POZNAŃ UNIVERSITY OF ECONOMICS AND BUSINESS
Research Papers in Economics and Finance *Vol. 10, No. 1, 2026: x–xx*
https://ref.ue.poznan.pl *https://doi.org/10.18559/ref.2026.1.2790*

Assessing the effectiveness of Greenblatt's Magic Formula across international stock markets: Literature review

Krzysztof Podgórski[1]

Abstract

This article presents a comprehensive literature review assessing the effectiveness of Joel Greenblatt's Magic Formula in international equity markets. The strategy is a value-investing approach based on return on capital (ROC) and earnings yield (EY) metrics. Its primary objectives are to evaluate whether the strategy generates excess returns and to identify factors influencing its performance. The analysis synthesises empirical studies from the US, European (primarily Nordic), Brazilian and Asian markets, incorporating methodological considerations such as data sources, investment universes and systematic biases (e.g. look-ahead bias and survivorship bias). Key findings reveal that the Magic Formula outperforms benchmarks in most markets; however, its effectiveness is contingent on transaction costs (frequently eroding alpha), firm size, market conditions and metric modifications. Simpler strategies (e.g. those relying solely on EY) occasionally yield superior results. The review concludes that the Magic Formula represents a robust, albeit imperfect, tool for exploiting stock market inefficiencies. Future research directions include analyses of post-2020 periods, formula modifications and hybrid approaches.

Keywords

- Greenblatt's Magic Formula
- value investing
- international equity markets
- return on capital
- earnings yield

Article received 1 December 2025, accepted 11 March 2026.

Suggested citation: Podgórski, K. (2026). Assessing the effectiveness of Greenblatt's Magic Formula across international stock markets: Literature review. *Research Papers in Economics and Finance*, *10*(1), xx–xx. https://doi.org/10.18559/ref.2026.1.2790

[1] University of Economics in Katowice, ul. 1 Maja 50, 40-287 Katowice, Poland, krzysztof.podgorski@uekat.pl

Introduction

Value investing, pioneered by Benjamin Graham, has long presented an intellectual and practical challenge for investors. Its core principle – buying high-quality assets at prices below their intrinsic value – is intuitively straightforward yet exceedingly difficult to implement systematically in practice (Petrova, 2015). The primary impediment is the efficient market hypothesis (EMH), as formulated by Eugene Fama (1970), which in its semi-strong form posits that stock prices instantaneously incorporate all publicly available information. Under this framework, the systematic identification of undervalued securities and the attainment of excess returns over the long term become infeasible (Basu, 1977).

In response to this complexity, Joel Greenblatt – a hedge fund manager and adjunct professor at Columbia Business School – introduced the Magic Formula in his book *The little book that beats the market* (Greenblatt, 2006). This strategy seeks to establish a simple, rules-based framework for value investing that systematises the identification of companies exhibiting two essential attributes: high quality and attractive valuation. Greenblatt's approach distils to a straightforward principle: "buy good companies at bargain prices". By eschewing subjective assessments, the strategy relies exclusively on two quantitative metrics: return on capital (ROC) and earnings yield (EY) (Jannah & Imansya, 2019).

Empirical studies across international markets demonstrate that Greenblatt's Magic Formula has consistently delivered positive outcomes to date (Abbey & Larkin, 2012). For instance, research on the Indonesian market revealed a compound annual growth rate (CAGR) of 33.3% for the strategy, substantially outperforming benchmarks such as the IHSG (Sasmitapura et al., 2022). In Brazil, Sweden and other regions, annually rebalanced portfolios comprising 10–30 stocks frequently generated excess returns relative to local benchmarks; a Swedish study reported a Sharpe ratio of 0.247 for the Magic Formula versus 0.15 for the broader market (Gustavsson & Strömberg, 2018), while a Brazilian analysis documented statistically significant Capital Asset Pricing Model (CAPM) alpha of approximately 1% per month (de Paula, 2016). Numerous investigations further suggest that the Magic Formula yields robust returns irrespective of market conditions, including episodes of financial distress (Håkansson & Kvarnmark, 2017). Moreover, variations in portfolio size, stock weighting or rebalancing frequency do not eliminate the potential for outperformance (de Paula, 2016; Vestre & Wikheim, 2022).

This review article provides a comprehensive synthesis of studies evaluating the effectiveness of Greenblatt's Magic Formula across international markets and diverse time periods, critically examining its global robustness and identifying recurring factors affecting its performance, including metric modifications, transac-

tion costs and market systems. It further examines whether the strategy generates excess returns and identifies key factors moderating its performance.

The article comprises six sections. The first provides an introduction to the effectiveness of Greenblatt's Magic Formula. The second outlines the foundational assumptions of Greenblatt's approach. The third synthesises the literature on the Magic Formula's performance in international markets. The fourth details the methodology employed for the literature review. The fifth offers a critical analysis of the extant studies, accompanied by a discussion. The sixth presents concluding remarks, delineates the review's limitations, and suggests avenues for future research.

1. The foundational assumptions of Greenblatt's approach

A thorough understanding of the calculation of key metrics and the stock selection process is essential for evaluating the Magic Formula's capacity to generate excess returns across varied market conditions. The strategy rests on two foundational pillars: quality and price. Greenblatt specified dedicated metrics for each, designed to mitigate distortions arising from differing capital structures and tax regimes, thereby enabling more objective cross-company comparisons (Greenblatt, 2006).

The first metric, return on capital (ROC), measures the quality and profitability of a firm's operating activities. Greenblatt employs a precise formula to evaluate how efficiently a company generates earnings from its invested tangible capital (Kątnik, 2011). The ROC computation is presented in Formula 1.

$$ROC = \frac{EBIT}{NWC + Net\ PP\&E} \tag{1}$$

where:

EBIT – earnings before interest and taxes,
NWC – net working capital, calculated as current assets minus current liabilities,
Net PP&E – net tangible property, plant and equipment, derived from tangible fixed assets minus accumulated depreciation and accumulated impairment losses (Sedova et al., 2020).

Greenblatt deliberately employs EBIT to evaluate a firm's operating profitability independent of its capital structure (interest expenses) and prevailing tax rates.

The sum of NWC and Net PP&E represents the tangible capital invested in core operations. Excluding intangible assets ensures reflection of the genuine physical capital essential for conducting business (Wielicki & Baum, 2009).

The second metric, earnings yield (EY), captures the valuation attractiveness of a stock (Arkan, 2016). It indicates how inexpensive a firm is relative to its operating earnings, as shown in Formula 2.

$$EY = \frac{EBIT}{EV} \tag{2}$$

where:

EV – enterprise value, market capitalisation plus interest-bearing debt minus cash and cash equivalents (Uggedal, 2009).

EBIT is employed in the earnings yield calculation for the same reasons as in the ROC metric. Enterprise value (EV), in turn, is defined as market capitalisation plus interest-bearing debt minus cash and cash equivalents. Employing EV rather than equity value alone (as in the traditional price-to-earnings ratio) is critical, as it facilitates comparisons across firms with differing leverage levels (Rutkowski, 2002). This approach incorporates both the cost of acquiring the equity and the assumption of the firm's debt, thereby providing a more comprehensive view of the total acquisition cost of the enterprise (Koller et al., 2005).

The stock selection process under Greenblatt's Magic Formula is entirely mechanical and relies on a ranking system, thereby eliminating subjective judgment in investment decisions. It comprises the following steps:

- **Step 1**: All firms in the analysed market are ranked by return on capital (ROC) in descending order. The firm with the highest ROC receives rank 1, the next receives rank 2, and so on.
- **Step 2**: The same firms are ranked separately by earnings yield (EY), also in descending order. The firm exhibiting the highest EY is assigned rank 1.
- **Step 3**: For each firm, the two ranks obtained in Steps 1 and 2 are summed.
- **Step 4**: The portfolio is constructed by selecting the 20–30 firms with the lowest sum of ranks. These firms represent the optimal combination of high operating quality and attractive valuation.

The standard implementation of the Magic Formula assumes a one-year holding period and annual portfolio rebalancing. The companies in the portfolio have equal weightings. At the end of each year, existing positions are liquidated, and the entire ranking and selection process is repeated to construct a new portfolio. Following Greenblatt's (2006) original recommendations, financial firms (e.g. banks

and insurance companies) and utilities are systematically excluded from the investment universe. This exclusion stems from the distinctive nature of their business models and financial reporting practices – notably the high leverage employed by financial institutions – which renders the ROC and EY metrics less comparable with those of firms in other sectors.

2. Literature review

This literature review contributes to the ongoing discourse on the effectiveness of Greenblatt's Magic Formula by synthesising empirical findings from studies conducted across diverse international markets. The results are organised geographically to facilitate cross-market comparisons while accounting for region-specific characteristics. The analysis begins with the US market – the original testing ground for the strategy – and proceeds through various European markets to the dynamic emerging markets.

The starting point for the subsequent analysis is the original backtest results reported by Joel Greenblatt himself (2006). In his book, he demonstrated that from 1988 to 2004, a Magic Formula portfolio constructed on the US market delivered an average annual return of 30.8%, compared with just 12.4% for the broad S&P 500 index over the same period. Although performance varied with market-capitalisation thresholds, the strategy consistently outperformed the broader market.

Subsequent studies have largely corroborated the Magic Formula's ability to generate excess returns. For instance, Alberg and Seckler (2015), employing comparable sample periods and data sources, produced results that reaffirmed the strategy's outperformance, albeit typically at a magnitude lower than originally reported by Greenblatt. These disparities primarily arose from variations in the definition of the investment universe and backtesting methodology. Nonetheless, a broad consensus emerged that the strategy delivered both statistically and economically significant alpha relative to passive benchmark investing.

Empirical studies on European markets overwhelmingly corroborate the effectiveness of Greenblatt's Magic Formula, albeit with notable nuances. The Nordic markets have proven particularly conducive to testing the strategy's performance (Persson & Selander, 2009). Sistonen (2014), examining Finland, Sweden, Norway and Denmark over the 2000–2011 period, documented an average annual net return (after taxes and transaction costs) of 29.4% for the Magic Formula, compared with only 7.6% for the FTSE Nordic Value Index. Vestre and Wikheim (2022), analysing the Norwegian market from 2003 to 2022, reported a statistically significant monthly CAPM alpha of 0.50%, confirming the strategy's ability to generate risk-

adjusted excess returns. Davydov et al. (2016), studying Finland between 1991 and 2013, similarly found that the Magic Formula outperformed the broader market by 5.63 percentage points annually (19.26% versus 13.63%). Crucially, however, they observed that a simpler value strategy based solely on the EBIT/EV (earnings yield) ratio delivered even stronger performance (20.57%) over the same period. This finding raises important questions about whether the quality component (ROC) genuinely adds incremental value beyond a pure low-valuation approach.

The Swedish market has been examined in several studies that consistently document significant outperformance of Greenblatt's Magic Formula. Both Goumas and Källström (2010) as well as Max and Svanberg (2019) found that Magic Formula portfolios substantially outperformed the OMXSPI benchmark. Notably, Max and Svanberg (2019), using data spanning 2002–2019, reported an average annual return of 19.2% for the strategy versus only 5.7% for the broad Swedish index. Empirical evidence from emerging and Asian markets further substantiates the effectiveness of Greenblatt's Magic Formula, although performance exhibits greater heterogeneity and appears more sensitive to prevailing market conditions. On the Brazilian market, studies uniformly document substantial outperformance of the strategy. Both de Paula (2016) and Silva et al. (2020) found that Magic Formula portfolios generated significantly higher returns than the local Ibovespa and IBrX-100 benchmarks. Specifically, Silva et al. (2020) reported an annualised return of 11.06% for the strategy over the 2007–2017 period, compared with only 5.04% for the Ibovespa.

Empirical investigations in Asian markets reveal a more heterogeneous picture, yet the majority still support the effectiveness of Greenblatt's Magic Formula. On the Hong Kong market, Fu and Xia (2015) documented that a portfolio comprising the top decile of stocks ranked by the Magic Formula delivered an impressive average monthly return of 2.53% over the 2001–2014 period. Results from the Indonesian market proved particularly sensitive to the sample period. Jannah and Imansyah (2019), using data from 2013–2018, reported significant outperformance of the strategy. By contrast, Setiawan et al. (2023) found that during the adverse market conditions of 2018–2021, a Magic Formula portfolio posted a negative annualised return of –1.72%; nevertheless, this still exceeded the benchmark return of –3.26%. Finally, Sasmitapura et al. (2022) restricted their investment universe to LQ45 constituents between 2016 and 2020 and concluded that the strategy failed to outperform the broader IHSG index, indicating that performance may be contingent on the breadth and composition of the investment universe.

Although the majority of empirical studies demonstrate that Greenblatt's Magic Formula generates excess returns relative to broad market benchmarks in range between 5.63% and 21.80%, the considerable heterogeneity in reported performance underscores the importance of a more detailed examination of methodological choices and moderating factors. These issues are addressed in the subsequent sections of this article.

3. Methodology employed for the literature review

The publication search strategy was founded on the utilisation of esteemed international databases, including Scopus, Web of Science and Google Scholar. These databases facilitate access to peer-reviewed scientific papers within the domains of finance and accounting. The identification of relevant articles was facilitated by the employment of the following key search terms: 'Greenblatt Magic Formula', 'magic formula investing', 'return on capital', 'earnings yield', 'value investing', and their equivalents. The search encompassed articles published subsequent to 2006, the date of publication of Greenblatt's original work.

In order to ensure the reliability and integrity of the research, precise inclusion and exclusion criteria were applied to the publications. The analysis encompassed works that satisfied the following criteria:

- they conducted empirical tests of the effectiveness of the Greenblatt strategy or its modifications;
- they were published in peer-reviewed scientific journals or as master's and doctoral theses at recognised universities;
- they covered clearly defined time frames and markets.

Articles of a purely theoretical nature, as well as popular science publications that lack methodological rigour, were excluded from consideration.

A further analysis of the methodologies employed in the collected publications was conducted. This section examines the standard methodologies employed in empirical studies of Greenblatt's Magic Formula and highlights critical methodological challenges that affect the comparability and robustness of reported findings. A thorough understanding of these issues is indispensable for conducting a rigorous critical assessment of the literature. The primary concerns include:

- data sources,
- investment universe,
- systematic biases (look-ahead bias and survivorship bias),
- portfolio construction and rebalancing procedures.

The quality and coverage of data constitute the cornerstone of any robust empirical investigation (Kowerski & Charkiewicz, 2021). Across the reviewed studies, researchers predominantly relied on established professional financial databases, including Compustat (S&P Global), Refinitiv Datastream (formerly Thomson Reuters) and Bloomberg.

A critical determinant of reported performance is the precise definition of the investment universe. Variations in this definition are a primary source of cross-study discrepancies. The principal dimensions include market-capitalisation thresholds

and sector exclusions. Greenblatt (2006) explicitly demonstrated that returns varied substantially depending on whether the strategy was applied to the full universe of stocks or restricted to firms with a market capitalisation exceeding USD 1 billion. Many subsequent studies deliberately concentrate on mid- and large-cap segments to mitigate liquidity concerns; however, this approach may exclude the very small-cap segment in which the Magic Formula has historically exhibited its strongest outperformance. Although the systematic exclusion of financial firms and utilities remains standard practice – consistent with Greenblatt's original methodology – some investigations deviate from these criteria or implement them inconsistently, thereby hindering direct comparability of results.

Backtesting carries the risk of several systematic biases that can materially inflate reported performance. Rigorous researchers, however, implement safeguards designed to mitigate these distortions (Saad, 2021). The two most prevalent and consequential biases are look-ahead bias and survivorship bias (ter Horst & Verbeek, 2007).

Look-ahead bias arises when a backtest inadvertently incorporates information that was not publicly available at the purported time of portfolio formation. A classic manifestation occurs when year-end financial data for fiscal year T–1 are used to rank and select stocks as of 1 January of year T, even though annual reports are typically released only in February, March or later. To eliminate this bias, rigorous studies impose a deliberate lag – commonly three to six months – between the fiscal year-end and the portfolio rebalancing date. Consequently, data for year T–1 are first utilised for ranking no earlier than the end of March (or more conservatively April–June) of year T (Daniel et al., 2008).

Survivorship bias arises when a backtest includes only firms that remain listed throughout the entire sample period, thereby excluding companies that were delisted due to bankruptcy, merger, acquisition or other forms of exit. Because delisted firms typically exhibit poor prior performance, their systematic omission materially inflates reported average and risk-adjusted returns. To eliminate this bias, researchers must employ point-in-time or delisting-adjusted databases that retain comprehensive historical records of all firms – both active and inactive – at each point in time. A leading example is the Compustat Point-in-Time database, which preserves the exact information available to investors on any given historical date (Baquero et al., 2009).

Another critical methodological dimension concerns portfolio construction and rebalancing. Variations in these technical specifications exert a material influence on reported performance. The literature reveals three primary areas of divergence:

1. Portfolio size – Greenblatt (2006) originally recommended holding 20–30 stocks, yet numerous studies examine substantially larger portfolios, such as the top decile or top quintile of ranked stocks (e.g. Fu & Xia, 2015).

2. Rebalancing frequency – While the canonical Magic Formula implementation employs annual rebalancing, some researchers test monthly or quarterly intervals (e.g. Blackburn & Cakici, 2017). More frequent rebalancing enables faster incorporation of new information but dramatically increases transaction costs and turnover.
3. Weighting scheme – The majority of studies adopt equal-weighted portfolios, thereby granting greater influence to smaller firms. In contrast, value-weighted (capitalisation-weighted) portfolios – more representative of market indices – typically deliver lower excess returns.

A thorough understanding of these methodological challenges and variations is indispensable for a rigorous critical evaluation and synthesis of the empirical evidence. It explains why certain studies report striking outperformance of Greenblatt's Magic Formula, while others document more modest or even inconsistent excess returns.

4. Critical analysis and discussion

The preceding literature review establishes that Greenblatt's Magic Formula has consistently generated excess returns across a wide range of international markets. Nevertheless, its effectiveness exhibits considerable heterogeneity and is contingent on multiple methodological and contextual factors. This section offers a critical examination of these determinants, situates them within the broader theoretical framework of value investing, and challenges certain foundational assumptions of the strategy. Notwithstanding the fact that this analysis is founded upon several fundamental and reputable scientific works, a significant part of the empirical evidence, especially concerning local markets, originates from unpublished theses or doctoral dissertations. This was necessary in order to create a comprehensive international synthesis, but requires careful interpretation due to their limited scientific rigour. Table 1 synthesises the key empirical findings on the performance of the Magic Formula in different markets together with the principal conclusions drawn by the respective authors.

Among the numerous factors influencing the effectiveness of Greenblatt's Magic Formula, the literature most frequently highlights four key moderators:

- firm size (small-cap vs. mid-/large-cap universes),
- transaction costs,
- prevailing market regimes, and
- modifications to the original formula.

Table 1. Summary of empirical evidence on the Magic Formula across international markets

Author(s) and year	Market	Study period	Magic Formula performance (e.g. CAGR or α)	Benchmark performance	Premium	Key conclusion
Greenblatt, 2006	United States	1988–2004	30.8%	12.4% (S&P 500)	18.4 pp	Original Greenblatt (2006) backtest confirming exceptionally high effectiveness.
Sistonen, 2014	Nordic countries	2000–2011	29.4%	7.6% (FTSE Nordic value)	21.8 pp	Exceptionally strong returns even after transaction costs and taxes.
Vestre & Wikheim, 2022	Norway	2003–2022	20.8% (alpha 0.5% monthly)	12.8% (OSEAX)	8.0 pp	Significant alpha that loses statistical significance after transaction costs.
Davydov et al., 2016	Finland	1991–2013	19.26%	13.63% (OMXH CAP GI)	5.63 pp	Outperforms the market, but simpler pure valuation strategies (e.g. EBIT/EV alone) deliver superior performance.
Max & Svanberg, 2019	Sweden	2002–2019	19.2%	5.7% (OMXSPI)	13.5 pp	Statistically and economically significant outperformance relative to the broad market index.
Silva et al., 2020	Brazil	2007–2017	11.06%	5.04% (Ibovespa)	6.02 pp	Effective, though comparable or inferior to alternative strategies (e.g. Piotroski F-score).
Fu & Xia, 2015	Hong Kong	2001–2014	2.53% (monthly)	Not applicable – comparison of top and bottom deciles of ranked stocks	–	Very high returns for top-decile (highest-ranked) portfolios.
Jannah & Imansyah, 2019	Indonesia	2013–2018	12.67%	5.31% (IDX Kompas 100 Index)	7.36 pp	Clear outperformance of the broad market index.
Blackburn & Cakici, 2017	Global markets	1991–2016	Negative or statistically insignificant for the canonical Magic Formula implementation	–	–	Standard Magic Formula ineffective globally; modified version using gross profit proves more robust.

Source: own study based on the bibliographical references listed in the table.

One commonly cited explanation for the Magic Formula's historical outperformance attributes it primarily to the size premium: equal-weighted portfolios inherently tilt toward smaller firms, which have traditionally delivered higher returns. Although the strategy does tend to perform particularly strongly among small-cap stocks, a closer examination undermines this overly simplistic view. Blackburn and Cakici (2017) provide compelling evidence from global markets that directly challenges the size-premium hypothesis. They document that CAPM alphas (and multifactor alphas) are consistently higher in value-weighted portfolios than in equal-weighted portfolios across nearly all regions (with Europe being the sole exception). The authors conclude that "the observed risk-adjusted returns are not due to the small-firm effect. Instead, large-capitalisation firms contribute significantly to the generated alpha". This finding is pivotal: the fact that the Magic Formula produces robust, and frequently superior, risk-adjusted performance precisely in the large-cap, highly liquid segment seriously undermines the notion that its success is predominantly driven by a size tilt. Consequently, the true drivers of the strategy's effectiveness must lie elsewhere – most likely in the quality and valuation characteristics captured by the ROC and EBIT/EV metrics themselves.

The Magic Formula in its canonical form exhibits full annual turnover (approximately 100%), generates substantial transaction costs – including commissions and bid-ask spreads – that are frequently ignored or understated in academic studies. This constitutes arguably the most critical practical impediment to the strategy's real-world profitability. A particularly rigorous analysis by Vestre and Wikheim (2022) on the Norwegian market illustrates this point convincingly. While their gross (pre-cost) results reveal a statistically significant monthly CAPM alpha of 0.50%, the inclusion of realistic transaction costs reduces this alpha to near zero and renders it statistically insignificant. This finding underscores a broader pattern: although the majority of academic backtests report impressive excess returns, the most robust implementations that properly account for trading frictions frequently show that economically and statistically significant outperformance largely, or entirely, disappears in practice (Blackburn & Cakici, 2017; Gustavsson & Strömberg, 2017; Vestre & Wikheim, 2022).

The effectiveness of Greenblatt's Magic Formula is not time-invariant but varies systematically with prevailing market regimes. Alberg and Seckler (2015), examining the US market over the 1973–2012 period, found that the earnings yield (EY) component – the valuation pillar – drove nearly all of the strategy's outperformance during periods of widespread market pessimism, when aggregate P/E ratios were contracting. In contrast, the return on capital (ROC) quality component contributed relatively little during such episodes. This pattern implies that the Magic Formula tends to generate its strongest excess returns when the overall market is undervalued or in recovery phases following bear markets, whereas

its relative performance weakens markedly during the late stages of bull markets dominated by high-valuation growth stocks. Consequently, the strategy exhibits pronounced regime-dependent behaviour rather than consistent superiority across all market environments.

A primary factor contributing to the divergence in research outcomes pertains to the delineation of the investment universe. As Blackburn and Cakici (2017) observe, in a manner consistent with the insights of Fama and French (2012), substantial excess returns (alpha) within value and momentum strategies tend to be concentrated in the small-capitalisation segment. The inclusion of low-capitalisation companies, which are characterised by a lack of liquidity, in the study may result in the artificial inflation of the theoretical results of the strategy, thereby rendering them unattainable in practice. This hypothesis is corroborated by Gustavsson and Strömberg (2017), who emphasise that small and illiquid companies, which are inaccessible to large institutional investors, pose a significant implementation risk. Research that restricts the universe to medium and large-capitalisation companies (for example, those exceeding NOK 200 million in the Vestre and Wikheim study) seeks to mitigate liquidity risk. However, this approach may yield lower returns compared to studies encompassing the broader market.

Discrepancies in the results that have been reported may also be attributable to divergent approaches to systematic errors, specifically look-ahead bias and survivorship bias. Look-ahead bias, which is an outcome arising from the utilisation of data that was not publicly accessible at the time of portfolio formation (for instance, delays in the dissemination of financial statements), results in a systematic overstatement of historical results. Research employing point-in-time databases or incorporating deliberate time delays within the company selection procedure consistently demonstrates reduced yet more dependable returns. Likewise, the exclusion of companies that have experienced bankruptcy or delisting (survivorship bias) can result in a misleadingly optimistic representation of the strategy's efficacy.

The most significant discrepancy between the results of theoretical models and the realities of market behaviour can be attributed to transaction costs and trading friction, which are often not taken into account in academic historical tests. As demonstrated by Vestre and Wikheim (2022), following the incorporation of transaction costs (i.e. the bid-ask spread and commissions), the alpha of the strategy attains statistical significance solely at the $p < 0.1$ level. This finding lends support to the notion that the realisation of risk-adjusted excess returns may be impractical under actual market conditions. As explicitly stated by the aforementioned authors, "the seemingly high returns from historically tested strategies often disappear in the real world" after costs are taken into account. This finding is consistent with Greenblatt's warnings that strategies with high trading frequency or involving illiquid assets may not outperform the market after transaction costs

are taken into account. Davydov et al. (2016) employ a conservative transaction cost assumption of 0.5%, thereby enabling a more realistic evaluation of the net effectiveness of the strategy.

Perhaps the single most important insight emerging from this literature review is that the specific ROC + EY combination proposed by Greenblatt is not necessarily optimal. The study by Blackburn and Cakici (2017) represents the most direct and compelling challenge to the original thesis. Examining 23 developed markets over the 1991–2016 period, the authors document that the canonical Magic Formula generates no statistically significant excess returns globally. Only after replacing EBIT with gross profit – a cleaner, less manipulable profitability metric – does the strategy produce consistent, economically meaningful, and statistically robust outperformance across virtually all markets examined. This finding fundamentally shifts the interpretation of the Magic Formula's success: the value of combining a quality signal with a valuation signal is not in question, but the particular operationalisation of the quality dimension appears far more critical than Greenblatt originally suggested. In essence, the strategy's effectiveness hinges less on the conceptual marriage of 'good' and 'cheap' companies and more on the robustness and accounting-distortion resistance of the chosen quality metric.

Furthermore, the Finnish evidence presented by Davydov et al. (2016) casts serious doubt on the indispensability of the two-factor Magic Formula. As previously noted, a pure valuation strategy relying exclusively on the EBIT/EV (earnings yield) metric generated higher risk-adjusted returns than the complete Greenblatt specification over the same 1991–2013 period. When combined with findings from Silva et al. (2020) – demonstrating that the Piotroski F-score (Piotroski, 2000) frequently matches or exceeds the performance of the full Magic Formula – a clear pattern emerges: Greenblatt's approach, while demonstrably effective in many settings, is ultimately one of several viable value-investing frameworks rather than the uniquely 'magical' solution originally portrayed.

The Magic Formula's persistent ability to generate statistically and economically significant excess returns across a wide array of markets and sample periods constitutes compelling evidence against both the strong-form and semi-strong-form versions of the Efficient Market Hypothesis (EMH). Under fully efficient markets, a simple, publicly disclosed mechanical strategy relying solely on historical accounting and price data should not be capable of systematically producing risk-adjusted outperformance (Oppenheimer & Schlarbaum, 1981). The efficacy of the Magic Formula thus contradicts the Efficient Market Hypothesis, which posits that asset prices fully reflect available information, thereby rendering it impossible to systematically achieve above-average returns without incurring additional risk (Malkiel, 2003).

In the existing literature on this topic, the efficacy of Greenblatt's strategy is predominantly elucidated through the lens of behavioural finance, wherein the

Magic Formula operates as a behavioural arbitrage strategy. The theory posits that it capitalises on systematic cognitive errors made by investors and so-called limits to arbitrage, which allow price inefficiencies to persist for a protracted period (Barberis & Thaler, 2002).

This strategy is predicated on the exploitation of two fundamental psychological tendencies: namely, overreaction and extrapolation error.

1. The initial phenomenon, as documented by De Bondt and Thaler (1985), among others, pertains to investors exhibiting an exaggerated response to negative short-term news. This leads to a temporary undervaluation of companies that are fundamentally sound. Subsequently, profitability enables the identification of such opportunities (Wutkie, 2020).
2. The second mechanism is that of the extrapolation error, as described by Lakonishok et al. (1994). According to Radke (2023), investors have a tendency to naively extrapolate historical growth rates of "growth companies" (glamour stocks) far into the future, resulting in their overvaluation and concomitant undervaluation of value companies.

Greenblatt (2006) developed a formulaic approach to investing that aims to avoid the pitfalls of emotional herding and the acquisition of overvalued assets. This approach seeks to impose a degree of investment discipline that can be challenging for a discretionary investor to uphold when confronted with market pressures.

Greenblatt's Magic Formula can also be considered within the framework of contemporary factor investing. It is an illustration of a multi-factor strategy that combines exposure to the Value and Quality factors. It is evident that the strategy in question bears a resemblance to classic value strategies, as evidenced by its similarity to the high Book-to-Market ratio in the Fama and French model. However, Greenblatt contends that Earnings Yield offers a more precise estimation of the actual rate of return for the owner when compared to conventional P/E or P/B ratios (Blackburn & Cakici, 2017). A distinctive characteristic of the Magic Formula is its capacity to consider the quality factor through the return on invested capital (ROIC) ratio. This enables the differentiation of inexpensive yet robust companies from the so-called value traps, which are companies that appear inexpensive but are inherently unstable. As indicated by the findings of recent research, this component exhibits a consistent alignment with the profitability premium as elucidated by Novy-Marx (2013). The latter theorist demonstrated that companies demonstrating profitability engender higher returns.

Multivariate regression analyses (e.g. Fama-French-Carhart) conducted on global markets indicate that the Magic Formula ranking possesses distinctive explanatory power that cannot be wholly ascribed to standard risk factors such as company size (SMB), value (HML) or momentum (WML) (Blackburn & Cakici, 2017). Importantly, this strategy frequently exhibits a negative correlation with the mo-

mentum factor, operating as a contrarian approach – purchasing assets that have recently exhibited substandard performance (so-called 'losers') in anticipation of their mean reversion (de Paula, 2016). The combination of the quality factor, denoted by the return on invested capital (ROIC), and the value factor, denoted by the enterprise value to earnings yield (EY), of the Magic Formula serves to mitigate the systematic risk that is characteristic of pure value strategies. This combination offers a return profile that is uncorrelated with simple market risk, also known as beta (Blackburn & Cakici, 2017).

Summary and conclusions

The comprehensive literature review conducted in this study yields several key conclusions regarding the effectiveness and practical applicability of Greenblatt's Magic Formula across international markets.

Greenblatt's Magic Formula emerges as a robust and extensively validated value-investing strategy that, across the majority of examined markets and sample periods, consistently delivers excess returns relative to broad market benchmarks – frequently manifesting as statistically and economically significant positive alpha after risk adjustment. Empirical evidence from highly diverse markets, including the United States, the Nordic region, Brazil and Hong Kong, repeatedly demonstrates the strategy's ability to identify firms capable of generating substantial outperformance over a typical one-year holding period.

Nevertheless, the effectiveness of Greenblatt's Magic Formula is far from unconditional. Its performance is materially moderated by several well-documented factors:

1. Transaction costs represent the single most important practical constraint. The most rigorous studies (e.g. Vestre & Wikheim, 2022) demonstrate that the erosive impact of trading frictions – driven by the strategy's approximately 100% annual turnover – can completely eliminate statistically (and economically) significant alpha.
2. Although the strategy benefits from a modest size tilt, the small-firm premium is not its primary driver. Compelling evidence shows robust outperformance even in large-cap, highly liquid universes when value-weighted portfolios are employed, thereby refuting overly simplistic size-based explanations (Blackburn & Cakici, 2017).
3. Performance exhibits strong regime dependence, with the highest excess returns typically realised during periods of broad market undervaluation or post-

crisis recovery phases, and markedly weaker results during late-stage bull markets dominated by growth stocks (Alberg & Seckler, 2015).
4. The original ROC + EY specification does not appear globally robust. Multiple studies find that simpler single-factor valuation strategies (especially pure EBIT/EV) or modified quality metrics (most notably gross profit in place of EBIT) frequently dominate the canonical two-factor version, casting doubt on the purported unique superiority of Greenblatt's exact indicator combination (Blackburn & Cakici, 2017; Davydov et al., 2016).

In conclusion, Greenblatt's Magic Formula is not a universally 'magical' solution that guarantees superior performance under all market conditions. It is, however, a robust, empirically supported value-investing framework that has repeatedly demonstrated the ability to generate excess returns across a wide range of international markets. Its principal strengths lie in its simplicity, full transparency, and – most importantly – the rigorous discipline it imposes on the investment process, thereby shielding investors from common emotional and cognitive biases. At the same time, the strategy's effectiveness is highly contingent on transaction costs, market regimes, firm-size universes and the precise specification of its quality and valuation metrics. When these factors are not carefully controlled, the strategy's apparent outperformance can diminish substantially or even disappear entirely.

In the light of these findings, three particularly promising avenues for future research emerge:

1. Examination of the Magic Formula's performance in the post-2020 environment, encompassing the COVID-19 pandemic, severe supply-chain disruptions, record-high inflation and the subsequent aggressive monetary tightening – conditions that represent a markedly different market regime from those prevailing in most earlier studies.
2. Further exploration of modified versions of the strategy, especially those replacing EBIT with cash-flow-based measures or gross profit, which have already shown greater global robustness and resistance to accounting distortions (Blackburn & Cakici, 2017; Vestre & Wikheim, 2022).
3. Investigation of hybrid strategies that combine the Magic Formula with complementary factors (most notably momentum or low-volatility screens) to determine whether such combinations can deliver more consistent risk-adjusted returns across diverse market cycles.

Ultimately, the enduring contribution of Greenblatt's Magic Formula lies not in its claim to infallibility, but in providing compelling evidence that systematic, quantitative value-investing strategies – when properly implemented – continue to exploit persistent market inefficiencies more than two decades after the strategy was first made public.

References

Abbey, B., & Larkin, P. (2012). *Another look at value and GARP strategies for individual investors*. Orlando International Academic Conference, Orlando, Florida, United States.

Alberg, J., & Seckler, M. (2015). *Why value investing works?* Euclidean Technologies. https://www.euclidean.com/price-and-value

Arkan, T. (2016). The importance of financial ratios in predicting stock price trends: A case study in emerging markets. *Finanse, Rynki Finansowe, Ubezpieczenia*, *79*(1), 13–26. https://doi.org/10.18276/frfu.2016.79-01

Baquero, G., ter Horst, J., & Verbeek, M. (2009). Survival, look-ahead bias and the persistence in hedge fund performance. *Journal of Financial and Quantitative Analysis*, *40*(3), 493–517. https://doi.org/10.1017/S0022109000001848

Barberis, N., & Thaler, R. H. (2002). A survey of behavioral finance. In G. M. Constantinides, M. Harris, & R. Stulz (Eds.), *Handbook of the economics of finance* (pp. 1053–1121). Elsevier.

Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios: A test of the efficient market hypothesis. *The Journal of Finance*, *32*(3), 663–682. https://doi.org/10.1111/j.1540-6261.1977.tb01979.x

Blackburn, D. W., & Cakici, N. (2017, October 29). *The Magic Formula: Value, profitability, and the cross section of global stock returns*. SSRN. http://dx.doi.org/10.2139/ssrn.2956448

Daniel, G., Sornette, D., & Wohrmann, P. (2008). *Look-ahead benchmark bias in portfolio performance evaluation*. arXiv, 0810.1922. https://doi.org/10.48550/arXiv.0810.1922

Davydov, D., Tikkanen, J., & Äijö, J. (2016). Magic Formula vs. traditional value investment strategies in the Finnish stock market. *Nordic Journal of Business*, *65*(3–4), 38–54.

De Bondt, W. F. M., & Thaler, R. (1985). Does the stock market overreact? *The Journal of Finance*, *40*(3), 793–805. https://doi.org/10.1111/j.1540-6261.1985.tb05004.x

de Paula, A. G. J. (2016). *Backtesting the Magic Formula in the Brazilian stock market* [master thesis]. University of Gothenburg. School of Business, Economics and Law. https://gupea.ub.gu.se/bitstream/handle/2077/48253/gupea_2077_48253_1.pdf?sequence=1

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383–417. https://doi.org/10.2307/2325486

Fama, E. F., & French, K. R. (2012). Size, value, and momentum in international stock returns. *Journal of Financial Economics*, *105*(3), 457–472. https://doi.org/10.1016/j.jfineco.2012.05.011

Fu, S., & Xia, C. (2015). *Does Magic Formula investing work in Hong Kong stock market?* University of Hong Kong. https://www.scribd.com/document/333718565/Magic-Formula-Investing-HK

Goumas, A., & Källström, P. (2010). *Value investing and the Magic Formula – a method for successful stock investments* [master thesis]. Lund University. https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=1604111&fileOId=1604115

Greenblatt, J. (2006). *The little book that beats the market*. John Wiley & Sons.

Gustavsson, O., & Strömberg, O. (2018). *Magic Formula investing and the Swedish stock market. Can the Magic Formula beat the market?* Lund University. https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=8932178&fileOId=8932179

Håkansson, E., & Kvarnmark, P. (2017). *Value investing on the Nordic stock market: Does the Magic Formula constitute a viable strategy for outperforming the market?* [unpublished bachelor's thesis]. Lund University. https://lup.lub.lu.se/student-papers/record/8901228

Jannah, M., & Imansyah, F. (2019). Analisis strategi investasi Magic Formula pada Bursa Efek Indonesia. *Jurnal Riset Akuntansi dan Keuangan*, *7*(2), 241–252.

Kątnik, J. (2011). Analiza i ocena wskaźników pomiaru rentowności przedsiębiorstwa jako instrument jego rozwoju. *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Krakowie*, (863), 143–160.

Koller, T., Goedhart, M., & Wessels, D. (2005). *Valuation: Measuring and managing the value of companies* (4th ed.). John Wiley & Sons.

Kowerski, M., & Charkiewicz, A. (2021). Panelowa baza danych o spółkach notowanych na Giełdzie Papierów Wartościowych w Warszawie dla potrzeb analiz finansowych. *Facta Simonidis*, *14*(1), 183–201. https://doi.org/10.56583/fs.19

Lakonishok, J., Shleifer, A., & Vishny, R. W. (1994). Contrarian investment, extrapolation, and risk. *The Journal of Finance*, *49*(5), 1541–1578. https://doi.org/10.1111/j.1540-6261.1994.tb04772.x

Malkiel, B. G. (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspectives*, *17*(1), 59–82. https://doi.org/10.1257/089533003321164958

Max, D., & Svanberg, J. (2019). *The moat of finance: Does complexity reward the private investor?* KTH Royal Institute of Technology. https://www.diva-portal.org/smash/get/diva2:1335619/FULLTEXT01.pdf

Novy-Marx, R. (2013). The other side of value: The gross profitability premium. *Journal of Financial Economics*, *108*(1), 1–28. https://doi.org/10.1016/j.jfineco.2013.01.003

Oppenheimer, H. R., & Schlarbaum, G. G. (1981). Investing with Ben Graham: An *ex ante* test of the efficient markets hypothesis. *Journal of Financial and Quantitative Analysis*, *16*(3), 341–360. https://doi.org/10.2307/2330242

Persson, V., & Selander, N. (2009). *Back testing "The Magic Formula" in the Nordic region* [master thesis]. Stockholm School of Economics. https://arc.hhs.se/download.aspx?MediumId=769

Petrova, E. (2015). Value investing – Essence and ways of finding undervalued assets. In *International Conference the Knowledge-Based Organization* (vol. XXI, no. 2, pp. 344–348). Nicolae Bălcescu Land Forces Academy. https://doi.org/10.1515/kbo-2015-0057

Piotroski, J. D. (2000). Value investing: The use of historical financial statement information to separate winners from losers. *Journal of Accounting Research*, *38*, 1–41. https://doi.org/10.2307/2672906

Radke, M. (2023). *Nadmierny optymizm analityków sporządzających rekomendacje giełdowe w wycenach przedsiębiorstw*. Wydawnictwo Uniwersytetu Łódzkiego. https://doi.org/10.18778/8331-264-4

Rutkowski, A. (2002). Aktualne problemy wyceny przedsiębiorstwa. *Przegląd Organizacji*, (10), 24–27. https://doi.org/10.33141/po.2002.10.06

Saad, D. (2021). Nowe narzędzia i techniki zwiększające trafność badań internetowych. *Com.press*, *4*(1), 106–121. https://doi.org/10.51480/compress.2021.4-1.248.

Sasmitapura, A., Michael, M., & Faninda, S. (2022). Analisis kinerja portofolio Magic Formula pada indeks LQ45 di bursa efek Indonesia [Portfolio performance analysis of Magic Formula on LQ45 index in the Indonesia stock exchange]. *Bina Ekonomi*, *26*(2), 121–132. https://doi.org/10.26593/be.v26i2.5716.121-132

Sedova, N. V., Buzulutskiy, M. I., Mishagina, M. V., & Romanov, I. P. (2020). Application of synthesis of several methods in stock valuation. *Revista ESPACIOS*, *41*(34), 261–269.

Setiawan, A. H., Fitri, R., Muthohharoh, M., & Irfany, M. I. (2023). Investment strategy on Indonesia Islamic stocks using Greenblatt Magic Formula. *International Journal of Financial, Accounting, and Management*, *5*(3), 281–296. https://doi.org/10.35912/ijfam.v5i3.1322

Silva, A. C. M. da, Faria, R. M., & Vieira, P. R. da C. (2020). Formação de carteira de investimentos baseada em value investing: Um estudo entre as metodologias de Piotroski e Greenblatt. *Revista De Contabilidade Do Mestrado Em Ciências Contábeis Da UERJ*, *25*(3), 44–60. https://doi.org/10.12979/rcmccuerj.v25i3.59751

Sistonen, I. (2014). *Value investing with rule-based stock selection and data mining* [master thesis]. Aalto University School of Business. https://urn.fi/URN:NBN:fi:aalto-201406182127

ter Horst, J., & Verbeek, M. (2007). Fund liquidation, self-selection, and look-ahead bias in the hedge fund industry. *Review of Finance*, *11*(4), 605–632. https://doi.org/10.1093/rof/rfm012

Uggedal, K. A. (2009). *Valuation and financial statement analysis of Seadrill Limited* [master thesis]. Norges Handelshøyskole. https://nva.sikt.no/registration/01991476e499-c115e714-8e60-472e-8627-4a3296b3e779

Vestre, T., & Wikheim, V. M. (2022). *The Magic Formula: An empirical study of Joel Greenblatt's Magic Formula, backtested on the Oslo Stock Exchange* [master thesis]. Norwegian School of Economics. https://nva.sikt.no/registration/0199147b903a-d5bd0150-07df-4d13-b9a8-eed505aec3a6

Wielicki, W., & Baum, R. (2009). Rola kapitału oraz wartości niematerialnych i prawnych w zarządzaniu przedsiębiorstwami rolnymi. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, *96*(4), 238–247. https://doi.org/10.22630/RNR.2009.96.4.86.

Wutkie, M. (2020). Behawioralne aspekty inwestowania na rynkach finansowych. *Progress: Journal of Young Researchers*, *7*, 124–133. https://doi.org/10.26881/prog.2020.7.08