



Implementation of Magic Formula and Acquirer's Multiple Stock Investment Strategy in The Indonesia Stock Exchange

Arif Indrapratama¹, Erman Arif Sumirat²

^{1,2}School of Business and Management Institut Teknologi Bandung, Indonesia

ABSTRACT: The Indonesia Capital Market has experienced a significant increase in investors from 2019 until now. The increase in the number of new Indonesian capital market investors is dominated by people under 30 years who prefer to invest in stocks and mutual funds. This increase in new investors does not follow by high financial literacy. Research regarding financial literacy and investment return in Indonesia showed that financial literacy affects investment return. Therefore, Indonesia's new investors will most likely experience losses due to their lack of financial literacy. Even though there are equity funds for novice stock investors that help them minimize the error they would make if they invest themselves, they cannot choose the equity funds randomly since most equity funds cannot beat the market benchmark. This study proposed using the Magic Formula and Acquirer's Multiple as an investment strategy for new investors in Indonesia. Both Magic Formula and Acquirer's Multiple generated an average annual return greater than the market and Indonesia Equity Funds listed since 2016 with an average return of 26,24% and 26,32% annually. The Sharpe ratio of both methods also generated a higher ratio than the market, where Magic Formula generated an average Sharpe ratio of 0,930 annually, while Acquirer's Multiple generated an average ratio of 1,038. The acquirer's Multiple is recommended for novice investors because it outperforms the Magic Formula and the market in terms of actual annual returns and risk-adjusted returns.

KEYWORDS: Acquirer's Multiple, Investment Strategy, Magic Formula, Stock Investment, Value Investing.

I. INTRODUCTION

A. Background

The Indonesia Capital Market has shown a significant increase in investors during that period. This increase is indicated by Indonesia Central Securities Depository data that stated the increasing number of Indonesian capital market investors in 2020 and 2021 by 56,21% and 92,99%. Based on a statement from the development director of the Indonesia Stock Exchange during an interview with CNBC, this increase in Indonesia's capital market investors shows a transformation of society from saving to investment. The shift is driven by the disruption of information technology, which encourages a more investment-conscious lifestyle and attitude.

The increasing number of novice investors in the Indonesian capital market has also led to an increase in stock investors as part of the Indonesian capital market. In 2020 the number of mutual funds investors increased by 53,47%, while in 2021 increased by 103,60%. The number of stocks investor had doubled in 2021 which is dominated by retail under 30 years old. According to Indonesia Central Securities Depository Director, Uriep Budhi Prasetyo, Indonesia stock investors are 81,64% dominated by these types of investors with a total asset of 144,07 trillion by the end of the first semester in 2022.

According to the article by Debora Laksmi Indrawari (2022) on Kompas, the increasing number of Indonesia Capital Market mostly comes from mutual funds and stocks as the primary contributor. The article stated that millennials dominate the growing number of novice investors. The survey from Katadata Insight Center stated that these millennials prefer to invest in stocks and mutual funds. These preferences come from the influence of digital platforms that give investment services that are easy to use. The availability of information regarding investment in digital platforms, mainly social media, has also become the source of the growing number of millennials in the Indonesia Capital Market.

B. Business Issue

The increase in novice investors in the Indonesian capital market, dominated by generations Y and Z with investment preferences in stocks and mutual funds, does not guarantee good skills and knowledge in investing. Although digital platforms and information technology facilities support increasing the number of investors and their knowledge, not every investor equips themselves with the



knowledge and investment strategies that match their profile. The use of media social to search for investment information can also cause these novice investors to experience losses. FOMO (Fear of Missing Out) is a phenomenon where investors, especially novice investors, fear being left out of making investment decisions regarding the current trend. These FOMO will become the source of novice investors' rash investing decisions without further analysis, often leading to losses.

The survey conducted by Jakpat showed that the reason Indonesian stock investors invest in stock is mainly due to long-term investment, easy transactions, and additional income. More than half of respondents choose to invest in stock due to long-term investment, easy transactions, and additional income. 35% of stocks investor in the survey chose stock since it is considered low risk. This showed that stocks investor still lack information on the stock market since the stock market is considered an investment instrument that has higher risk and higher return compared to other investment instruments. According to the survey, 33% of investors also invest in stocks due to trends on social media. This will potentially lead to FOMO and cause investors to experience losses due to bad investment decisions. 40% of investors in this survey consider stocks easy to learn. It means that 60% consider stocks not easy to learn.

Based on the article by Debora Laksmi Indrawari (2022) on Kompas, Research from the Indonesian Financial Services Authority shows that the literacy rate for 18-25 years old is only 32,1%, while 25-35 years old is only 33,5%. Research on the relationship between financial literacy and income on investment decisions by Nutia Feby Hanes Panjaitan and Agung Listiadi (2021) shows that financial literacy affects investment decisions. Through their research, Ari Sulistyowati et al. (2022) also show that financial literacy positively affects investment decisions. In addition, the return variable also has a positive impact on investment decisions.

Novice investors are also vulnerable to bias that affects investment decision-making. Fazura and Dewita's (2022) research regarding the factors influencing millennial generation investment decisions related to investment behavior stated that overconfidence bias positively affected millennial investment decisions. Bias in investment decisions can cause investors to make the wrong decisions in investing and yield losses. Therefore, financial literacy and investment knowledge are needed to make the right investment decisions.

According to Jakpat's survey regarding Indonesia's perceptions towards stocks and future investments trends, fundamental analysis is the main consideration for every investor at any age segment. More than 90% of stock investors used the company fundamentals when choosing stocks due to long term investment reasons. The respondents chose stocks using company fundamentals mainly using company financial statements, economic conditions and related industry opportunities, and company image.

Although fundamental analysis is popular among investors, implementing the method is not easy for novice investors. Fundamental analysis analyzes the firm, industry, and macroeconomics which uses both quantitative and qualitative analysis. Fundamental analysis has weakness in it needs forecasting to determine the intrinsic value of the stock's price. Low financial literacy and difficulties in learning the stock will result in novice investors experiencing bias and lead to losses in conducting the investment decision.

Novice stock investors can entrust their funds to investment managers by buying equity funds. Equity funds are derivative products of stocks where investor funds will be managed by investment managers who will invest their funds into a portfolio composed mainly of stocks. Investment managers with more excellent abilities than novice investors are expected to provide higher returns than the market. Investment managers get a fee for the services they provide. Even though there are equity funds for novice stock investors that help them minimize the error they would make if they invest themselves, they cannot choose the equity funds randomly. Investing in equity funds does not mean investors can beat the benchmark market since most equity funds cannot beat the market benchmark. This problem occurs in many equity funds worldwide. According to SPIVA research, which measures managed funds' ability to outperform benchmark indexes, only 25,9% of funds in the United States were able to beat the S&P 500 in the last five years, and only 16,93% of funds were able to beat the S&P 500 over the previous ten years. The issue raised in this research is the lack of investment ability of novice stock investors due to a lack of knowledge and skills. Using equity funds as an investment option does not guarantee better return and performance since most equity funds could not beat the market.

The issue raised in this research is the lack of investment ability of novice stock investors due to a lack of knowledge and skills. Difficulties in learning stocks, following the trend in social media, and misinterpretation of stocks as low-risk investment instruments



will lead to losses in their investment. Using equity funds as an investment option does not guarantee better return and performance since most equity funds could not beat the market.

Most value investing is based on the fundamental analysis principle that stocks must be purchased at a price lower than their intrinsic value. The Magic Formula and Acquirer's Multiple is an examples of quantitative value investing. There is no qualitative analysis, and the methods do not attempt to forecast future returns and only consider and employ past data. There are also some stocks selection criteria that are proposed by famous investors such as Benjamin Graham and Peter Lynch.

Yangxiu Ye (2013), in his research, compared the performance of Benjamin Graham, Peter Lynch, and Joel Greenblatt value investing criteria strategy in Shanghai stock exchange from 2006 to 2011. The research found that portfolios that created by Peter Lynch and Joel Greenblatt methods produced higher return than market. However, the number of stocks portfolio using Peter Lynch criteria is way more than Joel methods even though they both beat the market. This also applied for Benjamin Graham stocks selection that are also varied depending on stocks conditions. Joel Greenblatt also used less criteria rather than Benjamin Graham and Peter Lynch.

Based on the ability to beat the market with less stocks in the portfolio less criteria, this research proposed the implementation of Joel Greenblatt's Magic Formula or Tobias Carlisle's Acquirer's Multiple as stock portfolio investing strategies for novice investors. Acquirer's Multiple is included in this research since it is the improvisation of Magic Formula with lesser criteria. Instead of focus picking individual stocks while having difficulties in forecasting and bias, the research proposed the implementation of one of the methods for the beginner to invest. The methods can also be used as a stock screener for investors with a higher understanding of fundamental analysis.

Joel Greenblatt's Magic Formula uses value investing to buy stocks of good companies at a fair price. The magic formula sorts the stock based on the criteria of a good company and a reasonable price. The portfolio is made up of 20 to 30 stocks based on the stocks with the highest ranking in these criteria. Joel claimed that this simple method could beat the market, and the evidence of the implementation of the strategy is described in his book entitled "The Little Book That Still Beats the Market."

Tobias Carlisle's Acquirer's Multiple is an improvised method of Magic Formula that invests in stocks at low prices regardless of whether the company's performance is good. This method uses the concept of mean reversion, where prices will return to normal so that stocks with high prices will fall to the average and stocks with falling prices will rise to the average price. Tobias Carlisle's Acquirer's Multiple methods are described in his book "The Acquirer's Multiple: How the Billionaire Contrarians of Deep Value Beat the Market." In this book, he also tested his method and compared it with the Magic Formula method.

II. LITERATURE REVIEW

A. Previous Research

This research proposes the Joel Greenblatt and Tobias Carlisle methods as an alternative value investing strategy, considered a quantitative method. Several studies have been conducted to test the implementation of Joel Greenblatt's methods in various stock markets around the world. Still, no studies on the performance of the Tobias Carlisle method can currently be found. Since both methods are similar and research about Tobias Carlisle cannot be found, only the Joel Greenblatt method is used for the literature study.

According to research by Lalita (2015) regarding the implementation of Magic Formula for Thailand and the US stock market, Magic Formula was able to beat the market return in the Thai stock market from 1993 to 2012. The portfolios could generate a 24.3% annualized geometric return, while the market could generate only 3% in the Thailand stock market. In the US stock market, the portfolio generated a 12.7% return, while the market only generated a 6.5% return. This research showed that Magic Formula could beat the market return of Thailand and the US stock market for the investment period from 1993 to 2012.

The research conducted by Lalita determined the purchasing time according to the financial statement submission deadline. The portfolio performance is determined by using the Sharpe ratio according to the monthly price change of stocks. The portfolio consists of thirty stocks since, according to other research cited, thirty stocks are sufficient to eliminate unsystematic risk. The rebalancing will happen after one year. Multiple researches about Magic Formula have been conducted in several stock markets throughout the



world. Even though there is still no research regarding Acquirer's Multiple, the Acquirer's Multiple is considered part of Magic Formula since it only eliminated the "good company" part. Therefore, this research will also try to compare the performance of Acquirer's Multiple with Magic Formula since Acquirer's Multiple is considered as the improvement of Magic Formula.

Alexander (2016), in his research regarding back-testing of the Magic Formula in the Brazilian Stock Market, showed that the portfolio outperformed Ibovespa and the IBrX-100 index from 2006 to 2015. The research also concluded that despite Magic Formula portfolios outperforming that benchmark, the research could not assure with a high level of certainty that the strategy is an alpha generator since the results were not due to randomness.

Miftahul and Fadlul (2019) researched the implementation of Magic Formula on the Indonesia Stock Exchange. The magic formula yields an average return above the market's return during testing periods from 2013 to 2017. Kompas 100 index was used as the benchmark to replace the Indonesia stock exchange. The research used the composition of thirty stocks in the portfolio with annual portfolio rebalancing. The research chose the 1st of April as its purchasing time since the deadline for submitting the annual financial statement is the 31st of March. Sharpe, Treynor, and Jensen were used to measure and compare the performance of the Magic Formula portfolio with the benchmark.

Mika and Dian (2022) also researched the implementation of Magic Formula in the Indonesian stock market. The research used Sharpe, Treynor, and Jensen to measure the performance of a portfolio based on its risk and return. The research used a time frame of 2016 to 2020 with 58 stocks. Based on Treynor and Jensen, the research found that the average return of Magic Formula exceeded the two reference indices, the Indonesia Composite Index (JKSE) and Kompas 100.

B. Risk and Return

The rate at which an investor's funds have grown during their investment period is one indicator of success. The total holding-period return (HPR) of a share of stock is determined by changes in the share's price over the investment period and any dividend income generated by the share. The rate of return is defined as the profit earned over the money invested. HPR assumes the dividend is paid at the end of the holding period and disregards reinvestment income received between the dividend and the end of the holding period. The formula for HPR is as follows.

$$HPR = \frac{\text{Ending Price} - \text{Beginning Price} + \text{Cash Dividend}}{\text{Beginning Price}}$$

Risk can be calculated from the probability of the occurrence of HPR, commonly referred to as a probability distribution. The probability distribution allows us to calculate the reward and risk of an investment. Reward from the probability distribution comes from the expected return, or mean of the distribution of HPRs, while the standard deviation represents the uncertainty of an investment or risk.

Uncertainty or risk can be attributed to two factors. The first is a risk, which is caused by prevailing economic conditions. This risk is referred to as systematic risk. The second type of risk is the nonsystematic risk caused by firm-specific influences. Nonsystematic risk can be reduced by increasing the number of stocks in the portfolio. This method is known as diversification. Diversification reduces nonsystematic risk but cannot eliminate systematic risk.

C. Risk-adjusted Performance Measurement

The reluctance of an investor to accept risk and their willingness to commit funds to stocks depends on their risk aversion. Without a positive risk premium (excess return from the difference between the stock return and the risk-free asset return), investors would not be willing to invest in stocks. Risk aversion also implies that investors will accept a lower reward in exchange for a sufficient reduction in standard deviation.

The Sharpe ratio is a commonly used portfolio performance measurement that is used to help rank portfolios according to the trade-off between risk and return. The Sharpe ratio has the interpretation that an increase of 1% standard deviation means an incremental return an investor may expect. Therefore, the bigger the value of the Sharpe ratio, the better since it means better performance through better return. The mean-variance analysis is portfolio analysis using the mean and standard deviation of the excess return or can be said to rank portfolios by their Sharpe ratios. The Sharpe ratio formula is as follows.



$$S = \frac{\text{Portfolio risk premium}}{\text{Standard deviation of portfolio excess return}} = \frac{E(r_p) - r_f}{\sigma_p}$$

D. Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) is a hypothesis that states that prices fully reflect all available information in an efficient market and that generating a consistent excess return or abnormal rate of return is impossible. The theory of the EMH is closely related to information availability and its relationship to stock price conditions in the capital market. No group has a monopoly on access to stock price information to earn an excess or abnormal return on investment by utilizing inside information.

EMH comes in three varieties: weak, semi-strong, and strong. The amount of information available in these versions varies. According to the weak-form hypothesis, stock prices reflect all information by examining market trading data such as price history, trading volume, or short interest. According to this version of the hypothesis, trend analysis is useless. Past stock price data is widely available and almost free to obtain. According to the semi-strong-form hypothesis, all publicly available information about a firm's prospects must already be reflected in the stock price. In addition to past prices, such information includes fundamental data on the firm's product line, management quality, balance sheet composition, patents, earnings forecasts, and accounting practices. According to the strong-form version of the efficient market hypothesis, stock prices reflect all information relevant to the firm, including information only available to company insiders. Few argue that corporate officers have access to relevant information long enough before public release to profit from trading on that information.

E. Behavioral Finance

The study of investor behavior derived from psychological principles in making investment decisions to explain why investors buy or sell shares is known as behavioral finance. Behavioral finance is concerned with how investors interpret and act on information to make investment decisions. Behavioral finance focuses on investor behavior, which leads to market anomalies. According to the behavioral finance premise, the conventional financial theory ignores how real people make decisions. A growing number of economists have come to interpret these anomalies as consistent with several "irrationalities" that characterize individuals making complex decisions. These irrationalities are classified into two types. First, investors do not always correctly process information, resulting in incorrect probability distributions about future rates of return. Second, they frequently make inconsistent or systematically suboptimal decisions even when given a probability distribution of returns.

F. Joel Greenblatt's Magic Formula

Joel Greenblatt was the first to introduce the Magic Formula. He is a well-known American academic, asset manager, investor, author, value investor, and a Columbia University professor. The Magic Formula is a method for determining when to buy company stock based on excellent and cheap criteria. A good company with a low share price is represented by a high return on capital and an earnings yield. Greenblatt builds his portfolio using two valuation metrics based on the principles of value investing. Return on Capital (ROC) and Earning Yield (EY) are the metrics employed. ROC represents how good the company is, while EY means how cheap the company is. The method creates a ranking based on these two metrics and combines them to find the highest ranking from that combination. That ranking will be used to create the Magic Formula portfolio. The ranking combination will show companies classified as good with fair prices.

Return on Capital (ROC) refers to how much money a company makes from its assets. The higher the ROC results, the better the company's performance and worth investing. The return on capital (ROC) is calculated by dividing operating income before interest and taxes. The higher the ROC result, the better the company's performance and worth investing in. Return on Capital (ROC) is calculated by dividing operating income before interest and taxes, or Earnings Before Interest and Taxes (EBIT), by net working capital and net fixed assets (real capital used). The Magic Formula uses EBIT rather than Return on Assets (ROA) and Return on Equity (ROE) to eliminate potential operating performance covered by debt and tax payments. The equation of ROC is as follows.

$$ROC = \frac{EBIT}{(\text{Net Working Capital} + \text{Net Fixed Assets})}$$



Pretax earnings yield (EY) is determined by dividing operating earnings (EBIT) by enterprise value. The basic concept of earnings yield is determining how much a company earns with its purchase price. The higher the EY results, the cheaper the company is. Instead of market capitalization, enterprise value was used because it considers both the price paid for an equity stake in a company and the debt financing used to generate operating earnings. Pretax earnings yield allows us to compare companies with varying debt and tax rates on an equal footing. The equation of EY and Enterprise Value is as follows.

$$EY = \frac{EBIT}{EV}$$

G. Tobias Carlisle’s Acquirer’s Multiple

Tobias Carlisle developed The Acquirer’s Multiple, a simple value investing approach for evaluating stocks. Carlisle took a lot of inspiration from Joel Greenblatt’s Magic Formula. The Acquirer’s Multiple examines how cheap a company is. The idea is that company performance usually reverts to the mean. As a result, if a company’s stock is down due to a bad couple of quarters, it will most likely return to previous levels. The Acquirer’s Multiple uses enterprise value divided by operating earnings instead of PE, making it difficult to compare companies across industries. The Acquirer’s multiple is similar to EY in Magic Formula. The lower the Acquirer’s Multiple ratio results, the cheaper the company is. The equation of Acquirer’s Multiple is as follows.

$$Acquirer's\ Multiple = \frac{EV}{EBIT}$$

III. RESEARCH DESIGN

A. Conceptual Framework

The conceptual framework of this research is stated in Figure III. 1. The framework started by constructing Magic Formula and Acquirer's Multiple using stocks listed on Indonesia Stock Exchange (JKSE). The Magic Formula portfolios are constructed by ranking the stocks according to their EY and ROC. The Magic Formula portfolios will consist of stocks with the highest combination ranking of EY and ROC. The Acquirer’s Multiple portfolios are constructed using Acquirer’s Multiple formulae, and the portfolio will consist of stocks with the lowest ratio.

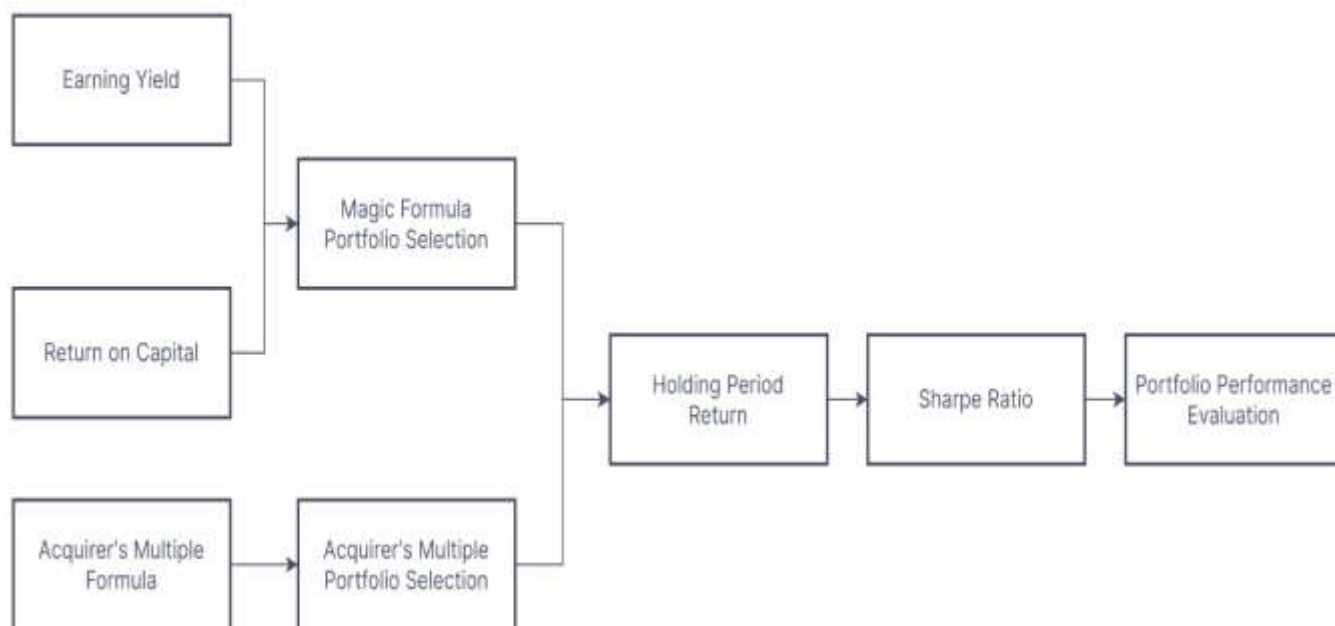


Figure III. 1 Conceptual Framework



The returns of each stock are calculated using the HPR formula according to the time frame. The portfolio returns are calculated from the combination of stocks' weighted returns that construct the portfolio. The risk of portfolios is calculated using the standard deviation of portfolio return since the fluctuation of portfolio return represents the risk.

The Sharpe ratio is used to assess and evaluate the performance of both portfolios. The Sharpe ratio measures the risk-adjusted return based on the total risk. All of the portfolio performance measurements search for the highest ratio between the assessed portfolio since it means the highest portfolio gives the best risk-adjusted return compared to others.

B. Research Methodology

This research purpose is considered exploratory research since this research test the implementation of Joel Greenblatt's Magic Formula and Tobias Carlisle's Acquirer's Multiple portfolios in the Indonesia Stock Exchange. The test is to find whether those methods could historically generate returns beyond market and equity funds. The research also analyses portfolios' performance based on the expected return and corresponding risk to find which portfolio base for novice investors to implement.

The research uses a quantitative approach since the portfolio is constructed using Magic Formula and Acquirer's Multiple. Both methods use companies' financial statement reports to construct the portfolio. Furthermore, the portfolios' performance was also calculated using the Sharpe ratio, classifying this research as a quantitative approach.

This research proposes Magic Formula and Acquirer's Multiple investing strategies as an alternative for novice investors to implement. Based on the literature review above, Magic Formula could beat the market benchmark. This research will construct a portfolio that consists of thirty stocks using Magic Formula and Acquirer's Multiple. Thirty stocks composition is chosen based on the literature review that states thirty stocks are considered enough to eliminate unsystematic risk. Purchasing stocks on the 1st of April will be done since the deadline for submitting companies' financial statement is on the 31st of March.

The research uses the Sharpe ratio to compare portfolio and market performance when assessing the performance of constructed portfolios according to their risk and return. The research will also show the actual annual return of portfolios, market, and equity funds for investment periods from 2016 to 2022. The diagram of the research framework is shown in Figure III. 2.

This research proposes Magic Formula and Acquirer's Multiple investing strategies as an alternative for novice investors to implement. The portfolios consisted of thirty stocks using Magic Formula and Acquirer's Multiple. Purchasing stocks on the 1st of April will be done since the deadline for submitting companies' financial statement is on the 31st of March. The research uses the Sharpe ratio to compare portfolio and market performance when assessing the performance of constructed portfolios according to their risk and return. The research will also show the actual annual return of portfolios, market, and equity funds for investment periods from 2016 to 2022.

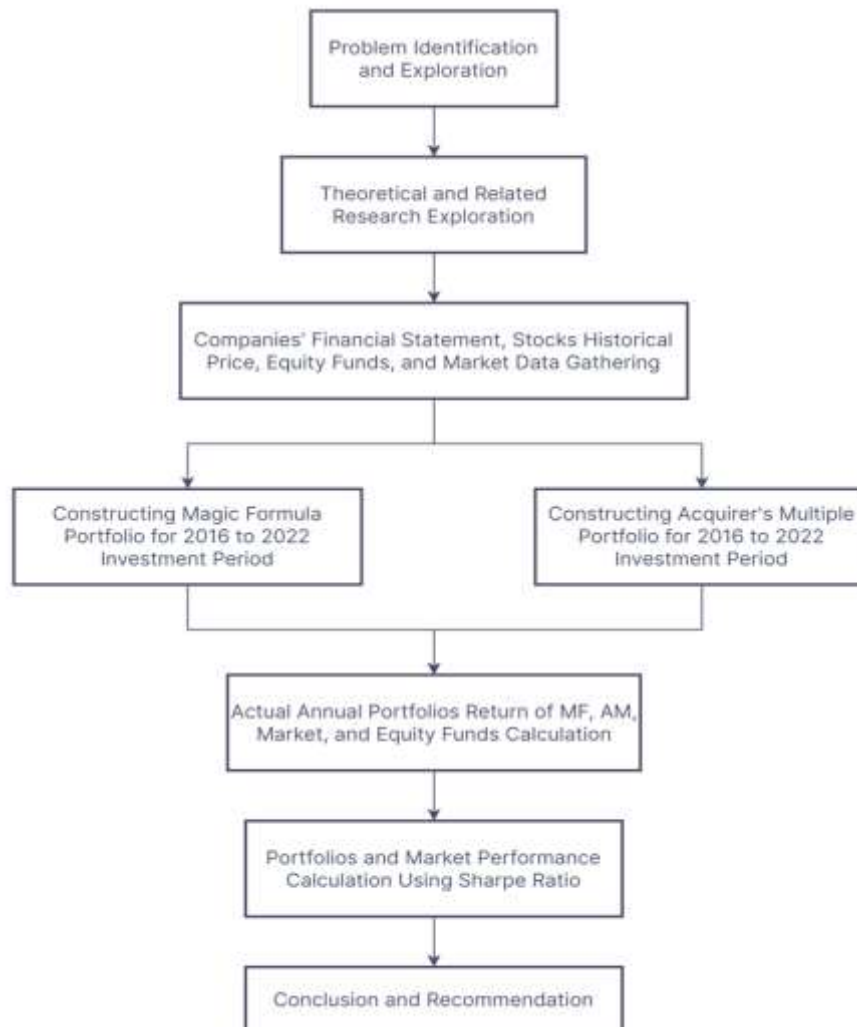


Figure III. 2 Research Framework

Data collected in this research consists of Indonesia stocks' annual financial statement, monthly Indonesia stocks historical price, Indonesia equity funds Net Asset Value (NAV) and Total Units, Monthly Indonesia Stock Index monthly historical price, and Indonesia government 10-year bonds yield. Indonesia stocks' annual financial statement data comes from Stockbit, while the monthly historical price comes from Yahoo Finance. Monthly Indonesia stocks' historical price also comes from Yahoo Finance. Indonesian equity funds data comes from the Indonesian Financial Authority, and the Indonesian government's 10-year bond yield comes from Investing.com.

The Magic Formula and The Acquirer's Multiple portfolios are constructed by ranking the result using the ratio stated in the theoretical study corresponding to their respective method. The Magic Formula portfolio can be made by ranking the ROC and EY calculated from each stock's financial statement data. A higher value of ROC or EY means a higher ranking for the stocks since the stock considers to be a good company with a fair price. This method constructs a stock portfolio with ROC and EY's highest ranking combination.

The Acquirer's Multiple has an identical way of creating a portfolio as The Magic Formula. The difference comes from the way that Acquirer's Multiple creates a portfolio by only choosing stocks that consider cheap. The method only uses the Magic Formula EY part to search for stock that is considered cheap. The Acquirer's Multiple formulae is the reverse of Magic Formula EY.



Therefore, Acquirer’s Multiple ranks the portfolio based on stocks with the most diminutive ratio and constructs the portfolio according to their rank.

Each stock in Magic Formula and Acquirer’s Multiple portfolios is constructed with equal weight since both methods implement equal weight portfolios. Therefore, the weight of each stock in the portfolio is equal to 3.33%. The number of stocks used in each portfolio is thirty stocks since the reference literature mainly used thirty stocks because of the diversified portfolio consideration.

IV. RESULT AND ANALYSIS

A. Actual Annual Return Comparison

This research calculated the actual annual return of Indonesian equity funds using the HPR formula based on each equity fund’s historical unit price. The unit price of each equity fund comes from dividing the NAV and the total unit of each equity fund product. NAV and total unit data come from Indonesia Financial Authority data. The actual annual return of portfolios and equity funds are also compared with the annual return of the Indonesia Stock Exchange Index (JKSE) as the benchmark. The Annual Return of Indonesia stock market index as the benchmark showed in Table III. 1.

Table III. 1 Indonesia Stock Market Index Annual Return

Year	JKSE
2016-2017	17,50%
2017-2018	5,44%
2018-2019	7,69%
2019-2020	-26,94%
2020-2021	27,12%
2021-2022	20,57%
Average	8,56%

The age of the mutual fund product is one of the considerations in choosing a mutual fund because investors can see the performance of the mutual fund. Indonesia Financial Authority data shows that one hundred forty-three equity fund products have remained from 2016 to 2022. If the performance returns given by these equity funds are calculated, only 17 out of the 143 equity funds perform above the average market return. Table III. 2 shows Indonesia equity funds already listed since 2016 in Indonesia Financial Authority data that exceed market return. All the listed equity funds cannot consistently beat the market annually from 2016 until 2022. Seventeen equity funds could generate an average return above the average market return, with the highest average return of 19,94%. Based on the finding regarding equity funds return above, novice stock investors cannot choose the equity funds randomly by only seeing the age of the equity funds since only a few can give an annual return above the market.

Table III. 1 Indonesia Equity Funds Listed since 2016 That Outperform The Average Market Return

Products	Investment Period						Average
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	
Reksa Dana Cipta Ovo Ekuitas	9,03%	33,70%	14,32%	-11,75%	36,08%	36,16%	19,59%
REKSA DANA DANAREKSA MAWAR KOMODITAS 10	13,82%	2,66%	12,44%	-31,96%	33,29%	21,84%	8,68%
REKSA DANA EASTSPRING INVESTMENTS VALUE DISCOVERY KELAS A	17,77%	3,61%	7,00%	-30,67%	37,48%	21,56%	9,46%
REKSA DANA HPAM ULTIMA EKUITAS 1	28,82%	4,77%	6,73%	-28,49%	13,26%	27,96%	8,84%



REKSA DANA MANDIRI INVESTA EQUITY MOVEMENT	5,89%	5,27%	65,71%	-35,99%	25,74%	7,12%	12,29%
REKSA DANA MANULIFE DANA SAHAM UTAMA	15,61%	7,56%	4,69%	-33,79%	50,34%	18,26%	10,45%
Reksa Dana Manulife Saham Andalan	10,27%	0,86%	4,97%	-35,41%	61,81%	26,60%	11,52%
REKSA DANA MANULIFE INSTITUTIONAL EQUITY FUND	11,60%	3,91%	6,68%	-35,44%	72,75%	60,13%	19,94%
REKSA DANA PANIN DANA TELADAN	20,97%	13,19%	4,32%	-33,72%	38,20%	28,14%	11,85%
REKSA DANA PINNACLE STRATEGIC EQUITY FUND	22,06%	7,67%	2,56%	-27,43%	17,45%	32,99%	9,22%
Reksa Dana Shinhan Equity Growth	18,96%	19,25%	6,19%	-28,55%	39,70%	22,45%	13,00%
Reksa Dana Sucorinvest Equity Fund	53,82%	13,58%	5,05%	-26,52%	41,42%	25,54%	18,81%
Reksa Dana Sucorinvest Maxi Fund	40,64%	19,92%	7,57%	-17,70%	32,28%	11,85%	15,76%
Reksa Dana Sucorinvest Sharia Equity Fund	33,24%	26,41%	-1,33%	-20,29%	61,35%	7,95%	17,89%
REKSA DANA TRIMEGAH BHAKTI BANGSA	16,35%	7,95%	6,45%	-30,45%	37,47%	17,89%	9,28%
REKSA DANA TRIM KAPITAL PLUS	11,20%	10,02%	4,02%	-29,53%	39,90%	26,57%	10,36%
TRIM Kapital	8,57%	9,81%	6,61%	-29,99%	30,97%	27,18%	8,86%

The actual annual return of proposed stock investment methods in this research is also calculated and compared with equity funds listed since 2016 and market return. Table III. 3 shows the actual annual return of Magic Formula and Acquirer’s Multiple portfolios implemented in this research. The average annual return of both Magic Formula and Acquirer’s Multiple exceeds the benchmark market return and the highest average return of the Indonesian equity fund product listed since 2016, which are 8,56% and 19,94%. The annual return each year from 2016 to 2022 also exceeds the market return, where the market return is shown in Table III. 1. Each portfolio’s annual return is calculated by adding each stock weight with each stock’s annual return. The annual return of each stock comes from the HPR between the current stock’s price on the first April and the stock price on the first April of the previous year.

Table III. 3 Magic Formula and Acquirer’s Multiple Actual Annual Return

Year	Actual Annual Return Magic Formula	Actual Annual Return Acquirer’s Multiple
2016-2017	41,12%	48,45%
2017-2018	8,85%	9,87%
2018-2019	30,07%	18,27%
2019-2020	-20,24%	-21,91%
2020-2021	56,62%	60,74%
2021-2022	41,02%	42,50%
Average	26,24%	26,32%



B. Portfolios' Performance Comparison

Although the actual return of proposed portfolios exceeds equity funds' average and market returns both annually and average, this does not guarantee better portfolio performance since risks need to be included when calculating the portfolio's performance. Portfolios with a higher return than the benchmark but higher risk do not mean they perform better than the market. Therefore, this research will also calculate the performance of both proposed portfolios according to the risk. The portfolios' performance is compared with the benchmark market and equity funds listed since 2016.

The Sharpe ratio calculates the portfolio's performance according to the risk and return. The performance of proposed portfolios is measured using 2016 to 2022 monthly return data to see whether the performance of portfolios is better than the market. The monthly returns of each stock from proposed portfolios are calculated using the HPR formula. The monthly portfolio return can be calculated using the total weighted monthly stocks' return in that month. The calculation of equity funds' monthly return also used the HPR formula from equity funds' monthly unit price data.

A statistical approach is used in the performance evaluation to see whether the proposed portfolios could generate excess return compared to the market. The single-index model which implemented the CAPM is used to find whether there are excess returns in the portfolio or not. The portfolio that generated excess return above the market can be seen from the alpha (α) generated from the portfolio. To help calculate the CAPM model, this research uses regression in excel to generate alpha (α) and beta (β) from the portfolio using the monthly return of the portfolio and market. The result of both Magic Formula (MF) and Acquirer's Multiple (AM) portfolio regression are shown in Table III.4.

Table III. 4 Regression Result of MF and AM Portfolios

Components	AM	MF
Alpha	1,54%	1,27%
Alpha P-value	0,0008	0,0010
Beta	0,906	0,859
Beta P-value	7,661E-12	1,132E-13
R Square	0,490	0,547
Observations	72	72

The data used in the regression are the monthly return of portfolios if implemented from April 2016 until April 2022 along with the monthly return of the market (JKSE) with the same time duration. Therefore, the observations of both AM regression and MF regression are 72. Each portfolio monthly return is calculated from the sum of weighted stocks' monthly returns in the same month.

R square from regression result showed how much the variability of the dependent variable which in this case is portfolio return explained by the independent variable which in this case is market return. In the regression result, 49% of AM portfolio return movement and 54,7% of MF portfolio return movement are explained by the market return. The rest of the portions which are 51% and 45,3% are explained by residual risk / firm-specific risk.

The regression test uses a 95% significance level to test the hypothesis of whether the alpha and beta generated from this statistical test are relevant. P-values are used to see if the test result is relevant or not. If the P-value is greater than 5% the coefficient variable of the P-value is considered insignificant and consider the hypothesis of the correspondent coefficient variable is equal to zero. If the P-value is less than 5%, the coefficient variable is considered significant and the hypothesis of the correspondent variable equal to zero is not true.

Based on the result P-values of alpha and beta from AM and MF portfolios showed that the P-values are less than 5% which concluded that the value of both alphas and betas are significant. AM portfolio generated alpha better than the MF portfolio which showed that AM generated better above-market return better compared to the MF portfolio. However, AM portfolios are more sensitive compared to MF portfolio which means that AM portfolio is riskier than the MF portfolio even though both portfolios is less risky than the market. This is considered normal since a greater return is usually followed by greater risk.



The Sharpe ratio is used to choose which generated better performance according to its excess return and volatility. Each portfolio's Sharpe ratio is calculated using the ratio of excess return and its standard deviation. The excess returns are calculated from the difference between portfolio return and risk-free rate return. The risk-free rate in this research uses the Indonesian Government 10 Years Bonds. In this research, the Sharpe ratio of both portfolios is also compared with the Sharpe ratio of 144 equity funds and market.

Table III. 5 Above Market Sharpe Ratio Summary

Portfolio	Monthly Sharpe	Annual Sharpe
Reksa Dana Cipta Ovo Ekuitas	0,151	0,522
REKSA DANA CIPTA SAKURA EQUITY	0,029	0,101
REKSA DANA MANDIRI INVESTA EQUITY MOVEMENT	0,035	0,120
REKSA DANA MANULIFE DANA SAHAM UTAMA	0,021	0,072
REKSA DANA MANULIFE INSTITUTIONAL EQUITY FUND	0,110	0,380
Reksa Dana Manulife Saham Andalan	0,022	0,078
REKSA DANA PANIN DANA TELADAN	0,041	0,143
REKSA DANA PINNACLE STRATEGIC EQUITY FUND	0,013	0,044
Reksa Dana Shinhan Equity Growth	0,066	0,230
Reksa Dana Sucorinvest Equity Fund	0,143	0,494
Reksa Dana Sucorinvest Maxi Fund	0,140	0,486
Reksa Dana Sucorinvest Sharia Equity Fund	0,128	0,443
REKSA DANA TRIM KAPITAL PLUS	0,025	0,085
REKSA DANA TRIMEGAH BHAKTI BANGSA	0,013	0,046
Acquirer' Multiple (AM)	0,300	1,038
Magic Formula (MF)	0,268	0,930
JKSE (Market)	0,012	0,043

The Sharpe ratio of this research is shown in Table III. 5. Both Magic Formula and Acquirer's Multiple portfolios generate a Sharpe ratio greater than the JKSE and equity funds that exceed the market Sharpe ratio. This shows that both portfolios could better generate risk-adjusted returns than the market and equity funds listed since 2016. Based on the Sharpe ratio result, the Acquirer's Multiple portfolios generate the highest Sharpe ratio both monthly and annually compared to Magic Formula portfolios and JKSE ratios. This indicates that the risk-adjusted return of the Acquirer's Multiple is better than the market and Magic Formula portfolios. Therefore, the best stock investment strategy for novice investors is Acquirer's Multiple since it generates the highest Sharpe ratio.

V. CONCLUSION

The Magic Formula and Acquirer's Multiple portfolios have almost identical ways of constructing stock portfolios. The Magic Formula used the concept of buying a company that is considered good at a fair price, while Acquirer's Multiple used the concept of buying a company that is considered cheap. Although the way that Magic Formula and Acquirer's Multiple determine how cheap the stock is are identical, the result portfolios from implementing both methods are not identical. This shows that many stocks are considered cheap but considered bad companies.

The average actual return of portfolios, if both MF and AM are implemented for the investment period of 2016 to 2022, the average actual return of portfolios shows that both methods generated greater annual returns better than the market and Indonesia equity funds listed since 2016. The average annual return of MF and AM are 26,24% and 26,32%, while the market and highest Indonesia equity funds are 8,56% and 19,94%. This indicates that if both methods are implemented annually, the methods will generate annual returns better than the market and listed Indonesian equity funds based on historical data.



The performance of both MF and AM is greater than the market and equity funds since they generated higher Sharpe ratio. The average Sharpe ratio of MF and AM are 0,268 and 0,300 monthly, while annually are 0,930 and 1,038. The Acquirer's Multiple generated an actual average return and performance better than Magic Formula, market, and equity funds. Therefore, Acquirer's Multiple investment strategy is recommended for novice investors to implement since it generates actual historical and risk-adjusted returns better than Magic Formula and the market.

REFERENCES

1. Audini, M., & Dewi, D. M. (2022). ANALISIS PENGGUNAAN MAGIC FORMULA DALAM PORTOFOLIO INVESTASI. JWM (JURNAL WAWASAN MANAJEMEN), 10(2), 134-140.
2. Bodie, Z., Kane, A., & Marcus, A. (2013). EBOOK: Essentials of Investments: Tenth Edition. McGraw Hill.
3. Carlisle, T. E. (2010). The Acquirer's Multiple: How the Billionaire Contrarians of Deep Value Beat the Market. Ballymore.
4. Chandra, E. G. (2022). Optimal Portfolio Composition Using LQ45 Stocks For Retail Investors During Covid-19 Pandemic. Bandung: MBA ITB.
5. Data of Monthly Historical Stock Price and Indeks JKSE for the period of 2011 to 2022, data is obtained from the website: <https://finance.yahoo.com/>.
6. Data of Indonesia's 10-year Bond Historical Yield, data is obtained from the website: <https://www.investing.com/rates-bonds/indonesia-10-year-bond-yield-historical-data>.
7. Data of Indonesia's Capital Market Statistics, data is obtained from the website: https://www.ksei.co.id/files/Statistik_Publik_-_April_2022.pdf.
8. Data of Indonesia's Mutual Funds Statistics, data is obtained from the website: <https://reksadana.ojk.go.id/public/statistiknabreksadanapublic.aspx>.
9. Data of Indonesia's Stock Financial Statement for the period of 2016 to 2022, data is obtained from the website: <https://stockbit.com/#/stream>.
10. Davydov, D., Tikkanen, J., & Äijö, J. (2016). Magic Formula vs. traditional value investment strategies in the finnish stock market. Nordic Journal of Business, 65(3-4), 38-54.
11. Goumas, A., & Källström, P. (2010). Value Investing and The Magic Formula-a method for successful stock investments.
12. Greenblatt, J. (2010). The little book that still beats the market. John Wiley & Sons.
13. Gunachandra. (2018). How Many Stocks to Make a Well-Diversified Portfolio? Case Study of Conventional and Socially Responsible Stocks in Indonesia Stock Exchange. Bandung: MBA ITB.
14. Gunnar Juliao de Paula, A. (2016). Backtesting the Magic Formula in the Brazilian Stock Market.
15. Hehuwat, R. A. (2022). Optimal Formation Portfolio: An Analysis Using The Markowitz and Single Index Model For IDX30 Stock Period (2016-2021). Bandung: MBA ITB.
16. Hongratanawong, L. (2014). The Study of The Magic Formula for Thailand and US Stockmarkets. UTCC International Journal of Business & Economics, 6(2), 135-145.
17. Indraswari, D. L. (29 Maret 2022). Geliat Kaum Muda Berinvestasi. Kompas. Website: <https://www.kompas.id/baca/telaah/2022/03/28/geliat-kaum-muda-berinvestasi>
18. Jakpat Survey Report. 2022 Investment Trend
19. Jakpat Survey Report. Indonesian Perceptions Towards Stock & Future Investment Trends
20. Jannah, M., & Imansyah, F. (2019). Analisis Strategi Investasi Magic Formula pada Bursa Efek Indonesia. Jurnal Riset Akuntansi dan Keuangan, 7(2), 241-252.
21. Kartikasari, D. (2016). A Test of Graham's and Lynch's Stock Screening Criteria on Shares Traded on the Indonesian Stock Exchange (Idx). Journal of Indonesian Economy and Business, 31(1), 23-34.
22. Lee, C. (2014). Value investing: Bridging theory and practice. China Accounting and Finance Review, 16(2), 1-29.
23. Ljungberg, A., & Högstedt, A. (2021). Modern Portfolio Theory Combined With Magic Formula: A study on how Modern Portfolio Theory can improve an established investment strategy.
24. Luo, M. (2018, July). Case Study of Magic Formula Based on Value Investment in Chinese A-shares Market. In International Symposium on Computational Science and Computing (pp. 177-194). Springer, Cham.



25. Panjaitan, N. F. H., & Listiadi, A. (2021). Literasi Keuangan dan Pendapatan pada Keputusan Investasi dengan Perilaku Keuangan sebagai Variabel Moderasi. *Jurnal Ilmiah Akuntansi dan Humanika*, 11(1), 142-155.
26. Parik, P. (2009). *Value Investing and Behavioral Finance: Insights into Indian Stock Market Realities*. New Dehli.
27. Paramitha, S. (2022). Analysis of Optimal Portfolio Allocation Using Sharpe Ratio Before and During Covid-19 Pandemic: A Case Study of PT Jasa Raharja. Bandung: MBA ITB.
28. Preet, S., Gulati, A., Gupta, A., & Aggarwal, A. (2021). Back Testing Magic Formula on Indian Stock Markets: An Analysis of Magic Formula Strategy. *Paideuma Journal of Research*, 14(10).
29. Qingnan, L., Dorasamy, M., Jambulingam, M., Wong, J., & Janie, D. N. A. Back Test of Magic Formula in Malaysian Stock Market Using Applied Programming and Online Quantitative Platform: An improved formula.
30. Sjöbeck, E., & Verngren, J. (2019). Magic Formula has its magic and Momentum has its moments: -A study on magic formula and momentum on the Swedish stock market.
31. Sulistyowati, A., Rianto, M. R., Handayani, M., & Bukhari, E. (2022). Pengaruh Financial Literacy, Return dan Resiko terhadap Keputusan Investasi Generasi Milenial Islam di Kota Bekasi. *Jurnal Ilmiah Ekonomi Islam*, 8(2), 2253-2260.
32. Syaifudin, F. (2021). Build Stock Portfolio Using Combination of Minervini Stock Screener Template and Markowitz Portfolio Optimization Method. Bandung: MBA ITB.
33. ten Hoor, C. In-depth analysis of Greenblatt's magic formula: risk or true value?.
34. Ye, Y. (2013). Application of the stock selection criteria of three value investors, Benjamin Graham, Peter Lynch, and Joel Greenblatt: a case of Shanghai Stock Exchange from 2006 to 2011. *International Journal of Scientific and Research Publications*, 3(8).

Cite this Article: Arif Indrapratama, Erman Arif Sumirat (2022). Implementation of Magic Formula and Acquirer's Multiple Stock Investment Strategy in The Indonesia Stock Exchange. International Journal of Current Science Research and Review, 5(12), 4454-4467