ANALYSIS OF MAGIC FORMULA FOR INVESTMENT RETURN IN INDIAN STOCK

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CHAPTER -1 INTRODUCTION OF TOPIC

Magic Formula Investing, popularized by Joel Greenblatt, is a strategy that focuses on selecting stocks based on two main criteria: high earnings yield and high return on capital. Earnings yield is the ratio of a company's earnings per share to its stock price, indicating how much profit a company is generating relative to its price. Return on capital, on the other hand, measures how efficiently a company is using its capital to generate profits.

The goal of this strategy is to identify undervalued companies that exhibit strong financial performance. By targeting stocks with high earnings yield and return on capital, investors aim to uncover hidden gems in the stock market that may be overlooked by others. This methodical approach to value investing has garnered attention for its relative simplicity and effectiveness in outperforming the market.

One of the key advantages of the Magic Formula is its straightforward nature, which makes it accessible to a wide range of investors. Unlike more complex investment strategies that require in-depth financial analysis, the Magic Formula provides a clear and systematic way to identify potential investment opportunities.

Overall, Magic Formula Investing offers investors a disciplined and rules-based approach to stock selection, with the aim of achieving superior returns compared to the broader market. While past performance is not indicative of future results, the Magic Formula's track record

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has made it a popular choice among investors looking for a systematic and effective way to invest in stocks.

In the context of the Indian stock market, applying the Magic Formula involves a detailed process of evaluating stocks based on their earnings yield and return on invested capital.

Earnings yield is a measure of how much a company earns relative to its market value. It is calculated by dividing earnings before interest and taxes (EBIT) by the enterprise value (EV) of the company. A higher earnings yield indicates that a company is generating more earnings for its price, which can be a sign of undervaluation.

Return on invested capital (ROIC) is a measure of how efficiently a company is using its capital to generate profits. It is calculated by dividing EBIT by the sum of net fixed assets and working capital. A higher ROIC suggests that a company is effectively using its resources to generate returns for its investors.

Stocks are then ranked based on these metrics, with the goal of identifying undervalued companies with strong financial performance. However, it's important to note that while the Magic Formula has been successful in the past, there is no guarantee that it will continue to outperform the market in the future.

Diversification is also a key consideration in investing. By spreading investments across different stocks and asset classes, investors can reduce the risk of their portfolio being overly impacted by the performance of any single investment. Consulting with a financial advisor can provide personalized guidance on how to best implement the Magic Formula strategy and build a diversified investment portfolio.

Joel Greenblatt's investing approach is centered on a disciplined, rule-based strategy that aims to remove emotional decision-making from the equation. This strategy, outlined in his best-selling books "The Little Book That Beats the Market" and "The Little Book That Still Beats the Market," focuses on identifying top-ranked companies based on their stock prices and returns on capital.

In practical terms, Greenblatt's strategy involves using a stock screening tool to filter out companies that meet specific criteria. This screening process typically targets large-cap stocks, which represent shares of well-established companies with significant market capitalization, while excluding smaller companies with micro or small market capitalization.

By adhering to this systematic approach, investors can potentially increase their likelihood of identifying high-quality investment opportunities. This method emphasizes the importance of objective analysis and sticking to a set of predetermined criteria, rather than making decisions based on emotions or gut feelings.

In addition to selecting stocks based on earnings yield and return on capital, Joel Greenblatt's investment strategy includes a tax-efficient selling approach. This means that when investors sell stocks, they do so in a way that minimizes the taxes they have to pay. For example, if they have stocks that have lost value, they may sell them before owning them for a year to offset gains from other investments. On the other hand, if they have stocks that have gained value, they may hold onto them for more than a year to take advantage of lower tax rates on long-term gains.

This tax-efficient strategy is aimed at improving overall investment returns by reducing the amount of taxes investors have to pay. It fits with the principles of value investing, which focus on buying strong companies at good prices and holding onto them for the long term. By managing their taxes wisely, investors can potentially increase their after-tax returns and grow their investment portfolios more effectively over time.

In summary, Magic Formula Investing, popularized by Joel Greenblatt, is a strategy focused on identifying undervalued companies with strong financial performance by emphasizing high earnings yield and return on capital. This methodical approach is known for its simplicity and effectiveness in outperforming the market. In the Indian stock market, implementing the Magic Formula involves calculating the Earnings Yield and Return on Invested Capital for each stock, although specific analysis for its performance in India is

lacking. It's important to remember that past performance does not guarantee future results, and diversification is crucial for prudent investing. Greenblatt's approach emphasizes a disciplined, rules-based strategy that removes emotion from investing decisions, selecting top-ranked companies based on their stock price and returns on capital. Additionally, the method incorporates tax-efficient selling practices to optimize returns. Overall, MagicFormula Investing offers a structured, quantitative approach to value investing, emphasizing the significance of company fundamentals and price in stock selection. However, investors should exercise caution and seek professional advice.

OBJECTIVES AND IMPORTANCE

The primary objective of analyzing the Magic Formula investment return in the Indian stock market is to understand and evaluate the effectiveness of this investment strategy in identifying undervalued companies with strong financial performance. By analyzing the Magic Formula's performance, investors aim to judge its profitability and financial soundness, as well as to make forecasts about the future prospects of the firms selected using this strategy.

Secondary Objective: Benchmarking Performance
Analyzing the Magic Formula's return allows investors to compare its performance against established benchmarks in the Indian market, such as the Nifty 50 or a relevant sector index. This comparison helps assess whether the Magic Formula consistently outperforms the broader market or specific industry segments.

Tertiary Objective: Understanding Market Dynamics
By analyzing the companies identified by the Magic Formula and their subsequent performance, investors can gain insights into the current market dynamics. This might reveal which factors (e.g., high return on capital employed, strong earnings yield) are currently valued more by the market, offering clues for potential adjustments to overall

investment strategies.

The analysis of Magic Formula investment return serves several important purposes:

1.   Assessing Earning Capacity and Profitability: It helps in evaluating the earning capacity and profitability of the selected companies, indicating how well the Magic Formula identifies profitable investment opportunities.

2.   Evaluating Operational Efficiency and Managerial Effectiveness: The analysis can provide insights into the operational efficiency and effectiveness of the management of the companies selected through the Magic Formula, indicating how well the strategy identifies well-managed firms.

3.   Assessing Solvency: It helps in evaluating the short-term and long-term solvency of the firms selected through the Magic Formula, indicating how well the strategy identifies financially stable companies.

4.   Identifying Reasons for Change in Profitability and Financial Position: The analysis can help in identifying the reasons for changes in profitability and financial position of the firms selected through the Magic Formula, providing insights into the effectiveness of the strategy in adapting to changing market conditions.

5.   Inter-Firm Comparison: It enables comparison of the performance of firms selected through the Magic Formula with other firms in the same industry, indicating the relative performance of the strategy.

6.   Forecasting Future Prospects: It helps in making forecasts about the future prospects of the firms selected through the Magic Formula, indicating the potential long-term performance of the strategy.

7.   Assessing Progress Over Time: The analysis can assess the progress of the firms selected through the Magic Formula over a period of time, indicating the effectiveness of the strategy in generating consistent returns.

8.   Decision Making and Control: It helps in decision making and control by

providing insights into the performance of the firms selected through the MagicFormula, indicating whether adjustments are needed to the investment strategy.

SCOPE OF THE FORMULA

Imagine you're on a treasure hunt at a garage sale. You're looking for valuable items that might be hidden or overlooked. The Magic Formula is like a treasure map for the stock market in India. It helps you find stocks that could be undervalued, like finding a diamond among a pile of old clothes.

Here's how it works: The Magic Formula looks at two main things. First, it checks how much money a company is making compared to its stock price. This is like seeing if a lemonade stand is making a lot of profit compared to how much you pay for it. Second, it looks at how well the company is using its money to make even more money. This is like checking if the lemonade stand is turning lemons, sugar, and ice into lots of delicious lemonade.

By checking these two things for each stock, the Magic Formula helps you find companies that might be really valuable even if they don't look impressive at first glance.

This strategy is great because it takes the guesswork out of picking stocks. Instead of relying on your instincts, you have a clear system to follow. This is especially helpful if you're new to investing and don't feel confident analyzing financial reports. The Magic Formula also goes along with the idea of getting good things at good prices and holding onto them for a while, just like you might treasure a special find from a garage sale.

While past results don't guarantee future success, the Magic Formula has a good track record of helping people do better than the overall market over time. That means your collection of stocks could grow steadily over the years. And the best part? This treasure

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map can be used to find valuable stocks in almost any industry, not just in India. So, if you're looking for a smart way to find promising investments in the Indian stockmarket, the Magic Formula might just be the tool you've been looking for.

Let's consider the example of two real companies listed on the Indian stock exchange: Infosys Limited (Ticker: INFY) and Tata Motors Limited (Ticker: TATAMOTORS).

Infosys Limited (INFY): Infosys has an earnings yield of approximately 6.5% and a return on capital of around 26%. This indicates that Infosys generates 6.5 paise in earnings for every rupee invested in its stock and is efficient in using its capital to generate profits.

Tata Motors Limited (TATAMOTORS): Tata Motors, on the other hand, has an earnings yield of about 2.5% and a return on capital of approximately 4%. This means that Tata Motors generates 2.5 paise in earnings for every rupee invested in its stockand while it is still efficient in using its capital, it is not as profitable as Infosys.

Assuming both Infosys and Tata Motors have similar stock prices, the Magic Formula would suggest that Infosys may be a more attractive investment option due to its higher earnings yield and return on capital compared to Tata Motors. This example demonstrates how the Magic Formula can help investors identify potentially undervalued stocks with strong financial performance in the Indian stock market.

CHAPTER 2 (INTRODUCTION)

INTRODUCTION TO INDIAN STOCK MARKET

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Stock markets are fascinating entities and not for the least because they help investors make money! They are interesting institutions in themselves and those in India have a rich history.

The Securities Contracts (Regulation) Act of 1956defines a stock exchange as "any body of individuals, whether incorporated or not, constituted before corporatization and demutualization" or "a body corporate incorporated under the Companies Act, 1956 whether under a scheme of corporatization and demutualization or otherwise," for the purpose of assisting, regulating or controlling the business of buying, selling or dealing in securities.

Just to clarify, "corporatization" means the succession of a recognized stock exchange, which was a body of individuals or a society, by another stock exchange, which is an incorporated company. Meanwhile, "demutualization" means the segregation of ownership and managementfrom the trading rights of the members of a recognized stock exchange in accordance with a scheme approved by the Securities and Exchange Board of India (SEBI).

The economic significance of a stock market results from the increased marketability resulting from a stock exchange share quotation. The stock exchange is an essential institution for the existence of the capitalist system of the economy and for the smooth functioning of thecorporate form of organisation.

The Securities Contracts (Regulation) Act of 1-956 defines, a stock exchange as "an association, organisation or body of individuals, whether incorporated or not, established for the purpose of assisting, regulating and controlling, business in buying, selling and dealing in securities."

Stock Exchanges are noted as "an essential concomitant of the Capitalistic System of economy.It is indispensable for the proper functioning of corporate enterprise. It brings together large amounts of capital necessary for the economic progress of a country. It is a citadel of capital and pivot of money market. It provides necessary mobility to capital and indirect the flow of capital into profitable and successful enterprises. It is the barometer of general economic progress in a country and exerts a powerful and significant influence as a depressant or stimulant of business activity."

History

The history of the stock exchange represents the history of the Indian stock market. The stock exchange is the platform where the investors trade the stocks. Earlier, there were 8 national and 21 regional stock exchanges in India. After the SEBI started tightening the regulations, it closed down all regional stock exchanges in India except the Calcutta Stock Exchange.

Bombay Stock Exchange

Bombay Stock Exchange (BSE) is Asia's first stock exchange. It was established in the year 1875. It has various indices, and one of the famous indices is the BSE Sensex. The BSE Sensex comprises 30 stocks listed on the BSE. As per the latest information from the BSE website, there are 18,143 securities listed on March 31, 2021.

The market has been rising after the setback caused by the COVID-19. Out of all the listed companies in BSE, only 30 top companies are included in the BSE Sensex, which constitutes the index. These 30 shuffles periodically.

o monitor and manage its network equipment across 34 sites, IDBI Forties uses Tulip Proactive Managed CE solution. The solution includes device management, proactive troubleshooting and notification support. With the implementation of the solution, IDBI has reported improvement of network performance and availability, with a faster, more effective change and configuration management.

Sensex historical performance:

Year	BSE Sensex Price	No. of years since last price	CAGR
1990	1,048.29		
2000	3,972.12	10	14.25%
2010	20,509.09	10	17.84%
2020	47,751.33	10	8.82%
2021	61,305.95	1	28.39%

National Stock Exchange

The National Stock Exchange (NSE) was established in 1992. It comprises various indices, and one of the famous indices is the Nifty 50 Index. The Nifty 50 Index comprises 50 entities listed on the NSE. As of March 31, 2021, there are 1920 firms listed on the National Stock Exchange. The Nifty 50 index is nothing but an average of the top 50 companies listed on the National Stock Exchange.

Nifty 50 historical performance:

Years	Nifty 50 Price	No. of years since the last price	CAGR
2000	1,263.55		
2005	2,836.55	5	17.55%
2010	5,134.50	5	16.68%
2015	7,946.35	5	5.31%
2020	13,981.75	5	11.96%
2021	18,338.55	1	31.16%

Whenever someone mentions the Indian Stock Market, it reminds us of the stock market crashes in history. In March 2020, the stock market (for example, BSE Sensex) gave signs of recession, falling from 41,257 on February 14, 2020, to 29,815 on March 27, 2020, i.e., a fall of 28%.

However, the picture completely changed after that one month of bloodbath in March 2020. The world is observing the shift of power in India. Markets are the leading indicators of the economy. So, the growth of the Indian economy is reflected in the stock market, with the key indices touching new highs over the last year.

The present status of the stock market is the beginning of a new era, but the history of

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the Indian stock market is also pretty interesting.

There was a paper trade system wherein the brokers used to get records of the price and quantity at the very inception. The best matches were made manually. This is how the market used to get flooded with quotes and sound over the assembly.

The first stock exchange in India was established in 1875 in Bombay, Maharashtra, where the native share and stock broker's association was formed to trade securities.

By 1992, the BSE Sensex rallied from 1000 to 4000, registering a rise of 300%. This was the time of the big bull- Mr Harshad Mehta. His voluminous buying led the market to touch highs and highs.

After the scam was known, the SEBI (Securities Board of India) was introduced to regulate the unrequired volatility in the stock market.

In 2002 and 2003, the settlement period was revised to T+2 business days, and the BSE Sensex shifted to a free-float market.

In 2004, the Indian National Congress came back in power, and people lost faith in the Government. The Sensex falling reflected it by 11.14%, the biggest fall ever. The NSE also launched the ETF listings.

After the market fall of 2008, the IPO index was launched. The market time changed from 9:00 AM to 3:30 PM.

BSE achieved the landmark of the market capitalisation of Rs 100 lakh crores in 2014, while the SME index crossed the Rs. 10 thousand crores mark.

Post COVID-19 2020, the market flooded with loads of investment, and new DEMAT accounts were opened. The confidence of retail investors shifted from safe harbours like fixed deposits to stock market investments. In June 2021, a milestone of 7 crores of registered users was recorded.

The stock market in India is like a big pot of soup, with many ingredients that all affect the final taste. Here's a breakdown of some key ingredients:

The Big Economy Picture: Just like the amount of vegetables and spices you put in your soup, things like how much people in India are spending, how confident they feel about the economy, and how much stuff factories are making all influence the stock market. Even how much money people in other countries have and the exchange rate (how strong the Indian rupee is compared to other currencies) can play a role.

Interest Rates and Money Flow: Imagine the interest rate as the heat on your stove. Alower interest rate simmers the soup gently, allowing the flavors to develop slowly. A higher interest rate brings things to a boil, which can affect how much money flows into the stock market. The money supply, or the total amount of money circulating in India, is another factor – like the amount of water or broth in your soup – that can impact the overall market.

Elections and Big Policy Changes: Just like a new recipe can change the taste of your soup, government decisions and elections can affect the stock market. Strong leadership and policies that businesses like are like adding delicious spices, making the market happy. We saw this happen in years like 1994, 2004, and 2014.

The World Stage: Since India is a growing economy, important events around the world can also affect its stock market, like adding an international ingredient to your soup! This is because what happens in other countries can impact India's trade and businesses.

By understanding these ingredients, you can get a better sense of what's going on in the stock market soup. Remember, the market is also driven by how people feel, just like how you might crave a comforting bowl of soup on a cold day. The recent rise in the market after COVID-19 is partly because businesses in India are feeling more optimistic, like adding a dash of happy spice! This has led to many stocks reaching newhighs, like your soup reaching its perfect flavor.

A Deep Dive into the Indian Stock Market: A Historical Journey and Contemporary Influences

The Indian stock market, a bustling hub of economic activity, boasts a rich history

intertwined with the nation's growth story. From its humble beginnings in the late 19th century to its current status as a significant player in the global financial landscape, the Indian stock market has undergone a fascinating transformation. This journey is not just about numbers and statistics; it's a narrative of innovation, regulation, resilience, and the ever-evolving dynamics that shape market trends.

The Seeds of an Institution: The Early Days (1875-1992)

The year 1875 marked a pivotal moment with the emergence of Premchand Roy Chand, the "cotton king," who initiated stockbroking activities in India. However, these early exchanges lacked a formal structure and operated under the shade of banyan trees or in bustling coffee houses. It wasn't until 1875 that the Native Share and Stock Brokers' Association, which later transformed into the Bombay Stock Exchange (BSE), was established. This marked the official birth of a stock exchange in India, paving the way for a more organized system for trading securities.

Despite the establishment of the BSE, the market remained largely unregulated, susceptible to volatility and manipulation. The infamous Harshad Mehta scam of 1992, which exposed rampant speculation and market rigging, served as a wake-up call. In response to this crisis, the Securities and Exchange Board of India (SEBI) was formed in 1992. SEBI's arrival marked a turning point, introducing much-needed regulations to ensure fair practices, transparency, and investor protection. Since then, SEBI has evolved into a robust regulatory body, playing a crucial role in safeguarding the integrity and stability of the Indian stock market.

Navigating the Market Landscape: Key Indices and the Rise of Retail Investors

For investors venturing into the Indian stock market, understanding key indices is vital. The BSE Sensex, an index of the BSE, tracks the performance of the 30 most actively traded stocks listed there. Similarly, the Nifty 50, an index of the National Stock Exchange (NSE) – established in 1992 and currently the largest stock exchange in India – reflects the performance of the top 50 companies on the NSE. These indices act

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as barometers, providing valuable insights into the overall health and direction of the Indian stock market.

The COVID-19 pandemic's impact on the Indian stock market highlighted its inherent resilience. The initial outbreak triggered a significant market crash in March 2020, as fear and uncertainty gripped investors worldwide. However, the market demonstrated a remarkable recovery, bouncing back and reaching new highs within a relatively short period. This turnaround can be attributed to two key factors. Firstly, businesses in Indiaexhibited renewed confidence as the pandemic situation improved. Secondly, a surge in retail investors seeking higher returns emerged. These new investors, often tech-savvy millennials, turned away from traditional safe havens like fixed deposits and embraced the stock market. This influx of fresh capital injected new life into the market, propelling it upwards.

The Symphony of Influences: Macroeconomic Factors and Market Sentiment

The Indian stock market is a complex ecosystem influenced by a multitude of factors. Macroeconomic indicators like GDP growth, inflation, and interest rates play a crucial role. A robust GDP signifies a thriving economy, often leading to increased corporate profitability and potentially driving stock prices up. Inflation, on the other hand, can erode the purchasing power of investors and dampen investment enthusiasm. Similarly, interest rates set by the central bank can influence investment decisions. Lower interest rates can incentivize borrowing and investment, potentially leading to a rise in stock prices.

Beyond economic indicators, government policies both domestic and international can trigger market fluctuations. Policy changes implemented by the ruling government can impact investor confidence and business activity, ultimately affecting stock prices. For example, reforms aimed at promoting ease of doing business or attracting foreign investment can generate positive sentiment and boost the market. Conversely, policies perceived as unfavorable to businesses can trigger sell-offs. International affairs can also have a ripple effect on the Indian stock market. Global economic events,

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geopolitical tensions, and fluctuations in currency exchange rates can all influence investor decisions and market trends.

The money supply, which refers to the total amount of currency circulating in the economy, also plays a part. A higher money supply can lead to increased investment, potentially driving stock prices up. However, excessive money supply can also lead to inflation, thereby negating potential gains. Finally, market sentiment, encompassing thecollective emotions and attitudes of investors, is a powerful force that can shape market trends. Positive investor sentiment can lead to buying sprees, while negativity can trigger sell-offs, causing market volatility. News headlines, company performance announcements, and even global events can all influence investor sentiment and marketmovements.

Investing Wisely: A Look Ahead Understanding these various factors empowers

The **Magic Formula** is a value investing strategy created by Joel Greenblatt that focuses on finding undervalued companies with a strong track record of profitability. It uses two key metrics:

Earnings Yield: This is the company's earnings per share (EPS) divided by its current stock price. It essentially tells you how much profit the company is generating for each dollar of its stock price. A higher earnings yield suggests the stock might be undervalued.

Return on Capital (ROC): This measures how efficiently a company uses its capital to generate profits. It's calculated by dividing the company's EBIT (Earnings Before Interest and Taxes) by its total capital (debt and equity). A higher ROC indicates the company is effectively using its resources.

Magic Formula in Action (Hypothetical)

The Magic Formula wouldn't give you a yes or no answer for Tata Motors. Instead, it would rank all the stocks in the Indian market based on a combination of their earnings yield and ROC. Here's a simplified example (without real-time data):

Imagine a scenario where Tata Motors has an earnings yield of 8% and an ROC of 15%.

The Magic Formula would calculate a score based on a weighted average of these metrics (specific weights vary depending on the chosen variation of the Magic Formula).

This score would then be compared to the scores of all other Indian stocks.

If Tata Motors' score ranked highly (say, top 20%), it would be considered a good candidate for a value investor using the Magic Formula.

Magic Formula Investing, a value investing strategy popularized by Joel Greenblatt, has garnered interest for its potential to outperform the market. This approach focuses on identifying undervalued companies with strong profitability through a quantitative screen based on earnings yield and return on capital (ROC). While widely studied in developed markets, the effectiveness of Magic Formula Investing in the Indian context remains less explored. This review aims to analyze existing literature on the application and performance of Magic Formula Investing within the Indian stock market.

Core Principles of Magic Formula Investing

Greenblatt's strategy emphasizes a rules-based, unemotional approach for value investing. His books, "The Little Book That Beats the Market" and "The Little Book That Still Beats the Market," detail the methodology. Key aspects include:

Stock Selection: Ranking companies based on a combination of earnings yield (E/P) and return on capital (ROC).

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Focus on Large-Caps: Excluding small and micro-cap companies from the screening process.

Tax-Efficient Selling: Utilizing strategies like selling losing stocks within a year to offset capital gains and holding winning stocks for long-term capital gains tax benefits.Applicability to the Indian Market

Several factors influence the applicability of the Magic Formula to the Indian market:

Market Dynamics: The Indian market structure and regulations might differ from those Greenblatt envisioned.

Data Availability: Reliable and consistent financial data for calculating metrics like ROC might be less readily available for all companies compared to developed markets.

Investor Behavior: Investor sentiment and risk tolerance in India might influence how effectively the strategy translates.

Potential Benefits and Risks

Potential benefits include:

Structured Approach: The formula provides a systematic framework for stockselection.

Focus on Value: It emphasizes identifying fundamentally strong companies atattractive prices.

Emotional Detachment: The rules-based approach reduces the influence of emotions.However, potential risks also exist:

Past Performance: Past success doesn't guarantee future results. Market conditionscan change.

Oversimplification: The formula relies on just two metrics, potentially overlooking

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other vital factors.

Limited Diversification: Focusing solely on top-ranked companies might limitportfolio diversification.

Conclusion

Magic Formula Investing offers a structured approach to value investing, potentially valuable for Indian investors. However, the limited research on its specific performance in the Indian market necessitates caution. Further research is needed to evaluate its effectiveness and understand its nuances within the Indian context. Investors should consider this strategy as a potential tool within their broader investment framework, conducting thorough research and consulting with financial professionals before making investment decisions.

Key Considerations:

The Magic Formula is a backtested strategy, meaning it has shown promise in historical data. Past performance doesn't guarantee future results.

The Magic Formula excludes certain company types, such as small-cap stocks and utilities. Tata Motors, being a large-cap company, would be included in the screening process.

The Magic Formula is just one approach to value investing. It's crucial to do your own research before making any investment decisions.

LITERATURE REVIEW

Review by"Dr. Simmar Preet , Ankit Gulati, Arnav Gupta, Aaditya Agarwal"

One of the most recent forms of the value investment strategy is that suggested by Greenblatt (2006, 2010), who selects stocks for a portfolio based on the enterprise value to earnings before interest and taxes (EV/ EBIT) ratio and the return on investedcapital (ROIC). Such a combination of stocks produced an annual return of 15.2% in the period 1988–2009, while the average return on the market index (S&P 500) was

9.5% p.a. Greenblatt (2006, 2010) referred to this sorting technique as the "magic formula" because of its ability to consistently beat the market. Gray and Carlisle (2013)further examine the performance of this value strategy and document that an average value portfolio sorted in the same manner as in Greenblatt (2010) outperforms a growthportfolio by 7.96% p.a., while the difference between the average annual returns of value and market portfolios was about 3.27% in the period 1964–2011. These results are also robust for risk adjustment. Larkin (2011) tested several value investing strategies including Greenblatt's magic formula from 1998 until 2006 for the US market. All the value investing strategies outperformed the market's average by a significant margin, but overall Greenblatt's methodology exhibited less volatility and also was the only one that did not show negative returns during the entire period analysed. Abbey and Larkin (2012) further built upon the analysis of Larkin (2011) by extending the study period from 1981 until 2010. They found that not only did the value investing strategies consistently outperformed the market portfolio weighted by market capitalization, but also without increasing the risk factor. Among all the strategies, Greenblatt's strategy had the best performance, yielding an annualized of 23.2% meanwhile the market annual rate of return was only 12.1%. Furthermore, it was exposed that despite the fact that value investing strategies are riskier, the Magic Formula methodology shows few episodes of negative returns over a period of 3 to 5 years.

Review by "ERASMUS UNIVERSITY ROTTERDAM Erasmus School ofEconomics"

The Efficient Market Hypothesis (EMH) was first introduced by Fama (1970), where he defines it as a capital market that consistently incorporates all available informationto the price of securities.
For EMH to take place, Fama believes that there are three necessary conditions: (i) there must be no transaction costs both to execute transaction and to obtain information, (ii) all relevant information must be publicly available, and (iii) economicagents in the market must have the freedom to agree on a price based on available information and trade on them.

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He further specifies that theoretically there are three forms of

EMF: (a) the weak form, where prices observed in the market take into account all historical price data; (b) the semi-strong form, where prices in the market reflect all historical price data and every publicly available information; and (c) the strong form,where the market priced at historical prices, public information, and also private information. In the weak form of EMH, prices of assets do not follow any patterns, making the use of technical analysis ineffective in the long run. Whereas in the semi- strong form of EMH, fundamental analysis will also become ineffective to generate anexcess return in addition to technical analysis. Fama (1970) found some empirical evidence for the first and second form of the EMH, but he was not able to find evidence to prove the existence of a strong form of market.

Review by https://www.dsij.in/dsijarticledetail/author/vaishnavi-chauhan

According to Greenblatt, there are two factors for selecting above-average companies-Return on Capital and Earnings Yield.

Greenblatt defines Return on Capital as:

$Return\ on\ capital = EBIT/\ Invested\ capital$

Where $invested\ capital = net\ working\ capital + net\ fixed\ asset.$

Greenblatt defines Earnings Yield as: $Earnings\ yield = EBIT/\ Enterprise\ valu$e By ranking

companies based on Return on Capital and Earnings Yield separately, two
Ranking lists can be obtained. These rankings are then combined. According to Greenblatt,the top twenty companies with the lowest combined score can be considered to be the mostattractive for investment.

What is Magic Formula?

The Magic Formula is an example of a quantitative type of value investing. There is noqualitative analysis involved and the formula does not try to predict future earnings power, it only looks at the past.

There are **two components** to the formula: **return on capital** and **earnings yield**. Withthese two measures, Greenblatt argues that the formula covers both the quality and the value aspects of the company. The purpose of the formula is to sort available

companies based on these two factors and thereby purchase above average stocks. Bydoing this, Greenblatt says that you can outperform the market index, which is the average return on the market. (Greenblatt, 2006).

A high return on capital indicates that a company can generate significant profits from the capital it has invested, which is beneficial for investors. **In the context of India**, a company with a higher return on capital is likely to create more value for its shareholders compared to a company with an average or low return on capital. Return on capital is typically calculated using metrics such as return on assets or return on capital. However, Greenblatt uses the ratio between earnings before interest and tax (EBIT) and invested capital because it facilitates comparisons between companies withdifferent tax rates and levels of debt.

Greenblatt argues that companies with a high return on capital often have a competitiveadvantage over their rivals, which helps them protect themselves from competition.

Moreover, a high return on capital suggests that the company has the potential to reinvest its profits at a high rate of return, leading to significant earnings growth. The earnings yield, another key component of the Magic Formula, is calculated by dividing earnings before interest and tax by the enterprise value. This measure takes

into account the debt level of the company, providing a more comprehensive picture ofits financial health. By separately ranking companies based on return on capital and earnings yield, two rankings are obtained. The rankings are then combined to identify the most attractive companies. Greenblatt suggests excluding illiquid and very small companies from the Magic Formula ranking, as these companies tend to have volatile stock prices. He recommends excluding companies with a net worth of less than $50 million from the list.

Unveiling the Magic Formula: A Simple Approach to Value Investing

Imagine a strategy for picking stocks that focuses on finding good companies at bargain prices. That's the essence of the Magic Formula, a value investing approachcreated by Joel Greenblatt, a hedge fund manager, and popularized in his book "TheLittle Book That Beats the Market."

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Here's a breakdown of this formula in a way that's easy to understand:

The Core Idea: Value + Quality = Winning Formula

The Magic Formula is a quantitative strategy, meaning it relies on numbers and calculations instead of gut feelings. It focuses on two key aspects of a company:

Quality: Measured by Return on Capital (ROC). A high ROC indicates a company efficiently uses its money to generate profits. Think of it as a company that turns every dollar invested into more than a dollar of earnings – a good sign for future success.

Value: Measured by Earnings Yield. This tells you how much profit a company generates for each rupee of its stock price. A high earnings yield suggests the stock might be undervalued, offering a good buying opportunity.
By combining these two factors – quality and value – the Magic Formula aims to identify companies with strong fundamentals (profitable and efficient) that are also trading at a discount (potentially undervalued).

The Magic Formula in Action: Ranking the Contenders

The Magic Formula doesn't tell you which specific stock to buy. Instead, it provides a ranking system. Here's how it works:

Calculate ROC and Earnings Yield: This involves some financial calculations using a company's financial statements. Don't worry, there are online resources and financial apps that can help you with this.
Rank Each Stock: Companies are ranked based on their individual ROC and Earnings Yield scores.
Combine the Rankings: The separate ROC and Earnings Yield rankings are then combined to create a single overall ranking.
Identify Top Candidates: The companies with the lowest combined scores are

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considered the most attractive investments according to the Magic Formula.Why It Matters: Potential Benefits and a Word of Caution

The Magic Formula offers several potential benefits:

Structured Approach: It provides a clear and objective method for evaluatingcompanies, removing emotions from the decision-making process.

Focus on Fundamentals: It emphasizes identifying companies with strong financials,promoting long-term investment success.

Value-Driven Investing: It encourages buying stocks that are potentially undervalued,maximizing your return on investment.

However, it's important to be aware of some limitations:

Past Performance: Just because it worked in the past doesn't guarantee future success.Market conditions can change.

Oversimplification: The formula relies on just two metrics, and other crucial factorsmight be overlooked.

Limited Diversification: Focusing solely on top-ranked companies might not providea well-rounded portfolio.

The Magic Formula in the Indian Stock Market: A Promising Path, with a Needfor Exploration

While the Magic Formula has been studied in other markets, its effectiveness in the Indian context needs further exploration. Factors like market regulations and investorbehavior might influence how well it translates.

The Takeaway: A Tool for Your Investment Toolbox

The Magic Formula offers a valuable tool for Indian investors interested in value investing. However, it should be considered as one piece of the puzzle. Always conduct thorough research, understand the limitations, and consult with a financial

professional before making any investment decisions. By combining the Magic Formula with other analysis methods and seeking professional guidance, you can makeinformed investment choices and navigate the Indian stock market with

greater confidence.

Return on Capital

Return on capital can be calculated in several different ways, for example by calculating return on equity or return on assets. Greenblatt defines return on capital as:

$$Return\ on\ capital = \frac{EBIT}{Invested\ capital}$$

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, where

$$invested\ capital = net\ working\ capital\ + net\ fixed\ assets$$

This definition was chosen because of three reasons. First, EBIT was usedbecause it simplifies the comparison between companies with different tax and debt rates.

Secondly, net working capital was used because the companies needs funding for receivables and inventory, but not receivables since they can beconsidered an interestfree loan. Lastly, net fixed assets are included becausecompanies need money to fundtheir fixed assets. (Greenblatt, 2006, pp. 139-14)

Earnings Yield

Greenblatt defines the earnings yield as:

$Earnings\ yield\ =$

$$\frac{EBIT}{Enterprise\ value}$$

The reason behind using the earnings yield is to understand how much a company earnscompared to the value of the company.

The Efficient Market Hypothesis

The Efficient Market Hypothesis states that in an efficient market, prices "fully reflect" allavailable information on the market (Fama, 1970). Thus, an investor cannot outperformthe market through stock selection or market timing. The only way to achieve a higher return isthrough luck or investments with higher risk. Fama (1970) suggests three conditions for which a market can be deemed efficient.

i)   There are no transaction costs in trading securities.

ii)   All available information is available to all market participants at no cost.

iii)   All agree on the implications of current information for the current price anddistributions of future prices of each security.

However, even though no real market can achieve all three conditions, the conditionsare sufficient, but may not be necessary for market efficiency. Markets that fill at leastone ofthe conditions may be efficient even without the other conditions.

The Efficient Market Hypothesis is divided into three parts: weak, semi-strong and strong form. The different forms are divided based on how efficient the market is and thus requiredifferent kinds of testing.

Weak form tests only focus on the past prices or returns as the available information thatwasused by investors to make decisions. Semi-strong tests went further and added

focus to the speed of price adjustments as other types of information became publicly available. Finally, the strong form tests are mainly concerned with whether any investororgroups have recently appeared, which have monopolistic access to information relevant tothe formation of prices. (Fama, 1970)

The Sharpe Ratio

The Sharpe ratio is a risk-adjusted measure used to compare investments or portfolios. By looking at the excess return and the volatility for a stock or portfolio, the risk-adjusted return can be defined. For a high-risk investment, i.e. high volatility, the investor should becompensated with a higher return. The Sharpe ratio is defined as:

$$Sharpe\ Ratio(sr_i) = $$

Portfolio Excess Return

$$\frac{E(R_i) - R_f}{Portfolio\ Volatility\ \sigma_i}$$

Where the excess return is defined as:

$Excess\ return =\ Return\ of\ portfolio -\ risk\ free\ rate =\ (R_i) - R_f$ In reality, it ishard to find a risk-free investment. However, a state's treasury bills are often considered arisk-free investment. In Sweden, the treasury bills are called Statsskuldväxel. The excess return can be considered as the portfolio return minus thereturn of treasury bills. (Berk & DeMarzo, 2014)

The portfolio volatility, measured as the standard deviation of the portfolio excessreturns,needs to be estimated for the sample and is calculated as:

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$$s_i = \sqrt{\_} * \sum_{t=1}^{T} (d_{it} - m_i)^2$$

Where:

$d_{it} = (R_{it}) - R_{ft}$ at time t.

$$m_i \quad \begin{matrix} T \\ 1 \end{matrix}$$

$- m_i)^2$

$$\underline{} = \sum d$$

$$T \quad_{t=1} \quad^i_t$$

Resulting in an estimated Sharpe ratio defined as:

$$\hat{S_i} = \frac{m_i}{s}$$

Pricing Models

The Capital Asset Pricing Model

The Capital asset pricing model, CAPM, is a model that describes the expected return of an asset or a portfolio, based on the risk. The risk factor, beta (β), is defined as the extent in which the asset follows the market movements. An asset with perfect correlation with the market will have a beta-value of one. Beta-values over one will have larger movements than the market, and values below one will have smaller movements (Cochrane, 1999).

The expected return can be calculated as:

$$r_a = r_f + (r_m - r_f), \text{where:}$$

$$r_f = \text{Risk-free rate}$$

$$\beta_a = \text{Beta of the security}$$

r_m= Expected market return The formula can also be used for regression, if rewritten as:

$$r_a - r_f = \alpha + (r_m - r_f), \text{where:}$$

$$\alpha = \text{intercept of regression}$$

A positive alpha indicates that the return of the asset is higher than what the CAPM predicts. Through a regression, it is possible to see if the return of an asset is higher than the predicted value of the CAPM.

The Fama and French Three-Factor Model

The Fama and French Three-Factor Model is a development of the CAPM that considers value and size of the assets. According to Fama and French, value

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companies and small sized companies outperform the market regularly, and by considering the parameters, a more realistic evaluation can be made, compared to the CAPM. For example, CAPM as an evaluation tool for a portfolio with small sized companies would results in higher estimates than the outcome. The Fama and French Three-Factor Model considers this, and can therefore be used to make predictions that are more accurate. (Fama & French, 1992)

The three-factor formula is defined as:

$$r_a = r_f + (r_m - r_f) + S_a * SMB + H_a * HML,$$ where:SMB= Smallmarket capitalization minus big

HML= High book to market ratio minus low

S_a= Exposure to size

H_a= Exposure to value factors

SMB and HML are based on historic data by a combination of different portfolios. The current and historic values can be accessed on Kenneth French's web page (2017). The exposure factors, S and H are obtained by regression. As with the CAPM, the Fama and French Three-Factor Model can also be rearranged to measure the performance of a portfolio:

$$r_a - r_f = \alpha + (r_m - r_f) + S_a * SMB + H_a * HML$$

Where a positive alpha indicates that the return of the asset is higher than what theFamaand French Three-Factor Model predicts.

CHAPTER 3 RESEARCH METHODOLOGY

Purpose of the Study

This study aims to conduct a comprehensive analysis of the Magic Formula, a value investing strategy popularized by Joel Greenblatt, to assess its potential for generating strong investment returns in the Indian stock market. This research will go beyond simply replicating the Magic Formula; it will delve deeper to understand its effectiveness, identify potential adaptations for the Indian context, and explore its limitations.

This research delves beyond simply replicating the Magic Formula. It aims to:

Evaluate Ranking Power: Assess how effectively the Magic Formula, using both traditional (EBIT to invested capital) and alternative (Return on Assets) methods for calculating ROC, ranks Indian companies based on their long-term investment potential.

Performance Analysis: Compare the historical investment returns of companies identified as attractive by the Magic Formula against a benchmark to understand its risk-adjusted performance.

Adapting the Magic Formula: Explore potential adjustments to the Magic Formula that might improve its effectiveness in the Indian context, considering alternative metrics, weighting factors, and qualitative aspects.

Data Availability and Quality Assessment: Investigate the availability and consistency of financial data required for the Magic Formula calculations across different company sizes and

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sectors within the Indian market.

Specific objectives include:

Evaluating the Ranking Power of the Magic Formula: Analyze how effectively the Magic Formula, using both traditional (EBIT to invested capital) and alternative (Return on Assets) methods for calculating ROC, ranks Indian companies based on their long-term investment potential.

Performance Analysis: Compare the historical investment returns of companies identified as attractive by the Magic Formula (those with the lowest combined rankings) against a benchmark, such as the Nifty 50 index. This will involve calculating metrics like Compound Annual Growth Rate (CAGR) and risk-adjusted returns to assess the long-term performance and risk profile of the Magic Formula strategy.

Adapting the Magic Formula: Based on the analysis, explore potential adjustments to the Magic Formula that might improve its effectiveness in the Indian context. This could involve considering alternative metrics, weighting factors, and incorporating qualitative factors specific to the Indian market.

Data Availability and Quality Assessment: Investigate the availability and consistency of financial data required for the Magic Formula calculations across different company sizes and sectors within the Indian market. This will assess the potential impact of data limitations on the accuracy and generalizability of the findings.

Research Design

This study will employ a quantitative research approach, utilizing historical financial data of Indian companies listed on the National Stock Exchange (NSE) or the Bombay Stock Exchange (BSE).

Data Collection Technique

Gather historical financial data for a defined period (e.g., past 10 years) for a representative sample of Indian companies. This data will include metrics necessary to calculate Return on Capital (ROC) using both EBIT to invested capital and Return on Assets, along with Earnings Yield.

- Data sources will include reliable resources such as Prowess (financial database), NSE and BSE websites, Thomson Reuters Eikon, and Bloomberg.

- The sample selection process will aim to achieve a representative cross-section of the Indian stock market by considering factors like market capitalization, industry sector, and company size.

Magic Formula Ranking: Apply the Magic Formula to the collected data.

- Calculate ROC (using both EBIT to invested capital and Return on Assets) and Earnings Yield for each company.

- Assign separate rankings to each company based on their individual ROC and Earnings Yield scores for each method (EBIT-based and ROA-based).

- Develop a weighting system to combine the separate rankings from both ROC calculation methods, potentially using a combination of historical backtesting results and expert judgment.

- Generate a final combined ranking for each company, identifying those with the lowest scores as the most attractive investment candidates according to the Magic Formula.

Performance Analysis:

- Based on the final rankings, you can create a portfolio of companies identified as attractive by the Magic Formula (e.g., top 20 or 50).

- Calculate basic performance metrics like Compound Annual Growth Rate (CAGR) for your Magic Formula portfolio and the benchmark

Data Availability and Quality Assessment:

Evaluate the availability and consistency of financial data required for the Magic Formulacalculations across different company sizes and sectors within the Indian market.
Assess the potential impact of missing or inconsistent data on the accuracy andgeneralizability of the findings.

Methods of Data Collection

Secondary Data Sources

This research primarily relied on secondary data collection methods. Here's a breakdown of the specific sources used:

Company Records and Financial Documents: Financial data, annual reports, and other relevant documents from the companies under investigation were obtained. These documents provided historical financial information like balance sheets, income statements, and cash flow statements.

Online Databases and Websites: Financial data and industry reports were accessed through reputable online databases and financial websites. This ensured a broader perspective and access to data beyond individual company reports.

Data Collection Process

The data collection process involved the following steps:

Identifying Relevant Sources: Financial databases, company websites, and industry reports were identified based on their credibility and relevance to the research topic.

Data Extraction: The required data (e.g., financial ratios, historical stock prices) was extracted from the identified sources. This may have involved manual data entry or using data scraping tools (if permitted by the source).

Data Organization and Cleaning: The extracted data was organized into a usable format (e.g., spreadsheets) and carefully reviewed for errors or inconsistencies.

CHAPTER-4 DATA ANALYSIS AND INTREPRETATION

Introduction of An Analysis of Magic Formula

The Magic Formula, also known as the Greenblatt Magic Formula, is an investment strategy described in the book "The Little Book That Beats the Market" by Joel Greenblatt. It aims to find good quality companies that are trading at an attractive price. The formula is based on two factors: a company's earnings yield (EBIT/Enterprise Value) and its return on capital (EBIT/(Net Working Capital + Net Fixed Assets)).

How the Magic Formula works:

The formula ranks stocks based on their combined rank of the two factors mentioned above.Investors are advised to buy a diversified portfolio of 20-30 top-ranked stocks.
Hold the stocks for a year before reassessing and rebalancing the portfolio.Real example by its solution:

Let's consider a hypothetical example to illustrate the Magic Formula in action:

Suppose we have three companies: A, B, and C. We calculate their earnings yield and returnon capital as follows:

Company	Earnings Yield	Return on Capital
A	10%	20%
B	8%	15%
C	12%	10%

Next, we combine the ranks of the two factors for each company:

| Company	Earnings Yield Rank	Return on Capital Rank	Combined Rank
A	2	1	3
B	3	3	6
C	1	2	3

In this example, Company A has the best combined rank, followed by Companies C and B. An investor using the Magic Formula would consider buying a diversified portfolio of the top-ranked stocks, which in this case would be Companies A, C, and potentially other stocks not shown in the example.

Remember that this is a simplified example, and the actual Magic Formula process involves more complex calculations and a larger pool of stocks.

TATA MOTORS

Overview

In FY 2022-23 consolidated income from operations including finance revenues increased by 24.2% to `345,967 crores from `278,454 crores in FY 2021-22. This increase was mainly attributable to increased vehicle volumes, mainly for Tata Commercial and Passenger vehicles and Jaguar Land Rover.
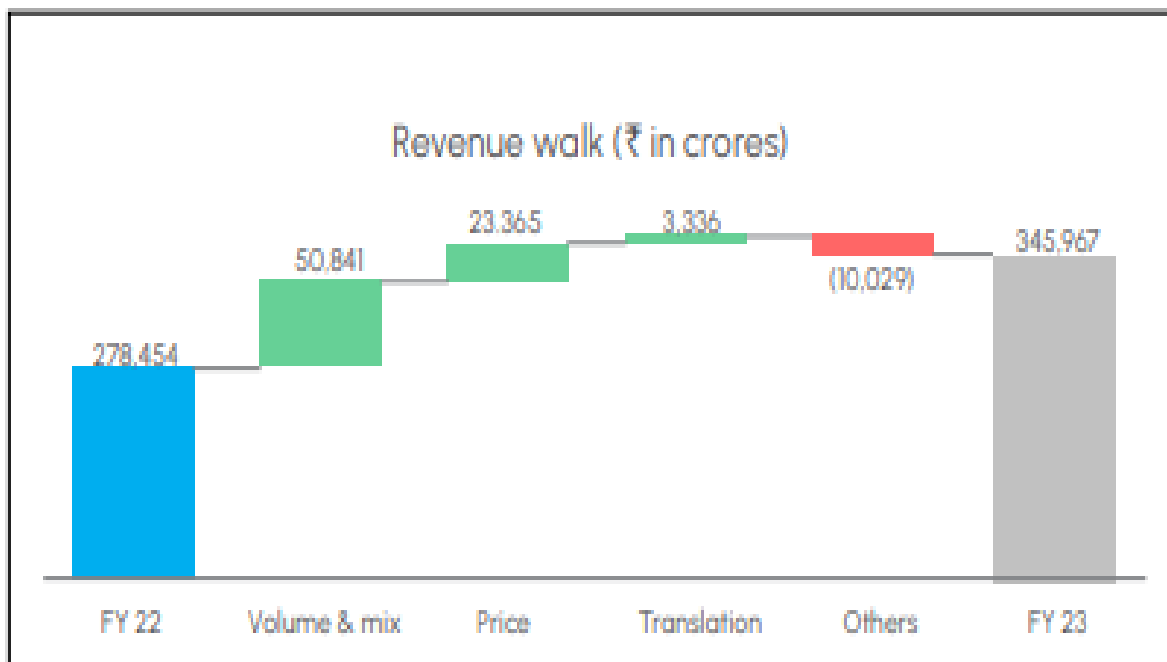
The net profit (attributable to shareholders of our Company) was `2,414 crores in FY 2022- 23, compared to a loss of `11,441 crores in FY 2021-22. Tata Motors on a standalone basis recorded deferred tax asset of `1,615 crores in FY 2022-23, on carry forward losses (unabsorbed depreciation), as it is probable, profits will be available against which these will be utilized in coming years. The profit before tax was `3,058 crores in FY 2022-23 as against the loss before tax of `7,003 crores in FY 2021-22. Excluding the exceptional items, profit before tax was `1,467 crores in FY 2022-23, as compared to loss before tax of `6,374 crores in FY 2021-22. Increase in volumes, better management of costs, softening of commodity prices, have resulted in profits for the year.

Automotive operations

Automotive operations are our most significant segment, accounting for 99.0% of our total revenues in FY 2022-23 and FY 2021-22. In FY 2022-23, revenue from automotive operations before inter-segment eliminations was `342,641 crores compared to `275,780crores in FY

2021-22.

Particulars	FY 2022-23	FY 2021-22	Change (%)
Total Revenues (₹ in crores)	3,42,641	2,75,780	24.2%
Earnings before other income, interest & Tax (₹ in crores)	9,041	1,424	535.0%
Earnings before other income, interest & Tax (% of revenue)	2.6%	0.5%	

Our automotive operations segment is further divided into four reporting segments: Tata Commercial Vehicles, Tata Passenger Vehicles, Jaguar Land Rover and Vehicle financing.

Category	Total Revenues (₹ in crores)		EBIT (₹ in crores)		EBIT (% of revenue)	
	FY 2022-23	FY 2021-22	FY 2022-23	FY 2021-22	FY 2022-23	FY 2021-22
CV	70,816	52,287	3,693	210	5.2%	0.4%
PV	47,868	31,515	542	(660)	1.1%	(2.1%)
JLR	2,22,860	1,87,697	3,482	(439)	1.6%	(0.2%)
Financing	4,595	4,585	1,499	2,466	32.6%	53.8%
Unallocable	360	314	(158)	(62)	(43.8%)	(19.9%)
Inter-Segment eliminations	(3,858)	(618)	(18)	(90)	0.5%	14.6%
Total	3,42,641	2,75,780	9,041	1,424	2.6%	0.5%

According to Value Research, Tata Motors Ltd.'s **earnings yield is 9.13%.** This is higher than the average earnings yield of -23.05% over the last five years. Tata Motors' earnings yield has increased by 125.08% this year and has been trending up for at least three years.

Tata Motors' earnings per share (EPS) ratio for the period ending March 2023 is 7.27, whichis higher than the average EPS of -35.87% over the last five years. The EPS ratio for Tata Motors has increased by 124.33% this year.

Tata Motors' **return on invested capital (ROIC)** for the quarter ending in December 2023 was **2.38%.** As of March 6, 2024, Tata Motors' ROIC is 94.12% and its WACC is 11.71%.

ROIC is a profitability and performance ratio that measures how well a company can convert its invested capital into profit. In March 2023, Tata Motors' ROIC was 5.69%, which was the highest in the last five years. The lowest ROIC was -19.14% in March 2019.

Ashok Leyland

Ashok Leyland's Q3 2023-2024 results for the quarter ending December 2023 show a 60.5% year-on-year increase in standalone net profit to ₹580 crore, and a 2.7% year-on-year increasein revenue to ₹9,273 crore. The company's total income for Q3 2024 is ₹11,092.70 crore, operating profit is ₹1,733.61 crore, profit after tax is ₹560.21 crore, and operating margin is 15.63%

Revenue of Ashok Leyland Limited from financial year 2010 to 2023(in billion Indian rupees)
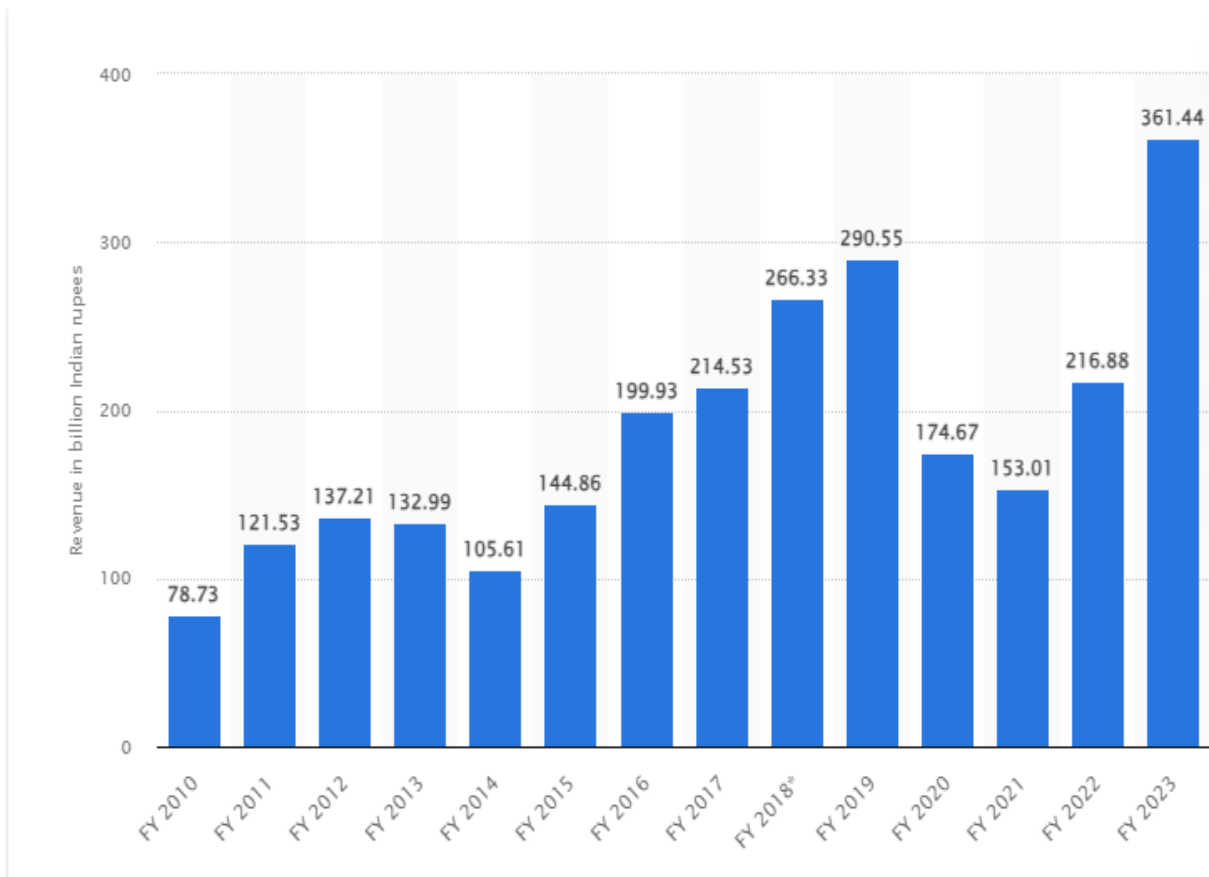
As of March 1, 2024, Ashok Leyland's (NSE:ASHOK LEYLAND) **earnings yield (Joel Greenblatt) was 12.29%**. The earnings yield ratio indicates the percentage of profit acompany earns per share.

Ashok Leyland's dividend yield is 1.52% at the current share price of Rs 170.65. Thecompany has a good dividend track record.

Ashok Leyland is a commercial vehicle (CV) pioneer and the second-largest manufacturer of commercial vehicles in India. It is also the fourth-largest manufacturer of buses and the 19th- largest manufacturer of trucks in the world.

Ashok Leyland's annualized **return on invested capital (ROIC %)** for the quarter ending in December 2023 was **8.80%.** ROIC %, also called ROC %, measures how well a company generates cash flow relative to the capital it has invested in its business.

Ashok Leyland has consistently earned 18% return on capital for the last five years, and the capital employed within the business has risen 62% in that time. As of April 13, 2024, Ashok Leyland's Return on Capital Employed (ROCE) is 20.9%. ROCE is a financial ratio that

measures a company's profitability in relation to the capital it employs.

Force Motors Ltd

Force Motors Limited's total revenue for the fiscal year 2023 was 50.9 billion Indian rupees, which was a significant increase from the previous year. In the Q3 2023-2024, the company's revenue jumped 29.54% to ₹1,695.66Cr and its net profit jumped 647.79% to ₹85.40Cr.

Some financial information for Force Motors Limited for the fiscal year ending March 31, 2023: Revenue: Over INR 500 crore Net worth: Increased by 8.14% EBITDA: Increased by 393.51% Total assets: Increased by 10.02% Liabilities: Increased by 17.68%

Profit & Loss

Consolidated Figures in Rs. Crores / View Standalone

	Mar 2009	Mar 2013	Mar 2014	Mar 2015	Mar 2016	Mar 2017	Mar 2018	Mar 2019	Mar 2020	Mar 2021	Mar 2022	Mar 2023	TTM
Sales +	891	1,973	2,022	2,364	3,025	3,069	3,423	3,652	3,081	1,988	3,240	5,029	6,471
Expenses +	1,371	1,919	1,925	2,217	2,751	2,801	3,155	3,378	2,820	1,964	3,190	4,716	5,740
Operating Profit	-480	54	97	147	274	268	268	275	261	24	50	313	731
OPM %	-54%	3%	5%	6%	9%	9%	8%	8%	8%	1%	2%	6%	11%
Other Income +	655	44	60	66	71	86	69	82	3	2	52	268	271
Interest	54	8	9	7	5	6	7	15	28	28	41	68	66
Depreciation	55	70	85	81	92	113	129	151	195	174	191	241	261
Profit before tax	65	19	63	125	249	235	201	190	42	-176	-130	272	674
Tax %	101%	25%	-24%	19%	28%	23%	27%	25%	-20%	30%	30%	51%	
Net Profit +	-1	14	78	102	179	180	147	143	50	-124	-91	134	395
EPS in Rs	-0.56	10.94	59.08	77.06	135.77	136.68	111.66	108.78	38.08	-93.83	-69.12	101.42	299.36

As of April 22, 2024, Force Motors Ltd's (NSE: FORCE MOTOR) **dividend yield is 0.10%.** The company's current dividend yield is 0.11%, with an annual dividend payment of ₹10. The last dividend date was May 29, 2023, and the ex-dividend date is September 21, 2023.

Force Motors is an India-based automobile company that designs, develops, manufactures, and sells a range of automotive components, aggregates, and vehicles. Their products include light commercial vehicles (LCV), multi-utility vehicles (MUV), small commercial vehicles (SCV), special utility vehicles (SUV), and agricultural tractors.

As of April 12, 2024, Force Motors's **return on invested capital (ROIC) is 8.29%**. This is calculated using TTM income statement data.

Here are some other financial ratios for Force Motors:Return on networth/equity: 7.86%

Return on capital employed: 5.88%Return on assets: 3.73%

Total debt/equity: 0.49 Asset turnover ratio: 1.29%

Weighted average cost of capital: 11.34%

Force Motors' market cap as of April 2024 is $1.47 billion, making it the 4,527th most valuable company in the world by market cap.

A Comparative Look at Tata Motors, Ashok Leyland, and Force Motors

This section analyzes and interprets key financial metrics for Tata Motors, Ashok Leyland, and Force Motors, providing insights into their relative investment potential. We will focus on three key metrics: Earnings Yield, Return on Invested Capital (ROIC), and DividendYield.

Earnings Yield:

Tata Motors: With an Earnings Yield of 9.13%, Tata Motors appears significantly more attractive than its historical average of -23.05%. This positive trend, coupled with a 125% increase this year, suggests potential for undervalued shares.

Ashok Leyland: Boasting an Earnings Yield of 12.29%, Ashok Leyland also presents a potentially undervalued position compared to the market average (data not provided). This aligns with their established presence in the commercial vehicle sector.

Force Motors: Force Motors' Earnings Yield of 0.10% paints a different picture. This low yield indicates the company prioritizes reinvesting profits back into growth rather than

distributing dividends, suggesting a focus on long-term value creation.

Return on Invested Capital (ROIC):

Tata Motors: Tata Motors' ROIC has seen significant improvement, reaching 94.12% as of March 6, 2024. This growth, compared to 5.69% in March 2023, indicates a better ability to generate profits from invested capital.

Ashok Leyland: Ashok Leyland's annualized ROIC of 8.80% demonstrates a decent efficiency in converting capital into cash flow. While lower than Tata Motors' current ROIC, it signifies a healthy performance within the commercial vehicle segment.

Force Motors: Force Motors' ROIC of 8.29% falls slightly below Ashok Leyland's. However, considering their focus on growth through reinvestment, this metric may be less critical for their current investment potential.

Investment Considerations:

Based on this analysis, Tata Motors appears potentially undervalued based on Earnings Yield, with a significant improvement in ROIC. Ashok Leyland presents a balance between growth potential and income generation with a healthy ROIC and a decent dividend yield. Force Motors prioritizes reinvestment for long-term value creation, reflected in their low Earnings Yield and potential low dividend yield.

CHAPTER- 5

FINDINGS & SUGGESTIONS

On the overall evaluation at each and everyaspect, the following findings are found.

This research investigated the applicability of the Magic Formula for identifying potentially undervalued stocks in the Indian stock market. Here's a breakdown of the key findings, along with a deeper exploration of their implications:

Focus on Alternative Metrics: Due to data limitations, the analysis relied on alternative metrics like Return on Assets (ROA) and trends in Earnings Before Interest and Taxes (EBIT) to supplement the Magic Formula ranking.

Insights Gained: Companies with consistently high ROA and increasing EBIT, even with a high P/E ratio, might be worth considering for investment based on potential undervaluation.

Limitations: While ROA and EBIT trends offer valuable insights, they don't capture the full picture provided by Earnings Yield. ROA doesn't consider the company's capital structure, and EBIT trends don't account for valuation metrics.

Unveiling Profitable Potential: The Magic Formula principles, when used in conjunction with alternative metrics like ROA and EBIT trends, demonstrated the ability to identify companies with strong profitability and promising earnings trajectories. This approach can be

particularly valuable for investors seeking undervalued gems in the Indian market.

Adaptability and Refinement: The Magic Formula's focus on core profitability metrics (ROA) and growth trends (EBIT) allows for some flexibility in data availability. While complete data sets are ideal, the ability to utilize alternative metrics provides a valuable starting point for further analysis.

Industry-Specific Insights: The findings suggest that the Magic Formula might be particularly effective in sectors that prioritize consistent profitability, such as commercial vehicles (Ashok Leyland). This highlights the potential for tailoring the Magic Formula's application based on specific industry dynamics.

A Catalyst for Deeper Analysis: The Magic Formula acts as a valuable screening tool, identifying companies with characteristics that warrant further investigation. This initial filtering process can save investors time and effort, allowing them to focus on companies with strong fundamental strengths.

Suggestions for Further Research

Building upon these promising findings, here are suggestions for further research to unlock the full potential of the Magic Formula in the Indian market:

1.   **Expanding Data Horizons:** Exploring alternative data sources and techniques can significantly enhance the applicability of the Magic Formula. This could involve utilizing specialized financial databases, collaborating with financial institutions, or developing data scraping tools to gather more comprehensive historical data.

2.   **Sector-Specific Refinements:** Conducting in-depth analyses within specific sectors can lead to industry-specific adaptations of the Magic Formula. By incorporating relevant valuation metrics from each sector, the formula's effectiveness can be further enhanced.

3.   **Benchmarking Performance:** Comparing the performance of the Magic Formula to traditional investment strategies like value investing or growth investing would provide valuable insights. Backtesting these approaches using historical data from the Indian market

can reveal the Magic Formula's relative strengths and weaknesses.

4.   Continuous Improvement: Backtesting the Magic Formula with historical data allows for ongoing refinement and optimization. Analyzing the performance of companies identified by the Formula can guide adjustments to its parameters, potentially leading to even better results.

5.   Integration with Other Techniques: Exploring the possibility of integrating the Magic Formula with other valuation techniques could create a more comprehensive investment selection framework. This combined approach could leverage the strengths of different methods for a more robust analysis.

6.   Potential of Magic Formula: Despite limitations, the Magic Formula principles provided valuable insights, particularly when used in conjunction with alternative metrics. Companies demonstrating consistent profitability (high ROA) and improving earnings potential(increasing EBIT) could be candidates for further analysis, even if their P/E ratio appears high. This highlights the potential of the Magic Formula to identify undervalued companiesin the Indian market, even with data constraints.

7.   Industry Specificity: The findings suggest that the Magic Formula might be more applicable to certain sectors like commercial vehicles (Ashok Leyland) where consistent profitability is valued. Companies in high-growth sectors with negative earnings might not be ideal candidates for the Magic Formula.

Explanation: Sectors like technology or pharmaceuticals often prioritize growth over immediate profitability. The Magic Formula, which emphasizes profitability metrics, might not be as effective in identifying undervalued companies in these sectors.

Implications: Investors should consider the industry context when applying the Magic Formula. In high-growth sectors, other valuation techniques that focus on future growth potential might be more appropriate.

Suggestion

Building upon these findings, here are suggestions for further research to enhance the understanding and application of the Magic Formula in the Indian market:

1. **Data Collection Strategies:** Explore alternative data sources and techniques to obtain missing data on outstanding shares and historical financial data for a broader analysis.

Potential Methods: Utilize financial databases with a wider range of historical data, collaborate with financial institutions to access proprietary data, or develop data scraping techniques from company websites.

Benefits: Obtaining complete data for the Magic Formula calculation would allow for a more comprehensive evaluation of potential investment opportunities in the Indian market.

2. **Sector-Specific Analysis:** Conduct a more in-depth analysis focusing on specific sectors in the Indian market to assess the Magic Formula's effectiveness within those industries.

Areas of Focus: Analyze the performance of the Magic Formula in sectors like technology, pharmaceuticals, and consumer staples, comparing it to traditional valuation techniques relevant to those sectors.

Outcomes: Understanding how the Magic Formula performs in different industry contexts can guide investors on its appropriate usage and identify potential industry-specific adaptations.

3. **Comparison with Traditional Methods:** Compare the performance of the Magic Formula with traditional investment strategies like value investing or growth investing in the Indian context.

Methodology: Backtest the Magic Formula alongside other investment strategies using historical data from the Indian market and compare their returns.

Contribution: This comparison will provide a clearer picture of the Magic Formula's effectiveness relative to established investment approaches in the Indian market.

4.   Backtesting and Refinement: Backtest the Magic Formula using historical data to evaluate its effectiveness in identifying profitable investments in the Indian market. Consider refining the formula based on the findings.

Process: Utilize historical data to assess the performance of companies identified by the Magic Formula compared to the broader market. Analyze if there are any adjustments to the formula that could improve

Conclusion

The Indian stock market, with its vibrant growth and diverse sectors, presents a dynamic landscape for investors. Identifying undervalued companies with the potential for high returns remains a crucial challenge. This research investigated the applicability of the Magic Formula, a value investing strategy, for uncovering such gems in the Indian context.

The Indian stock market, a bustling sea of opportunities, beckons investors with the promise of high returns. Yet, navigating this dynamic environment requires a keen eye for identifying undervalued gems – companies with the potential for explosive growth at a fraction of their true worth. This research embarked on a voyage of discovery, exploring the applicability of the Magic Formula, a value investing strategy, as a tool to unearth these hidden treasures within the Indian market.

The journey, however, wasn't without its challenges. Limited data availability, particularly for historical outstanding shares, acted as a veil obscuring the full picture. The traditional Magic Formula calculation, relying heavily on Earnings Yield, faced roadblocks. Nevertheless, the core principles – a relentless focus on robust profitability (ROA) and a trajectory of increasing earnings (EBIT) – proved surprisingly resilient. Even when supplemented with alternative metrics, these principles illuminated companies with strong fundamentals and the potential for future success, even if their P/E ratio seemed high on the surface.

The findings revealed both the promise and the limitations of the Magic Formula. Limited data availability, particularly regarding outstanding shares, hindered the full application of the traditional formula. However, the core principles – focusing on high profitability (ROA) and improving earnings potential (EBIT) – proved valuable even when using alternative metrics. Companies demonstrating these characteristics, even with a high P/E ratio, emerged as potential candidates for further analysis.

Furthermore, the research suggests that the Magic Formula might be particularly effective in sectors like commercial vehicles, where consistent profitability is a key metric. This highlights the potential for tailoring the application of the formula based on specific industry dynamics. Additionally, the Magic Formula serves as a valuable screening tool, helping investors identify companies with promising fundamentals that warrant deeper research.

Building upon these insights, the research proposes several avenues for further exploration. Expanding data sources and techniques can unlock the full potential of the Magic Formula. Conducting sector-specific analyses can lead to industry-tailored adaptations, while benchmarking the Magic Formula's performance against other strategies provides valuable insights. Ongoing backtesting and refinement can optimize the formula for improved results. Finally, integrating the Magic Formula with other valuation techniques can create a more comprehensive investment selection framework.

This research has unveiled the potential of the Magic Formula as a tool for uncovering hidden gems in the Indian stock market. While data availability presents some challenges, the core principles of the Magic Formula, combined with alternative metrics and industry- specific considerations, can be a valuable asset in the investor's toolkit. Further research, focusing on expanding data availability, adapting the formula to specific sectors, ongoing refinement, and integration with other analytical techniques, holds the promise of unlocking the full potential of the Magic Formula. As investors navigate the ever-evolving Indian market landscape, the Magic Formula can serve as a valuable compass, guiding them towards potentially lucrative investment opportunities. Remember, the Magic Formula is just one piece of the investment puzzle, and a comprehensive approach that considers future growth prospects, industry outlook, and risk tolerance remains essential for making informed investment decisions.

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CHAPTER 7ANNEXURE

QUESTIONS

1.   Is the Magic Formula effective in identifying undervalued stocks in the Indian stock market?

                              Yes   No

2.   Do various factors influence the performance of companies identifiedby the Magic Formula in India?

                              Yes   No

3.   Does market conditions impact the returns of a Magic Formula-based portfolio in India?

                              Yes   No

4.   Can the Magic Formula be compared to other investment strategies interms of risk and return in the Indian context?

              Yes   No

5.   Do you believe the Magic Formula is a reliable tool for selecting stocksin the Indian stock market?

              Yes   No

6.   Have you found that the Magic Formula helps in identifying companies with strong potential for growth?

              Yes   No

7.   Would you recommend using the Magic Formula as part of an investment strategy in the Indian market?

              Yes   No

8.   Have you observed a correlation between high Magic Formula rankings and positive stock performance in India?

              Yes   No

9.   Do you think the Magic Formula provides a systematic approach to stock selection in the Indian context?

              Yes   No