Correlation Analysis Between Financial Ratios and Stock Prices of Real Estate Companies Listed on the Indonesia Stock Exchange

Sasabella

Property Management and Appraisal, Vocational College, Universitas Gadjah Mada, Yogyakarta
Email: sasabella@mail.ugm.ac.id

ABSTRACT

Indonesia’s real estate sector is experiencing a surge in investor interest, reflected by the increasing number of companies joining the Indonesia Stock Exchange (IDX). Understanding the factors influencing stock prices is crucial to navigate this dynamic landscape. This study delves into this question, aiming to identify key financial ratios that significantly impact the stock prices of real estate companies listed on the IDX. Employing multiple linear regression analysis, we examined 45 observations spanning three years, collected from 15 real estate firms on the IDX. The results shed light on the significant influence of two key financial ratios: Return on Assets (ROA) and Earnings per Share (EPS). Interestingly, ROA exhibited a negative relationship with stock prices. This suggests that while a company's overall profitability, as measured by ROA, might be improving, the market might perceive factors that could limit future growth, leading to a decline in stock prices. Conversely, Earnings per Share (EPS) displayed a positive correlation with stock prices. This aligns with investor expectations, as a company generating higher earnings per share is perceived as more financially sound and attractive, ultimately boosting its stock price. Ultimately, this study empowers investors to make informed decisions by going beyond a single financial ratio and considering the interplay between various financial metrics specific to the real estate industry.

Keywords: Real Estate Sector, Current Ratio, Debt to Equity, Return on Assets, Earning per Share.

1. Introduction

Investment growth in the capital market is a highlight in the modern economy, marking an era where the real estate and property sector is growing rapidly. This phenomenon is reflected in the increasing number of real estate and property companies that decide to go public and are officially listed on the Indonesia Stock Exchange (IDX). Currently, the IDX records 778 listed companies, reflecting the comprehensive openness for the public to own company shares. The existence of 778 listed companies on the IDX is not just a statistic but a vital indicator of the active participation of the public in investing in the real estate and property sector. This phenomenon provides funds to companies and increases stock liquidity, opening up share ownership opportunities for individual and group investors. This positive development creates a more inclusive investment dynamic, empowers people in equity ownership, and creates opportunities for small investors to participate in capital market activities. The diversity of listed companies reflects the economy’s growth and creates a platform for small investors to participate in capital market activities.
A more democratic approach to shared ownership ensures that investment benefits are distributed evenly across society. Thus, the capital market is not only a platform for companies' economic growth but also a means of spreading the benefits to various segments of society.

Investing in stocks requires careful attention as it involves certain risks. For investors, an in-depth analysis of the stocks to be purchased is a must, given several internal and external factors that influence stock prices. External factors that can influence include political aspects, market conditions dynamics, and other constantly changing variables. On the other hand, internal factors are generally related to the company's performance. Understanding external and internal conditions is key to making smart investment decisions in this context. This ensures that every investment move is based on an in-depth analysis, allowing investors to manage risks better and maximise potential returns.

In investment, a company's performance is a crucial indicator that is significant in the investor's decision-making process. The share price, as a measure of the value that must be paid to obtain partial ownership of a company, directly reflects the quality of a business entity's performance. When the share price increases, investors tend to interpret it as a signal of positive company performance and vice versa (Kuswara, 2012). Therefore, an in-depth understanding of the company's internal factors is critical to gaining a comprehensive insight into the company's future growth and performance potential. Careful analysis of aspects such as management, financial structure, and business strategy is the foundation for understanding the company's dynamics. This will provide investors with information on, among other things, mitigating risks and planning their investments more intelligently in the face of dynamic market challenges.

The process of in-depth analysis of a company's internal factors involves evaluating various aspects, including management, organisational structure, and innovation, which ultimately provides a holistic picture of the company's health and growth potential. Wise investors investigate these internal performance metrics to form a solid view of their investments' likely growth and stability. Analysing these internal factors is an essential step in investment decision-making and an important tool for planning sustainable and intelligent investments in the future. Investors can identify potential opportunities and risks by profoundly understanding how a company's management manages its operations, the organisational structure implemented, and the extent to which innovation is integrated. These analyses provide a basis for investors to make more informed decisions and allow them to design investment strategies that match their long-term vision, supporting the sustainable growth of their portfolios.

Financial ratios, like sophisticated measurement tools, provide critical information to evaluate a company's performance and guide informed investment decisions. Metrics such as liquidity, profitability, solvency, and market ratios are critical parameters for assessing a company’s financial health (Rane & Gupta, 2022). These financial ratio analyses open the gates to a holistic understanding of a company's financial strengths and weaknesses, laying the foundation for smart investment decisions. However, it is not only financial ratios that play a role in determining investment prospects. A company's internal factors also significantly influence its value and growth. Effective management, a solid organisational structure and a culture of innovation are vital determinants that should not be overlooked. An in-depth analysis of a company's internal performance is like

Pulling back the curtain behind the scenes, revealing hidden potential waiting to be tapped. Including these internal analyses in the investment evaluation process is like equipping a map with a compass. This more comprehensive perspective allows investors to make more informed and sustainable decisions, strengthen their investment strategies, and optimise portfolios more efficiently. By combining information from financial ratios and internal company analyses, investors gain a deeper understanding of a company's growth potential and open up opportunities to discover hidden gems in a sea of investments. This holistic approach helps investors to maximise returns and minimise risks, leading them to sustainable financial success.

The effect of financial ratios on stock prices in real estate companies is an interesting research topic. Recent research, as said by (Rosdiana, 2021), shows that stock prices, especially in real estate sector companies, are influenced by several factors: current ratio, debt to equity ratio, and return on equity. These findings confirm that financial factors such as liquidity, capital structure, and profitability are essential in shaping the value of property company shares. Another study conducted by Syukhron, Santoso and Sulistyawati (2022) using Return on Assets (ROA) can affect stock prices in the real estate sector. This underscores the relevance of asset-based measures of firm performance in the context of property. Similar findings were revealed by Nguyen Cong, Nguyen Nga, Le Oanh, and Nguyen Than (2019), who confirmed a significant relationship between stock prices and ROA in real estate companies. Thus, it can be concluded that asset-related aspects of company performance, such as profitability, play a key role in determining share prices in the property industry. Ardiandia and Ulfah (2022) added a new dimension to this research by emphasising that Earning per Share (EPS) also influences stock prices in real estate companies. Thus, it appears that traditional factors such as liquidity and profitability play a role, and factors
such as earnings per share contribute to the dynamics of stock prices in the property sector. Overall, it can be concluded that share prices are influenced by many factors, not just one factor but several financial factors involving liquidity levels, capital structure, profitability, and earnings per share. Therefore, the analysis of financial ratios is essential to form a more complete understanding of what can affect a share price.

Based on this series of studies, it can be stated that there is empirical evidence that supports the influence of corporate financial factors on stock prices in companies, especially companies in the real estate sector. Thus, an in-depth understanding of financial ratios is crucial for investors, financial analysts, and property company managers to make more informed and timely investment decisions.

2. Theoretical Background

a) Share Price

Stock prices, which are the amount of money buyers are willing to pay and sellers are willing to receive for a share at a given time (Brigham & Ehrhardt, 2008), significantly impact financial market dynamics. Previous research suggests that one of the factors that can influence stock prices is the company’s performance. The focus of research often centres on the impact of financial ratios on stock prices, and previous findings create various results. Some studies show a significant impact of certain financial ratios on stock prices, while other studies suggest an insignificant effect. This difference in findings may stem from variations in the research methodology, the characteristics of the sample taken, or the specific context in which the research was conducted. The importance of this further research not only contributes to the academic literature and provides a clearer view for practitioners and investors to make more informed and measured investment decisions, minimise risk, and better understand the dynamics of stock price movements in a constantly changing market environment.

b) Current Ratio (CR)

According to Pandey (2002), the current ratio is a parameter in the financial world that determines a company’s ability to meet short-term obligations using its current assets. The following is the formula for obtaining this ratio:

\[
\text{Current Ratio} (CR) = \frac{\text{Current Ratio}}{\text{Current Liabilities}}
\]

Research conducted by Muthalib, Murni, and Untu (2021) indicates that CR has no significant relationship with stock prices. However, a different perspective emerges from the results of Dimitropoulos and Asteriou’s (2009) research, which shows that the ratio of working capital to total assets, which is related to the concept of Current Ratio, has a negative impact on stock returns. The findings from “The Effect of Current Ratio, Earning Per Share and Debt to Equity Ratio on Stock Prices” (2022) also reinforce the finding that CR significantly affects stock prices. This finding highlights that a high current ratio does not always positively affect stock prices. In other words, liquidity, as measured by the Current Ratio, does not always positively impact stock performance. The complexity of the relationship between firm liquidity, particularly the Current Ratio, and stock value is emphasised by this study. This underscores the importance of involving various aspects in financial analysis to obtain more accurate findings regarding the factors affecting stocks.

c) Debt to Equity (DER)

The debt ratio, according to Gitman (2009), is a number that shows the difference between a company’s debt and equity; in other words, this ratio shows the size of a company’s financial leverage. Here is the formula to get this ratio:

\[
\text{Debt to Equity (DER)} = \frac{\text{Total Liabilities}}{\text{Total Equity}}
\]

Several researchers have examined the relationship between DER and stock prices. Some studies state that DER significantly impacts company performance; this impact will later lead to an appreciation or depreciation of the stock value, which will certainly affect the stock price (Basarda et al., 2018). However, other findings found that stock prices are not influenced by DER (Muthalib et al., 2021), while other studies found that DER has an effect on stock prices and is negative (Rosdiana, 2021). Following up on the facts in these findings, further research is needed to understand the dynamics of the relationship between DER and stock prices in more depth. This further investigation may detail the factors that influence the results of the study, such as industry conditions, company characteristics, or specific time periods that may play an important role in the relationship. The difference in research results underscores the complexity of factors that may influence the relationship between DER and stock prices. Therefore, a more comprehensive understanding and in-depth analysis are needed to identify variables that can explain the differences in research findings so that the research results are more reliable and relevant in the context of corporate finance.

d) Return on Asset (ROA)

Return on Assets (ROA) is a ratio measure of the company’s operating results or performance based on the amount of assets it has (Brigham & Ehrhardt, 2008). To calculate ROA, the following formula is used:

\[
\text{Return on Asset (ROA)} = \frac{\text{Net profit}}{\text{Total Asset}} \times 100\%
\]

Research to determine the effect of ROA on stock prices has been done before. The findings by Happrabu & Ariyani (2023) state that stock prices are influenced by ROA, and the effect of ROA is positive; this is in line
with the results of research by another research (Khasanah et al., 2021). On the other hand, a research study found that ROA has no effect on stock prices (Tahir et al., 2021). Moreover, according to Choiriyah et al (2021), ROA and other financial metrics have no significant impact on stock prices. This discrepancy in findings indicates the need for further research to understand the relationship between ROA and stock prices more deeply. Factors such as research methodology, sample characteristics, and the specific economic context may play a role in this difference in results, and further studies may provide more comprehensive insights. The discrepancy of findings in the literature emphasises the complexity of the relationship between ROA and stock prices, highlighting that variability in research methodologies may affect the results. By conducting further research, we can detail and identify additional factors that influence this relationship, so that research results can become more consistent and relevant in describing the impact of ROA on stock prices in various contexts and situations.

e) Earnings per Share (EPS)
Earnings per share is a quantitative measure that shows how much net income can be earned by each holder of common stock. The formula is calculated by dividing net income minus preferred dividends by the number of outstanding common shares, as Gitman (2009) explained. The following is the formula used to calculate EPS:

\[
\text{Earnings per Share (EPS)} = \frac{\text{Net profit} - \text{Preferred dividends}}{\text{Weighted Average Shares Outstanding}} \times 100\% 
\]

According to Sahlan and Syaroni (2020), earning per share (EPS) significantly impact the share price of companies listed on the Indonesia Stock Exchange. This study shows that EPS, as an indicator of profitability per share, plays a crucial role in shaping market perceptions of company value. Similar findings were also revealed by Wijaya (2019), who found that EPS has a significant and simultaneous influence on the share price of manufacturing companies on the Indonesia Stock Exchange. Moreover, in the context of the real estate sector, EPS remains a relevant determining factor. Almansour et al (2022) highlighted the negative impact of the COVID-19 pandemic on real estate sector returns, which indirectly reflects the potential influence on the share prices of real estate companies. A study also reveals a negative correlation between real estate prices and stock prices in China (Su et al, 2018). This research provides an in-depth insight into the dynamics of the real estate market and how it can affect share prices and illustrates the complex relationship between company performance, industry sector, and external factors.

3. Methodology
This research combines two research methods, descriptive quantitative and qualitative, to gain a thorough understanding. The quantitative method produces regression values that enable in-depth analysis of the relationship between variables. Furthermore, the qualitative method was used to interpret the statistics of the regression results and enrich the research findings. This approach provides a comprehensive framework for understanding the phenomenon under study and enhances the validity of the findings.

3.1 Data
This study involves five variables, with Share Price as the dependent variable and Current Ratio (CR), Debt to Equity (DER), Return on Asset (ROA) and Earnings per Share (EPS) as the independent variables. The research focuses on 15 companies in the real estate sector. Data was collected through annual final reports from 2020 to 2022, ensuring accuracy and reliability. This approach provides a solid basis for analysing the impact of the independent variables on the stock prices of real estate companies. By using relevant samples and reliable data, this study is expected to provide valuable insights into stock market dynamics in the context of the real estate industry. Overall, this approach ensures the validity and reliability of the research findings.

3.2 Analysis Method
The panel data regression analysis in this study utilised three approaches to determine the most appropriate model, namely:

a) Common Effect Model (CEM)
Common Effect Model (CEM) is often referred to as Pooled Least Square or Pooled Regression. This model combines data from all individuals and periods to estimate the relationship between the dependent and independent variables.

b) Fixed Effect Model (FEM)
This model belongs to the panel data regression models that consider intercept variations between individuals in the estimation process. Meanwhile, the slope coefficients for the independent variables are assumed to be constant over time.

c) Random Effect Model (REM)
This model is an approach that combines elements of FEM and REM, considering both fixed and random individual effects simultaneously. This model suits situations with heterogeneous individual effects and correlation between individual effects and explanatory variables.

In the process of determining the appropriate regression model specification for panel data regression, three tests are conducted, namely:
a) Chow Test
The Chow test, a statistical method, is used to compare CEM and FEM in panel data regression. The aim is to determine which model is more appropriate for data analysis. The decision on model selection is based on the probability value of the resulting cross-section F statistic. The significance level used in this test is 5%. The following is the hypothesis used:
H0: Common Effect Model (CEM)
H1: Fixed Effect model (FEM)

b) Hausman Test
This study uses the Hausman Test to determine whether the Fixed Effect or Random Effect Model is more suitable for analysing panel data. The decision is based on the p-value of the Random Effect Model cross-section. A statistically significant p-value (usually less than 0.05) indicates that the Fixed Effect Model is more appropriate. In contrast, an insignificant p-value (greater than 0.05) indicates that the Random Effect Model is more appropriate. The following is the hypothesis used:
H0: Random Effect Model (REM)
H1: Fixed Effect model (FEM)

c) Lagrange-Multiplier Test
The Lagrange Multiplier (LM) test is a crucial step in determining the appropriate model between the Random Effect Model (REM) and the Common Effect Model (CEM) in panel data analysis. The final decision depends on the probability value (p) of the Breusch-Pagan (BP) test. The following is the hypothesis used:
H0: Random Effect Model (REM)
H1: Common Effect Model (CEM)

**Figure 1. Regression model**

To understand the relationship between the dependent variable and the independent variable in panel data regression, the following model is used:

\[ y = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon \]

Where:
\( y \) = Share Price
\( \chi_1 \) = Current Ratio (CR)
\( \chi_2 \) = Debt to Equity (DER)
\( \chi_3 \) = Return on Asset (ROA)
\( \chi_4 \) = Earning per Share (EPS)

4. Result and Discussion
Before running the panel data regression test, a crucial first step is selecting the model that best suits the characteristics of the research data. Three tests are applied: the Chow, Hausman, and Lagrange Multiplier. From the tests conducted, it is concluded that the Random Effect Model (REM) is the best model for this study, as shown in Table 1. REM considers random individual effects, providing greater flexibility. The choice of REM as the panel data regression model indicates support for accurate and relevant analysis in this study. The test results form a solid basis for continuing the panel data regression analysis, ensuring the validity of the research findings by selecting the model that best fits the characteristics of the data at hand.

<table>
<thead>
<tr>
<th>Test</th>
<th>Prob.</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chow</td>
<td>0.0000*</td>
<td>H0 is rejected, then the model used is FEM</td>
</tr>
<tr>
<td>Hausman</td>
<td>0.9833*</td>
<td>H0 is accepted, then the model used is REM</td>
</tr>
<tr>
<td>Lagrange Multiplier</td>
<td>0.0000*</td>
<td>H0 is accepted, then the model used is REM</td>
</tr>
</tbody>
</table>

*** p<.01, ** p<.05, * p<.1

The data used in this study is panel data with 45 observations. To ensure that the REM method is suitable, it is necessary to test for heteroskedasticity and multicollinearity tests. The results of these two tests show no relationship between the variables used. (Table 2).

<table>
<thead>
<tr>
<th>Test</th>
<th>Prob.</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uji heteroskedasticity</td>
<td>0.3818*</td>
<td>H0 is accepted, then the residual variance is constant.</td>
</tr>
<tr>
<td>Uji multicollinearity</td>
<td>1.73</td>
<td>H0 is accepted, then there is no multicollinearity</td>
</tr>
</tbody>
</table>

*** p<.01, ** p<.05, * p<.1

The following are the results of panel data regression with the selected models that have the potential to affect stock prices in real estate sector companies:

\[ Y = 436.2098 + 7.5698 \chi_1 - 32.0571 \chi_2 - 915.7246 \chi_3 + 0.5198 \chi_4 + \epsilon \]

Where:
\( y \) = Share Price
\( \chi_1 \) = Current Ratio (CR)

Table 1.
Model Selection Test

Table 2.
Classic Assumption Test
\( \chi^2 \) = Debt to Equity (DER)

\( \chi^3 \) = Return on Asset (ROA)

\( \chi^4 \) = Earning per Share (EPS)

**Table 3. Regression Result**

<table>
<thead>
<tr>
<th>No.</th>
<th>y</th>
<th>Coef.</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>7.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x2</td>
<td>-32.057</td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>x3</td>
<td>-915.725</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>x4</td>
<td>0.52</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>436.21</td>
<td>***</td>
<td></td>
</tr>
</tbody>
</table>

*** \( p < .01 \), ** \( p < .05 \), * \( p < .1 \)

Among the four independent variables analysed in Table 3, only two variables show a significant effect on the dependent variable. A variable has a significant effect if it has a probability level (p-value) less than the predetermined alpha (\( \alpha \)) value; in this case, \( \alpha = 0.05 \). Based on the analysis results, it is concluded that only two of the four independent variables significantly affect the company's stock price, namely variables X3 (ROA) and X4 (EPS). The impact of each variable on the stock price will be explained further to provide a deeper understanding of its contribution. The following is an explanation of the influence of each variable:

a) Effect of EPS on Stock Price

An in-depth analysis of the research data revealed a significant effect of Earnings per Share (EPS) on the share price of real estate companies. This variable has a p-value of 0.000, much smaller than the set significance level of alpha (\( \alpha = 0.05 \)). This convincing result unequivocally demonstrates the substantial impact of EPS on share price fluctuations. The positive coefficient associated with the EPS variable confirms the existence of a direct relationship between EPS and the share price of real estate companies. This finding aligns with previous research conducted by Siyah, Ardian, and Helsinawati (2019). Furthermore, this observation is supported by the concept of long-term convergence between the stock prices of real estate companies and fundamental financial value indicators, including EPS (Hiang, 2003).

From a theoretical and empirical perspective, it is evident that EPS plays a vital role in influencing stock price levels, especially in the real estate sector. This breakthrough finding makes a valuable contribution to understanding the factors that can influence stock market dynamics, particularly in the real estate sector. It provides a more comprehensive view for investors, analysts and relevant stakeholders.

b) Effect of ROA on Stock Price

The return on assets (ROA) variable has a probability of 0.005, smaller than the alpha value (0.05) set. This indicates that ROA significantly influences the stock price of real estate companies. The negative coefficient on the ROA variable indicates an inverse relationship between ROA and stock price, where a higher ROA results in a lower stock price.

This finding aligns with previous studies conducted by Nguyen Cong, Nguyen Nga, Le Oanh, and Nguyen Than (2019). The study showed that financial ratios, including ROA, significantly impact the share price of real estate sector companies. Support for this finding is also found in another study that shows that financial factors, particularly ROA, significantly impact highly leveraged Real Estate Investment Trusts (REITs) (Chan et al., 1990). This suggests that the interaction between leverage and financial performance also affects stock prices.

Various other studies have also proven that ROA can affect the share price of real estate companies. Higher ROA generally contributes to lower bankruptcy risk, better stock returns, and positive abnormal returns for shareholders. This is especially the case when combined with effective asset management and considering the company's financial structure. These findings provide valuable insights for stakeholders, investors, and analysts in understanding the role of ROA in determining the stock value of real estate companies. A deeper understanding allows them to optimise financial and investment strategies to achieve their desired goals.

A thorough model quality analysis is required to assess the extent to which the panel data regression model can capture the relationship between stock prices and firm fundamentals. Relevant information that can aid this evaluation is presented in Table 3. A critical measure of model quality is the coefficient of determination (R-squared). The R-squared value reflects the proportion of stock price variation that can be explained by the independent variables included in the model, namely Current Ratio (CR), Debt to Equity Ratio (DER), Return on Assets (ROA), and Earning per Share (EPS) in the model this study. Analysis of the panel data regression model shows an R-squared value of 0.16. This means the model can explain 16% of the variation in stock prices, while other factors outside the model influence the remaining 84%. (Table 4)

Interpretation of R-squared needs to be done with caution. While a high R-squared value indicates the model's ability to explain variation, it does not necessarily indicate a direct cause-and-effect relationship. Other statistical measures and external factors must also be...
considered for an accurate interpretation. Thus, while the model can partially explain changes in stock prices, other factors outside the model, such as market sentiment or economic policies, may also influence the dynamics of real estate companies' stock prices. Therefore, a thorough evaluation of the model is essential. This includes testing the significance of the variables and checking the regression assumptions. Through this comprehensive evaluation, we can gain a deeper understanding of the accuracy and reliability of the model in explaining the relationship between stock prices and company fundamentals. With a thorough evaluation, researchers can determine whether the model should be used to predict real estate companies' stock prices effectively.

### Table 4. Regression Result

<table>
<thead>
<tr>
<th>Mean dependent var</th>
<th>SD dependent var</th>
<th>362.943</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall r-squared</td>
<td>0.160</td>
<td>Number of obs 45</td>
</tr>
<tr>
<td>Chi-square</td>
<td>12.601</td>
<td>Prob &gt; chi2 0.013</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.321</td>
<td>R-squared 0.192 between</td>
</tr>
</tbody>
</table>

5. Conclusion

This study examines the factors that influence the stock price of real estate companies in Indonesia. Panel data regression analysis with the Random Effect Model (REM) shows that Return on Asset (ROA) and Earnings Per Share (EPS) have a significant influence on stock prices. Although ROA has a negative coefficient, indicating an inverse relationship, this reflects the company's financial performance. On the other hand, EPS with a positive coefficient indicates a positive contribution of earnings per share to the stock price. However, it should be remembered that this model only explains a small part of the model, Variation in stock prices. Other measurable and immeasurable factors can also affect stock prices and must be considered when making investment decisions. This research provides valuable insights for investors in understanding the factors that influence stock prices. Underlying stock prices of real estate companies and making smart investment decisions.

### References


HM Hasibuan, D., & Septian Rahman, M. (2023). The Effect of Earnings Per Share, Current Ratio, and Debt to Equity


