

## Exploring the merits of five-factor investing: A critical literature review

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### ARTICLE INFO

#### Article history:

Received 03 March 2023

Received in rev. form 16 April 2023

Accepted 24 April 2023

#### Keywords:

Five factor investing; portfolio management; Index investing; Stock Returns; Efficient market hypothesis

#### JEL Classification:

G11, G15, G17

### ABSTRACT

*The dynamics of investing in stock markets have changed considerably over the past twenty years. The value and growth investing concept has drawn much attention and continues to dominate portfolio management. Factor investing is an approach that aims at quantifying particular characteristics through matrixes of quality, value, momentum, and growth to improve the returns of a portfolio. Although the three-factor style of investing has gained widespread acceptance, the five-factor continues to be a source of disagreement among academics and industry practitioners. This study aimed to review the merits of five-factor investing critically. A critical literature review was used to review prior literature. The narratives from the literature reveal that the five-factor investing style will result in multiple sources of expected return. Hence, using five factors in portfolio formation has merits and will significantly improve the returns and most likely outperform the market portfolio. Factor premiums have proven to be drivers of asset return. Therefore, market participants and investment managers can intentionally assume additional exposures to deliver superior risk-adjusted returns compared to the market with the five-factor investing style. According to the author's knowledge, this is the first study to objectively analyze the literature on five-factor investing and propose that active managers can earn positive alphas on a risk-adjusted basis through factor exposures.*

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## Introduction

Smart beta and factor investing are the most frequent term used today in portfolio management and asset allocation (Nazaire et al., 2021). Factors are simply quantitative characteristics that are shared across a broad class of securities (Israel et al., 2018). These quantitative characteristics can be used to structure a portfolio in order to outperform the market without relying on market timing and stock picking. Factor investing is one of the cutting edge topics in financial market research, as they represent mechanisms that drive asset returns.

Prior to the emergence of factors, diversified portfolios comprising of small capitalisation (small Cap) stocks were outperforming larger cap portfolio without any substantial explanation. Hence, the performance of these small cap portfolio was attributed to the skills of the asset manager. However, most of the justifications as to why stocks with particular traits outperform other securities in the context of greater expected return has been provided by the development of factor investing. Capturing and reporting these characteristics over time has numerous benefits for market participants. One of the benefits is that, market participants can now construct and replicate a well-diversified portfolio comprising of small and value stocks easily at a lower transaction cost without using an active manager.

The proliferation of research on factor investing was pioneered by Fama and French (1992) in their paper titled cross-section of expected stock return. Fama and French (1992) observed that small cap and value stocks outperformed large cap and growth stocks overtime due to the higher amount of risk using a three factor model. Carhart (1997) added the momentum factor to the three factor model proposed by Fama and French (1992). Later on, Norvy-Marx (2013) added the profitability index which became a five factor

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<https://doi.org/10.20525/ijrbs.v12i3.2482>

model. These five factors explained over ninety-five percent of the difference in returns between small cap and large cap portfolios (Blitz et al., 2020). Fama and French (2015) used different factors made up of market, size, relative price, profitability and investment as an alternative ignoring the momentum factor in an attempt to explain a portfolio's excess return. However, compared to the Norvy-Marx (2013) model, the modified Fama and French (2015) five factor model demonstrated little merits with very few advantages. Hence, Fama and French (2015) concluded that factor investing should be used prudently in order not to market products that are detrimental to investors.

There have been several controversies regarding the five factor investing. One of such controversies emanates from the amount of risk assumed in the five factor model. Specifically, some authors (Jiao & Lilti, 2017; Mukoyi & Ogujiuba, 2023) believe that the five factor model does not drive price risk and is a very risky style of investing due to the additional layer of risk that is introduced. This additional layer of risk does not always realize positive returns. Also, it is very difficult to identify factors that drive the return of specific portfolios due to the relative small amount of stocks that consistently outperform the market.

The purpose of this study therefore, is to explore the relevance of the five factor investing style in the current dynamic environment. More specifically, this study explores the following research questions; are there any merits of the five factor investing style over index style investing? Can the five factor investing style produce sustainable abnormal returns over a long period of time? Does index style investing represent an efficient portfolio? In providing answers to the above questions, this study makes a notable contribution to the literature of systematic portfolio construction and five factor investing. The next section below highlights the review of prior literature.

## **Literature Review**

### **Theoretical and Conceptual Background**

Prior to the introduction of factor investing, index style investing was predominantly used as the main strategy of constructing portfolios due to the influence of the efficient market hypothesis (EMH) (Blitz, 2023). Compared to factor investing, an index style that uses market capitalization weights provides low cost exposure to market risks (Balatti, Brooks & Kappo, 2017). For some market participants right now, index investing is the most prudent sort of investment. Ever since the introduction of the EMH as a testable theoretical model in the mid-1960s, asset pricing in general has seen other theoretical risks that systematically affect security prices.

The EMH believes that security prices fully incorporate all available information entering the market (Enow, 2021). In an efficient market, more risk is required to reliably increase the expected return for a given portfolio. However, the EMH is a theoretical state that doesn't reflect the realities of the real world. A portfolio's excess return caption as alpha continues to contradict the EMH theory where a combination of stock picking and market timing strategies have been used to outperform the market (Enow, 2022). Market participants motivated by empirical evidence have shifted their focus away from the basic concepts of index and market capitalization weight investing. To increase the expected return, it may be worthwhile to pursue long-term exposures with a combination of known risks rather than depending solely on market risks (Lo & Foerster, 2021). Investing in a firm's security involves purchasing a portion of the company's asset and expected future profits. The securities are purchased at a discount because the expected future profits are not guaranteed. The investment returns are simply the difference between the discounted price paid for the asset and the actual profit that accrues to those securities. Market participants are always willing to pay less for riskier future profits because of uncertainty. Nevertheless, lowering long-term exposures is usually prudent because it is challenging to continually produce positive long-term alpha for a given amount of risk.

The relationship between risk and return extends back to the mid-60s where the Capital Asset Pricing Model (CAPM) was introduced by Sharp (1964). However, Banz (1981) criticised the CAPM theory because it failed to explain why small-cap portfolios beat large-cap equities. Rosenberg, Reid and Lanstein (1985) latter observed that the average returns for stocks with higher book values were higher which was not accounted for by market risks. This led to their subsequent paper in 1986 which provided another persuasive evidence of market inefficiencies (Rosenberg, Reid and Lanstein, 1986).

Fama and French (1992) pulled together more empirical evidence of market anomalies that further contends the validity of the EMH theory. Fama and French (1992) suggested that independent risks included in small-cap and value stocks may account for these firms' improved performance hence financial markets were not mispricing these stocks. Including these independent risks in their asset pricing model significantly improved the explanatory power of a portfolio's return and eliminated some of the market anomalies that rendered financial markets inefficient. Furthermore, evidence from the United states (US) and other global financial markets revealed that the three factor model explained about 90% of the returns for diversified portfolios. This percentage later increased to 95% when the five factor model was introduced.

According to Dirx and Peter (2020), the five factor investing strategy is worth pursuing if they meet certain characteristics. These characteristics are persistence, pervasive quality, robust to alternation specification, investable and sensible. For a factor to be persistent, it must be indefatigable over time (Bender, 2023). Pervasive qualities refer to the ability to hold true across various geographical regions and sectors (De Silva, 2023). Robustness to alternative specification connotes the inability to be affected when there is a holistic change in the attribute. Finally, inevitability means that the factor can be cost effectively captured across numerous portfolios. Below is a table highlighting empirical summary of the five factor investing strategy.

**Table 1:** Empirical summary of prior literature on factor investing

Study	Period	Country	Findings
Kang & Jang (2016)	1992 - 2013	Korea	The five factor model is not a good predictor of cross sectional returns.
Rowshandel et al. (2017)	2003 - 2014	Iran	The five factor model can be used to explain the variability in returns.
Jiao & Lilti (2017)	2010 -2015	China	Factor investing is inconsistent with the claims of explaining excess returns
Alrabadi & Alrabadi (2018)	2011 -2015	Jordan	No empirical evidence to support the five factor model.
Ozkan (2018)	2009 - 2015	Turkey	The five factor model provides reliable explanation for cross sectional returns in the Turkish stock market.
Chen & Ho (2020)	1972 -2015	US	The fluctuation in returns can be well explained by five factors, particularly during times of depressed sentiment.
Dirkx & Peter (2020)	2002 - 2019	Germany	No significant evidence to support the five factor model
Claesson (2021)	1992 -2021	26 countries	The three factor model produced a slightly better performance than the five factor model.
Douagi, Chaouachi & Sow (2021)	2007 - 2018	Ivory Coast	The fluctuation in returns may be fully accounted for using factor investing.
Mukoyi & Ogujiuba (2023)	2007 - 2015	South Africa	The four factor model proves to be superior to the five factor model.

**Source:** Author

The table above presents the findings of prior studies on the five factor investing. The findings indicate mixed results where some authors (Rowshandel et al. 2017; Ozkan, 2018; Chen & Ho, 2020; Douagi, Chaouachi & Sow, 2021) contend that five factor investing is very useful in explaining the variability of returns. However, Kang & Jang (2016); Jiao and Lilti (2017); Alrabadi & Alrabadi (2018); Dirkx & Peter (2020); Claesson (2021); Mukoyi and Ogujiuba (2023) is of the opinion that the five factor style of portfolio construction does not provide any meaningful explanation for the variability in returns. A discussion on factor investing is presented below.

## Findings and Discussion

The five Factor investing has two integral components of portfolio management with significant implications for active managers. These implications are centred around the possibility of generating a positive alpha over time. It should be noted that taking additional exposures may lead to higher expected risk premiums independent of market risk. The table below presents some important findings of the five factor approach.

**Table 2:** Annualised performance of the five factor model in the US from July 1963 – June 2020

	Market return minus risk-free rate	Small minus big	Value minus growth	More profitable minus less profitable	Conservative minus aggressive
<b>Annualised Five factor premiums</b>	5.37%	2.04%	2.68%	2.80%	2.93%
<b>T-stats</b>	3.16	1.85	2.39	3.06	3.42

**Source:** French data library

From the table above, the US stock market outperformed the US treasury bill (T-bill) by 5.37% annually from 1963 to 2020 while small stocks outperformed large stocks by 2.04%. Also value stocks beat growth stocks by 2.63% while more profitable and conservative stocks outperformed less profitable and aggressive stocks by 2.8% and 2.93% respectively. A similar finding was also observed in developed and emerging markets as shown in tables 2 and 3 below.

**Table 3:** Annualised performance of the five factor model in developed markets from 1990 –2020

	Market minus rate	return risk-free	Small big	minus	Value growth	minus	More profitable minus profitable	less	Conservative minus aggressive
<b>Annualised Five factor premiums</b>	2.4%		0.81%		3.01%		4.30%		1.34%
<b>T-stats</b>	1.25		0.82		2.36		5		1.36

Source: French data library

**Table 4:** Annualised performance of the five factor model in emerging markets from 1990 –2020

	Market minus rate	return risk-free	Small big	minus	Value growth	minus	More profitable minus profitable	less	Conservative minus aggressive
<b>Annualised Five factor premiums (Emerging markets)</b>	5.01%		0.71%		6.67%		1.82%		2.66%
<b>T-stats</b>	1.79		0.71		4.57		1.89		2.30

Source: French data library

In most cases, the t-stats values are equal to or higher than 2 which means that the annualised return percentages are good predictors of the model. As opposed to some authors in the prior literature (Kang & Jang (2016); Jiao and Lilti (2017); Alrabadi & Alrabadi (2018); Dirkx & Peter (2020); Claesson (2021); Mukoyi and Ogujiuba (2023) the five factor model seems to account for a meaningful percentage of the variability in returns. It is also vital to access the performance of risk premium factors in the long run. The table below highlights the empirical risk premium results.

**Table 5:** Positive premium indicator from 1963 –2020

	US return	market	US minus	Small big	US minus	Value growth	US profitable less profitable	More minus	US Conservative minus aggressive
10-Year positive premiums	80.7%		71.5%		86.02%		85.66%		98.4%
20-year positive premiums	100		82.47%		100		100		100

Source: French data library

From table 5 above, small cap stocks outperformed large cap stocks by 71.5% for a 10-year period while value stocks and more profitable stocks beat growth and less profitable stocks by 86.02% and 85.66% respectively while conservative stocks outperformed aggressive stocks by 98.4%. These positive risk premiums were also found to be persistent over time in both developed and emerging markets. While the persistence of risk premiums is of interest, the relative timing is also important. The historical correlation across risk premiums between diversified portfolios has been very high although negative at times (Ang, 2023). This is very important when considering the reliability of the investment outcome. Therefore, combining multiple sources of risk premium or using the five factor model doesn't only account for the variability in returns but also increases the independent sources of expected outcomes as well as the reliability of the outcomes. From tables 2 to 5, it is evident that using the five factor investing style over a period of time will enhance the return of a portfolio, at least better than the market return. The exposure to these factors will improve diversification in addition to raising the predicted return.

## Conclusion

Market capitalisation weighted index strategies are still believed to be the most worthwhile investment strategy by some investment practitioners and market participants till date. This is because, some market cap funds are characterised by low cost as well as their easy accessibility. This is not surprising given the strong empirical backing for this type of investing. The five Factor approach is predominantly selecting factors that outperform the market over a protracted period of time. The aim of this study was to critically review prior literature on the relevance of factor investing based on empirical evidence. The review of prior literature indicates that It will be prudent to change the narrative to the five factor style with risk premiums due to the evidence presented in the literature. As also demonstrated in the literature, the alleged dynamics of market cap index investing will result in multiple risk premiums. Adopting the five factor style will not only lead to higher expected returns but will also increase the reliability of the investment

outcome by adding multiple sources of expected returns. In principle, five factor models may have a significant exposure to value and growth. It may be well suggested that five factor investing may be an attractive application of value bias. Active managers can also generate positive alphas on a risk adjusted basis through exposures to factors. Savvy investors with superior skills can enhance the value of their portfolios by using value, growth, investment and profitability factors in the long run.

### Acknowledgement

The author has read and agreed to the published version of the manuscript.

**Author Contributions:** Samuel Tabot Enow

**Funding:** The author received no funding for this article

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data which was secondary in nature are publicly available.

**Conflicts of Interest:** The author declare no conflict of interest.

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