




“Earnings and market ratio: Additional evidence from Jordanian banks”

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EARNINGS AND MARKET RATIO: ADDITIONAL EVIDENCE FROM JORDANIAN BANKS

Abstract

The primary objective of this study is to investigate the correlation between profitability and the banks market value, while controlling for bank size as indicated by total assets. Two main models are analyzed, namely the benchmark model and the main model, to estimate the impact of high and low profitability on market value. The sample for this study consists of Jordanian banks covering the period from 2010 to 2020. The study results reveal that banks with high profitability exhibit a higher market value compared to those with low profitability, underscoring the crucial role of profitability as a determinant of bank value. Furthermore, the study establishes a link between low and high ROE and market value, indicating that variations in ROE significantly affect market value. Moreover, the study demonstrates a positive link between earnings and market value, emphasizing the significance of bank earnings in influencing market value. Lastly, the study emphasizes the role of bank size in shaping the link between ROE and market value, highlighting the importance of considering bank size when examining the link between profitability and market value.

Keywords

profitability, banks size, bank value, information content, Jordan

JEL Classification

G21, M41, G32

INTRODUCTION

The relevance of studying the link between profitability and the bank market in Jordan stems from several factors. Firstly, the banking sector in Jordan has experienced vital growth over the past decade, reflecting the country's ongoing efforts to enhance its financial infrastructure. This growth has been accompanied by intensified competition among banks, as they strive to expand their market share and improve their financial performance.

Then, understanding the determinants of bank profitability is crucial for various stakeholders, including regulators, investors, and policy-makers. Profitability serves as a key indicator of a bank's overall financial health and its ability to generate returns for its shareholders. By examining the relationship between profitability and the bank market in Jordan, this study aims to shed light on the factors that contribute to a bank's financial success in this unique context.

The link between a company's earnings and its market ratio is a critical area of research in finance and accounting. Investors and analysts use these measures to evaluate a firm's profitability, growth potential, and overall financial health. Recently, there has been increasing interest in exploring this relationship in emerging markets, including Jordan.

The general formulation of the research scientific problem revolves around investigating the strength of the link between bank profitabil-

ity and the bank market in Jordan. The research will employ quantitative methods and draw upon a comprehensive dataset to analyze various financial indicators, market metrics, and macroeconomic variables to discern the key factors influencing bank profitability in this context. Through rigorous analysis, this study aims to provide empirical evidence that can inform policymakers, regulators, and industry practitioners in their decision-making processes.

1. LITERATURE REVIEW

The relationship between profitability and the bank market has been a subject of extensive research in the field of banking and finance. This literature review aims to provide a solid overview of the existing researches that have explored the link between profitability and the bank market, with a specific focus on the context of Jordan. By examining the relevant empirical evidence, theoretical frameworks, and methodological approaches adopted in prior research, this review aims to identify key findings, research gaps, and avenues for further investigation.

The link between a company's earnings and its market ratios is a well-established topic in financial analysis (Almumani, 2018). Researchers have explored this relationship in various contexts and provided empirical evidence to support its importance. In the Jordanian context, however, there is a limited amount of research on this topic. Therefore, this literature review will examine the existing studies on the relationship between earnings and market ratios, with a focus on studies conducted in Jordan.

Various theoretical perspectives have been proposed to investigate the link between profitability and the bank market. One widely accepted theory is the Structure-Conduct-Performance (SCP) framework (Altahtamouni et al., 2020). According to this theory, factors such as market concentration, barriers to entry, and competitive behavior can shape a bank's profitability in the market. Other theoretical frameworks, such as the Efficiency-Profitability hypothesis and the Market Power hypothesis, also offer valuable insights into the profitability dynamics of banks.

Numerous empirical studies have investigated the relationship between profitability and the bank market across different countries and

time periods. While some studies find a positive link between market share and profitability, suggesting that larger banks enjoy economies of scale and market power, others report mixed or inconclusive results. For instance, Karimzadeh et al. (2013) find a positive link between market concentration and income in the Indian banking sector, while Shubita (2023) finds that bank size significantly affects the Jordanian banks market value.

Despite the existing body of literature on profitability and the bank market, several research gaps and avenues for future investigation remain. Firstly, there is a need for more studies specifically focusing on the Jordanian banking sector to understand the unique factors influencing bank profitability and market dynamics in this context. Secondly, the role of market competition, technological advancements, and regulatory factors in shaping the profitability-market relationship requires further exploration. Additionally, incorporating qualitative research methods, case studies, and industry expert insights can provide a deeper understanding of the complex interactions between profitability and the bank market in Jordan. In the context of Jordan, several studies have explored the determinants of bank profitability, but there is a dearth of research specifically examining the relationship between profitability and the bank market.

Al-Nasser and Muhammed (2017) analyze the effect of market concentration on Jordanian banks' profitability and find a positive relationship, indicating that a more concentrated market structure leads to higher profitability. However, their study does not consider other factors related to the bank market, such as market share or competitive behavior.

Several studies have examined the correlation between (ROE) and market value in various

markets (Beaver & Ryan, 2000; Bernard, 1994; Penman, 1991; Leibowitz, 1999). However, there is a lack of evidence regarding this relationship specifically in Jordan and other emerging countries. Leibowitz (1999) conducted a study that investigated the connection between market value and ROE. The findings revealed a positive relationship when ROE was positive, but a negative link between market value and high ROE. However, this study did not consider control variables such as firm size and industry impact. The results of Leibowitz's (1999) study are similar to the findings of the present study, with the main difference being the inclusion of bank size.

In their study conducted in Jordan, Kabajeh et al. (2012) tested the relationship between profitability ratios, both individually and collectively, among public insurance firms from 2002–2007. The findings of their study revealed a positive link between the combined profitability ratios. However, when considering each ROE ratio separately and the ROI ratio separately, the findings indicated insignificant association. Additionally, there was no significant association observed between the individual ROE ratios and the market value of Jordanian insurance firms. It is worth noting that Kabajeh et al. (2012) focused on the insurance sector rather than the banking sector, distinguishing their study from the current research.

Similarly, Aldebi'e and Mustafa (2011) conducted a study in Jordan, investigating the link between ROE and the market ratio for listed firms during the period of 2000–2009. Their findings revealed a negative relationship between firm value and ROE for companies with low ROE, while a positive relationship was observed for companies with high ROE. Despite the difference in sectors examined, the results of Aldebi'e and Mustafa's (2011) study align with the present research, particularly when considering the division of the study sample into two main components. Several studies investigated the differences of small and large banks (Shubita, 2021; Senan, 2019; Kim & Kross, 2005; Ogneva, 2012). Importantly, Barth et al. (2021) considered multiple accounting items and found no decrease in the combined value relevance of accounting information.

In a different context, Karğın (2013) used the Ohlson model (Ohlson, 1995) to test the link between market value, earnings per share, and book value, the study found that the value content of financial information increased specifically when considering book values. Karğın's (2013) study differed from the current research in terms of the sample and the environment it focused on.

On the other hand, Ball and Brown's seminal work in 1968 demonstrated the link between earnings and stock returns, which had a significant effect on empirical research (Suadiye, 2012; Ohlson, 1991). This link between earnings and share prices has been explored in numerous studies. This study, however, is considered the first to examine market-based research in the field of accounting. Ohlson's model (Ohlson, 1995) relating a company's market value to its dividends, book values, and earnings has been investigated by several studies in various countries (Cooke et al., 2009; Ali & Hwang, 2000; Perera & Thrikawala, 2010). While Al-Horani's (2010) study focused on the same sector as this research, it covered a different time period. Alali and Foote (2012) demonstrated the link between income, EPS, book value, and the share price in the Abu Dhabi Stock Exchange. Abdollahi et al. (2020) found a vital link between auditor's report, audit company size, and the value relevance of financial information, including book value and earnings.

The literature review highlights the theoretical perspectives, empirical evidence, and methodological approaches used to test the link between profitability and the bank market. While previous studies have contributed valuable insights, the literature lacks comprehensive research specifically focused on the Jordanian banking sector. This study aims to address these gaps and provide additional evidence on the link between profitability and the bank market in Jordan, contributing to both theoretical knowledge and practical implications for stakeholders in the banking industry.

The purpose of the study is to examine the relationship between profitability, measured by return on equity (ROE), and the market values

of Jordanian banks. The study also aims to investigate whether bank size acts as a controlling factor that influences the aforementioned relationship.

The study formulates the following hypotheses:

H_{01} : *There is no correlation between profitability and market value.*

H_{02} : *There is no relationship between high and low profitability and market value.*

H_{03} : *The size of a bank does not affect the relationship between profitability and market value.*

2. METHOD

The algorithm of this study will use the regression models, the variables examined in this research include the (ROE) and the (MV/BV). The total assets refer to the size of a bank, and is considered as a control variable. The market-to-book value is computed by dividing the bank market capitalization, which is obtained by multiplying the stock closing prices by the total number of shares, by the total equity. Conversely, ROE is measured by dividing net profits by the total equity (Habib, 2010; Luc, 2018). The two main models of this study are:

- (Model 1): The Main model

$$MV_{it}/BV_{it} = A_0 + A_1 \cdot D \cdot ROE_{it} + (1-D) \cdot ROE_{it} + \varepsilon_{it} \quad (1)$$

where D – Dummy variable that takes 1 when return on equity is positive, and 0 otherwise; A_0 , A_1 – coefficients; ε – error.

According to Hayn (1995), positive income contains more informative content regarding the company market value compared to negative income. This key finding serves as the foundation for the development of the current model. However, when applying this model to Jordanian banks, the available dataset only includes two years where the banks incur losses. As a result, instead of categorizing the sample as high or low profit based

on the median of banks' return on equity (ROE) in the descriptive analysis section, an alternative approach is adopted.

- The benchmark model (Model 2)

$$MV_{it}/BV_{it} = B_0 + B_1 \cdot ROE_{it} + \varepsilon_{it} \quad (2)$$

3. RESULTS

Table 1 illustrates that the Jordanian banks market value is equivalent to the book value, which is lower than the same ratio reported by Aldebi'e and Mustafa (2011) for Jordanian firms during the period of 2000–2009, which was 1.543. This decline in the ratio can be primarily attributed to the difference in the study periods. The Jordanian market experienced significant value losses following the financial and COVID-19 crisis.

Nevertheless, this ratio is considered favorable, since a value exceeding 1 indicates an overvaluation of shares. Hence, it suggests strong performance, whereas a ratio below 1 implies undervaluation, making it an unfavorable investment. A low ratio may also indicate potential issues with the bank itself. As for the return on equity, the average value provides insights into how effectively the bank utilizes net assets financing to facilitate growth, demonstrating the bank's ability to reinvest its earnings wisely to maximize profitability and productivity.

In panels (1) and (2), it is observed that high-profit banks possess a higher market value compared to low-profit banks. This signifies that Jordanian investors take income statement results into account when making investment decisions, influencing the fluctuations in share demand. The decreasing in ROE ratio is due to total equity being the denominator in this calculation. Consequently, Jordanian banks with low ROE tend to have higher total assets.

As anticipated, banks with high return on equity (ROE) exhibit a substantial correlation with market value. However, the Spearman and Pearson correlation coefficients for banks with low return on equity are positive but statistically insignificant, as depicted in Table 2. These findings indi-

Table 1. Descriptive statistics

Variable	Mean	Median	Standard deviation	Percentile 1	Percentile 99
Panel 1: High Profit					
MV _i /BV	1.15	1.0	0.49	0.6	–
ROE	10.93	10.2	2.0	7.8	–
Assets	292,942,545,3	663,781,091,2	116,462,720,5	707,612,776	–
Panel 2: Low Profit					
MV _i /BV	0.84	8.	0.28	74.0	–
ROE	15.5	6.09	26.2	–1.5	–
Assets	542,302,146,4	704,203,399,1	681,640,263,7	570,656,243	–
Panel 3: Total Sample					
MV _i /BV	1	0.9	0.5	0.47	2.5
ROE	8.20	8.6	3.61	–1.3	16.7
Assets	4,097,058,275	2,061,689,519	6,313,553,180	350,714,929	26,810,513,480

Table 2. Correlation matrix

Item	Spearman	Pearson
High Return on Equity	25.0**	0.27*
Low Return on Equity	21.0	71.0

Note: * 0.1 level. ** 0.01 level.

Table 3. Regression results

Model	(Constant)	ROE	High ROE	Low ROE	R ²	Adjusted- R ²	F
Model (1)	0.701	–	0.042	0.025	0.181	0.169	15.478***
	(7.167) ***	–	(4.404) ***	(1.50)	–	–	–
Model (2)	0.607	0.048	–	–	0.164	0.158	27.68***
	(7.476) **	(5.261) **	–	–	–	–	–

Note: * 0.1 level; ** 0.01 level.

cate that profitable banks tend to possess a higher market value and are more appealing to investors compared to less profitable banks.

The relationship between market value and both low and high return on equity is depicted in Table 3 using OLS results. Table 4 also displays the OLS results for Model 1 and Model 2 after dividing the sample into banks. The adjusted R-squared value of the main model, which differentiates between banks with high ROE and those with low ROE, is higher compared to that of the benchmark model, which does not make this distinction. These findings align with the observations made in 1999 regarding the US market. Consequently, the first null hypothesis is rejected, indicating a link between low and high return on equity and market value. In the main model, the coefficient for high ROE is statistically significant, while low ROE banks are not significant.

In the second model, as anticipated, the coefficient for return on equity was found to be statis-

tically positive and significant. This suggests that Jordanian investors base their investment decisions on the operational performance of banks, leading to a scenario where higher profitability of banks drives an increase in demand for their shares. Consequently, this upward demand contributes to the growth of banks' market value. This finding further emphasizes the importance for Jordanian companies to focus on their income statements, as it can positively impact their market value. Therefore, based on this analysis, the second null hypothesis can be rejected, indicating a relationship between earnings and market value.

To explore the last hypothesis, the study divides the banks into large and small categories. The adjusted R-squared value for the small banks is 24.3%, which exceeds that of the large banks (14%) or the entire sample (15.8%). Similarly, in the main model, the adjusted R-squared value for the small banks is 26.2%, which is higher than that of the full sample (16.9%) and the large banks (14.1%).

Table 4. Regression findings based on size

Model	(Constant)	ROE	High ROE	Low ROE	R ²	Adjusted- R ²	F
Panel 1: All Companies							
Model (1)	0.701 (7.167)***	–	0.042 (4.404)***	0.025 (1.50)	0.181	0.169	15.478***
Model (2)	0.607 (7.476)**	0.048 (5.261)**	–	–	0.164	0.158	27.68***
Panel 2: Small Companies							
Model (1)	0.722 (10.764)***	–	0.030 (4.378)***	0.017 (1.440)	0.284	0.262	13.454***
Model (2)	0.664 (11.447)***	0.033 (4.849)***	–	–	0.254	0.243	23.509***
Panel 3: Large Companies							
Model (1)	0.669 (3.134)***	–	0.054 (2.68)***	0.034 (0.993)	0.165	0.141	6.737***
Model (2)	0.533 (3.201)***	0.063 (3.526)***	–	–	0.153	0.140	12.431***

Note: ** 0.05 level, *** – 0.01 level

These findings lead to the rejection of the third null hypothesis, indicating that the relationship between ROE and market value is influenced by the size of a company.

Bank profitability plays an important role in the valuation model of banks. The bank value ratio is assessed by creditors and investors to gauge the perceived value of a bank's shares in the market. Therefore, this finding holds considerable importance as it can be utilized to assess the value of

various entities such as banking and insurance companies and real estate enterprises. This crucial ratio allows for an examination of the amount of equity investors are willing to invest per dollar of total assets, underscoring the importance of linking this value with figures from the income statement.

Table 7 indicates that the random effect is better. The results achieved the same findings of the regression model.

Table 5. Regression findings for the research models (MODEL 1)

Item	Factor	E	t	Probability
High Profit	0.04210	0.00956	4.39990	0.000
Low Profit	0.02427	0.01632	1.48736	0.139
Constant	0.70266	0.09780	7.18450	0.000
R ²	0.18		–	
Adj. R ²	0.17		–	
F	15.52		–	
F-statistic	0.00		–	
D-Watson	0.24		–	

Table 6. Regression findings for the research models (MODEL 2)

Item	Factor	E	t	Probability
ROE	0.047696	0.009063	5.262737	0.0000
Constant	0.607342	0.081153	7.483946	0.0000
R ²	0.16417		–	
Adj. R ²	0.15825		–	
F	27.6964		–	
Prob. (F)	0.00000		–	
D-Watson	0.22379		–	

Table 7. Husman test

Equation	Chi-Sq. St.	Chi-Sq. d.f.	Probability	Conclusion
One	0.35862	1	0.5493	Random is better
Two	0.605043	2	0.7390	Random is better

Table 8. Model (1), Random effect models

Item	Coefficient	E	t	Probability
Constant	0.7406	0.1167	6.34409	0.000
High Profitability	0.03511	0.00566	6.19740	0.000
Low Profitability	0.02425	0.00889	2.72853	0.007
Weighted statistics				
R ²	0.27594		–	
Adj. R ²	0.26560		–	
F	26.6780		–	
Prob(F)	0.00000		–	
Durbin-Watson	0.84704		–	

Table 9. Model (2)

Item	Coefficient	E	t	Probability
ROE	0.038179	0.005511	6.928031	0.0000
Constant	0.685395	0.111037	6.172691	0.0000
Weighted statistics				
R ²	0.25		–	
Adj. R ²	0.24		–	
F	48.2		–	
Prob. (F)	0.0		–	
Durbin-Watson	0.81		–	

The results indicate that high ROE has a significant positive relationship with market ratios, as shown by the coefficient of 0.042105 and the t-value of 4.399906, with a probability of 0.0000. This means that a higher ROE is associated with higher market ratios, and the relationship is statistically significant. On the other hand, low ROE has a coefficient of 0.024274 and a t-value of 1.487361, with a probability of 0.1392, which suggests that the relationship between low ROE and market ratios is not statistically significant. The constant has a coefficient of 0.702664, a t-value of 7.184502, and a probability of 0.0000, indicating that the intercept is statistically significant and has a positive relationship with market ratios.

The R² value of 0.181484 refers that the model explains 18.1% of the dependent variable variance, while the adjusted R² value of 0.17. The F. figure of 15.52 and its probability of 0.00 suggest that the overall model is significant. Overall, the findings of the regression analysis provide evidence for a positive relationship between high ROE and market ratios, which suggests that investors in the Jordanian

market value companies with higher ROE more highly. However, the presence of autocorrelation in the residuals should be addressed in future research.

Granger Causality is conducted to tests the primary association between market value and ROE.

Table 10. Panel Granger Causality

H ₀	F.	Prob.
ROE doesn't Granger Cause	3.51	0.033

The results are as follows: based on the F-statistic in Table 10, the null hypothesis is rejected at the 5% significance level, indicating that ROE does not cause changes in the market values of Jordanian banks.

Multicollinearity was investigated using the VIF test (Variance Inflation Factor). For the entire sample of banks, the VIF for the main model is 2.803, while the VIF for the benchmark model is 1.0, both of which are below the threshold of 10. Therefore, there is no evidence of multicollinearity in the research equation (Gujarati, 2021).

4. DISCUSSION

This study aims to provide additional evidence on the earnings and market ratio relationship in Jordanian companies, building on previous research in the field. By examining data from a range of firms across different sectors, this study investigates the factors that influence this important financial relationship and contribute to a deeper understanding of the Jordanian economy.

Accounting statement analysis, which involves comparing financial ratios of companies with their market value, is an essential aspect taught to students. This study extends the work of Leibowitz (1999) by examining the aforementioned relationship within subsamples categorized by bank size during the study period. The current study adopts a similar model to Al-Debi'e and Mustafa (2011), but with notable differences such as decomposing the sample into high and low ROE categories instead of positive and negative ROE, as well as variations in the study period and sector.

The global financial landscape has undergone significant transformations in recent years, reshaping the dynamics of the banking industry worldwide. Banks play a pivotal role in economic development by facilitating capital allocation and providing financial services to individuals, businesses, and governments. As such, under-

standing the relationship between a bank's profitability and its market position has garnered considerable attention from researchers and policymakers alike.

Prior research examined the positive correlation between ROE and MV/BV; however, Leibowitz (1999) suggested and demonstrated that the correlation might also be negative. There are numerous discrepancies between the marketplaces examined in the two research. This study's finding fits with Leibowitz's (1999) results: The correlation between market-to-book value and high ROE is statistically significant, while it is not significant with low ROE. Leibowitz's (1999) study categorized the sample based on positive and negative ROE. The overall results underscore the importance of differentiating between high-profit and low-profit banks, as profitability plays a crucial role in assessing the value of companies. Furthermore, this distinction becomes even more significant when evaluating the performance of small and large firms. This research paper aims to add to the current body of knowledge by providing additional evidence on the link between profitability and the bank market, with a specific focus on the context of Jordan. Jordan, as an emerging market economy, offers a unique setting to examine this relationship due to its distinctive economic characteristics, regulatory environment, and banking sector dynamics.

CONCLUSIONS AND RECOMMENDATION

The purpose of this study is to determine whether a distinction between high and low ROE increases the relevance of ROE. In addition, the results reveal that the model that differentiates between low and high ROE has greater explanatory power than the other model. According to the findings of the study, banks with high profit figures have a greater market value than banks with low profit figures; low and high ROE are linked with market value; and earnings are associated with market value.

This paper has provided additional evidence on the link between earnings and market ratios in the Jordanian context. The findings of this study support the existing literature, which refers to a significant positive link between high ROE and market ratios. These results have important implications for managers and investors who are interested in the Jordanian market.

Managers should focus on improving their ROE to increase their market value. To achieve this, managers can invest in research and development, improve the efficiency of their operations, and adopt innovative strategies to increase revenue and reduce costs. Furthermore, companies should communicate their financial performance to investors and analysts to enhance their understanding of the bank's prospects and increase their confidence in the bank's future earnings potential.

For investors, the results of this study suggest that companies with higher ROE are more likely to generate higher returns. Therefore, investors should prioritize companies with higher ROE when making investment decisions. However, investors should also consider other factors, such as liquidity, debt, and macroeconomic conditions, to make informed investment decisions.

There are some limitations that should be considered. Firstly, the study is based on a single market, which limits its generalizability to other markets. Secondly, the study only considers one financial metric (ROE), and future research could investigate the relationship between other financial metrics and market ratios. Finally, the study identifies the presence of autocorrelation in the model's residuals, indicating that further research is needed to address this issue and improve the robustness of the findings.

In conclusion, this study highlights the importance of earnings in determining market ratios in the Jordanian context. The findings provide important implications for managers and investors, and future research could build on these results to deepen our understanding of the link between financial metrics and market ratios in other contexts. This research endeavors to deepen our understanding of the relationship between profitability and the bank market in Jordan. By examining this relationship within the unique context of an emerging market economy, this study aims to contribute to the existing knowledge base and provide valuable views for interested stakeholders in the financial performance and competitiveness of banks.

AUTHOR CONTRIBUTIONS

Conceptualization: Mohammad Fawzi Shubita.

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Formal analysis: Mohammad Fawzi Shubita.

Funding acquisition: Mohammad Fawzi Shubita.

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