	**Std. Error**
CAR	-0.1627	0.2036	0.2544	0.3659	0.6847**	0.2598
LDR	-0.1051**	0.0397	-0.0873**	0.0500	0.0605	0.0684
NPLR	-1.7613**	0.1962	-0.2157	0.1286	0.0345	0.3511
Covid_Dummy	24.0141**	9.1798	31.6153	31.1167	-32.0858*	15.4097
LNTA	2.4465*	1.0802	1.2547	1.4438	18.2926**	3.4414
Ownership_Dummy	0.8104	2.1732	0	(omitted)	0	(omitted)
LNTA*Covid	-1.0956*	0.4246	-1.1996	1.1815	1.6065*	0.7368
Ownership*Covid	-1.1671	1.3071	0	(omitted)	2.7044*	1.2498
Constant	-18.0514	23.8857	-21.1732	37.9276	-383.8952	71.8588
R-squ.	within	0.3567	Within	0.0108	Within	0.3781
	between	0.6397	Between	0.5722	Between	0.0154
	overall	0.573	Overall	0.1865	Overall	0.0208
Year - 2019					-3.2429	0.8158
2020					-7.9708	1.4563
2021					-11.6699	1.7072
Wald chi2 (8)	102.92		10.63		7.9	
Prob > chi2	0		0.0039		0	

Note: * and ** represents the significance level of the coefficient at 1% and 5% respectively.

Panel B of Table 5 shows the regression results for model 2 (ROE) in the Bangladesh banking sector. The results show that LDR with a coefficient of -0.0873 has a negative and significant effect on the bank's profitability. None of the other variables are significant in model 2 under panel B. Panel C of Table 5, shows the results for the Pakistan banking sector taking ROE as the proxy for profitability.

The results show that CAR has a positive and significant effect on the profitability (ROE) of the selected commercial banks in Pakistan with the coefficient value of 0.6847 and at 1% significance level. Furthermore, both LDR and NPLR variables have a positive effect on the profitability of banks, but those are not significant. The coefficient value of the COVID-19 variable is -32.0858 and it is significant at 5% level. Bank size (LNTA) has a positive effect on ROE (β = 18.2926) and it is significant at 1% level. The above results show both bank size (LNTA*Covid) and bank ownership (Ownership*Covid) have a positive and significant moderating effect on the profitability of selected commercial banks in Pakistan during the COVID-19 pandemic and are significant at 5% level.

5. DISCUSSION AND FINDINGS

In summary, based on the results of the analysis, this study concludes that the COVID-19 pandemic has a significant impact on the profitability of commercial banks. In both models (ROA & ROE) COVID-19 pandemic has had a significant impact on the banks profitability in the contexts of Sri Lanka and Pakistan. Furthermore, the COVID-19 pandemic has had a positive impact on the Sri Lankan banks' profitability and as a result, this can be seen in the descriptive statistics comparison table. The highest mean values of ROA and ROE are recorded in Sri Lanka compared to Bangladesh and Pakistan (Bobade & Alex, 2020). And COVID-19 pandemic has had a negative impact on the Pakistan banking sector profitability (Elnahass et al., 2021).

According to Barua and Barua (2020), the COVID-19 pandemic has a significant threat to the Bangladesh banking sector. Based on the results of this study, this situation is different and the COVID-19 impact is not significant in Bangladesh. This may be due to the fact that the analysis was conducted using only the private sector commercial banks in Bangladesh based on the availability of quarterly financial statements. CAR has a significant positive impact on Pakistan banks' profitability at 5% level. These results are in line with the results of Suganya and Kengatharan (2018) who also found a positive significant impact between CAR and the profitability of commercial banks. Although the CAR has a positive effect on the profitability of the banking sectors in Sri Lanka and Bangladesh, it is not significant. And also it has a negative impact on ROE in Sri Lanka. The researcher can suggest that those countries have not paid much attention to the Basel III requirements.

Generally, high loans to deposit ratio (LDR) indicates that banks can earn higher profits and on the other hand it is a huge risk to the banks (Hasna et al., 2020). Accordingly, this study states that LDR has a positive impact on the bank's profitability in Pakistan. And also this has a negative impact on the bank's profitability in Sri Lanka and Bangladesh. Furthermore, LDR represents the banks' liquidity position. If this ratio is high, banks cannot meet their unforeseen fund requirements.

Sri Lanka has the highest mean value of LDR compared to Bangladesh and Pakistan. This can be seen in the descriptive statistics comparison table (table 2)

clearly and also as a result of this banking sector in Sri Lanka has recorded the highest profitability proxies. The lowest mean value of LDR has been recorded in the Pakistan banking sector. Therefore, the researcher can suggest that during the COVID-19 pandemic, the banking sector in Pakistan focused on unforeseen fund requirements rather than lending.

NPLR is the highly significant variable in Sri Lanka compared to Bangladesh and Pakistan and also among all other variables. The results are also in line with the results of Suganya and Kengatharan (2018) who also found that NPLR has a significant negative impact on banks' profitability. Furthermore, NPLR has a negative insignificant effect on the profitability (ROA) of the Bangladesh banking sector (Ichsan et al., 2021). And this is a positive insignificant effect on the Pakistan banking sector profitability.

More importantly, bank size as a moderating variable has a significant impact on the financial performance of the banking sectors in Sri Lanka and Pakistan during the COVID-19 pandemic. And that negatively impacts the Sri Lankan banking sector profitability. On the other hand, the profitability of the Sri Lankan and Pakistani banks have a positive effect on the bank size during the pandemic. Considering the findings of the Barua and Barua (2020) study suggest that large banks are relatively vulnerable. Bank ownership also has a significant positive impact on the financial performance of Pakistan commercial banks and also shows a moderating effect on the relationship between profitability and the Covid-19 period.

6. CONCLUSION

This study attempts to analyze the effects of COVID-19 on banks' profitability using quantitative secondary data available in quarterly financial statements of commercial banks in Sri Lanka, Bangladesh, and Pakistan. This study aimed to fill the gap in the literature and provide empirical evidence about the effects of COVID-19 on the profitability of commercial banks. Thus, this study contributes to the extant literature by making a comparison among the selected banks representing the South Asian region. The relationship between the dependent variable (profitability) and independent variables was assessed for statistical significance, using ROA and ROE as proxies for the profitability, and CAR, LDR, NPLR, and COVID-19 as the independent variables. And also bank size and bank ownership were used as the control variables and as moderating variables.

The findings of the descriptive statistics demonstrate a higher deviation between all the variables. This could be explained by the effects of the COVID-19 pandemic which makes the profitability influenced by more economic factors. Based on the information gathered from this study some recommendations can be put forward to perform the operations of the banking sector well in similar shock events like the COVID-19 pandemic. According to the findings of the study that can be stated as an example, the non-performing loans ratio is a highly significant variable in the Sri Lankan banking sector and it has a negative effect on the profitability of commercial banks. So, considering the impact of non-performing loans, the researcher recommends bank managers put more effort into credit risk management,

especially to control non-performing loans. That is to say, bank managers should evaluate more accurately the ability of the customers to pay back when borrowing.

As to the negative relationship identified between CAR and profitability (ROE) of the Sri Lankan banking sector compared to Bangladesh and Pakistan, banks should pay close attention to how Basel III requirements are met, even though the study could not find a significant impact between CAR and profitability proxies (ROA & ROE) in Sri Lanka and Bangladesh. But this situation is different in the Pakistan banking sector and it can be seen that CAR has had a significant positive impact on the profitability of the banking sector. So, this is yet an essential aspect when managing the risks of commercial banks and should be paid great attention to.

Furthermore, the management of the commercial banks in Sri Lanka, as well as Bangladesh and Pakistan, should design and maintain risk management strategies and frameworks. That will help banks to perform well in a challenging period like the COVID-19 pandemic. In addition, irrespective of the size of the banks, the managers should not underplay the importance of capital adequacy, hence consistent evaluation of the CAR ratio is paramount.

The findings of the study, however, have to be considered in the context of several limitations. Because this study includes only the private sector commercial banks in Bangladesh due to data availability issues. So, this study will require public sector data access in Bangladesh's banking sector to expand the importance and contribution of the study. Future researchers can get access to the data of the Bangladesh public sector commercial banks or they can use another suitable country/ countries rather than Bangladesh to analyze the effects of COVID-19 on the profitability of commercial banks.

REFERENCES

Advocata Institute. (2020, April 3). *How will COVID-19 affect Sri Lanka's economy? Three eminent economists discuss*. https://www.youtube.com/watch?v=KowI4PsE5-E

Barua, B., & Barua, S. (2021). COVID-19 implications for banks: Evidence from an emerging economy. *SN Business & Economics*, *1*(1), 19. https://doi.org/10.1007/s43546-020-00013-w

Bobade, P., & Alex, P. A. (2020). STUDY THE EFFECT OF COVID-19 IN INDIAN BANKING SECTOR. *JournalNX*, 179–184.

Carey, M., & Stulz, R. M. (Eds.). (2007). *The Risks of Financial Institutions*. University of Chicago Press.

Demirgüç-Kunt, A., Pedraza, A., & Ruiz-Ortega, C. (2021). Banking sector performance during the COVID-19 crisis. *Journal of Banking & Finance*, 133, 106305.

Disemadi, S. H., & Shaleh, I. A. (2020). Banking credit restructuring policy on the impact of COVID-19 spread in Indonesia. *Special Issue of Economic Challenges in Covid-19 Outbreak*, *5*(02), 63–70.

Elnahass, M., Trinh, V. Q., & Li, T. (2021). Global banking stability in the shadow of Covid-19 outbreak. *Journal of International Financial Markets, Institutions and Money*, *72*, 101322. https://doi.org/10.1016/j.intfin.2021.101322

Fakhri, U. N., & Darmawan, A. (2021). Comparison of Islamic and conventional banking financial performance during the covid-19 period. International Journal of Islamic Economics and Finance (IJIEF), 4(SI), 19-40.

Ghosh, R., & Saima, F. N. (2021). Resilience of commercial banks of Bangladesh to the shocks caused by COVID-19 pandemic: An application of MCDM-based approaches. *Asian Journal of Accounting Research*, *6*(3), 281–295. https://doi.org/10.1108/AJAR-10-2020-0102

Gazi, M. A. I., Nahiduzzaman, M., Harymawan, I., Masud, A. A., & Dhar, B. K. (2022). Impact of COVID-19 on financial performance and profitability of banking sector in special reference to private commercial banks: empirical evidence from Bangladesh. Sustainability, 14(10), 6260

Hasna, D. P., Ariyani, D. S., Ula, L. F., Putri, R. S., & Yogo Heru Prayitno, S. E. (2020). The Effect of Third-Party Funds and Liquidity (LDR) on Banking Profitability (ROA) (Case Study of BUMN Banks Listed on the Indonesia Stock Exchange from 2012 to 2019). *PalArch's Journal of Archaeology of Egypt / Egyptology*, *17*(4), 2914–2927.

Ichsan, R., Suparmin, S., Yusuf, M., Ismal, R., & Sitompul, S. (2021). Determinant of Sharia Bank's Financial Performance during the Covid-19 Pandemic. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*, 298–309. https://doi.org/10.33258/birci.v4i1.1594

Karim, S., Akhtar, M. U., Tashfeen, R., Raza Rabbani, M., Rahman, A. A. A., & AlAbbas, A. (2021). Sustainable banking regulations pre and during coronavirus outbreak: The moderating role of financial stability. *Economic Research-Ekonomska Istraživanja*, 1–18. https://doi.org/10.1080/1331677X.2021.1993951

Kassem, N., & Sakr, A. (2018). *The Impact of Bank-Specific Characteristics on the Profitability of Commercial Banks in Egypt*. *6*. https://doi.org/10.15640/jfbm.v6n2a8

Korzeb, Z., & Niedziółka, P. (2020). Resistance of commercial banks to the crisis caused by the COVID-19 pandemic: the case of Poland. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, *15*(2), 205-234.

Kozak, S. (2021). The Impact of COVID-19 on Bank Equity and Performance: The Case of Central Eastern South European Countries. *Sustainability*, *13*(19), 11036. https://doi.org/10.3390/su131911036

KPMG Report. (2020). *Sri Lanka Banking Report—November 2020*. 56.

Lelissa, T. (2020). *The Impact of COVID-19 on the Ethiopian Private Banking System* (SSRN Scholarly Paper ID 3624944). Social Science Research Network. https://doi.org/10.2139/ssrn.3624944

Lagoarde-Segot, T., & Leoni, P. L. (2013). Pandemics of the poor and banking stability. *Journal of Banking & Finance*, *37*(11), 4574–4583. https://doi.org/10.1016/j.jbankfin.2013.04.004

Larbi-Odam, C., Awuah, K., & Frimpong-Kwakye, J. (2020). *Financial Risk implications of COVID-19 on banks*. Deloitte. https://www2.deloitte.com/content/dam/Deloitte/gh/Documents/financial-services/gh-financial-risk-implications-of-COVID-19-on-banks.pdf

Obeidat, M., Khataibeh, M., Omet, G., & Tarawneh, A. (2021). The performance of banks in a developing country: Has Covid-19 made any difference. *Pressacademia*, *8*(2), 102–108. https://doi.org/10.17261/Pressacademia.2021.1395

Udawatta, M. D., Jayasanka, K. D., Peiris, P. P. L., & Nanayakkara, G. D. K. D. Impact of Credit Risk Management on Profitability of Commercial Banks of Sri Lanka from 2014 to 2017.

APPENDIX

This study investigates the effects of COVID-19 on the profitability of commercial banks. Operationalization of the variables are developed depending on the related literature available

Table A1: Operationalization of the Variables

	Variable	Description	Measurement	Source
ROA	Dependent Variable	Return on Assets	Net Income / Total Assets	(Kaaya & Pastory, 2013)
ROE	Dependent Variable	Return on Equity	Net Income / Total Equity	(Li et al., 2021)
CAR	Independent Variable	Capital Adequacy Ratio	Total Capital / Risk Weighted Assets	(Epure et al., 2013; Hosna et al., 2009; Kayode et al., n.d.)
LDR	Independent Variable	Loans to Deposit Ratio	Total Loans / Total Deposits	(Kingu et al., 2018; Million et al., 2015)
NPLR	Independent Variable	Non-performing Loans Ratio	NPLs / Total Loans	(Kithinji, 2010)
Bank Size	Control Variable	Natural log of total assets	Natural logarithm of total assets of the banks	(Shalit & Sankar, 1977)
Bank Ownership	Control Variable	State owned and private sector banks	State owned and private sector banks	(La Porta et al., 2002; Micco et al., 2007)