The Moderating Role of ROA in the PER-Firm Value Nexus: Evidence from Pakistan's Banking Sector

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ABSTRACT

Purpose
Firm Value (FA) acts as a key measure of the efficiency of banking institutions in allocating resources and investor confidence in confidence in times of economic uncertainty. This research investigates the impact of investment choices, represented by the Price-to-Earnings Ratio (PER), and tests the moderating effect of profitability, represented by Return on Assets (ROA), on FV in commercial banks in Pakistan.

Methodology
The research applies panel data from 20 listed commercial banks for the period 2018–2023. Using a Random Effects Model (REM) on panel data diagnostics, the research examines direct and moderating effects of PER and ROA on FV.

Findings
The results show that neither PER nor ROA has any statistically significant direct effect on FV. Furthermore, ROA does not significantly moderate PER-FV. The findings are indicative of the complexity of value creation in commercial banks and suggest the possibility of other unexplored internal and external variables playing a more significant role in determining firm value.

Conclusion
The research provides insights to regulators and managers to move beyond conventional measures such as PER and ROA while formulating policies for augmenting firm value in turbulent environments.

Practical Implications
The management of banks and regulators in Pakistan must reconsider relying on traditional measures of PER and ROA to build firm value in turbulent environments. Further studies are essential in coming up with other untested internal and external factors that play a significant role in the value of firms in the Pakistani business banking industry.
Policies to increase the value of a firm should not be limited to concentration on only evidence of PER and ROA as a broader range of indicators offering good results need to be used.

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1. Introduction

The Pakistan banking sector serves as a foundational pillar of the national economy because it produces 7.4% GDP along with 85% control of financial system assets (State Bank of Pakistan, Annual Report 2022). Although vital to the national economy, the banking sector continues to experience serious long-standing issues, including macroeconomic uncertainties and political instability, as well as expanding Non-Performing Loans (NPLs) that reached 7.9% of total advances in 2022 (SBP Financial Stability Review, 2022).

The performance of commercial banks remains weakened by these problems, and between 2020 and 2023, the average market capitalization of listed banks showed a 1.8% annual decrease according to the Pakistan Stock Exchange Yearly Review 2023. The market-perceived long-term profitability combined with risk elements of a firm constitutes Firm Value and acts as an essential metric for demonstrating managerial operational efficiency and optimal resource distribution (Jensen & Meckling, 1976). Pakistan must preserve firm value under its risky economic conditions because this practice drives investor faith as well as financial sector stability.

Prospective earnings expectations of investors are reflected through the Price-to-Earnings Ratio (PER). A higher ratio especially indicates investor belief in increased bank growth opportunities (Fama & French, 1992). Strategic bank investments become challenging due to the frequent fluctuations in interest rates, which averaged 12.3% in 2022 (SBP, 2022). Research was conducted on the property and real estate industry, confirming that these crucial financial measures, such as P/E and ROA, influence the valuation of a firm together and can provide insight for managers planning to improve their firm's appeal to investors (Salsabila & Simon, 2025).

The ability of banks to convert their asset investments into cash is measured through Return on Assets (ROA), which represents net income divided by total assets (Berger et al., 2020). The pandemic recovery did not lead to an improvement in the 0.8% ROA levels, which remained static among Pakistani banking institutions in 2022 (State Bank of Pakistan, 2022).

This research uses four theoretical frameworks as a backbone. According to the Signaling Theory, high ROA demonstrates financial stability, thus attracting investors (Ross, 1977). The Agency Theory, according to which managers' conflicting incentives oppose shareholders' interests at times, and this irregularity could create poor PER or TATO performance (Jensen & Meckling, 1976). The Resource-Based View indicates that better TATO and ROA demonstrate business strength in the market (Barney, 1991). The key aim of Stakeholder Theory is to accomplish regulatory criteria at the same time as achieving unbiased shareholder rewards within emerging market systems.

The research on Pakistani banks produces inconsistent outcomes regarding their relationships. Shah and Mahmood (2020) argue a positive connection between PER-FV. A single study by the State Bank of Pakistan (SBP, 2022) demonstrated that every ten-percentage-point increase in total asset turnover (TATO) leads to a 6.5% rise in firm value (FV). However, Rehman et al. (2023) suggested TATO-based FV is reduced by operational expenses. Static ROA shows positive effects on FV in regular banking periods per in the International Review of Financial Analysis (Malik et al., 2021).

Research typically fails to analyze the new structural changes that became widespread after 2020, such as digital banking expansion, which grew by 42% (State Bank of Pakistan, 2023).

The research employed panel data from 20 commercial banks of Pakistani banking institutions from 2018 to 2023, which represent 92% of sector assets according to the PSX Market Performance Report 2023. The research implements fixed-effects regression (Wooldridge, 2016) as its method to analyze the following variables:

- Direct effects of PER and ROA on FV.
- ROA's moderating role.

This study combines signaling, agency, RBV, and stakeholder theories in the banking context. First evidence of ROA's moderation and nonlinear TATO effects in Pakistan. The research provides tasks to managers for improving asset usage while recommending PER stability methods to regulatory bodies.

2. Literature Review

2.1. Firm Value in the Banking Sector

Firm value is the estimation of a company's total value in the market by taking into account all aspects like assets, risk, liabilities, and profitability (Jensen, 2010; Card et al., 2018). Investors, shareholders, and other stakeholders use this crucial metric to assess the financial stability and expansion prospects of a company (Jiao, 2010; Khan, Qureshi, & Davidsen, 2020). In addition, firm value is an important factor in corporate decision-making that impacts mergers, acquisitions, and investment strategies (Jihadi et al., 2021; Kadim, Sunardi, & Husain, 2020). Tobi Q widely used firm value to assess investor confidence and future expectations by comparing the market value of a company to the asset's replacement cost (Tobin, 1969).

2.2. Investment decisions and Firm value

Previous studies showed that investment decisions positively impact firm value, as well-planned investments boost revenue, strengthen competitiveness, and foster growth. Asset investments that produce profits generate better future cash flows, which attract investors and grow long-term company value (Beladi, Deng, & Hu, 2021; Appah et al., 2023).

Company investments that span across different industry sectors produce stable financial conditions because they foster reduced dependence on single income streams. Organizations obtain maximum shareholder value by redirecting capital toward productive investments as an alternative to unproductive uses (Cheng & Wu, 2018).

According to signaling theory, the value of an organization changes based on decisions about investment, which reveal its quality standards and financial potential. Firms that make investments that benefit their entire stakeholder community establish better relationships, while minimizing risks and improving reputation to elevate firm value (Chang et al., 2022). Profits alongside growth result from strategic investments because they create immediate value improvements for the company (Margono & Gantino, 2021). Scientific evidence proves that successful investment choices lead to higher firm value (Fionita et al., 2021; Meutia et al., 2021). Companies with stronger ROA are more likely to report greater PBVs, which means that the ROA can intensify the evaluation of P/E

ratios in financial analyses. This implies that higher P/E ratios may be justified and linked with the increased value of firms in companies that have high profitability.

H_1: PER has a significant positive impact on FV.

2.3. Profitability and Firm Value

Profitability stands as the primary factor determining banking firm value because it affects both investor trust levels and stock market performance. Banking sector profitability shapes firm value, influencing investor confidence and stock prices, which in turn determine the firm's investment process. This process is primarily influenced by profitability, future demand, interest rates, competitive advantage, cash flows, and net worth levels of firms. A new version of the model emerged when Miller (1977) incorporated corporate taxes and personal income taxes. According to the Agency Theory demonstrates that strategic profitability management allows managers and shareholders to share common financial goals and achieve improved firm value (Sudiyatno et al., 2021). High ROA values reinforce the financial performance and sustainable utilization of assets and these factors demonstrate effective asset management practices. Bon and Hartoko (2022), along with Jihadi et al. (2021), Sudiyatno et al. (2020), and Fathony et al. (2020), demonstrated that return on assets (ROA) has a positive and significant effect on firm value (FV).

H_2: ROA has a significant and positive impact on FV.

2.4. Moderating role of ROA

This financial metric assesses the issuing companies' ability to generate profits relative to their asset utilization efficiency. The research results indicate that ROA creates positive impacts, meaning more ROA leads to greater company value and maximum levels because high profits establish strong market guarantees for investors seeking certain issuers. High profit levels usually lead investors to choose such financial instruments.

The company valuation will benefit from both shareholders receiving substantial dividends, along with a high market valuation of shares. This research supports earlier findings (Athifah, 2021; Fajaria, 2018). They show that ROA is influential. However, Dan et al. (2014), along with Ekonomi Pamulang (2018), present different evidence where ROA does not affect firm value. This research supports the Signaling theory since organizations need to communicate superior financial statement results to indicate success through asset utilization performance measurement. Organizational leaders who succeed in maximizing their asset allocation will boost stock price performance by attracting capital inflows while simultaneously growing the company's market value.

The ROA metric provides a fundamental measure of a banking operation's ability to produce profits from its asset base. Management effectiveness in generating bank profits from its assets should be evaluated, although off-balance-sheet activities can influence results. The crucial metric for bank profitability evaluation emerges as ROA because it avoids the disregard of leverage risks and because regulation controls financial leverage. For Greek banking sector analysis, ROA exhibits a rising trend with a peak in 1999. Return on assets (ROA) indicates asset utilization efficiency at a bank because it demonstrates how effectively bank assets produce revenue (Hargrave, 2021). A bank determines ROA by dividing Net Income by the Average Total Assets. The ratio serves to assess how well bank executives use their investment resources, together with financial assets, to generate profits. The study of bank profitability has frequently

employed return on assets (ROA) as a key metric (Ozili & Uadiale, 2017; Li et al., 2019). ROA is a valuable indicator that influences firm value and may enhance the interpretive power of the price-to-earnings (P/E) ratio (Herlambang et al., 2024).

H_3: ROA positively and significantly moderates the relationship between PER and FV.

3. Methodology

3.1. Samples and Data

This study investigates the influence of investment decisions and profitability on firm value (FV) in the Pakistani banking sector, while considering the moderating role of Return on Assets (ROA). The sample comprises 20 commercial banks listed on the Pakistan Stock Exchange (PSX), which collectively account for approximately 92% of the total banking sector assets (PSX, 2023). The sampling period spans from 2018 to 2023, providing a balanced panel dataset with 20 firm-year observations (20 banks × 6 years).

The sample was selected using a purposive sampling method based on three criteria: (1) the bank must be continuously listed on the PSX from 2016 to 2022, (2) availability of complete annual data on all study variables (FV, PER, TATO, and ROA), and (3) the bank must be classified as a commercial bank under the supervision of the State Bank of Pakistan (SBP). Data were collected from publicly available sources, including the annual reports of banks (SBP, 2022a; SBP, 2022b; PSX, 2023).

3.2. Measurement of Variables

3.2.1. Firm Values

The research aims to understand how firm value (FV) in Pakistan's banking sector depends on investment and profitability, considering the influence of Return on Assets (ROA). FV measures the market's opinion of how strong, stable, and likely to grow a bank is over time. It demonstrates how a firm creates value for its shareholders by improving stock prices and making profits over time. FV is usually estimated in empirical studies by considering different market-based measures. With this method, FV measures if the bank's resources shown on its books are correctly reflected in the value the market gives, allowing for a full assessment. When FV is higher, it shows that investors trust the company, expect positive market growth, and notice effective planning in finance and operations. By contrast, a low FV means the market sees the company in a less favorable light, or human resources or assets are not being used effectively. Boosting the FV is fundamental for strengthening shareholder value and keeping up with competitors in banking.

3.2.2. Investment Decisions

An investment decision is about using the company's resources to gain the best returns for its investors. Companies with solid finances and good prospects draw investments from people. The Price to Earnings Ratio (PER) is a popular tool investors use to assess how much a company is expected to grow in profits. PER indicates how market prices link the stock price to a company's earnings per share. Having a high PER makes firms invest more and this is likely to draw in new investors who look forward to the rise in profits.

3.2.3. Profitability

In the banking sector, ROA reveals the firm's level of profitability and directly affects the firm's value (FV) while adding to the regulation of the relationship between PER and FV. ROA tells us how effectively a company turns its assets into earnings, which is calculated by net operating profit over total assets. High ROA in a business means the assets are being used well and result in better profits. High ROA is shown to investors to indicate good company performance, which can affect their investment choices and may raise the stock price. More expensive shares in the market bring positive returns to the business's owners. So, how ROA affects the relationship between PER and firm value in the banking sector can be strengthened or weakened by its moderating role.

3.3. Estimation Model Specification

The report presents the link between a company's Price to Earnings Ratio (PER) and its firm value (FV), considering Return on Assets (ROA) as the independent variable and moderator. Firm value (FV) is the dependent variable, and PER and ROA are the explanatory variables. ROA works as a moderator, which means it affects the effect between ROA and PER. Therefore, two models are created: a model that does not include the moderating relationship and a model that takes the moderator into account. Model 1 is used to observe how both PER and ROA impact FV.

$$FV_{it} = \beta_0 + \beta_{1PERit} + \beta_{2ROAit} + \delta + y + \varepsilon_{i,t} \text{----------(1)}$$

δ is industry dummy and y is year dummy variable

In Model 2, PER was tested directly on FV and in interaction with ROA to see how they affect FV together.

$$FV_{it} = \beta_0 + \beta_{1PERit} + \beta_{2\,ROAit} + \beta_3(_{PERit \times ROAit}) + \delta + y + \varepsilon_{it} \text{----------(2)}$$

A company's firm value (FV) is calculated by comparing its market price to its book value, resulting in the price-to-book value (PBV) ratio. The PER is given by taking the stock price and dividing it by earnings per share. ROA shows the profitability of a company by measuring profit after tax by total assets. The interaction part PER×ROA measures the way ROA changes the relationship between PER and firm value. Industry and year dummies are used to tackle potential fixed effects that stem from different industries and years, which could influence all the companies in the sample.

Panel data regression methods such as Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM), are used in the study. Finance experts depend on panel data to analyze corporate actions spanning a period. Diagnostic tests are essential for selecting the appropriate model specification. The Breusch–Pagan Lagrange Multiplier (LM) test is typically applied first to determine whether panel data techniques are more suitable than pooled OLS (Breusch & Pagan, 1979). If panel effects are present, the Hausman test is used to decide between the Fixed Effects Model (FEM) and the Random Effects Model (REM) by examining the correlation between regressors and random effects. Additionally, the Chow test helps assess whether the FEM provides a better fit than OLS (Aminda et al., 2024)

4. Results and Discussion

4.1. Descriptive Statistics

Table.1.Description Statistics

Variable	Mean	Sd	Min	Max	Skewness	Kurtosis
ROA	0.5749	1.690	-8.572	4.418	-2.709	13.138
P/E Ratio	118.7681	1231.845	-15.476	13500	10.816	117.991
Firm Value	8942577	3.78E+07	-19321	2.20E+08	4.349	20.774

Source: Author's own elaboration

Table 1 presents a statistical summary of average, maximum, minimum, standard deviation, skewness, and kurtosis for the variables under consideration with respect to the impact of the P/E Ratio on Firm Value for the Pakistan Banking sector from 2018 to 2023, moderated by the ROA variable. Firm value has an average of 8,942,577, a high of 220,000,000, and a low of -19,321. The wide range between the highest and lowest Firm value indicates significant heterogeneity in the sample.

ROA has an average of 0.5749, a high of 4.418, and a low of -8.572. The range of ROA reflects a great diversity of profitability among the companies, with some of them making huge losses while others make positive returns. P/E Ratio has an average of 118.768, with its values ranging from -15.476 to 13,500. The extremely wide range of the minimum and maximum values for P/E Ratio demonstrates an enormous imbalance in market value relative to firm earnings within the industry. The indicator also manifests itself in the largest standard deviation value of 1231.845 for the P/E Ratio, as it is much more volatile than all other variables. ROA has the lowest standard deviation of 1.69009, as its volatility is quite low.

The skewness results report a positive value for Firm value (4.349) and P/E Ratio (10.816), implying that increases occur more often than decreases, or there are large positive outliers. By comparison, ROA shows a negative coefficient of skewness (-2.709), implying that decreases occur more often than increases, or that there are large negative outliers.

4.2. Correlation Analysis

Table.2.Correlation Matrix

Variable	ROA	P/E Ratio	Firm Value
ROA	1		
P/E Ratio	0.009	1	
Firm Value	0.392	-0.0148	1

Source: Author's own elaboration

Table 2 displays the correlation matrix for pairs of variables. The correlation analysis of the pairs of variables reflects different strengths and directions of association. The correlation value of ROA and P/E Ratio is 0.009 and reflects an extremely weak positive association. The correlation value between Firm value and ROA is 0.392 and reflects a moderately positive association. The correlation value between Firm value and P/E Ratio is -0.0148 and reflects an extremely weak negative association. The correlation findings indicate positive and negative coefficients for the relationships among variables in the

research model estimation. While some relationships are insignificant, the positive correlation between Firms' value and ROA is significant.

4.3. Results Estimation

4.3.1. Impact of PER and ROA on Firm Value

Panel data regression estimation on FV is conducted on two research models: Model 1 without moderation and Model2 with moderation. The panel data regression model uses three methods, namely OLS, FEM, and REM. Table 3 presents the diagnostic results of model selection based on the LM test, F-test, and Hausman, which conclude that REM is the most appropriate method. Thus, the interpretation and Analysis of the study are based on the results of the REM estimation.

Table.3.Diagnostic Test Results without Moderation

Test	Chi-square / F-Statistics	Prob.	Results
LM test (Breusch & Pagan)	269.87	0.0000	Random > Pooled
F test	0.0046	0.0000	Fixed > Pooled
Hausman test	0.03	0.9829	Random > Fixed

Source: Author's own elaboration

The LM test (Breusch & Pagan) with a chi-square statistic value of 269.87 and a p-value of 0.0000 shows that the Random Effects Model (REM) is more suitable than the Pooled OLS model. The F-test (Chow Test) with a chi-square statistic value of 0.0046 and a p-value of 0.0000 shows that the Fixed Effects Model (FEM) is more suitable than the Pooled OLS model (Aminda et al., 2024). Lastly, the Hausman test with a chi-square value of 0.03 and p-value of 0.9829 indicates that we cannot reject the null hypothesis. This indicates that there is no systematic variation between the Random Effects and Fixed Effects models' coefficients, suggest that the Random Effects Model (REM) is the most suitable and effective approach for this analysis (Faisal, Khan, & Khalid, 2023).

Table.4.Comparison of OLS Panel Models, FEM, and REM without Moderation

Variable	OLS	FEM	REM
P/E Ratio	-606.762	6.967334	1.885261
	(-0.21)	-0.01	0. 00
ROA	1391161	361493.1	401350.5
	-0.67	-0.34	-0.39
Constant	8214885**	8733933***	8711623
	-2.23**	-8.8	-0.98
Observations	120	120	120
R-squared	0.0043	0.0012	0.0039
Adjusted R-squared	0.0394		
F-test (or Wald chi2)	0.25	0.06	0.15

Note:*, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.**

Source: Author's own elaboration

Table 4 presents the estimation of the panel data regression model for the OLS, FEM, and REM methods, with different results. The proper REM method chosen for analysis yields an ROA estimation coefficient of 401350.5 with a t-statistic of 0.39. Since the absolute t-statistic (0.39) is far below typical significance thresholds (e.g., 1.96 for 5%),

the ROA estimation coefficient is not statistically significant in influencing FV. These findings suggest that we cannot accept the hypothesis that changes in ROA consistently affect firm value. The P/E Ratio estimation coefficient is 1.885261 with a t-statistic of 0.00. Likewise, the absolute t-statistic (0.00) is below any traditional significance level. Hence, the P/E Ratio estimation coefficient has no statistically significant influence on FV, i.e., investment choice (as captured by P/E Ratio) is unrelated to FV. In short, according to the selected Random Effects Model, neither ROA nor P/E Ratio has a statistically significant effect on Firm Value (FV) in this model.

4.3.2. Analysis of the Moderating Effect

5. Table.5.Diagnostic Test Results with Moderation

Test	Chi-square / F-Statistics	Prob.	Results
LM test (Breusch & Pagan)	270.11	0.0000	Random > Pooled
F test	0.0113	0.0000	Fixed > Pooled
Hausman test	0.03	0.9986	Random > Fixed

Source: Author's own elaboration

Table.6.Comparison of Three OLS panel models, FEM, and REM with Moderation

Variable	OLS	FEM	REM
P/E Ratio	-4664.865	-2174.258	-2260.681
	(-0.86)	(-1.25)	(-1.00)
ROA	848404.5	476700.4	503905.9
	-0.39	-1.11	-0.49
P/E RatioxROA	809098.5	414586.6	430236
	-0.88	-1.25	-1.05
Constant	3990452	6355291***	6252850
	-0.66	-3.18	-0.67
Observations	120	120	120
R-squared	0.011	0.011	0.0108
Adjusted R-squared	-0.0146		
F-test (or Wald chi2)	0.43	0.64	1.25

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Source: Author's own elaboration

Tables 5 and 6 present the results of the estimated impact of PER on FV by making ROA a moderator variable. The results of the diagnostic test of the selection of the panel data regression model, that REM is the proper method to analyze. The results of statistical testing with a 99% confidence level prove that PER directly, without interaction, has a negative and significant effect on FV. The direct P/E Ratio estimation coefficient is -2260.681 with a z-statistic of -1.00 and a p-value of 0.319. At a 99% confidence level (equivalent to $p < 0.01$), this conclusion is statistically not significant that P/E Ratio directly does not impact FV. From these results, we cannot reliably say that variations in P/E Ratio alone affect FV.

Alternative test results indicate that when P/E Ratio is combined with ROA (captured by the P/E Ratio x ROA coefficient), the coefficient is 430236, with a z-statistic of 1.05 and p-value of 0.295. At 99% confidence, the interaction term does not significantly affect FV. This indicates that ROA does not significantly moderate the effect of P/E Ratio on FV in this model.

The non-significant relationship between PER and ROA on firm value indicates that ROA does not significantly moderate the effect of PER on firm value in the Indonesian property industry sample. Other variables, such as asset turnover, are also negatively moderated by ROA, hence showing that this measurement of financial performance is intricate (Melina & Endri, 2025). In the moderation effects, the interaction term of P/E ratios and ROA, which is represented as P/E Ratio x ROA, also showed an insignificant result that strengthens the conclusion that ROA does not make any significant difference in the representation of the effect of P/E ratios on firm value. This result sheds light on the complexity of financial performance indicator and their effects in comprehensive evaluation. On the same note, Kim et al. (2025) explored the relationships of the single performance indicators to each other, and this aspect shows that, though necessary, ROA is not an ultimate adjustment to bring P/E ratios and firm valuation at par in all situations. In conclusion, according to the Random Effects Model with moderation, neither the P/E Ratio independently nor its interaction with ROA has a statistically significant influence on Firm Value (FV) at the 99% confidence level.

5.1. Discussion

This research analyzed the effect of investment choices, approximated by Price-to-Earnings Ratio (P/E Ratio), and the moderating influence of profitability, quantified in terms of Return on Assets (ROA), on Firm Value (FV) in 20 business banks for six years. Applying panel data regression, the results were compared between Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM) methodologies. Diagnostic tests—namely the Breusch-Pagan LM test, F-test, and Hausman test—all identified the Random Effects Model (REM) as the most suitable and efficient estimator of this moderated panel data analysis. Therefore, all the following interpretations are on the REM findings (explained in the extensive Table: Comparison of three OLS panel models, FEM, and REM with moderation effect).

The REM findings produced several important conclusions:

Direct Effect of P/E Ratio: The direct effect coefficient for P/E Ratio only was -2260.681 ($z = -1.00$, $p = 0.319$), which is statistically insignificant at typical cut-off values (1%, 5%, 10%). This shows that, in this model, the P/E Ratio has no statistically identifiable direct effect on FV. This result is consistent with prior research across other industries (Suleman, 2021; Bon & Hartoko, 2022), including studies on Indonesian real estate and property companies.

5.1.1. Moderating Role of ROA

The results of Aulia and Setiawati (2025) strengthen the main claim that the financial indicators, such as ROA and P/E, cannot be perceived independently. This is displayed in their work that, despite profitability (proxied by ROA) being a determinant of valuation that it has overlapping effects with other concepts such as decisions involving investments (proxied by PER) in the formation of perceptions of firm value (Aulia & Setiawati, 2025). The interaction term (P/E Ratio x ROA), examining ROA's role as a moderator, produced a coefficient of 430,236 ($z = 1.05$, $p = 0.295$). Like the direct PER effect, the moderating effect was statistically not significant. This indicates that ROA does not make the relationship between P/E Ratio and FV significantly different in this sample. While this contrasts with studies finding significant moderation by profitability or governance, it supports findings like Pramartha et al. (2020), where governance failed to moderate the PER-FV link.

5.1.2. Direct Effect of ROA

The coefficient for ROA's direct effect on firm value (FV) was 503,905.9 ($z = 0.49$, $p = 0.625$), indicating statistical insignificance. This result contradicts prior studies that reported either a negative relationship (Endri & Fathony, 2020; Harahap et al., 2020; Endri et al., 2021) or a positive association between ROA and FV (Gharaibeh & Qader, 2017; Luthfiah & Suherman, 2018). Instead, it aligns with findings that observed no significant direct link between ROA and market value (Hakim & Sugianto, 2018; Sugianto et al., 2020).

The overall explanatory fit of the model, as represented by an R-squared value of 0.0108 for the REM, is considerably low. This suggests that P/E Ratio, ROA, and their interaction together account for only a very small percentage of the explained variance in firm value. The Wald chi-2 statistic of 1.25 ($p = 0.742$) also establishes that the overall model is not statistically significant.

In summary, the stringent REM examination of panel data of 20 commercial banks for six years presents empirical information that neither P/E Ratio (standing for investment choices), ROA (standing for profitability), nor their interaction exerts statistically significant effects on Firm Value in this setting. These results reinforce the richness of factors influencing firm value in commercial banking, indicating that omitted or unobserved variables—fascinatingly, perhaps such externalities, regulatory regimes, or other financial indicators—may have more significant influences than these studied variables in this model.

6. Conclusion

This study examined the effect of investment choices (captured by P/E Ratio) and the moderating effect of profitability (ROA) on Firm Value (FV) in 20 business banks across six years. The main findings, extracted from the statistically favored Random Effects Model estimation, are unambiguous:

P/E Ratio does not have a statistically significant direct effect on FV.

The interaction term between P/E Ratio and ROA does not show a statistically significant moderating effect on FV.

ROA does not directly have a statistically significant effect on FV.

Although seeking to clarify determinants of commercial bank value, this research revealed no empirical evidence of support for the posited significant relationships between P/E Ratio and ROA (as moderator or direct catalyst) within the period under investigation and among the targeted sample. This adds to the literature by offering industry-specific evidence from commercial banking that the dynamics under investment decisions and profitability that affect firm value can be very different from trends in other industries or market situations.

6.1. Practical Implications

Bank management must realize that affecting firm value potentially needs consideration of a wider range of drivers other than direct or moderated influences of PER and ROA. Although investment choices and profitability continue to be the bedrock, their effect on value in this industry looks to be complicated, perhaps indirect, or perhaps outweighed

by other key drivers like macroeconomic conditions, regulation alterations, tech disruption, credit risk profiles, or capital sufficiency.

6.2. Limitations and Future Research

6.2.1. Sample Scope

20 commercial banks targeted by the study may pose generalizability limitations. Future studies could increase the sample size, include more banks, and perhaps cover varied financial institutions (e.g., Islamic banks, investment banks) or cross-sectoral comparisons.

6.2.2. Timeframe

Conclusions are limited to the particular six-year period examined. Subsequent research needs to look at various timeframes, possibly including complete economic cycles, and include analysis of banks in other nations, especially developing nations.

6.2.3. Variable Scope

The model accounted for very little variance, suggesting strong omitted variables. Subsequent research needs to incorporate other powerful determinants, including:

6.2.4. Internal Factors

Other financial ratios (e.g., NIM, CAR/NPL), growth opportunities, efficiency ratios, dividend policy, and quality of corporate governance.

6.2.5. External Drivers

Macroeconomic variables (interest rates, inflation, GDP growth), regulation changes (i.e., Basel III effects), technological innovation (Fintech disruption), and competitive pressures.

Overcoming these shortcomings will present a broader understanding of the drivers of firm value for the vibrant commercial banking industry.

Author Contributions

Ahmed Adekunle carried out the conceptualization, formal analysis, revised, results estimation, tabulation of data, and response to reviewers' comments.

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No conflict of interest

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