

# **EMPIRICAL STUDY ON DETERMINENTS OF PROFITABILITY OF LISTED COMMERCIAL BANKS: WITH SPECIAL REFERENCE TO SRI LANKA**

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## **ABSTRACT**

It is an accepted truth that, a robust and vigorous banking system is a precondition for an economic growth condition. Banks in Sri Lanka have been experiencing major challenges in the changing internal and external environment over the past few decades. It has been focused to identify the determinants that influence the profitability of Licensed Commercial Banks in Sri Lanka, in order to repel the adverse effects and to assure the financial stability. This paper analyses the Bank specific and Macroeconomic determinants affecting the profitability of Licensed Commercial Banks in Sri Lanka. This study uses GDP growth, Operating Efficiency, Interest Rate, Bank Size and Liquidity ratio as the determinants of profitability while taking ROA as the dimension of profitability. The findings reveal that Bank size and Operating efficiency and GDP growth rate significantly affect the banks' profitability when using ROA as the measure of profitability. In line with above findings, financial stability can be achieved by increasing the banks' liquidity and by being operationally efficient. Nevertheless, Macro Economic factors were found to be insignificantly influencing the profitability while Bank focused factors are highly influential for the profitability of the Licensed Commercial Banks in Sri Lanka.

**Keywords** – Bank Specific Factors, Economic growth, Interest rate, ROA

## **Introduction**

An efficient financial intermediation is a key determinant of the economic growth and development of a country. Said & Tumin (2011) mentioned that the financial institutions, are one of the significant section of the financial system which play a vibrant role in the economic growth of the country. Especially, the banking sector of United States (US) and the European Union (EU) suffered with huge losses as a result of the US sub-prime mortgage crisis. The poor performance of the financial sector affected to slow down the economic growth of the global economy. The identified major reason of the poor performance was the weaknesses in the lending policies adopted by US financial institutions. Within the Asian continent, though the losses within the financial institutions are less influential compared to US, it has been impact to deviate the economic conditions of the region. (Said & Tumin, 2011)

Similar to the other businesses, banks earn profits by earning an excess of income than their expenses. The major portion of the profit of a bank generates from the interest which it earns on its assets. One of the key pay out of a financial institution is the interest paid on its liabilities. Thus, the key assets of a financial institution are considered to be the lending to the external parties. Further the securities and their investment are also considered to be the assets of a bank. Simultaneously, the liabilities of a financial institution consist of deposits and the borrowings from other institutions. (thismatter.com, 2016)

Financial institutions perform a major role in any economy which impacts to determine the performance of the financial system. Thus, the financial intermediation is the key role of financial institutions, which creates a link between the people or institutions who have excess money (Lenders) who provides those extra funds to the people or institutions that struggle for cash (Borrowers) to perform their service. This process helps a lot in economic growth. (thismatter.com, 2016)

An efficient, stable and disciplined financial system in a country causes for a rapid growth in every part of the economy. Thus these factors are highly determined based on the profitability of the financial institutions. So, in this paper, it was focused on identifying the determinants that are affecting for the net returns of the commercial banks in Sri Lanka and their significance on the profitability.

Profitability means either accounting profits or economic profits. It emphasizes the ability of a business to earn additional revenue, which is the main goal of all business ventures and it is one of a key factor which determines the survival of a business in the long run. Accordingly, analyzing the trend of historic information of profitability and projecting future profitability is substantially important.

Return on Assets (ROA) and Return on Equity (ROE) are the most common measurements used to evaluate the profitability of any business.

Major objective of a financial institution is maximization of its profits to assure the investors' betterment. So that, it is essential to find out the triggering factors of profitability of a financial institution.

*“The banking sector continued to expand with improved business operations and risk management practices with the implementation of timely and appropriate regulatory measures during the year. Asset growth of banking sector remains high, though it gradually moderates during the second half of the year parallel to the tight monetary policy regulations which result to generate high market interest rates within the economy. The sector resilience was improved with a notable decline in the funds for banking sector expansion. Banking sector profitability also improved as reflected in both the ROA and ROE ratios, indicating the build – up of resources to mitigate potential risks in the system. Overall, the banking sector continued to support economic growth and development through enhanced banking services and outreach, along with branch network expansion, thereby improving financial inclusion in the country.”* (Central Bank of Sri Lanka, 2017)

Stability of a financial system emphasizes that it is important to assure that the financial system is capable of adopting to the external shocks and internal shocks of the economy. Accordingly, a stable financial system motivates both direct investors and financial investors. Based on an effective regulatory system and a healthy payment and settlement system, the financial institutions can promote investor friendly economic environment. By focusing the maintenance of the financial system, it is possible to identify and address the potential vulnerabilities.

There are 26 Licensed Commercial Banks (LCB) and 7 Licensed Specialized Banks (LSB) in Sri Lanka. Out of the 26 LCBs 13 banks are domestic while the remainder are foreign banks.

## **Research Problem**

Commercial banks play a major role of an economy in stimulating economic growth. For this purpose, banks need to be profitable, thus, it is important to consider the factors that may influence the profitability of commercial banks. These factors may be bank specific or macro-economic. There are many previous researches which have identified a mixture of many bank specific and macroeconomic factors. In Sri Lankan economy the financial services sector has been structured with more banks than licensed financial institutions thus, analyzing the performance of banking industry is vital to assure the stability of the financial system which leads to create a fast growing economy. (Seelanatha & Senerath, 2007)

Second, there are plenty of studies on organizational performance of other sectors in Sri Lanka. But, only a few studies have focused on the banking sector. (Seelanatha & Senerath, 2007; Seelanatha, 2010; Swarnapali, 2012) However, most of those researches were based on considerably historical years. Now due to technological advances, other improvements and new trends, functioning of a bank is different and long-gone researches might not be much related to the current financial system.

Thus, this research intends to investigate the impact of the factors such as operating efficiency, bank size, liquidity, GDP growth and interest rate towards the profitability of the commercial banks in Sri Lanka. There can be many measures for profitability. This research considers ROA as the measure for profitability.

Therefore, it is important to find a solution for the broad question “What are the determinants of profitability of LCBs in Sri Lanka?”

### **Research Questions & Objectives**

#### Research Questions

Do factors like bank size, operating efficiency, credit risk, liquidity, GDP growth and interest rate have an impact on ROA?

#### Research Objectives

To examine whether a relationship exists between bank specific determinants, macroeconomic factors and ROA of LCBs in Sri Lanka.

To investigate the strength and the direction of relationship between bank specific determinants, macroeconomic factors and ROA of LCBs in Sri Lanka.

### **Significance of Research**

This research focuses to find the determinants of profitability of commercial banks in Sri Lanka. Financial Stability can be achieved by increasing the profitability of LCBs. When the most significant factors are found it is easier for the banks to focus on those factors to be more profitable and can lead the bank to achieve the economic growth of the country. This research will help LCB to get an understanding about the determinants affecting the profitability and the significant factors that affect the profitability. It is even useful for the policy makers like Central Bank of Sri Lanka (CBSL) in order to make economic decisions (i.e. Interest Rate). This research will be useful for the future researchers to get an idea about the determinants of profitability and how strongly they are related. And also, for the students who are in the process of studying about the banking system or finance related subjects, this article can be used.

### **Methodology**

The chapter aims to provide the methodology or a systematic way to solve the identified issues, followed by conducting the study. It consists of following sub sections namely data source, sampling method, conceptual framework, measurement of variables, hypothesis generation, model specification, data analysis and analysis tools.

### **Data Collection Method**

The population of the study consists of all 26 LCBs in Sri Lanka for the period of 2009 – 2018. The banking sector plays a major role in the financial system of the country and their performance directly link with the economic growth of the country. Since the entire population cannot be covered in this research because of the time constraint, only the LCBs listed in the Colombo Stock Exchange is used as the sample. Due to non-availability of data researcher obtained annual data of 7 banks out of 10 banks from the Colombo Stock Exchange

database for a period of 10 years. In order to conduct the research for the past 10 consecutive years, the period of research is selected from 2009 – 2018

### Conceptual Frame Work

Following conceptual framework has been developed in order to disclose the relationship between independent variables and the dependent variable of the study of the determinants of the profitability of LCBs.

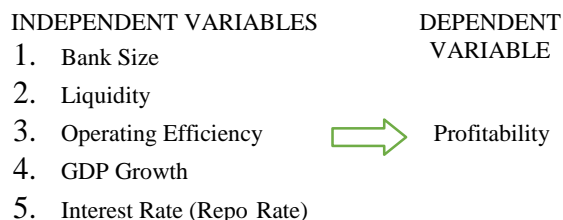


Figure 01- Conceptual Frame Work

### Measuring Variables

This is an empirical study on determinants of the profitability of LCBs in Sri Lanka thus the profitability is the dependent variable. There are several ways which can be used to measure the profitability of a bank. In this study ROA has been used as the measure of profitability.

#### 2.3.1. Bank Size = Total Assets

Total number of assets in the bank has been used to measure the bank size which is one of the key determinant of the profitability. Boyd & Runkle (1993) showed that size of a bank is also connected with the concept of economies of scales. Athanasoglou, Delis & Staikouras (2006) indicated that as a result of gaining market share, a bank would increase its earning which would increase its profitability. It is usually assumed that large banks enjoy economies of scales, so they are able to produce their outputs or services more cheaply and efficiently than smaller banks. As a result, larger banks will earn higher rates of profit. It was expected a higher level of profits to be earned based on the economies of scale by the larger banks. However, the findings stated that, larger the scale causes to decrease the profits of financial institutions.

#### 2.3.2. Operating Efficiency

$$\text{Operating Efficiency} = \frac{\text{Operating Expenditure}}{\text{Total Assets}}$$

Operating efficiency ratio has been used to assess the efficiency of the expenses management of a financial institution. In line with previous studies, it was expected a negative effect of efficiency ratio on profits.

#### 2.3.3. Liquidity

$$\text{Liquid Asset Ratio} = \frac{\text{Liquid Assets}}{\text{Total Assets}}$$

Liquidity is measured by using liquid assets ratio which is a ratio of all liquid assets over total assets. High liquidity of a financial institution causes to eliminate the costly borrowings. However, the loss of potential income or returns is the opportunity cost that may incur for the financial institution, by holding excess cash available. Therefore, the sign may appear positive.

#### 2.3.4. Macro – Economic Determinants

GDP Growth = Growth Rate in the Gross Domestic Product (GDP)

The real GDP growth rate is used to account for the growth in the output of the Sri Lankan economy and it is expected to have a significant positive impact of GDP growth on the profitability of LCBs. In line with literature,

macro-economic variables employed (inflation rate, long-term interest rate, growth rate of money supply) were found to have a positive relationship with the profitability of a bank. (Molyneux & Thornton, 1992). Kosmidou (2008) found that the growth in GDP is positively significant with ROA. Ghazali (2008) also supported with the same findings in his research stating a significant and positive relationship between GDP growth and ROA and ROE.

#### 2.3.5. Interest Rate = Repo Rate

The Repo rates published by the CBSL as a proxy for the monetary policy which is used by the CBSL to steer the money supply are used to measure the interest rate. It is expected that the CBSL interest rate variable will affect positively towards the bank's profitability.

### Hypothesis Development

H1: There is a significant relationship between bank size and profitability of LCBs in Sri Lanka.

H2: There is a significant relationship between operating efficiency and profitability of LCBs in Sri Lanka.

H3: There is a significant relationship between liquidity and profitability of LCBs in Sri Lanka.

H4: There is a significant relationship between GDP growth and profitability of LCBs in Sri Lanka.

H5: There is a significant relationship between interest rate and profitability of LCBs in Sri Lanka.

### Data Analysis Methods

This research adopted the econometric analysis by employing the multiple regression analysis of panel least square method using the E- Views statistical package. Unit root test was conducted to check the stationarity of the data used, Multi-Collinearity test to check the Multi- Collinearity between the independent variables of the model and Hausman test to choose the best suited model between fixed effects and random effects model. Also, the descriptive statistics were found out such as the mean, median, standard deviation and correlation to analyze the level of distribution of dataset.

### Data analysis & presentation

#### 3.1 Descriptive Statistics

In descriptive statistics mean, median, maximum value, minimum value, standard deviation for all the considered variables are calculated.

The mean value of the ROA is 1.257286 and median is 1.420000. Maximum value of the ROA is 2.120000 while minimum value becomes 0.010000. Accordingly, the standard deviation of ROA is 0.535534. The standard deviation value of ROA indicates the deviation of an actual data point of ROA from its' mean value of 1.257286. The maximum value of liquidity ratio becomes 63.79000 while the minimum value becomes 20.19000. Further, mean value of liquidity ratio is 29.94971. median value is 26.88000. Standard deviation becomes a lower value of 9.647407 which emphasis a lower dissipate from its' mean value of 29.94971.

The descriptive statistics for operating efficiency indicate a maximum value of 25.67000 while a minimum value of 3.850000. Mean value the data set is 18.11671 while the median is 18.97000. Standard deviation of operating efficiency becomes 4.358736 from the mean value.

Further, repo rate shows a maximum value of 7.500000 while its minimum value is 6.000000. the mean value of the repo rate is 6.875000 while median is 7.125000. Also, the standard deviation of repo rate shows the value of 0.554543 from the mean value.

According to the descriptive statistics the bank size indicates a maximum value of 0.751416 while minimum value is -4.605170. Mean value takes a value of - 0.020575 while median value is 0.350657. Standard deviation of the bank size becomes 1.011587 from the mean value.

According to the descriptive statistics the GDP indicates a maximum value of 9.100000 while minimum value is 3.300000. And mean value takes a value of 5.410000 while median value is 4.750000. Further standard deviation of the GDP becomes 2.133049 from the mean value.

### 3.2. Unit Root Tests

Unit Root Test is done to observe whether the panel data set used for this research study is stationary or not. The results of the regression provide inaccurate findings if the data becomes non-stationary.

As per the findings of the unit root test done for ROA, the dependent variable considered in this study, and in Levin, Lin & Chu,  $p$  value is less than 5% in both levels and first difference while in Augmented Dickey Fuller method,  $p$  value was more than 5% ( $p= 0.1666$ ) in the first level difference but it is less than 5% in the second level difference. Accordingly, based on above results it can be finalized to accept the alternative hypothesis as well as the data in ROA is stationary based on above tests.

Operating efficiency variable gives greater than 5%  $p$  values at the first level of both Levin, Lin & Chu test and the Augmented Dickey Fuller. However, it depicts that  $p$  values less than 5% at second difference for both tests. Therefore, the alternative hypothesis will be accepted in this case also while null hypothesis is rejected. Accordingly, the operating efficiency data also will be considered as stationary based on above findings.

The  $p$  values are greater than 5% at the first level in both Levin, Lin & chu and Augmented Dickey Fuller tests ( $ADF = 0.2232$ , Levin, Lin & Chu = 0.0964) for variable Bank Size. But  $p$  values are less than 5% at the second difference when using both Levin, Lin & Chu and Augmented Dickey Fuller methods. So will reject the null hypothesis and accept the alternative hypothesis here as well.

Liquidity is the remaining variable considered in this research study and it results a  $p$  value less than 5% in first difference and second difference when testing the both Levin, Lin & Chu test and Augmented Dickey Fuller Test. So null hypothesis will be rejected and alternative hypothesis will be accepted. And data for liquidity is considered as stationary accordingly.

### 3.3. Multi-Collinearity Test

Multi-Collinearity test is used when two or more predictor variables in a multiple regression model are highly correlated to each other. The Variance Inflation Factor (VIF) and tolerance level indicates the level of Multi-Collinearity. Correlation matrix is also a way of presenting it.

Within the independent variables none of them have a correlation above 80%. Accordingly, it will be proved that multi-collinearity will not exist in the variables considered in the model. As there is no serious multicollinearity problem. All the correlation coefficients between the independent variables were less than 0.8.

### 3.4 Correlation

It shows the relationship between dependent and explanatory variables and within the explanatory variables. Also, whether that relationship is strong or weak will be indicated here.

These results indicate that there is a strong positive correlation between bank size, operating efficiency and GDP with ROA. And there is a positive correlation between interest rate and liquidity ratio with the ROA. However, they were not that much strong.

So, with above observations it can be identified that when the variables like Bank Size, GDP, liquidity and operating efficiency are increased, the ROA will also be increased, thus the performance of the bank will increase accordingly.

The results indicate that the correlation within the explanatory variables such as repo rate, GDP, operating efficiency, bank size and liquidity has a correlation which is less than 80%. So, it can be observed that there is no multi-collinearity in the model used in this research study.

### 3.5. Regression Model

#### 3.5.1 Hausman Test

Hausman Test has been identified as the best fit model for the dataset used in this research study either would be Fixed Effects Model or Random Effects Model.

According to the Hausman Test the null hypothesis can be accepted. Because probability value is greater than 5% ( $p = 1.0000$ ) and also that is insignificant accordingly. Therefore, in this study the Random Effects Model should be the most suitable model and it would be considered as the model for the research study.

#### 3.5.2. Regression Model

Following equation can be derived based on the regression model

$$\text{ROA} = -0.265355 + 0.434408 \text{ BANKSIZE} + 0.004724 \text{ LIQUIDITY} + 0.038164 \text{ OE} + 0.040931 \text{ GDP} + 0.069420 \text{ REPO}$$

With the analysis of the equation, if all the variables are zero, the value of ROA is - 0.265355. If the bank size increases by 1 unit, ROA increases by 0.4344 units. Further liquidity increases by 1 unit, then ROA will increase by 0.0047 units. And if operating efficiency ratio increases by 1 unit, ROA will increase by 0.0382 units. Also, if GDP increases by 1 unit, ROA will increase by 0.0410 units. And if repo rate increases by 1 unit, the ROA will increase by 0.0694 units.

Except of liquidity and repo rate all the other variables are significant at 5% level. Independent variables used in this regression are explained 87.24% of ROA (Bank size, liquidity, operating efficiency, GDP and repo rate).

86.25% of ROA is explained by the independent variables if one extra variable is added to this model (Adjusted R square - 0.8625). And the overall model is significant at 5% significant level (F statistic – 87.54, Probability – 0.0000). And also, there is no any autocorrelation within the variables too (Durbin Watson stat – 1.2750).

### Conclusion

When considering the acceptance of hypothesis developed based on the findings, it can be analyzed as follows.

H1: There is a significant relationship between bank size and profitability of LCBs in Sri Lanka.

Statistically, the bank size is significant at 5% level. Therefore 95% confidence level is there. Accordingly, it is very significant factor to the profitability of bank.

In a previous study done for European banks (1992-1998) observed that there is only a slight relationship available in between bank size and profitability, (Goddard, Molyneux & Wilson, 2004). And another study observed that the bank size has a positive impact on profitability by reducing the cost of raising capital for big banks, (Short, 1979). Further some studies have observed that bank size has no significant impact on profitability. (Pasiouras & Kosmidou, 2007; Athanasoglou et al., 2005).

H2: There is a significant relationship between operating efficiency and profitability of LCBs in Sri Lanka.

Statistically the operating efficiency is significant at level 5% which means it is a 95% confidence level. So, it is possible to conclude that operating efficiency has an impact on profitability of a bank. Thus the alternative hypothesis is accepted accordingly.

The level of operating expenses is spotted as an indicator of the efficiency of the management in the literature. In a study done for EU countries observed operating costs has negative impact on profit measures, (Pasiouras & Kosmidou, 2007). Further, few studies have found that there is a link between expense management and profitability of the bank (Bourke, 1989; Molyneux & Thornton, 1992). Further another study observed that, there is a positive effect between operating costs and profitability when the banks enjoy the market power and costs passed on to customers relatively in uncompetitive markets. (Flamini, McDonald, & Schumacher, 2009).

H3: There is a significant relationship between liquidity and profitability of LCBs in Sri Lanka.

Liquidity is not significant in the model. This means that the liquidity does not have direct impact on profitability of LCBs in Sri Lanka. Hypothesis developed would be rejected accordingly since it is insignificant variable.

In previous studies it has been observed a positive substantial association between the liquidity and bank profitability (Bourke, 1989; Athanasoglou et al., 2005; Demirguc-Kunt & Huizinga, 1999). But some unstable banks selected to put on their cash holding to diminish the risk. And further studies illustrate that there is a negative relationship between liquidity and profitability of financial firms. (Bourke, 1989; Molyneux & Thornton, 1992)

H4: There is a significant relationship between GDP growth and profitability of LCBs in Sri Lanka.

GDP is statistically significant at level 5%. Therefore, with 95% of confidence level the alternative hypothesis was accepted and we can conclude that it is an essential component which impacts the level of profitability of a financial institution.

In empirical review and literature, the GDP shows a substantial positive impact on profitability of any financial sector company. The inflation is also considered as an important determinant of the profitability of a bank. Previous studies observed that there is a significant positive impact available between inflation and the earnings of a bank. (Molyneux & Thornton, 1992; Bourke, 1989). Further it has been observed that, if the returns are high, the market power gains by such firms causes to create an inefficiency when delivering financial services to the customer. (Flamini, et al., 2009).

H5: There is a significant relationship between interest rate and profitability of LCBs in Sri Lanka.

Interest rate is not a substantial variable in the model. It does not have direct impact on profitability of LCBs in Sri Lanka. Hypothesis developed has been rejected accordingly since it is an insignificant variable.

Since there are limited empirical studies on the relationship between repo rate and the profitability, repo rate has been used in explain the market interest rate in this study. As per the analysis, observed that there is no substantial relationship between repo rate and the profitability. In 1992 Molyneux & Thornton found that there is a positively relationship between capital ratios, nominal interest rates and the profitability.

According to the observations, the importance of the determinants like operating efficiency, bank size and the GDP growth are highly influential towards the profitability of their firms. Finally, it is possible to conclude that the bank specific factors have a robust impact on ROA.

All the bank specific determinants and macroeconomic determinants except liquidity and repo rate are significant at level 5% and they have positive impact on ROA. And 86.7% of ROA is also explained by independent variables considered in the study as in, GDP growth rate, repo rate, liquid asset ratio, operating efficiency ratio and bank size considered in the regression analysis. The overall model is significant at level 5%. (F statistic – 67.06, Probability – 0.0000). Further within the variables there is no autocorrelation (Durbin Watson stat – 1.274993).

## **Recommendations**

Based on the findings, it is possible to recommend the banks to pay more attention on the determinants like operating efficiency, bank size and GDP growth when focusing on maximizing the profits in banks. Expenses like administrative expenses and assets maintaining costs can be identified as the areas where banks can control when considering the increments in profitability. Since bank size is reflected based on the total assets, it has been considered as an important factor. Because increasing its assets does not increase profits if cumbersome bureaucracy operates. So, the management and directors should have a better understanding on the bank size in intention of making higher profit.

Further, it is possible to recommend some more timely important factors to consider in relation to the profitability of the banks. Because, the current financial market is really competitive and the risks are comparatively high. There should be a control over the banks, when achieving the objectives of the banks according to their plans and profitability in order to assure their survival and growth. There the factors like management of the bank, board



members, education background of employees, corporate governance, skill level of employees, experience of the employees, and credit risk becomes more important.

In addition to the recommendations it is possible to suggest some more factors for the future researchers to consider such as management efficiency, capital adequacy and non-performing loans, as that would provide more important output to the banking sector development in Sri Lanka or entire world.

For a sustainable economic growth, it is prerequisite to have a healthy and strong banking system. Further, to maintain financial stability and survival in the competitive market, it is really important to recognize the effective and significant factors that are critically influential on the performance of making profits in LCBs in Sri Lanka. This study considered the bank characteristics as the factors which determine the profitability of a bank. The banks with higher rate of total assets, low level of liquidity, earning more interest income and efficiently managing their operating expenses are proved to earn more safety. So, the research objective of exploring the factors helping the banks on their profit making concerns has been achieved to a certain extent along with the results obtained from the considered variables.

But certain limitations are there in this study. Entire study was limited to Sri Lankan context while it doesn't cover the entire commercial banks that are licensed within the country. The research has focused only on 5 variables which were considered due to other practical concerns while having lot more other variables available to consider for the study that may affect the profitability of bank.

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