



Impact of Interest Rate Spread (IRS) on the Performance of All Commercial Banks: Evidence from Pakistan

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Abstract

To examine the impact of interest rate spread on bank performance and investigate how interest rate spread affects commercial banks' performance in Pakistan from 2006 to 2014 with balanced panel data. This study relied on secondary data from 33 commercial banks in Pakistan from 2015 to 2023. Return on Assets (ROA) and Return on Equity (ROE) are adopted in this study as measures of the efficiency of the commercial banks in Pakistan. These are used as a dependent variable. In addition, the following ratios are incorporated in this study. Interest rate spread (IRS) has been used as an independent variable while bank liquidity (BL), market profit opportunity (MPO), interest income (II), and capital adequacy (CA) have been controlled. Based on tests conducted earlier and correlation tests, the Panel data regression analysis is conducted using the Random Effect Model. The study shows that there is a positive relationship between the dependent variable namely Interest rate spread (IRS), and the two parameters of Bank Performance namely, Return on Assets (ROA) and Return on Equity (ROE). The study also established that there is a positive significant relationship between the performance of commercial banks and bank liquidity (BL), capital adequacy (CA), and market profit opportunity (MPO) but not with interest income (II). However, interest income (II) is not very relevant to the evaluation of the performance of the banking sector and has a small negative effect on the performance indicators, including return on assets and return on equity. Thus, the results reveal that the IRS affects bank performance in a positive manner proportionately based on the variation in the current period lending and borrowing spread. Nonetheless, better bank liquidity, adequate capital, and market opportunity contribute to boosting the performance of the banks, listed interest income is not enough.

Keywords: Interest Rate Spread (IRS), Commercial Banks Performance

1. Introduction

The banking sector is the backbone of any developing country. In Pakistan, banks operate in a competitive environment. The banking sector is a vital pillar of economic development, especially in emerging economies like Pakistan, where financial intermediation through commercial banks fuels economic growth by providing credit to businesses and individuals (Bisht et al., 2022). Thus, the knowledge of the discussed determinants affecting the operation of commercial banks becomes essential (Ndiritu et al., 2024).

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Analyzing the above-detailed factors, the performance of the commercial banks fastest the financial stability and economic growth rate in Pakistan. Among the factors affecting bank performance, the IRS, which is the difference between the rates on loans received and the rate paid on deposits, is of main important (Mushafiq et al., 2023). Though, a higher IRS may also mean greater profitability, it also shows inefficiencies or the absence of competition in the banking structure. Although a tremendous growth was seen in the year 2008 the banking sector felt some pressure in solvency and liquidity which had caused damage to the performance of the banking system and the financial structure of the country (Khan & Sattar, 2014).

Fundamental to the sustainability and growth of the financial framework of Pakistan, the current performance of commercial banks has huge significance. The Interest Rate Spread (IRS) is a critical determinant of banks' profitability, but previous literature in the Pakistan context is limited regarding its association with performance (Shaheen et al., 2024). The knowledge of how the IRS affects other measures of organizational performance such as the return on the asset (ROA) and return on equity (ROE) is vital in policy-making processes and banking organizations. However, other variables such as BL, MPO, II, and CA exist and may make the relationship between IRS and banks' performance alter due to the interplay of these variables. This research therefore seek to fill these gaps by establishing the effect of the IRS on the overall performance of all the commercial banks in Pakistan that would offer useful insight for future improvement of profitability in banking as well as any regulatory adjustments.

The study is important because IRS is a significant indicator of the financial performance and efficiency of banks. In Pakistan, a high IRS can also help the banks in increasing the spread between the lending to deposit rates, however, it can also lead to certain waste and cost of funds being higher to borrowers. It can therefore reduce credit mobilization, thereby unfavorably affecting economic growth. This is so because given the financial intermediation role of banks, the changes in IRS must be connected with the variability of such banking performance indicators as profitability and efficiency measured, for example, by return on asset (ROA) and return on equity (ROE). The banking system of Pakistan is conspicuous and a supportive part of nourishing the growth and sustainability of the economy of the financial sector (Mushafiq et al., 2023). The banking sector plays a pivotal factor for the whole economy, reliability and stability are very important. They came across a pretty large increase all through the banking period of Pakistan. This paper identifies the role played by Pakistani banking sector in contributing to the national economy, its impact on growth, stability, and development. Banks are the most important part of the country's economy because they help in extending credit, in export & import activities, in the growth of SMEs as well as in financial inclusion, and large infrastructure development ventures (Hussain, 2021). In this regard, to make Pakistan a competitive country in the contemporary competitive world, a healthy, dynamic and well-regulated banking industry is pivotal for sustainable development. Therefore, this study aims to investigate the various degrees of association between the IRS and profitability of the commercial banks in Pakistan, through the analysis of ROA and ROE (Mushafiq et al., 2023).

To analyze the correlation between the IRS and the performance of the commercial banks as a proxy of ROA and ROE. To test the effect of control variables like BL, MPO, I, and CA on the performance of the banks. To meet the objectives, this study aims to answer the following research questions: This study seeks to understand the effects that exist between IRS and the performance of commercial banks in Pakistan with special reference to ROA and ROE. According to this study, what roles do control variables like BL, MPO, II, and CA play in the

relationship between the IRS and the performance of commercial banks?

This study selects the commercial banks from 2006 to 2014 in Pakistan and it explore how much impact interest rate spread will make on eighty six banks out of 33 commercial banks. The study used financial information of the sample commercial banks operating in Pakistan, which are listed on KSE. In this study, we used panel data analysis that combines both a cross-sectional and time-series analysis to determine the relationship between the interest rate spread and the performance of banks. Methodologically, different statistical technique is used in this study such as descriptive analysis, correlation, and other regression technique which is random effect model used in the outcome. IRS has a positive and statistically significant relationship with the performance of all commercial banks in Pakistan. Robustly, analyses revealed that BL, CA, and MPO influenced the performance of the banks. The analysis of the II resulted into negative and insignificant correlation with both the measures of performance; the ROA and the ROE.

2. Literature Review

This section includes the theoretical and empirical literature related to this field of study. Specific literature is relevant to interest rate spread, profitability, and performance and their implementations. This section also included the discussion about objectives, results of data analysis techniques, and dependent and independent variables of other researchers who work in the same field of study. Some theories here to understand the concept of interest rates. Only three theories have been discussed here under.

Rational Expectation Theory In the rational expectation theory of interest rates, researchers found values in mathematical form. It is based on efficient market theories related to interest rates. I found the answer to the question: Why should the inflation rate not be deducted from the nominal rate of interest in the short run?

Classical Theory of Interest Rate According to Keynes, the crossing of demand and investment schedule is the base of this theory. Suggested that by crossing of savings and demand schedule, the rate is established. This term explains the relationship of investment and savings by interest rate. So it is confirmed that there is a direct relation between savings and income level. Studied capital demand from the investment varieties in a class of business. So it is proved that savings and investment are the two compulsory factors to define interest rates.

Loanable Fund Theory of Interest Early British economists embody the loanable fund theory. Based on this theory it holds that the rate of interest is determined by the demand and supply of such funds depicted as Loanable Funds. In other words, rates of interest are formed by the connecting of demand for and supply of these funds. The loanable fund theory is actually the advanced version of the classical theory of interest rates.

2.1 Empirical Literature

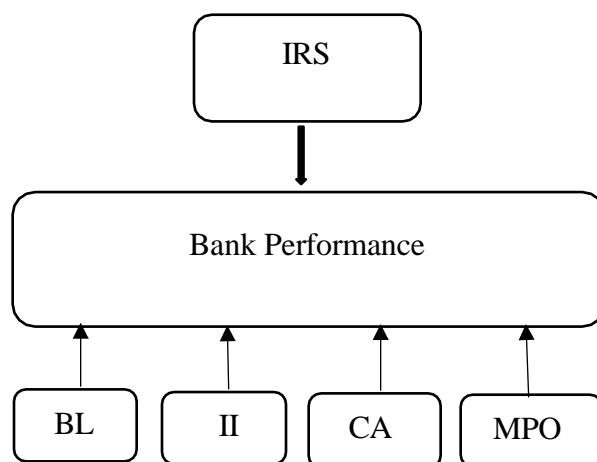
In an empirical analysis, (The & Sector, 2003) examined the factors of interest rate spread were investigated using a cross-sectional of 29 commercial banks from Pakistan. Therefore macro variables and industry related variables used as dependent variable, is the IRS interest rate spread. GLSM generalized least square method is also used for testing the heteroscedasticity of the variables. This study also extends on (Siddiqui, 2012) by examining the dissemination by considering a panel data for the time period 2002- 2006. To include factors of spread in Armenia, bank related, industry related and time variant macro variables were used. The analysis found out that there exist cross time and cross bank variations of spread in relation to bank related variables. Comparing the values of the macro variables in 1982 to 1990, one can observe that macro variables have a relatively weak influence for the IRS. (Alper & Anbar, 2011) discussed in her research about the basic concept behind the spread in Bangladesh using

the data of the commercial banks of Bangladesh from 1974 to 2011 July. The empirical analysis reveal that there is a positive correlation of deposits with IRS but the correlation of lending rate and interest spread is insignificant.

(Rebei, 2014) analyzed this behavior through elements of the IRS by using bank, industry and macro variables and legal indicatives. Solomon Island bank still display low charges to borrowers and thus increasing mobility in the charging of interest rates. The empirical results revealed that overhead cost has a direct relationship with the IRS. As a result of applying panel data analysis, several issues emerged including the reduction of the problem of multicollinearity and the enhancement of the degree of freedom. In this context the spread is considered as the dependent variable measured as the net interest margin in the percentage of assets. (Samahiya, M., & Kaakunga, 2012) evaluate the determinants of spread has been analyzed using panel data analysis Namibia. The ordinary Least Square method was used to analyze the relationship of several factors that are related to the banks to ascertain their influence spread from the year 2004 to 2011. The findings show that spread is reduced as the cost efficiency ratio and deposit market share increase and spread rises as a bank is more liquid due to interest rate spread.

The author, (Ding, 2012) described the factors causing higher spread in the performance of Chinese banks. Research contributes to changes of bank elements and how the performance is influenced by a higher level of spread. Conforming to the approach used in the study, the two-step model was used to examine the study. In the case of the 13 profitable banks in China, the performance results indicated that an oligopolistic market structure had a significant negative relationship with performance before the year 2000 and positive and significant from the year 2000. Bank interest margin (NIM) was examined by (Almarzoqi, R., & Naceur, 2015) with causes of insignificance in Caucasus as well as Central Asia from 1998 to 2013. A sample of 110 commercial banks was considered for reducing the effects of cross-sectional heterogeneity to control the macro and micro-economic variables on the net interest margin. Descriptive statistics and Regression analysis results indicate that the value of the impact of the independent variable on the spread is contingent on the country's policies regarding interest rates. It is concluded that the literature reviewed to compile this paper demonstrates that there are several factors employed to develop interest rate spread. In the case of the interest rate spread, micro-economic, macroeconomic, and bank-specific variables are employed for the G7 countries. Here the a need to expand on the above findings to address how interest rate spread impacts the performance of the banks in developing nations which include; Pakistan.

2.2 Conceptual Framework



2.3 Hypothesis

H1: There is a significant relationship between Interest Rate Spread and Bank Performance.

H2: Strong significant relationship between Bank liquidity, Capital Adequacy, Market Profit Opportunity, and Bank Performance.

H3: There is a negative relationship between Interest Income and Bank Performance.

3. Research Methodology

This segment explains in detail the process carried out in this research paper. It covers the proposed study's location, sources of data, forms of data to be collected, sampling methods, data collection, and analysis methods. Therefore, this study shall employ a positivist research philosophy that generally encompasses quantitative modes of interpreting and conducting research. The design of the survey used in this work was cross-sectional. Population is the number of commercial banks that have been considered in this study. The total number of bank data used in this research was 33. This study sought data for 8 years from the year 2015 to the year 2023. Secondary data was collected from the annual reports and financial statements of the commercial banks operating in Pakistan and listed at KSE. In this empirical study to analyze the effect of interest rate spread for a cross-section of the commercial banks, there are seven variables, two are dependent and two are taken as independent variables. Four have control variables. E- Views were used in this study to analyze the data. Up to date, many estimation techniques have been formulated to handle panel data context, including. Measurement statistics, analytical statistics, and random effect analysis.

The studies have identified two ratios exclusively to measure the performance of a bank, namely, ROA and ROE. Return on assets entails the major aspect of profitability that relates to the company's capacity to garner a return on resources employed in the generation of revenues and always in percentage.

It is measured as;

$$\text{ROA} = \frac{\text{NPAT}}{\text{TA}} \text{ and } \text{ROE} = \frac{\text{NPAT}}{\text{TE}}$$

NPAT; Net Profit after Tax, **TA;** Total Assets, **TE;** Total Equity

The main predictor variable is the IRS. The difference between the bank deposit and lending rate is called interest rate spread.

It is measured as;
$$\text{IRS} = \frac{\text{Interest Received}}{\text{All Interest Bearing Assets}} - \frac{\text{Interest Paid}}{\text{Interest Earning Liabilities}}$$

Four control variables have been claimed to be bank specific in the review literature. In order to isolate the relationship between the IRS and the performance of the bank these variables have to be held constant as BL, MPO, CA and II. Bank Liquidity: This ratio is directly contingent on the said liquidity of the bank if the former rises, the latter will also rise this study concluded that profitability has a statistically negative relationship with liquidity. It is calculated by dissecting total loans by the total assets in a bank. It is measured as;

$$BL = \frac{TL}{TA}$$

Interest income is measured as; $II = \frac{\text{Total Interest Income} - \text{Total Interest Expense}}{\text{Total Assets}}$

This ratio has been chosen to see its impact on the performance of banks. This is also called the net interest margin (NIM) ratio of banks. Capital Adequacy is also known as capital ratio and it is measured as equity to total assets. If this ratio increases the performance and profitability will also increase. It can mitigate the risk of losses. Analyzed that this ratio has a positive association with bank performance and minimizes the cost of external funds. A well-capitalized business faces a lower chance of being

bankrupt. Measured as; $CA = \frac{\text{Equity}}{TA}$

Market Profit Opportunity: Deposits are the main cause of funding from customers in banks. Analyzed that profits will increase due to the conversion of deposits into loan able

funds which is also an increase in net interest margin. It is calculated as; $MPO = \frac{TD}{TA}$

3.2 Model Specification

Where ROA and ROE are the dependent variables for bank i index bank i and time t ; I_{it} is a vector of IRS interest rate spread for bank i and time t ; B_{it} is a vector of bank-specific variables; ε is an error term. In these equations, the variance of the error term is equal to zero and it is distributed in an independent and equal manner.

The model in general specification is presented as by the following two equations.

$$(ROA_{it}) = \beta_0 + \beta_1(I_{it}) + \beta_2(B_{it}) + \varepsilon$$

$$(ROE_{it}) = \beta_0 + \beta_1(I_{it}) + \beta_2(B_{it}) + \varepsilon$$

4. Results and Discussion

To analyze the effect of IRS in determining the performance of commercial banks in Pakistan. These values were estimated by the researcher using descriptive statistics, correlation matrix and random effect model.

4.1 Descriptive Statistics

Measures of central tendency were used to give a measure of the central tendency of the characteristics of the variables involved in the study. For every variable, descriptive statistics in form of mean, standard deviation, and frequencies were conducted to give the researcher a glimpse of the data.

Table. 1 Descriptive Statistics

Variables	Mean	Std. Dev	Min.	Max.	Obs.
ROA	0.3419	2.25455	-21.1700	9.5500	270
ROE	2.4224	67.8754	-51.60	38.1412	270
IRS	0.0244	0.1762	-0.9245	0.2452	270
BL	0.6515	0.2478	0.0124	1.7470	270

II	3.0354	2.2784	-5.2452	9.2442	270
CA	-0.7854	91.5872	-730.2453	81.2145	270
MPO	66.5255	20.2452	0.0000	91.3144	270

The descriptive statistics are basic in purpose and are given in Table. 1. with the abnormal distribution of data of 297 observations. It is established that on average the selected banks, have a ROA= 0.3419 and an ROE =2.4224 in the period 2006 – 2014. The standard deviation of ROA is thereby 2.25455, and their minimum and maximum are -21.1700, and 9.5500 respectively. The standard deviation of ROE is 67.8754 while minimum and maximum levels are -51.60 and 38.1412 respectively. An impersonal form of the measure of uncertainty, the Mean of the IRS is 0.0244 and the standard deviation of the IRS is 0.1762 with the minimum and maximum values of the IRS being -0.9245 and 0.2452. The liquidity ratio BL equals a mean of 0.6515, a max of 1.7470, a min of 0.0124, and the SD of BL is 0.2478. Interest income II has a mean of 3.0354, a standard deviation of 2.2784; a minimum of -5.2452; and a maximum of 9.2442. The mean of capital adequacy is -0.7854, the standard deviation is 91.5872, the smallest value is -730.2453 and the largest value is 81.2145. The mean of market profit opportunity is 66.5255 while the smallest MPO is 0.0000 the largest value of MPO is 91.3144 and the standard deviation is 20.2452.

4.2 Correlation Analysis

The Table. 4.4 correlation of all, Independent & Dependent has been revealed in the context of the table below Table. 4.2. Looking at Table 4.2 the correlation that bounds all the variables is low hence the research finds no issue of multi-collinearity within the variables.

Table. 4.2 Correlation Matrix

	ROA	ROE	IRS	BL	II	CA	MPO
ROA	1.000						
ROE	0.2733	1.000					
IRS	0.1784	0.3047	1.000				
BL	-0.1214	-0.0547	-0.32438	1.000			
II	0.5442	0.2324	0.3012	-0.05547	1.000		
CA	-0.0145	0.0014	0.2286	-0.5406	0.3924	1.000	
MPO	-0.0145	0.2474	0.5939	-0.13389	-0.0067	0.2421	1.000

4.3 Results of the Random Effect Model

Table 4.3 Model 1 Dependent Variable: ROA

Random Effect Model			
Variables	Coef.	t-value	P > t
IRS	0.744612	10.86476	0.002
BL	-4.426243	-5.447279	0.0000
II	0.024166	0.385184	0.4004
CA	-0.013246	-7.25889	0.0000
MPO	-0.001457	-0.424817	0.6396

Constant	0.5413855	0.628662	0.4960
R ²	0.3447	F-Stats	29.3846
Adj-R ²	0.3433	Prob(F-Stats)	0.0000

Table 4.3 represents the predictable factors and t-statistics found from the application of the random effect model REM by using ROA as the dependent variable. Here interest rate spread (IRS), Bank liquidity (BL), and capital adequacy (CA) are very significant to return on Asset (ROA) at a 5% level of significance. IRS shows a positive relationship with ROA by its coefficient value i.e. 0.744612. Interest income was found to be insignificant but positively correlated to the ROA of commercial banks. MPO also has a negative correlation with the performance measure of banks and also reflects the non-significant effect. They found that the Sam model can predict 34.47% of the variability in ROA the value of R² (0.3447). Although this is a rather satisfactory result, there is other possibility for other variables to contribute to the explanation of the DAT in ROA. Significance values are the following: F (29.3846) and Adjusted R² (0.3433) to reflect the impact of the number of predictors and the moderate percentage of variance explained by the model. The value of F-Stats shows that the result is hugely significant when given the p-value or in other words it can be stated that the model is effective if it is less than 5% level. Thus it can be confirmed that the relationship between IRS and ROA for all commercial banks is positive and significant.

Table 4.4 Model 2 Dependent Variable: ROE

Random Effect Model			
Variables	Coef.	t-value	P > t
IRS	2.86312	7.814089	0.0000
BL	-20.7040	-5.5297	0.0020
II	-0.8348	-0.6541	0.5032
CA	-0.04541	-5.0100	0.0000
MPO	0.11644	3.3498	0.0109
Constant	1.8451	0.5883	0.5501
R ²	0.2455	F-Stats	18.64702
Adj-R ²	0.2451	Prob (F-Stats)	0.0000

Table 4.4 shows the result of the panel regression of the model with p-value and t-statistic using the random effect model and dependent variable ROE. As shown in Table 4.3 IRS, BL, and CA are significant at a 5% level affecting the performance measure. We discover a positive relationship between the independent variable, IRS, and the study's dependent variable, ROE. Still, there is an inverse relationship between the BL and CA and the performance measure ROE of the commercial banks. The performance measure linked with MPO also has a positive and significant result in ROE. Interest income can also not be said to significantly affect at a 5% level of significance. The change in the performance described by these five explanatory variables was 24.55% as the R² value was 0.2455 and the Adjusted R² value 0.2451. All these variables are closely related to the performance ROE. The value of F-stats 18.64702 with the 0.000 p-values, i.e. less than 5% level of significance supports the fact that the overall model is rewarding. The goal of this current study is thus to establish how the IRS has affected the performance of the commercial banks of Pakistan, positively and significantly as well.

5. Conclusions

The current work examined the effect of IRS on the ROA and ROE. For this purpose, the Fixed/Random effect model was used as a panel data regression analysis of 33 commercial banks. Thus, data is extracted from the financial statements of stand-alone banks in the Karachi Stock Exchange from 2006 to 2014. The findings show that there exists a significant positive correlation between the IRS and the overall performance of all the commercial banks in Pakistan. An examination of the impact of IRS gives evidence that it has a positive and statistically significant effect on the two performance indicators of the banks. With an increase in the IRS, the profitability and the total financial position of the banks enhanced. This implies that the various IRS indicate that banks with the ability to set high rates of interest on their lending activities are likely to earn high income from lending activities thus increasing their margins and performance. This shows that the IRS and the bank's performance vary in a direct ratio where the amount of change in performance is equal to the change in IRS.

Among all predictors bank liquidity, capital adequacy and market profit opportunity also influenced the performance of banks. Another factor that we also tested is bank liquidity which we can define as the capacity of the bank to meet its short-term financial obligations and we get a clear positive relation between it and the performance of the bank. Organizations that have higher levels of liquidity may be in a better place to finance their risks, demands, and needs, thus increasing their operation's profitability and steadiness. Among the independent variables employed, capital adequacy (often measured using capital ratios, including capital-to-asset ratio) has a positive and statistically significant impact on bank performance. By establishing this, the study means that the better the position of the banks in terms of capital adequacy, they are in a better place to deal with any losses incurred hence improving their performance in the market because of investor confidence. More capital is less risk and more earnings power hence implies that well-capitalized banks earn more. The market profit opportunity that could denote the capacity of banks to seize favorable market opportunities or profitable opportunities, is also positive and significant to performance. Banks that are in a position to identify new opportunities in the market (utilizing competitive product offers, or services and/or better pricing strategies) will be expected to record better performances. It indicates that adopts as well as market responsiveness leads to increased profitability. The results further revealed that interest income has a negative but statistically insignificant relationship with the performance variables of ROA and ROE. Interestingly, the coefficient for interest income is negative and statistically insignificant with both measures of performance. The negative result suggests that an increase in interest income per se not necessarily foster better bank performance, provided this is tempered with other costs or inefficiencies. The low coefficient implies that other variables could be more important to the measurement of the relative performance of banks in the industry such as non-Interest income or efficiency.

5.1 Practical Implications

The findings of this study provide several practical insights for stakeholders in the banking industry, particularly in Pakistan: The evidence of a positive relationship between the IRS and bank ROA and ROE implies that policy-makers at the State Bank of Pakistan should carefully supervision the spread between the loan and deposit rates. Balancing in the IRS is very sensitive since implementing high spread might make the banks to record higher revenues in the short run, but it would limit economic growth since borrowing would become costly to enter businesses and individuals. Therefore, for bank managers maintaining capital adequacy ratio healthy will not only lead to increased profitability, but also create health capital buffer for shocks within the ever dynamic financial system. The findings provide a framework that investors and

shareholders can use when assessing the performance of a bank. This way the investors would be better placed to invest their money in these banks which have good liquidity levels, good capital levels in relation to the risk the banks take while operating in the market conditions. Furthermore, low and indeed negative Interest to Total Assets (ITA) connotes that Interest Income (II) which many institutions consider as the main source of income may not hold the key to growth.

5.2 Recommendations

Banks should aim to optimize the IRS, balancing profitability with customer affordability. A high IRS may increase short-term profits but can limit market expansion by making borrowing too costly for potential customers. Banks should continuously monitor and manage their liquidity levels to ensure that they can meet short-term obligations while also maintaining a strong capital adequacy ratio. This will improve both performance and long-term stability. Given that Interest Income (II) showed a negative and insignificant impact on bank performance, banks should diversify their revenue streams. Non-interest income from fees, commissions, and other services can provide more stable income sources and reduce dependence on fluctuating interest rates. Banks should actively seek out opportunities in profitable market segments. Proactive engagement in market-driven strategies can increase returns and enhance performance, as indicated by the positive relationship between MPO and bank performance.

5.3 Future Research Directions

Further research could apply the same specification to other EMs or regions to determine if similar findings about the link between the IRS and the performance of banks are obtainable in dissimilar environments for financial systems and markets. This implies that future research should work to assess the impact of other external macroeconomic factors; including inflation, exchange rates, or government policies on the IRS and bank performance. This would give a better outlook on what drives the profitability of commercial banks. Perhaps, extending the research period into a longer time horizon should facilitate the tracking of changes in the performance of the banking sector during various cycles. This could offer further analysis of interest rate spread dynamics and the effect they have on bank performance in the long-run. Research questions may include the following; how has the use of FinTech and digital banking performance affected the performance of commercial banks? Technological changes may shift the balance of profitability around interest margin, fund flow, and customer sensitivity. Future research could also look at other measures of efficiency and profitability like the Net Interest Margin or Cost-to-Income Ratio to present a richer view compared to the existing examination of the banks' ROA and ROE.

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