Impact of Bank-Specific and Macroeconomic Factors on the Net Interest Margin of Financial Institutions in Sri Lanka

D.M. Jayasena[1], M.K.S.M. Samaranayake[2] & A.M. Weerasinghe[3]

[1, 3] Department of Industrial Management, Faculty of Applied Sciences

[2] Departments of English Language Teaching, Faculty of Business Studies & Finance, Wayamba University of Sri Lanka

Abstract

Banks and other deposit-taking financial institutions play a crucial role in any country's economy. The Interest Spread and Net Interest Margin (NIM) in Sri Lankan financial institutions are considerably higher than in other regional countries, indicating high intermediation costs. This paper aims to identify the primary factors contributing to maintaining a higher margin in the sector. Credit risk, liquidity risk, firm size, operational expenses, and earning ability were considered as bank-specific explanatory variables, while interest rate, inflation rate, and economic growth rate were used as macroeconomic explanatory variables. The selected sample comprised seven Licensed Commercial Banks (LCBs), three Licensed Specialized Banks (LSBs), and five Licensed Finance Companies (LFCs) based on their total assets. Data were collected from published secondary sources over a period of 10 years (2009-2019). The data for 2020, 2021, and 2022 were omitted due to the negative impact of COVID-19 and the economic crisis in the country. Multiple regressions with a fixed-effect model were employed to identify significant variables. The results reveal that firm size, credit risk, interest rate, and economic growth are significant across the entire sample. However, firm size emerges as the only industry-specific significant variable in Licensed Finance Companies (LFCs).

Keywords: *Financial institutions, Sri Lanka, Net Interest Margin*

Introduction

Banks and other deposit-taking financial institutions play a pivotal role in the Sri Lankan economy. These institutions have more than 70 % assets of the finance system at the end of 2019 (CBSL, 2019). Licensed Commercial Banks (LCBs), Licensed Specialized Banks (LSBs), and Licensed Finance Companies (LFCs) are the three main categories of financial intermediaries in Sri Lanka. One of the key roles of the financial system is to work as an efficient intermediator between savers and investors (Teshome et al., 2018). An efficient financial system is required for a country's sustainable economic growth (Misra & Aspal, 2013). Interest Spread and the Net Interest Margin (NIM) can be used to measure the efficiency of the financial intermediaries. Interest Spread is the difference between the rates paid on deposits and the interest rates charged on loans (Ram & Mesfin, 2019). The Net Interest Margin (NIM) is the difference between banks' actual interest revenues and actual interest expenses as a ratio to the banks' total assets (Zhou & Wong, 2008). Researchers have used both measurements to measure the efficiency of the financial system.

Financial institutions in Sri Lanka currently maintain a higher interest margin compared to other neighboring countries, as evident in Table 1. This reflects the high intermediation costs incurred by the sector. Therefore, it is worthwhile to investigate the most significant causes of this sector's inefficiency. The primary objective of this study is to identify the significant bases behind this phenomenon, focusing on both bank-specific and macroeconomic variables. Another objective is to assess whether there are differences between Licensed Commercial Banks (LCBs) and Licensed Finance Companies (LFCs) in these determinants.

Interest Spread is the most accurate measure of efficiency in the financial sector, requiring average lending and deposit rates (De Siva et al., 2020). However, obtaining accurate and reliable data poses a key challenge for researchers. Consequently, many studies focus on Net Interest Margin (NIM) (Puspitarai et al., 2021). Metrics like Return on Assets (ROA), Return on Equity (ROE), Net Interest Income, and Net Interest Margin are crucial ratios used to assess financial institutions' performance. Among these, Net Interest Margin is particularly effective in measuring institutional efficiency and aiding managerial decisions. Aligned with previous research studies, this study employed NIM as a proxy to measure bank efficiency (Dissanayake and Kethmi, 2021).

In literature, scholars have identified certain factors that determine a bank's net interest margin. Among them, credit risk is one of the most powerful factors. There is the possibility of a financial loss if a borrower fails to meet contractual obligations (CBSL, 2019). Tarus, Chekolb, & Mutwoic (2012) have found it significantly positive with the NIM. Another study in Mainland China by Zhou & Wong (2008) found that credit risk can be measured by the total loan to total assets ratio and has a positive

relationship with the NIM. The reason for this relationship is that the firm has additional capital and attempts to invest its assets more riskily. They expect higher margins.

Bennaceur and Goaied (2008) have found that firm size and the NIM have a positive and significant association. Ram & Mesfin (2019) and Obeid & Adeinat (2017) reveal that bank size is positive and statistically significant with the NIM. However, Kengatharan (2018) and Zhou & Wong (2008) find that size negatively impacts firms' profitability. It proves that large banks can face the interest rate risk more than others with control liabilities.

According to Suravimala (2006), "firms need the additional high cost of funds other than the deposit to grant loan and advances". Therefore, it has a negative relationship with the NIM. Liquidity assets express conversation assets or security into cash without impacting the market price during critical economic conditions. Consequently, firms need to maintain a satisfactory level of liquidity to meet their obligation. Similar work has also been pursued by Ram & Mesfin (2019), who have found that the liquidity position of Ethiopian commercial banks has a significant negative relationship with the NIM. These results are also supported by Bashir (2021). However, Saksonova (2014) finds no significant relationship between liquidity and the NIM in the Serbian Banking Industry.

Bashir (2018) finds that leverage negatively impacts the NIM in Pakistan commercial banks. However, Suravimala (2006) finds that leverage

has no significant impact on the NIM. Earning is a good indicator to emphasize the financial health of the organization. It expresses the ability to generate revenue from its lending services. Ram & Mesfin (2019) use the earning ability to find the relationship with the NIM, subsequently identifying that earning ability is significantly undesirable with the NIM. However, a limited number of studies use this variable to determine the relationship with the NIM.

Horvath (2009), using the data from the financial statements of 25 commercial banks, identifies the determinants of interest rate margins of Czech banks. He uses capital adequacy as a variable and discovers a negative relationship between interest margins. According to this study, higher capital adequacy of a bank depends on lower interest margins, while lower margins depend on price stability. However, Ram & Mesfin (2019) find that capital adequacy positively relates to the NIM.

The ratio of operating expenses to total assets is used to determine relevant facts about variations in financial institutes' costs over the financial system's assets. The studies by Zhou & Wong (2008) and Bennaceur & Goaied (2008) also reveal a positive relationship with the operating expenses to total assets ratio. Both studies use this ratio to measure the organization's operational expenses. Increasing the total amount of operating cost will also seek a broader margin to cover it. But Tarus, Chekolb, & Mutwoic (2012) find that operational expenses have no significant relationship with the NIM

in Kenya.

Real GDP is another appropriate variable associated with the NIM. It encourages the demand for institution loans and advances and affects the interest margin. Udom et al. (2016) investigated the interest margin in Nigeria. They find that real GDP positively correlates with interest margin. Jagirani & Zaidi (2017) and Ram & Mesfin (2019) have used real GDP growth as a macroeconomic variable. Their study results show that economic growth positively correlates with the NIM. However, Azeez & Gamage (2013) find that GDP negatively correlates with the NIM.

Inflation is another crucial macroeconomic variable since it measures the general price level. High inflation influences the surge of the NIM. Thus, it would be a positive determinant to increase the NIM value. Azeez & Gamage (2013) have found inflation is significantly positive with the NIM. However, Jagirani & Zaidi (2017) and Obeid & Adeinat (2017) find a significant negative relationship between Inflation and the NIM. The treasury bill rate changes can impact any financial organization's cost, profit, and liquidity. Hence, the 12-month treasury bill rate is used as a proxy to measure interest rates. Suravimala (2006) finds it has a significant relationship with the NIM.

Azeez & Gamage (2013) conducted a study using Ho and Saunders' dealership model to uncover the impact of bank-specific, industry-specific, and macroeconomic variables on the net interest margin of

Sri Lankan commercial banks from 1999 to 2011. The results support the identification of factors such as staff cost, capital cost, market power, inflation, and treasury bills, which have a positive impact, while factors like management quality, statutory reserve requirements, and GDP growth have a negative impact.

Kengatharan and Sivalingam (2018) examine the capital structure pattern of Sri Lankan commercial banks and its influence on the net interest margin of commercial banks in Sri Lanka. The study reveals that Sri Lanka has a low-leverage capital structure pattern.

Kumari (2014) explores the determinants of net interest margin in Sri Lanka using reports from domestic banks between 2003 and 2011. The study identifies determinants such as operating cost, credit risk, risk aversion, non-interest income, and capital adequacy requirements. Additionally, the study recognizes some non-significant factors, including market rivalry, other regulations on banks, risks arising from the volatility of market prices, and macroeconomic variables.

Seelanatha & Ihalanayake (2019) investigate how the Sri Lankan economy is affected during wartime and post-wartime through a longitudinal graphical analysis. They find that the civil war has a positive impact on the economy by reducing the net interest margin.

Previous research has predominantly focused on exploring the determinants of net interest margin in the commercial banking sector in Sri

Lanka. There is a noticeable gap in the existing literature concerning how determinants for Licensed Specialized Banks (LSBs) and Licensed Finance Companies (LFCs) impact net interest margin (NIM) in Sri Lanka. This gap requires further investigation, considering that both banking and non-banking industry-specific determinants play a role in influencing NIM in the country. Additionally, understanding how macroeconomic variables such as GDP growth rate and inflation affect NIM for both banking and non-banking financial institutions operating in Sri Lanka is crucial.

A more comprehensive understanding of this concept is essential as financial structures in developing countries have consistently demonstrated significantly higher intermediation spreading on average than those in developed countries. Therefore, this study aims to address this research gap to a certain extent.

Methods

The population of this study is 26 LCBs, 6 LSBs, and 38 LFCs in Sri Lanka. The sample is selected through an analysis of their asset ratios and the availability of the data. Therefore, 7 licensed commercial banks, 3 Licensed specialized banks, and 5 finance companies from 2009 to 2019 were considered. The data for 2020, 2021, and 2022 were omitted due to the negative impact of COVID-19 and the economic crisis in the country. A descriptive research design was utilized to examine the macroeconomic and industry-specific factors that affected the NIM in Sri Lankan financial institutions between 2009 and 2019. Mainly, annual data were taken from each financial institution's annual reports. Macroeconomic information was also extracted from the Central Bank of Sri Lanka's annual reports and quarterly publications.

Figure 1 depicts the conceptual framework developed based on previous literature. The dependent variable is the net interest margin (NIM), calculated as total interest income minus total interest expenses. It serves as a proxy for measuring the efficiency of the sector, assuming that efficient institutions maintain relatively lower margins than inefficient ones.
This inefficiency ultimately results in a higher interest spread.

Bank-specific explanatory variables include Credit Risk *(CR)*, Firm Size *(SIZE)*, Liquidity Risk *(LIQR)*, Earning Ability *(EA)*, and Operational Expenses *(OE)*. These variables were incorporated into a regression model to examine their relationships. Additionally, macroeconomic variables such as Economic Growth Rate *(EG)*, Inflation Rate *(INF)*, and Interest Rate *(IR)* were utilized in the model. The operationalization of the variables and the expected sign is shown in Table 2.

Based on the conceptual framework, this study tests the following hypothesis.

H_1: There is a positive significant relationship between credit risk and the NIM
H_2: There is a negative significant relationship between firm size and the

NIM

H₃: There is a positive significant relationship between liquidity risk and the NIM

H₄: There is a negative significant relationship between earning ability and the NIM

H₅: There is a positive significant relationship between operational expenses and the NIM

H₆: There is a significant relationship between economic growth and the NIM

H₇: There is a significant relationship between the inflation rate and the NIM

H₈: There is a significant relationship between Interest Rate and the NIM

The panel dataset comprised a total of 165 observations, covering 15 institutes over the span of 11 years. STATA version 16 was employed for data analysis. Generally, fixed effects models are suitable when aiming to estimate the average effect of a variable within a group. Consequently, this study utilized a fixed effects model to estimate the coefficients of the variables.

The primary model encompassed both Licensed Commercial Banks (LCBs), Licensed Specialized Banks (LSBs), and Licensed Finance Companies (LFCs). To address the second objective of the study, the primary model was bifurcated into two segments: one for LCBs & LSBs and the other for LFCs. This division aimed to comprehend the nature of the influence of determinants on net interest margins in each institution.

The equation for the Primary model

$$NIM = \alpha_0 + \alpha_1 CR + \alpha_2 EA + \alpha_3 LIQR + \alpha_4 OE + \alpha_5 SIZE + \alpha_6 INF + \alpha_7 EG + \alpha_8 IR + \varepsilon i$$

The equation for the LCB & LSB model

$$NIM = \beta_{A0} + \beta_{A1} CR + \beta_{A2} EA + \beta_{A3} LIQR + \beta_{A4} OE + \beta_{A5} SIZE + \beta_{A6} INF + \beta_{A7} EG + \beta_{A8} IR + \varepsilon i$$

The equation for the LFCs model

$$NIM = \beta_{B0} + \beta_{B1} CR + \beta_{B2} EA + \beta_{B3} LIQR + \beta_{B4} OE + \beta_{B5} SIZE + \beta_{B6} INF + \beta_{B7} EG + \beta_{B8} IR + \varepsilon i$$

Results

Regression analysis was done by stepwise process and was tested with the relevant hypothesis. P values of each variable were used as evidence to reject the null hypothesis and include the explanatory variable in the model.

When analyzing the primary model, the results showed a significant negative relationship between credit risk and the NIM. The total loans to total assets ratio was used as a proxy for credit risk. The expected relationship between credit risk and NIM was positive. Nevertheless, credit risk was a negative sign. Its coefficient and p-value were -0.158 and 0.013, respectively. The negative sign indicated that credit distribution failures like bad debts caused to decrease in the firm's income (Syaifuddin et al., 2018). The same relationship was present in LCBs and

LSBs but not in LFCs.

Firm size and the NIM, too, had a significant negative relationship when the Primary model was considered. The coefficient of SIZE was -0.262, and the p-value was 0.000054. As expected, the negative sign derived that a larger scale of operations was linked with a low-interest margin. This outcome was supported by Zhou & Wong (2008). Based on the results, a 1% increase in firm size would decrease the NIM by 26.2. The same relationship was present in LFCs but not in LCBs & LSBs. A significant association between Liquidity assets and the NIM could be observed when we considered the LCBs & LSBs model but not in the primary and LFC models. No significant relationship was observed between earning ability and the NIM in the above models. A significant association between operational expenses and the NIM could be seen when we considered model LCBs & LSBs but not in the primary and LFC models.

Economic growth, Interest rate, and inflation were considered macroeconomic variables. Economic growth and inflation rate significantly positively correlated with the expected coefficient sign. Moreover, the study found that the only insignificant macroeconomic variable was the Interest rate (Table 3.). The variable Economic Growth had a 0.366 coefficient value and 2.4164×10^{-9} p-value. This implied that a 1% increase in economic growth would have a 36.6% increase in the NIM. This finding is similar to the results of Jagirani & Zaidi (2017), Azeez & Gamage (2013), and Ram & Mesfin (2019). Furthermore, inflation significantly impacted the NIM with a coefficient of 0.443 and p-value of 2.1454×10^{-12}. These results agree with the existing studies by Tarus, Chekolb, & Mutwoic (2012) and Azeez & Gamage (2013). The results are inconsistent with Jagirani & Zaidi (2017) and Obeid & Adeinat (2017), but there may be several reasons. Azeez & Gamage (2013) reveal that firms expand the gap between lending and borrowing rates during frequent increases in inflation.

Table 4 shows the fitted model summary statistics. R Square value for the fitted model was 0.586. Hence, the fitted model could explain 58.6 percent of the total variation for NIM values. R Square values for the fitted model LCBs & LSBs and LFCs were 0.581 and 0.730, respectively. Hence, 58.1 and 73 percent of the total variation for NIM values could be explained by the fitted models.

Discussion

Net interest margin is a good indicator to measure the effectiveness of monetary policy mechanisms, the profitability of the financial system, and financial sector development. This study investigated the determinants of the NIM in financial institutes in Sri Lanka from 2010 to 2019. The independent variables were analyzed as industry-specific and macroeconomic variables to illustrate the relationship between the independent variables and the dependent variable. The primary regression model included both LCBs & LSBs and LFCs. Two secondary regression models were deployed

using the primary model to investigate the impact of the NIM in LCBs & LSBs, and LFCs separately. This study showed that only the inflation rate and economic growth significantly positively affected the NIM across all financial institutions. Other variables do not offer a significant positive impact for all models simultaneously.

Moreover, operational expenses and liquidity assets had a significant positive relationship with the NIM in the LCBs & LSBs sectors. However, Credit risk showed a significant negative relationship with the NIM among the entire financial institutions and LCBs & LSBs but not in LFCs. This study further indicated that firm size was insignificant for LCBs & LSBs. However, in LFCs, firm size was the only industry-specific variable negatively impacting the NIM. All other industry-specific variables were insignificant in this sector.

The main objective of this study is to identify the root causes for maintaining a higher interest spread and net interest margin in Sri Lankan financial institutions. The results reveal that operational expenses are a key variable shaping interest spread, emphasizing the need for financial institutions to focus on minimizing these expenses. Another significant aspect is the impact of liquidity risk on margin in Licensed Commercial Banks (LCBs), suggesting a need to address liquidity risk associated with their operations.

Additionally, the macroeconomic environment of the country does not favor bringing down the higher margin maintained. Accelerated economic growth leads to increased demand for financial resources by borrowers, pushing the sector to maintain a higher margin. Therefore, it is crucial to expand the financial sector to meet the financial requirements of borrowers. The impact of determinants is not the same across all types of financial institutions. Notably, size plays a key role in shaping the margin in Licensed Finance Companies (LFCs), potentially due to their smaller market segment. Larger institutions have the capacity to reduce the margin, whereas many LFCs in Sri Lanka are relatively small in terms of total assets.

Conclusion

This study investigated the determinants of the NIM of financial institutes in Sri Lanka using macroeconomic and industry-specific factors. The large NIM demonstrates a degree of stability for a financial system. Hence, it will discourage potential depositors from depositing their money in banks, non-banks, and other financial institutes. Therefore, policymakers should bring down the financial institution's interest rate spread. The study's results recommend that policymakers be more sensitive to the real GDP growth rate and the inflation rate of Sri Lanka because these factors significantly positively impact the NIM among all financial institutions.

Furthermore, all managers of financial institutions should be responsible for minimizing the risk of credit or non-performing loans, which would directly decrease the interest income of financial institutions. It badly

affects the financial sector's profitability. Expanding the market share of financial institutes would be an advantage in maintaining a constant NIM value. A clear understanding of the behavior of these variables is helpful for policymakers. The primary causes for higher NIM and spread are credit risk and high operations costs in commercial banks. Therefore, it is urgent to improve the operation efficiency and minimize the overhead cost, especially in state-owned large-scale banks. Another plausible solution is promoting the underdeveloped financial market with different financial sources, such as the bond market. Further to bankers' perspective, they should maintain a systematic approach to assessing the creditworthiness of their customers.

Figures and Tables

Figure 1: Research framework
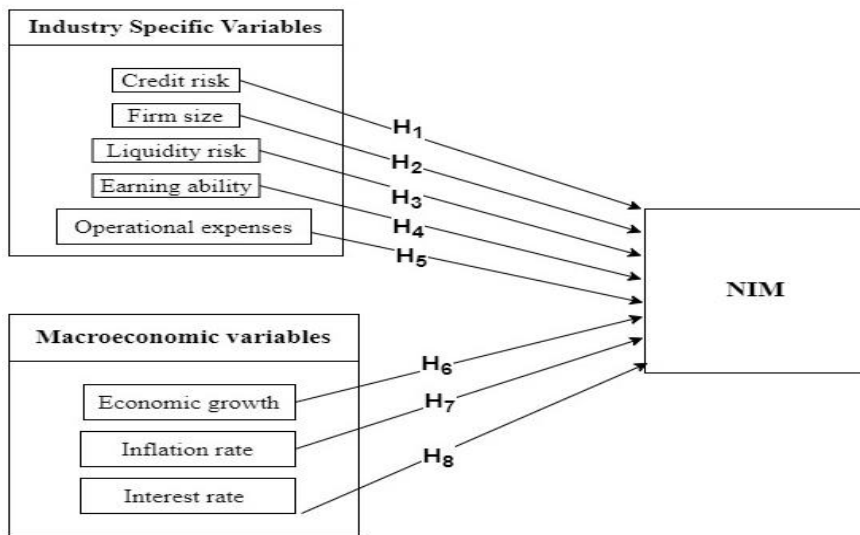
(By author constructed 2024)

Table 1: Net interest margin in selected Asian countries

Country	2013	2014	2015	2016	2017	2018	2019
Sri Lanka	4.85	4.19	4.02	4.08	4.49	4.33	4.41
India	3.01	2.85	2.89	2.84	3.01	3.11	3.07
Pakistan	3.87	4.51	4.28	3.72	3.27	3.17	3.22
Bangladesh	3.99	3.92	2.02	2.43	2.43	2.55	2.52
Vietnam	3.10	2.53	2.93	2.99	3.62	3.60	3.44
Myanmar	0.06	1.60	1.60	1.60	2.91	2.81	2.89

Source: Economic Research - St. Louis Fed (2022)

Table 2: Operationalization of variables and expected sign

Variable Type	Variable	Measurement	Notation	Expected Sign
Dependent Variable	Net Interest Margin	Interest Income – Interest expenses to average assets	NIM	
Independent Variable	Credit Risk	Total loan to total assets ratio	CR	Positive
	Firm Size	Natural logarithm of assets	SIZE	Negative
	Liquidity Risk	Total loan to total deposit ratio	LIQA	Positive
	Earning Ability	Interest income to total income ratio	EA	Negative
	Operational Expenses	Operating expenses to total assets ratio	OE	Positive
	Economic Growth	Real GDP growth rate	EG	Positive / Negative
	Inflation Rate	Annual inflation rate	INF	Positive / Negative
	Interest Rate	12 months treasury bill rate	IR	Positive / Negative

Table 3: Coefficient values for fitted model

Model	Primary Model		LCBs & LSBs Model		LFCs Model	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
Constant	0.443	0.000		0.000	-	0.000
CR	-0.395	0.000	-0.209	0.005	-	-
EA	-	-	-	-	-	-
LIQR	-	-	0.153	0.030	-	-
OE	-	-	0.279	0.000	-	-
SIZE	-0.064	0.000	-	-	-0.322	0.002
INF	0.125	-	0.457	0.000	0.503	0.000

EG			0.082	0.013	0.365	0.000	0.249	0.020
Model Summary	R		0.765			0.762		0.854
	R Square		0.586			0.581		0.730
	Durbin-Watson		0.284			0.522		0.742

Table 4: Hypothesis test results (Significance at 0.05)

No	Hypotheses	Results		
		Primary (A)	LCBs & LSBs (B)	LFCs (C)
H₁	There is a relationship between credit risk and the NIM	Accepted	Accepted	Rejected
H₂	There is a relationship between firm size and the NIM	Accepted	Rejected	Accepted
H₃	There is a relationship between liquidity risk and the NIM	Rejected	Accepted	Rejected
H₄	There is a relationship between earning ability and the NIM	Rejected	Rejected	Rejected
H₅	There is a relationship between operational expenses and the NIM	Rejected	Accepted	Rejected
H₆	There is a relationship between economic growth and the NIM	Accepted	Accepted	Accepted
H₇	There is a relationship between the inflation rate and the NIM	Accepted	Accepted	Accepted
H₈	There is a relationship between Interest Rate and the NIM	Rejected	Rejected	Rejected

References

Azeez, A., & Gamage, S. (2013). The Determinants of Net Interest Margins of Commercial Banks in Sri Lanka. Vidyasagar University Journal of Commerce.

Bashir, Z., 2021. Determinants of Net Interest Margin-A Study Based On Conventional Banks Of Pakistan. *Bhatti, GA, Bashir, Z., & Abbas*, (2018), pp.92-105.

Bennaceur, S., & Goaied, M. (2008). The Determinant of Commercial Bank Interest Margin and Profitability: Evidence from Tunisia. *Frontiers in Finance and Economics*, 106-130.

CBSL. (2019). *Annual Report of Central Bank of Sri Lanka.* Colombo: Central Bank of Sri Lanka.

De Silva, D. N., Chinna, K., & Azam, S. F. (2020). The Influence of Net Interest Margin (NIM) on Profitability of Sri Lankan Banking Industry. Global Journal of Management and Business Research, 2(3), 23-41.

Dissanayake, D. M. U. H., & Kethmi, G. A. P. (2021). Determinants of Bank Performance: Evidence from Commercial Banks in Sri Lanka. International Journal of Innovative Science and Research Technology, 110-117.

Doliente, J. S. (2006). Determinants of Bank Net Interest Margins in Southeast Asia. *Applied Financial Economics Letters*, 53-57. doi:10.1080/1744654042000303629

Edirisuriya, P. (2007). Effects of Financial Sector Reforms in Sri Lanka: Evidence from the Banking Sector. *Asia Pacific Journal of Finance and Banking Research*, 45-63.

Garza-Garcia, J. G. (2010). What Influences Net Interest Rate Margins? Developed versus Developing Countries. *Banks and Bank Systems, 5*(4), 32-41.

Ho, T. S., & Saunders, A. (1981). The Determinants of Bank Interest Margins: Theory and Empirical Evidence. *The Journal of Financial and Quantitative Analysis*, 581-600. doi:10.2307/2330377

Horvath, R. (2009). The Determinants of the Interest Rate Margins of Czech Banks. *Finance a uver-Czech Journal of Economics and Finance*.

Jagirani, T. S., & Zaidi, Z. H. (2017). An Analysis of Macroeconomic Variables and Interest Rate Spread in Pakistan. *International Journal of Management Sciences and Business Research*, 27-34.

Kengatharan, L., & Sivalingam, L. (2018). Does Capital Structure Matter? The Influence of Capital Structure on Net Interest Margin: Evidence from Sri Lanka. *Asian Journal of Finance & Accounting, 10*(2). doi:10.5296/ajfa.v10i2.13286

Kumari, S. (2014). Determinants of Interest Margins of Banks in Sri Lanka. *South Asia Economic Journal*, 265-280.

Louis, e. R. (n.d.). *FRED*. Retrieved March 20, 2021, from https://fred.stlouisfed.org/tags/series?t=nim

Misra, S. K., & Aspal, P. K. A Camel

Model Analysis of State Bank Group. World Journal of Social Sciences; 2013; 3(4):36 – 55.

Marinkovic, S., & Radovic, O. (2014). Bank Net Interest Margin related to Risk, Ownership, and Size: An Exploratory Study of the Serbian Banking Industry. *Economic Research-Ekonomska Istraživanja*, 134-154.

Obeid, R. & Adeinat, M. (2017), 'International Journal of Economics and Financial Issues Determinants of Net Interest Margin: An Analytical Study on the Commercial Banks Operating in Jordan (2005-2015)', International Journal of Economics and Financial Issues 7(4), 515–525. URL: http:www.econjournals.com

Qi, M., & Yang, Y. (2017, January). The Determinants of Bank Interest Margins: A Short-term Funding Perspective. *Applied Economics and Finance, 4*(1), 127-137. doi:10.11114/aef.v4i1.1902

Puspitasari, E., Sudiyatno, B., Aini, N., & Anindiansyah, G. (2021). The relationship between net interest margin and return on asset: Empirical study of conventional banking in Indonesia. Academic Journal of Interdisciplinary Studies, 10(3), 362-374.

Ram, M. V., & Mesfin, A. E. (2019). Determinants of Net Interest Margin in Selected Commercial Banks in Ethiopia. *International Journal of Scientific Research and Reviews*, 1646-1655.

Saksonova, S. (2014). The Role of Net Interest Margin in Improving Banks' Asset Structure and Assessing the Stability and Efficiency of their Operations. *10th International Strategic Management Conference* (pp. 132-141). Elsevier Ltd.

Seelanatha, L., & Ihalanayake, R. (2019). War and Peace Times, Interest Margin and Commercial Bank Operations: A Case Study of the Sri Lankan Banking Sector. *International Journal of Development and Conflict*, 122-141.

Sidabalok, L. R., & Viverita, D. (2012, January 23). The Determinants of Banks' Net Interest Margin in Indonesia: A Dynamic Approach. Universitas Indonesia, Indonesia. Retrieved from http://ssrn.com/abstract=1990175

Surawimala, W. (2006, April). *Interest Rate Spread in Commercial Banking Sector of Sri Lanka.* Sri Jayewardenepura: University of Sri Jayawardanapura. Retrieved from Scholar Bank: http://dr.lib.sjp.ac.lk/handle/123456789/4785

Tarus, D. k., Chekolb, Y. B., & Mutwoic, M. (2012). Determinants of Net Interest Margins of Commercial Banks in Kenya: A Panel Study. *2nd Annual International Conference on Accounting and Finance* (pp. 199-208). Eldoret: Procedia Economics and Finance.

Teshome E., Debela K. and Sulta M. Determinant of financial performance of commercial banks in Ethiopia: Special emphasis on private commercial banks. African Journal of Business Management2018;12(1): 1