

CHAPTER 2 – LITERATURE REVIEW

2.1. Investing

Investing is a commitment to a financial instrument or other resource with the expectation of future returns (Bodie, Kane & Marcus, 2014). Investments can be divided into two categories: real and financial assets. Real assets include buildings, land, machinery and knowledge that are used to produce goods and services. In contrast, financial assets, such as bonds and stocks, are claims to income generated by real assets and do not contribute directly to their productive capacity (Bodie, Kane & Marcus, 2014).

Financial assets can be classified into three components: fixed income, equity, and derivatives. Fixed income provides a steady stream of income determined by a certain formula. For example, a corporate bond promises that the holder will always receive a certain amount of interest each year. Investment performance in financial assets is closely related to the condition of the issuing company (Bodie, Kane & Marcus, 2014).

Stocks, also known as equity, do not promise fixed incomes to shareholders, but they are rewarded with dividends. Investment in stocks is highly dependent on the performance of the company being invested in. When the company's performance consistently improves over time, the value of its shares increases, and vice versa. Therefore, investing in stocks carries higher risk than investing in bonds (Bodie, Kane & Marcus, 2014).

2.2. Risk and Return

Risk and return are two fundamental concepts in investing, and understanding their relationship is crucial for making informed investment decisions. Risk refers to the potential for loss or damage in an investment, while return refers to the gain or profit that an investor makes on an investment. The risk-return tradeoff states that higher returns are associated with higher levels of risk, while lower returns are associated with lower levels of risk. There are several theories and models that attempt to explain the relationship between risk and return in investing.

2.2.1 Capital Asset Pricing Model (CAPM)

One of the earliest and most widely used theories of risk and return is the Capital Asset Pricing Model (CAPM), developed by William Sharpe, John Lintner, and Jan Mossin in the 1960s (Sharpe, Lintner, & Mossin, 1964). The CAPM states that the expected return of an asset is equal to the risk-free rate plus a risk premium, which is proportional to the asset's beta, or sensitivity to market risk. The CAPM assumes that investors are rational and risk-averse, and that they hold well-diversified portfolios. The model has been widely used in finance and investment management, although its assumptions have been subject to criticism and its predictions have sometimes been inaccurate.

2.2.2 Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory (APT), developed by Stephen Ross in the 1970s, is another important theory of risk and return (Ross, 1976). Unlike the Capital Asset Pricing Model (CAPM), which only considers one source of risk (market risk), the APT assumes that there are multiple sources of risk that affect asset prices. The APT states that the expected return of an asset is a function of various factors or macroeconomic variables, such as interest rates, inflation, and GDP growth. The APT assumes that investors can earn excess returns by identifying and exploiting mispricings in the market. The model has been used to explain the returns of various asset classes, including stocks, bonds, and real estate. The APT is considered a more complex model than the CAPM, as it allows for multiple sources of risk to be considered when evaluating an asset's expected return. The model's reliance on macroeconomic variables reflects the idea that changes in the economy can have an impact on investment returns.

2.2.3 The Fama-French Three-Factor Model

The Fama-French Three-Factor Model is a widely recognized model for evaluating the risk and return of stocks, which was developed by Eugene Fama and Kenneth French in the 1990s (Fama & French, 1992). The model extends the Capital Asset Pricing Model (CAPM) by adding two additional factors: the size of the company and the book-

to-market ratio of the company. The size factor reflects the idea that smaller companies have higher expected returns than larger companies, while the book-to-market ratio factor reflects the idea that companies with low book values relative to their market values have higher expected returns than those with high book values. The Fama-French Three-Factor Model assumes that the risk of a stock can be decomposed into three sources: market risk, size risk, and value risk. The market risk is represented by the beta coefficient in the CAPM, while the size and value risks are represented by the SMB and HML factors in the Fama-French Three-Factor Model, respectively. The SMB factor reflects the outperformance of small companies over large companies, while the HML factor reflects the outperformance of value companies over growth companies. The model has been widely used to explain the returns of value stocks and small-cap stocks, and it has been shown to provide a better fit to the data than the CAPM.

2.2.4 Modern Portfolio Theory (MPT)

The Modern Portfolio Theory (MPT) is a widely used theory that emphasizes the importance of diversification in managing risk. The theory was developed by Harry Markowitz in the 1950s (Markowitz, 1952) and provides a framework for constructing portfolios that maximize returns for a given level of risk. MPT assumes that investors are rational and risk-averse, and that they hold well-diversified portfolios. The theory suggests that investors should aim to construct portfolios that have the highest expected return for a given level of risk, and that the optimal portfolio is the one that lies on the efficient frontier, which is the set of portfolios that offer the highest expected return for a given level of risk.

The efficient frontier is the set of portfolios that offer the highest expected returns for a given level of risk, and it represents the optimal portfolio for an investor. The efficient frontier is calculated by plotting the expected returns and standard deviations of a set of portfolios, and finding the set of portfolios that maximize the expected return for a given level of risk. The efficient frontier is a useful tool for investors because it provides a framework for constructing portfolios that offer the highest expected returns for a given level of risk.

2.2.5 Black-Scholes Model

The Black-Scholes model is a widely used financial model that revolutionized the options trading industry. Developed by Fischer Black and Myron Scholes in 1973, the model assumes that the stock price follows a random walk and is influenced by several factors such as the current price of the underlying asset, the exercise price of the option, the time to expiration, and the risk-free rate (Black & Scholes, 1973). The Black-Scholes model provides a mathematical framework for pricing options, which created a market for options that did not exist before. This allowed investors to hedge their positions and manage their risk more effectively. The model is widely used in finance and investment management to price options, and it has been influential in the development of modern financial theory. The Black-Scholes model is not without its criticisms, however, as it assumes a number of idealized conditions that may not reflect reality. For example, the model assumes that stock prices follow a random walk, which may not always be the case.

2.3. Fundamental Analysis

Fundamental analysis, also known as fundamental metrics, consists of every information that describes the condition of a specific company (May, 2011). These information include financial statements, company management, and other essential key metrics. Investors who find daily fluctuations in price irrelevant are also known as long-term investors. These long-term investors focus on companies' performances, profitability, growth, and other metrics for long-term benefits.

Fundamental analysis is a method of evaluating an asset by analyzing its intrinsic value and examining relevant economic and financial factors that may affect its future price. The goal of fundamental analysis is to identify undervalued or overvalued assets based on their underlying fundamentals.

One of the most widely used theories of fundamental analysis is the discounted cash flow (DCF) model, which is used to estimate the intrinsic value of an asset based on its expected future cash flows (Brealey et al., 2017). The DCF model assumes that the value of an asset is equal to the present value of its future cash flows, adjusted for the time value of money and the riskiness of the asset. The model requires the analyst to

estimate the future cash flows of the asset, the discount rate used to adjust for the time value of money, and the expected rate of return required by investors for taking on the risk of the asset. The DCF model is widely used in equity valuation and has been applied to a wide range of assets, including stocks, bonds, and real estate.

Another important theory of fundamental analysis is the economic moat, which refers to the competitive advantage that a company has over its peers (Hagstrom, 2016). A company with a wide economic moat is able to maintain high profitability and fend off competition more effectively than its peers. Economic moats can be created through various factors, including brand recognition, economies of scale, network effects, and patents. By identifying companies with strong economic moats, investors can identify assets that are likely to have sustainable competitive advantages and strong long-term growth prospects.

The efficient-market hypothesis (EMH) is another important theory of fundamental analysis, which states that asset prices always fully reflect all available information about the asset (Fama, 1970). This means that it is impossible to consistently earn excess returns by analyzing public information about an asset, as the market has already priced in all available information. The EMH has been subject to criticism and debate, with some analysts arguing that there are inefficiencies in the market that can be exploited through fundamental analysis and other methods.

The Graham-Dodd approach is a fundamental analysis method that emphasizes the importance of analyzing a company's financial statements to identify its intrinsic value. This approach was developed by Benjamin Graham and David Dodd in the 1930s and has been widely used in equity valuation (Graham & Dodd, 2009). The approach involves analyzing a company's financial statements, including its income statement, balance sheet, and cash flow statement, to determine its financial health and profitability. The approach also involves identifying any discrepancies between the market price of the asset and its intrinsic value, based on the analysis of its financial statements.

2.4. Technical Analysis

Technical analysis is a popular method of evaluating an asset in the financial markets. It involves analyzing an asset's historical price and volume data using charts and other tools to identify patterns and trends. Technical analysis is often used by traders and investors to make informed decisions on whether to buy or sell an asset. Although critics argue that technical analysis is based on past performance and cannot predict future prices, proponents argue that it can provide valuable insights into the market and help traders identify potential opportunities.

One of the most commonly used technical indicators in trading is volume, which measures the number of shares traded over a specific period. Volume is an essential technical indicator as it can indicate significant interest in a particular stock. When the trading volume is high, it could indicate that there is a lot of activity in a particular stock. Conversely, when the trading volume is low, it could indicate that there is a lack of interest in a particular stock. In this research, volume is used as a technical indicator to understand the level of activity in a particular stock. The level of trading activity could be used to identify potential buy or sell signals. For example, if the volume of trading in a particular stock is increasing, it could indicate that there is significant interest in the stock, and traders may want to consider purchasing that stock. On the other hand, if the volume of trading in a particular stock is decreasing, it could indicate that there is a lack of interest in the stock, and traders may want to consider selling that stock. Volume is an indicator of market interest and can be used to confirm trends and identify potential reversals. Technical analysts use various tools, such as volume bars and on-balance volume indicators, to analyze volume data and identify patterns and trends. High volume can indicate strong buying or selling pressure, while low volume can indicate a lack of interest in the asset (Murphy, 1999).

Another important technical indicator is trend, which identifies the direction of the market over a specific period. When the trend of the market is up, it indicates that prices are generally increasing, and traders may want to buy stocks. Conversely, when the trend of the market is down, it indicates that prices are generally decreasing, and traders may want to sell stocks. In this research, trend is used as a technical indicator to identify the general direction of the movement of stock prices in the LQ45 index. By analyzing the trends of the stock prices in the LQ45 index, traders can make informed decisions

on when to buy or sell stocks. For example, if the trend of the stock prices in the LQ45 index is up, it could indicate that prices are generally increasing, and traders may want to consider buying stocks. On the other hand, if the trend of the stock prices in the LQ45 index is down, it could indicate that prices are generally decreasing, and traders may want to consider selling stocks. Trends can be classified as either uptrends or downtrends, depending on whether the price is moving up or down over time. Technical analysts use various tools, such as moving averages and trendlines, to identify and confirm trends. Once a trend has been identified, technical analysts may use it to predict future price movements and identify potential trading opportunities (Murphy, 1999).

The Dow Theory is another important theory of technical analysis, which was developed by Charles Dow in the late 19th and early 20th centuries. The theory states that the market consists of three trends: the primary trend, the intermediate trend, and the short-term trend. The primary trend is the long-term trend of the market, which can last for several years. The intermediate trend is the trend that lasts for several weeks to several months, while the short-term trend lasts for several days to several weeks. The Dow Theory suggests that investors should focus on the primary trend and ignore short-term fluctuations in the market (Rhea, 2012).

Elliott Wave Theory is another important theory of technical analysis, which was developed by Ralph Elliott in the 1930s. The theory states that the market moves in a series of waves, which can be classified as either impulsive waves or corrective waves. Impulsive waves are the larger waves that move in the direction of the primary trend, while corrective waves are the smaller waves that move against the primary trend. Elliott Wave Theory suggests that the market moves in predictable patterns and that investors can use these patterns to predict future price movements (Elliott et al, 1938).

Other important tools and theories of technical analysis include chart patterns, such as head and shoulders patterns and double bottoms, and indicators, such as the relative strength index (RSI) and the moving average convergence divergence (MACD). Technical analysts use these tools and theories to identify potential trading opportunities and manage their risk (Murphy, 1999).

2.5. Yuliarti and Diyani (2018): The Effect of Firm Size, Financial Ratios, and Cash Flow on Stock Return

Yuliarti and Diyani (2018) conducted a study to investigate the influence of firm size, financial ratios, and cash flow on stock returns. The study is relevant to the current research as it examines various fundamental metrics that could affect stock prices, which aligns with the first objective of this thesis. Moreover, their findings provide valuable insights into the factors that could potentially impact stock price movements in the LQ45 index.

The researchers used a quantitative approach, employing multiple regression analysis to analyze the data. The sample consisted of 7 companies listed on the Indonesian Stock Exchange (IDX) from 2011 to 2013. The financial ratios considered in the study included the current ratio (CR), market book ratio, and return on equity (ROE). Additionally, the study assessed the effect of cash flow from operating activities (CFOA) and firm size (measured by the natural logarithm of total assets) on stock returns.

Yuliarti and Diyani (2018) found that firm size and cash flow from operating activities had a significant positive effect on stock returns. This implies that larger companies and those with higher cash flows generated from their core business activities tend to experience higher stock returns. Among the financial ratios, the study discovered that the current ratio had a negative and significant relationship with stock returns, while total asset turnover and return on equity showed a positive and significant relationship with stock returns.

These findings contribute to the current thesis by providing evidence on the impact of certain financial ratios on stock returns, which can be linked to stock price movements. The results also emphasize the importance of considering firm size and cash flow when analyzing stock price movements. Although Yuliarti and Diyani's (2018) study does not specifically focus on the LQ45 index or technical indicators, their research provides a solid foundation for understanding the role of fundamental metrics in stock price movements, which can be further explored and extended in the current thesis.

2.6. Abidin, S., Suhadak, & Hidayat, R. R. (2016): Pengaruh Faktor-Faktor Teknikal Terhadap Harga Saham (Studi Pada Harga Saham IDX30 di Bursa Efek Indonesia Periode Tahun 2012-2015)

Abidin, S., Suhadak, & Hidayat, R. R. (2016) conducted a research to examine the effect of bid volume, past stock price and trading volume partially and simultaneously to the stock market price by using multiple regression analysis. The study is relevant to the current research as it examines technical indicators such as trading volume, bid volume, and past stock prices that could potentially affect stock prices, which aligns with the first objective of this thesis.

The researchers used a quantitative approach, employing multiple linear regression analysis to analyze the data. The sample consisted of 17 companies listed on the Indonesian Stock Exchange (IDX) from 2012 to 2015. The researchers found that, of the three independent variables examined, bid volume was the only one that did not have a significant partial influence on the stock prices of companies in the IDX30 index. In contrast, past stock prices and trading volume were found to have a significant partial impact on stock prices, with past stock prices exhibiting a positive significant influence and trading volume showing a negative significant influence. The researchers concluded that the three independent variables – bid volume, past stock prices, and trading volume – collectively had a significant simultaneous effect on stock prices. These findings contribute to the current thesis by providing evidence on the impact of certain technical indicators on stock price movements.

2.7. Research Model

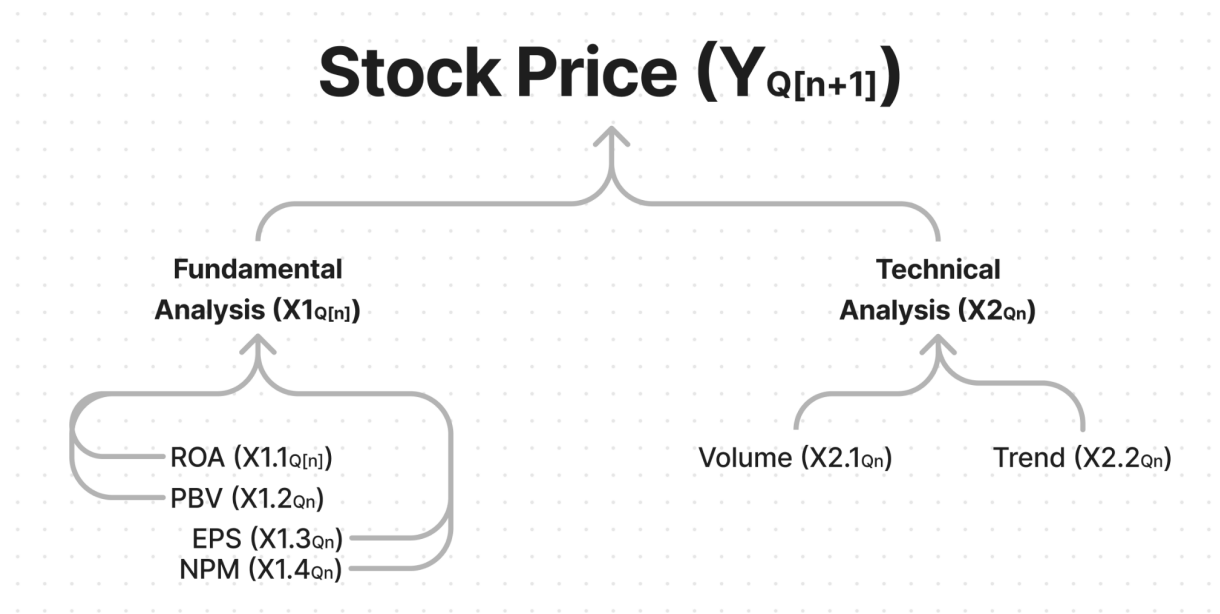


Fig. 2.1 - Research Model

2.8. Research Hypothesis

2.8.1. Fundamental Metrics of a Company May Affect The Movement of Its Stock Price

The research hypothesis that fundamental metrics, including earnings per share (EPS), return on assets (ROA), net profit margin (NPM), and price-to-book value (PBV), may affect the movement of a company's stock price has been the subject of many studies.

Earnings Per Share (EPS) is a widely used metric that reflects a company's profitability by dividing its net income by the number of outstanding shares of common stock (Penman, 2013). EPS is a critical measure of a company's financial performance as it provides information on the company's profitability on a per-share basis. The EPS metric is commonly used by investors to evaluate a company's financial health and to make investment decisions. The EPS metric is an important indicator of a company's profitability and is closely watched by investors, analysts, and other stakeholders.

Studies have shown that EPS is positively correlated with stock price movements (Ball & Brown, 1968). This relationship indicates that EPS may be a critical determinant of stock price movement. Companies with higher EPS tend to have higher stock prices, as

investors are willing to pay more for shares of more profitable companies (Fama & French, 1992). This highlights the importance of EPS as a key financial metric that can impact stock price movements.

Moreover, the EPS metric is a critical component of many financial ratios used by investors to evaluate a company's financial health. For example, the price-to-earnings ratio (P/E ratio) compares a company's stock price to its EPS, providing investors with an indication of how much they are willing to pay for each dollar of earnings. The higher the P/E ratio, the more expensive the stock is relative to its earnings. The EPS metric is also used to calculate other financial ratios, such as the dividend payout ratio and the return on equity.

Return on Assets (ROA) is a financial ratio that measures a company's profitability in relation to its total assets. It provides insights into how efficiently a company uses its assets to generate earnings (Lev & Thiagarajan, 1993). The higher the ROA value, the more efficiently the company is managing its assets to generate profits. In a study conducted by Abarbanell and Bushee (1997), it was found that there is a positive correlation between ROA and stock price movement. Companies with higher ROA values are perceived as more efficient in managing their assets, and therefore, investors often view them as having better prospects in terms of stock performance (Lev & Thiagarajan, 1993). This demonstrates the importance of ROA as a key financial metric in evaluating a company's financial health and potential for growth. By utilizing ROA, investors can gain valuable insights into how efficiently a company is using its assets to generate profits, and make better-informed investment decisions as a result.

Net Profit Margin (NPM) is a profitability metric that measures the percentage of revenue that a company retains as net income. It is calculated by dividing the company's net income by its revenue. A high NPM indicates that a company is able to control its costs effectively and generate profit efficiently. According to a study conducted by Mandelker and Rhee in 1984, there is a positive relationship between NPM and stock price movement. This suggests that companies with higher NPM values are more attractive to investors.

The importance of NPM as a profitability metric cannot be overstated. It provides insight into a company's ability to generate profit, which is critical for long-term

success. A high NPM indicates that a company is able to keep its costs under control, which can lead to higher profits and ultimately, higher stock prices. However, it is important to note that NPM should not be used in isolation. It should be considered alongside other financial metrics such as return on equity (ROE) and return on assets (ROA) to get a more complete picture of a company's financial health.

In addition to its importance as a profitability metric, NPM can also be used by investors to compare the profitability of different companies within the same industry. For example, if two companies in the same industry have similar revenue, but one has a higher NPM than the other, this may indicate that the company with the higher NPM is more efficient at controlling costs and generating profit.

Price-to-Book Value (PBV) is a financial ratio that is widely used by investors and analysts to evaluate a company's stock. The ratio is calculated by dividing the market price of the stock by its book value (net asset value). The book value of a company is the total value of its assets minus its liabilities, as recorded on its balance sheet. PBV is an important metric because it provides an indication of how much the market is willing to pay for a company's assets, relative to their book value.

According to research by Fama and French (1992), there is an inverse relationship between PBV and stock price movement. This means that undervalued stocks tend to outperform overvalued stocks in the long run. This is because undervalued stocks have more room for growth and are more likely to see a significant increase in their stock price over time. In contrast, overvalued stocks are already priced high and are less likely to see significant price increases in the future.

In summary, Price-to-Book Value (PBV) is an important financial ratio used by investors and analysts to evaluate a company's stock. A low PBV ratio suggests that a stock may be undervalued, while a high PBV ratio indicates that the stock may be overvalued. Research has shown that undervalued stocks tend to outperform overvalued stocks in the long run.

H1: Fundamental metrics may affect the movement of stock prices.

2.8.2. Technical Indicators May Affect The Movement of Its Stock Price

Technical analysis is an essential tool for traders to make informed investment decisions. Technical indicators are the tools used to identify trends and patterns in the market. These indicators are useful for traders as they provide insight into market trends and help them make informed decisions. One of the most common technical indicators used in trading is volume.

Volume, the number of shares traded within a specific time frame, is another crucial aspect of technical analysis. It helps confirm the strength of a trend and provides insights into the intensity of trading activity (Pring, 2014). Volume can be analyzed through various techniques, including volume bars, on-balance volume (OBV), and volume-weighted average price (VWAP), to better understand market dynamics and the forces driving price changes (Pring, 2014).

Studies by Gervais, Kaniel, and Mingelgrin (2001) and Karpoff (1987) have demonstrated that volume is positively correlated with stock price movement. High volume indicates strong investor interest in a particular stock, which can lead to increased price movement, as more participants are actively buying and selling shares. This heightened trading activity can create momentum, causing prices to continue moving in the direction of the prevailing trend.

Conversely, low volume suggests a lack of investor interest, often resulting in limited price movement. In such cases, prices may consolidate within a narrow range, as there is insufficient buying or selling pressure to drive prices significantly higher or lower (Pring, 2014). This lack of decisive price movement can make it more challenging for technical analysts to identify profitable trading opportunities based on trends and price patterns.

Furthermore, volume can also be used to confirm the validity of chart patterns and technical signals, such as breakouts or reversals. For instance, a breakout accompanied by high volume is generally considered more reliable, as it indicates strong buying or selling interest and suggests that the price movement may be sustained (Pring, 2014). By incorporating volume analysis into their decision-making process, technical analysts can gain a more comprehensive understanding of market sentiment and make more informed trading decisions.

Trend, on the other hand, are essential components of technical analysis, which aims to predict future price movements based on historical price and volume data (Murphy, 1999). Technical analysts utilize various tools and techniques to identify and analyze trends, including moving averages, trendlines, and chart patterns. Trends can be classified as uptrends, downtrends, or sideways trends, depending on the direction of price movement (Park & Irwin, 2007). In an uptrend, prices generally move higher, forming higher highs and higher lows. Conversely, in a downtrend, prices tend to move lower, creating lower highs and lower lows. In a sideways trend, prices fluctuate within a narrow range without a clear direction.

The duration of trends can also vary, with short-term, intermediate-term, and long-term trends providing different insights into the market's behavior. Short-term trends typically last from days to weeks, while intermediate-term trends may persist for weeks to months, and long-term trends can extend from months to years (Murphy, 1999).

Research by Neely, Weller, and Dittmar (1996) has shown that trends can have a significant impact on stock price movement, with prices often continuing in the same direction as the prevailing trend. This concept, known as the trend-following principle, suggests that once a trend is established, it is more likely to continue than to reverse. The trend-following principle is the basis for many trading strategies employed by technical analysts, who seek to capitalize on the continuation of trends to generate profits in the market.

H2: Technical indicators may affect movement of its stock price.