Evaluating the Relationship Between Financial Ratios and Firm's Total Stock Returns: A Study of Thai Banking Firms

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Abstract

Financial ratios are the cornerstone of financial statement analysis. They aim to analyze financial statements and evaluate the firm's performance, solvency, and efficiency. They benefit stakeholders such as prospective investors, stockholders, lenders, managers, analysts, and the government in their decision-making. Total stock returns provide significant information to those interested in a firm's financial performance. Total stock returns include changes in the stock price and dividends the firm pays. This study explores the relationship between bank-specific financial ratios and the total stock returns of Thai banking firms. The rank normalization method has been used to rank financial ratios. The ranking of banks based on their financial ratios has been compared to and analyzed with the ranking of the banks based on total stock returns. The findings suggest no concrete positive relationship between Thai banks' financial ratios and total stock returns. However, the financial ratio analysis-based ranking was similar to the total stock returns ranking.

Keywords: Financial ratios; Total stock returns; Rank normalization; Financial statement analysis; Thai banking firms

Introduction

Evaluating firm performance is important for investors, regulators, and stakeholders seeking to assess a firm's financial health and stability (Maverick, 2022). Traditional financial ratios have long been critical for a firm's profitability, liquidity, asset quality, and overall operational efficiency. According to Barnes (1987), financial ratios serve various purposes, including assessing a company's ability to fulfill its financial commitments, evaluating business and managerial success, and overseeing a firm's adherence to statutory regulations. These financial ratios, designed for the analysis of financial statements, are a distinctive outcome of the development of accounting practices in the United States. Originally developed as tools for analyzing short-term loans, their origins can be traced back to the late nineteenth century, as noted by Lucic (2014). Thai Bank ratios are essential as they allow the stakeholders to evaluate a bank's performance, such as net interest margin (NIM) ratio. They can help assess a bank's risk profile, such as the nonperforming loan % (NPL). Thai bank ratios may aid in reflecting any specific challenges or opportunities within the banking sector.

Total stock returns consider capital gains and dividends a firm distributes (Jordan et al., 2020). This helps to know how a stock performed over a specified period. Therefore, it aids an investor and manager in reflecting on the bigger picture rather than merely considering the appreciation or decline in a firm's stock price. Ye and Turner (2014) suggested that stock features such as dividend yield, past-year return performance, beta, and illiquidity positively correlate with stock returns. Musallam (2018) explored the relationship between financial ratios and market stock returns of twenty-six (26) listed companies in Qatar from 2009 to 2015. The author observed that ratios such as dividend yield, earnings yield, and earnings per share had a positive and significant relationship with market stock returns. However, return on assets, return on equity, net profit margin, book value ratio, dividends earnings ratio, and price-to-earnings ratio had an insignificant relationship with market stock returns.

This research paper investigates the relationship between Thai banks' financial ratios and total stock returns. It seeks to provide insights into the effectiveness of financial ratios in reflecting a Thai bank's total stock returns. It also endeavors to study whether there is a similarity between banks' financial standing as indicated by their financial ratios and the total stock returns.

Research Objectives

1. Evaluate the relationship between financial ratios and total stock returns.
2. Examine whether financial ratios predict bank performance as measured by total stock returns.
3. Assess whether the relative financial standing of each bank is similar based on two financial variables: financial ratio analysis (FRA) ranking and total stock returns (TR) ranking.
4. Aid investors in their investment analysis and decision-making, assist the financial analysts in gauging the banks' performance and provide insights to managers for improving the bank's financial performance.

Literature Review

Significance of Financial Ratios in Financial Statement Analysis

Financial ratios have a long history, dating back to the early development of accounting principles. Their original purpose was to analyze financial statement data and assess a firm's performance, solvency, and efficiency. According to Horrigan (1968), the roots of financial ratio analysis can be traced back to the latter half of the nineteenth century when America was striving toward industrial maturity. Over time, financial ratios have evolved into a cornerstone of financial statement analysis, offering crucial insights into a company's financial well-being. According to Babalola and Abiola (2013), financial statement analysis involves using analytical tools and techniques to examine general-purpose financial statements and related data. The primary objective is to extract valuable estimates and inferences beneficial in conducting a comprehensive business analysis.

The significance of financial ratios lies in their ability to enable cross-company comparisons and trend analysis of a firm's financial health. They serve as valuable tools for investors, creditors, and financial analysts, aiding them in making well-informed decisions by comprehensively evaluating a company's financial condition and performance. In their paper, Stanko & Zeller (1994) highlight the importance of financial ratios as a dependable tool for assessing a company's performance and advancement. They argue that these ratios are an acceptable method of analysis. This viewpoint is shared by financial analysts and researchers who utilize vital financial ratios over time and across different industries. By integrating these quantitative measures with qualitative evaluations, experts aim to comprehensively understand a firm's performance (Barnes, 1987). Despite the continuous evolution of financial markets,

financial ratios remain indispensable for accurately understanding a company's financial position and performance. In their 2013 paper focusing on measuring firm performance through financial ratios, Delen et al. emphasized this task's intriguing and formidable nature for researchers and practitioners alike. They highlighted that accurately determining a firm's performance through financial measures and ratios presents a captivating challenge. Identifying factors, precisely financial measures and ratios, that can reliably predict a firm's performance is paramount to decision-makers in various industries.

Bank Financial Ratios

Bank financial ratios are crucial in evaluating banks' financial health and performance. The Tier 1 Risk-Adjusted Capital ratio is a critical measure that safeguards banks against excessive leverage, insolvency, and financial difficulties. This ratio is calculated by comparing a bank's capital to its current liabilities and risk-weighted assets. Risk-weighted assets reflect the amount of a bank's assets adjusted for their associated risks. By maintaining an adequate capital adequacy ratio, banks can mitigate risks, protect against potential losses, and ensure stability in their operations, ultimately promoting a healthy and secure financial environment (Fatima, 2014). The efficiency ratio is computed by dividing a bank's overhead expenses, encompassing salaries, benefit costs, occupancy expenses, and other operating costs, by the total net interest income and non-interest or fee income. This ratio is a valuable indicator of a bank's effectiveness in utilizing its overhead expenses to generate revenues. A decrease in the efficiency ratio is considered favorable, indicating improved cost management and revenue generation.

On the other hand, a rising efficiency ratio is generally seen as undesirable, as it suggests reduced cost-effectiveness and potential inefficiencies in the bank's operations. Thus, a lower efficiency ratio is a positive signal, reflecting the bank's ability to optimize resources and enhance profitability (Hays et al., 2009). There are other bank specific ratios such as end-of-period (EOP) deposits to end-of-period loans (EOP), net interest margin (NIM), return on assets (ROA), return on equity (ROE), and nonperforming loans to total loans (NPL%). NIM is the ratio of interest income earned less interest paid on borrowings to the earning assets; ROA is the ratio of income after tax to the average total assets; ROE is the ratio of income available to the common stockholders excluding extraordinary items to the average common equity; NPL is the ratio of nonperforming loans to the total loans and other real estate owned.

Financial Ratios and Bank Performance

Several studies have examined the relationship between financial ratios and bank performance in different contexts. Adam (2014) investigated the relationship between performance measures (net profit margin (NPM), ROA, risk-adjusted operational deposits (ROD), ROE) and a set of financial factors (capital ratio, bank size, and loans) as liquidity indicators. The relationship between these performance measures and assets quality or credit performance, considering indicators such as total revenues to total assets, provisions to financing, and provisions to total assets, was also considered. The analysis revealed a significant and positive relationship between ROA, the ratio of deposits to total assets, and the provision to total assets ratio. Similarly, the ROE ratio demonstrated the same positive associations with these variables. However, a negative correlation exists between ROA and the ratio of risk-adjusted operational deposits (ROD). Also, the provision-to-loan ratio and ROE are positively and significantly correlated. Again, a positive and significant relationship exists between the deposits/total assets ratio and total asset turnover (TAT) and ROD.

Similarly, net profit margin also has a positive and significant relationship of deposits with ROA, ROE, TAT, and other variables. Alswalmeh and Dali (2019) analyzed data from 14

Amman Stock Exchange (ASE) banks. They discovered significant relationships between specific financial ratios (such as debt ratio, stock turnover, return on assets, price to book value and return on equity) and the banking sector index in ASE. However, no significant relationships were observed between the equity and quick ratios. In another study by Islamogu (2015), the debt-to-equity ratio negatively affected the BIST XBANK Index (stock index comprised of banking institutions listed on the Istanbul Stock Exchange), while the shareholders' equity to total assets ratio positively impacted its growth. Kheradyar et al. (2011) conducted a study on stocks listed on the Malaysian Stock Exchange and found that three financial ratios, namely dividend yield (DY), earning yield (EY), and book to market ratio (B/M), were able to predict stock returns. The study revealed that the B/M ratio had higher predictive power than DY and EY in determining stock returns. Sahananporn and Sukcharoensin (2020) studied 344 companies listed on the Stock Exchange of Thailand. They found that financial ratios accounted for 4 percent of stock price changes, while past stock price movements accounted for approximately 96 percent. Christaria and Kurnia (2016) studied the impact of key financial indicators on bank profitability in the Indonesian banking sector from 2012 to 2014. They analyzed the effects of capital adequacy ratio (CAR), loan-to-deposit ratio (LDR), operation expense-to-operating income ratio (BOPO), and nonperforming loan (NPL) on ROA, using purpose sampling and multiple regression analysis. Findings showed that these indicators significantly influence bank profitability, particularly BOPO. Edem et al. (2018) explored the impact of financial ratios on Nigerian banks' stock market prices from 2009 to 2015. Using panel multiple regression, the study found a significant negative association between the cash deposit ratio (CDR) and stock prices. At the same time, return on assets (ROA) and earnings per share (EPS) have positive effects. Net assets per share (NAPS) and debts to total asset ratio (DTAR) showed insignificant associations. The study recommended using EPS and CDR to predict stock price behavior in Nigerian banks.

Research Hypotheses

Research hypotheses address the first three of the four research objectives. While the first hypothesis, H1, addresses the first two research objectives, the second, H2, addresses the third research objective.

H1: A positive relationship exists between the Financial Ratio Analysis (FRA) and Thai banking firms' total stock returns (TR).

H2: There is a similarity in the financial standing of Thai banking firms obtained from the financial ratio ranking and total stock returns (TR) ranking.

Research Methodology

Sample and Data Collection

This study is based on secondary data. Financial ratios have been taken from annual reports of the banking companies and LSEG Refinitiv Eikon financial platform. A few financial ratios may be calculated if they are not available in the documents mentioned. Ten (10) banking public companies limited (PCLs) have been selected for this study. These banks have been selected since they are PCL and listed on the Stock Exchange of Thailand (SET). Therefore, the required financial information may be readily available. These banks contribute a substantial portion of the Thai GDP and are critical to the development of the Thai economy. The financial sector contributed nearly THB 1.27 trillion to the Thai GDP in the financial year (FY) 2019. This study has yet to consider Thanachart Capital PCL (Ticker: TCAP) since it is an investment holding company but not in commercial banking. Its businesses include leasing, insurance, asset-based financing, and nonperforming asset management. It has an equity stake

in TMBThanachart Bank PCL (Ticker: TTP). Therefore, TMBThanachart Bank's financial information has been included in this study.

Total stock returns and financial ratios were obtained from these banks' annual reports and Refinitiv Eikon. Where any specific financial ratio was not available in the annual report or Refinitiv Eikon, the authors collected the required financial items from the firm's financial statements and computed them manually. Panel data from the three recent financial years (FYs), 2020, 2021, and 2022, will be analyzed to widen the scope and bring more reliability and relevance to this study. This will bring reliability to the analysis and findings.

The ticker and name of the banking firms are mentioned below. In this study, tickers will be used more often.

Banking firms:

1. BAY - Bank of Ayudhya Public Company Limited
2. BBL - Bangkok Bank Public Company Limited
3. CIMBT - CIMB Thai Bank Public Company Limited
4. KBANK – Kasikorn Bank Public Company Limited
5. KKP - Kiatnakin Phatra Bank Public Company Limited
6. KTB - Krung Thai Bank Public Company Limited
7. LHFG - LH Financial Group
8. SCB - The Siam Commercial Bank Public Company Limited
9. TISCO - Tisco Financial Group Public Company Limited
10. TTB - TMBThanachart Bank Public Company Limited

Measures and Statistical Methods

To evaluate the holistic financial performance of Thai banks, financial ratios related to liquidity, profitability, efficiency, leverage, and risk will be used in this study. Bank-specific ratios used in this study are EOP loans to EOP deposits for liquidity, efficiency ratio for efficiency, Tier 1 risk-adjusted capital ratio (RAC) for leverage or solvency, net interest margin (NIM), return on equity (ROE), and return on assets (ROA) for profitability, and nonperforming loans percentage (NPL) for risk. The primary reason for selecting these ratios is that they are bank-specific ones that have been used by scholars and financial analysts in the past and will bring to light the overall financial performance of a bank. Furthermore, although these ratios are not the same as those used in DuPont identity, they are related to DuPont analysis in that they broadly analyze the bank's profitability, efficiency, and financial leverage. Total return (TR) will be used to measure the stock returns of each bank based on the last three financial years (FYs).

The relationship between FRA and total stock returns will be tested and evaluated to determine whether the financial performance of banks is reflected in their total stock returns. In other words, it will be determined if there is a positive relationship between FRA and a bank's total stock returns.

Statistical methods like the rank normalization method, Spearman's rank correlation, and Wilcoxon signed ranked test will be used in this study. These methods are suitable because they aid in better analysis of two ranked variables, which will be the basis of analysis in this study. Furthermore, the rank normalization method does not assume any specific probability distribution. In situations where the sample size is small, therefore, it is preferred to use such a technique. It can also mitigate the adverse effects of outliers. There may be a few outliers in TR (annualized percentage).

Research Results

Table 1. Financial Ratios for FY 2020

	FY 2020						
Ticker	**Liquidity**	**Profitability performance**			**Ratio for efficiency**	**Ratio for leverage or solvency**	**Ratio for risk**
	EOP loans/EOP deposits	NIM (%)	ROA (%)	ROE (%)	ER (%)	Tier 1 RAC (%)	NPL (%)
BAY	0.85	3.47%	0.94%	8.25%	48.7%	14.51%	2.55%
BBL	0.72	2.24%	0.50%	3.92%	59.6%	15.76%	4.49%
CIMBT	0.90	3.20%	0.32%	3.16%	63.7%	15.60%	4.60%
KBANK	0.87	3.27%	0.97%	6.97%	65.1%	16.13%	4.61%
KKP	0.96	4.40%	1.52%	11.33%	59.4%	14.33%	3.12%
KTB	0.80	2.91%	0.61%	4.91%	46.9%	15.73%	4.69%
LHFG	0.80	2.48%	0.84%	5.16%	40.1%	16.70%	3.41%
SCB	0.84	3.2%	0.90%	6.70%	44.4%	17.1%	3.68%
TISCO	1.02	4.62%	2.11%	15.42%	43.4%	17.48%	2.43%
TTB	0.93	3.00%	0.55%	5.06%	49.9%	15.46%	2.97%

In FY 2020, TISCO's profitability, efficiency, leverage, and risk ratios have performed well. However, its liquidity may improve as its EOP loans/EOP deposits ratio exceeds 1. Banks like SCB and BAY also performed well. BAY's profitability was higher, while SCB's efficiency and solvency were good. BBL and CIMBT performed below par and could improve their profitability, efficiency, and risk profile.

Table 2. Financial Ratios for FY 2021

	FY 2021						
Ticker	**Liquidity**	**Profitability performance**			**Ratio for efficiency**	**Ratio for leverage or solvency**	**Ratio for risk**
	EOP loans/EOP deposits	NIM (%)	ROA (%)	ROE (%)	ER (%)	Tier 1 RAC (%)	NPL (%)
BAY	0.91	3.24%	1.33%	11.17%	45.5%	15.60%	2.61%
BBL	0.69	2.10%	0.66%	5.63%	53.9%	15.98%	4.01%
CIMBT	0.86	2.10%	0.60%	5.75%	63.3%	16.34%	3.95%
KBANK	0.82	3.21%	1.09%	8.30%	63.8%	16.49%	4.38%
KKP	0.95	4.20%	1.59%	12.95%	53.9%	13.62%	3.47%
KTB	0.84	2.49%	0.71%	6.14%	49.8%	15.89%	4.24%
LHFG	0.80	2.63%	0.54%	3.60%	42.5%	15.91%	3.00%
SCB	0.81	3.0%	1.10%	8.40%	46.6%	17.60%	4.74%
TISCO	1.09	4.84%	2.61%	16.82%	45.4%	18.56%	2.40%
TTB	0.93	2.97%	0.59%	5.04%	50.7%	15.30%	2.81%

In FY 2021, TISCO again performed well with relatively better profitability, leverage, efficiency, and risk performance. It may improve its liquidity, however. Like the last financial year, BAY and SCB did well with a relatively better profitability and efficiency ratio. However, SCB may improve its ri,sk by reducing its NPL (%), which is relatively high at 4.74%. BBL, TTB, and CIMBT performed poorly and could improve their profitability and efficiency.

Table 3. Financial Ratios for FY 2022

	FY 2022						
Ticker	**Liquidity**	**Profitability performance**			**Ratio for efficiency**	**Ratio for leverage or solvency**	**Ratio for risk**
	EOP loans/EOP deposits	NIM (%)	ROA (%)	ROE (%)	ER (%)	Tier 1 RAC (%)	NPL (%)
BAY	0.89	3.45%	1.20%	9.33%	49.9%	15.93%	2.91%
BBL	0.70	2.42%	0.68%	5.87%	55.8%	15.67%	3.74%
CIMBT	0.80	2.70%	0.65%	6.52%	67.5%	16.19%	3.51%
KBANK	0.81	3.33%	0.91%	7.30%	62.5%	16.84%	3.74%
KKP	1.01	4.86%	1.61%	13.97%	53.1%	13.32%	3.73%
KTB	0.84	2.60%	1.04%	9.15%	48.3%	15.74%	4.19%
LHFG	0.80	2.47%	0.56%	4.21%	45.7%	13.44%	2.61%
SCB	0.81	3.3%	1.60%	8.32%	49.8%	17.80%	4.01%
TISCO	1.07	5.09%	2.84%	17.20%	48.2%	17.15%	2.07%
TTB	0.89	2.95%	0.79%	6.60%	48.4%	16.30%	3.01%

FY 2022 reflected a similar pattern of banks' financial performance to the past FYs. TISCO, BAY, and SCB's financial performance was better than other banks. TISCO and BAY performed better in their profitability and risk management. SCB's liquidity and solvency performance were better. TISCO could improve its EOP loans and EOP deposits (liquidity) as they are more than 1. BBL and CIMBT did not perform well, and several ratios, like profitability and efficiency, need improvement. LHFG could improve its profitability and performance.

The banks' total return (TR), holding period %, and annualized % for 30 December 2019 to 30 December 2022 (recent 3 FYs) are mentioned below. TR (holding period percentage) is the total return over the chosen period. TR (annualized percentage) refers to the total return of an instrument with an annualized rate.

Table 4. Total Returns

30 December 2019 to 30 December 2022		
Ticker	**TR (holding period %)**	**TR (annualized %)**
BAY	9.9928%	3.3660%
BBL	2.4330%	0.8390%
CIMBT	61.1667%	18.0446%
KBANK	6.6996%	2.2796%
KKP	32.4649%	10.2657%
KTB	21.5416%	7.0161%
LHFG	0.4667%	0.1620%
SCB	-4.7735%	-1.6857%
TISCO	27.6303%	8.8499%
TTB	-7.5299%	-2.6844%

From the data in the table above, banks such as CIMBT, KKP, KTB, and TISCO have higher TR, while SCB and TTB have negative returns over the three periods from 2020 to 2022.

FRA Based Rank

From the FRA, a few banks' financial performance seems good through a few ratios but needs to be more satisfactory for other ratios. Therefore, if a composite score could be determined based on all ratios for each bank, then the banks could be ranked. This will provide a holistic picture of banks' financial performance. For this, the rank normalization method has been used. This method is beneficial as it does not make assumptions about the underlying data distribution or its normality. Therefore, this technique can be applied to normalizing parametric or non-parametric data. It will help generate the rank of firms and aid in comparison, which would otherwise be challenging given the different financial ratios. The ranks assigned to efficiency and NPL (%) ratios will follow the opposite order of ratios like NIM, ROA, ROE, and Tier 1 RAC for this research. The reason is that a lower efficiency ratio and NPL (%) ratio generally indicate better financial performance; on the other hand, a higher ratio of NIM, ROA, ROE, and Tier 1 RAC indicates the robust financial health of a bank. The EOP loans/EOP deposits ratio is a liquidity ratio, and the ideal standard is between 80% and 90%. A lower rank may be assigned to that bank if it is higher or lower than this standard. In summary, the rank normalization method is a technique of normalizing data that can produce a cumulative score (rank) by adding the computed rank of each ratio of a bank. Similarly, cumulative scores can be obtained for other banks.

The overall rank of banking companies based on this method for FYs 2020 to 2022 is as follows:

Table 5. Overall Ranking FY 2020

Ticker	Overall rank FY 2020
TISCO	1
BAY	2
SCB	2
KKP	4
LHFG	5
KBANK	6
TTB	7
KTB	8
BBL	9
CIMBT	9

The table above on banks' ranking for FY 2020 demonstrates that TISCO, BAY, and SCB had higher FRA ranks, while KTB, BBL, and CIMBT had lower ranks. Other banks' ranking was moderate, like KKP, LHFG, and KBANK.

Table 6. Overall Ranking FY 2021

Ticker	Overall rank FY 2021
TISCO	1
BAY	2
KKP	3
SCB	3
KBANK	5
LHFG	6
KTB	7
CIMBT	8
TTB	8
BBL	10

The table above on banks' ranking for FY 2021 demonstrates that TISCO, BAY, KKP, and SCB had higher FRA ranks, while TTB, BBL, and CIMBT had lower ranks. Other banks' ranking, like LHFG and KBANK, was moderate.

Table 7. Overall Ranking FY 2022

Ticker	Overall rank FY 2022
TISCO	1
BAY	2
SCB	3
KKP	4
TTB	5
KBANK	6
KTB	7
LHFG	8
CIMBT	9
BBL	10

The table above on banks' ranking for FY 2022 demonstrates that TISCO, BAY, and SCB had higher FRA ranks, while LHFG, BBL, and CIMBT had lower ranks. Other banks' ranking, like KKP and TTB, was moderate.

Table 8. Cumulative ranking from FYs 2020 to 2022

Ticker	Cumulative rank of all FYs (2020 to 2022)
TISCO	1
BAY	2
SCB	3
KKP	4
KBANK	5
LHFG	6
TTB	7
KTB	8
CIMBT	9
BBL	10

Based on the rank normalization method, the table above on banks' cumulative ranking from FY 2020 to 2022 demonstrates that TISCO, BAY, and SCB had higher FRA ranks while KTB, CIMBT, and BBL had lower ranks. The ranking of other banks like KKP, KBANK, and LHFG was moderate. TTB had a lower rank at 7.

Discussions

Table 9. Comparison of FRA with TR

Ticker	FRA-based cumulative rank of all FYs (2020 to 2022)	TR (annualized %) rank (based on FY 2020 to 2022)
TISCO	1	3
BAY	2	5
SCB	3	9
KKP	4	2
KBANK	5	6
LHFG	6	8
TTB	7	10
KTB	8	4
CIMBT	9	1
BBL	10	7

In Table 9 above, the overall (cumulative) ranking of firms' financial ratios has been compared with the TR (annualized %) ranking of firms based on FYs 2020 to 2022.

Spearman's rank correlation will be used to analyze the relationship between two ranked variables, FRA-based cumulative rank, and TR (annualized %) rank mentioned in Table 7. Its correlation coefficient is denoted by ρ (rho). Sig.1 (1-tailed) or the significance test, mentioned along with Spearman's rho below, has not been considered in testing the hypothesis. This is because the sample size is just 10, which may lead to biased interpretation of results. The Wilcoxon ranked sign test will be used to determine the statistical difference or the lack of it between the two data sets, namely TR rank and FRA rank. Its asymptotic significance (Asymp. Sig. (2-tailed)) provides reliable results even for small sample size so that it may be considered in the analysis.

Table 10. Spearman's correlation

Correlations				
			FRA overall rank	TR (annualized %)
Spearman's rho	FRA overall rank	Correlation Coefficient	1.000	.055
		Sig. (1-tailed)	.	.441
		N	10	10
	TR (annualized %)	Correlation Coefficient	.055	1.000
		Sig. (1-tailed)	.441	.
		N	10	10

Spearman's ρ (rho) is 0.055, close to 0. It implies that there is no concrete positive relationship between the two variables, as also shown in Fig. 1.

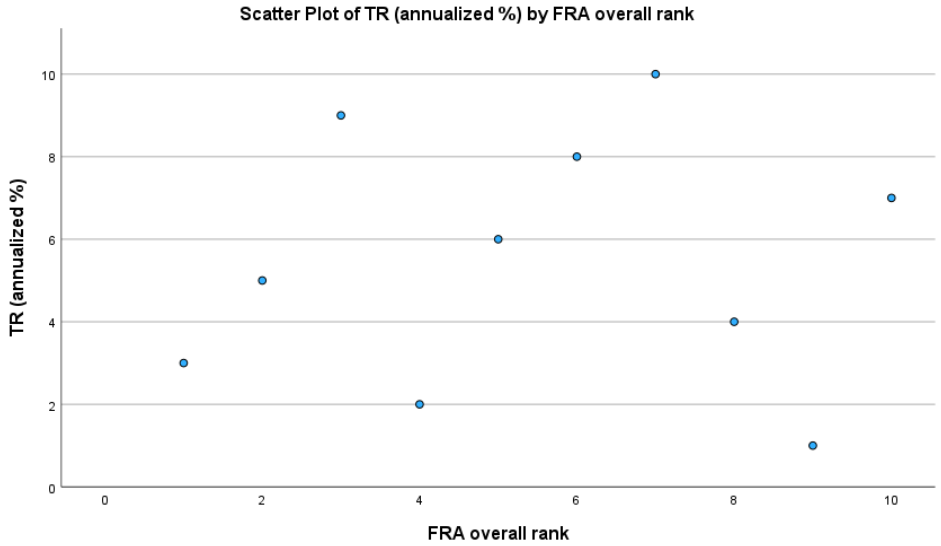

Fig. 1: FRA Rank versus TR Rank

The scatter plot visualizes the relationship between FRA and TR. It reinforces the assertion that the data points are scattered and implies a lack of correlation between the two variables under study. Spearman's rho is close to 0; thus, it does not indicate a positive relationship between the two variables under study.

Based on the above discussion, hypothesis 1, 'H1: There is a positive relationship between Financial Ratio Analysis (FRA) and total stock returns (TR) of Thai banking firms', needs to be validated.

Table 11. Wilcoxon Signed Ranks Test

Ranks				
		N	Mean Rank	Sum of Ranks
TR (annualized %) - FRA overall rank	Negative Ranks	4[a]	6.75	27.00
	Positive Ranks	6[b]	4.67	28.00
	Ties	0[c]		
	Total	10		
a. TR (annualized %) < FRA overall rank				
b. TR (annualized %) > FRA overall rank				
c. TR (annualized %) = FRA overall rank				

Table 12. Wilcoxon Test Statistics

Test Statistics[a]	
	TR (annualized %) - FRA overall rank
Z	-.051[b]
Asymp. Sig. (2-tailed)	.959
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

According to the Wilcoxon Signed Ranks Test. there are four firms whose TR rank is less than the FRA rank, six firms whose TR rank is more than the FRA rank, and no firms with

the same TR and FRA rank. The z value is -.051, which indicates that the differences in the ranks of the two variables are negligible. Asymp. Sig. (2-tailed) Alternatively, p .959 suggests that the two variables, TR and FRA, have similar ranks, and there is not enough evidence to conclude that there is a statistically significant difference between the two variables.

Knowledge from Research

Based on the above discussion, hypothesis 2, 'H2: There is a similarity in rankings obtained from FRA and total stock returns (TR)', can be accepted. Fig. 2 above synthesizes the overall findings as a diagram.

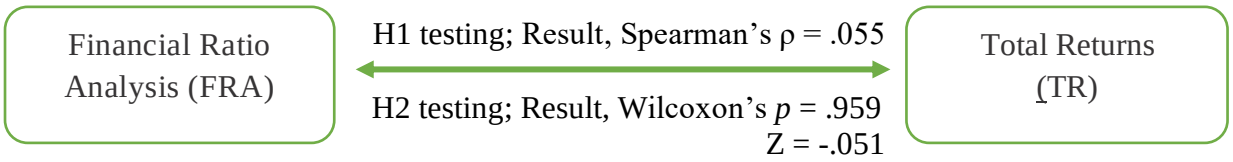

Fig. 2. Hypothesis Testing and Findings

The findings in this study partly align with earlier studies. Alswalmeh and Dali (2019) discovered significant relationships between specific financial ratios in ASE, such as debt ratio, return on assets, and the banking sector index. However, no significant relationships were observed between the equity and quick ratios. In other words, some ratios positively correlated with the banking sector index while others did not. Similarly, the study by Edem et al. (2018) suggested that some ratios had a positive or negative association with stock prices, while a few ratios showed an insignificant association. This research is consistent with the findings of Sahananporn and Sukcharoensin (2020). They studied 344 companies listed on the Stock Exchange of Thailand and found that financial ratios accounted for 4 percent of stock price changes. In contrast, past stock price movements accounted for approximately 96 percent of the changes. This suggests that financial ratios had minimal effect on stock prices, and technical analysis was more effective in predicting stock price movements.

Conclusions

The financial performance of banks like TISCO, BAY, and SCB in FYs 2020 to 2022 was excellent based on financial ratio analysis. KTB, CIMB, and BBL could have performed better in financial ratio analysis. On the other hand, the total stock returns of CIMBT, KKP, and TISCO were higher than other banks in FYs 2020 to 2022. SCB and TTB had negative total returns, which could have augured better the investors. Stock returns from LHFG were also relatively low.

Interestingly, CIMBT's financial ratios were poor, but the stock returns were higher. SCB's financial performance based on its FRA was comparatively good, but its stock returns were negative. Overall, there was no apparent positive relationship but a similarity in ranking between the two variables under study, FRA and TR.

Suggestions

This study will aid the investors in knowing not just the total returns offered by banks on their investments but also whether a positive relationship and similarity exists between financial ratio analysis and total returns. Investors and analysts may need help to conclude that a higher FRA will lead to higher total returns.

From a practical perspective, for the investors, managers, and financial analysts, the findings suggest that financial ratios are not a reliable sole predictor of total stock returns for Thai banking firms. Stock returns are affected by several other factors, not just the financial ratios. External factors like market sentiment, regulatory changes, and economic events may significantly affect stock prices and total returns. The change in investor behavior, like the emphasis on a firm's sustainability initiative and growth prospect, may affect the total returns irrespective of a banking firm's financial ratios. Technological disruptions like digital banking influence stock returns independent of traditional financial metrics.

The present study will be helpful and contribute to the decision-making of stakeholders, such as investors and managers. These stakeholders may gain more insights into the comparison and relationship between FRA and TR of banking companies.

Limitations

The financial information for FRA and TR has been obtained for the last three financial years. Financial information for more financial years may be added in future studies to provide concrete results. In this study, the authors have used the rank normalization method to obtain a summary or ranking of the financial ratios of different banks. In future studies, individual ratio categories like profitability and leverage may also be compared separately with total stock returns (TR) to determine whether each relates to stock returns. That helps investors make better investment decisions as they determine which individual ratio/s positively relates to total stock returns. Future research may also consider macroeconomic conditions to provide a holistic view of the factors affecting the total stock returns of Thai banking firms.

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