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Magic Formula: Can It Be Used to Identify 'Winning Stocks' in the Indonesian Stock Exchange?

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Abstract

Magic Formula, developed by Joel Greenblatt, offers a simplified investment model that can be used by individuals without extensive financial literacy. This model uses two key metrics: return on capital and earnings yield, to identify potentially profitable stocks. This study tests the effectiveness of the Magic Formula using data from companies listed on the Indonesia Stock Exchange over the past ten years (2011-2021). The results indicate that the Magic Formula yields an average annual return of 39.81%, significantly outperforming the market return, which stands at 6.16%.

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INTRODUCTION

Today, many Indonesians are exploring their luck as stock investors. The COVID-19 pandemic situation, which recently affected the world, including Indonesia, has contributed to the increase in the number of new investors. Indonesia, like many other countries, had to implement social restrictions to curb the spread of COVID-19. The government's restrictions, enforced through the social distancing policy, ultimately led to economic downturn due to limited mobility and decreased consumer spending. An article by CNBC highlighted this phenomenon during the pandemic. In the article, Wimboh Santoso, the Chairman of the Board of Commissioners of the OJK, stated that the increase in the number of investors occurred because consumer spending had not yet recovered, leading to a shift from consumption to investment (CNBC Indonesia, 2021). Within one year, the increase in the number of Single Investor Identification or SID based on KSEI data showed an almost 100% increase from 6.1 million at the end of August 2021 to 10 million in early November 2022, with 99.78% of them being local investors.

Investing in stocks is seen as a positive endeavor if we consider that people's investment goals are to divert their consumption into something that hopefully generates more money. However, this positivity depends on whether people's expectations are met. Stock investment does not guarantee positive returns as stock prices are influenced by various factors. Dividends are also uncertain, depending on the company's decisions. To address this uncertainty, technical and fundamental analysis is used, which requires adequate financial literacy. Many new investors lack understanding of how to choose the right stocks and are influenced by influencer promotions or 'stock cheerleaders.' As a result, they face greater risks compared to experienced investors, often leading to losses instead of achieving the goal of turning consumptive spending into 'extra money.'

The recent phenomenon of stock losses has drawn media attention. Many cases have tragically ended with consequences such as marital disputes leading to divorce or even suicide among new investors who were unprepared for these losses. Due to the complexity of stock analysis, an academician and investment manager from the United States developed a calculation formula called the Magic Formula. The hope is that the simplicity offered by the Magic Formula can assist novice investors in their analysis. This formula tends to be straightforward as it only utilizes the variables of return on capital and earning yield (Greenblatt, 2006).

The results provided by the Magic Formula will then rank the companies being analyzed. Companies with good rankings are considered suitable investment choices for investors.

The Magic Formula is a formulation developed by Joel Greenblatt in his book titled "The Little Book That Beats the Market." From the title of the book itself, it is evident that by applying the Magic Formula, it is expected that the stock choices can outperform existing stock market prices. The effectiveness of the Magic Formula has been extensively researched both domestically and internationally. Using data from LQ45 companies in Indonesia, companies ranked within the top 15 based on the Magic Formula have a higher average return compared to the overall LQ45 return (Sasmitapura, et al., 2022). Similarly, studies from other countries such as China (Ye, 2013), India (Preet, et al., 2021), as well as Thailand, Japan, and the United States (Hongratanawong and Kakinuma, 2014), state that stock portfolios included in the Magic Formula yield higher returns than market indices.

Considering the wide array of stock investment options available to new investors, this study aims to build upon previous research that only focused on data from LQ45 companies. This research intends to take a broader perspective by including all companies listed on the Indonesia Stock Exchange. Through this study, it is hoped that the effectiveness of the Magic Formula in assisting both new and seasoned investors in generating stock portfolios with higher returns compared to the overall IHSG return can be assessed.

LITERATURE REVIEW

Efficient Market Hypothesis

Fama (1970) explained that it is extremely challenging for an individual investor to outperform the market collectively. This difficulty arises because market prices reflect all available information. This concept is known as the Efficient Market Hypothesis (EMH). However, not all markets around the world fully absorb all available information. In reality, the EMH is divided into three forms:

1. Weak form efficiency
2. Semi-strong form efficiency
3. Strong form efficiency

Mishkin and Eakins (2018) state that weak form efficiency occurs when stock prices reflect all past trading information, such as historical prices and trading volumes. Semi-strong form efficiency is when stock prices incorporate all publicly available information, including details found in annual company reports and public announcements made by the company. In strong form efficiency, stock prices reflect all information, including non-public or insider information.

Several countries categorized as developing or emerging markets still largely exhibit weak form efficiency. Bekaert et al. (2007), in their study of various emerging markets, found that most of these markets still operate under weak form efficiency. Additionally, specific research on African countries indicates that their markets also remain in the weak form category (Ntim & Opong, 2006; Magnusson & Wydick, 2002). Similarly, an empirical study in Bangladesh by Mobarek & Keasey (2000) confirmed that the Bangladeshi market operates under weak form efficiency. Studies in Indonesia by Faninda & Djajadikerta (2000) and Andrianto & Mirza (2016) also indicate that the Indonesian market exhibits weak form efficiency.

Brealey et al. (2016) state that the greatest potential for obtaining abnormal returns exists in markets that exhibit weak form efficiency. This potential diminishes in semi-strong form efficiency and is almost impossible in strong form efficiency. In weak form efficiency, asset prices reflect only historical price and trading volume information, allowing technical analysis to be used to seek profit opportunities. In semi-strong form efficiency, asset prices reflect all publicly available information, such as financial reports and news, making technical and fundamental analysis less effective in generating abnormal returns. In strong form efficiency, asset prices reflect all information, including non-public or insider information, so no investor can achieve abnormal returns as all relevant information is already incorporated into market prices. This creates a truly efficient market where no new information can provide a profit advantage. Therefore, in the context of developing countries, particularly in Indonesia as indicated by research, markets still tend to exhibit weak form efficiency. This means that the opportunity to achieve returns remains relatively high for investors who have a thorough understanding of how to invest effectively.

Market Irrationality

Malkiel (2013) explains that stock prices are sometimes formed as a result of irrational market reactions. The market tends to be aware of general information without understanding its core context. This general context may only be surface-level information, often referred to as "the tip of the iceberg." When such information leads the market to misinterpret situations, it can result in irrational outcomes. For example, a significant event like a presidential change in one country might not have a substantial impact on a company in another country. However, the global market might irrationally respond to this event, causing fluctuations in the stock price of that unrelated company. This irrational pricing should be recognized and welcomed by savvy investors. In his critique of the EMH, Malkiel (2013) mentions that "professional investors" can take advantage of these situations by investing in fundamentally sound companies, even when their prices are being influenced by irrational market fluctuations.

The market irrationality previously discussed has been extensively examined in earlier decades through the concept of behavioral finance. As a pioneer in behavioral finance, Thaler (1999) suggested that traditional financial theories must "coexist" with the concepts and insights of behavioral finance. He emphasized that there will be times when the market behaves irrationally due to the behavioral tendencies of market participants, which need to be taken into account.

Bodie et al. (2022) explain in detail that behavioral finance is an approach in financial markets that focuses on the potential impact of psychological factors on investor behavior. In their book "Essentials of Investment," they identify irrationalities that occur among investors. These irrationalities arise when investors fail to process information correctly, resulting in inaccurate probability distributions about future returns. Additionally, even when investors are aware of the probability distributions of returns, they often make inconsistent and systematically sub-optimal decisions. Nobel Prize-winning economist Robert J. Shiller also explains in his seminal book "Irrational Exuberance" that markets tend to be heavily influenced by emotional behavior, leading to irrational actions. This can result in the price of certain stocks inflating beyond what is supported by their fundamentals. Conversely, many stocks may see their values diminish due to specific events that do not fundamentally affect the quality of the company's assets. Despite having strong fundamentals, irrational decisions lead many investors to abandon these stocks (Shiller, 2000).

Investment and Risk & Return Concept

According to Smart and Zutter (2020), investment is the commitment of current financial resources with the aim of achieving higher gains in the future. This involves allocating money to various assets such as stocks, bonds, real estate, or other securities with the expectation of earning returns over time. Reilly and Brown (2012) emphasize that the primary goal of investing is to increase wealth, not to incur losses. However, the expected returns are closely linked to the concept of risk and return. This concept has long been established, with Sharpe et al. (1999) stating that the relationship between risk and return is a cornerstone of modern portfolio theory. Investors are expected to be compensated for taking on additional risk, which is reflected in the form of higher potential returns. Elton et al. (2014) further emphasize that investors make decisions based on their risk tolerance and the expected returns of various investments. The risk-return relationship is a key concept in portfolio management, where the goal is to optimize the balance between risk and return. Essentially, investors seek adequate returns while carefully considering the associated risks.

From the previous explanations, it can be said that investing requires effort and a deep understanding to achieve the balance between risk and return without ultimately harming the investor. In the hopes of generating income or increasing the value of an asset, Benjamin Graham and David Dodd proposed the concept of value investing in 1928. This concept is closely related to the practice of fundamental security analysis, which Benjamin Graham, the investment guru, also advocated. According to Bodie et al. (2022), Benjamin Graham suggests that a careful analysis of a company's financial statements can uncover undervalued or 'bargain' stocks. The development of the value investing concept was further refined in 1934 by Graham and Dodd in their magnum opus, "Security Analysis." Over the decades, since its inception, value investing has become a fundamental principle for many investors.

According to Ross et al. (2019), to assess whether an investment creates value, investors often use measures to determine if an investment is worth more than its purchase price. Two widely used techniques for this purpose

are quantitative standards of value and identifying undervalued stocks. Quantitative standards help identify market lows, offering optimal buying opportunities for investors. Conversely, in a market that is not at a low, extensive knowledge is required to identify undervalued stocks (Graham & Dodd, 2008). These methods are used to find stocks trading at a "discount" or to calculate the intrinsic value by comparing the expected price to its intrinsic value. One popular method frequently discussed in academic circles is the discounted cash flow (DCF) technique, used to determine the intrinsic value of a stock. Despite its popularity, the DCF method is considered complex in practice. This complexity arises because it involves not only mathematical calculations but also the analysis of both micro and macroeconomic conditions affecting the company. Numerous judgments are required in DCF analysis, including estimations of future cash flows and expected rates of return. These judgments pose challenges as they demand experience and high analytical skills. The effectiveness of the DCF technique largely depends on the proficiency of the investor-analyst performing it. Additionally, external factors play a significant role, contributing to potential inaccuracies and uncertainties in future projections (Damodaran, 2012).

Magic Formula

What is the magic behind Joel Greenblatt's Magic Formula? This question often arises among finance enthusiasts and readers. The term "magic" is used because of the formula's simplicity and its effectiveness in identifying undervalued stocks in the market. Upon closer examination, Greenblatt's formula is indeed straightforward, relying on just two key financial ratios: Return on Capital and Earnings Yield. Who is the figure behind the Magic Formula? The answer is Joel Greenblatt, an American academic who introduced this innovative approach in his book 'The Little Book That Beats the Market' in 2006. The Magic Formula provides a new methodology for value investors by simplifying the investment decision-making process. It focuses on purchasing stocks from companies with high Earnings Yields and Returns on Capital. Greenblatt's book includes a study spanning 17 years, from 1988 to 2004, demonstrating that a portfolio of 30 stocks selected based on these criteria achieved an impressive annual return rate of around 30.8% (Greenblatt, 2010).

Greenblatt (2010) explains that the Magic Formula selects companies through a ranking system where those with high Earnings Yields and Returns on Capital are combined into a portfolio to achieve the highest rankings. This method systematically identifies companies based on the value investing principle of finding above-average companies that can be purchased at below-average prices. This approach eliminates the need for the discounted cash flow method, which requires complex estimations of future conditions, cash flows, and discount rates.

In summary, the Magic Formula leverages a simple yet effective strategy by focusing on key financial ratios. By ranking and selecting companies with high Earnings Yields and Returns on Capital, Greenblatt's method allows investors to systematically identify undervalued stocks without the complexities of traditional valuation methods.

Return on Capital

In his book, Greenblatt discusses several points, such as: 1) Why does the Magic Formula refer to companies with high ROC? 2) What makes this high ROC so special? Greenblatt explains that ROC is an indicator that a company has a 'good business'. ROC known as a financial metric used to evaluate the efficiency of a company's use of its capital.

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

EBIT as a numerator of the formula means that it excludes the effect of financing decisions and tax strategies of a company, solely taking into account the operational point of view of a company. It only took into account the core operational profitability. Net working capital and Net Fixed Assets as the denominator is used as an indicator of how much capital is tied up in core business activities and the usefulness of a long term asset to support the operational activities of a company. So, the higher the ROC implying the more efficient the company on generating profit based on its available capital. As the *PIE* will tend to be the same, the better the ROC means that the more competitive the company. Thus, provides a more accurate comparison of operational efficiency across companies and industries. High ROC indicating unique advantages of a company that protect their businesses from competitors, which could otherwise undermine their ability to generate above-average profits (Greenblatt, 2010).

Earnings Yield

Penman (2013) explains earnings yield as a financial metric used to evaluate the earnings generated by a company relative to its stock price. It is the inverse of the price-to-earnings (P/E) ratio and is expressed as a percentage. The earnings yield can help investors assess how much they are earning for each dollar invested in the stock, with formula as follows:

$$Earnings\ Yield = \frac{EBIT}{Enterprise\ Value}$$

Another literature adopts a per-share approach, where EBIT is represented by EPS and enterprise value is calculated using market price per share. However, since both the numerator and denominator are on a per-share basis, this study directly uses EBIT and enterprise value without incorporating the per-share element. EBIT is earnings before interest and taxes, which is the actual operating income of the company before considering interest and taxes with the company's market capitalization and interest-bearing debt after subtracting cash. Whereas, enterprise value is the result of calculating the company's market capitalization and interest-bearing debt after subtracting cash. Greenblatt (2010) does not use projected earnings from the company, but only last year's earnings to calculate the Magic Formula. Joel Greenblatt highlights the earnings yield ratio as being more commonly utilized than other ratios because it allows for an easy assessment of how much income a company generates relative to the price of its shares. Within the context of the Magic Formula, the earnings yield is crucial for identifying companies that produce higher income relative to the cost of their shares, thereby aiding in the selection of undervalued stocks.

Previous Research

There is no magic formula that guarantees making the right decision in every investment case (Whittaker et al., 1990). However, decades later, Joel Greenblatt, a renowned value investing guru, introduced his Magic Formula. This formula distills complex investment concepts into simple, actionable strategies that help investors make informed decisions. Joel Greenblatt's Magic Formula is a unique investing strategy that combines Warren Buffett's value investing principles with Benjamin Graham's deep-value approach. It assists investors in identifying potentially undervalued stocks with strong profitability (Saxena, 2023). Due to its uniqueness and simplicity, the Magic Formula has attracted significant interest from both academicians and investors. Numerous studies have been conducted to evaluate the formula's effectiveness across various stock markets worldwide.

Many studies demonstrate the impressive performance of the Magic Formula. For instance, research conducted in Norway, Thailand, and the United States suggests that the Magic Formula has consistently outperformed the market. In Norway, the Magic Formula outperformed the OSEAX (Oslo All-Share Index) by 8.02 percentage points in compound annual growth rate (Vestre & Wikheim, 2022). Similarly, in the United States and Thailand, the Magic Formula exceeded market returns by 6% and 21%, respectively (Hongratanawong, 2015).

An interesting finding emerged from a study on the Finnish Stock Market. According to Davydov et al. (2016), during the period from 1991 to 2013, the Magic Formula yielded the highest excess returns only during bull markets in Finland. In Indonesia, a back testing study of the Magic Formula using companies listed on the LQ45 index for the period 2016-2020 on the IDX showed mixed results. While the arithmetic average return of the Magic Formula outperformed the Indonesia Composite Index Average Return, it failed to outperform based on the CAGR rate of return.

RESEARCH METHODS

This study focuses on companies listed on the Indonesia Stock Exchange over the past ten years (2011 to 2021). The selection of this research object aims to broaden the scope beyond our previous preliminary research, where in this study, the entire population of the Indonesia Stock Exchange is used considering all listed stocks on the Indonesia Stock Exchange have an equal probability of being selected into the stock portfolios of new investors. Financial data is obtained from the financial reports published by issuers. As for stock prices, researchers obtain them from Stockbit. The period for stock price data is taken on March 31st each year. This is done considering that issuers on the Stock Exchange must have submitted their annual financial reports no later than March 31st.

Researchers calculate financial data from the financial reports of issuers listed in the LQ45 index each year. The financial data used as variables in this study are return on capital (ROC) and earning yield (EY). Each year, researchers rank each variable. Issuers with the highest nominal variable will be given the first rank and so on. Then, the ranks of each variable are summed to obtain the total rank. After that, the total rank is re-ordered, starting from the rank with the smallest nominal to the largest.

Based on the research by Ye (2013), Hongratanawong and Kakinuma (2014), and Preet, et al. (2021), the number of stock portfolios formed consists of 30 stocks. In this study, the banking industry is excluded considering its different characteristics compared to other industries on the Indonesia Stock Exchange.

All stocks in this portfolio are formed proportionally, with an equal distribution of shares. After the portfolio is formed containing selected stocks based on the magic formula, the next step is to calculate the return from the portfolio. Portfolio return is obtained by calculating the percentage increase or decrease in stock prices for each issuer from the end of March to the end of March the following year, then averaged for all stocks in the portfolio. Dividend amounts are not included as a return component. This is because one of the objectives of this research is to compare with benchmarks, such as market indices like IHSG, where dividend components are also not considered. This research procedure is repeated for each period to reassemble the portfolio in each period.

Table 1. Variable Operationalization

No.	Variable	Pengukuran
1.	*Return on Capital*	$ROC = \frac{Earnings\ Before\ Interest\ and\ Tax}{Total\ Asset - Total\ Current\ Liability}$
2.	*Earnings Yield*	$Earnings\ Yield = \frac{EPS}{Share\ Price}$

RESULTS AND DISCUSSION

Table 2 provides the return on investment for each year from 2012 to 2021 for the Indonesia Composite Index. It measures the profit or loss made on an investment during a single year. Positive values indicate a profit, while negative values indicate a loss. The returns range from a high of 22.29% in 2014 to a low of -12.13% in 2015. The average annual return over the period is 6.16%. IHSG Standard Deviation represents the statistical measure of the dispersion of returns around the average return. In simpler terms, it measures the volatility of the investment. A higher standard deviation indicates higher volatility, meaning the returns are more spread out from the average return. For example, 2014 has the lowest standard deviation (1.79%), suggesting relatively stable returns, while 2020 has the highest (7.65%), indicating higher volatility.

Table 2. IHSG Portfolio

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
Annual Return	12.94%	-0.98%	22.29%	-12.13%	15.32%	19.99%	-2.54%	1.70%	-5.09%	10.08%	**6.16%**
Standard Deviation	3.68%	4.93%	1.79%	4.53%	2.68%	2.00%	3.11%	2.94%	7.65%	2.84%	**3.62%**
Standard Deviation Annualized	22.10%	29.56%	10.73%	27.20%	16.10%	12.00%	18.69%	17.66%	45.90%	17.03%	**21.70%**
Sharpe Ratio	0.59	-0.03	2.08	-0.45	0.95	1.67	-0.14	0.10	-0.11	0.59	**0.52**

Table 2 also provides the annualized version of the standard deviation. It's essentially the standard deviation adjusted to represent the volatility on an annual basis. It allows for a standardized comparison of volatility across different time periods. IHSG Sharpe Ratio represents the risk-adjusted return, calculated by dividing the excess return (the return above the risk-free rate) by the standard deviation of returns. A higher Sharpe ratio indicates better risk-adjusted performance. Positive values suggest that the investment has provided returns that adequately compensate for the risk taken. Analyzing the Sharpe ratio, we see that it fluctuates over the years, indicating varying levels of risk-adjusted performance. For instance, 2014 has a notably high Sharpe ratio of 2.08, indicating strong risk-adjusted returns, while 2015 has a negative Sharpe ratio (-0.45), suggesting that the returns may not adequately compensate for the risk. Overall, these metrics provide insight into both the return and risk aspects of the investment over the ten-year period, aiding investors in evaluating its performance and making informed decisions.

Table 3. Magic Formula Portfolio

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
Annual Return	16.13%	30.47%	12.90%	69.79%	27.43%	25.66%	-12.16%	39.75%	175.65%	12.48%	**39.81%**
Standard Deviation	5.26%	2.05%	4.32%	3.97%	2.79%	4.32%	4.46%	5.19%	5.56%	3.14%	**4.11%**
Standard Deviation Annualized	18.23%	7.09%	14.95%	13.76%	9.66%	14.96%	15.46%	17.97%	19.27%	10.86%	**14.22%**
Sharpe Ratio	0.88	4.30	0.86	5.07	2.84	1.72	-0.79	2.21	9.11	1.15	**2.74**

Table 3 displays the percentage return on investment for each year from 2012 to 2021 when using the investment portfolio by Magic Formula approach. It indicates how much profit or loss was made on the investment during each specific year. The returns vary significantly, with some years experiencing substantial gains and others showing losses. Notably, 2020 stands out with an exceptionally high return of 175.65%, while 2018 shows a loss of -12.16%. The Standard Deviation of Magic Formula provides the statistical measure of the dispersion of returns around the average return. It quantifies the volatility of the investment. A higher standard deviation indicates greater volatility, implying that returns are more spread out from the average return. For example, 2012 has a relatively high standard deviation of 5.26%, indicating higher volatility, while 2013 has a much lower standard deviation of 2.05%, suggesting lower volatility.

Although the Standard Deviation Annualized of magic formula presents the annualized version of the standard deviation. It offers a standardized measure of volatility on an annual basis, facilitating comparison across different time periods. Similar to the standard deviation, higher values indicate higher volatility on an annual basis. Magic Formula Sharpe Ratio represents the risk-adjusted return, calculated by dividing the excess return (the return above the risk-free rate) by the standard deviation of returns. A higher Sharpe ratio suggests better risk-adjusted performance. Positive values indicate that the investment has provided returns that sufficiently compensate for the risk taken. Notably, 2020 again stands out with a remarkably high Sharpe ratio of 9.11, indicating exceptional risk-adjusted performance, likely due to the high return and relatively low volatility compared to other years.

Comparing the IHSG (Indonesia Stock Exchange Composite Index) and the Magic Formula Portfolio over the specified years, there are notable differences in their annual returns, standard deviations, standard deviations annualized, and Sharpe ratios. 1) Annual Return**: The Magic Formula Portfolio generally exhibits higher annual returns across all years compared to the IHSG. While both portfolios show fluctuating returns annually, the Magic Formula Portfolio tends to have more significant fluctuations, including exceptionally high returns in some years, such as 2015 and 2020. 2) Standard Deviation: The standard deviation for both portfolios indicates the volatility of returns. The IHSG generally demonstrates lower volatility compared to the Magic Formula Portfolio. However, the Magic Formula Portfolio exhibits higher volatility, as evidenced by its higher standard deviation values in most years. 3) Standard Deviation Annualized: Looking at the annualized standard deviation, we see a similar pattern to the standard deviation itself. The Magic Formula Portfolio consistently shows higher annualized standard deviations compared to the IHSG, indicating higher volatility on an annual basis. 4) Sharpe Ratio: The Sharpe ratio measures the risk-adjusted return, with higher values indicating better risk-adjusted performance. The Magic Formula Portfolio tends to have higher Sharpe ratios than the IHSG in most years, suggesting that it provides better risk-adjusted returns despite its higher volatility. Notably, the Magic Formula Portfolio has exceptionally high Sharpe ratios in years like 2013, 2015, and 2020, indicating outstanding risk-adjusted performance. In summary, while the Magic Formula Portfolio generally outperforms the IHSG in terms of annual returns and risk-adjusted performance, it also exhibits higher volatility. Investors may prefer the Magic Formula Portfolio for its potentially higher returns, but they should be aware of the increased risk associated with its higher volatility. Conversely, the IHSG may offer more stability but at the expense of potentially lower returns.

Table 4 compares the performance of the Magic Formula portfolio with the IHSG (Composite Stock Price Index) from March 31, 2013, to March 31, 2023. The Magic Formula portfolio has shown a very strong performance during this period, with high annual return rates. Over this period, the Magic Formula portfolio was able to achieve outstanding annual returns, peaking in 2020 with a 176% annual return. In comparison, the IHSG consistently shows lower return rates compared to the Magic Formula portfolio, with an average annual return rate of 5.6%.

Table 4. IHSG vs Magic Formula Portfolio

		31-Mar-13	31-Mar-14	31-Mar-15	31-Mar-16	31-Mar-17	31-Mar-18	31-Mar-19	31-Mar-20	31-Mar-21	31-Mar-22	31-Mar-23	CAGR
Magic Formula	**Annual Return**	-	16%	30%	13%	70%	27%	26%	-12%	40%	176%	12%	**33.3%**
	Portfolio Value	100.00	116.13	151.51	171.06	290.44	370.09	465.08	408.52	570.92	1573.73	1770.06	
IHSG	**Annual Return**	-	13%	-1%	22%	-12%	15%	20%	-3%	2%	-5%	10%	**5.6%**
	Portfolio Value	100.00	112.94	111.83	136.76	120.17	138.59	166.29	162.08	164.82	156.44	172.20	

However, despite the higher returns of the Magic Formula portfolio, it is also accompanied by higher volatility. This can be seen from the significant variation in annual performance, including sharp negative returns in certain years, such as in 2018 with a -12% return. On the other hand, the IHSG shows greater stability in its performance despite its lower return rate, which may be a safer option for investors seeking long-term stability. In terms of portfolio value, the Magic Formula portfolio experienced significant growth during the observed period.

The value of the Magic Formula portfolio grew dramatically from 100 to 1770.06, while the value of the IHSG portfolio grew more slowly from 100 to 172.20. Although the IHSG has lower portfolio value growth, it demonstrates relatively greater stability in achieving portfolio value during the observed period. Overall, the table describes that while the Magic Formula portfolio may offer higher return rates, it is also accompanied by higher volatility. Meanwhile, the IHSG offers greater stability despite its lower return rates. Investment decisions depend on individual risk tolerance and investment goals.

CONCLUSIONS

The analysis of the Magic Formula portfolio compared to the Indonesia Composite Index (IHSG) from 2012 to 2021 reveals several key insights. The Magic Formula portfolio generally exhibits higher annual returns, averaging 39.81%, significantly outperforming the IHSG's 6.16%. Notable returns include a 175.65% gain in 2020, contrasted with a -12.16% loss in 2018. Despite higher volatility, indicated by greater standard deviation values, the Magic Formula portfolio consistently shows higher Sharpe ratios, suggesting better risk-adjusted returns. From March 31, 2013, to March 31, 2023, the Magic Formula portfolio's value grew from 100 to 1770.06, compared to the IHSG's growth from 100 to 172.20, highlighting its long-term growth potential. Investors should consider their risk tolerance before choosing the Magic Formula strategy due to its higher returns and volatility. Diversifying investments across different asset classes or sectors can help mitigate this volatility. A long-term perspective is recommended to benefit from the strategy's overall growth potential despite annual fluctuations. Continuous monitoring and adjustment of the portfolio based on market conditions are crucial. Improving financial literacy can help investors make more informed decisions, better understanding the risks and rewards associated with different investment strategies. By following these recommendations, investors can align their decisions with their financial goals and risk tolerance, leveraging the strengths of the Magic Formula while mitigating its risks.

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