PERFORMANCE OF MUTUAL FUNDS IN EMERGING MARKETS

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in Finance and Investments

NALEDI MOTAUNG
2387730

Supervisor: Professor THABANG MOKOALELI-MOKOTELI

Wits Business School

June 2024

DECLARATION

I, Naledi Molepa Motaung, declare that this research report is my own work, except where otherwise indicated and acknowledged. It is submitted to fulfil the partial requirements for the Master of Management in Finance and Investment degree at the University of the Witwatersrand, Johannesburg. This research report has not, either in whole or in part, been submitted for a degree or diploma to any other institution or university for a similar qualification.

Naledi Motaung
_____
Signature of Candidate

JOHANNESBURG
_____
Place

2024-06-28
_____
Date

ABSTRACT

This study delves into the dynamics of mutual fund performance within the BRICS economies, underpinned by theoretical frameworks like Modern Portfolio Theory and the Mutual Fund Theorem. The study aims to provide a comprehensive examination of mutual fund architectures, classifications, and their inherent advantages, alongside the diverse factors shaping investment choices.

The study further aims to assess and juxtapose the effectiveness of BRICS mutual funds, by deploying established measures such as Jensen's Alpha, Sharpe ratio, Treynor ratio, and the Fama-French and Carhart factor models. These measures facilitate a deeper comprehension of returns, especially when comparing portfolios with analogous risk profiles, underscoring the diverse sources of returns.

The findings indicate that Chinese mutual funds are distinguished by superior risk-adjusted returns over a period of one to five years, signifying a more proficient market. The Fama-French three factor model regression results exhibited a positive correlation between market activity and returns, with Indian funds showing heightened market sensitivity. While the Carhart model introduces momentum as a novel component, its contribution to explaining mutual fund performance is minimal. The models' limited R-squared values imply the existence of additional influential factors not encapsulated by both the three and four factor models.

The juxtaposition of performance measures and factor models exposes a consistent theme of market sensitivity and risk-adjusted performance, albeit with misalignment due to their measurement of different risk dimensions. Notably, the Emerging Markets Four-Factor Model emerges as a more refined tool, offering an enhanced comprehension of the forces driving performance in BRICS, potentially reconciling the disparities observed with the more traditional performance metrics.

Overall, the research contributes to the understanding of mutual fund performance in emerging markets, particularly in the BRICS economic bloc. It highlights the opportunities and challenges faced by investors and provides insights into the factors that influence mutual fund returns in these dynamic and diverse markets.

ACKNOWLEDGMENTS

I am deeply grateful to my supervisor, Professor Thabang Mokoaleli-Mokoteli, whose immense patience and scholarly insight have been a beacon of guidance throughout this research journey. Her unwavering support and constructive feedback have been invaluable, and for this, I am profoundly thankful.

My heartfelt thanks go to my family, the core of my strength and inspiration. To my husband, whose understanding and encouragement have been my sanctuary, and to my daughter, who brings endless joy and motivation into my days, I am eternally appreciative.

I extend my sincere appreciation to my father, who has always encouraged us to reach for the stars, and my siblings, whose love and support have been constant. To my mother, who has passed but continues to be a guiding light in my life, I dedicate my perseverance and achievements. Her memory remains a source of courage and compassion that enriches me.

I must also express my profound gratitude to my friends, who have provided an unyielding network of support. Their belief in my abilities and their readiness to assist, even during the most challenging times, have been sources of comfort and encouragement.

Lastly and not least, I offer my profound thanks to God, whose grace and blessings have guided me through every step of this journey. I am grateful for the strength, wisdom, and peace bestowed upon me, which have been a source of strength in my academic endeavour.

TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION

1.1 Introduction

The objective of this chapter is to introduce the thesis by presenting the background of the study and highlighting the research objectives. The chapter is organised as follows: Section 1.2 provides the background of the study. Section 1.3 outlines the research problem. Section 1.4 defines the objectives of the research paper. Section 1.5 discusses the gap that has been identified in current literature and section 1.6 highlights the benefits of the proposed study.

1.2 Background

Klappers (2004) argues that mutual funds have become one of the most successful financial innovations of the twentieth century and have grown exponentially in most countries around the world during the 1990s. Equity funds predominate in Anglo-American countries and bond funds in most of continental Europe and in middle-income countries. Capital market development (reflecting investor confidence in market integrity, liquidity and efficiency) and financial system orientation are found to be the main determinants of mutual fund development. It has, therefore, become important to understand what gives these investment vehicles their appeal, particularly in emerging markets such as in BRICS (representing Brazil, Russia, India, China and South Africa).

Naveed & Farooq (2019) defined mutual funds as an investment vehicle that allocates resources (i.e., money) into various security arrangements. Investors that purchase part of the mutual fund become the shareholders or proprietors and the cash invested is then further used to purchase stocks. The capital appreciation and income collected from the investments made by the fund are then shared amongst the investors based on their holding in the fund (Tan, 2015).

Mutual funds are preferred investment vehicles for various reasons and these include their vast diversification, the benefit of outsourcing of investment management to a professional and more favourably their low cost (Saraoglu & Detzler, 2002). Kumar (2020) further re-iterates these advantages by stating that an income earning individual often invests in a mutual fund because of its good returns, risk diversification

benefits and great expertise. Without the existence of mutual funds, it would be difficult to build a diversified portfolio with small investment amounts (Ahmad et al 2015).

Mutual funds offer two primary management approached which are active and passive management strategy involves a strategy where portfolio managers strive to outperform the selected benchmark through meticulous stock selection and constant attention to performance metrics (Vidal-García et al.,2017). Passive fund management in contrast, adopts a strategy that mimics and tracks a specified stock index, minimising the need for frequent intervention by portfolio managers (Cremers et al., 2016).

Prior research indicates that the size of the mutual fund industry tends to be greater in countries with stronger rules, laws, and regulations, and where mutual fund investors' rights are better protected. In addition, the industry is also believed to be larger in countries with wealthier and more educated populations, where the mutual fund industry is matured, and the investment costs are relatively lower. Conversely, the industry is smaller in countries where barriers to entry are higher, possibly contributing to diminished popularity. It is, therefore, evident that a combination of regulatory, economic, and demographic factors tends to shape the fund industry landscape. (Khorana et al., 2005).

Fan & Lin, 2019 showed that total assets for all long-term active funds and passive funds, including both open-end mutual funds and ETFs, were $11.4 trillion and $6.7 trillion at the end of 2017. Zhang & Gençay (2019) added by showing that mutual fund companies play a considerable role in financial markets, managing more than $15 trillion in assets under management at the end of 2013, with approximately 98 million investors. Over the 33-year period from 1980 to 2013, the percentage of American households holding mutual funds increased from 5.7% to 46.3%. The findings highlights the significance of the mutual fund industry and strengthen the case for understanding its prevalence and performance in other markets especially in emerging markets such as BRICS.

To obtain an understanding of what constitutes an emerging market, Medel (2019) discusses that there is no clear consensus among international business scholars on

the precise definition of an emerging market. Particularly, when examining favoured and alternative emerging market lists from the International Monetary Fund, World Bank, United Nations, and Standard & Poor's, very few countries appear consistently across these sources. Consequently, classification systems vary widely between indexers and benchmarks.

The World Bank's classification emphasises a country's economy, particularly its relative level of wealth per capita. Countries with high levels of per capita income are classified as "developed." Conversely, those with low, middle, or upper-middle income per capita, compared to other countries globally, are classified as "developing" or "emerging." Countries with even lower levels of per capita income are categorised as "frontier markets." The latter defined markets tend to have more volatile and less diverse stock markets, with companies exhibiting weaker levels of corporate governance. Frontier markets however, are considered less mature than emerging markets due to factors such as demographics, development, politics, and liquidity.

Nielsen (2018) further examines the increased interest in emerging markets as noted by the emergence of the abbreviations “BRIC” – *Brazil, Russia, India, and China*, “MINT” – *Mexico, Indonesia, Nigeria* and “Next- Eleven” – *Bangladesh, Egypt, Indonesia, Iran, South Korea, Mexico, Nigeria, Pakistan, the Philippines, Turkey and Vietnam*, through the 90s and 00s. According to O’Neill (2011), these nations exhibited favourable demographics and rising productivity, suggesting promising economic prospects for corporations and investors within the subsequent decade or two.

In the context of this study, mutual fund performance refers to the measure of returns generated by mutual funds over a specific period, typically assessed against a benchmark index or other relevant metrics. It encompasses both the financial gains or losses realised by investors and the fund's ability to achieve its investment objectives. Evaluating mutual fund performance involves analysing various metrics such as annualised returns, volatility, risk-adjusted returns and alpha. Understanding these aspects is crucial for assessing how effectively mutual funds within the BRICS economies manage investor funds and align with investor expectations.

1.3 Problem statement

The problem is that numerous studies have investigated the mutual fund industry and sought to understand the intricacies of its performance, yet significant gaps and limitations remain specifically in emerging markets. Jakšić et al. (2015) evaluated the performance of eight open-end mutual funds in the Republic of Serbia with the aim of assessing the justification of active portfolio management and determining the selection ability of the selected funds. Their findings revealed that Serbian mutual funds underperform compared to the market portfolio, indicating a lack of selection capabilities among domestic portfolio managers.

Additionally, the problem is highlighted by Ferreira et al. (2013), who identified crucial differences in the determinants of fund performance between the U.S. and other parts of the world, suggesting that country-specific characteristics are instrumental in explaining mutual fund performance. Khorana et al. (2005) confirmed that despite a significant amount of research focusing on the U.S. mutual market, this does not account for the largest share of mutual funds' assets globally.

Lemeshko & Rejnuš (2015) argue that while research on mutual funds in emerging markets is becoming more frequent, it is often conducted at a country-specific level, limiting the ability to derive generalized conclusions about mutual fund performance in broader economic blocs, such as BRICS.

Emerging markets are key players in the global economy, drawing keen attention as they strive to achieve the economic prowess of advanced markets (Radulescu et al., 2014). BRICS stands out as an exceptional institution that brings together the most notable emerging economies worldwide (Lal, 2023). This remarkable growth trajectory underscores the need for a comprehensive understanding of mutual fund operations and performance, particularly in the context of emerging markets like BRICS.

While BRICS nations exhibit rapid economic development, they also present unique market challenges and opportunities that require careful examination. Collectively, emerging markets constitute a substantial share of global economic activities, making it increasingly important to understand their contribution to the stability of the global economy (Atale, 2012)

1.4 Research Objectives

The objectives of the study are stated as follows:

- To identify and analyse the characteristics of mutual funds and to investigate how mutual funds within the BRICS economies align with these identified characteristics.
- To evaluate the performance of mutual funds in the BRICS economies using traditional performance measures such as Jensen's Alpha, Sharpe Ratio, and Treynor Ratio.
- To assess the performance of mutual funds within the BRICS bloc by applying multi-factor models such as the Fama-French Three-Factor and Carhart Four-Factor models.
- To determine whether the elected Emerging market factors are likely to influence mutual fund performance

1.5 Research Questions

The below research questions aim to delve into the depth of mutual fund performance and maturity across the BRICS countries:

- What are the characteristics of mutual funds, and how do mutual funds within the BRICS economies align with these characteristics?
- How do mutual funds in the BRICS economies perform when evaluated using traditional performance measures such as Jensen's Alpha, Sharpe Ratio, and Treynor Ratio?
- What are the key findings of mutual fund performance within the BRICS bloc when applying multi-factor models like the Fama-French Three-Factor and Carhart Four-Factor models?
- How do the market factors identified vary across the BRICS economies, and what are the potential reasons for these variations?

1.6 Gap in the literature

Ramasamy & Yeung (2003) posit that mutual funds are established institutions in developed financial markets, and the extent to which research, both at the theoretical and technical levels, has been conducted in developed markets indicates that the maturity level of mutual funds in these markets is very advanced. In emerging markets, however, mutual funds are relatively new, even though the amounts of funds managed by mutual funds are increasing at an alarming rate. Ramasamy & Yeung (2003) revealed that double-digit annual growth in mutual funds is expected and is projected to reach US$ 12 trillion by the year 2030. Despite the substantial amounts invested in mutual funds, there is a dearth of literature investigating various aspects of mutual funds in emerging markets, especially in BRICS.

Kaminsky et al. (2004) sought to gain a deeper understanding of the performance of mutual funds in emerging economies by specifically addressing the trading strategies utilized in these markets and found that momentum trading is positive, where both fund investors and managers systematically buy winners and sell losers. Suppa-Aim (2010) further attested to the limited research on mutual funds in emerging markets.

While a great deal of literature anchors its research on the explosive growth of the mutual fund industry, there is a significant gap in recent literature concerning the performance of mutual funds in the BRICS nations. This gap highlights the need to discover the factors behind the investment performance of mutual funds in these emerging markets. Thus, additional studies that explore the maturity level of mutual funds, assess performance through various measures, and determine market factors influencing performance within the BRICS context become imperative. This research aims to bridge this knowledge gap, offering insights into the appeal and efficacy of mutual funds in these emerging markets, ultimately contributing to the strategic development of the mutual fund industry on a global scale.

1.7 Benefits of the proposed study

The research on mutual fund maturity and performance within the BRICS nations has the potential to benefit a wide array of stakeholders who are directly or indirectly involved with financial markets and investment vehicles, these are further discussed,

and not limited to the stakeholders identified. Mutual Fund Managers could benefit from the insights into performance and market factors that can better inform them about effective strategies for fund management and assist to tailor their investment approaches to suit the dynamics of the BRICS markets. Financial advisors and analysts who are providing investment advice can leverage the research to guide their recommendations, ensuring they are based on the latest trends and data specific to the BRICS region. Banks, investment firms, and other financial institutions could use the research to design new products, improve existing offerings, and better position themselves in the market. Ultimately the research provides empirical evidence that can aid in the development of new models or the refinement of existing ones.

1.8 Organisation of the thesis

The rest of study is organised as follows. Chapter 2 reviews the empirical literature on mutual funds including the underpinning theories. Chapter 3 describes the research methodology employed to achieve the objectives outlined in Chapter 1. Chapter 4 presents the results and Chapter 5 discusses the findings and concludes the research.

Chapter summary

The current chapter provided a broad background on the evolution and success of mutual funds, and outlines the problem that, despite the extensive research on mutual funds in developed markets, there is a lack of comprehensive understanding regarding the performance and strategic management of mutual funds in emerging markets, especially within the BRICS bloc. The benefits of the proposed study are discussed, emphasising the value it could provide to a range of stakeholders including mutual fund managers and the broader research community. The organisation of the study is provided, leading the study into the next chapter provides an examination of existing literature related to the research topic

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

The main purpose of the literature review is to determine what has been understood on the research problem being studied. This chapter begins by addressing the theories guiding this study after which it proceeds to discuss key aspects that relate to mutual fund performance in emerging markets.

2.2 Underpinning theories

There are two main theories that underpin the current study, and these are the Modern Portfolio Theory and the Mutual fund theorem.

2.2.1. Modern Portfolio Theory

The Modern Portfolio Theory (MPT) is an important departure point for understanding the performance of mutual funds, as the framework seeks to provide a foundation for investment managers to construct and select portfolios based on the expected performance of the investments and the risk appetite of the investor (Fabozzi et al., 2002). Constantinides & Malliaris (1995) discussed that Markowitz (1952) solved the problem of understanding portfolio selection through the development of the “expected returns-variance of returns” rule. The rule emphasises the significance of diversifying an investor's portfolio across securities with low return covariances to maximise returns. The findings from this research will contribute to the theory by enhancing the understanding of the performance of emerging markets. This understanding will enable investors to assess whether investing in these markets offers any diversification benefits compared to more developed markets.

2.2.2. Mutual fund theorem

In its simplest form, the Mutual Fund theorem gives portfolio managers insights on how investors with different attitudes towards risk should construct their portfolios (Tenani, 2017). Schachermayer et al. (2009) explain that the theorem is based on the premise that an agent (investor) will only put their money in two types of investments: the risk-free asset, which is generally a safer and guaranteed option, and a second

mutual fund. This second mutual fund is created by combining different risky assets available in the financial market in a straightforward way.

2.3 Description of mutual funds

Financial markets and other intermediaries play a significant role in the economy, among other reasons, they assist by efficiently re-directing flows from surplus to deficit sectors within an economy (Kumar, 2020). The surplus funds are largely from savings and investments and can be used in various investment vehicles include shares, bonds, property, cash, mutual funds, exchange traded funds (ETFs) and exchange traded notes (ETNs) (Rootman & Krüger, 2017).

Mutual funds are one such avenue, these investment vehicles pool investor funds together and invest the pooled assets in order to meet certain objectives set out by the type of mutual fund. In some regions such as South Africa, mutual funds are called unit trusts. The difference between mutual funds and unit trusts lies in their structure, but their end result is the same to the investor (Meyer-Pretorius & Wolmarans, 2006). Some mutual funds focus on a specific asset class while others are based on a combination of many asset classes. Each type of asset will have different levels of risk. There are many variants of mutual funds with different risk levels in the market and these includes equity, balanced/multi-asset, fund of fund, shariah compliant, index tracker, money market and interest bearing (Ahmad, Roomi, Ramzan, Zia-ur-Rehman & Baig, 2015).

Mutual funds are broadly grouped into two types of structures which are open-ended and close-ended. The former means units can easily be sold back to the company at their net asset value (NAV), with new units continuously being created on demand. The NAV is defined as the difference between the funds total assets & liabilities, divided by the total fund units. These units can then be easily purchased and sold back to the management company at the prevailing NAV, which is determined daily (i.e. daily price) (Ahmad, Roomi, Ramzan, Zia-ur-Rehman & Baig, 2015). In contrast, closed-ended mutual funds – which are also actively managed – are described by Fortune (1997) as vehicles that issue a fixed number of shares (or units) and proceed to invest the funds in an actively managed portfolio of financial assets. These shares

are then traded on a registered exchange at prices determined by supply and demand, much like any other company shares.

Rootman & Krüger (2017) showed that the main benefits of a mutual fund is its simplicity, ease of understanding, low risk of not meeting investor expectations, reasonable fee structure and different types are available in the market. The greatest benefit of them all is the ability to afford investors who may not have the knowledge and time to invest in the stock market an exposure to investing. In addition, they create for long-term investment income and are relatively liquid investments. The strategy of mutual funds is to reduce risk by channelling the savings of investors into a well-diversified portfolio.

Even with their great appeal, mutual funds do have their negative aspects. Kothari & Mindargi (2013) explored the downside of this investment vehicle and found that although diversification is a key feature of mutual funds, investors can find themselves in positions where they are over diversified by investing in too many funds with no clear portfolio optimisation strategy. Furthermore, while mutual funds are generally low cost investing, some funds may charge relatively high fees which erode the return to investors. In addition, the investment management fee is charged whether the fund over or under performs, as such in periods of poor performance, the costs tend to overstate losses.

2.4 Factors influencing investment in mutual funds

Alhorani (2019) found that the mutual fund industry has grown substantially over the years, with a large number of investors preferring to invest in mutual funds in comparison to direct investments on the stock market. The investors surveyed were of the view that mutual funds are a safe haven and more beneficial than alternative investment vehicles. The study further found that one key factor contributing to the growth of the industry in India is the policy initiatives taken by its government to interrupt the structure of the trade by allowing public bank sectors and insurance companies to hold their own reserves. As a result of the latter, the industry has become quite competitive and matured extensively over the decades.

Walia & Kiran (2009) investigated investor's risk and return perception towards mutual funds in comparison to other financial avenues with a specific focus on mutual fund transparency and disclosure practices. They found that most individual investors do not consider mutual funds a high-risk investment. The latter is indeed consistent with the growth experienced in the industry. The study also reported that a significant relationship of interdependence exists between the level of income of investors and their perception of investment returns from mutual funds investment.

Mutual funds tend to lure investors by selling the benefit of optimal risk and return profiles that would not be possible for an unprofessional investors and have become popular investment vehicles that are sold by various third-party financial institutions such as brokers, because of their ease (Walia & Kiran, 2012). Fortune (1997) confirms that third parties play an important role in the sale of mutual funds and the third parties include brokers, investment advisors, and financial planners who, reportedly, not only encourage clients to invest in mutual funds but to also remain invested for the long term. Research undertaken by Rehan et al. (2018) explored the uptake of mutual funds in Pakistan – where the industry is still relatively new & unfamiliar. Their research focused on determining the awareness and perception of mutual funds in the region. Their findings revealed that demographical aspects such as gender, education, income level, age and environmental factors such as inflation, degree of risk, uncertainty and economy have a significant influence on an investors investment decision.

Dragotă et al. (2016) aimed to delve deeper into the human psyche and explored the influence of socio-cultural values like trust, happiness, the preference for a specific type of ownership (public vs. private) and the religious affiliation on the development of mutual funds. The values are expected to show which saving, spending and investment behaviours can be linked with the characteristics of mutual fund unitholders. The study revealed that trust and religious affiliation had no significant impact on the development of the mutual fund industry. However their hypothesis on the effects of happiness proved true, as happiness was correlated with a high propensity to save, ultimately resulting in the growth of the mutual fund industry.

A study on investors' awareness and perception about mutual funds in India was undertaken to assess the investors preferences, priorities and awareness towards

mutual funds schemes. Saini et al. (2011) explored three key facets of the choice of mutual fund investment. First, they ranked and scored factors considered by investors. Secondly they analysed factors that can win back the investors confidence to invest in mutual funds, and lastly they unpacked features that attract the investor's most while choosing a mutual fund scheme. Respectively the results revealed that tax benefits was the main objective behind investors choice in mutual funds, that the minimum assured returned encouraged investors to re-invest and lastly – interestingly aligned to the former – an attractive feature while choosing a mutual fund is the performance of the scheme.

2.5 Mutual funds and investing strategies

In order to differentiate between the different types of mutual funds available for investors, the investment industry groups mutual funds by fund investment objectives and classifications. They are generally grouped according to securities they hold (Brown & Goetzmann, 1997).

Mutual funds are commonly classified according to the management strategy adopted in terms of whether they are active or passive funds. Active portfolio management aims to construct portfolios that generate superior returns, which contrasts with passive portfolio management, where the goal is to track a given index (Al-Aradi et al., 2018). Cremers et al. (2016) found that active managers tend to take on a more active investment approach and charge lower fees as a result of the increasing competitive pressure from low-cost passive funds. They conclude that the use of an indexing strategy improves competition in the mutual fund industry. Contrary to the belief that only active managers exhibit some level of skill, Crane & Crotty (2014) found that index fund skill exists and has persistence at levels similar to those found in active funds.

Chan et al. (2002) investigated whether mutual funds should aggressively pursue certain investment strategies in order to produce superior returns and they found that managers face high personal career risks for adopting risky management strategies. Instead, they tend to prefer portfolios that do not deviate significantly from market benchmarks. This type of strategy is referred to as "bunching at the centre" and is similar to a passive philosophy.

As the world becomes more environmentally conscious and socially considerate, the financial services industry has had to find ways to become active participants in positively contributing to this. The mutual fund sector contributed to this by creating socially responsible funds. These are funds which utilise a screening process in order to invest only in companies that meet certain social criteria or to not consider those that are involved in disagreeable activities or practices (Leite et al., 2017). Utilising a screening process was identified as a primary differentiator when compared to conventional mutual funds. Humphrey, Warren & Boon (2015) found that some differences in fund characteristics exist, with socially responsible funds tending to be smaller in size and less exposed to the value management style than conventional funds on average, however no significant deviations in fund performance were found.

2.6 BRICS economies

Since its inception in 2010, the economies of Brazil, Russia, India, China and South Africa (BRICS) have emerged as a force to be reckoned with, as evidenced by the groups consistent growth and development (Iqbal, 2022). While it holds true that there are notable differences in the respective economies' standard of living, economic models and political systems, this does not work against the members as they are not seeking dominance or unification. The members are instead seeking to implement a new framework for global relations that will ultimately enhance the economic growth of their respective economies (Toloraya & Chukov, 2016).

Radulescu et al. (2014) found that there were few studies on the growth and influence of the BRICS economies on the global economy, and aimed at analysing the evolution of emerging markets in recent years. Their research further raised concerns on whether the economies would be able to maintain their upward trajectory given the weaknesses within their systems, these include different political ideologies and high levels of corruption. Their research concluded that the economies experienced a material slowdown after a decade of significant growth levels, indicating that this may signal the end of a high growth period, where performance peaked at 50%.

Prior to the inclusion of South Africa (in 2010) to this particular emerging group of economies, Tandon & Shome (2009) examined the durability of the BRICs economies

in contrast to the newly formed entity referred to as " N11". The economies included in the N11 group are ; Turkey, Iran, Bangladesh, Nigeria, Egypt, Indonesia, Mexico South Korea, Vietnam, Pakistan and the Philippines. Their data revealed that the growth of BRICs was not sustainable and that the N11 group of economies would likely overtake its growth in time. Mostafa & Mahmood (2015) dismiss this view through their study which revealed that they expect that by 2040 China would become the largest economy followed by USA, India, Japan, Mexico, and Russia. Their findings further cement the relative importance of the BRICS economies and their contribution to the global economy at large.

Jash (2017) researched the role of BRICS in influencing and changing the World order, and aimed to understand how this powerful group of economies has shifted the dynamics of the traditional west-dominated powers. One prominent landmark was the creation of the BRICS New Development Bank (NDB), borne from the frustrations of the BRICS economies in receiving inadequate support from the International Monetary Fund (IMF). The creation of the NDB was significant as it challenged the "old system" of obtaining finance through foreign investment by donor countries such as Europe and the United States of America. Although this may be deemed as powerful move, the BRICS nation view the creation of the NDB as a complement rather than a substitute to the existing financial institutions, further indicating how this group of economies doesn't seek to overtake but instead has as its core mission inclusion.

It therefore becomes evident that the members of BRICS play a notable role in the world order of the 21st century, making it increasingly important to unpack and understand the various aspects of these economies as this research seeks to do through focusing on their mutual fund performance.

2.7 Performance of mutual funds

The main goal of investing in mutual funds for investors, is to gain positive returns (Graham et al., 2020), therefore, fund performance is a differentiator when selecting a mutual fund (Ingrid,2013). Measuring the performance of mutual funds has been the cornerstone of mutual fund research since the 1960. The first verifiable analysis of the

performance of mutual funds was undertaken by Friend, Brown, Herma and Vickers (1962).

Redman et al., (2000) examined whether or not the performance of a group of chosen global mutual funds -outside of the USA ranked higher than that of two benchmarks which are the Vanguard Index 500 mutual fund and an equally- weighted portfolio of U.S. domestic mutual funds. The results of their analysis showed that the selected global funds generally earned risk-adjusted returns superior to that of the two benchmarks as determined by their Sharpe' and Treynor's indices. The aim of the research was to show that the addition of global portfolios to a domestic mutual fund could result in possible diversification benefits.

Daniel et al. (1997) took a somewhat different approach to analysing performance and aimed to measure mutual fund performance through the use of characteristic-based benchmarks. Using the Grinblatt and Titman approach, which examines the performance of the individual stocks held in a fund, they were able to design benchmarks that better capture the investment styles utilised by portfolio managers. An advantage of utilising the latter method, is that the hypothetical returns extrapolated through the underlying stocks do not include fees and trading costs which have the effect of reducing returns. Therefore, by using the "pure returns", it would be easier to undergo analyses that determine whether fund managers have any timing or stock selection skills when compared to relevant benchmarks. The researchers found that characteristics-based benchmarks were better able to forecast the pattern of future returns and that aggressive-growth funds in particular exhibit some selectivity ability but no timing ability.

A cross country mutual fund performance analysis was undertaken by Ferreira et al. (2013) using a worldwide sample of funds. Their broad sample base allowed them to consider various country characteristics such as financial development, quality of legal institutions and law enforcement, economic development and mutual fund industry structure, as potential determinants of performance. The results were interesting in that the difference in performance related to the scalability of funds. Ultimately they found that smaller funds returned better performance than their larger counterparts only in the case of U.S. funds, and larger non-U.S. funds performed better than smaller funds.

Furthermore, the researchers found that country characteristics in comparison to fund characteristics were able to provide more insight into fund performance. This revealed that there was a positive relationship between a country's level of financial development (specifically stock market liquidity) and mutual fund performance.

2.8 Persistence of mutual fund performance

An important benefit of mutual funds to investors is the outsourcing of the portfolio management aspect to a well skilled investment professional, particularly in the hope that they would achieve above average consistent returns. It therefore became important to understand whether a portfolio manager could successfully time the market by consistently buying the right securities at the right time in order to achieve consistent returns. Assessing the persistence and existence of managerial ability in the mutual fund industry further provides an opportunity to test the efficient market theory, evidence of which, suggest a rejection of its semi-strong form hypothesis (Bollen & Busse, 2005). One approach to investigate this was to test for persistence in mutual fund performance.

Aspects relating to the persistence of performance in mutual funds is a topic that has been widely studied in finance. In the South African context, there has been evidence showing that both short- and long-term persistence in fund performance exists. Analyses have shown that poor performing funds tend to remain poor performing funds, while top performing funds become average performers over extended periods (Von Wielligh & Smit, 2000). Naveed & Farooq (2019) went on to further re-iterate the presence of execution constancy in mutual funds based on previous reviews. The review found that in general if a mutual fund had not performed relatively well in past periods, it is likely that it will deliver the same standard of performance in later periods and the same applies for those funds that have performed well.

Using the persistence methodology developed by Brown & Goetzmann (1995), Droms & Walker (2001) performed an analysis to test for short-term performance persistence in international equity mutual funds over the 20-year period from 1977 to 1996. The persistence testing was undertaken on all international equity funds during the latter period, starting from a low of 11 funds in 1977 to an exponential increase of 473 funds

by 1996. The results showed statistically significant performance persistence for the 1-year holding period, but no persistence over the two-, three- and four-year periods. The analysis concluded that over the one-year period, performance persistence is statistically significant at the .001 level. Therefore, the research suggested that investments or assets are only able to provide consistent returns over the one year period and not in subsequent years. Bollen & Busse (2005) agreed with the view that exceptional performance is a short-lived phenomenon that is only able to be observable when funds are evaluated throughout the one-year period.

Su et al., (2012) sought to determine whether persistence exists in Chinese mutual funds using a simple approach of whether a fund beat the market proxy or not, their data sample consisted of 42 mutual funds over the period from 2002 to 2009. The study found that funds that performed well generally repeated this performance in negative market returns; while funds that underperformed in really good years, on average, were more likely to repeat their underperformance. Goel et al.,(2012) conversely found no relationship between past performance and future returns – when specifically analysing bond mutual funds. As a result they did not support the existence of performance persistence in the mutual funds. Jan & Hung (2003) held the same view and did not support the performance persistence in the mutual funds.

2.9 Measuring performance of mutual funds

There are different methods used to measure performance of mutual funds. One famous model is the CAPM (Capital Asset Pricing Model) that was created in 1970. The model recognises that an investment carries two main risks, which are systematic risk and unsystematic risk. Systematic risk is inherent in the market and cannot be diversified away while unsystematic risk pertains to the individual asset and can be diversified away (Huij, 2007).

Agarwal & Pradhan (2019) analysed the performance of open-ended equity mutual funds in India and argued that performance valuation of mutual funds utilising the CAPM-based single factor approach does not accurately capture superior skill selection and that a dynamic model that considers changing economic conditions should be used instead. The research therefore proposes that a conditional

performance evaluation (CPE) framework be used instead, as the framework proposes that superior skill (stock selection and market timing) cannot be determined when one compares performance to a managed portfolio that can be replicated using publicly available information. Using the CPE approach, the ability to select stocks and time the market is determined only after the variation in returns caused by the available information has been controlled for. The latter can be achieved by using instruments like pre-determined macro-economic variables on the right-hand side of the CAPM equation (Christopherson et al.,1999; Gregoriou, 2003).

Barber et al., (2014) point out that over the past twenty years, models such as the Fama-French three-factor model (Fama & French 1993) and Carhart four-factor model (Carhart 1997) have become common in academic research. The Fama-French three factor model is an extension of CAPM model and estimates alpha by the inclusion of the size (SMB) and value (HML) risk to the market risk. Using USA fund data, Fama & French (1993) find that the three-factor model explain alpha better than CAPM (Gao, O'Sullivan & Sherman, 2019). Rehnby (2016) explain how Kenneth French and Eugene Fama (1993) included the two factors (Book-to-market ratio and the size of the company) as they were of the view that CAPM could not fully explain fund performance. They found that the size of the company has a negative correlation to average returns and that stocks with a high book-to-market ratio are positively correlated to average returns (Fama & French, 1993). What makes Fama and French's research interesting is that it demonstrates that the additional returns, that investors can potentially earn by investing in small companies and companies with a high book-to-market ratio can be explained by the level of risk involved - which is in line with the premise of the CAPM model (Gumanti et al., 2017).

Carhart (1997) presented the four-factor model as a tool for valuating mutual funds. Naveed & Farooq (2019) explain that the Carhart four factor model extends Fama-French three factor model by including a momentum factor. The momentum factor is defined as the proneness of a stock price to continue increasing or decreasing. Cremers (2013), however, suggests that four-factor models can be misleading for performance measurement, and that the alpha estimates from these models are very noisy and not as meaningful as one would expect. In the case of Indonesia, Gumanti et al. (2017) compared the performance of the Fama-French three-factor model and

Carhart four-factor model in explaining the excess return of a share portfolio. Their research showed that the Carhart four-factor mode is better in explaining the excess return of share portfolios. The regression estimation results revealed that there were nineteen statistically significant intercepts, while six intercepts were insignificant, therefore indicating that other factors do exist that better capture stock return variations when utilising asset pricing models.

2.10 Performance of Mutual Funds In Emerging Markets

Studying the performance of mutual funds in emerging markets provides an opportunity to test whether the view that mutual funds in highly efficient and developed markets are not able to beat the market, is also applicable in inefficient markets. Białkowski & Otten (2011) provided evidence on the latter by analysing a prominent emerging market ; Poland. The results of the research determined that Polish mutual funds were unable to add any significant value – as evidenced by their negative alphas.

Rahman et al. (2012) evaluated the performance of more than 15 listed mutual funds that employ a growth strategy in Bangladesh. The overarching aim of the study was to understand whether growth oriented mutual funds provide higher returns than the benchmark returns and whether the same funds offer the advantages of diversification, market timing and selectivity to their investors. Their study found that when utilising the Jenson and Treynor measures, most of the mutual funds have performed better than the benchmark. However, very few mutual funds offered any diversification benefits or resulted in reduced levels of risk.

Stefea et al., (2013) provided an overview of the Egyptian mutual fund industry. The paper determined that the first mutual funds was launched in 1994 and the number of funds grew to over 90 funds by 2013. The industry has matured and provides mutual funds across various asset classes, showing an increasing interest in this investment vehicle in their financial markets. The research undertaken explored a different perspective of performance; by seeking to determine the ability of the portfolio manager to successfully balance between the different rates of return and acceptable levels of risk as well as whether there was a relationship between the fund objective

and return. The findings showed that objective of the Egyptian mutual funds had a statistically significant impact on funds return, total risk and systemic - when analysing the relationship between risk and return.

In the Nigerian context, mutual fund firms contribute greatly to the economy and form an integral part of its investment portfolios. The net asset value (NAV) of mutual funds in the Nigerian capital market grew by 159 percent from N102 billion in December 2012 to N264billion in April 2017 (Mahmuda & Abdullahi, 2018). Igbinosa (2019) studied 95 Nigerian mutual funds that operated between January 1, 2019 and December31, 2019 utilising the commonly used risk-adjusted performance criteria of Sharpe, Treynor, Jensen and information ratios and the Treynor and Mazuy models. The research found that fixed income, equity and real estate funds outperformed the market benchmark index on the Nigerian financial market. The research further revealed that of the sample used, only real estate and fixed income funds had the capacity to generate persistent returns above market returns to investors.

The mutual fund industry in South Africa has been in existence for over 40 years and continues to grow consistently. Over the 40-year period, from 1965 to 2005, the industry has grown from only one fund to 567 different funds, worth more than R345 billion (Meyer-Pretorius & Wolmarans, 2006). Tan (2015) evaluated the performance of ten South African equity funds using the Sharpe ratio (1966), Treynor ratio (1965), Jensen's alpha (1968) methods. In addition, the Treynor & Mazuy (1966) and Henriksson & Merton (1981) regression analysis methods were applied to ascertain the market timing ability of fund managers. The findings revealed that in the era of quantitative easing that took place in South Africa during the 5 year period assessed, South African fund managers could not display a good performance both in selectivity skills and market timing abilities.

In the case of Kenya, the mutual fund industry has been in existence for 20 years, however literature in terms of exploring its mutual fund industry is rather limited. The industry in Kenya is very young having started with the passage of the Capital Markets Amendment Act (2000), which recognised specific investment vehicles, particularly mutual funds (Kariuki, 2014). Buster (2012) investigated whether unit trusts in Kenya had better performance than that of the market portfolio. The results of the study

revealed that there was a difference between the performance of the market and unit trusts. This was particularly evident in 2011, where the stock market experienced a decrease in performance while that of unit trusts improved its returns. The analysis also revealed that unit trusts had generally performed well over the period of study and that the market portfolio trailed behind the performance of unit trusts. In light of the findings, the researcher concluded that fund managers might be able to predict stock prices based on various fundamental variables such as market capitalisation, price-earnings ratios, price-to-book value ratios, and initial dividend yields.

Although some research has been undertaken on mutual fund performance in emerging markets, it is not vast due to the lack of information in these markets. Focusing on the BRICS regions is advantageous due to the availability of a reasonable amount of data, which allows for the acquisition of valuable economic insights. When adjusted for market-specific conditions, these insights can serve as a proxy for evaluating performance in emerging markets.

Chapter summary

The current chapter explored various aspects of mutual funds within the context of the BRICS economies, drawing on theoretical frameworks such as Modern Portfolio Theory (MPT) and the Mutual Fund Theorem. The chapter provided an overview of mutual fund structures, types, and benefits, as well as factors influencing investment decisions. Understanding these factors is crucial for investors and policymakers seeking to optimize investment strategies and regulatory frameworks within the BRICS economies. Furthermore, the performance of mutual funds in both developed and emerging markets was examined. The findings contribute to the ongoing discussions on mutual fund performance particularly in the captivating BRICS economic bloc.

CHAPTER 3 - RESEARCH METHODOLOGY

3.1 Introduction

The primary focus of this research is to evaluate the performance of mutual funds in the BRICSs countries which include Brazil, Russia, India, China and South Africa. The research further investigates the factors that influence performance of mutual funds in the BRICS. The chapter is organised as follows: Section 3.1 presents data and data sources. Section 3.2 addresses the research design of the study and describes the methods and measures that will be used and Section 3.3 provides an overview of the chapter.

3.2 Data and data sources

This mutual fund data name, size (measured NAV), and performance for all BRICS countries were used. To gain insights into mutual fund performance trends in the emerging market region, the top five largest funds by (assets under management (AUM) with a 10-year history were selected. The research period was from 2010 to 2020. Table 1 below presents the universe of open-ended mutual funds used in the analysis.

Region	Total Open-Ended Funds in region (classes counted individually)	Number of Funds
Brazil	4337	1478
Russian Federation	8905	97
India	9336	363
China	9388	9145
South Africa	7120	2364

Table 1: Universe of open-ended mutual funds in BRICS region
Source: MorningstarDirect Global Database

The total sample of open-ended mutual funds for the research is comprised of a total of five mutual funds, encompassing one equity mutual fund per region in the BRICS economic bloc. The analysis required that only funds with a 10-year history could be included in the sample, in addition to this, only Equity mutual funds were eligible as equity markets typically have more available data. Equity funds provide an access to a wider range of sectors, industries, and market capitalisation. This diversity allows for a comprehensive analysis of factors, which were obtained from the *MorningSta*r mutual fund database. Other databases such as *Bloomberg Terminal* provided other

relevant information including economic variables such as 10-year government bond yields and market portfolio returns per region.

3.3 Research Design

The objective of this study is to determine and compare the performance of mutual funds in BRICS. The existing measures in the literature which are Jensen's Alpha, Sharpe ratio, and Treynor, Fama-French three factor model and Carhart four-factor model were used to determine how mutual funds in different BRICS countries and collectively perform. Soongswang & Sanohdontree (2011) highlighted that when analysing returns on portfolios that have similar risk levels, the performance of such portfolios can best be compared using descriptive models which include Jensen's Alpha, Sharpe ratio, and Treynor. The factor models assist in better understanding the sources of returns. The regression models were diagnosed using the Breusch-Pagan test to assess the presence of heteroscedasticity and determine the validity of the homoscedasticity assumption, with the models estimated using the Ordinary Least Squares (OLS) technique in Excel. Below is an explanation of how each performance measure is operationalised.

3.3.1 Jensen's Alpha

The Jensen's alpha is based on the CAPM and singles out the alpha (α) component to measure portfolio return. The intercept (α) is then interpreted as a measure of over or underperformance relative to the market proxy (Otten & Bams, 2004). The Jensen's alpha is also useful in determining asset selection skills in portfolio managers (Tan, 2015).

The Jensen's alpha is calculated as follows:

$$Jp = Rp - [Rf + \beta p\,(Rm - Rf)]$$

Where Jp is the Jensen's measure for portfolio, rp the portfolio return, rf the risk free return, β_p the systematic risk and R_m the market return.

The positive Jensen's α was interpreted as showing that the portfolio lies above the security market line, and is therefore providing a return higher than the expected return (Kiymaz, 2015).

3.3.2 Sharpe Ratio

The Sharpe ratio is one the most commonly used performance measures, and it measures the risk-adjusted performance of a portfolio. Tan (2015) defined as the risk premium earned per unit of total risk (Tan, 2015).

The Sharpe ratio is calculated as follows:

$$S_{\mathrm{p}} = {[R_{\mathrm{p}} - R_{\mathrm{f}}]}/{\sigma_{\mathrm{p}}}$$

Where S_p is the Sharp ratio, r_p the portfolio return, r_f the risk-free return and σ_p the total risk of portfolio.

A positive and relatively high Sharpe ratio indicates a superior risk-adjusted performance of a mutual fund portfolio while a low Sharpe ratio portrays unfavourable performance. As a rule of thumb, if the ratio is greater than the benchmark comparison, it can be inferred that that the funds' performance is better than that of the market, with the opposite being true for a ratio lower than the benchmark (Choudhary & Chawla, 2014).

3.3.3 Treynor Ratio

The Treynor ratio is similar to the Sharpe ratio discussed above, with the primary difference being the denominator used in the formula. The ratio measures the relationship between a portfolio's excess return over and above the risk-free rate, relative to market risk - as measured by beta (β) (Choudhary & Chawla, 2014).

The Treynor ratio is calculated as follows:

$$T\mathrm{p} = {[R\mathrm{p} - R\mathrm{f}]}/{\beta\mathrm{p}}$$

Where Tp is the Treynor ratio, rp the portfolio return, rf the risk-free return and βp the systematic risk.

The performance models selected will assist in deducing whether the mutual fund schemes in emerging markets were able to meet investors' expectations by providing excess returns from both a total risk and systematic risk point of view.

3.3.4 Fama-French three-factor model

Fama & French (1993) investigated the variables that best explain firm performance and concluded that among different variables, book-to-market ratio and the size of the company had the most significant explanatory power. These two variables were then used to expand on the single factor CAPM (Rehnby, 2016).

The three-factor model is shown below:

$$R_{\mathrm{i}} - R_{\mathrm{f}} = \alpha_{\mathrm{i}} + \beta_{1\mathrm{i}}\left[R_{\mathrm{m}} - R_{\mathrm{f}}\right] + \beta_{2\mathrm{i}}\left[SMB\right] + \beta_{3\mathrm{i}}\left[HML\right] + \varepsilon$$

Where: α = Intercept of the regression line; R_i = The return on asset I; Rf = The risk-free interest rate in government bonds; Rm = Return of the market portfolio; SMB = Return of the size factor; HML = Return of the BE/ME factor; HML = Return of the BE/ME factor; ε_i = residuals of the regression model; $\beta_{1i\ -2i\ -\ 3i}$ = Beta values of the three independent variables rm - rf, SMB and HML.

3.3.5 Carhart four factor model

Carhart (1997) used a four-factor model to evaluate the performance of funds and stock portfolios. The use of the model evidenced results for the market, value, and size factor, which were inconsistent with that of Fama French (1993). He therefore added one additional factor of momentum, which provided more insights into a fund or stock return. The momentum effect can be explained as the effect where winner stocks continue to show good performance and loser stocks continually underperform over a defined period (Gumanti et al., 2017). Based on the latter findings by Jegadeesh and Titman (1993), Carhart (1997) incorporates the momentum variable and proposes the four-factor model as it is presently known. The four-factor model is shown below:

$$R_{\mathrm{i}} - R_{\mathrm{f}} = \alpha + \beta_{1\mathrm{i}}\left[R_{\mathrm{m}} - R_{\mathrm{f}}\right] + \beta_{2\mathrm{i}}\left[SMB\right] + \beta_{3\mathrm{i}}\left[HML\right] + \beta_{4\mathrm{i}}\{MOM\} + \varepsilon$$

Where: α = Intercept of the regression line; R_i = The return on asset I; Rf = The risk-free interest rate in government bonds; R_f = The risk-free interest rate in government bonds; $_m$ = Return of the market portfolio; SMB = Return of the size factor; HML = Return of the BE/ME factor; MOM = Return of the momentum factor; ε_i = residuals of the regression model; $\beta_{1i\ -2i\ -\ 3i\ -\ 4i}$ = Beta values of the three independent variables rm - rf, SMB and HML; $\beta_{1i\ -2i\ -\ 3i\ -\ 4i}$ = Beta values of the three independent variables rm - rf, SMB and HML

3.3.6 Market factors influencing the performance of mutual funds

This study further aimed to understand whether four additional factors (volatility, yield, quality, liquidity) that are important in the context of emerging markets and how they are likely to affect mutual fund performance. The model is specified as follows:

$$Ri - Rf = \alpha i + \beta 1i[VOL] + \beta 2i[YLD] + \beta 3i[QUA] + \beta 4i[LIQ] + \varepsilon$$

Where: α = Intercept of the regression line; VOL = The return premium on volatility; YLD = Return of dividend yields; QUA = Return premium of profitability; LIQ = Return trading frequency; ε_i = residuals of the regression model; $\beta_{1i\text{-}2i-3i-4i}$ = Beta values of the three independent variables VOL, YLD, QUA and LIQ.

The identified factors are important factors characterising emerging factors, when looking at Liquidity, this is evidenced by Qin et al. (2017) who conducted a study on the liquidity of stocks in emerging markets, focusing on how the liquidity of individual stocks is related to the liquidity of other stocks in the same market. The findings indicate that in emerging markets, the liquidity of individual stocks is more influenced by changes in overall market prices than by changes in the prices of individual stocks. This suggests that the greater commonality in liquidity observed in emerging markets may be due to increased co-movement in stock volatility and inventory risk. Evidence from the Chinese market, studied by Zheng et.al (2006), was consistent with the latter and found that the liquidity of large firms' stocks is found to be more likely to move with market liquidity.

Emerging markets are often characterized by higher volatility than developed markets, due to factors such as political instability, regulatory changes, and economic fluctuations. The study by Aggarwal et.al (1999) explores the nature and determinants of stock market volatility in emerging markets, the main findings revealed that that volatility in emerging stock markets is not constant over time but tends to exhibit clustering and persistence. The findings further suggest that emerging markets exhibit higher levels of volatility compared to their developed counterparts, deeming it important to include volatility as a performance factor.

The study by Novy-Marx (2013) provided insights into the quality of stocks in emerging markets, its finding suggest that suggest that gross profitability is a robust indicator of a firm's quality. This is particularly important in the case of emerging markets where

information asymmetry and market inefficiencies are more common, therefore researchers are able to use gross profitability to serve as a reliable measure to assess the quality of stocks. Understanding the influence of quality in emerging markets is crucial for identifying mutual funds that invest in stocks with strong fundamentals.
Baldacci, Gupta, & Mati (2011) examine the determinants of yield spreads in emerging markets and the impact of volatility spillover. Their findings reveal that the volatility in developed markets is shown to spill over into emerging market yield spreads, indicating the sensitivity of emerging markets to global financial conditions and highlighting the importance of understanding yield dynamics in these markets.

3.3.7 Description of variables

Table 2 below provides the description of variables in each model described above.

Variable	Description	Measurement
Market (MKT)	Monthly returns of the sample in excess of the risk-free rate	$Rm - Rf$
Size (SMB)	SMB is the average return on the nine small stock portfolios minus the average return on the nine big stock portfolios	$\frac{1}{3}\,(SMB(\mathrm{B/M}) + SMB(\mathrm{OP}) + SMB(\mathrm{INV})\,)$
Style Factor (HML)	HML is the average return on the two value portfolios minus the average return on the two growth portfolios	$\frac{1}{2}\,(Small\ Value + Big\ Value) - \frac{1}{2}\,(Small\ Growth + Big\ Growt$
Momentum (MOM)	MOM is the equal-weight average of the returns for the two winner portfolios for emerging markets minus the average of the returns for the two loser portfolios on winners minus losers	$\frac{1}{2}\,(Small\ High + Big\ High) - \frac{1}{2}\,(Small\ Low + Big\ Low)$

Volatility (VOL)	Monthly returns of the maximum observed spread	$\sqrt{\sum \mathrm{n} t \frac{rt - r_{\mathrm{mean}}}{N-1}}$
Yield (YLD)	Monthly premiums of the dividend and buyback yields	*Buyback Yield$_{ttm}$ + Dividend Yield$_{ttm}$*
Quality(QL)	Monthly premiums of the profitability and financial leverage	$\frac{1}{2}[ROEz + (1 - \frac{Total\ Debt}{Total\ Capital}\ \mathrm{z})]^t$
Liquidity (LIQ)	Monthly premiums of the trading frequency	$\frac{1}{21}\sum_{t=20}^{0}\{\frac{trading\ volume}{share\ outstanding}\}$

Table 2: Description of variables
Source: MorningstarDirect Global Database

The emerging countries used to construct the emerging market factors are; Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Saudi Arabia, South Africa, South Korea, Taiwan, Thailand, Turkey, United Arab Emirates. The raw data is obtained from Bloomberg terminal.

Chapter summary

The chapter presented the research methodology used to achieve the objectives of this research and presents a framework for evaluating the performance of mutual funds within the BRICS economies. Traditional performance measures such as Jensen's Alpha, Sharpe Ratio, and Treynor Ratio and multi-factor models like the Fama-French Three-Factor and Carhart Four-Factor are used to analyse various aspects of fund management and market behaviour. The results are discussed in the next chapter.

CHAPTER 4 – RESULTS PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

The current chapter present the research findings. The chapter is organised as follows; Section 4.1 present descriptive analysis. Section 4.2 discuss performance of mutual funds in individual BRICS countries and overall. Section 4.3 shows the market factors influencing mutual funds' performance in BRICS countries and overall. The summary concludes the chapter.

4.2 Descriptive Analysis

Research Objective : To identify and analyse the characteristics of mutual funds and to investigate how mutual funds within the BRICS economies align with these identified characteristics.

Table 3 reports the growth in Mutual Fund Assets over the 10 years from January 2010 to December 2020 (in $ billion) and shows that mutual fund assets in the analysed region have grown at 13%. The latter is largely attributable to the high growth in China, and the rapid growth of India and Russia. The results show that from 2016, total asset growth was significant, which is likely influenced by positive market growth based on the increased Global interest and allocation to emerging markets. Interestingly, the mutual fund industry experienced a period of growth during the COVID-19 pandemic in 2020, this is consistent with the efforts taken by the Central Banks of each respective region to maintain continuity and the stability of financial markets. According to a statement issued by the BRICS Finance Ministers and Central Bank Governors in 2021, some of the measures to achieve this included the relief of capital requirements for banks, reduction of the interest on excess reserves and ensuring the stability of payment systems. These measures assisted greatly in maintaining liquidity in BRICS economies.

It is notable that over the 10-year period analysed, China experienced the largest growth in assets of 35%, this is consistent with Holz (2008). Holz (2008) revealed that by 2025, China's economy is expected to be the world's largest economic superpower as measured by various economic factors. Russia and India have returned positive CAGRs, however, it should be noted they have smaller-sized mutual fund industries. In

the case of Russia, Tershukova et al. (2016) found that during the period 2009 – 2016, there has been a consistent decrease in the number of mutual funds available for investment in the Russian Federation, which has contributed to a relatively small market size. The latter was attributable to the crisis phenomena in the economy and the tightening of the regulator by the Central Bank of the Russian Federation. The ongoing Russia-Ukrainian war which commenced in 2014 has also had a disruptive effect on the economy and caused tighter financial conditions.

Country	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20	10 Year CAGR
Brazil	922 622	974 484	1 126 065	1 055 415	1 099 837	863 736	1 290 115	1 566 043	1 538 059	1 764 864	1 494 549	**5%**
Russia	1 298	1 036	611	1 446	704	689	1 047	1 912	1 807	2 366	2 730	**8%**
India	463	320	518	796	1 039	1 073	1 099	1 485	1 003	1 337	1 078	**9%**
China	112 440	137 003	134 950	203 030	229 805	438 576	1 027 903	1 443 918	1 502 028	1 566 509	2 241 685	**35%**
South Africa	152 822	157 627	155 347	152 511	158 975	162 179	160 769	199 721	169 558	192 314	199 550	**3%**
BRICS Total	**1 189 648**	**1 270 473**	**1 417 493**	**1 413 200**	**1 490 361**	**1 466 254**	**2 480 935**	**3 213 080**	**3 211 455**	**3 527 394**	**3 939 594**	**13%**

Table 3: Mutual Fund Assets Growth Over 10 Years (in $ billion)
Source: MorningstarDirect Global Database and Authors Computations

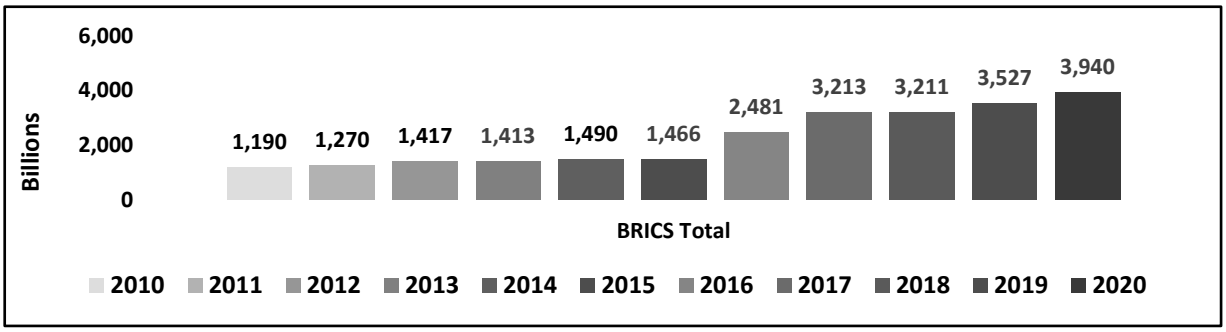

Figure 1: Evolution of total assets (in $ billion) in BRICS region (2010-2020)
Source: MorningstarDirect Global Database and Authors Computations

Figure 1 demonstrates the evolution of total assets in the BRICS region from 2010 to 2020, the average annual growth rate during this period was determined as 13%. There are several factors that could influence mutual fund asset growth that are region specific, however the broader economic factors are briefly discussed. The BRICS countries have as a collective bloc experienced significant economic growth , resulting in the expansion of certain industries and market sectors and ultimately having a positive impact of stock prices. There were notable investment and infrastructure initiatives that encouraged enhanced trade relations, allowing for boosted economic activity, catapulted by globalisation efforts. The BRICS economies are also the epicentres of key natural resources, such as oil in the case of Russia and minerals in the case of Brazil and South Africa, it would be remiss to ignore the contribution of resource industries to the overall asset growth. Although the financial sectors are not expected to be as mature as the more developed country counterparts, the BRICS Investment Report reveals that significant development and growth have taken place in the emerging marking regions, leading to the accumulation of financial assets.

Figure 2 seeks to further emphasise the mutual fund growth per BRICS region over the 10 years. In line with expectations, all countries have displayed positive growth as emerging markets have experienced a boom in the date range. China has stood out, consistent with market views on its substantial economic growth potential. South African assets have grown at a lower rate when compared to its BRICS counterparts.

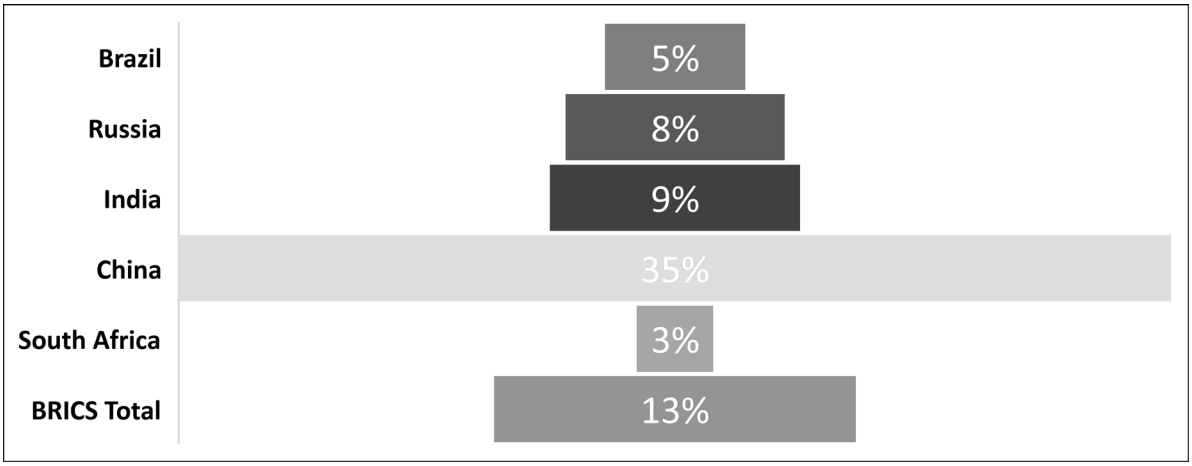

Figure 2: 10-year Growth Comparison (CAGR 2010-2020)
Source: Authors Computations

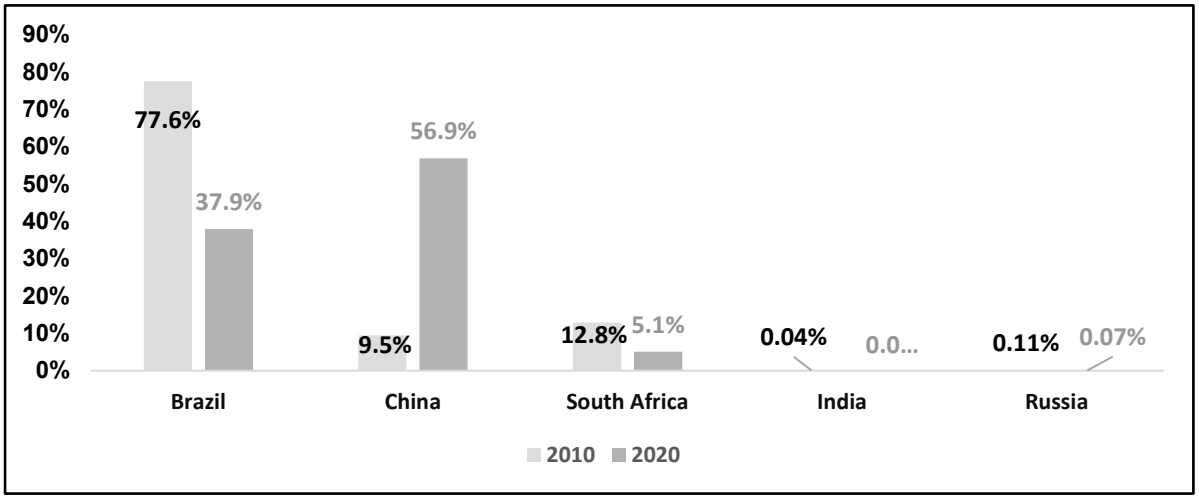

Figure 3: Transition in total asset composition per region (2010 versus 2020)
Source: Authors Computations

Figure 3 seeks to illustrate the transition in total asset composition over the 10 years. The figure shows the growth in China's industry, in contrast to the notable contraction in asset composition of Brazil and South Africa. The evidence suggests that a positive change in economic and investment conditions created an opportunity for overall mutual fund industry growth. These may include more conducive regulations, higher economic growth, an increase in investment fund flows, and positive investment sentiment(outlook) concerning the economies.

Table 4 provides descriptive statistics for the entire sample comprising of the five economic regions that make up the BRICS bloc. Monthly mean returns for the region are 9,02% with a standard deviation of 17,81. Although the standard deviation appears high

– as consistent with the level of risk expected in emerging markets, an analysis of the Sharpe Ratio of 0,76 indicates the sample provided a mean return greater than the risk-free rate, after adjusting for the risk incurred. The alpha of the monthly returns is lower than one would expect for the BRICS economies considering the continued investment interest by global markets, it is therefore probable that the Global economy can obtain alpha by investing in the BRICS economies, however high alpha is not necessarily achieved within the economic bloc itself.

BRICS Economic Bloc						
Variable	**Ri**	**Rm**	**Rf**	**α**	**σ**	**SR**
Mean	9,02	0,05	7,67	0,04	17,81	0,76
Median	10,38	0,00	7,87	0,02	14,75	-0,08
Standard Deviation	26,02	0,25	2,70	0,12	9,75	2,23
Kurtosis	-0,25	-0,25	0,10	-0,09	1,84	-1,04
Skewness	0,08	0,31	0,10	0,36	1,43	0,08
Minimum	-54,74	-0,45	2,51	-0,21	5,42	-2,90
Maximum	70,11	0,69	16,49	0,37	49,72	4,29
Count	55	55	660	55	55	11

Ri = Annualised Mutual Fund Return; Rm = Annualised Market Portfolio Return; Rf = 10-year Government Bond Yield; α = Annualised Alpha; σ = Standard Deviation

Table 4: Descriptive statistics of the sample of mutual funds in BRICS region
Source: Authors Computations

The standard deviation of the return variable in the sample yielded 26,02, this allows us to deduce that market returns in BRICS economies tend to deviate from their average returns by around 26.02 percentage points. The return on the market conversely did not have significant disparity as evidenced by a relatively low standard deviation of 0,25 percentage points. Graph 4 illustrates the return (Ri) variable across the respective regions in comparison to the economic bloc.

Variable	Ri	Rm	Rf	α	σ	SR
Panel 1 : Brazil n =132						
Mean	10,23	-0,01	10,79	0,11	14,26	0,76
Median	-2,31	-0,02	11,15	0,18	12,04	-0,08
Standard Deviation	24,71	0,31	2,21	0,15	10,72	2,23
Kurtosis	-0,80	1,14	-0,03	-0,18	9,36	-1,04
Skewness	0,56	1,01	0,00	-0,96	2,97	0,08
Panel 2 : Russia n =132						
Mean	7,23	0,03	8,15	0,03	21,87	0,66
Median	12,30	-0,04	7,82	0,02	18,79	0,64
Standard Deviation	30,02	0,28	1,51	0,11	9,33	1,66
Kurtosis	0,56	0,12	3,46	-0,26	-1,59	0,17
Skewness	-0,73	0,33	1,51	0,07	0,39	0,45
Panel 3 : India n =132						
Mean	8,92	0,09	7,60	-0,3%	17,00	0,64
Median	2,42	0,13	7,78	-0,4%	15,45	0,06
Standard Deviation	26,66	0,21	0,81	0,10	6,81	2,12
Kurtosis	-0,23	0,72	-0,60	0,51	6,08	0,49
Skewness	0,23	-0,74	-0,49	0,45	2,12	0,88

Panel 4 : China n =132						
Mean	14,60	0,09	3,50	0,05	24,46	0,72
Median	13,43	0,02	3,52	0,01	22,21	0,60
Standard Deviation	32,43	0,27	0,43	0,16	10,16	1,79
Kurtosis	-0,89	-1,41	-0,10	0,66	3,58	-0,20
Skewness	0,10	0,27	0,24	0,59	1,72	0,59
Panel 5 : South Africa n =132						
Mean	4,11	0,02	8,33	0,02	11,49	0,45
Median	2,86	0,02	8,45	0,02	9,94	0,37
Standard Deviation	17,78	0,19	0,78	0,06	6,05	1,91
Kurtosis	-1,15	-1,05	1,35	-0,45	7,41	-1,33
Skewness	0,04	0,07	-0,45	0,65	2,52	-0,17

Table 5: Descriptive Statistics of the sample of Mutual Fund Performance per BRICS region

Source: Authors Computations

Table 5 provides kurtosis and skewness statistics for the BRICS region. The monthly mean returns distribution is negatively skewed (-0,25) – showing that the distribution has thinner tails and is less peaked compared to a normal distribution. This therefore indicates that the mutual fund returns tend to exhibit extremely positive or negative returns that are less common with a normal distribution. The monthly return sample data has a positive skewness (0,08), suggesting that BRICS economies exhibit more frequent small positive returns with occasional large positive returns.

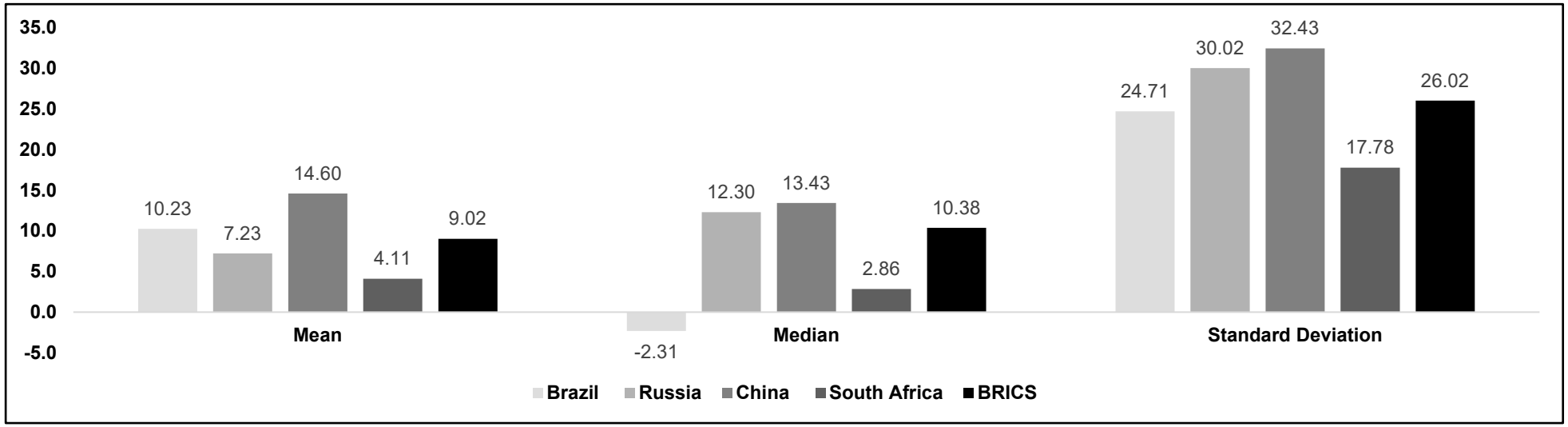

Figure 4: Analysis of the Return (Ri) variable across the BRICS Region (2010 – 2020)
Source: Authors Computations

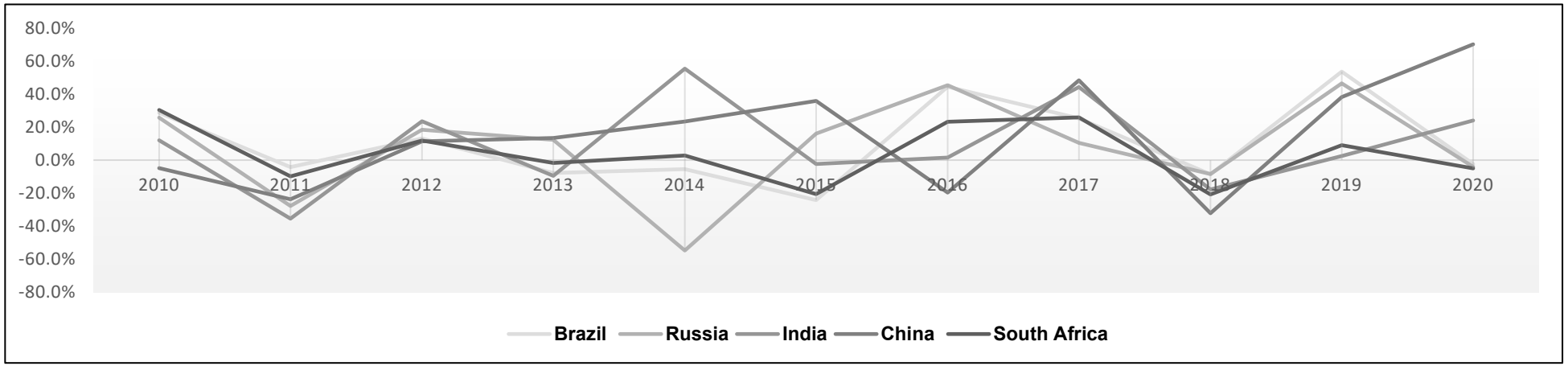

Figure 5: Annual Returns of Mutual Fund Performance in the BRICS Regions
Source: Authors Computations

Figure 5 depicts the 10-year annualised returns across the BRICS region. There are periods where the regions exhibit performance returns in the same direction and other periods where performance moves in almost opposite directions. The former occurred during a majority of the periods i.e. 2010 to 2013 and then again from 2017 to 2019. In 2014, opposite movements in performance between India and Russia were observed - in India, a significant positive growth was observed when compared to the group, while a notable decline in performance was noted for Russia. Russia's detraction in performance is attributable to the commencement of the Russia-Ukrainian war in 2014 as a result of Russia's invasion of the Ukrainian Republic of Crimea. In India, conversely, the total industry experienced improved stock market conditions when compared to previous years. The Confederation of Indian Industry (CII) prepared a report in conjunction with PwC, where it revealed that mutual fund assets in India reached a record high as a result of exceptional equity market performance. Rokade (2021) noted that the change in the government coupled with the rise in the expectations of people led to significant growth in India's capital market.

During the 10 years, China, in particular, made significant strides in areas such as digital technology, e-commerce, and artificial intelligence, contributing to its economic transformation and thus attracting global investor interest and assets. Therefore, mutual funds that were focused on innovation and employed growth-oriented strategies may have allocated a portion of their portfolios to Chinese companies at the forefront of their technological advancements. These funds would have sought exposure to emerging trends such as fintech, biotech, electric vehicles, and smart manufacturing, leveraging China's innovation ecosystem and government support for strategic industries. Graph 5 further illustrates that the China economy has only returned three periods (2011,2016 & 2018) of negative return, while the remaining seven periods delivered positive performance.

In the 5-year period between 2015 to 2020 the performance across the regions is slightly volatile, this is likely as a result of the significant economic and market developments that transpired during the period. BRICS economies are players in the commodity export market, therefore fluctuations in commodity prices will tend to have an impact on their financial markets. Oil prices, in particular, have been rather volatile and experienced sharp declines in 2014-2015 and rebounded modestly in 2016. As illustrated on Graph 5, economies such as Russia and Brazil felt the impact proportionally more than other regions in the bloc.

The literature on mutual funds highlights key characteristics such as performance, management style, risk profile, expense ratios, and market focus that determine the

attractiveness and efficiency of mutual funds. When examining the descriptive analysis results of the BRICS economies, it is notable that the key characteristics assist in providing a better understanding of how mutual funds align with identified characteristics.

The growth in mutual fund assets within the BRICS region over the decade from January 2010 to December 2020 is significant, with an average annual growth rate of 13%. China experienced the largest growth in assets at 35%, aligning with predictions of its economic ascent (Holz, 2008). This growth underscores the importance of fund performance as a key characteristic. The high growth rate in mutual fund assets in China, India, and Russia is indicative of robust market returns, which attract investors seeking higher returns compared to developed markets.

The literature differentiates between active and passive management styles, influencing fund performance and cost. The descriptive results show that BRICS mutual funds, particularly in China and India, have benefitted from active management strategies that capitalize on emerging market opportunities. The positive mean returns (Ri) in these regions reflect successful management strategies in navigating volatile markets and seizing growth opportunities.

The risk profile of mutual funds, encompassing market risk, credit risk, and liquidity risk, is crucial for investors. The standard deviation of returns for BRICS mutual funds is relatively high, with an overall standard deviation of 26.02. This indicates a higher level of risk inherent in these emerging markets, consistent with the literature's assertion of higher risk profiles for mutual funds in developing economies. The Sharpe Ratio of 0.76 suggests that, despite the high risk, the returns in the BRICS region justify the risk taken by investors.

Although specific expense ratios and fees are not detailed in the descriptive analysis, the rapid growth of mutual fund assets suggests that competitive expense ratios may have played a role in attracting investors. The significant asset growth in countries like China and India could be partially attributed to lower expense ratios, which enhance net returns for investors.

Diversification is a key characteristic that impacts the risk and return profile of mutual funds. The BRICS mutual funds' substantial growth in assets indicates a diversified investment approach, capitalising on various sectors such as technology, commodities, and infrastructure.

The descriptive analysis shows how mutual funds have leveraged sectoral growth, particularly in China, which focused on digital technology, e-commerce, and artificial intelligence.

Mutual funds in the BRICS region exhibit a strong market focus on emerging trends and sectors. Notably, China's focus on innovation and technology-driven sectors has attracted significant global investment, reflected in the high growth rate of mutual fund assets. Similarly, India's mutual funds have benefitted from positive stock market conditions and investor sentiment, as noted in the descriptive analysis.

The descriptive analysis of mutual funds in the BRICS economies aligns well with the key characteristics identified in the literature. The significant growth in mutual fund assets, driven by strong performance, effective management strategies, and focused market investments, highlights the attractiveness of these funds in emerging markets. The higher risk profiles and potential for higher returns make BRICS mutual funds a compelling option for investors seeking diversified and growth-oriented investments. The analysis underscores the dynamic and evolving nature of mutual funds in the BRICS region, driven by economic growth, sectoral expansion, and strategic investment approaches.

4.3 Performance of mutual funds in BRICS

Research objective : To evaluate the performance of mutual funds in the BRICS economies using traditional performance measures such as Jensen's Alpha, Sharpe Ratio, and Treynor Ratio.

4.3.1 Performance of mutual funds using traditional performance measures

Table 6 shows the results of the Jensen, Sharpe, and Treynor ratios. Based on the findings, there is general and persistent outperformance from both China and Brazilian regions, as evidenced by Jensen's alpha of 17.82% and 38.41% respectively for the 1 year to December 2020. However, it is evident that China delivers outperformance at relatively lower levels of risk, evidenced by the high Treynor and Sharpe ratios when compared to Brazil. Furthermore, while both funds outperform their benchmarks, China has better risk-adjusted characteristics when analysing all three-performance metrics over 10 years.

Region	Jensen			Sharpe			Treynor		
	1 yr.	5 yr.	10 yr.	1 yr.	5 yr.	10 yr.	1 yr.	5 yr.	10 yr.
Brazil	17.82%	11.57%	7.97%	-0.08	1.77	0.54	-0.093	-1.324	-0.062
Russia	5.36%	3.07%	2.20%	-0.11	1.29	0.58	-0.205	0.089	-0.083
India	9.73%	-3.23%	0.25%	0.68	0.82	0.63	0.184	0.021	-0.022
China	38.41%	4.41%	4.37%	3.53	1.37	0.82	0.825	0.1	0.084
South Africa	28.83%	1.09%	1.17%	-0.20	0.62	0.22	0.205	-0.029	-0.086
BRICS Average	20.03%	3.38%	3.19%	0.76	1.18	0.56	0.1832	-0.2286	-0.0338

Table 6: Performance of mutual funds in BRICS using descriptive models over time
Source: Authors Computations

When comparing the Brazil and India mutual fund performance (over the 1 year) India has higher Treynor and Sharpe ratios, meaning that the India-domiciled funds will likely perform in line with the market portfolio at reasonable risk levels, whereby Brazil mutual funds will likely outperform the market portfolio but at higher-levels of risk.

Over the 1-year, South African mutual funds returned a relatively high Jensen's Alpha (28.83%), this came at greater risk relative to China and India – which returned positive Sharpe ratios, revealing that the higher returns obtained in South Africa were achieved at relatively higher levels of risk. On the contrary, the Indian and Chinese funds achieved high returns with reasonable risk levels, as evidenced by positive Sharpe and Treynor ratios over the 1 to 5-year periods. The findings show that China ranks delivers higher risk-adjusted returns, as evidenced by superior Sharpe and Treynor ratios, along with above-average Jensen's alpha. This is consistent with the findings by Kiymaz (2015), which revealed that Chinese funds provide higher risk adjusted returns, specifically when compared to the risk adjusted return measures of various relevant indices.

When analysing the average results across the entire sample, Jensen's Alpha result of 3.19% (for the 10 years) shows that on average, mutual funds in the BRICS region have performed better than expected given their level of risk. The positive Sharpe ratio of 0.22 over the same period, further suggests that on average, the returns from mutual funds in the BRICS region have exceeded the risk-free rate (such as government bonds), indicating that

investors have been compensated for taking on additional risk compared to the risk-free rate.

On the contrary, the sample returned a negative Treynor ratio of -0.0338, indicating that on average, the mutual funds in the BRICS region have not adequately compensated investors for the level of systematic risk – risk that cannot be diversified away. While a negative Treynor Ratio appears unfavourable, it may be valuable to compare the result to the ratios in other regions to fully conclude that it is unfavourable. To the best of my knowledge, studies on the BRICS economies that extensively analyse the region based on the above discussed performance measures have not been undertaken, however a similar analysis was undertaken in Nigeria by Osaretin (2020), which revealed that specific fund types can generate better returns per unit of risk taken than others. Consistent with some of the results in Table 6, the portfolio's analysed outperformed the market benchmark index, contrary to some positions held in the literature that mutual funds are unable to outperform the market.

4.3.2 Performance of mutual funds using factor models

Research objective: To assess the performance of mutual funds within the BRICS bloc by applying multi-factor models such as the Fama-French Three-Factor and Carhart Four-Factor models.

The below section presents the performance of mutual funds using the factor models three and four factor models. Table 8 presents the results of Fama-French three factor model for BRICS individual countries and collectively.

Variable	Coefficient	Standard error	t-stat	P-value
Panel 1- Brazil n = 131				
Market factor	0,037	0,168	0,222	0,824
Size factor	-0,274	0,530	-0,517	0,606
Value factor	-0,232	0,451	-0,515	0,608
Alpha	-9,940	0,759	-13,097	2,50E-25
R-Squared	0,004			
Adjusted R-squared	-0,019			
Diagnostic Test				
Breusch-Pagan Test Result	2.6275	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 2 - Russia n =131				
Market factor	0,211	0,160	1,319	0,190
Size factor	0,386	0,506	0,762	0,448
Value factor	-0,529	0,431	-1,228	0,222
Alpha	-7,769	0,725	-10,719	1,73E-19
R-Squared	0,021			
Adjusted R-squared	-0,002			
Diagnostic Test				
Breusch-Pagan Test Result	2.3389	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 3 - India n =131				
Market factor	0,259	0,135	1,918	5,7E-02
Size factor	-0,048	0,428	-0,112	9,1E-01
Value factor	0,065	0,364	0,179	8,6E-01
Alpha	-7,131	0,612	-11,643	5,7E-02
R-Squared	0,039			
Adjusted R-squared	0,017			
Diagnostic Test				
Breusch-Pagan Test Result	1.5156	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Table 7 presents the regression results based on the Fama-French three-factor model per region in the study sample. When analysing the market coefficients, the results reveal that all the countries exhibit positive MKT coefficients, indicating a positive correlation between

markets and returns, with India having the highest sensitivity to market movements. The coefficients of the size factor are negative across all regions except in Russia and South Africa, indicating an inverse relationship to the size effect; indicating that stocks in larger firms tend to perform better than smaller ones. The positive SMB coefficients in the remaining regions points towards a more pronounced size effect where a mutual fund with an allocation to smaller companies is likely to outperform their larger counterparts. The results reveal that India has a positive HML coefficient, suggesting that mutual funds that have a higher allocation to value stocks tend to outperform growth stocks. Conversely, Brazil, Russia, and China have negative coefficients, indicating a preference for growth stocks in their mutual funds.

Variable	Coefficient	Standard error	t-stat	P-value
Panel 4 - China n =131				
Market factor	0,183	0,151	1,208	0,229
Size factor	-0,310	0,478	-0,648	0,518
Value factor	-0,227	0,407	-0,557	0,578
Alpha	-2,557	0,685	-3,734	2,83E-04
R-Squared	0,017			
Adjusted R-squared	-0,006			
Diagnostic Test				
Breusch-Pagan Test Result	5.2993	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 5 – South Africa n =131				
Market factor	0,071	0,123	0,578	0,564
Size factor	0,061	0,389	0,158	0,875
Value factor	-0,023	0,331	-0,069	0,945
Alpha	1,93E-28	0,557	-14,387	1,93E-28
R-Squared	0,003			
Adjusted R-squared	-0,021			
Diagnostic Test				
Breusch-Pagan Test Result	0.03725	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 6 – Combined BRICS countries n =659				
Market factor	0,141	0,069	2,036	0,042
Size factor	0,023	0,218	0,103	0,918
Value factor	-0,174	0,187	-0,932	0,351
Alpha	-7,012	0,313	-22,407	5,50E-83
R-Squared	0,006			
Adjusted R-squared	0,002			
Diagnostic Test				
Breusch-Pagan Test Result	7.6955	Chi-test Statistic		9.4877
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Table 7: Mutual funds in individual BRIC countries and collectively using the Fama -French three-factor model. *Source: Authors Computations*

The negative adjusted R-Squared across all the regions suggests that the Fama-French model, may not fully capture the drivers of returns for BRICS countries. This indicates that there are potentially other factors, such as country-specific risks, political events, or sectoral trends, which could be influencing mutual fund returns. Overall, the results based on the Fama-French three-factor model reflect significant underperformance with high market sensitivity, particularly in Russia and Brazil, suggesting a more volatile investment environment when compared to the other countries.

Variable	Coefficient	Standard error	t-stat	P-value
Panel 1- Brazil n = 131				
Market factor	0,052	0,170	0,309	0,758
Size factor	-0,313	0,535	-0,585	0,560
Value factor	-0,076	0,511	-0,148	0,882
Momentum Factor	0,260	0,396	0,656	0,513
Alpha	-10,219	0,871	-11,728	6,28E-22
R-Squared	0,007			
Adjusted R-squared	-0,024			
Diagnostic Test				
Breusch-Pagan Test Result	2,6667	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 2 - Russia n =131				
Market factor	0,245	0,161	1,523	0,130
Size factor	0,300	0,507	0,591	0,555
Value factor	-0,182	0,484	-0,376	0,708
Momentum factor	0,576	0,375	1,534	0,128
Alpha	-8,386	0,826	-10,156	4,54E-18
R-Squared	0,039			
Adjusted R-squared	0,008			
Diagnostic Test				
Breusch-Pagan Test Result	-2.8710	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 3 - India n =131				
Market factor	0,251	0,137	1,829	0,070
Size factor	-0,025	0,432	-0,059	0,953
Value factor	-0,027	0,413	-0,064	0,949
Momentum factor	-0,152	0,320	-0,475	0,635
Alpha	-6,968	0,704	-9,902	1,89E-17
R-Squared	0,041			
Adjusted R-squared	0,011			
Diagnostic Test				
Breusch-Pagan Test Result	-2.1450	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Variable	Coefficient	Standard error	t-stat	P-value
Panel 4 - China n =131				
Market factor	0,172	0,153	1,123	0,264
Size factor	-0,283	0,483	-0,586	0,559
Value factor	-0,338	0,461	-0,731	0,466
Momentum factor	-0,184	0,358	-0,514	0,608
Alpha	-2,360	0,787	-3,000	0,003
R-Squared	0,019			
Adjusted R-squared	-0,012			
Diagnostic Test				
Breusch-Pagan Test Result	1.3937	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 5 – South Africa n =131				
Market factor	0,078	0,125	0,628	0,531
Size factor	0,043	0,393	0,110	0,912
Value factor	0,050	0,375	0,134	0,893
Momentum factor	0,122	0,291	0,418	0,677
Alpha	-8,141	0,640	-12,724	2,31E-24
R-Squared	0,004			
Adjusted R-squared	-0,027			
Diagnostic Test				
Breusch-Pagan Test Result	-0.4948	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 6 – Combined BRICS countries n =659				
Market factor	0,144	0,070	2,056	0,040
Size factor	0,017	0,219	0,076	0,939
Value factor	-0,145	0,211	-0,688	0,492
Momentum factor	0,047	0,161	0,294	0,769
Alpha	-7,061	0,355	-19,878	3,85E-69
R-Squared	0,007			
Adjusted R-squared	4,32E-04			
Diagnostic Test				
Breusch-Pagan Test Result	-0.0345	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Table 8: Carhart Four-Factor Model Regression Results per region
Source: Authors Computations

Table 8 presents the regression results per region based on the Carhart Four-Factor Model. All regions exhibit positive MKT coefficients, suggesting that the mutual fund returns in these regions are correlated with the market. However, the magnitude varies, with Russia having the most market sensitivity and Brazil having the least. The SMB coefficients are negative across all regions except Russia and South Africa, indicating that mutual funds with more exposure to large-cap stocks, perform better than those with higher allocations to small-cap

stocks. Russia and South Africa's positive SMB coefficients suggest a bias towards small caps contributing positively to mutual fund returns. When assessing the style (HML) behaviour across the regions, the coefficients are negative across all regions except South Africa, this shows a preference for mutual funds with a growth strategy over a value-orientated strategy. South Africa's positive coefficients suggest that value strategy mutual funds perform better in this region. The MOM coefficients are positive across Brazil, Russia and South Africa, indicating that mutual funds that have been performing well recently tend to continue performing well. Overall, the low R-squared values across all regions indicate that a significant amount of variability in returns are not being captured by factors as defined in the Carhart four-factor model.

This underscores the possibility that other variables, potentially unique to emerging markets are significant in understanding performance. When comparing the results of the three-factor model (Fama-French) with the four-factor model (Carhart) for the BRICS regions, the most significant difference is the addition of the momentum factor in the Carhart four-factor model.

In the Fama-French three-factor model, the alphas were generally less negative than in the Carhart four-factor model. This suggests that when the momentum factor is not considered, the models are attributing less of the performance to the known risk factors, and more to the skill or other attributes of the portfolio managers or the specific characteristics in the regions. The low adjusted R-squared in each region indicates that the model has very little explanatory power. This could be due to the low correlation between the factors and the dependent variable, and suggests that other factors are likely to have more explanatory powers. The model however indicates that market risk is a significant factor for BRICS, which is consistent with the economic literature that suggests emerging markets are sensitive to market swings.

4.3.3 Other market factors influencing performance of mutual funds

Research Objective: To determine whether the elected Emerging market factors are likely to influence mutual fund performance

Variable	Coefficient	Standard error	t-stat	P-value
Panel 1- Brazil n = 131				
Liquidity factor	1,532	0,324	4,734	5,82E-06
Volatility factor	0,624	0,330	1,888	0,061
Yield factor	1,598	0,652	2,451	0,016
Quality factor	0,083	0,246	0,339	0,735
Alpha	-18,741	3,947	-4,749	5,47E-06
R-Squared	0,188			
Adjusted R-squared	0,163			
Diagnostic Test				
Breusch-Pagan Test Result	10.0044	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 2 - Russia n =131				
Liquidity factor	0,787	0,333	2,363	0,020
Volatility factor	0,027	0,340	0,081	0,936
Yield factor	0,636	0,671	0,948	0,345
Quality factor	0,358	0,253	1,417	0,159
Alpha	-7,841	4,061	-1,931	0,056
R-Squared	0,073			
Adjusted R-squared	0,044			
Diagnostic Test				
Breusch-Pagan Test Result	4.5588	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 3 - India n =131				
Liquidity factor	0,442	0,283	1,560	0,121
Volatility factor	-0,319	0,289	-1,105	0,271
Yield factor	1,350	0,570	2,368	0,019
Quality factor	0,180	0,215	0,836	0,405
Alpha	-7,968	3,451	-2,308	0,023
R-Squared	0,080			
Adjusted R-squared	0,051			
Diagnostic Test				
Breusch-Pagan Test Result	3.969	Chi-test Statistic		11.0704
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Variable	Coefficient	Standard error	t-stat	P-value
Panel 4 - China n =131				
Liquidity factor	0,411	0,320	1,285	0,201
Volatility factor	0,196	0,327	0,601	0,549
Yield factor	0,570	0,645	0,884	0,378
Quality factor	0,020	0,243	0,084	0,933
Alpha	-6,526	3,904	-1,672	0,097
R-Squared	0,037			
Adjusted R-squared	0,006			
Diagnostic Test				
Breusch-Pagan Test Result	13.6819	Chi-test Statistic	11.0704	
Hypothesis result	Reject null hypothesis (evidence of heteroscedasticity).			
Panel 5 – South Africa n =131				
Liquidity factor	0,642	0,253	2,537	0,012
Volatility factor	-0,066	0,258	-0,256	0,798
Yield factor	1,090	0,510	2,138	0,034
Quality factor	0,036	0,192	0,186	0,853
Alpha	-8,327	3,085	-2,699	0,008
R-Squared	0,077			
Adjusted R-squared	0,048			
Diagnostic Test				
Breusch-Pagan Test Result	2.5207	Chi-test Statistic	11.0704	
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			
Panel 6 – Combined BRICS countries n =659				
Liquidity factor	0,770	0,142	5,432	7,85E-08
Volatility factor	0,084	0,144	0,581	0,562
Yield factor	1,071	0,282	3,802	0,000
Quality factor	0,142	0,108	1,317	0,188
Alpha	-9,847	1,744	-5,645	2,46E-08
R-Squared	0,068			
Adjusted R-squared	0,062			
Diagnostic Test				
Breusch-Pagan Test Result	6.0369	Chi-test Statistic	11.0704	
Hypothesis result	Fail to reject the null hypothesis (no evidence of heteroscedasticity).			

Table 9: Market factors influencing mutual funds' performance
Source: Authors computation

Table 9 provides the results of the Emerging Markets Four-Factor Model Regression Results per region. When compared to the Fama-French three-factor and Carhart four-factor models, the Emerging Markets Four-Factor Model is statistically significant for these countries. The Liquidity premiums are positive for all countries, suggesting a reward for

holding fewer liquid assets, this is particularly significant in the case of Brazil and Russia. The YLD coefficients are positive across all countries, indicating return compensation for holding mutual funds with higher yields, this is a significant contributor to performance except in China, where the coefficient is lower in magnitude. The QL coefficients are mostly positive but are relatively small in magnitude. The latter suggests that quality is not a significant factor in explaining the returns of the BRICS mutual funds.

Based on the Emerging Markets Four-Factor model results, mutual funds in Brazil reward less liquid, more volatile, and higher-yielding assets indicating that liquidity, volatility, and yield are all significant factors.

In the case of Russia, the results indicated that none of the factors are significant drivers of returns, which could indicate a different market dynamic or that other unmodeled factors are more significant.

The results indicated that yield is a significant factor in India, while liquidity and quality seem less relevant. Volatility is also not a significant factor for mutual fund returns. The model does not exhibit explanatory power for China, as indicated by the comparatively low t-stats across the factors, which was in contrast to South Africa where liquidity, volatility and yield are significant factors. The observed adjusted R-squared values suggest that the models exhibit limited explanatory ability regarding the variation in returns within these markets. This indicates that the current variables may not fully encompass all factors influencing returns. Enhancing the models through refinement or the addition of supplementary variables holds potential to bolster their predictive accuracy and overall reliability.

4.4 Discussion

The study aims to investigate the performance of mutual funds in the BRICS economic bloc, underpinned by Modern Portfolio Theory (MPT) and the Mutual Fund Theorem. MPT provides a framework for constructing diversified portfolios to maximise returns for a given level of risk, while the Mutual Fund Theorem offers insights into portfolio construction based on investor risk preferences. The review of existing literature highlights the importance of mutual funds in financial markets, their role in providing diversification benefits, the factors influencing investment decisions, and the various strategies employed by mutual funds, including active and passive management.

In understanding the level of mutual fund maturity in BRICS economic bloc, the results of the study indicate a significant growth of total assets (in $ billion) in the BRICS region between the period 2010-2020. The BRICS region experienced a 13% growth in mutual

fund assets over the past decade, with significant contributions from China, India, and Russia. The growth was particularly notable from 2016 onwards, with the industry showing resilience during the COVID-19 pandemic in 2020. China witnessed the largest growth in mutual fund assets, aligning with predictions of its emergence as a leading economic superpower. The country's focus on digital technology, e-commerce, and artificial intelligence has attracted global investor interest. The levels of growth determined by the study are consistent with the forecasts highlighted by Ramasamy & Yeung (2003) which revealed that double digit annual growth in Emerging markets mutual funds is expected and is projected to reach US$ 12 trillion by the year 2030.

The study's findings underscore the growing importance of the BRICS economies in the global mutual fund industry, with China leading the way in asset growth and innovation.
The objective of assessing and comparing the performance of mutual funds in the BRICS economies using different performance measures returned results consistent with the study by Rahman et.al (2012) that found that when utilising the Jenson and Treynor measures, mutual funds exhibit better performance than their respective market benchmarks. The study found this to be true when compared to the results revealed by the three and four factor models – which ultimately indicate that performance measures, without undergoing in depth factor analysis, may falsely exaggerate alpha. The BRICS mutual funds provided mean returns greater than the risk-free rate after adjusting for risk, however, the alpha was lower than expected, suggesting that high alpha is not necessarily achieved within the economic bloc itself. The annualised returns showed periods of aligned and divergent performance among the BRICS countries while China consistently delivered positive performance in most periods.

The three and four factor models utilised in the study were insignificant in explaining the mutual fund performance of BRICS emerging markets, which is inconsistent with the studies by Rouwenhorst (1999) & Liew & Vassalou (2000) that found that that the models exhibit significance in explaining performance return in emerging markets.

The performance analysis suggests that while mutual funds in the BRICS region have provided returns above the risk-free rate, achieving high alpha within the economic bloc may be challenging. This highlights the need for investors to carefully consider market sensitivity, volatility, and economic conditions when investing in BRICS mutual funds. The factor

analysis reveals that traditional models like the Fama-French three-factor and Carhart Four-Factor Models may not fully capture the drivers of returns in emerging markets.

Diagnostic tests were undertaken on each model to assess whether there is any evidence of heteroscedasticity displayed. Based on the Breusch-Pagan Test, the regression models do not exhibit significant evidence of heteroscedasticity. This indicates that the variance of the residuals is constant, aligning with the assumption of homoscedasticity. However, in the other emerging market factors model concerning China, the Breusch-Pagan test result exceeded the Chi-test statistic, suggesting pronounced heteroscedasticity in this particular case. This discrepancy highlights the need for robust standard errors or alternative modelling techniques for this region. The conclusive finding underscores that the Emerging Markets Four-Factor Model offers a nuanced insight into performance drivers, highlighting the significance of liquidity, volatility, and yield within the BRICS region. Due to the limited number of studies specifically focusing on mutual fund performance within the BRICS economies, direct comparisons of results with existing literature are limited.

CHAPTER 5 - CONCLUSION

5.1 Policy Implications and Recommendations

In light of the comprehensive analysis of mutual fund performance in the BRICS economies across various metrics, strategic policy implications and recommendations aimed at fostering sustainable growth and enhancing investor outcomes in these dynamic emerging markets can be determined. Five key aspects are explored;

5.1.1 Enhanced Factor-Based Strategies

The research findings encourage fund managers to adopt factor-based investment strategies that incorporate market, size, value/growth, momentum, liquidity, yield, and quality factors. This approach can optimize risk-adjusted returns tailored to the unique dynamics of each BRICS economy.

5.1.2 Regulatory Framework Adaptation

The research findings provide guidance that will assist in developing regulatory frameworks to accommodate factor-based investing, ensuring transparency, investor protection, and market efficiency. The adaption of the latter includes updating guidelines to reflect the importance of liquidity management and yield enhancement strategies.

5.1.3 Investor Education and Awareness

Investor education programs may be expanded to increase awareness of factor-based investing and its potential benefits. This effort should emphasize understanding risk metrics and performance drivers specific to BRICS mutual funds.

5.1.4 Research and Development Collaboration

The research findings encourage the need for fostering collaborative research initiatives between academia, industry, and regulators to explore additional emerging market factors that would influence mutual fund performance. This collaboration can enhance model refinement and provide actionable insights for policymakers

5.1.5 Benchmarking and Performance Evaluation

The research findings encourage the need to continuously undertake analysis that will reveal integral insights about BRICS nations. This can be undertaken by benchmarking BRICS mutual fund performance against global indices, integrating insights from diverse models and factors to assess competitiveness and identify areas for improvement. The latter particularly informs policy adjustments aimed at enhancing market efficiency and investor confidence.

5.2 Conclusion

There is notable growth in mutual fund assets across the BRICS nations, with China, India, and Russia leading the expansion. This growth underscores the attractiveness of these markets to global investors. The high standard deviations noted in the region indicate elevated risk levels inherent in these emerging markets, necessitating careful risk management strategies for investors seeking exposure. India generally exhibits higher risk-adjusted returns compared to Brazil, as indicated by superior Sharpe and Treynor ratios. South Africa shows high Jensen's Alpha, suggesting outperformance relative to market benchmarks. Positive Sharpe ratios indicate returns above the risk-free rate, but negative Treynor ratios suggest insufficient compensation for systematic risk, highlighting challenges in achieving alpha within the region. All BRICS countries display positive market coefficients in Fama-French and Carhart models, emphasizing market risk as a significant driver of mutual fund returns. Varying coefficients across countries reveal preferences for larger firms (except in Russia and South Africa) and growth over value stocks (except in India). Momentum factors contribute significantly to performance in Brazil, Russia, and South Africa. The Emerging Markets Four-Factor Model highlights liquidity premiums in Brazil and Russia, indicating higher returns for less liquid assets. Yield (YLD) contributes significantly across BRICS nations, whereas quality (QL) has a minor impact. The models revealed limited explanatory power in some countries, particularly China, suggesting the need for additional variables to better capture performance drivers unique to each market. While BRICS mutual funds generally offer returns above the risk-free rate, achieving high alpha within the region remains challenging. Investors must carefully balance risk and return expectations. The factor models reveal that market sensitivity, size preferences, style biases, and additional factors such as liquidity and yield significantly impact mutual fund performance. Therefore, adopting factor-based investment strategies can potentially enhance risk-adjusted returns.

REFERENCES

Agarwal, P., & Pradhan, H. (2019). Mutual fund performance in changing economic conditions: Evidence from an emerging economy. Cogent Economics & Finance, 7(1). doi: 10.1080/23322039.2019.1687072

Ahmad, W., Roomi, M., Ramzan, M., Zia-ur-Rehman, M., & Baig, S. (2015). A Comparative Study on Performance of Open and Close-ended Mutual Funds in Pakistan. International Journal Of Accounting And Financial Reporting, 1(1), 300. doi: 10.5296/ijafr.v5i1.7487

Al-Aradi, A., & Jaimungal, S. (2018). Outperformance and Tracking: Dynamic Asset Allocation for Active and Passive Portfolio Management. Applied Mathematical Finance, 25(3), 268-294. doi:10.1080/1350486x.2018.1507751

Alhorani, A. (2019). Factors affecting the financial investors' decision in the adoption of mutual funds. Management Science Letters, 2269-2276. doi: 10.5267/j.msl.2019.7.027

Atale, N. (2012). A Decade of BRICS: Prospects and Challenges for Next Decade. Indian Journal of Management, Forthcoming, 18-23.

Aybar, B., & Thirunavukkarasu, A. (2005). Emerging market multinationals: an analysis of performance and risk characteristics. Journal of Asia-Pacific Business, 6(2), 5-39.

Barber, B., Huang, X., & Odean, T. (2014). Which Risk Factors Matter to Investors? Evidence from Mutual Fund Flows. SSRN Electronic Journal. doi: 10.2139/ssrn.2517644

Baldacci, E., Gupta, S., & Mati, A. (2011). Emerging market yield spreads: Domestic, external determinants, and volatility spillovers. Global Finance Journal, 22(2), 83-100. https://doi.org/10.1016/j.gfj.2011.08.001

Białkowski, J., & Otten, R. (2011). Emerging market mutual fund performance: Evidence for Poland. The north american Journal of economics and finance, 22(2), 118-130.

Bollen, N. P., & Busse, J. A. (2005). Short-term persistence in mutual fund performance. The Review of financial studies, 18(2), 569-597.

Buster, B. D. (2012). Relationship between Asset Allocation and Financial Performance of mutual funds in Kenya University of Nairobi, Kenya].

Brown, S., & Goetzmann, W. (1997). Mutual fund styles. Journal Of Financial Economics, 43(3), 373-399. doi: 10.1016/s0304-405x(96)00898-7

Carhart, M. M. (1997). On persistence in mutual fund performance. The Journal of finance, 52(1), 57-82.

Chan, L., Chen, H., & Lakonishok, J. (2002). On Mutual Fund Investment Styles. Review Of Financial Studies, 15(5), 1407-1437. doi: 10.1093/rfs/15.5.1407

Choudhary, V., & Chawla, P. (2014). Performance Evaluation of Mutual Funds: A Study of Selected Diversified Equity Mutual Funds in India. International Conference On Business, Law And Corporate Social Responsibility, Oct 1-2. doi:

Constantinides, G. M., & Malliaris, A. G. (1995). Portfolio theory. Handbooks in operations research and management science, 9, 1-30.

Cremers, M., Ferreira, M., Matos, P., & Starks, L. (2016). Indexing and active fund management: International evidence. Journal Of Financial Economics, 120(3), 539-560. doi: 10.1016/j.jfineco.2016.02.008

Daniel, K., Grinblatt, M., Titman, S., & Wermers, R. (1997). Measuring mutual fund performance with characteristic-based benchmarks. The Journal of finance, 52(3), 1035-1058.

Dragotă, I.-M., Tatu-Cornea, D., & Tulbure, N. (2016). Determinants of Development of the Mutual Fund Industry. A Socio-Cultural Approach. Prague Economic Papers, 25(4), 476-493. https://doi.org/10.18267/j.pep.572

Droms, W. G., & Walker, D. A. (2001). Performance persistence of international mutual funds. Global Finance Journal, 12(2), 237-248.
Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. Journal of financial economics, 33(1), 3-56.

Fan, Y., & Lin, C. (2019). Active vs. Passive, The Case of Sector Equity Funds. SSRN Electronic Journal. doi: 10.2139/ssrn.3422496

Fabozzi, F. J., Gupta, F., & Markowitz, H. M. (2002). The legacy of modern portfolio theory. The journal of investing, 11(3), 7-22.

Ferreira, M. A., Keswani, A., Miguel, A. F., & Ramos, S. B. (2013). The determinants of mutual fund performance: A cross-country study. Review of Finance, 17(2), 483-525.

Fortune, P. (1997). Mutual funds, part I: Reshaping the American financial system. New England Economic Review, 45.

Gao ,J., O'Sullivan, N, & Sherman,M. (2019). An evaluation of Chinese securities investment fund performance. The quarterly review of Economics and Finance 76(2020) 249 - 259

Gelos, G., & Borensztein, E. (2000). A Panic-Prone Pack? the Behavior of Emerging Market Mutual Funds. IMF Working Papers, 00(198). doi: 10.5089/9781451860054.001

Goel, S., Sharma, R., & Mani, M. (2012). A study of performance and characteristics of open ended mutual funds. Asian Journal of Management Research, 3(1).

Graham, J. E., Lassala, C., & Ribeiro Navarrete, B. (2020). Influences on mutual fund performance: comparing US and Europe using qualitative comparative analysis. Economic research-Ekonomska istraživanja, 33(1), 3049-3070.

Gumanti, T. A., Sutrisno, B., & Bernardus, D. (2017). Empirical Study Of Fama-French Three-Factor Model And Carhart Four-Factor Model In Indonesia. Available at SSRN 3314684.

Holz, C. A. (2008). China's economic growth 1978–2025: what we know today about China's economic growth tomorrow. World Development, 36(10), 1665-1691.

Igbinosa, S. O. (2019). Performance of Mutual Funds: Evidence from Nigeria. International Journal of Economics and Financial Management, 5(2).

Iqbal, B. A. (2022). BRICS as a driver of global economic growth and development. In (Vol. 14, pp. 7-8): SAGE Publications Sage India: New Delhi, India.

Huij, J. (2007). New Insights Into Mutual Funds: Performance and Family Strategies. SSRN Electronic Journal. doi:10.2139/ssrn.961819

Humphrey, J., Warren, G., & Boon, J. (2015). What is Different about Socially Responsible Funds? A Holdings-Based Analysis. Journal Of Business Ethics, 138(2), 263-277. doi: 10.1007/s10551-015-2583-7

Jakšić, M., Leković, M., & Milanović, M. (2015). Measuring the performance of mutual funds: A case study. Industrija, 43(1), 37-51.

Jash, A. (2017). The emerging role of BRICS in the changing world order. IndraStra Global(6), 11.

Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. The Journal of finance, 48(1), 65-91.

Kaminsky, G., Lyons, R. K., & Schmukler, S. L. (2004). Managers, investors, and crises: mutual fund strategies in emerging markets. Journal of international Economics, 64(1), 113-134.

Kariuki, E. (2014). Effect of Macro Economic variables on financial performance of mutual funds industry in Kenya. School of Business, University of Nairobi.

Klapper, L. (2004). The development of mutual funds around the world. Emerging Markets Review, 5(1), 1-38. doi: 10.1016/j.ememar.2003.12.001

King, J. S. (2002). Mutual funds: investment of choice for individual investors? REVIEW OF BUSINESS-SAINT JOHNS UNIVERSITY, 23(3), 35-39.

Kiymaz, H. (2015). A performance evaluation of Chinese mutual funds. International Journal of Emerging Markets, 10(4), 820-836. doi: 10.1108/ijoem-09-2014-0136

Khorana, A., Servaes, H., & Tufano, P. (2005). Explaining the size of the mutual fund industry around the world. Journal Of Financial Economics, 78(1), 145-185. doi: 10.1016/j.jfineco.2004.08.006

KotharI, P., & Mindargi, S. (2013). A study of investors attitude towards mutual fund with special reference to inversotrs in Solapur City. International Journal Of Accounting And Financial Management Research, 3(2).

Kumar, R. (2020). An Empirical Study on Investors Behavior towards Mutual Funds Investment. Review
Of Professional Management, 18(1).

Lal, B. (2023). The BRICS Countries: Trends of Demographic and Economic Development. International Journal of Science and Research, 12, 702-708.

Leite, C., Cortez, M., Silva, F., & Adcock, C. (2017). The performance of socially responsible equity mutual funds: Evidence from Sweden. Business Ethics: A European Review, 27(2), 108-126. doi: 10.1111/beer.12174

Lemeshko, O., & Rejnuš, O. (2015). Performance evaluation of equity mutual funds in countries with emerging economies: Evidence from BRIC, CEE, sea and MENA regions. Procedia Economics and Finance, 30, 476-486.

Lusardi, A., & Mitchell, O. (2011). Financial Literacy Around the World: An Overview. SSRN Electronic Journal. doi: 10.2139/ssrn.1810551

Mahmuda, M., & Abdullahi, A. (2018). An evaluation of mutual funds performance: Empirical evidence from Nigeria. Retrieved from https://saheljournalsonline.org.ng/testuploadc/Sahel_15_8_8.pdf

Mateus, I. B., Mateus, C., & Todorovic, N. (2019). Review of new trends in the literature on factor models and mutual fund performance. International Review of Financial Analysis, 63, 344-354.

Mostafa, G., & Mahmood, M. (2015). The rise of the BRICS and their challenge to the G7. International Journal of Emerging Markets, 10(1), 156-170.

Medel, D. (2019). Essay on emerging markets. Thesis

Meyer-Pretorius, M., & Wolmarans, H. (2006). The unit trust industry in South Africa from 1965 to June 2005: are investors better off?. Meditari Accountancy Research, 14(1), 49-67. doi: 10.1108/10222529200600004

Naveed, & Farooq, U. (2019). Performance Evaluation of Pakistani Mutual Funds: Through Carhart Four-Factor Model. The Dialogue, 14(1), 53.

Nielsen, U. B., Hannibal, M., & Larsen, N. N. (2018). Reviewing emerging markets: Context, concepts and future research. International Journal of Emerging Markets, 13(6).

O'Neill, J. (2011). The Growth Map: Economic Opportunity in the BRICs and Beyond. New York, NY: Portfolio Penguin.

Otten, R., & Bams, D. (2004). How to measure mutual fund performance: economic versus statistical relevance. Accounting And Finance, 44(2), 203-222. doi: 10.1111/j.1467-629x.2004.00105.x

PricewaterhouseCoopers. (2020). Africa Asset Management 2020. PricewaterhouseCoopers. Retrieved from http://www.pwc.com/amtax2020

Qin, Yafeng and Bai, Min, Liquidity and Commonality in Emerging Markets (April 1, 2007). 20th Australasian Finance & Banking Conference 2007 Paper, Available at SSRN: https://ssrn.com/abstract=966002 or http://dx.doi.org/10.2139/ssrn.966002

Radulescu, I. G., Panait, M., & Voica, C. (2014). BRICS countries challenge to the world economy new trends. Procedia economics and finance, 8, 605-613.

Ramasamy, B., & Yeung, M. C. (2003). Evaluating mutual funds in an emerging market: factors that matter to financial advisors. International Journal of Bank Marketing, 21(3), 122-136.

Redman, A. L., Gullett, N. S., & Manakyan, H. (2000). The performance of global and international mutual funds. Journal of Financial and strategic Decisions, 13(1), 75-85.

Rehan, R., Naz, S., Umer, I., & Ahmed, O. (2018). Awareness and perception of investors towards mutual funds industry. RADS Journal of Social Sciencess & Business Management, 5(1), 01-14.

Rehnby, N. (2016). Does the Fama-French three-factor model and Carhart four-factor model explain portfolio returns better than CAPM?:-A study performed on the Swedish stock market.

Rokade, E. (2021) A Study on the Growth of Mutual Funds in India, Journal of Emerging Technologies and Innovative Research [Preprint], (2349–5162).

Rootman, C., & Krüger, J. (2017). Determining consumers' intention to use unit trusts. Journal Of Economic And Financial Sciences, 9(2), 436-454. doi: 10.4102/jef.v9i2.51

Saraoglu, Hakan & Lam, Miranda. (2002). A Sensible Mutual Fund Selection Model. Financial Analysts Journal - FINANC ANAL J. 58. 60-72. 10.2469/faj.v58.n3.2538.

Saini, S., Anjum, B., & Saini, R. (2011). Investors' awareness and perception about mutual funds. Journal of Banking Financial Services and Insurance Research, 1(1), 92-107.

Schachermayer, W., Sîrbu, M., & Taflin, E. (2009). In which financial markets do mutual fund theorems hold true? Finance and Stochastics, 13, 49-77.

Soongswang, A., & Sanohdontree, Y. (2011). Open-Ended Equity Mutual Funds. International Journal of business and social science,2(17). Retrieved from http://ijbssnet.com/journals/Vol_2_No_17/18.pdf

Stefea, P., Wagdi Wadi, O., & Mamdouh Abbas, K. (2013). Egyptian Mutual Funds Analysis: History, Performance, Objectives, Risk And Return. Scientific Papers Series Management, Economic Engineering In Agriculture And Rural Development, 13(3).

Sundaram, P. (2012). The BRIC Mutual Fund Industry. Procedia - Social And Behavioral Sciences, 37, 324-336. doi: 10.1016/j.sbspro.2012.03.298

Suppa-Aim, T. (2010). Mutual fund performance in emerging markets: the case of Thailand University of Birmingham].

Tan, Ö. (2015). Mutual Fund Performance: Evidence From South Africa. EMAJ: Emerging Markets Journal, 5(2), 49-57. doi: 10.5195/emaj.2015.83

Tandon, S., & Shome, S. (2009). The cracks in the BRICS. OF THE UNIVERSITY OF PETROŞANI~ ECONOMICS~, 9(4), 273-282.

Tazi, O., Aguenaou, S., & Abrache, J. (2022). A comparative study of the Fama-French three factor and the Carhart four factor models: Empirical Evidence from Morocco. International Journal of Economics and Financial Issues, 12(1), 58.

Tenani, P. S. (2017). Reinterpreting the mutual fund theorem: the risk portfolio as a tactical overlay.

Tershukova, M. B., Savinov, O. G., Zhegalova, E. V., Zhuruhinc, G. I., & Zhegalova, A. S. (2016). Mutual Funds as a Form of Collective Investment in Russia. International Journal of Environmental and Science Education, 11(15), 7563-7575

Toloraya, G., & Chukov, R. (2016). BRICS to be considered? International Organisations Research Journal, 11(2), 97-112.

Vidal-García, J., Vidal, M., Boubaker, S., & Hassan, M. (2017). The efficiency of mutual funds. Annals Of Operations Research, 267(1-2), 555-584. doi: 10.1007/s10479-017-2429-z

Vitor, D., Aveh, F., Donkor, S., & Addai, I. (2015). Determinants of mutual fund investment decision by second cycle teachers in Kumasi metropolis, Ghana. African J. Of Accounting, Auditing And Finance, 4(4), 328. doi: 10.1504/ajaaf.2015.075124

Von Wielligh, J., & Smit, E. (2000). Persistence in the performance of South African unit trusts. South African Journal Of Business Management, 31(3), 120-129. doi: 10.4102/sajbm.v31i3.742

Walia, N., & Kiran, R. (2012). Understanding the Risk Anatomy of Experienced Mutual Fund Investors. Journal Of Behavioral Finance, 13(2), 119-125. doi: 10.1080/15427560.2012.673517

Zhang, K., & Gençay, R. (2019). Mutual Fund Performance In Developing And Advanced World Networks. The Singapore Economic Review, 64(02), 399-421. doi:10.1142/s0217590817500254

Zheng, Xinwei and Zhang, Zhichao, Commonality in Liquidity in Emerging Markets: Evidence from the Chinese Stock Market (October 2006). Durham Working Paper in Economics and Finance No. 06/04.