

Determinants of Banks' Profitability: Empirical Evidence from Sri Lanka

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Abstract

The objective of this paper is to examine the effect of bank specific, industry specific and macro-economic determinants namely, bank size, capital adequacy, credit risk, liquidity risk, operating cost efficiency, assets management, diversification, market concentration, inflation and interest rate on Sri Lankan commercial banks' profitability over the period from 2010 to 2019. The study used quantitative research approach and analyzed secondary data using E views software of 11 Sri Lankan commercial banks over a period of 2010 to 2019. Multiple panel regression method was used to investigate the effects of bank specific, industry specific and macro-economic determinants on the profitability of commercial banks in Sri Lanka. The result of the study suggests that bank size, capital adequacy, asset management and interest rates bring positive effects on the banks' profitability, while credit risks bring negative effects on commercial banks' profitability. This study is one of the pioneering studies examining the determinants of the profitability of commercial banks in emerging economies. The implications of this study would be helpful for policy makers and regulatory bodies in revising their existing practices for developments in the banking sector in achieving the economic growth. Further, this study sheds light on Sri Lankan commercial banks to understand the significant determinants on their overall profitability and set strategies to accordingly.

Keywords: Asset management, Bank size, Capital adequacy, Credit risks, Interest rates



Introduction

Financial institutions play a vital role in every economy. However, the key component of financial institutions in Sri Lanka is commercial banks. Their role is very crucial to economic growth of the country. Banking sector in Sri Lanka consists of Licensed Commercial Banks (LCBs) and Licensed Specialized Banks (LSBs). Mainly, 26 licensed commercial banks (LCBs), including 13 domestic banks and 13 foreign banks dominate the Sri Lankan financial system. During the past two decades, Sri Lankan banking industry has faced major revolutions. Due to the effect of internal and external factors, operating environment has changed significantly. Financial deregulation, technological innovation and globalization have formed new tasks for those who engage in the financial sector. Similarly, those changes have created the concept of efficiency. This is more broadly significant for financial institutions including banks, Altunbas *et al.*, 2001) suggested the repercussions of costs and revenues and resulted financial success in terms of profitability of banks. Specially, globalization required the banking sector to upgrade their existing systems in order to cope up with communication and technological innovation affecting the profitability of banks. Thus, major transformations in the banking sector directly affect banks' performance and profitability. Banking sector profitability is also affected by changes in macro-economic factors, where "profitability" is referred to as the capability of businesses to keep its profit yearly.

The achievement of management of organizations is indicated by profitability of the banks. For investors, it is the most vital performance measurement. Banking sector's profitability is vital for the stability and growth of the whole economy. Therefore, identifying determinants of banks' profitability is crucial and essential for a stable economy. Thus, examining the determinants of the profitability of banks has been subject to growing theoretical and empirical investigations during the past decades all over the world. However, the extant literature does not resolve the problem of identifying the specific determinants of banks' profitability. Thus, the problem of this study is to assess the impact of bank specific, industry specific and macro-economic determinants namely, bank size, capital adequacy, credit risk, liquidity risk, operating cost efficiency, assets management, diversification, market concentration, inflation and interest rate on Sri Lankan commercial banks' profitability. Therefore, this study aims to answer what are the bank specific, industry specific and macro-economic factors that determine banks' profitability. Therefore, this study fills the empirical gap by examining the effect of the above-mentioned determinants on Sri Lankan commercial banks' profitability.

The objective of our study is to identify the bank specific factors, industry specific factors and macro-economic factors on Sri Lankan commercial banks' profitability. Our study focuses on the banking sector which plays a key role in an emerging economy like Sri Lanka and tries to identify the main factors affecting the profitability of commercial banks in Sri Lanka over the period from 2010 to 2019. This study would provide useful insights on determinants of financial profitability of commercial banks in Sri Lanka. Similarly, this study tries to get the attention of policymakers and researchers to investigate the determinants of banking profitability to enhance the smooth functioning of the banking sector with the view to contributing the economic growth of the country. The rest of the paper is organized as follows. In Section 2, literature review is discussed and section 3 explains the data and research methodology. Section 4 presents empirical results of the study and in section 5, conclusion, implications and future directions are presented.

Literature review and hypothesis development

Literature review

Banking literature provides a wide variety of studies by different authors all over the world. Some of the studies are described below. Bansal, Singh, Kumar and Gupta (2018) concluded that interest expended interest earned (IEIE) and credit deposit ratio (CRDR) reduced the profitability of private banks in India. IEIE, CRDR and quick ratio (QR) reduced the profitability of public banks in India, while cash deposit ratio (CDR) and Advances to Loan Funds (ALF) increased the effectiveness of public banks. Under the total banks IEIE, CRDR reduced the profitability, on the other side, CDR, ALF and Total Debt to Owners Fund (TDOF) increased the profitability of total banks in India. Under the dependency of ROA, CRDR and TDOF reduced the return of private banks in India, while CDR, ALF and QR enhanced the profitability of private banks. According to the findings of Menicucci and Paolucci (2016) revealed, in determining the profitability of European banks, size and capital ratio act as significant determinants at company-level, where lower profitability levels are due to higher loan loss provisions. Further, banks having greater deposits and loan ratios operate more profitably than the others, but in some cases, statistically insignificant relationships were found in some cases. Further, Ahmad Al-Harbi (2019) said that equity, foreign ownership, off-balance sheet (OBS) activities, real gross domestic product growth, real interest rate and concentration foster banks' profitability. In addition, the results showed that the banking sector development and loans will increase banks' profitability in the long run in the countries of the studies. In contrast, the study reported that deposits lower profitability. The study also revealed that GDP per capita, market capitalization and banks size have no impact on profitability. Loan-assets ratio and operating expenses affected statistically insignificant on the banks' profitability in the study of AL-Omar and AL-Mutairi (2008). High capital adequacy and low ratio of non-interest assets pave the way for better profitability in banks. This is highlighted in their study. Accordingly, the results stress as a way to improve profitability. A comprehensive literature review relating to each explanatory variable is performed in developing the hypotheses for our study.

Hypothesis development

Bank Size

In identifying the determinants of profitability of commercial banks, total assets have been used as a proxy. Specifically, authors of Alper and Anbar (2011), AL-Omar and AL-Mutairi, (2008) Masood and Ashraf (2012) and Petria *et al.* (2015) in this arena used natural logarithm of total assets as a measure for bank size. Size variable effects positively on profitability, due to scale efficiency. So, when size of a bank increases, it leads to generate higher profits. Masood and Ashraf (2012) proved that greater return on assets could be achieved in situations where the banks' have a larger asset base and well-organized asset management is found. That has been consistent with the findings of Bikker and Hu (2002), Camilleri (2005), Athanasoglou *et al.* (2008), Smirlock (1985), Saeed (2014), Boyd and Runkle (1993), Alp *et al.* (2010), Pasiouras and Kosmidou (2007) and Dogan (2013). The previous studies of Bourke (1989), Molyneux and Thornton (1992), Bikker and Hu (2002) proved that banks with large asset base obtained huge profits due to economies of scale and resultant reductions in costs. The fact that profitability of Islamic banks was significantly and positively affected by assets size was empirically analyzed in above studies. Thus, high profitability could be achieved through a larger assets base, showing a positive impact on profitability. Whereas, Gul *et al.* (2011) and Singh and Sharma (2016) found a negative effect on banks' profitability. In line

with the extant research studies found all over the world, we formulated the following hypothesis.

H1: Bank Size significantly impacts on profitability of commercial banks.

Capital adequacy (CA)

Based on a sample of 35 top European commercial banks, Menicucci and Paolucci (2016) emphasized the fact that capital ratio is a significant company-level determinant of bank profitability in Europe. Out of 175 observations during 2009 to 2013, authors found that banks which have been financed by more equity and lower debt capital, obtain satisfactorily higher levels of profits than others. Their argument is consistent with the findings of Berger (1995) and Hassan and Bashir (2003). A strong capital structure is crucial for financial institutions in pursuing business opportunities more successfully and in withstanding unexpected losses, thus achieving more profitability. Masood and Muhammad (2012) analyzed data from 25 banks representing 12 countries for a period of 2006 to 2010 and concluded that the capital adequacy, loans to assets and assets management results leads to positive and significant relationship with return on assets (ROA) and return on equity (ROE) which plays a vital role in the profitability of Islamic banks. Kosmidou (2008) also investigated the performance of Greek banks during the period of EU financial regulations from 1990 to 2002. Unbalanced pooled time series data set of 23 banks was analyzed. The results revealed that capital adequacy made a positive significant impact on return on average assets. Ali *et al.* (2011) examined the profitability performance indicators of 22 indicators of public and private commercial banks in Pakistan over the period of 2006-2009, where profitability seems to have been positively affected by capital structure of those banks. Again, Sufian (2012) examined the performance of 77 Bangladesh, Sri Lankan and Pakistan commercial banks between the time period of 1997 to 2008 and concluded that capitalization have significant positive impact on the bank profitability. Thota (2013) also supported the above argument. Weerasinghe and Perera (2013) and Swarnapali (2014) also argued that capital adequacy affects the profitability of Commercial Banks in Sri Lanka. Thus, researchers broadly hypothesize that banks which have a higher capital structure are safer than others and therefore they are escaped from being insolvent. Thus, the following hypothesis was developed based on the extant literature.

H2: Capital Adequacy significantly impacts on profitability of commercial banks.

Credit risk

The level of loan loss provisions represents banks' level credit risk. This signals bank's asset quality. Thus, it indicates possible variations in upcoming banks' performance, Menicucci and Paolucci (2016). Loan loss provisions are considered as shields against banks' capital. Similarly, loan loss provisions and growing loss reserves assign a security for potential of bad loans. Whereas, having loan loss provisions would display a similarity to keeping a strong guard in order to face insolvency risks. This is pivotal and also helpful where the bank would face a serious asset quality problems and loan loss reserves would be insufficient to allow all bad loans to be written off. In such a situation, the excess will have to be written off against shareholders' equity, (Golin, 2001). Molyneux and Thornton (1992) showed the effect of credit risk on profitability is negative where, higher loan loss provisions are required for higher risky loans. This lowers the ability of banks to generate income. Athanasoglou *et al.* (2005) also found that credit risk has a negative impact on the banks' profitability in Greece during the period of 1985 to 2001. Similar negative impact was discovered by Kosmidou *et al.* (2008) with regard to UK commercial banks during the period from 1995 to 2002. Sufian (2012) also identified that credit risk has a negative impact on the on the Korean banking

sector. Petria *et al.* (2015); Heffernan and Fu (2008), Sufian and Royfaizal (2008), Molyneux and Thornton (1992) and Sufian and Habibullah (2010) also supported this argument with their studies. However, Ali *et al.* (2011) found a positive impact on the profitability of 22 private and public commercial banks in Pakistan. Similarly, Thota (2013); Gul *et al.* (2011) proved the same argument with regard to Pakistan commercial banks during the period from 2005 to 2009. The following hypothesis was developed based on the extant literature.

H3: Credit Risk significantly impacts on profitability of commercial banks.

Liquidity risk

One of the main reasons for the failures of the banks is inadequate liquidity. Identifying the importance of this measure on the profitability, a number of researchers have included liquidity ratios to their studies. Ashraf and Masood (2012) and Bansal *et al.* (2018) used quick ratio to measure the liquidity of the commercial banks, where the asset value was net of stock value. They revealed that liquidity risk measured by quick ratio reduced the profitability of the Indian banks, by analyzing the data of 39 listed public and private banks over the period of 2012 to 2017. Bansal *et al.* (2018) also used the same quick ratio as a measure of profitability, and concluded that quick ratio enhanced the profitability of 39 public and private banks. Petria *et al.* (2015) had concluded that liquidity risk negatively impacts on EU bank performance. Thota (2013) and Sufian (2012) revealed that liquidity affected positively impacted on the profitability of Sri Lankan and Pakistan commercial banks between the period of 1997 to 2008. As per Ali and Pua (2018), liquidity risk showed statistically insignificant impact on the profitability of 24 Pakistan commercial banks during the period of 2007 to 2015. Swarnapali (2014) had been unable to identify a statistically significant impact of liquidity risk on the profitability. However, Weerasinghe and Perera (2013) said that liquidity had showed a negative relationship for the profitability of Sri Lankan commercial banks. The above literature has led the authors to develop the following hypothesis.

H4: Liquidity ratio significantly impacts on profitability of commercial banks.

Operating cost efficiency

Operating cost is defined as the cost to income ratio such as the administrative costs, staff salaries and property costs, excluding losses due to bad and non-performing loans over total generated revenues, (Dietrich and Wanzenried, 2009). Operating cost efficiency ratios are also used by scholars as proxies to measure the profitability of commercial banks. Operations ratios are; cost-to-income ratio (CIR) and the non-financing revenue to average assets ratio. In expenses management, CIR plays a key role in terms of efficiency. Higher expenses result in lower profits. Kosmidou *et al.* (2006) revealed that CIR made negative effects on Islamic Bank's margins and profits. Bansal *et al.* (2018) used a ratio of interest expended to interest earned (IEIE) reduced the profitability of private banks in India. Kosmidou (2008) also investigated the performance of Greek banks during the period of EU financial regulations from 1990 to 2002. Unbalanced pooled time series data set of 23 banks was analyzed and concluded that expenses management ratios made a significant negative impact on the profitability. Tan and Floros (2012) found a positive relationship between bank profitability with cost efficiency with regard to Chinese 12 joint banks and 84 city commercial banks during 2003-2009. AL-Omar and AL-Mutairi (2008) argued on operating cost to total assets ratio of seven national Kuwait commercial banks covering the period from 1993 to 2005. They argued that operating costs of Kuwait commercial banks significantly impact on profitability. Sufian and Habibullah (2010) revealed that costs/expenses significantly and positively impact on the performance of Bangladesh commercial banks. Ali *et al.* (2011) supported the same in relation to Pakistan commercial banks over the period from 2006 to 2009. Weerasinghe and

Perera (2013) and Sufian (2012) found that operational cost significantly made a negative impact on the profitability of commercial banks operating in Sri Lanka which is measured by return on assets. Swarnapali (2014) concluded that operating expenses is negatively related with Sri Lankan bank profitability from 2009 to 2012. A number of scholars have extensively proved that operating cost make a significant impact on the profitability of the commercial banks. Therefore, the authors developed the following hypothesis.

H5: Operating cost efficiency significantly impacts on profitability of commercial banks.

Assets management

Asset management of corporates could be measured by operating income divided by total assets. High asset management ratios are beneficial for banks. Based on a study representing four regions from Middle East countries, East Asian countries, African countries and South Asian countries, Masood and Muhammad (2012) identified a positive significant relationship with return on assets (ROA) and return on equity (ROE), during the period from 2006 to 2010. The same argument was supported in early studies of Chirwa (2003) and Miller and Noulas (1997). Sufian and Royfaizal (2008) identified that profitability of Philippines banks was positively affected by non-interest income from 1990 to 2005. However, Sufian and Habibullah (2010) revealed that non-interest income exhibits a negative relationship with profitability on 37 Bangladeshi commercial banks from 1997 to 2004. Ali *et al.* (2011) also revealed that assets management positively impacted on the profitability of selected commercial banks in Pakistan. Bansal *et al.* (2018), Ongore and Kusa (2013) and Lucky nad Andrew (2015) proved that assets management had significantly impact on Kenyan commercial banks profitability. Bandaranayake and Jayasinghe (2013) found that asset management significantly impact on bank profitability. Based on this available literature, authors developed the following hypothesis.

H6: Asset management significantly impacts on profitability of commercial banks.

Diversification

Degree of diversification is another internal factor that affects the profitability of commercial banks. This variable is measured as a ratio of non-interest income to operating income. A negative relationship among non-interest income and profitability have been reported by several studies. In a study based on US community banks, it is found that there is a positive relationship between diversification and profitability, (Stiroh, 2004b). Over a period 1997–2003, Mercieca *et al.* (2007) found an inverse relationship between non-interest income and bank profitability on small European credit institutions. Diversification delivers lower rewards for Islamic banks than for conventional banks, as argued by Paltrinieri *et al.* (2020). 88 Chinese banks over the period 1996–2006 was examined by Berger *et al.* (2010), where diversification caused low profits and high costs. According to the findings of Maudos (2017), a rise in share of non-interest income has a negative effect on profitability. However, a rise in non-interest income has diversification benefits was found by Li and Zhang (2013) on a sample of Chinese banks' data over a period of 1986–2008. In contrast to above, a positive association between non-interest income and profitability was investigated on European and Asian banks. Data of banks in Australia, Canada, France, Germany, Italy, UK, US, Spain and Switzerland was analyzed by Elsas *et al.* (2010), where authors found that diversification increases profitability of banks. Again, a positive association between revenue diversification and profitability was examines by Sanya and Wolfe (2011). Saunders *et al.* (2014) established that revenue diversification generates higher profits in US banks. Similarly, for the period of 1999 to 2011 Thota (2013) examined 108 commercial banks in India and concluded diversification positively impacted on the bank profitability. Petriaa *et al.* (2015) based on

their research on 27 EU commercial banks over the period from 2004 to 2011, concluded that diversification of banks has influenced the bank profitability. Thus, the extant literature on this area has led the authors to develop the following hypothesis.

H 7: Diversification significantly impacts on profitability of commercial banks.

Market concentration

Market concentration is an industry factor which has selected for the study, measured as the concentration ratio of the three largest banks in terms of assets. Banks which operate at super-efficient conditions would attain bigger market shares than less efficient banks. As a result, a more concentrated market would be created and high concentration does not essentially indicate market power. In such an instance, a positive association between concentration and profitability could not be visible. However, a positive and significant relationship between profitability and concentration was suggested by Demirgüç *et al.* (2000). In contrast, a significant but negative relationship was suggested by Ben *et al.* (2013). Molyneux and Thornton (1992) examined the profitability of banks in 18 European countries during the period from 1986 to 1989, finding that there is a significant positive association between, bank concentration and government ownership Athanasoglou *et al.* (2005) found that concentration is positively correlated with bank profitability. This argument again proved by Abdulazeez *et al.* (2021). Authors found that less capitalized, less liquid and small banks enjoy low profitability under the conditions of higher concentration. This creates risks for less capitalized banks. In relation to capitalization, liquidity, asset quality, fee and income, Islamic banks have achieved better performance than conventional banks. Similarly, Islamic banks have higher market concentration than conventional banks. Petriaa *et al.* (2015) again concluded that the market concentration has influenced on bank profitability of EU commercial banks over the period from 2004 to 2011. Based on the available literature, the authors developed the following hypothesis.

H 8: Concentration significantly impacts on profitability of commercial banks.

Inflation

The percentage increase in consumer price index for all goods and services is measured by annual inflation rate. Inflation affects the actual values of costs and revenues of a country. Most of the researchers use inflation rate as a determinant on the profitability of banks. Sufian and Royfaizal (2008) found that rate of inflation negatively affected the profitability of Philippines banks. In contrast, Sufian and Habibullah (2010), a negative relationship between rate of inflation and profitability of Bangladeshi banks. Gul *et al.* (2011) identified that affected the profitability of Pakistan commercial banks. A Middle East study, conducted by Bashir (2003) examined and identified a statistically significant and positive relationship in relation to Middle East Islamic banks. Izhar and Asutay (2007) identified a statistically significant positive relationship between inflation and Indonesian Islamic banks' profitability. When, high inflation rates associate with high interest rates on loans, it affects positively on the bank profitability. This was evidenced from the studies of Athanasoglou *et al.* (2008), Kosmidou *et al.* (2006), Demirguc-Kunt and Huizinga (1999) and Athanasoglou *et al.* (2005) found that inflation has a strong effect on profitability. However, Zarrouk *et al.* (2015) argued that inflation rate negatively associated with Islamic bank profitability. Research studies found all over the world has led the authors to formulate the following hypothesis.

H 9: Inflation significantly impacts on profitability of commercial banks.

Interest rate.

The interest rate levels are also part of the macroeconomic environment. The effect of interest rates on different profit components of net interest income, non-interest income, and the level of provisions was analyzed by Borio *et al.* (2015). Authors identified that non-interest income is reduced when the level of interest rates are high. Both short-term interest rate and yield curve slope have a positive impact on banks' loan loss provisions. Yahya (2017); Albertazzi and Gambacorta (2009) proved the same argument. Finally, the positive effects of interest rate and the slope of yield curve on net interest income more than offsets the negative effects on non-interest income and provisions. Therefore, positive effect on overall profitability could be identified due to higher interest rates. Weerasinghe and Perera (2013) identified interest rate as a macro determinant on the profitability of licensed commercial banks in Sri Lanka based on the conclusion of their study, as it revealed a significant negative relationship. As identified by Alper and Anbar (2011), real interest rate significantly affected the return in equity of the commercial banks in Turkey from 2002 to 2010. The fact that low interest rate damages bank performance and compresses net interest margins was identified by Bikker and Verliet (2017). Due to the impact of lower provisioning, banks are trying to maintain their overall level of profits, compromising financial stability. Malik *et al.* (2014) that the interest rate has more effects on profitability in private banks as compared to the public sector banks. In financially developed economies, high rates of interest suggest better profits. This is the finding of Abdulazeez and Saif-Alyousfi (2020). Concluding that high credit to the private sector reduces the bank profitability based on their study of 2,446 banks across 47 Asian countries between 1995 and 2017. Thus, the authors developed the following hypothesis based on the extant literature.

H 10: Interest rate significantly impacts on profitability of commercial banks.

Conceptual Framework

According to the aforementioned hypotheses developed based on the extant literature on the relationship between bank specific, industry specific and macro-economic determinants (independent variables) and banks' profitability (dependent variable), the conceptual framework for the study is presented in figure I.

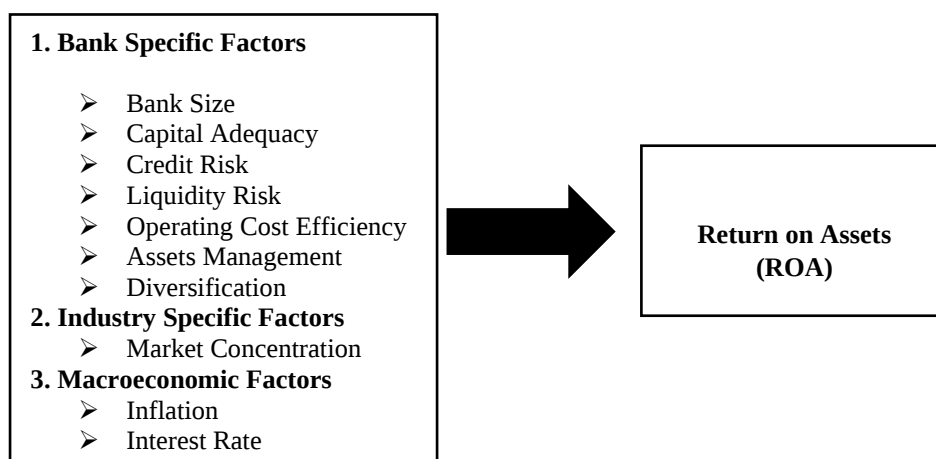


Figure I- Conceptual framework

Source: Author generated framework

Methodology

Data and sample

This study used secondary data and followed quantitative research approach. The selected sample for the study consisted of eleven domestic banks including nine private banks and two state banks for ten-year period from 2010 to 2019. Further, this study excluded all foreign banks in Sri Lanka. Dependent variable of the study has been selected as profitability of the banks measured by the return on assets. Independent variables contained bank specific factors, industry factors and macro-economic factors. Bank size, capital adequacy, credit risk, liquidity risk, operating cost efficiency, assets management, diversification and concentration as bank specific factors. Rate of inflation and interest rates were selected as macro-economic factors for this study. Data related to the dependent variable was collected from annual reports of selected commercial banks during the period of 2010 to 2019 and data related to macroeconomic factors collected from central bank annual reports of Sri Lanka. E views software was used to analyze data. Multiple panel regression method was used to investigate the effects of bank specific, industry specific and macro-economic determinants on the profitability of commercial banks in Sri Lanka. Further, descriptive statistics, unit root, normality, correlation, multicollinearity and autocorrelation were tested in this study.

Profitability determinants of Sri Lankan commercial banks

The dependent variable and independent variables are measured by way of proxies in this study. Those proxies are mentioned below.

Dependent variable

Return on assets (ROA)

ROA reflects the ability of a bank's management to generate profits from the banks' assets. Return on assets calculated net profit after tax divided by total assets. In banking literature, ROA has become the most common measure of bank profitability. $ROA = \text{Profit after Tax} / \text{Total Assets}$

Independent variables

Bank size (SZE)

Natural logarithm of total assets is used as a measurement of total profitability of commercial banks.

Capital adequacy (CAR)

This decides the general soundness of banks as it represent how well the bank is capitalized. In most studies, equity to total assets ratio considered as measure the capital adequacy of banks.

$\text{Capital Adequacy Ratio} = \text{Total Equity} / \text{Total Assets}$

Credit risk (CR)

The level of loan loss provisions is an indicator of a bank's asset quality, and it points out changes in the future performance.

$\text{Credit Risk} = \text{Loan Loss Provision} / \text{Total Loans}$

Liquidity risk (LR)

One major cause for bank failure is inadequate liquidity. Similarly, more liquidity assets in hand have an opportunity cost of higher return. Liquidity assets to total assets ratio is used to measure liquidity risk banks.

Liquidity Ratio= Cash & Cash Equivalents / Total Assets

Operating cost efficiency (OE)

Operating cost is defined as the cost to income ratio such as the administrative costs, staff salaries and property costs, excluding losses due to bad and non-performing loans over total generated revenues.

Operating Cost Efficiency=Non-Interest Expenses / Net Interest Income

Assets management (AM)

Assets management ratio of a commercial bank is measured by ratio of operating income to total assets.

Assets management ratio = Operating income/Total assets

Diversification (DI)

Diversification is measured as the ratio of non-interest income on loans to total operating income.

Diversification=Non-Interest Income/Total Operating Income

Concentration (CNR)

Market concentration is an industry factor measured as the concentration ratio of the three largest banks in terms of assets.

Market concentration =Three largest banks assets Value/Total Assets value of Licensed domestic commercial banks

Annual inflation rate (INF)

Inflation is an increase in the average level of prices and a price is the rate at which money is exchanged for a good or services.

Annual interest rate (IR)

The interest rate reflects the lending interest rate that a bank gains.

Descriptive statistics

Table I: Descriptive Statistics

Description	ROA	AM	CA	CNR	CR	DI	INF	IR	LR	OC	TA
Mean	1.44	0.05	0.08	0.53	0.01	0.17	5.59	8.10	0.05	0.27	19.40
Median	1.49	0.05	0.08	0.53	0.00	0.17	6.40	8.00	0.05	0.26	19.55
Maximum	1.94	0.08	0.10	0.55	0.01	0.33	9.60	10.00	0.09	0.62	21.54
Minimum	0.80	0.03	0.05	0.52	0.00	0.01	2.20	6.00	0.02	0.00	16.46
Std. Deviation	0.28	0.01	0.02	0.01	0.00	0.06	2.26	1.07	0.02	0.15	1.17
Skewness	-0.13	0.48	-0.28	0.15	0.42	-0.24	0.01	-0.20	0.35	0.25	-0.35
Kurtosis	2.25	2.45	2.28	2.44	2.30	3.78	1.95	2.72	2.65	3.35	2.45
Jarque-Bera	2.91	5.63	3.87	1.87	5.48	3.88	5.06	1.08	2.84	1.69	3.72
Probability	0.23	0.06	0.14	0.39	0.06	0.14	0.08	0.58	0.24	0.43	0.16
Sum	158.40	5.65	8.55	58.78	0.63	18.36	614.90	891.00	5.50	29.72	2133.97
Sum Sq. Dev.	8.30	0.02	0.03	0.01	0.00	0.43	556.70	125.40	0.03	2.30	148.01
Observations	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00

Source : Author generated descriptive statistics

According to the descriptive statistics (Table I) output, mean value of ROA is 1.44 while the maximum and minimum values are 1.94 and 0.80 respectively, whereas mean value, maximum and minimum of bank size is 19.40, 21.54 and 16.46 respectively. Mean value of capital adequacy is 0.08 while the maximum and minimum values are 0.10 and 0.05 respectively. Credit risk's mean value of is 0.01 and the maximum and minimum values are 0.01 and 0.00 respectively. Mean value of liquidity risk is 0.05 while the maximum and minimum values are 0.09 and 0.02 respectively. Similarly, mean value of operating cost efficiency is 0.27 and the maximum and minimum values are 0.62 and 0.00 respectively. Assets management's mean value of is 0.05 while the maximum and minimum values are 0.08 and 0.03 respectively. Mean value, maximum and minimum values of diversification are 0.17, 0.33 and 0.01 respectively. Market concentration variable's mean value of is 0.53 while the maximum and minimum values are 0.55 and 0.52 respectively. Mean value of inflation is 5.59 while the maximum and minimum values are 9.60 and 2.20 respectively. Interest rate variable's is 8.10, while the maximum and minimum values are 10.00 and 6.00 respectively. The Jarque-Bera test results shows the corresponding p-values in relation each variable is greater than 0.05. It indicates that all data relating to each variable is normally distributed.

Standard deviation measures how observations are spread. The higher the value of standard deviation, the spread of the observations is also higher. As per the summary of descriptive statistics, ROA, bank size, capital adequacy, credit risk, liquidity risk, operating cost efficiency, assets management, diversification, market concretion, inflation and interest rate have small standard deviations, indicating the values in the statistical data set are close to the means of the data set.

Regression analysis

In this study researcher has employed the random effect model in order to determine the impact of bank specific factors, industry specific factors and macro-economic factors on banks' profitability. The results of the model are mentioned in this table II.

Table II: Regression Analysis

Variable	Coefficient	Stand. Error	t-Statistic	Prob.
C	-4.928099	2.175072	-2.265718	0.0256
TA	0.133699	0.023156	5.773963	0.0000
CA	3.460942	1.629114	2.124433	0.0361
CR	-5.836040	1.840971	-3.170088	0.0022
LR	1.538198	1.360069	1.130971	0.2608
OC	0.014743	0.168018	0.087747	0.9303
AM	5.623450	2.256457	2.492159	0.0144
DI	-0.178788	0.395704	-0.451822	0.6524
CNR	5.158515	3.748656	1.376097	0.1719
INF	-0.012286	0.011775	-1.043415	0.2993
IR	0.063762	0.027208	2.343513	0.0211

Effects Specification

	S.D.	Rho
Cross-section random	0.019329	0.0072
Idiosyncratic random	0.226683	0.9928

Weighted Statistics

R-squared	0.279149	Mean dependent var	1.390343
Adj R-squared	0.206335	S.D. dependent var	0.273142
S.E. of regression	0.243336	Sum squared resid	5.862036
F-statistic	3.833759	Durbin-Watson stat	1.374511
Prob(F-statistic)	0.000210		

Unweighted Statistics

R-squared	0.284080	Mean dependent var	1.440000
Sum squared resid	5.942423	Durbin-Watson stat	1.355917

Source: Author generated regression results

Table II presents the regression results of determinants of commercial banks profitability in Sri Lanka during the period of 2010 to 2019. As per the analyses, R Square is 0.2791 indicating a 28% percent of the variability of Return on assets (ROA) described by the selected bank specific, industry specific and macro-economic determinants. Corresponding p-value of F-statistic 0.0002 is significant at 5% level, which also indicates that ROA of the selected commercial banks' is determined by bank size, capital adequacy, credit risk, liquidity risk, operating cost efficiency, assets management, diversification, market concentration, inflation and interest rates. Altogether, it shows a statistical relationship among the selected variables. The estimated regression equation for our study is given below.

Research model

The following model has been developed by the authors in order to identify the effect of bank specific factors, industry specific factors and macro factors on the profitability of licensed commercial banks in Sri Lanka.

$$ROA_{it} = -4.9281 + 0.1337TA_{it} + 3.4609CA_{it} - 5.8360CR_{it} + 1.5382LR_{it} + 0.0147OC_{it} + 5.6234AM_{it} - 0.1789DI_{it} + 5.1585CNR_{it} - 0.0122INF_{it} + 0.0637IR_{it} + \varepsilon_{it} \quad (1)$$

Where,

ROA = Return on Assets

AM = Assets Management

SZE = Natural logarithm of total Assets

DI = Diversification

CAR = Capital Adequacy Ratio

CNR = Market Concentration

LR = Liquidity Risk

INF = Annual Inflation Rate

CR = Credit Risk

IR = Annual Interest Rate

OE = Operating Cost Efficiency

E = Error term

Hypothesis testing

We developed H1 to H 10 hypothesis to meet the objectives of the study. Hypothesis were formulated based on the relationship of dependent variable and the explanatory variables and tested at 0.05 significance level and the results are shown in table III. When p value is less than 0.05, those hypotheses were found to be significant. Further, the statistical decision rule to accept the hypothesis is *p* value should be less than 0.05 at 95% confidence level. Accordingly, H 1, H 2, H 3, H 6, and H 10 were supported while H 4, H 5, H 7, H 8 and H 9 were not supported. In this study, *p*-value with bank size (H 1) is 0.0000 and therefore is estimated to be 13.37% positively related with bank's ROA, indicating that bank size makes a significant and positive impact on ROA of commercial banks in Sri Lanka. H 2 hypothesis was also supported as *p*-value of 0.0361, suggesting that capital adequacy makes a significant positive impact of 346.09% on ROA of commercial banks in Sri Lanka. In this study, credit risk (representing H 3) is estimated to be negatively related with banks' ROA, since coefficient value is -583.6% and this relationship is found statistically significant, where it implies that credit risk has significant negative impact to the ROA of commercial banks in Sri Lanka. Further, *p* value of asset management (H 6) was found to be 0.0144 and therefore accepted as per the decision rule, concluding that asset management makes a significant and positive impact of 562.34% on ROA of Sri Lankan commercial banks, Interest rates (H 10) prevailing in the economy was also found to be significant, as it shows a *p* value of 0.0211, where if the rates of interest changes by 1%, the resulting change in ROA of Sri Lankan commercial banks is 2.11%. In our study, liquidity (H 4), operating cost (H 5), diversification (H 7), concentration (H 8) and Inflation (H9) were found to be insignificant, as per the decision rule of *p* values of those variables were above 0.05.

Table III - Significance of the explanatory variables

Independent Variables	Value of coefficients	t-statistics	P-value	Significance
Bank Size	0.1337	0.0231	0.0000	Significant
Capital Adequacy	3.4609	2.1244	0.0361	Significant
Credit Risk	-5.8360	-3.1700	0.0022	Significant
Liquidity Risk	1.5382	1.1310	0.2608	Insignificant
Operating Cost Efficiency	0.0147	0.0877	0.9303	Insignificant
Assets Management	5.6234	2.4922	0.0144	Significant

Diversification	-0.1787	-0.4518	0.6524	Insignificant
Market Concentration	5.1585	1.3761	0.1719	Insignificant
Inflation	-0.0122	-1.0434	0.2993	Insignificant
Interest Rate	0.0637	2.3435	0.0211	Significant

Source : Author generated data

Discussion

In our study, bank size, capital adequacy, asset management and interest rates were identified as determinants which could bring positive effects on banks' profitability measured by ROA. However, credit risk was identified as a determinant which could bring negative impacts on banks' profitability measured by a proxy ratio of loan loss provisions over total loans. Our findings could be justified with the extant literature as our results are in line with those of previous studies by and large. Bank size has been identified as a determinant which could increase banks' profitability by a number of authors. Al- Omar and Al- Mutairi (2008) found that size variable or total assets generates scale efficiency and thereby creating a potential for higher profits. Therefore, when the size of the bank increases, it creates a positive impact on the banks' profitability. Murthy (2007) also proved the same argument with 78 banks listed on GCC stock exchanges during the period 2002 to 2006. Smirlock (1985); Bourke (1989); Molyneux and Thornton (1992); Goddard Molyneux and Wilson (2004); Athanasoglou *et al.* (2006); Demirgüç-Kunt and Huizinga (1999); Al-Qudah and Jaradat (2013); Saona (2016) had supported that argument in various studies found all over the world. Further, capital adequacy was also determined as a factor to increase the profitability of commercial banks by our study. Almazari (2014) also found a significant positive relationship between capital adequacy and banks' profitability. Athanasoglou *et al.* (2008) also proved this, justifying the lower requirement for external funding generates higher profitability of banks. Abreu and Mendis (2001); Ben Naceur (2003); Nguyen (2011); Pasiouras and Kosmidou (2007); Kunt and Huizinga (1999); Flamini, McDonald and Schumacher (2009), Khedhiri and Khedhiri (2009); Ben *et al.* (2013); Sufian (2012); Cihak and Hesse (2008) also demonstrated from their studies that the ROA is significantly affected by the total equity-to-total asset ratios of their respective banks.

Our finding in relation to credit risk is in line with the evidence proposed by Rekik and Kalai (2018); Menicucci and Paolucci (2016); Demirgüç-Kunt and Huizinga (1999); Kosmidou *et al.* (2005); Heffernan and Fu (2008); Athanasoglou *et al.* (2005); Heffernan and Fu (2008); Sufian (2012). All those authors argued that credit risk is a determinant of banks' profitability. Accordingly, a significant but negative relationship with credit risk and bank profitability is justified. The reason would be due to the fact that increase in loans could deteriorate the costs of funds leading to a negative correlation between profitability. Similarly, higher risky loans necessitate higher loan loss provisions and thereby lowering profitability of banks. Banking literature provides massive evidence on significant and positive relationship between asset management and banks' profitability in line with our findings. Masood and Muhammad (2012), Chirwa, (2003), Sufian and Royfaizal (2008), Ali *et al.* (2011); Ongore and Kusa (2013); Lucky and Andrew (2015); Miller and Noulas, (1997) were some of the authors supporting to our finding from this study. Further, Abdulazeez and Saif-Alyousfi (2020) found that high rates of interest in financially developed economies offer better profits. Concluding that high credit to the private sector reduces the bank profitability based on their study of 2,446 banks across 47 Asian countries between 1995 and 2017. Al-Harbi (2019) real interest rate foster bank's profitability. Bikker and Verliet (2017) found that the low interest rate damages bank performance and compresses net interest margins.) Albertazzi and Gambacorta (2009) proved the same argument showing positive effects of interest rate and the slope of the

yield curve on net interest income more than offsets the negative effects on non-interest income and provisions. Finally, authors found a positive effect of higher interest rates on banks' profitability. In our study, rate of interest was found to be positive as well as significant. This would be due to the fact that higher rates of interest increase interest income as a major source of banks' overall profits and vice versa. However, banks' liquidity, operating cost, diversification, concentration and inflation were not identified as determinants of banks' profitability.

Conclusion, implications and future direction

Our study has assessed and quantified the effects of key internal and external drivers of profitability of Sri Lankan commercial banks. Based on that, we conclude bank size, capital adequacy, asset management and interest rates positively affect the profitability of commercial banks in Sri Lanka, while credit risk affects negatively. In situations where the size of the banks in terms of total assets is big, those banks could share scale efficiencies, therefore the profitability is positively affected. A higher capital adequacy ratio of Sri Lankan commercial banks would lower the need for external funding and thereby higher the profitability in terms of ROA. Similarly, a higher ratio indicates the ability of banks to face external threats and accordingly the banks could mitigate risk component. So, a positive relationship between equity and total assets would lower chance of bankruptcy minimizing risks and external funding. As higher ratio of loan loss provisions to gross loans of commercial banks could reveal poor quality of loans. This creates higher risk of the loan portfolio and ultimately the overall profitability would reduce. In terms of assets management of banks, a positive relationship would increase the profitability of banks, when the performance of banks is effective and efficient. Similarly, higher of long-term interest rates would generate more interest income and there by raising net interest margins of commercial banks in Sri Lanka.

Understanding the determinants is very important for key stakeholders of Sri Lankan commercial banks such as shareholders, creditors, competitors, regulatory bodies and the government in order to understand the market sentiments. Knowing about the effects of profitability determinants, commercial banks also could comply with banking rules and regulations in such a way that to avoid non-performing loans and possible bankruptcy costs. When revising macro-economic determinants such as interest rates, our study would provide a comprehensive road map to regulatory authorities. Specially, shareholders are also benefitted from our study, as they could make better decisions when they are in a difficulty in making financial investment decisions, enabling them to make good profits on their investments. Nevertheless, the findings of the study are significant; there are some limitations as well. We consider only few internal and external determinants on the profitability of Sri Lankan commercial banks. Also, the effects on foreign banks are ignored in our study. Further, we used only ten years data for the study. Future research could also be considered with more recent data especially after the COVID-19 pandemic. Further, there is a need for future consecutive studies in order to understand the changes in the profitability of Sri Lankan studies. Similarly, the effect of other variables especially variables relating to green financing should also be incorporated into studies in the future to understand the effect of those on the profitability of Sri Lankan commercial banks.

References

- Abdulazeez Y.H., and Saif-Alyousfi (2020), “Determinants of bank profitability: Evidence from 47 Asian countries”, *Journal of Economic Studies*. Vol. 49 No. 1, pp. 44 - 60. <https://doi.org/10.1108/JES-05-2020-0215>
- Abdulazeez Y.H., Saif-Alyousfi and Saha, A. (2021), “Determinants of banks’ risk-taking behavior, stability and profitability: Evidence from GCC countries”, *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 14, pp. 874-907. <https://doi.org/10.1108/imefm-03-2019-0129>
- Abreu, M. and Mendes, V. (2001), “Commercial bank interest margins and profitability: Evidence from some EU countries”, *Porto Working paper series*.
- Al-Bertazzi, U. and Gambacorta, L. (2009), “Bank profitability and the business cycle”, *Journal of Financial Stability*, Vol. 5, pp. 393-409.
- Al-Harbi, A. (2019), “The determinants of conventional banks profitability in developing and underdeveloped OIC countries”, *Journal of Economics, Finance and Administrative Science*, Vol. 24 No. 47, <https://doi.org/10.1108/JEFAS-05-2018-0043>
- Ali, K., Akhtar, M. F. and Ahmed, H. Z.(2011), “Bank-specific and macroeconomic indicators of profitability:empirical: evidence from the commercial banks of Pakistan”, *International Journal of Business and Social Sciences*, Vol. 2 No. 6, pp. 235-242.
- Ali, M. and Puah, C.H.(2018), “The internal determinants of bank profitability and stability:An insight from banking sector in Pakistan”, *Management Research Review*, ISSN: 2040-8269.
- Almazari, A.A. (2014), “Impact of internal factors on bank profitability: comparative study between Saudi Arabia and Jordan’, *Journal of Applied Finance and Banking*, Vol. 4 No. 1, pp. 125-140.
- AL-Omar, H., and AL-Mutairi, A. (2008), “Bank-specific determinants of profitability: The case of Kuwait”, *Journal of Economic and Administrative Sciences*, Vol. 24 No. 2, pp. 20–34. <https://doi.org/10.1108/10264116200800006>
- Alp, A., Ban, U., Demirgunes, K. and Kilik, S. (2010), “Internal determinants of profitability in Turkish banking sector”, *Istanbul Stock Exchange Review*, Vol. 12 No. 46, pp. 1-14.
- Alper, D. and Anbar, A. (2011), “Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey, *Business and Economics Research Journal*, Vol. 2 No. 2, pp. 139-152.
- Al-Qudah, M. and Jaradat M.A. (2013), “The Impact of Macroeconomic Variables and Banks Characteristics on Jordanian Islamic Banks Profitability”, *International Business Research*, Vol. 6 No. 10. <https://doi.org/10.5539/ibr.v6n10p153>.
- Altunbas, Y., Gardener, EPM., Molyneux, P. and Moore, B. (2001), “Efficiency in European Banking”, *European Economic Review*, Vol. 45 No 10, pp. 1931-1955.

- Ashraf, M. and Masood, O., (2012), “Bank-specific and macroeconomic profitability determinants of Islamic banks: the case of different countries”, *Qualitative research in financial markets*. ISSN: 1755-4179.
- Asli Demircug-Kunt, A.D. and Huizinga. H. (1999), “Determinants of Commercial Bank Interest Margins and Profitability”, *The World Bank Economic Review*, Vol. 13 No.2, <https://doi.org/10.1093/wber/13.2.379>
- Athanasoglou, P. P., Brissimis, S. N., and Delis, M. D. (2008), “Bank-specific, industry-specific and macroeconomic determinants of bank profitability” *International Journal of Financial Markets, Institutions and Money*, Vol. 18, pp. 121–136, <https://doi.org/10.1016/j.intfin.2006.07.001>
- Athanasoglou, P., Delis, M. and Brissimis, S. (2005), “Bank specific, industry and macroeconomic determinants of bank profitability”, *Journal of International Financial Markets Institutions and Money*, Vol 18 No 2, pp. 121-136.
- Athanasoglou, P., Delis, M. and Staikouras, C. (2006), “Determinants of bank profitability in the South Eastern European region”, *Journal of Financial Decision Making*, Vol. 2, pp. 1-17.
- Bandaranayake, S. and Jayasinghe, P., (2013), “Factors influencing the efficiency of commercial banks in Sri Lanka”, *Sri Lankan Journal of Management*, Vol. 18, Nos. 1 & 2, pp. 23 - 49.
- Bansal, R., Singh, A., Kumar, S. and Gupta, R., (2018), “Evaluating factors of profitability for Indian banking sector: a panel regression”, *Asian Journal of Accounting Research*, Vol. 3 No2, pp. 236-254.
- Bashir, A.H.M. (2003), “Assessing the performance of Islamic banks: some evidence from the Middle East”, *Islamic Economic Studies*, Vol. 11 No. 1, pp. 31-57.
- Ben Naceur, S. (2003), “The determinants of the Tunisian banking industry profitability: panel evidence, *Conference Proceedings Economic Research Forum (ERF) 10th Annual Conference*, Marrakesh–Morocco, December 16–18
- Ben, Ameer, I. and Mhiri, S. (2013), “Explanatory factors of bank performance: Evidence from Tunisia”, *International Journal of Economics, Finance and Management*, Vol. 2 No. 1, pp. 1-11.
- Berger A. N., Hasan, I. and Zhou, M. (2010), “The Effects of Focus versus Diversification on Bank Performance: Evidence from Chinese banks, *Journal of Marketing Science*, Vol 29 No 5, pp. 815-827, <https://doi.org/10.2139/ssrn.1578249>
- Berger, A. (1995a), “The relationship between capital and earnings in banking”, *Journal of Money, credit and banking*, Vol. 27 No. 2, pp. 432-456.
- Bikker, J. A. and Vervliet, T. M. (2017), “Bank profitability and risk-taking under low interest rates”, *International Journal of Finance & Economics*, Vol 23 No 1, pp. 3 -18.
- Bikker, J. and Hu, H. (2002), “Cyclical patterns in profits, provisioning and lending of banks and procyclicality of the New Basel Capital Requirements”, *BNL Quarterly Review*. Vol 221 No 1, pp. 143-175.

- Borio, C., Gambacorta, L., and Hofmann, B. (2015), “The influence of monetary policy on bank profitability”, *BIS Working Paper*, No 514, ISSN 1682-7678.
- Bourke, P. (1989), “Concentration and other determinants of bank profitability in Europe, North America and Australia”, *Journal of Banking and Finance*, Vol. 13, pp. 65-79.
- Boyd, J. and Runkle, D. (1993), “Size and performance on banking firms: testing the predictions of theory”, *Journal of Monetary Economics*, Vol. 31 No. 1, pp. 47-67.
- Camilleri, S.J. (2005), “An analysis of the profitability, risk and growth indicators of banks operating in Malta”, *Bank of Valletta Review*, Vol. 31 No. 1, pp. 32-48.
- Chirwa, W. (2003), “Determinants of commercial banks’ profitability in Malawi: a cointegration approach”, *Applied Financial Economics*. Vol. 13 No. 8, pp. 565-571.
- Cihak, M. and Hesse, H. (2008), “Islamic banks and financial stability: An Empirical Analysis”, *Working Paper*, WP/08/16, <https://doi.org/10.1007/s10693-010-0089-0>.
- Demirgüç-Kunt, A. and Huizinga, H. (1999), “Determinants of commercial bank interest margins and profitability”, *World Bank Economic Review*, Vol. 13, pp. 379-408.
- Demirgüç-Kunt, A. and Huizinga, H. (2000). “Financial structure and bank profitability”, *Working paper series*, No. 2430. <https://doi.org/10.1596/1813-9450-2430>.
- Dietrich, A. and Wanzenried, G. (2009), “Determinants of bank profitability before and during the crisis: evidence from Switzerland”, *Journal of International Financial Markets, Institutions and Money*, Vol. 21 No. 3, pp. 307-327.
- Elsas, R., Hackethal, A., and Holzhäuser, M. (2010), “The anatomy of bank diversification”, *Journal of Banking and Finance*, Vol. 34 No. 6, pp. 1274–1287.
- Flamini, V., McDonald, C. and Schumacher, L. (2009), “The determinants of commercial bank profitability in Sub-Saharan Africa”, *Working Paper*, No. 09/15.
- Goddard, J. A., Molyneux, P., and Wilson, J. O. S. (2004), “Dynamics of growth and profitability in banking”, *Journal of Money, Credit, and Banking*, Vol. 36 No. 6, pp.1069–1090.
- Golin, J., (2001), “The Bank Credit Analysis Handbook: A guide for analysts, bankers and investors”, *John Wiley*
- Gul, S., Irshad, F., and Zaman, K. (2011), “Factors affecting bank profitability in Pakistan”, *The Romanian Economic Journal*, Vol.2 No.39, pp.61–87.
- Hassan, K. and Bashir, A. (2003), “Determinants of Islamic banking profitability”, *Conference paper*, <https://doi.org/10.3366/edinburgh/9780748621002.003.0008>.
- Izhar, H. and Asutay, M. (2007), “Estimating the profitability of Islamic banking: evidence from bank Muamalat Indonesia”, *Review of Islamic Economics*, Vol. 11 No. 2, pp. 17-29.

- Khedhiri, K.B. and Khedhiri, H.B. (2009), "Determinants of Islamic bank profitability in the MENA region", *International Journal of Monetary Economics and Finance*, Vol. 2 No. 3, pp. 409-426, <https://doi.org/10.1504/IJMEF.2009.029072>.
- Kosmidou, K., (2008), "The determinants of banks' profitability in Greece during the period of EU financial intergration", *Managerial finance*, Vol. 34 No. 3, pp. 146-159, <https://doi.org/10.1108/03074350810848036>.
- Kosmidou, K., Pasiouras, F., Doumpos, M. and Zopounidis, C. (2006), "Assessing performance factors in the UK banking sector", *Central European Journal of Operations Research*, Vol. 14 No. 1, pp. 25-44.
- Kosmidou, K., Tanna, S. and Pasiouras F. (2005), "Determinants of profitability of UK domestic banks: panel evidence from the period 1995-2002", *37th Annual Conference of the Money Macro and Finance (MMF) Research Group* Rethymno, Greece.
- Kosmidou, K., Tanna, S. and Pasiouras, F. (2008). "Determinants of profitability of domestic UK commercial banks", *Economics, Finance and Accounting Applied Research, Working paper*, No. RP 08 - 4, pp. 1-27.
- Li, L. and Zhang, Y. (2013), "Are there diversification benefits of increasing noninterest income in the Chinese banking industry?", *Journal of Empirical Finance*, Vol. 24 No C, pp. 151-165.
- Lucky, A. and Andrew, A. (2015), "Asset quality and profitability of commercial banks-Evidence from Nigeria", *Journal of Finance and Accounting*, Vol.6 No.18.
- Malik, M.F., Shehzad, K. Muhammad, I. and Faisal, K. (2014), "Interest rate and its effect on bank's profitability", *Journal of Applied Environmental and Biological Sciences*, ISSN: 2090-4274.
- Masood, O., and Ashraf, M. (2012), "Bank-specific and macroeconomic profitability determinants of Islamic banks", *Qualitative Research in Financial Markets*, Vol. 4 No. 2/ 3, pp.255-268. <https://doi.org/10.1108/17554171211252565>.
- Maudos, J. (2017), "Income structure, profitability and risk in the European banking sector: The impact of the crisis", *Research in International Business and Finance*, Vol. 39, pp. 85-101.
- Menicucci, E., and Paolucci, G. (2016), "The determinants of bank profitability: Empirical evidence from European banking sector", *Journal of Financial Reporting and Accounting*, Vol, 14 No.1, pp. 86-115. <https://doi.org/10.1108/JFRA-05-2015-006>.
- Mercieca, Steve, Schaeck, K. and Wolfe, S. (2007), "Small European banks: Benefits from diversification?", *Journal of Banking and Finance*, Vol. 31, pp.75-98.
- Miller, S. and Noulas, A. (1997), "Portfolio mix and large-bank profitability in the USA", *Applied Economics*, Vol. 29 No. 4, pp. 505-512.
- Molyneux, P. and Thornton, J. (1992), "The determinants of European bank profitability" *Journal of Banking and Finance*. Vol. 16, pp. 1173- 1178.

- Nguyen, J. (2011), “Market concentration and other determinants of bank profitability: evidence from panel data”, *Journal of Finance and Economics*, Vol. 70, pp. 7-17.
- Ongore, V. O., and Kusa, G. B. (2013), “Determinants of financial performance of commercial banks in Kenya”, *Journal of Economics and Financial Issues*, Vol. 3 No. 1, pp.237–252. <https://doi.org/10.15520/jbme>.
- Paltrinieri, A., Dreassi, A., Rossi, S. and Khan, A. (2020), “Risk-adjusted profitability and stability of Islamic and conventional banks: Does revenue diversification matter?” *Global Finance Journal*, 100517
- Pasiouras, F. and Kosmidou, K. (2007), “Factors influencing the profitability of domestic and foreign commercial banks in the European union” *Research in International Business and Finance*, Vol. 21 No. 2, pp. 222-237.
- Petria, N., Capraru, B. and Ihnatov, I. (2015), “Determinants of banks’ profitability: Evidence from EU 27 banking systems” *Procedia Economics and Finance*, Vol. 20, pp. 518-524.
- Rekik, M. and Kalai, M. (2018), “Determinants of banks’ profitability and efficiency: Empirical evidence from a sample of banking systems”, *Journal of Banking and Financial Economics*, Vol. 1 No. 9, pp. 5-23. <https://doi.org/10.7172/2353-6845.jbfe.2018.1.1>
- Saeed, M.S. (2014), “Bank-related, industry-related and macroeconomic factors affecting bank profitability: a case of the United Kingdom”, *Research Journal of Finance and Accounting*, Vol. 5 No. 2, pp. 42-50.
- Sanya, Sarah and Wolfe, S. (2011), “Can banks in emerging economies benefits from revenue iversification?”, *Journal of Financial Services Research*, Vol 40, pp.79–101.
- Saona, P. (2016), “Intra-and extra-bank determinants of Latin American banks’ profitability”, *Revista Mexicana de Economía y Finanzas*, Vol. 11 No. 1, pp. 1-27.
- Saunders, Anthony, Markus M., Schmid, and Walter, I. (2014), “Non-interest income and bank performance: Is banks’ increased reliance on non-interest income bad?”, School of Finance, Univ. of St. Gallen, St. Gallen.
- Singh, A. and Sharma, A. K. (2016), “An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks”, *Future Business Journal*, Vol 2 No 1, pp. 40 – 53. <https://doi.org/10.1016/j.fbj.2016.01.001>.
- Smirlock, M. (1985), “Evidence on the (non) relationship between concentration and profitability in banking”, *Journal of Money, Credit, and Banking*, Vol. 17 No. 1, pp. 69-83.
- Stiroh, Kevin J. (2004b), “Do community banks benefit from revenue diversification?” , *Journal of Financial Services Research*, Vol 25 No.1, pp.35–60.
- Sufian, F. (2012), “Determinants of bank profitability in developing economies: Empirical evidence from the South Asian banking sectors”, *Contemporary South Asia*, Vol. 20 No. 3, pp. 375-399.
- Sufian, F. and Habibullah, M.S.(2010), “Determinants of bank profitabilty in a developing economy:empirical evidence from Bangladesh”, *Journal of Business Economics and*

Management. Vol.10 No.3, pp.207-217. <https://doi.org/10.3846/1611-1699.2009.10.207-217>

- Sufian, F. and Royfaizal, R. (2008), “Determinants of bank profitability in a developing economy: empirical evidence from Philippines”, *Asian Academy of Management Journal of Accounting and Finance*, Vol 4 No. 2, pp.91-112.
- Swarnapali, N., (2014), “Firm specific determinants and financial performance of Licensed commercial banks in Sri Lanka”, *Reshaping Management and Economic Thinking through Integrating Eco-Friendly and Ethical Practices* in 3rd International Conference on Management and Economics-pp. 26-27
- Tan, Y. and Floros, C.(2012), “Bank profitability and inflation”, *Journal of Economic studies*. Vol. 39, pp.675-696.
- Thota, N.(2013). “The determinants of commercial bank profitability in India”, *SSRN Electronic Journal*, <https://doi.org/10.2139/ssrn.2544838>
- Weerasinghe, V. and Perera, T. R. (2013), “Determinants of profitability of commercial banks in Sri Lanka”, *International Journal of Arts and Commerce*, Vol. 2 No. 10.
- Yahya, A., Akhtar, A. and Tabash, M. (2017), “The impact of political instability, macroeconomic and bank-specific factors on the profitability of Islamic banks”, *Investment Management and Financial Innovations*, Vol. 14 No.4, pp. 30-39, [https://doi.org/10.21511/imfi.14\(4\).2017.04](https://doi.org/10.21511/imfi.14(4).2017.04).
- Zarrouk, H., Jedidia, B. and Moualhi, M. (2016). “Is Islamic bank profitability driven by same forces as conventional banks?”, *International Journal of Islamic and Middle Eastern Finance and Management*. Vol. 9 No. 1, pp. 46-66. <https://doi.org/10.1108/IMEFM-12-2014-0120>.