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Emerging market analysis of passive and active investing under bear and bull market conditions

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Abstract

Purpose – Stirred by scant regard for market phases in portfolio performance assessments, the current paper investigates the active versus passive investment strategies under the bull and bear market conditions in emerging markets focusing on South Africa as a case study.

Design/methodology/approach – Methodologically, the measures of Jensen's alpha and Treynor index are applied to the monthly returns of 20 funds from January 2010 to June 2022.

Findings – The results are enlightening; though they contradict developed market evidence, they are consistent with emerging market trends. The findings show that actively managed funds outperform the market benchmark and passive investing style under bear and normal market conditions. Passive investment strategy outperforms both market benchmark and actively investing style under bull market conditions.

Practical implications – In the face of improved market efficiency, increased liquidity and recent technological impact, the findings of this study have practical application. The study outcomes should inform and update global investors, especially asset managers interested in emerging markets; however, the limitations of the study should also be considered.

Originality/value – While limited studies consider market conditions when comparing and contrasting the performance of passive versus active investing, such consideration is lacking in emerging markets. The current study corrects this literature imbalance.

Keywords Passive investing, Active investing, Performance measure, Unit trust, Bear, Bull, Emerging market

Paper type Research paper

1. Introduction

While picking the winner is intricate, the core debate about passive versus active investing is straightforward. Passive investors believe the financial markets are efficient. So, price adjustment is expected to adapt almost instantaneously if a market disturbance occurs. Therefore, passive investors are traditionally known as index trackers and maintain a clear long-term buy-hold strategy which they deem a superior investing option. On the contrary, active investors believe capital markets are inefficient and exposed to frequent anomalies or irregularities. Their investment style is a more analytical and aggressive profit-seeking approach. Active investors aim to beat the market, especially during short-term fluctuations. So, they must invest intensively in market timing skills and analytical tools. Consequently, active investing is said to be a more expensive investment style. The current study addresses the unclear aspect of passive versus debate in emerging markets, especially South Africa,

JEL Classification — G10, G11, G12

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in order to inform and update the literature. In particular, using South Africa as a case study, this paper investigates whether the performance of passive and active investment strategies is different under bear and bull market conditions in emerging markets. In consideration of financial markets tendencies in emerging markets to differ with developed markets, this study is premised on the hypothesis that active investing should be relatively more profitable than passive investment strategy.

The background of the South African fund management industry provides informative grounding for the planned empirical study. According to the official numbers released by the Association for Savings and Investment South Africa (Association for Savings and Investment South Africa (ASISA), 2023), the domestic collective investment schemes (CIS) industry is healthy and economically viable. The South African CIS sector experiences new growth levels to ZAR3.27 trillion (USD177.8 billion) in assets under management (AuM), giving investors a generous choice of 1 769 portfolios. ASISA gauges its market position with a comparable global industry value of USD68.2 trillion for a total portfolio count of 146,114 in the recent triennial. Under this scenario, the South African unit trust market achieves a 0.3% share of the global CIS's AuM or approximately 1% of the worldwide CIS portfolio population.

The international practitioners in collective investment schemes, Price Waterhouse Coopers (Price Waterhouse Coopers (PWC), 2017) and European Fund Management Association (European Fund Management Association (EFAMA), 2023), foresee positive growth of the CIS industry in the future but with increased competitiveness. This means that asset managers will do well to improve their operational structures and, most importantly, investment strategies. Therefore, their investment decisions on whether to beat the market by continuous timed trading (active investing) or maintaining a long-term buy-hold strategy (passive investing) matter greatly. In this regard, what will be helpful is reliable research findings regarding the critical evaluation of active and passive investment strategies. Which is the winner, passive or active investing?

The extant literature is dominated by what Cremers *et al.* (2019) call the "accepted academic wisdom" (especially in developed markets) that active investing is costly but performs no better than passive investing. This outcome is said to be promoted by the influential study of Jensen (1968) and later collaborated by other notable studies like Ippolito (1989), Malkiel (1995), Gruber (1996), Carhart (1997), Bernstein (1998), Davis (2001) and Fama and French (2010). Carhart's (1997) paper stands out because it is one of the most cited papers (according to Google Scholar) and introduced the widely used 5-factor asset pricing model. This study made a well-known pronouncement that "results do not support" the literature notion that asset managers are skilled (Carhart, 1997, p. 57). The investment environment has changed over time, including trading technology, access to timely investment information, improved market efficiency (Conrad *et al.*, 2015) and increased globalisation. It is common knowledge that the practice of investment is diverse and dynamic. While it is conceivable that the *accepted wisdom* is subject to change over time, the eminent question is whether it holds in emerging markets presently.

Thus, it is evident that active and passive investing should be re-evaluated over time, and some observations suggest a re-examination is due. First, the *accepted wisdom* on active and passive investing has recently been challenged through a comprehensive literature review by Cremers *et al.* (2019). Second, and more importantly, as related to the current study, Glode (2011, p. 547) uses a theoretical model and empirical tests to highlight "the existence of recession-related misspecification in popular [portfolio] performance measures". Despite this warning, most studies that assess the active versus passive investing debate do not account for the economy's cycles in their empirical analysis. The current paper corrects this error by investigating the comparative performance between active and passive investing under bear and bull market conditions in the emerging market of South Africa. This study is closest to the few studies that examine portfolio performance under different states of the economy (like Ferson and Schadt, 1996; Glode, 2011; Kosowski, 2011; Dyck *et al.*, 2013) and the research

dimension that specialises in market regimes (Pagan and Sossounov, 2002; Lunde and Timmermann, 2004; Zegadlo, 2022) but differs from them in one crucial respect. Both literature groupings do not explicitly pursue an empirical objective of evaluating active versus passive investing, while the current study does. The literature (Kole and Van Dijk, 2017, p. 127) on market phases makes a distinct observation with important implications for the performance studies of active and passive investing: "The volatility is higher during bear markets (around 2.5%) than during bull markets (around 1.9%)", implying that it is essential to account for market dynamics in the active and passive investing debate for effective performance evaluation which is a concern of the current study. The rest of the paper is organised into six sections. Section 2 presents a literature review, Section 3 provides econometric modelling, Section 4 reports the empirical results, Section 5 discusses results and Section 6 concludes the study.

2. Literature review

2.1 Theoretical framework

As a start, no general economic theory explains the existence of passive and active investing styles (except for some topics, Berk and Green, 2004; Farnsworth, forthcoming). However, the mainstream finance theory is intuitive. Based on the rationales of modern finance textbooks, the advantages of a passive investment strategy are persuasive. Under this investment approach, investors are exposed to tax advantages since the buy-hold strategy does not trigger capital taxes through continuous trading. This investment style is also transparent, which builds confidence in investors, and, most importantly, it is cost-effective since it has less administrative burden than alternative investing styles. Over time, passive investing earned a reputation for simplicity and stable, long-run performance, while its justification is based on efficient market hypothesis (EMH) (Arshanapali, 1997). Daher and Rapp (2023, 148, emphasis added) bemoan this deepened uncritical embrace of the *"you cannot beat the market"* doctrine of EMH: "passive investing has become *something of a dogma* among members of the economics and financial professions". EMH was evangelised by Fama (1965, 1970, 1991, 1998), and it has dominated the literature from the early 1970s and peaked in the 1980s with a very simple sermon: all relevant information is already reflected in security prices, and so it is impossible to beat the market consistently. Interestingly, as EMH started to weaken in its influence, the relationship between passive and active investing styles started to reverse, and the practice of active investing began to increase. It all started when EMH was increasingly afflicted by anomalies (see reviews, Schwert, 2003; Hou *et al.*, 2020), and the inherent theory could not provide a satisfactory theoretical and empirical defense.

In the cause of time, new rationalisation of anomalies emerged in the form of behavioural finance analysis (BFA) headed by Thaler (1985, 1999, 2015; Rashid *et al.*, 2022), which raised much scepticism about the claimed rational investor assumption of EMH. BFA introduced the idea that psychological factors influence investors' investment decisions. Another new theory that tried unsuccessfully to resuscitate EMH is the adaptive efficient market hypothesis (A-EMH) introduced by Lo (2004). This theory rests on a simple proposition that investors are human beings; they make mistakes and then correct themselves (or adapt). While EMH was gradually losing popularity, the literature on security returns predictability was gaining momentum (De Bondt and Thaler, 1985, 1987), along with the upgrades on asset pricing methods like the capital asset pricing model (CAPM). The literature has come to accept the hypothesis of market predictability (Hawawini and Keim, 1995; Sensoy *et al.*, 2015) but not without caution (Aras and Yilmaz, 2008). Notwithstanding that EMH had a convincing case in support of passive investing, the ensuing theories appear to favour the practice of active investing. The active investing style is driven by a conviction that it is more profitable to beat the market and that this strategy is achievable. At present, academics have

not entirely abandoned EMH but only reduced their enthusiasm about it and now see it as "half true" (Shiller, 2013). Whereas technological progress along with digitalisation improves data access and trading methods, the subsequent market liquidity and better market efficiency should, in our view, elevate the status of EMH to *three-quarters true*. This should partly explain the observed shift from an active to a passive investment style (Sushko and Turner, 2018; Anadu *et al.*, 2020). This market trend should not be misconstrued as passive investing outperforms active investment.

2.2 Empirical evidence

The history of passive and active investing appears to track the developments in modern finance theory. As knowledge of capital asset pricing models (Lintner, 1965; Mossin, 1966; Sharpe, 1964) and EMH (Fama, 1965) were advancing from the 1960s, passive investing was gaining in popularity and was becoming a more defensible investing style theoretically. The trend continued until the end of the 19th century, peaking in the 1980s. Nevertheless, the experience of developed and emerging markets regarding passive and active investing appears to diverge in the literature.

2.2.1 Developed markets experience. Before a pioneering paper by Jensen (1968), active investing was an established tradition of investment. Not only did this paper design a now-famous performance measure called Jensen's alpha, but it also delivered what was then a "swim against the tide" results showing that active investing was not better than passive investing. A while later, several contradictory papers (Grinblatt and Titman, 1992; Hendricks *et al.*, 1993; Goetzmann and Ibbotson, 1994; Brown and Goetzmann, 1995) emerged from high-ranked journals with favourable support for active investing. These studies found persistent outperformance by asset managers. Before long, a plethora of studies appeared refuting the persistence performance claim. The influential paper by Carhart (1997) using a newly developed five-factor performance model led this stream of literature. The studies were mostly unanimous that any claimed good performance of active investing was eroded by fees or disappeared when the survivorship bias was controlled (Malkiel, 1995). Another argument against active investing is called the *arithmetic* of active investing (Sharpe, 1991). This concept says that, in active investing, some investors profit, while others lose, and the two outcomes cancel out (zero-sum game). Pedersen (2018) disagrees and argues that this idea of a zero-sum game assumes a constant portfolio allocation, which is untenable. In defence of active investing, Cremers *et al.* (2016) conducted a comprehensive review from 1997 to 2015 of the pro-passive literature, also called "accepted academic wisdom", which was spearheaded by Jensen (1968) and anchored by Carhart (1997). Cremers *et al.* (2016, p. 8) concluded, "Our review of the most recent literature suggests that the conventional wisdom is too negative on the value of active management". The literature from emerging markets seems to resonate with this conclusion, elaborated next.

2.2.2 Emerging markets experience. Two emerging markets studies used multifactor models to assess the performance of mutual funds from 1996 to 2005 (Lai and Lau, 2010), and from 2004 to 2014 (Rao *et al.*, 2017), in Malaysia and China, respectively. Both studies found positive results in favour of active investing. These studies are consistent with a broader performance evaluation by Huij and Post (2011) which examines 137 collective investment schemes over 22 emerging markets from 1993 to 2006.

In general, most studies tend to concur that active investing has better success opportunities in emerging markets (Chang *et al.*, 1995) primarily due to less competitiveness (Dyck *et al.*, 2013) and lower market efficiency (Cajueiro and Tabak, 2004, Kayal and Maheswaran, 2018). For instance, Dyck *et al.* (2013) found that active investing outperforms the passive investment style by more than 180 basis points per annum after accounting for cost and risk in emerging markets. Further, Grossman and Stiglitz's (1980) paradox works favourably in emerging

markets. The paradox says that since active market participation requires costly information in efficient markets, investing in information resources may not be worthwhile, which hampers the needed analytical work to improve market efficiency. On the contrary, since analytical work is more profitable in emerging markets (McLaren, 2020), then active investing should be more beneficial. This should continue until emerging markets catch up enough towards some standard of efficiency. Other proponents perceive that emerging markets provide diversification opportunities for investors from developed markets (Li *et al.*, 2003; Phylaktis and Ravazzolo, 2005). This study needs to examine whether the South African experience of passive and active investing debate aligns with other emerging market countries.

2.2.3 South African empirical studies. Early South African portfolio performance studies published in peer-reviewed journals in the 1970s were significantly constrained by data availability and examined sample sizes of less than ten funds on a non-risk-adjusted basis (Bertolis and Hayes, 2014). The first set of studies with a sample size of 10 funds or more and applying traditional portfolio performance measures are by Gilbertson and Vermaak (1982) and Knight and Firer (1989). Both studies found that unit trusts performed better than the standard market benchmark (JSE Allshare index) on a risk-adjusted basis. The explanation for the outperformance was given as market inefficiency. This positive result of fund performance was contradicted a decade later by the findings of Oldfield and Page (1997) for the period 1987 to 1994, and Oldham and Kroeger (2005) for the horizon, 1998 to 2002. These studies used improved sample sizes of 17 and 20 funds, respectively. Recent studies mostly find negative results (Tan, 2015; Thobejane *et al.*, 2017; Toerien *et al.*, 2022) or mixed (Malefo *et al.*, 2016; Bertolis and Hayes, 2014), with rare evaluations finding positive outcomes (Wessels and Krige, 2005; Kalima and Gopane, 2022), which confirm the existence of management skills in asset selection and market timing abilities.

3. Methodology

3.1 Motivation: performance evaluation models

Quantitative and finance theory (Alekseev and Sokolov, 2016, p. 431) obtain confirmatory results that "justify the use of benchmark-based portfolio evaluation". Typical portfolio performance measures include factor models, model-free metrics, and index-based analysis. Measures like the five-factor model of Carhart (1997) are accused (Cremers *et al.*, 2013; Kadan and Liu, 2014) of being too ambitious and incorporating factors irrelevant to fund performance, like the metric on small-cap stocks. Further, the self-declared benchmarks of asset managers are criticised for failing to accurately represent the actual funds' investment culture as claimed by fund managers (Sensoy, 2009). The main weakness of the model-free metrics, like the Treynor ratio and Sharpe ratio, may be seen as their strength in that they fail to control for other market-based factors but, by so doing, do not introduce modelling-specific imperfections. Therefore, it is noteworthy that there is no flawless performance measure. The current study uses the validated and parsimonious methods of Jensen (1968) and Treynor (1965) for easy comparability with prior studies. Another problem often raised in portfolio evaluation studies is the survivorship bias (Brown *et al.*, 1992) which arises if discontinued funds are disregarded. In the present study, the problem does not feature since the study focuses on comparing active and passive. So, the issue should affect both investing styles if it does arise. The Jensen's alpha (α) measure is appealing because it is theoretically grounded in the capital asset pricing model (CAPM), and it is commonly applied in practice (Cremers *et al.*, 2019).

3.2 Econometric models

Jensen's alpha is the preferred empirical model for the current study since it can provide absolute and relative performance measures. With this model, we can rank portfolios between

active and passive management styles against each other and then decide whether they also outperform the market benchmark. The Jensen's alpha model is explained through Equations (1) and (2).

$$\alpha_p = R_p - \left[r_f + \beta_p(r_m - r_f)\right] \tag{1}$$

The objective of Jensen's alpha is to evaluate portfolio performance relative to benchmark or market performance. The interpretation of Jensen's alpha from Equation (1) is straightforward. If $\alpha_p = 0$, then the portfolio has equal performance as the benchmark. The portfolio outperforms or underperforms the benchmark if $\alpha_p > 0$, or $\alpha_p < 0$, respectively. In Equation (2), we regress $r_p - r_f$ against $r_m - r_f$ to estimate beta as an input for computing Jensen's alpha. Equation (2) is estimated using the ordinary least square (OLS) method.

$$r_p - r_f = \alpha_p + \beta_p(r_m - r_f) + \delta_p(bull) + \gamma_p(bear) + \varepsilon_p \tag{2}$$

The definition of variables in Equation (2) are as follows:

α_p is the portfolio alpha.

r_p is the portfolio return.

r_f is the risk-free rate.

r_m is the return on the market index.

β_p is the portfolio's sensitivity to the market index.

δ_p is the coefficient of a bull market.

γ_p is the coefficient of a bear market.

ε_p is the random error term assumed to follow a normal distribution.

bull is the indicator for the upturn market phase.

bear is the indicator for the downturn market phase.

We use Equation (3) to calculate and transform portfolio returns (r_{pt}) from net asset values of unit trusts symbolised as current price (P_t), and its lag (P_{t-1}):

$$r_{pt} = \ln(P_t) - ln(P_{t-1}) \tag{3}$$

An alternative method that will be used as a robustness check on Jensen's alpha is the Treynor ratio, which is much similar to the Sharpe ratio (Sharpe, 1966), but it has some advantages in that it uses beta as the measure of portfolio risk.

$$Treynor = \frac{\overline{r_p} - \overline{r_f}}{\beta} \tag{4}$$

The variable $\overline{r_p}$ is the average portfolio returns and $\overline{r_f}$ is the average of risk-free rate. The parameter β is systematic risk (beta of portfolio). Beta is able to capture and quantify the sensitivity of portfolio to market movements. When beta equals unity, this indicates that changes in portfolio returns are proportional to market index. When beta is greater or less than unity, this shows that portfolio response is greater or less than market variation, respectively. When beta is zero, this signifies the absence of correlation between portfolio variation and market changes, and this would disqualify the market index as a valid performance benchmark. When beta is negative, then Treynor ratio will not have meaningful results. Portfolios with higher positive Treynor ratios indicate better portfolio performance.

3.3 Data characteristics

3.3.1 Sample design. The ASISA online database was used to identify and categorise unit trust funds under active and passive management groups. After the random selection of funds, their net asset values were downloaded from Iress online database. The study uses monthly closing prices from January 2010 to June 2022. This period should include the bull and bear relative market conditions before and during Covid-19. The South African all-bond index (ALBI), and the JSE Allshare index (ALSI) are used as proxies for risk-free rate and market benchmark, respectively. In order to ensure a comparable performance assessment of funds and in line with the relevant literature (Malefo *et al.*, 2016), we screen and require the selected funds to satisfy the following criteria:

(1) Only domestic funds are selected, that is, those that trade in the South African Johannesburg Stock Exchange.

(2) The funds must have a significant portion of their investment in equity.

(3) Funds of funds are excluded to avoid duplication.

(4) The funds must have maintained separate investment strategies of active and passive through the study period (January 2010 through June 2022.

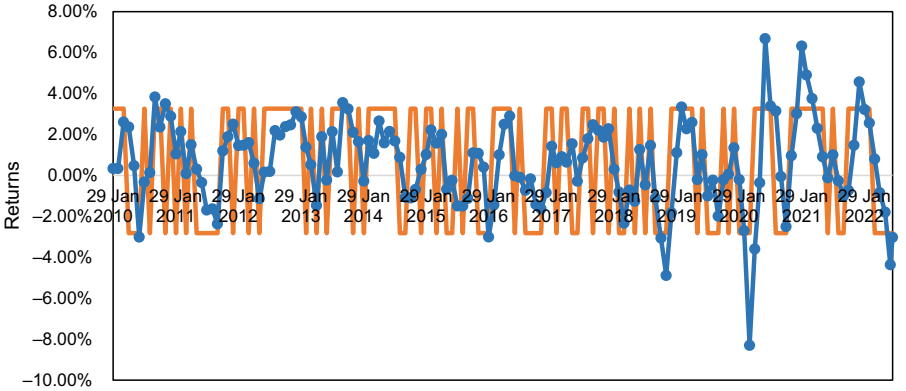
(5) The funds must have existed for the period of the study without interruption or ceasing operation.

(6) All funds must have accessible data on Iress online database. The single source criterion is intended to avoid data inconsistency.

(7) Funds with incomplete data are not included in the sample to avoid bias.

3.3.2 Identification of bull and bear markets. The empirical design of this study requires that we identify the bear and bull markets in the time series. While there is some guidance in the literature, there is no explicit prescribed method of dating bear and bull turning points as noted by Gonzalez *et al.* (2006, p. 81): "Despite widespread media interest in bull and bear markets, academic research that seeks to formally define bull markets is almost non-existent". Kole and Van Dijk (2017, p. 2) have also shown concern about the "absence of a clear definition of bull and bear markets" in academic research. Our approach of identifying the bear and bull markets is similar (but not the same in detail) to De Chassart and Firer (2001) and Bhaduri and Durai (2006) as follows: Figure 1 plots two graphs. First, the long-term asymmetric averages of the Allshare index (ALSI) are shown as a uniform smooth line. This line is produced by computing positive and negative averages of ALSI separately, and then joining through with a line. Secondly, the quarterly moving averages of the Allshare index are plotted, showing a cyclical solid line with markers. The purpose of this set of graphs is to pictorially capture the regimes of bull and bear in the market within the horizon of the current study (last 12 years). The moving averages trend is intended to align and capture the quantitative definition of bear and bull markets, which requires some minimum depth (within the rise or fall of a market cycle) for a considerable duration. The data stretch for the period from January 2010 to June 2022, labelled on the x-axis of the graph, while the vertical axis shows the returns of the ASLI index in percentages. The long-term average (solid) line shows the normal trading range of 3.26 and −2.82 for positive and negative performance, respectively. The quarterly moving average line oscillates within the normal trading range from Jan 2010 to June 2022. We accept the protruding quarterly moving average line (between March 2020 and December 2020) beyond the average range to be the bear (below), and bull (above) market occasions. Before examining the detailed results of this study, it is helpful to review the summary descriptive statistics.

3.3.3 Summary data description. Table 1 presents the summary descriptive statistics of the sample used in the study. The first column shows that active portfolios (P1 to P10) have an average of 0.7%, while passive portfolios an average of 0.6%, which is the same as the benchmark average of the Allshare Index of the Johannesburg Stock Exchange (JSE). The average standard deviation for active portfolios (0.029) and passive portfolios (0.032) are both less (but not much) than the standard deviation of the Allshare index (0.038). Under both active and passive sets, there are more portfolios that are negatively skewed. Overall, Table 1



Source(s): Authors' graphics

Figure 1.
A plot of *Quarterly moving average line*, as well as *long-term average line* for negative and positive (asymmetric) numbers. Long-term asymmetric averages were computed for the JSE Allshare index for the period, January 2010 to June 2022

	Portfolio code	Mean	Std Dev	Kurtosis	Skewness	Min	Max	Count
Active portfolio	*P1*	0.007	0.035	8.273	−1.050	−0.198	0.135	151
	P2	0.007	0.036	0.652	0.042	−0.105	0.119	151
	P3	0.006	0.027	0.270	0.112	−0.061	0.087	151
	P4	0.005	0.041	8.523	−1.379	−0.245	0.123	151
	P5	0.013	0.043	0.809	0.180	−0.104	0.145	151
	P6	0.000	0.008	−0.587	−0.667	−0.024	0.014	151
	P7	0.007	0.039	6.159	−0.687	−0.205	0.162	151
	P8	0.009	0.035	0.577	−0.381	−0.095	0.088	151
	P9	0.007	0.035	1.027	−0.270	−0.099	0.111	151
	P10	0.007	0.029	1.235	−0.020	−0.092	0.109	151
Passive portfolio	*PP1*	0.006	0.040	0.244	0.031	−0.110	0.125	151
	PP2	0.005	0.044	3.022	−0.564	−0.204	0.136	151
	PP3	0.011	0.044	0.828	−0.050	−0.140	0.125	151
	PP4	0.008	0.044	0.227	−0.017	−0.116	0.137	151
	PP5	0.006	0.036	0.363	−0.069	−0.103	0.100	151
	PP6	0.006	0.039	0.013	−0.041	−0.106	0.099	151
	PP7	0.001	0.057	0.240	−0.118	−0.170	0.150	151
	PP8	0.006	0.040	1.245	−0.207	−0.143	0.138	151
	PP9	0.003	0.022	8.414	−1.392	−0.123	0.071	151
	PP10	0.006	0.032	0.826	−0.094	−0.090	0.107	151
Market	*ALSI*	0.0060	0.0387	0.9530	−0.1266	−0.1373	0.1235	151
	ALBI	−0.0004	0.0223	4.5082	−0.8940	−0.1127	0.0617	151

Note(s): The portfolio codes P1–P10 represent active portfolios, and PP1 to PP10 represent passive portfolios. ALSI: stocks index, ALBI: bonds index, a proxy for risk-free rate
Source: Authors' computations

Table 1.
Descriptive summary statistics

shows that both active and passive portfolios are reasonably comparable with each other and the market benchmark.

4. Empirical results

This section presents the empirical results of the study in Table 2, Figures 2–4. Table 2 provides a regression output generated from Equation 2, computations of Jensen's alpha from Equation 1 and Treynor ratios from Equation 4. The beta for all portfolios is statistically significant at less than one percent level. This indicate that both active and passive portfolios co-vary with the market benchmark. It is also notable that the beta's and R-square of passive portfolios are closer to unity as expected since these portfolios are index trackers. Since the methods of analysis in this study are Jensen's alpha and Treynor ratio, the regression output is just a means to an end (providing coefficients for calculations in panel 2).The last four columns of panel 2 report the results of Treynor ratio and Jensen's alpha under normal, bear and bull market conditions. The interpretation of these results is presented in Figure 2 (for Treynor ratios) and Figures 3 and 4 (for Jensen's alpha).

Figure 2 shows the performance of portfolios for both passive and active investing under the Treynor measure. Figure 2 plots and ranks active and passive portfolios on the basis of Treynor index. The vertical axis labels the Treynor ratios, and the horizontal axis shows the rankings of the portfolios from the lowest to the highest (ranked from 1 to 10). Figure 2 shows that the magnitudes of Treynor ratios for active portfolios are predominantly more than those of passive portfolios. This is indicated by the graph of active portfolios (solid line) being positioned above the graph of passive portfolios (dashed line), signifying that active investing outperforms passive investing. To investigate whether Jensen's alpha will collaborate this finding, we interpret Figures 3 and 4 next.

We present the results of Jensen's alpha under three different market conditions, namely, normal (in Figure 3), bull (in Figure 4, panel A) and bear (in Figure 4, panel B). In all graphs, the vertical axis labels Jensen's alpha, while the horizontal axis shows the portfolio rankings from 1 (lowest) to 10. Two observations are revealed in Figure 3. First, the alphas of all portfolios are positive, indicating that both active and passive outperform the market benchmark. Second, the line for active portfolios is positioned high above the passive portfolio, line indicating that active investing outperforms passive investing, unambiguously. Thus far, the results of Jensen's alpha, under normal market condition, collaborate Treynor outcomes. Next, we need to examine the effect of bull and bear markets.

There are two discoveries coming out of Jensen's alpha under bull markets (Figure 4, panel A) and bear markets (Figure 4, panel B). Firstly, both markets have occasions when they experience underperformance of benchmark and outperformance, while the latter dominates. Second, and most importantly for this study, the line for passive portfolios is above the line for active portfolios under bull markets, and the reverse is the case for bear markets. This means that active investing outperforms passive investing under bear markets, and it is outperformed by passive under the bull markets. To summarise, active investing outperforms passive investing under both normal and bear markets but not under bull markets.

Based on the evidence of Treynor ratio and Jensen's alpha (Figures 2–4), we can conclude that both active and passive portfolios outperform the market predominantly. Active portfolios outperform passive investing under normal and bear market conditions, while passive portfolios only outperform active investing under bull markets.

5. Discussion of results

The curiosity of this study is whether the performance between passive and active investing differs under bear and bull market conditions. The empirical work is based on the emerging

Table 2. Performance results

Portfolio code		Panel 1 Regression analysis				Panel 2 Calculations of Jensen's alpha and Treynor ratio				
		Beta	Bull	Bear	R^2	Ave portfolio	Bull Jensen's alpha	Bear Jensen's alpha	Normal Jensen's alpha	Treynor ratio
Active portfolio	P1	0.570***	0.008*	−0.032**	0.577	0.007	−0.005	0.035	0.004	0.013
	P2	0.646***	0.008*	−0.006*	0.578	0.007	−0.005	0.009	0.004	0.012
	P3	0.551***	0.004**	0.033**	0.452	0.006	−0.002	−0.031	0.002	0.011
	P4	0.616***	0.014*	−0.055***	0.590	0.005	−0.012	0.056	0.002	0.009
	P5	0.638***	−0.019*	0.021*	0.264	0.013	0.029	−0.011	0.010	0.021
	P6	0.123***	0.000**	0.041***	0.110	0.000	0.000	−0.040	0.000	0.007
	P7	0.671***	0.012*	−0.028*	0.630	0.007	−0.009	0.031	0.003	0.011
	P8	0.571***	0.020*	0.055***	0.441	0.009	−0.014	−0.049	0.006	0.017
	P9	0.571***	0.019**	0.087***	0.443	0.007	−0.015	−0.083	0.004	0.014
	P10	0.586***	0.008**	0.010*	0.592	0.007	−0.004	−0.007	0.003	0.012
Passive portfolio	PP1	1.052***	−0.001*	0.013***	0.968	0.006	0.001	−0.013	−0.001	0.006
	PP2	0.968***	0.001**	−0.039***	0.836	0.005	−0.002	0.038	0.000	0.006
	PP3	0.935***	−0.037*	0.045*	0.392	0.011	0.043	−0.039	0.006	0.013
	PP4	0.647***	−0.031*	0.051*	0.008	0.008	0.035	−0.047	0.004	0.013
	PP5	0.938***	−0.002*	0.011**	0.934	0.006	0.002	−0.011	0.001	0.007
	PP6	1.038***	−0.002*	0.027***	0.950	0.006	0.002	−0.027	0.000	0.007
	PP7	1.228***	−0.001*	−0.037**	0.721	0.001	−0.006	0.030	−0.007	0.001
	PP8	0.93***	0.000**	0.005*	0.863	0.006	0.000	−0.005	0.000	0.007
	PP9	0.139***	0.003**	−0.004*	0.073	0.003	−0.001	0.007	0.003	0.025
	PP10	0.887***	−0.010*	0.010*	0.852	0.006	0.011	−0.009	0.001	0.007

Note(s): The first panel presents the regression analysis, and panel 2 shows the computations for Jensen's alpha and Treynor ratio. Beta is the regression coefficient for portfolios to benchmark index (Johannesburg Stock Exchange Allshare Index). Bull and bear are coefficients of dummy variables for bull and bear market conditions, respectively. R^2 is the R-squared regression output. Jensen's alpha is calculated using equation (1), and Treynor ratio is calculated using equation (4)
Statistical significance at *** 1%, **5%, *10%
Source(s): Authors' computations

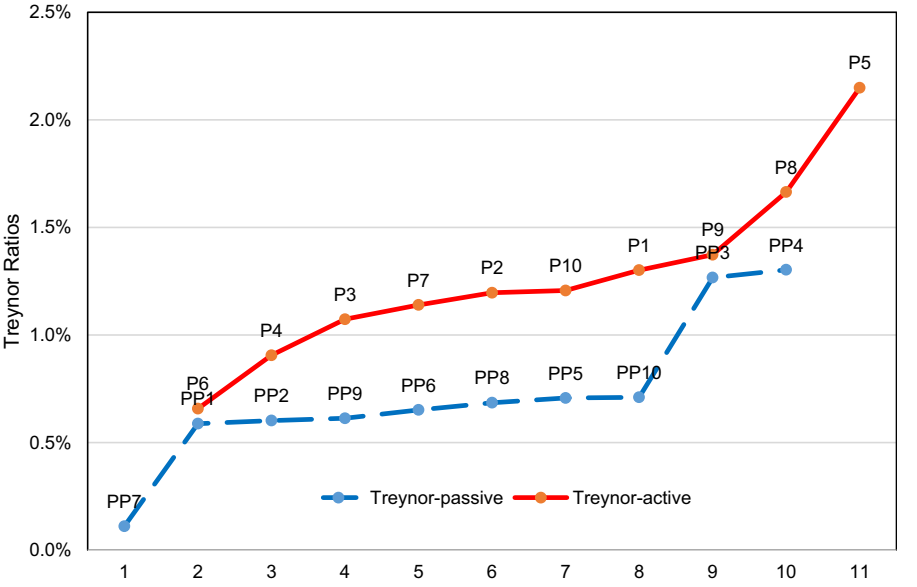


Figure 2.
Plot of Treynor ratios for active investing (solid line) and passive investing (dashed line). The codes with P represent active portfolios while PP represent passive portfolios

Source(s): Own computations

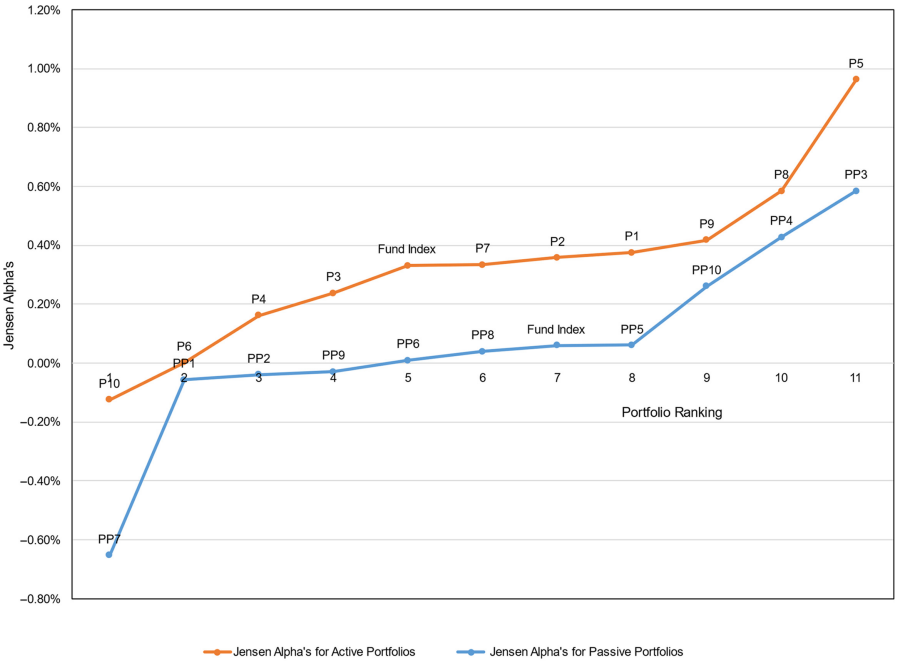
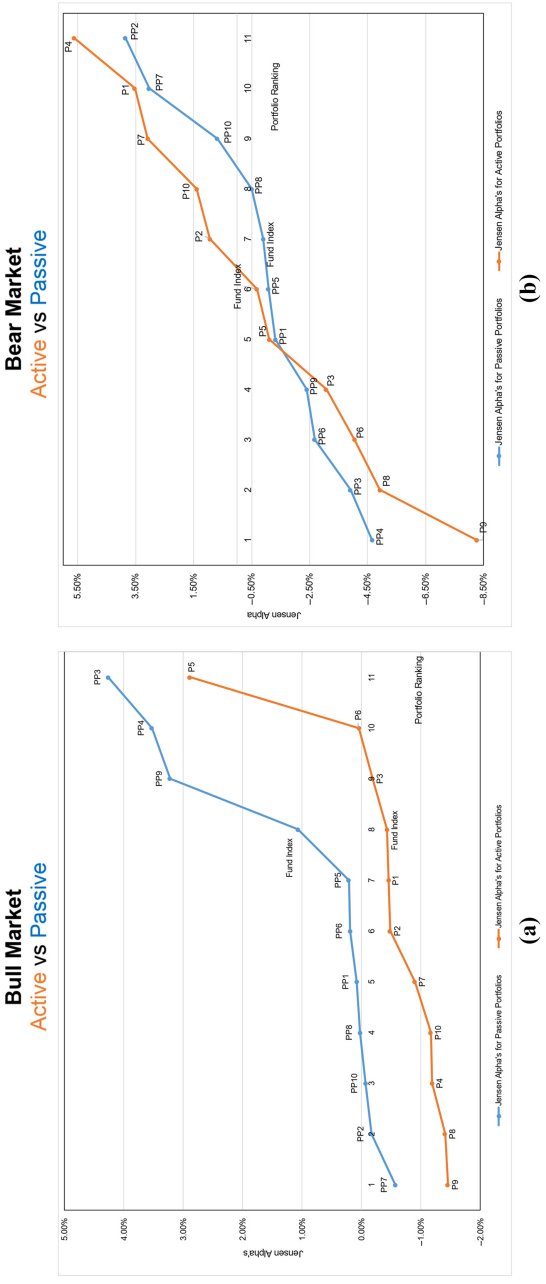


Figure 3.
A plot of Jensen's alphas for active and passive investing normal market conditions

Source(s): Authors' graphics



Source(s): Authors' graphics

Figure 4.
A plot of Jensen's alphas for active and passive investing under bear and bull markets

market of Africa, particularly the South African unit trust market. The results are interesting. The primary finding is that actively managed funds outperform passive investing style under bear and normal market conditions, while passive investment strategy outperforms active investing style under bull markets. The discovery of active investing showing outperformance in bear market is in tandem with known information about market regimes. Observations from the South African market timing literature (De Chassart and Firer, 2001, p. 2) reveal that "bear timing [is] superior to bull timing both on returns basis as well as on the basis of required predictive accuracy" since a "relatively low forecasting ability is required to outperform the buy-and-hold return" (p. 8). Also, the results of the current study and the quoted extract are consistent with the findings in developed markets summarised by Kosowski (2011, p. 607): "the stylized fact of average mutual fund underperformance documented in the literature stems from expansion periods . . . and not recession periods". While the interpretation of bear and bull outcomes is given regarding the active investing outperformance during normal market condition, we see this as confirming the explanation of inefficiency in domestic market similar to other emerging economies.

The secondary results show that both passive and active investing outperform the market benchmark of JSE Allshare index. Although this is a supportive result, it is not the core of this study. A comparison and contrast of our general findings with related studies is important. Our results are mostly in conflict with results from developed countries (see review by Cremers *et al.*, 2019) but consistent with observations from emerging markets, particularly Malaysia (Lai and Lau, 2010), China (Rao *et al.*, 2017) and India (Agarwal and Pradhan, 2018), in the sense that they find asset management outperform financial market benchmarks. Regarding the domestic literature, the outcomes of the current research appear to swim against the tide in that most prior studies report negative results (Oldfield and Page, 1997; Oldham and Kroeger, 2005; Tan, 2015; Thobejane *et al.*, 2017; Toerien *et al.*, 2022), or mixed findings (Malefo *et al.*, 2016; Bertolis and Hayes, 2014), but compares favourably with a few discoveries (Gilbertson and Vermaak, 1982; Knight and Firer, 1989; Wessels and Krige, 2005; Kalima and Gopane, 2022). There are several plausible reasons for contradictory findings.

First, the comparability of the current study to most South African studies is implicit and not explicit. Most of these studies' empirical objective is to evaluate the performance of the South African funds' performance with the financial market benchmark. We can call these benchmark studies. In contrast, the current study investigates the performance of active versus passive investing, that is, passive versus active studies. The literature accepts the two sets of studies as comparable because if asset managers can beat the market (or benchmark), they are assumed to be competent in active investment style. The problem arises in sample design. Benchmark studies tend to aggregate passive and active investing funds together into one sample. Since passive investors are, by design, not intending to beat the benchmark but to track it, mixing the two samples creates inadvertent opportunity for misleading results of underperformance for active investing. This is mostly the case in the above studies.

Second, the use of different methodological approaches is likely to account for some differences between the current study and the contradictory results. Different South African studies reviewed in this paper used diverse data frequencies including weekly, monthly or quarterly returns. Some studies use model-free metrics (like Sharpe index or Treynor ratio), while other studies use single index model (like basic Jensen's alpha) or multifactor models (like Fama and French, 1993, 2015; Carhart, 1997). The literature on performance measures (see review by Cremers *et al.*, 2019) has established that no model is perfect, not even the advanced multifactor models which are likely to contaminate research outcomes resulting in misleading underperformance (Cremers *et al.*, 2013; Kadan and Liu, 2014). While performance measures should be less of a concern relatively, it is possible that it may account for some difference in findings.

Thirdly, and more importantly, majority of studies disregard the potential influence of market phases or bear and bull interims. We submit that this is a critical oversight, and it is a planned contribution of the current paper to correct this weakness. An exception is the limited South African literature that is closest to our investigation, namely, Bertolis and Hayes (2014), Malefo *et al.* (2016), Kunjal *et al.* (2021) and Apau *et al.* (2021), but which differ from the current study in one important aspect. The empirical designs in these studies account for prevailing states of economy, but unlike the current paper they are benchmark outperformance studies and not explicitly investigating the passive versus active debate. That is, they do not split funds into passive and active funds with a direct objective of comparing the competitive performance of the two investing styles, but they are focused on whether the funds outperform benchmarks. The importance of accounting for states of economy is confirmed by the market regimes literature both in South Africa (De Chassart and Firer, 2001) and other countries (Pagan and Sossounov, 2002; Lunde and Timmermann, 2004; Wong and Shum, 2010; Kole and Van Dijk, 2017; Zegadlo, 2022).

Therefore, we conjecture that some or a combination of the above factors may account for the contradiction between the results of the current study and those of prior South Africans. Nevertheless, all the above factors are not unique to the South African environment, but our view is that if applicable, such weaknesses are likely to exacerbate the problem in emerging markets like South Africa. It is notable that our findings support the stylised fact that active investing is more likely to be profitable in emerging markets (Chang *et al.*, 1995; Dyck *et al.*, 2013). Our findings are also consistent with Cremers *et al.*'s (2019, p. 9) global assessment: "Overall, our review of the literature suggests that the conventional wisdom judges active management too negatively. We conclude that the academic literature during the past 20 years shows that active managers have a variety of skills …". This appraisal and defence of active investing is particularly raised against the modern trends summarised by: Anadu *et al.* (2020, p. 23): "Over the past 2 decades, there has been a substantial shift in the asset management industry from active to passive investment strategies". This discussion signals watchfulness as protagonists' and antagonists' debate deepens globally including emerging markets.

6. Conclusion

The world is now favoured by increased globalisation, improved market efficiency, speedy trading systems and timely data access due to digitalisation, all of which inspire an eminent need to update the research of passive versus active investment strategies. This study is also motivated by developments in financial markets and some worrying literature observations. Literature review shows a dominant history of empirical design that neglects the role of market regimes (bear or bull) in critical assessments of passive and active investment strategies. Therefore, the current study investigates whether the performance of passive and active investing is characterised differently under bear and bull market conditions, particularly in the emerging markets of Africa taking South Africa as a case study. The core finding of the study is that actively managed funds outperform passive investing style under bear and normal market conditions, while passive investment strategy outperforms the active investing style under bull markets in tandem with related studies. Although we used established methods in portfolio performance comparison, we concede that these models and our overall empirical design are not without limitations. The study's weaknesses include a limited data range, thus excluding more amplified lows and highs of market conditions. Also, our analytical approach could be deepened by applying specialist econometric techniques that are designed to track extreme tails of time series such as quantile connectedness approach and quantile vector autoregressive (QVAR) model (Ando *et al.*, 2022). Further, our analytical modelling does not specifically account could be better adapted for possible heterogeneous risk dynamics between passive and active investing. These limitations form part of further research recommendations.

Nevertheless, these results were based on robust and accepted portfolio performance measures and have important policy and business implications. First, the outcomes of this research stand to benefit global investors who may need to choose between passive and active investing in emerging markets. Second, the results provide a useful application in legal systems to validate litigation cases which probe whether passive and active investment strategies are implemented accurately. Thirdly, policymakers and regulatory systems may need to know the commercial implications of global shift from active to passive investing. All the above applications necessitate an up-to-date knowledge about developments in passive and active investing both globally and in emerging markets. A recommended further study is to extend this study to multiple emerging markets within similar empirical design and examine the importance of controlling for bear and bull market conditions.

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