

Macroeconomic Variables and Banking Sector Performance in Sri Lanka

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ABSTRACT

This paper aims to evaluate the effect of selected macroeconomic variables on banking sector performance in Sri Lanka while using ARDL co-integration technique and Granger causality approach. According to study results, in the long run, model 1 shows all explanatory variables have a negative and significant impact on ROE Model 2 shows IR and LER have a positive and significant effect on IM and RR has a negative impact on IM. For model 2 in the short run, the current year's interest rate negatively impacts and the Current year's GDP growth positively impacts IM. It should be carefully controlled by both fiscal and monetary phenomena in Sri Lanka. Because it is needed favorable macroeconomic environment to boost the banking sector as well as the financial market in a country.

Keywords: IM, Macroeconomic variables, ROE, Sri Lanka

1. INTRODUCTION

The banking sector plays an important role in the financial market in every country as well as in the world. In Sri Lanka, as of the end of 2020, the banking industry dominated the financial sector, accounting for 72.5% of total assets (CBSL, 2020). Banks provide liquidity to the entire economy while transforming asset risk characteristics, offering payment services, and making it easier for all organizations to conduct financial operations. It helps to maintain financial system confidence. Therefore, any failure

could have an impact on the activities of all other financial and non-financial businesses, as well as the economy. On the other hand, by improving banking services and expanding the banking network, the banking sector continued to assist economic growth and promote financial inclusion (CBSL, 2021).

The Banking sector in Sri Lanka comprises 24 licensed commercial banks (LCBs) and 6 licensed specialized banks (LSBs). With the largest market share of the financial sector's assets, LCBs dominate the financial system. In terms of the size and impact of the financial system, the LSB sector is small in comparison to the LCBs.

During the last two decades the Sri Lankan financial sector, including the banking sector experienced different challenges such as natural disasters, civil war, financial crises, pandemic situations etc...For example, there was an adverse macroeconomic impact rising as a result of the financial crisis in 2007-08. So, these kinds of challenges directly influence on the behavior of macroeconomic variables and moreover, changes in the behavior of those variables could cause the banking sector's performance. Empirically, several foreign studies have shown it. For example, Akani et. al. (2016) mentioned that macroeconomic variables such as inflation, unemployment, interest rates, money supply, and the exchange rate have a direct impact on the banking sector's performance. Adegbaaju and Olokoyo (2008) show that macroeconomic shocks, monetary policy, political shocks, and foreign liquidity shocks all have a direct impact on the banking sector's performance and well-being. Alaba (2002) reported poor macroeconomic performance might jeopardize banks' deposit mobilization and credit allocation in the economy, affecting bank performance negatively.

Macroeconomic variables are associated with economic aggregates. The most common macroeconomic variables are inflation (IR), the exchange rate (ER), interest rate (RR),

gross domestic production growth (GDP) etc...Inflation is the increase in the general price level of goods and services. The rate at which one currency exchanges with another currency is known as the exchange rate. The interest rate is the amount that a lender charges a borrower on top of the principal for the use of assets. Finally, the GDP growth rate measures the change in the gross domestic production of the country in comparison to the earlier period and it is also known as the economic growth.

For the bank performance analysis, different versions of financial ratio analysis are employed, with financial statement items as the primary data sources. Generally, banking sector performance is analyzed based on DuPont financial ratio analysis. In this analysis, the ratios of return on equity (ROE) and interest margin (IM) are widely used and popular measures of the bank's performance. The ROE ratio is defined as the ratio of net profit to total equity. IM indicates the interest spread between assets and liabilities and focuses on net earnings from investing through borrowed funds.

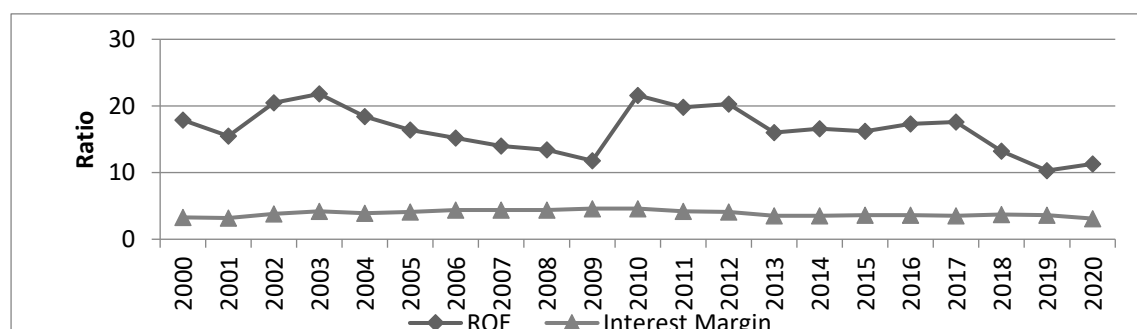
So far, most of the previous studies on the banking sector have mostly focused on the impact of the banking sector on economic growth and determinants of the banking sector performance. In this study, it focuses to investigate how the behavior of macroeconomic variables influences the Sri Lankan Banking sector performance. Because the current macroeconomic situation in Sri Lanka is going from bad to worse. This is caused in part by a lack of foreign currency. The CBSL floated the currency on March 07 to stop reserve losses after holding the exchange rate widely fixed around 201 LKR/US\$ for seven months. Today, 1 dollar is worth 345 SL rupees. The value of the Sri Lankan rupee has depreciated. According to Hanke's Inflation Dashboard (21st April, 2022), Sri Lanka has the world's third highest inflation rate. Sri Lanka's national inflation rate for March 2022, as measured by the National Consumer Price Index (NCPI), increased to 21.5 percent from 17.5 percent in February 2022, according to the

Department of Census and Statistics. And also, Sri Lanka has increased interest rates on bank deposits. So, IMF has predicted real GDP growth rate for 2022 will be 2.6. It was 3.6 in 2021 (IMF World Economic Database, 2022). The country's macroeconomic behavior directly effects on all sectors, especially on financial (banking) sector. On the other hand, the banking sector performance in a country is affected by both internal factors and external factors. Therefore, this study mainly investigates that what are the key macroeconomic variables that affect Sri Lankan banking sector performance and how these macroeconomic variables affect it. Therefore, the main objective of this study is to evaluate the effect of selected macroeconomic variables on banking sector performance in Sri Lanka.

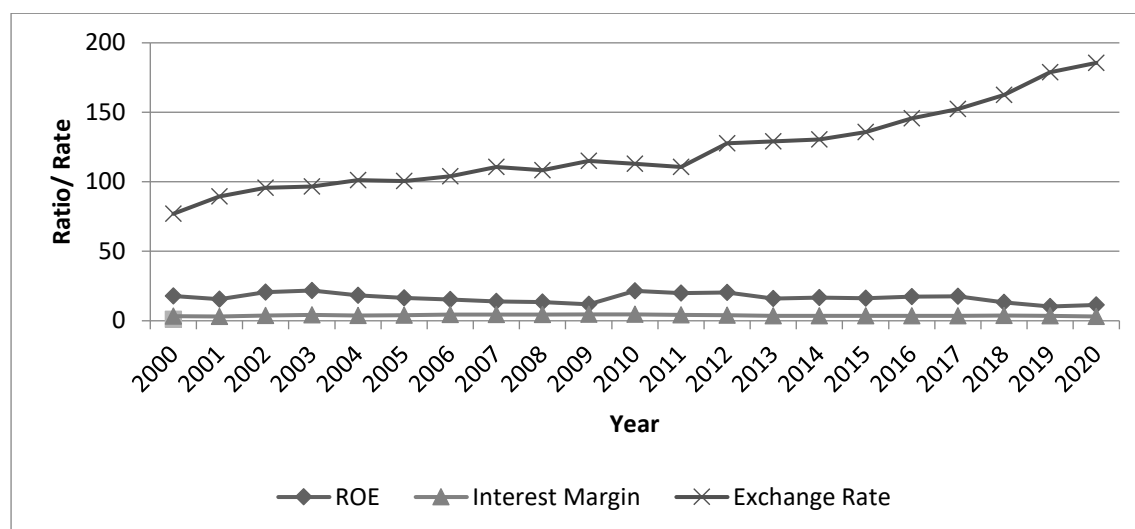
THE BEHAVIOR OF SELECTED VARIABLES OVER THE SELECTED PERIOD

Figure 1 shows the behavior of selected financial ratios namely ROE and IM over the period from 2000 to 2020. According to that figure, IM is recorded at a constant level with very little fluctuations over the period. And also, the IM ratio is recorded as less than 5% over the selected period. ROE fluctuates sharply from 2000 to 2020 between the lowest value of 11.8% in 2009 and the highest value of 21.8% in 2003. It was continuously decreasing between the period of 2003 and 2009 and, sharply increased from 2009 to 2010.

Figure 1: The Behavior of Selected Financial Ratios

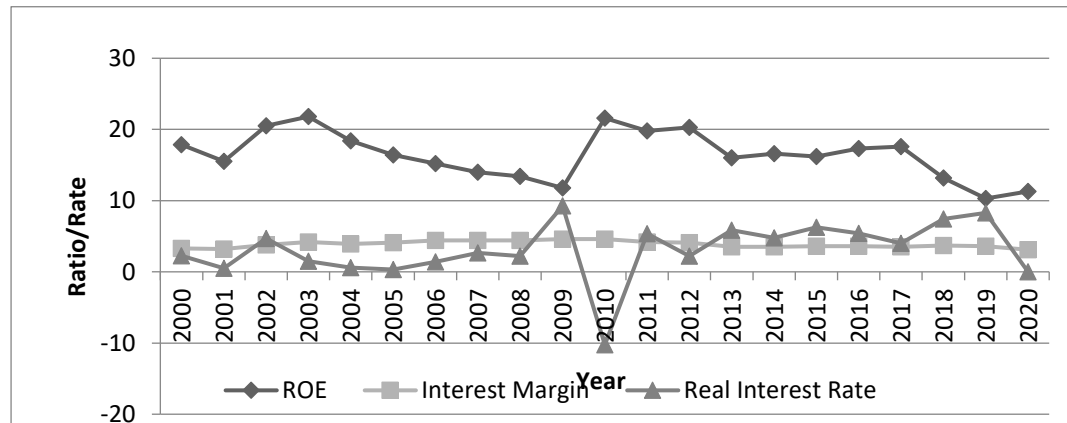


Source: Author's Computation

Figure 2: The Behavior of Selected Financial Ratios and Exchange Rate

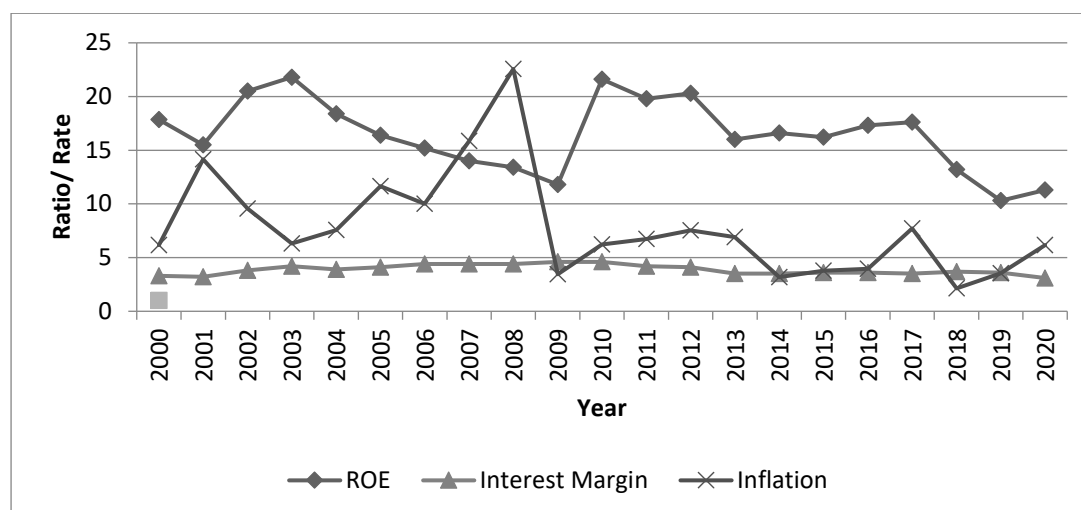
Source: Author's Computation

Figure 2 presents the behavior of selected financial ratios and exchange rates. Exchange rate trends to increase over the period from 2000 to 2020 with the lowest value of 77.005 in 2000 and the highest value of 185.59 in 2020.

Figure 3: The Behavior of Selected Financial Ratios and Interest Rate

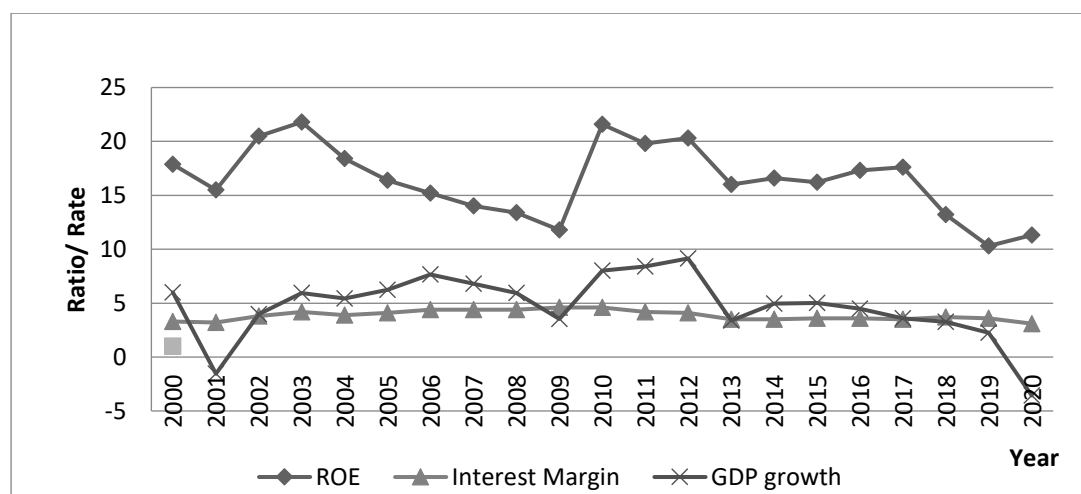
Source: Author's Computation

According to Figure 3, the real interest rate also has fluctuations between the selected periods. It is recorded between 0 % and 10% from 2000 to 2009 and in 2010, it is recorded as a negative real interest rate. In economics, the real interest rate equals the nominal interest rate minus the inflation rate. Therefore, it can conclude that in 2010, the inflation rate is higher than the nominal interest rate. After that point, it again recorded positive values and was still below 10%.

Figure 4: The Behavior of Selected Financial Ratios and Inflation Rate

Source: Author's Computation

Figure 4 shows the behavior of inflation over the period. It has sharp fluctuations with the lowest value being 2.13% and the highest value being 22.56% in 2008.

Figure 5: The Behavior of Selected Financial Ratios and GDP Growth Rate

Source: Author's Computation

According to Figure 5, in 2001 and 2020, there was a negative GDP growth rate. The highest growth is recorded in 2012 which is 9.14%. The lowest growth is -3.56% in 2020.

According to these all figures, it can identify that selected financial ratios and macroeconomic variables show remarkable behavior around the period from 2007 to

2010 due to the 2007/08 financial crisis. And also, in 2020, the annual GDP growth rate is recorded the lowest value due to covid-19 pandemic situation.

2. LITERATURE REVIEW

There are several studies in the literature related to determinants of bank performance in a country. Among them, many studies focus on all factors which are internal factors such as bank-specific factors, industry-specific factors, and, external factors. For example, the studies were done by Karim et.al. (2010), Nouaili et.al. (2015), Ameer and Mhiri (2013), and Athanasoglou et. al. (2008). There are few numbers of studies focusing on only external factors, macroeconomic factors such as GDP growth, Inflation, exchange rate, etc... Therefore, it is better to review the major studies related to the impact of macroeconomic variables on the banking sector performance in Sri Lanka as well as globally.

In most studies, the researchers have employed interest rates as an external factor to examine the effect of macroeconomic variables on bank performance. According to those study results, it was found that interest rate has a significant and either positive or negative effect on bank performance. Akani et. al. (2016) find that interest rate has a positive impact on ROA, and bank performance in Nigerian commercial banks. But, Olokoyo et. al. (2021) found a negative relationship between ROA and interest rate in Nigeria. Therefore, Olokoyo et. al. suggest controlling lower interest rates to encourage people in the economy. Ifeacho and Ngalawa (2014) also find that interest rates negatively impact ROE. For Sri Lanka, Ariyadasa et.al. (2017) investigate the factors that influence the profitability of Sri Lanka's licensed commercial banks (LCBs) and they find in the short run, interest rate has a negative impact on bank profitability. There was another study done by Weerasinghe and Perera (2013) to investigate the

determinants of commercial banks' profitability in Sri Lanka. They find interest rate has a significant impact on bank profitability with a negative relationship between ROA.

According to previous studies, the Inflation rate is also a major significant determinant of banking sector performance. Melissa (2014) finds that the inflation rate is a determinant of the Ethiopian commercial bank's performance. Therefore, the study suggests to Ethiopian banks consider external variables in their strategic design. There is another study done by Athanasoglou et. al. (2008) to investigate the impact of bank-specific, industry-specific, and macroeconomics variables on bank profitability in Greek banks over the period from 1985 to 2001. They also find that inflation affects the banking sector's performance in Greece. Moreover, Akani et. al. (2016) show there is a positive impact of inflation on the banking sector in Nigeria. Karim et.al. (2010) also find inflation boosts bank profitability in Islamic banks in Africa. On the other hand, Nouaili et.al. (2015) shows inflation causes banks' performance negatively in Tunisia. Moreover, Ameer and Mhiri (2013) have found the same result for the period from 1998 to 2011 that was inflation negatively impacts bank performance and net interest margin in Tunisia. Supporting both Nouaili et.al. (2015) and Ameer and Mhiri (2013), Ariyadasa et.al. (2017) find inflation has a significant and negative effect on licensed commercial bank profitability in Sri Lanka in the long run. Sufian (2012) studied the performance of 77 commercial banks in Bangladesh, Sri Lanka, and Pakistan over the period from 1997 to 2008. The study results find inflation has no significant impact on bank profitability.

Olokoyo et. al. (2021) shows that in Nigeria, bank performance is mainly boosted by GDP growth. And also, Karim et.al. (2010) find macroeconomic factors such as higher economic growth boost bank profitability. Nouaili et.al. (2015) studied the

determinants of Tunisian bank performance using regression analysis and panel data techniques over the period after their financial reforms. They find that in terms of macroeconomic drivers, the business cycle, as measured by the growth of the GDP cause to the improvement of bank performance. Ifeacho and Ngalawa (2014) examined the effect of bank-specific variables and macroeconomic variables on the banking sector in South Africa using annual time series data between 1994 and 2011. There are two models formulated by employing two dependent variables, namely ROE and ROA under two data estimation techniques; Generalized Method of Moments (GMM) and System GMM. This study results reveal that, according to system GMM estimation, GDP growth has a significant and positive impact on ROE. Moreover, Hassan and Bashir (2003) analyze the impact of banking-specific variables and the financial environment on the performance of worldwide Islamic banks between the periods from 1994 to 2001. They find that a favorable macroeconomic environment causes higher profits in Islamic banks. Especially, they found GDP growth rate and per capita GDP has a positive effect on banking sector performance. For Sri Lanka, Ariyadasa et.al. (2017) find in the long run, real GDP has a significant and positive effect on licensed commercial bank profitability in Sri Lanka. And also, Sufian (2012) found economic growth positive effect on bank profitability in Bangladesh, Sri Lanka, and Pakistan.

In literature, many studies did not select the exchange rate as a macroeconomic variable for their research works. Anyhow, Akani et. al. (2016) has found exchange rate has significant and positive effects on ROA. In addition, Seelanatha (2007), Swarnapali (2014), Yamuna (2013), and Bandaranayake and Jayasinghe (2013) have done studies related to determinants of banking sector performance in Sri Lanka. They basically focused on internal factors such as bank-specific factors; bank size, capital adequacy, and deposits, etc.

According to studies mentioned above, many studies have generally focused on either all factors' effects on the banking sector in their countries or internal factors' effects on the banking sector. They have not focused only on macroeconomic factors. Therefore, it is important to narrow this study to macroeconomic factors that influence the banking sector's performance. Because the current macroeconomic situation in Sri Lanka is going from bad to worse. As a result of the current economic situation in Sri Lanka, Fitch, S&P, and Moody downgraded the sovereign rating deeper into the substantial risk investment category. Fitch Fitch has Downgraded Sri Lanka to 'C' on 13th April, 2022.

So, it is important to investigate the impact of external factors, and macroeconomic variables on Sri Lankan banking sector performance to fill the research gap identified in the literature review. Therefore, this study is mainly focused only on macroeconomic factors that influence the Sri Lankan banking sector performance.

3.METHODOLOGY

The study uses annual time series data collected from CBSL annual reports over the period from 2000 to 2020. Augmented Dickey-Fuller (ADF) unit root test was used to assess the order of integration of each variable and Akaike Information Criterion (AIC) was used to identify the ideal lag length of each series. In addition, to determine the effect of selected macroeconomic variables on banking sector performance in Sri Lanka, the ARDL co-integration technique developed by Pesaran et. al. (2001) was used. Finally, the Granger causality approach developed by Clive Granger (1969) was applied to study the causal relationship between selected variables.

Depending on the literature survey, this study formulates two multiple regression models on two dependent variables, namely return on equity (ROE) and interest margin

(IM) while employing exchange rate (ER), real interest rate (%) (RR), annual % of the inflation rate (IR), and the annual % of GDP growth (GDP) as the independent variables (See Karim et.al., 2010, Ameer and Mhiri, 2013). Those multiple regression models are as follows;

$$ROE_t = \alpha_0 + \alpha_1 LER_t + \alpha_2 RR_t + \alpha_3 IR_t + \alpha_4 GDP_t + u_t \quad (1)$$

$$IM_t = \delta_0 + \delta_1 LER_t + \delta_2 RR_t + \delta_3 IR_t + \delta_4 GDP_t + v_t \quad (2)$$

Where, variables names are as mentioned above, u_t and v_t are the white noise error terms, α and δ are the regression coefficients and t illustrate the time period.

In addition, the following model is used in this study to examine the causal relationship between variables;

$$Y_i = \sum_{i=1}^k a_i X_{t-i} + \sum_{i=1}^n \beta_i Y_{t-i} + U_{1t} \quad (3)$$

$$X_i = \sum_{i=1}^k y_i X_{t-i} + \sum_{i=1}^n \rho_i Y_{t-i} + U_{1t} \quad (4)$$

4. RESULTS AND DISCUSSION

Table 1 shows the results of the Augmented Dickey-Fuller (ADF) unit root tests for all series included in the analysis.

Table 1: Unit Root Test Results

Variable	Level	1 st Difference	I(0)/I(1)
ROE	0.2438	0.0012*	I(1)
IM	0.6415	0.0266*	I(1)
IR	0.0514	0.0001*	I(1)
LER	0.9917	0.0004*	I(1)
RR	0.0011*	0.0000	I(0)
GDP	0.3339	0.0001*	I(1)

Note: *indicates that variables are statistically significant at 5% level.

Source: Author's Computation

According to Augmented Dickey-Fuller (ADF) unit root test results, at a 5% level of significance, ROE and IM are non-stationary in the level form and they become stationary after the first difference. All other independent variables excluding interest rate are non-stationary in the level form and, they also become stationary after the first difference. The interest rate is stationary in level form. Therefore, the ARDL Bound test is performed to investigate the existence co-integration relationship between macroeconomics variables and banking sector performance. Akaike information criteria (AIC) suggest the use of the ARDL (2, 0, 2, 2, 2) model and ARDL (1, 0, 0, 1, 2) model for model 1 and model 2 respectively.

Table 2a and Table 2b present the results of ARDL Bound tests for model 1 and model 2 respectively.

Table 2a: Results of ARDL (2, 0, 2, 2, 2) model for model 1

Panel A: F-test for the existence of a co-integration					
F-Bound test 95% level of confidence					
F-Statistics		Lower Bound		Upper Bound	
58.59653		2.56		3.49	
Panel B: Long run coefficient estimates					
Constant	LER	RR	IR	GDP	R ²
89.15633*	-13.10943*	-0.506548*	-0.693789*	-0.375694*	0.997523
(0.0000)	(0.0000)	(0.0017)	(0.0000)	(0.0043)	

Note: P-Value is given in parenthesis. * Indicates that variables are statistically significant at 5% level.

Source: Author's Computation

According to table 2a, F-Statistics is 167.7755 which is higher than the upper bound critical value at 5% level of significance. It indicates that there is existing co-integration relationship between the selected variables in model 1. This infers that all the explanatory variables simultaneously and jointly influence the variation in ROE. Above regression result shows all explanatory variables have negative and significant impact on ROE in the long run. If inflation rate, exchange rate, interest rate and GDP growth increase by 1%, ROE decreases by 0.6937%, 13.10943%, 0.506548% and 0.375694% respectively.

Table 2b: Results of ARDL (1, 0, 0, 1, 2) Model for Model 2

Panel A: F-test for the existence of a co-integration					
F-Bound test 95% level of confidence					
F-Statistics		Lower Bound		Upper Bound	
6.235276		2.56		3.49	
Panel B: Long run coefficient estimates					
Constant	LER	RR	IR	GDP	R ²
-3.010959	1.297079**	-0.053240*	0.111766*	0.006133	0.955176
(0.3300)	(0.0536)	(0.0282)	(0.0032)	(0.9101)	

Note: P-Value is given in parenthesis. *, ** indicate that variables are statistically significant at 5% and 10% level respectively.

Source: Author's Computation

According to Table 2b, F-statistics for model 2 is 23.97302 which is higher than the upper bound critical value at a 5% level of significance. It denotes that there is an existing co-integration relationship between considered variables in model 2. This

infers that all the explanatory variables simultaneously and jointly impact on IM in the long run. Regression results show IR and LER have a positive and significant effect on IM and RR has a negative impact on IM. If IR and LER increase by 1%, IM increases by 0.111766% and 1.297079% respectively, while IM decrease by 0.053240% as a result of the increase in RR by 1%. There is no significant impact of GDP growth on IM in the long run.

Table 3a and Table 3b present the results of Error correction representation for the model 1 and model 2 respectively.

Table 3a: The Results of Error Correction Representation for ARDL (2, 0, 2, 2, 2) Model for Model 1

Short run coefficient estimates and error correction representation						
Lag order	ΔROE	ΔLER	ΔRR	ΔIR	ΔGDP	ECT(-1)
0		-6.702505 (0.7424)	-0.329081 (0.4265)	-0.156676 (0.2854)	-0.107876 (0.9328)	-2.649355 (0.3830)
1	0.623203 (0.1032)		0.101896 (0.7714)	-0.172180 (0.3691)	-0.569727 (0.2140)	
2	-0.532788 (0.2237)		-0.292276 (0.5404)	-0.194540 (0.4901)	-0.155450 (0.3435)	
R ²	0.964335					

Source: Author's Computation

According to table 3a, ECT (-1) is not significant in the model 1. It indicates that there is no adjustment towards the steady state line after the exogenous shocks. Moreover, in the short run, current year and previous year values of the selected variable has no significant impact on ROE.

Table 3b: The Results of Error Correction Representation for ARDL (1, 0, 0, 1, 2) Model for Model 2

Short run coefficient estimates and error correction representation						
Lag order	ΔIM	ΔLER	ΔRR	ΔIR	ΔGDP	ECT(-1)
0		1.329231 (0.1962)	-0.023325** (0.0772)	-0.002705 (0.7518)	0.072569* (0.0144)	0.157938 (0.5132)
1	0.326310 (0.1534)			0.045011* (0.0049)	-0.029783 (0.3089)	
2					0.046300* (0.0222)	
R ²	0.853994					

Note: P-Value is given in parenthesis. *, ** indicates that variables are statistically significant at 5% and 10% level, respectively.

Source: Author's Computation

According to Table 3b, ECT (-1) is not significant in model 2. It means there is no adjustment towards the steady state line after the exogenous shocks. In addition, in the short run, the current year's interest rate has a significant and negative effect on IM. If the interest rate increases by 1%, IM decreases by 0.023325%. The previous year's

inflation rate has a significant and positive impact on IM. If the previous year's inflation rate increases by 1%, IM also increases by 0.045011% in the short run. Current year GDP growth and two years' previous GDP growth positively affect on IM. If the current year's GDP growth and two years' previous GDP growth increase by 1%, IM increases by 0.072569% and 0.04630% in the short run.

Table 4 shows the results of the Diagnostic test for each model.

Table 4: The Results of Diagnostic Test for Model 1 and Model 2

Diagnostic Test	Test applied	Model 1		Model 2	
		P-value	Conclusion	P-value	Conclusion
Serial correlation	Breusch-godfrey serial correlation LM test	0.455	No serial correlation	0.9718	No serial correlation
Normality	Jarque- Bera	0.823624	Error is normal	0.460993	Error is normal
Heteroscedasticity	White test	0.6236	No Heteroscedasticity	0.6903	No Heteroscedasticity
Omitted variable	Ramsey RESET test	0.8323	No omitted variables	0.9276	No omitted variables

Source: Author's Computation

Table 4 shows all the diagnostic test probability values are greater than 10% level of significance. It denotes that both models are correctly specified and the parameters are correctly estimated.

Tables 5a and 5b present the results of the Granger causality test for each model.

Table 5a: The Results of Granger Causality Test for Model 1

Null hypothesis	Obs	F- statistics	Pob.
D_LER does not Granger Cause D_ROE	18	0.12487	0.8837
D_ROE does not Granger Cause D_LER		2.63602	0.1094
D_RR does not Granger Cause D_ROE	17	3.02655	0.0863**
D_ROE does not Granger Cause D_RR		0.07519	0.9280
D_IR does not Granger Cause D_ROE	18	6.18548	0.0130*
D_ROE does not Granger Cause D_IR		0.72081	0.5048
D_GDP does not Granger Cause D_ROE	18	1.19999	0.3325
D_ROE does not Granger Cause D_GDP		2.22361	0.1477

Note: * and ** indicate 5% and 10% levels of significance respectively.

Source: Author's Computation

The Granger causality test results for model 1 show that unidirectional causality that runs from interest rate and inflation rate to ROE.

Table 5a: The Results of Granger Causality Test for Model 2

Null hypothesis	Obs	F- statistics	Pob.
D_LER does not Granger Cause D_IM	18	1.95446	0.1811
D_IM does not Granger Cause D_LER		0.13181	0.8777
D_RR does not Granger Cause D_IM	17	3.04759	0.0851**
D_IM does not Granger Cause D_RR		1.04739	0.3808
D_IR does not Granger Cause D_IM	18	2.65324	0.1081
D_IM does not Granger Cause D_IR		0.34369	0.7154

D_GDP does not Granger Cause D_IM	18	0.90291	0.4294
D_IM does not Granger Cause D_GDP		0.26557	0.7708

Note: ** indicates 10% levels of significance.

Source: Author's Computation

According to table 5a, the Granger causality test results show that there is a unidirectional causality that runs from interest rate to interest margin.

5. CONCLUSION

This study aims to evaluate the effect of selected macroeconomic variables on banking sector performance in Sri Lanka over the period from 2000 to 2020. The study uses annual time series data collected from CBSL annual reports. Augmented Dickey-Fuller (ADF) unit root test, Akaike Information Criterion (AIC), ARDL co-integration technique, and Granger causality approach are applied for the study methodology. This study formulates two multiple regression models; model 1 and model 2 on two dependent variables, namely return on equity (ROE) and interest margin (IM) while employing exchange rate (ER), real interest rate (%) (RR), the annual % of inflation rate (IR), and annual % of GDP growth (GDP) as the independent variables.

The results of the study revealed that for model 1 all explanatory variables have negative and significant impact on ROE in the long run. If the inflation rate, exchange rate, interest rate, and GDP growth increase by 1%, ROE decreases by 0.6937%, 13.10943%, 0.506548%, and 0.375694% respectively. Model 2 shows IR and LER have a positive and significant effect on IM and, RR has a negative impact on IM. If IR and LER increase by 1%, IM increases by 0.111766% and 1.297079% respectively, while IM decrease by 0.053240% as a result of an increase in RR by 1%. There is no significant impact of GDP growth on IM in the long run.

The results of the Error correction version of the ARDL model revealed for both model 1 and model 2 there is no adjustment towards the steady state line after the exogenous shocks. Moreover, in the short run, the current year and previous year values of the selected variable have no significant impact on ROE in model 1. For model 2 in the short run, the current year interest rate has a significant and negative effect on IM. If the interest rate increases by 1%, IM decreases by 0.023325%. The previous year's inflation rate has a significant and positive impact on IM. If the previous year's inflation rate increases by 1%, IM also increases by 0.045011% in the short run. Current year GDP growth and two years' previous GDP growth positively affect on IM. If the current year's GDP growth and two years' previous GDP growth increase by 1%, IM increases by 0.072569% and 0.04630% in the short run.

The diagnostic test results for both models 1 and model 2 show both models are correctly specified and the parameters are correctly estimated. Finally, Granger causality test results find that for model 1, unidirectional causality that runs from interest rate and inflation rate to ROE, and for model 2 there is a unidirectional causality that runs from interest rate to interest margin.

According to the above study results, it can come up with the below conclusion. The interest rate has a significant and negative impact on both ROE and IM in the long run. As well as in the short run, it has the same effect on IM. Next, in the long run, the inflation rate has a negative and significant impact on ROE. On the other hand, inflation has a significant and positive impact on IM in both the short run and the long run. This finding goes with Karim et.al. (2010) and Akani et. al. (2016).

In the long run, the exchange rate has a negative and significant effect on ROE. But in the short run, it is positive and significant on IM. The final macro variable considered

in the study is GDP growth. Olokoyo et. al. (2021), Karim et. al. (2010), Nouaili et. al. (2015), Ngalawa (2014), and Sufian (2012), all these studies find that GDP growth boosts banking sector performance in their countries. Ariyadasa et. al. (2012) also finds the same result for Sri Lanka. In the short run, this study result goes with the above works of literature. But in the long run, it finds that GDP growth negatively impacts on ROE. Finally, it can conclude that selected macroeconomic variables effect on either ROE or IM either in the short run or in the long run.

6. POLICY IMPLICATIONS

In Sri Lankan context, since 2000 local currency is continuously depreciating. With the higher exchange rate, now Sri Lanka experiencing high interest rates and high inflation. High-interest rates cause a lack of competition in the banking sector. It discourages customer borrowing and reduces credit expansion. Therefore, the banks' profitability will decrease due to higher interest rate scenarios (Ifeacho and Ngalawa, 2014), (Ariyadasa et. al., 2017), (Weerasinghe and Perera, 2013).

Inflation raises financial uncertainty in the future. It gives signals to the rational customers to move from deposits to real assets. And also, the amount of deposits or savings of the families and firms decreases due to higher disposable income with higher inflation. Therefore, in the long run, the bank's performance, and ROE decrease with less saving ((Nouaili et. al., 2015), (Ameur and Mhiri, 2013), (Ariyadasa et. al., 2017)).

But on the other hand, this study's results infer that banks tend to be more profitable in an inflationary environment. IM indicates the interest spread between assets and liabilities. Savings or deposits are liabilities of the banking sector. Therefore, it can be argued that savings or deposits decrease as a result of inflation and it causes to reduce in the interest spread between assets and liabilities.

So, the current macroeconomic situation in Sri Lanka is going from bad to worse. IMF has predicted real GDP growth rate for 2022 will be 2.6. It was 3.6 in 2021 (IMF World Economic Database, 2022). In Sri Lanka, the annual GDP growth rate is recorded below 10% over the selected period. If we carefully see economic growth in Sri Lanka, the average GDP growth is 4.71% between the periods from 2001 to 2020. Therefore, it should be carefully controlled both fiscal and monetary phenomena by policymakers in Sri Lanka. Because it is needed favorable macroeconomic environment to boost the banking sector as well as the financial market in a country.

Looking at the limitation of the study: The model only considers ROE and IM to represent the financial sector performance since the variables such as return on assets (ROA) could not be included due to normality issues and the presence of auto-correlation. Furthermore, the study was based on a short time period, of 20 years. Because ROE and IM data are not available for the time period before 2000.

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