The Active Versus Passive Investing Debate: Evidence From the 2018-2023 Market Cycle

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The paper investigates the research question: Which investment management style, active or passive, produced better risk-adjusted performance from January 1, 2018, to December 31, 2023 (Prondzinski, 2010)? The comprehensive time period was further subdivided into two periods: January 2020 – May 2023, the Pandemic period, and March 2022 – December 2023, the interest rate hiking period without any interest rate cuts. The study tested twenty-seven hypotheses derived from this research question for the specified periods addressed.

The study, consisting of 27 statistical tests, found that on a risk-adjusted basis, the Sharpe ratios of active indices (proxies for active management) significantly exceeded the passive indices (proxies for passive management) in nine of the periods tested) (Prondzinski, 2010).

Keywords: active management, passive management, Sharpe ratio

INTRODUCTION

This research study was intended to expand and update the current thinking on the active versus passive management debate. The literature was reviewed for the period January 2018 through December 2023, and the study's primary research question was: Over the literature review period, which investment management style, active or passive, produced better risk-adjusted performance (Prondzinski, 2010)?

History and Definition of Active/Passive Investing

Active and passive investing was derived from Modern Portfolio Theory (MPT), conceived by economist Harry Markowitz in 1952. The MPT framework is used to build a portfolio of investments that maximize the expected return for a given level of risk.

MPT formalizes and extends the concept of investment diversification. The diversification concept suggests that owning contrasting asset classes (stocks, bonds, cash, real estate) is less risky than owning only one type of asset class. The key learning insight of MPT suggests that a conservative investor can do better by choosing a mix of low-risk and riskier investments than by only selecting low-risk choices.

Active investing is the process of investing in funds selected by portfolio managers based on their research and independent analysis of an active fund's worth. Active investing is a strategy involving buying and selling assets to earn a profit and outperform a benchmark or index such as the S&P 500.

Alternatively, passive investing is a wealth-building, buy-and-hold strategy for long-term investment horizons. Passive investing maximizes the investor's return by minimizing investment turnover, buying, and selling. The passive investor understands that passive investing is cheaper, less complex, and can often produce superior after-tax results compared with actively managed portfolios. Passive investing lowers risk by allocating assets to differing asset classes, sectors, and industries instead of individual stocks.

The Debate

Investors have debated the merits of 'active' versus 'passive' investing for almost two generations. As the Certified Financial Planner® spends time thinking about how to construct client investment portfolios, the ongoing, provocative conversation centers on the role of active and passive styles of investing. The client-financial planner conversation is not just academic; the resulting investment decisions can potentially affect investment results in real and meaningful ways. Which investment style produces the best long-term risk-adjusted performance?

Benefits of Passive Investing for the Individual

The benefits of passive investing for the individual and body of evidence have long been documented by Standard & Poor's. Passive investing is arguably a sensible way for individual investors to invest in the stock and bond markets to save for future income security. S&P Dow Jones Indices (2022) reports in their webinar, *Unlocking the Power of Passive Investing with SPIVA*, that for the past 20 years, S&P Indices vs. Active (SPIVA) Scorecard results demonstrate that passive investing outperforms active investing over longer-term horizons.

Malkiel (2023) argued that indexing a stock portfolio through a low-cost fund remains the best way to participate in the stock market. Malkiel cited evidence from Vanguard's Bogle Financial Research Center that from 1990 to 2009, the Vanguard Total Stock Market fund outperformed the average actively managed equity fund by almost 1% yearly. For example, during the 20 years from 1990-2009, the total stock market index returned 8.42% annually, while the actively managed equity mutual fund's annual return was only 7.53% (Malkiel, 2023).

Malkiel (2023) referenced the basic idea of efficient markets: market prices are always wrong or incorrect. Efficiency implies that stock price information is reflected in prices without delay and that current market prices reflect the combined judgment of thousands of investors and research departments of the most influential Wall Street firms. It's thus rare for an individual manager to make correct bets against the wisdom of the market. Malkiel (2023) concluded that more than 90% of active managers failed to beat the market over 10- and 20-year periods.

Lower cost is the primary benefit/advantage of passive/index investing. The costs of active investment manager research, purchases, and sales securities can average 1-2% per year. Although the index investor can expect to earn the market return, the active investor should expect to underperform the market by the costs of their management fees, approximately 1-2% a year. To be sure, the investment return evidence offers proof that active managers underperform passive index funds by the difference in their costs.

Index funds and active funds are treated differently from a tax perspective. Active fund turnover (trades) results in recognizable annual taxable capital gains, while a passive fund's low-to-zero turnover generally results in no capital gains, suggesting that index funds exhibit greater tax efficiency than active funds. International research findings show that active manager had inferior international market performance compared to their passively managed counterparts (Boyde, 2022). The author further reported that the movement from active to passive funds is a global phenomenon and is a trend not just limited to the U.S. Boyde (2022) found that cumulative global fund flows for October 2022 show that passive equity and bond funds have attracted substantial inflows, while active equity and bond funds experienced outflows, offering support for the trend that passive investing is surpassing active investing.

LITERATURE REVIEW

Crane and Crotty (2018) studied the existence of index mutual funds as a benchmark of active fund manager performance. Specifically, they studied the spread of passive fund performance as a yardstick of the additive ability of active fund managers' ability to outperform. The authors' research idea, borrowed from Malkiel (1995), uses index fund performance as a proxy for the opportunity cost of active management. Their research results connote that persistent investment skill exists with index funds, implying that the appraisal of active fund manager skills can be improved by the distribution of passive fund investment performance. Crane and Crotty (2018) concluded statistically that the performance dispersion of passive index funds has significant ramifications for evaluating active managers and benchmarking passive fund performance.

AMP's press release, The *Problem with the active versus passive debate (2018)*, speaks to the active versus passive debate from a practitioner's perspective, suggesting that debaters have the wrong argument. The thrust of the press release is that what clients need from asset managers, passive or active, is to help them achieve their financial goals. From the perspective of a Certified Financial Planner®, financial goals are absolute and should guide the debate related to the choice of investment style: active, passive, or an integrated investment mix.

Roberts (2018) argued for increased transparency in understanding active and passive management's true costs and benefits. The argument is clouded by the historical difficulties of understanding the true costs of active fund investing, compared and measured against more cost-effective passive alternatives. The author concluded that cost disclosures can enhance investment decision-making, ensuring active managers beat their passive indices net of relevant fees (Roberts, 2018).

Atherton (2018) refers to using ETFs as trackers and their key cost advantage. The author discussed the competitive cost environment among large financial groups such as BlackRock and Vanguard, as these strategic competitors seek to drive down costs. The author suggested that advocates of ETFs argued that they outperform active funds over most periods. The benefits of ETFs as passive investments include the range of available investment options and their level of sophistication. Drawbacks of ETFs include the fact that the structure of tracker funds is heavily weighted towards the larger companies, resulting in disproportionate amounts of money concentrated in a handful of giant stocks. The author concluded with a discussion of the evidence of a crossover effect, with the active-passive debate yielding a two-way, neutral approach with each fund management group innovating to encroach on each other's investment style (Atherton, 2018).

Norrington (2018) explored how a positive macroeconomic environment, buoyed by the Fed's quantitative easing, has favored active managers and explores if the fees paid to active managers are worth the cost. The author argued that quantitative easing has enabled investors to achieve outstanding returns by simply buying the market replete with cheap exchange-traded funds, thereby casting doubt over the worth of stock-picking active managers. Referencing the efficient market hypothesis and Burton Malkiel's random walk hypothesis, passive investors picking ETF trackers would deliver superior performance over the long term. On balance, the author summarizes that there shouldn't be an active versus passive debate; the best choice is to remain agnostic, recognizing the value of passive vehicles and embracing active managers who add value for investors (Norrington, 2018).

In Williams-Alvarez's (2018) article, *Active Management ensures 'someone is driving the bus'*, the author discussed how Barbara Delaney built her advisor business on the active side of the active versus passive management debate. Seventy-five percent of the assets managed by her company, StoneStreet Renaissance, are actively managed because Ms. Delaney believes it gives advisors more flexibility and better downside protection. Delaney's idea is to use active management techniques to educate her clients, assist them in setting financial goals, and provide unique messaging (Williams-Alvarez, 2018).

Duncan (2018) suggested that a mix of actively managed funds and passive investments replicating an index at a low cost can function in an investment portfolio. The author believes that the judgment to invest passively or actively is independent of the decision to invest over the long term, given the numerous active and passive strategies available from a long-term horizon investing perspective. On balance, the author

believes active management is important to ensuring fund managers are actively engaged with their investment companies (Duncan, 2018).

A multi-asset investment strategy can be accomplished by investing in a variety of asset classes. Asset classes may include stocks, bonds, real estate, or cash which will serve to create a well-diversified portfolio. Sardana (2018) suggests that multi-asset funds are becoming popular for investors desiring to diversify their holdings across several asset classes using one fund. The active versus passive debate has been brewing for years as passively managed fund providers continue cutting costs, increasing competitiveness. The author's perspective is that active fund advocates argue that active funds tend to outperform the benchmark as active managers choose their fund investments. Whether active or passive investing, diversification is key for investors wishing to gain exposure to the best global opportunities (Sardana, 2018).

Hodari (2019) argued that the active versus passive investing debate initiated by Vanguard founder Jack Bogle is the wrong discussion; the investment management reality is that there's room for both philosophies. Hodari suggests that several internal life cycle variables, such as age, risk profile, and net worth, dictate how your portfolio should be allocated. These variables change over time as the investor moves through his/her life cycle and serve to determine where the investor falls on the active-versus-passive spectrum. How active or passive one wants to be is dependent on how one manages their asset allocation. The author's philosophy is that the investing bottom line is not absolute; the author argued in favor of building a diversified portfolio that accounts for both active and passive approaches (Hodari, 2019).

Hodari's (2019) perspective is that we're having two separate discussions about active versus passive investing. The first discussion concerns asset allocation; the second is what you do within the chosen allocation. Age, net worth, and risk profile are examples of internal factors dictating how one's portfolio will be allocated. Hodari suggested that the diversified investment options offered by robo-advisors might be the best solution for the individual investor with a modest net worth. Alternatively, the higher net worth individual must optimize their portfolio for complexities such as taxes and estate planning. Hodari's concluding perspective is that determining how active or passive you want to manage your portfolio's specific allocation to various assets is a function of the asset in question. The author believes in building an integrated portfolio with active and passive investment-style approaches (Hodari, 2019).

Barron's (2019) suggested that stock market investing includes different philosophies, styles, and risk profiles. The choice of investment strategy/style- active versus passive-is primary. Barron's asks, "Do you want to invest with an active manager who is evaluating individual stocks and bonds and choosing what to own, or do you want a passive fund that owns a wide swath of the market, and doesn't trade very often?" Passive funds operate based on a set of low-cost buy/sell allocation decisions because the investor does not have the costs related to a team of researchers and analysts who evaluate individual investments. Alternatively, with active investing, an investment manager renders buy-sell decisions related to stock/security selection to beat the market. The article concluded that a mixed, blended, or composite investment strategy, blending active and passive styles, may be the best strategy (Baron's, 2019).

Younes (2019) discussed the results of a recent active versus passive debate at a funds conference. The debate conclusion, as always, was that investors consider a blend of active and passive investments. Younes suggested the ease of gauging the performance of passive funds, as these funds track their benchmark, and the tracking error of these funds will determine if the passive funds successfully track their benchmark performance; the same is not true for active funds. The author opined that an information ratio, a risk-adjusted measure of actively managed fund performance, should be the metric used for active funds. Interestingly, Younes found that active manager performance increases as the investment time boundary increases. The author concluded that whether active or passive, investors should focus and decide on their fund allocation-active or passive-at the beginning of the investment process (Younes, 2019).

Butler (2019) defines, examines, and analyzes the two primary theories, methods, and philosophies of investment. The author's perspective is that either strategy's merits depend on the economic cycle, market conditions, and one's knowledge. Butler prefers active management to passive management because he believes he achieves better results when he is 'active' in his positions. Remaining active requires more time and research, and the author concluded that the average person seeking to grow their retirement will most

likely opt for a passive investment strategy to avoid experiencing market downsides and below-market levels while keeping costs low (Butler, 2019).

Schlesinger's (2019) essay continued the twenty-year debate on whether active strategies are better than passive ones. Active managers claim that purchasing and selling stock securities yields returns that exceed the performance of its benchmark. Passive managers contend that an investor should buy an exchange-traded fund replicating a broad market index, such as the total stock market index. The thinking is that whatever the index does, the investor/investment will be optimized over the long term. The author's perspective is that evidence largely supports the passive investment strategy. Alternatively, Schlesinger reported observing how an active manager can situate and insulate a portfolio in anticipation of a market decline, though no perceptible pattern exists to determine if or when the active manager will outperform. The author found that regardless of an investor's strategic choice, active and passive strategies, individually, have strengths and weaknesses. The recommendation is that investment success is likely if an investor builds a sustainable, low-cost, diversified portfolio (Schlesinger, 2019).

Dhanorkar (2020) discussed how investors seeking passive exposure to the equity markets can use funds offering multi-cap exposure. Multi-cap funds are funds that invest their corpus in a portfolio of equity and equity-related products of companies with varying market capitalizations and shift without constraints among sectors to capture opportunities presented by market conditions. Dhanorkar reports that multi-cap index funds offer restrained market cap diversification. As multi-cap fund active managers have sought to outperform their benchmark index, the underlying active multi-cap funds have suffered the same issues, rankling other actively managed funds. Dhanorkar concluded that passive investing earns returns in line with the broad market, even though the investor's diversification needs may not be fully satisfied.

Amidst the pandemic, the Journal of Financial Planning (2020) queried advisers about their economic perspective for the next two-year and five-year periods. Considering the costs related to each management style, advisers have asked which type of management style they thought would provide the best overall investment performance. Two-thirds, or 66%, of advisers preferred a blend of active and passive management; 24% of survey respondents say that passive management produces optimized investment performance (Journal of Financial Planning, 2020).

Henebry (2020), a chartered financial analyst, discussed how investor behavior and emotions get in the way and cause investors to display irrationality, buying low and selling high. The author suggested that now is a fortuitous time to revisit the active versus passive investing discussion, observing the vast array of investment approaches that vary from the simple active versus passive paradigm. Henebry referenced Jack Bogle's 2007 book, *The Little Book of Common Sense Investing*, which frames a robust case for index (passive) investing and cites investor conduct as a significant factor affecting an investor's capability to produce inexpensive index returns. The author cited an emerging thought-provoking combination approach from a St. Louis-based registered investment adviser, traditionally an active stock-picking firm. The St. Louis-based investment adviser observed that most outperformance opportunities derived from allocation compared with individual security selection, an endorsement of an index, or a passive investing approach. The author concluded that advisers prefer allocations that merge active and passive investment approaches and diversify to fuse the leading active and passive philosophies in uncertain times (Henebry, 2020).

The Economic Times (2020) reported that the end of 2020 was a good time to buy equities and remain invested long-term. The article discussed a young investor exploring building a portfolio but could not decide between active and passively managed funds. The article suggested that the investor wanted to make an informed choice considering both active and passive fund categories' risks, costs, return, and performance history. The article urged young investors to understand that active management means market timing and selection skills based on understanding the microenvironment and the market's cycles (Economic Times, 2020).

The Economic Times (2020) explained the concept of 'alpha' or excess return and how fund managers modify portfolios and choose stocks expected to perform. Alternatively, with passive investing, the young investor need not worry about market cycles or timing for passive investing, making it easier to buy the indices, ensuring a return that mirrors the market. The article concluded that passive investing is the best

choice for the young investor who does not have the time, energy, and interest in investments but wants his money to earn a decent over the long term (Economic Times, 2020).

Plan Advisor (2020) reported in *Active vs. Passive Strategies* that passive funds have received considerable retirement plan attention, with investment managers making the case that passive funds are offered in many plan menus. Active fund managers often make the case that active management offers superior performance in periods of market volatility, while passively managed funds do better during bull markets. Summarizing the active-passive debate reflected in the first three quarters of 2020, active U.S. and international equity funds reported better downside protection than index (passive) funds. Plan Advisor (2020) implies that a mix of active and passive investments reflecting the investor's goals and risk-return profile is the best choice for the investor.

Shah et al. (2021) asked which investment style performs better, passive or active fund management. Shah et al. explored investment management performance using SPIVA data scorecards. SPIVA, the S&P Indices versus Active scorecards, reports published semiannually by S&P Dow Jones Indices. SPIVA compares the performance of active equity and fixed-income mutual funds versus their benchmarks over varying time perspectives. The authors sought to understand the benefit of how the persistence scorecard evaluates consistency and shows that active management performance diminishes over time, with few funds consistently outranking their peers. Shah et al. summarized that index (passive) funds customarily outperform actively managed funds because of lower fees. The authors posited that pursuant to the claims of passive managers, the difficulty of beating the market (Efficient Market Hypothesis) over the long term remains (Shah et al., 2021).

Lledo, (2021) echoed Shah et al. (2021) research, observing that while 2020 was the time for active investment management, the long-term SPIVA scorecard argued overwhelmingly that passive asset managers consistently outperform their active counterparts. Lledo (2021) opined that initial research shows mixed short-term results for active managers; longer-term results support the notion that active investment management generally underperforms the benchmark.

The Economic Times (2021) discussed the thinking and experience of a hypothetical investor at the crossroads of the active versus passive debate, as half of the investor's portfolio has underperformed in the past several years. Understanding the difference between the two investment styles, the investor instinctively liked the idea of active management, feeling reassured that someone is researching to carefully select the securities presenting the best investment options. Using the hypothetical investor's logic, actively managed funds should consistently beat the market with a return exceeding that of a passively managed fund. The Economic Times (2021) concluded that the investors' key considerations include understanding what they are investing in and that the investment meets their goals and risk profile.

Peartree (2021) reported that the active versus passive debate data tells us that most active investment strategies fail to outperform a basic market-tracking index fund. Peartree discussed that since 2002, the S&P Dow Jones has been the definitive scorekeeper in the active versus passive investment debate, measuring fund returns against the returns of a benchmark. Given that the allure of active management is to always beat the market, the 2020 SPIVA report suggests that 2020 was a disappointing year for active investment managers who select securities and attempt to time the market. The author concluded that the probable path to investment success for most investors is to capture market-like returns using a low-cost index or market-tracking fund (Peartree, 2021).

Kumar (2021) reported that passive funds' performance has surpassed actively managed funds in the past couple of years and discussed the merits of both investment style approaches. Kumar mentioned that index (passive) funds offer investments based on market capitalization, wherein the selected passive funds track an index; however, with active funds, the possibility exists of earning greater returns than the benchmark index. With active funds, inferior returns remain possible based on fund manager stock selections. The author asked which investment style is better for investment. On balance, Kumar (2021) argued that, over the long term, a blended approach consisting of active and passive funds is workable.

Frick's (2021) article, *Competition and collaboration: Active versus passive managers*, discussed the historical competition between active and passive managers in the ESG (environmental, societal, and corporate governance) world of investments. Frick reported that passive managers have been eating into

active funds that have heretofore dominated the ESG space. Frick asked if passive managers can deliver a true ESG investment product or if there's an advantage for active managers in the ESG investment arena? Based on the article's articulated collaboration model, the author believes that although passives have a developed investment approach, with an active ESG investment style, managers can add significant value over and above passive investments in two areas: identifying leaders/laggards and valuing ESG risk. The author concluded that collaboration is powerful and that both sides of the debate agree that passive and active investment managers must work together to facilitate active ownership (Frick, 2021).

Content Engine LLC (2021) theoretically suggested that to invest in the market, one must master skills such as financial analysis, money management, and risk control. One also needs to know the investment approaches and/or philosophies used because the strategies that will be followed depend on them. Investment approaches may be classified as passive investment and active investment. The article described and discussed the features and benefits of each investment approach and concluded that the best investment approach is a combination of both investment styles/philosophies, with a percentage allocation to passive investments and active investments (Content Engine LLC, 2021).

Wealth Management (2022) explored the diminished distinction between index and active investing, citing inflexibility as a common trait of both investment approaches. The article cited the example of an active manager who may operate with urgency when trading on perceived mispricing because the manager can't sit on information relative to security prices that the manager believes the market has not yet incorporated. Index fund managers ironically also trade urgently as the relative index dictates the trade decision with no discretion over what securities to buy and when to buy them. Wealth Management (2022) concluded that the cost of inflexibility is a good reason for investors to look past traditional active and passive labels.

Bhalla (2022) argued that passive investing is a better investment approach when investing in large-cap mutual funds. Bhalla's perspective was that passive investing can serve to avoid psychological bias and generate returns consistent with how larger markets have performed. Alternatively, the author reported that in active investing, investors go against the herd mentality, invest actively, and get the desired alpha. Bhalla (2022) concluded that the two factors for active manager success are avoiding bad companies and choosing good management.

Barrett (2022) reported that in the first half of 2022, sixty percent of actively managed equity funds have underperformed the market. Barrett reminded us that active managers are well remunerated to pick stocks they think will outperform; however, active managers have underperformed the cheaper passive funds that simply track an index. Barrett reports that active performance has been miserable in the UK, with only 12 percent of active funds outperforming passive alternatives. The author's research found that active funds are more exciting to read and write about compared with passive funds; the press are suckers for stories about 'star' managers who have all shown that the best active managers cannot beat markets indefinitely. Barrett (2022) suggested that investors take a 'mix and match approach' and remain picky about areas where they choose to go active, noting how the U.S. has historically been a much harder market for managers to outperform.

Content Engine LLC (2022) reported that when selecting investments for their portfolio, the first decision the investor needs to make is the choice between active or passive investment strategies. The need to understand the advantages and disadvantages of each investment style and the importance of a diversified portfolio can help the investor determine the timing and feasibility of implementing an active or passive investment approach. Actively managed portfolio fees are higher than passive portfolios. Alternatively, the goal of a passive investing strategy is to meet the performance of an index or benchmark rather than to outperform it. Passive investing presents a limited, buy-and-hold approach intended to keep costs low. On balance, the article concluded that active and passive strategies are not mutually exclusive and recommended a combination of each in an overall portfolio (Content Engine LLC, 2022).

Dhanorkar's (2023) article, *Active vs passive mutual funds: Where should you invest?* examined the active versus passive debate by analyzing what the numbers say in terms of the inability of active funds to beat the index. Dhanorkar began by attacking active fund fees. The author reported that active returns have underperformed in the last 3, 5, and 10-year periods. The underperformance is widespread and includes

mid-cap funds, value funds, and large-cap funds. The implication of these findings means that the core of the portfolio is not consistently delivering the outcomes that active investors are paying for. Looking beyond the numbers, the author suggested that whether one buys the market (passive) or beats the market (active) is irrelevant if the investor cannot invest a sizeable amount and maintain their investment discipline over the long term. The author summarized his research by recommending that investors pick a low-cost, passively managed fund and stick with it for the investing time horizon (Dhanorkar, 2023).

Evans (2023) reported that the market is at the apex of change in the equilibrium bounded by active and passive investing. Evans found that the market is on the verge of passive funds outstripping active funds over the next few years. For example, the percentage of long-term U.S. assets associated with active funds is expected to drop below 50% after accounting for 53% in 2022; by 2027, the share of active funds is expected to shrink to 44%, with passive investing reaching 56% of long-term invested assets. Evans (2023) concluded that the ongoing shift toward passive investing is expected to continue.

Horstmeyer (2023) reported on how actively managed ETFs compare to passively managed ETFs. Horstmeyer found that while actively managed ETFs have fared better than active mutual funds when comparing returns against their passive counterparts, passive ETFs yield a higher post-tax return than actively managed ETFs. Expense ratio differentials, .26% for the passive ETF versus .57% for the active ETF, account for a large portion of the passive ETF outperformance (Horstmeyer, 2023).

DATA AND METHODOLOGY

The research process used to test the hypotheses derived from the research question is explained in this section.

Research Question

The study's primary research question was: From January 1, 2018, through December 31, 2023, which investment management style, active or passive, produced better risk-adjusted performance (Prondzinski, 2010)?

Research Model and Variables

The research model identified by Miller (2006) and later modified by Prondzinski (2010) outlines the relationships among the variables and presents a general flow of the study's logic and potential outcomes. Risk-adjusted returns were measured using the Sharpe composite performance measure, which combines risk and returns into a single value. The Sharpe ratio was employed to compare the performance of passive and active funds (Miller, 2006).

Morningstar Style Box

The Morningstar Style boxes categorize investments into growth, blend, and value styles and include three size categories: large-cap, mid-cap, and small-cap. These categories are based on market capitalization, with large-cap accounting for 70% of the cumulative market capitalization, mid-cap stocks for the next 20%, and small-cap stocks for the remainder (Morningstar, 2018).

Hypotheses

Nine hypotheses, derived from the above research question were tested for three different periods (January 2018 – December 2023, January 2020 – May 2023, and March 2022 – December 2023). The January 2018 – December 2023 was the aggregate period for the test, the January 2020 – May 2023 was the Pandemic period, and the March 2022 – January period was the interest rate hiking time frame without any subsequent rate cuts. Growth funds, blended funds, and value funds were included in the tests.

Large Growth Fund/Index

$H1_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large growth investment category's Sharpe ratio is not significantly greater than the passively managed Russell 1000 Growth Index's Sharpe ratio.*

$H1_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large growth investment category's Sharpe ratio is significantly greater than the passively managed Russell 1000 Growth Index Sharpe ratio.*
Midcap Growth Fund/Index

$H2_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap growth investment category's Sharpe ratio is not significantly greater than the passively managed Russell Midcap Growth Index's Sharpe ratio.*

$H2_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap growth investment category's Sharpe ratio is significantly greater than the passively managed Russell Midcap Growth Index's Sharpe ratio.*

Small Growth Fund/Index

$H3_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small growth investment category's Sharpe ratio is not significantly greater than the passively managed Russell 2000 Growth Index's Sharpe ratio.*

$H3_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small growth investment category's Sharpe ratio is significantly greater than the passively managed Russell 2000 Growth Index's Sharpe ratio.*

Large Blend Fund/Index

$H4_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large blend investment category's Sharpe ratio is not significantly greater than the passively managed Russell 1000 Index's Sharpe ratio.*

$H4_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large blend investment category's Sharpe ratio is significantly greater than the passively managed Russell 1000 Index's Sharpe ratio.*

Midcap Blend Fund/Index

$H5_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap blend investment category's Sharpe ratio is not significantly greater than the passively managed Russell Midcap Index's Sharpe ratio.*

$H5_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap blend investment category's Sharpe ratio is significantly greater than the passively managed Russell Midcap Index's Sharpe ratio.*

Small Blend Fund/Index

H6$_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small blend investment category's Sharpe ratio is not significantly greater than the passively managed Russell 2000 Index's Sharpe ratio.*

H6$_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small blend investment category's Sharpe ratio is significantly greater than the passively managed Russell 2000 Index's Sharpe ratio.*

Large Value Fund/Index

H7$_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large value investment category's Sharpe ratio is not significantly greater than the passively managed Russell 1000 Value Index's Sharpe ratio.*

H7$_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed large value investment category's Sharpe ratio is significantly greater than the passively managed Russell 1000 Value Index's Sharpe ratio.*

Midcap Value Fund/Index

H8$_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap value investment category's Sharpe ratio is not significantly greater than the passively managed Russell Midcap Value Index's Sharpe ratio.*

H8$_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed midcap value investment category's Sharpe ratio is significantly greater than the passively managed Russell Midcap Value Index's Sharpe ratio.*

Small Value Fund/Index

H9$_0$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small value investment category's Sharpe ratio is not significantly greater than the passively managed Russell 2000 Value Index's Sharpe ratio.*

H9$_a$: *For the periods January 1,2018, to December 31,2023, January 1,2020, to May 11,2023, and March 17,2022, to December 31,2023, the actively managed small value investment category's Sharpe ratio is significantly greater than the passively managed Russell 2000 Value Index's Sharpe ratio.*

Sample and Population

Prondzinski (2010) first used the described sample and population, followed by a subsequent analysis by Prondzinski and Miller (2018). Morningstar Direct was the database used for the research. The comparison utilized the Morningstar Style Boxes, which includes nine mutual fund classifications: large growth, midcap growth, small growth, large blend, midcap blend, small blend, large value, midcap value' and small value. These classifications were compared against the following passive benchmarks: Russell 1000 Growth Index (large growth); Russell Midcap Growth Index (midcap growth); Russell 2000 Growth Index (small growth); Russell 1000 Index (large blend); Russell Midcap Index (midcap blend); Russell 2000 Index (small blend); Russell 1000 Value Index (large value); Russell Midcap Value Index (midcap value); and Russell 2000 Value Index (small value) (Prondzinski, 2010; Prondzinski & Miller, 2018).

Data Collection Methods

Prondzinski (2010) and Prondzinki and Miller (2018) defined the data collection methods used int the study. Secondary data from the Morningstar Direct database were gathered and analyzed. The search parameters included open-end fund, Morningstar category, U.S. domicile, and exclusion of index funds. To avoid survivorship bias, all open-ended investments were included. The search resulted in the following number of funds for each Morningstar investment category: large growth (4,173), midcap growth (1,929), small growth (1,925), large blend (3,872), midcap blend (940), small blend (1,368), large value (3,263), midcap value (979) and small value (1,122) (Prondzinski, 2010: Prondzinski & Miller, 2018).

Daily returns for each fund in the investment categories were extracted from the Morningstar Direct database. These returns were then averaged using Microsoft Excel to calculate a category average for each day of the study period, resulting in 1,509 daily data points per investment category (Prondzinski, 2010; Prondzinski & Miller, 2018).

Standard deviations, average portfolio returns, and average risk-free returns were calculated using Microsoft Excel with five daily data points. The Bank of America Merrill Lynch 3-month daily Treasury bill returns served as the risk-free rate. These values were then used to compute the Sharpe Ratio, yielding 302 data points for all categories (Prondzinski, 2010; Prondzinski & Miller, 2018).

Daily data points were also extracted and used for each paired index comparison. These data points were exported to Microsoft Excel, where means, variances and related risk-adjusted measures of each pair of indices were calculated, compared, and analyzed (Prondzinski, 2010; Prondzinski & Miller, 2018).

Data Analysis Methods

Data analysis involved statistical analyses and hypothesis testing. The normality of each data set was tested using the Kolmogorov-Smirnov test (KS-test) in the Statistical Package for the Social Sciences (SPSS) (Prondzinski, 2010; Prondzinski & Miller, 2018).

For normally distributed data, F-tests for two samples were used to test for significant differences between the means of passive and active indices for the different investment categories (Miller, 2006). The null hypothesis was rejected if the estimated F-value exceeded the F-critical value and/or the p-value was less than 0.05. For non-normal data, non-parametric statistical tests were conducted.

RESULTS

The study's hypotheses tests, based on data extracted from the Morningstar Direct Database, are presented below, addressing the research question: From January 1, 2018, through December 31, 2023, which investment management style, active or passive, produced better risk-adjusted performance? Nine hypotheses were tested.

Demographics of the Population

The secondary data collected from the Morningstar Direct database included open-end funds, Morningstar category, U.S. domicile, and exclusion of index funds (Prondzinski, 2010; Prondzinski & Miller, 2018). This comprehensive search aimed to eliminate survivorship bias and yielded the following number of funds for each Morningstar investment category: large growth (4,173), midcap growth (1,929), small growth (1,925), large blend (3,872), midcap blend (940), small blend (1,368), large value (3,263), midcap value (979), and small value (1,122). The daily returns of each fund in these categories were aggregated to compute a daily category average (Prondzinski, 2010; Prondzinski & Miller, 2018).

Descriptive Statistics

Table 1 (Hypothesis 1) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the large growth fund category against the passively managed Russell 1000 Growth Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns for the three periods were lower for the large growth category compared to the passive Russell 1000 Growth Index. The mean daily Sharpe Ratios for the three periods for the large growth category were lower than those for the

Russell 1000 Growth Index, except for the combined period. Additionally, the standard deviations and variances for the three periods were higher for the large growth fund category than for the passive index (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 1
LARGE GROWTH VERSUS RUSSELL 1000 GROWTH INDEX

Number/Returns/ Ratios/Standard Deviation/Variance/ P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H1_0$	2018-2023	Large Growth	Russell 1000 Growth	
Number of Funds Within Category			4173		
Mean Daily Return			0.058	0.069	
Mean Daily Sharpe Ratio per Week			0.157	0.155	
Standard Deviation			0.551	0.542	
Variance			0.303	0.294	
P-Value					0.239
	$H1_0$	2020-May 11, 2023	Large Growth	Russell 1000 Growth	
Mean Daily Return			0.117	0.117	
Mean Daily Sharpe Ratio per Week			0.120	0.120	
Standard Deviation			0.507	0.496	
Variance			0..257	0.246	
P-Value					0.498
	$H1_0$	March 17, 2022-2023	Large Growth	Russell 1000 Growth	
Mean Daily Return			0.061	0.069	
Mean Daily Sharpe Ratio per Week			0.058	0.066	
Standard Deviation			0.448	0.445	
Variance			0.201	0.198	
P-Value					0.454

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 2 (Hypothesis 2) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the midcap growth fund category against the passively managed Russell Midcap Growth Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily return for the aggregate period was higher for the actively managed funds than the passive index proxy, the Russell Midcap Growth Index, but it was lower for the other two periods. The mean daily Sharpe Ratios for the midcap growth category were numerically close to those of the passively managed Russell Midcap Growth Index for the first two periods. However, in the third period, the midcap growth category's Sharpe Ratio was 0.031, compared to the passive index's ratio of 0.046. The standard deviations and variances were

consistently lower for the midcap growth fund category across all three periods (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 2
MIDCAP GROWTH VERSUS RUSSELL MIDCAPGROWTH INDEX

Number/Returns/Ratios/ Standard Deviation/ Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H2_0$	2018-2023	Midcap Growth	Russell Midcap Growth	
Number of Funds Within Category			1929		
Mean Daily Return			0.157	0.155	
Mean Daily Sharpe Ratio per Week			0.136	0.136	
Standard Deviation			0.606	0.614	
Variance			0.377	0.368	
P-Value					0.955
	$H2_0$	2020-May 11, 2023	Midcap Growth	Russell Midcap Growth	
Mean Daily Return			0.098	0.107	
Mean Daily Sharpe Ratio per Week			0.108	0.099	
Standard Deviation			0.537	0.562	
Variance			0.289	0.316	
P-Value					0.442
	$H2_0$	March 17, 2022-2023	Midcap Growth	Russell Midcap Growth	
Mean Daily Return			0.034	0.049	
Mean Daily Sharpe Ratio per Week			0.031	0.046	
Standard Deviation			0.438	0.449	
Variance			0.192	0.202	
P-Value					0.411

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 3 (Hypothesis 3) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the small growth fund category against the passively managed Russell 2000 Growth Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns for the small growth category were 0.106, 0.076, and 0.004 for the three periods, while the returns for the passive Russell 2000 Growth Index were 0.063, -0.011, and 0.055, respectively. The mean daily Sharpe Ratios for the small growth category were higher than those for the passively managed Russell 2000 Growth Index across all three periods. The standard deviations and variances were lower for the small growth fund category in the first two periods. In the third period, the standard deviation was higher for the small growth fund category,

but the variance remained lower compared to the passive index (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 3
SMALL GROWTH VERSUS RUSSELL 2000 GROWTH INDEX

Number/Returns/Ratios/ Standard Deviation/ Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H3_0$	2018-2023	Small Growth	Russell 2000 Growth	
Number of Funds Within Category			1925		
Mean Daily Return			0.106	0.063	
Mean Daily Sharpe Ratio per Week			0.106	0.063	
Standard Deviation			0.602	0.627	
Variance			0.363	0.394	
P-Value					0.000
	$H3_0$	2020-May 11, 2023	Small Growth	Russell 2000 Growth	
Mean Daily Return			0.076	-0.011	
Mean Daily Sharpe Ratio per Week			0.077	0.043	
Standard Deviation			0.443	0.485	
Variance			0.327	0.390	
P-Value					0.005
	$H3_0$	March 17, 2022-2023	Small Growth	Russell 2000 Growth	
Mean Daily Return			0.004	0.055	
Mean Daily Sharpe Ratio per Week			0.002	-0.013	
Standard Deviation			0.526	0.518	
Variance			0.196	0.235	
P-Value					0.574

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 4 (Hypothesis 4) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the large blend fund category against the passively managed Russell 1000 Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances were numerically similar for both the large blend category and the passive Russell 1000 Index across all three periods (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 4
LARGE BLEND VERSUS RUSSELL 1000 INDEX

Number/Returns/Ratios/Standard Deviation/Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H4_0$	2018-2023	Large Blend	Russell 1000	
Number of Funds Within Category			3872		
Mean Daily Return			0.146	0.154	
Mean Daily Sharpe Ratio per Week			0.146	0.154	
Standard Deviation			0.563	0.567	
Variance			0.317	0.322	
P-Value					0.303
	$H4_0$	2020-May 11, 2023	Large Blend	Russell 1000	
Mean Daily Return			0.146	0.144	
Mean Daily Sharpe Ratio per Week			0.147	0.146	
Standard Deviation			0.574	0.560	
Variance			0.330	0.314	
P-Value					0..908
	$H4_0$	March 17, 2022-2023	Large Blend	Russell 1000	
Mean Daily Return			0.054	0.057	
Mean Daily Sharpe Ratio per Week			0.049	0.054	
Standard Deviation			0.455	0.444	
Variance			0.207	0.197	
P-Value					0.480

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 5 (Hypothesis 5) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the midcap blend fund category against the passively managed Russell Midcap Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns for the passive Russell Midcap Index were higher compared to those for the midcap blend category across all three periods. The mean daily Sharpe Ratios for the midcap blend category were lower than those for the passively managed Russell Midcap Index throughout the study period. The standard deviations and variances for the two categories were numerically similar across all three periods (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 5
MIDCAP BLEND VERSUS RUSSELL MIDCAP INDEX

Number/Returns/Ratios/ Standard Deviation/Variance/ P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H5_0$	2018-2023	Midcap Blend	Russell Midcap	
Number of Funds Within Category			940		
Mean Daily Return			0.114	0.132	
Mean Daily Sharpe Ratio per Week			0.114	0.132	
Standard Deviation			0.629	0.630	
Variance			0.395	0.397	
P-Value					0.001
	$H5_0$	2020-May 11, 2023	Midcap Blend	Russell Midcap	
Mean Daily Return			0.107	0.124	
Mean Daily Sharpe Ratio per Week			0.107	0.124	
Standard Deviation			0.607	0.594	
Variance			0.369	0.353	
P-Value					0.013
	$H5_0$	March 17, 2022-2023	Midcap Blend	Russell Midcap	
Mean Daily Return			0.031	0.036	
Mean Daily Sharpe Ratio per Week			0.027	0.032	
Standard Deviation			0.462	0.461	
Variance			0.213	0.213	
P-Value					0.471

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 6 (Hypothesis 6) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances for the small blend fund category against the passively managed Russell 2000 Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns for the small blend category were higher compared to those for the passive Russell 2000 Index across all three periods. The mean daily Sharpe Ratios for the small blend category were also higher than those for the passively managed Russell 2000 Index during the same periods. The standard deviations and variances for both categories were numerically similar across all three periods (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 6
SMALL BLEND VERSUS RUSSELL 2000 INDEX

Number/Returns/Ratios/ Standard Deviation/ Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H6_0$	2018-2023	Small Blend	Russell 2000	
Number of Funds Within Category			1368		
Mean Daily Return			0.069	0.048	
Mean Daily Sharpe Ratio per Week			0.069	0.047	
Standard Deviation			0.596	0.657	
Variance			0.355	0.432	
P-Value					0.596
	$H6_0$	2020-May 11, 2023	Small Blend	Russell 2000	
Mean Daily Return			0.060	0.029	
Mean Daily Sharpe Ratio per Week			0.061	0.030	
Standard Deviation			0.580	0.682	
Variance			0.336	0.465	
P-Value					0.306
	$H6_0$	March 17, 2022-2023	Small Blend	Russell 2000	
Mean Daily Return			0.006	-0.014	
Mean Daily Sharpe Ratio per Week			0.002	-0.016	
Standard Deviation			0.445	0.474	
Variance			0.198	0.225	
P-Value					0.129

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 7 (Hypothesis 7) compares the large value fund category and the passively managed Russell 1000 Value Index, focusing on mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns were higher for the Russell 1000 Value Index across the three periods compared to the large-value fund category. The mean daily Sharpe Ratios were arithmetically similar between the large value category and the Russell 1000 Value Index. However, the standard deviations and variances were higher for the large-value fund category than for the passive index (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 7
LARGE VALUE VERSUS RUSSELL 1000 VALUE INDEX

Number/Returns/Ratios/Standard Deviation/Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H7_0$	2018-2023	Large Value	Russell 1000 Value	
Number of Funds Within Category			3263		
Mean Daily Return			0.107	0.109	
Mean Daily Sharpe Ratio per Week			0.107	0.109	
Standard Deviation			0.604	0.602	
Variance			0.365	0.362	
P-Value					0.947
	$H7_0$	2020-May 11, 2023	Large Value	Russell 1000 Value	
Mean Daily Return			0.091	0.091	
Mean Daily Sharpe Ratio per Week			0.092	0.091	
Standard Deviation			0.593	0.579	
Variance			0.351	0.335	
P-Value					0.510
	$H7_0$	March 17, 2022-2023	Large Value	Russell 1000 Value	
Mean Daily Return			0.045	0.049	
Mean Daily Sharpe Ratio per Week			0.038	0.042	
Standard Deviation			0.534	0.524	
Variance			0.286	0.274	
P-Value					0.481

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 8 (Hypothesis 8) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances of the midcap value fund category with those of the passively managed Russell Midcap Value Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns were higher for the Russell Midcap Value Index across all three periods compared to the midcap value fund category. The mean daily Sharpe Ratios for the midcap value category were lower than those of the Russell Midcap Value Index. While the standard deviations and variances were generally similar, the midcap value fund category had higher standard deviations and variances in the first and third periods but lower in the second period compared to the passive index (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 8
MIDCAP VALUE VERSUS RUSSELL MIDCAP VALUE INDEX

Number/Returns/Ratios/ Standard Deviation/Variance/ P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H8_0$	2018-2023	Midcap Value	Russell Midcap Value	
Number of Funds Within Category			979		
Mean Daily Return			0.079	0.096	
Mean Daily Sharpe Ratio per Week			0.079	0.096	
Standard Deviation			0.600	0.589	
Variance			0.360	0.346	
P-Value					0.003
	$H8_0$	2020-May 11, 2023	Midcap Value	Russell Midcap Value	
Mean Daily Return			0.069	0.091	
Mean Daily Sharpe Ratio per Week			0.069	0.091	
Standard Deviation			0.583	0.586	
Variance			0.340	0.343	
P-Value					0.021
	$H8_0$	March 17, 2022-2023	Midcap Value	Russell Midcap Value	
Mean Daily Return			0.030	0.031	
Mean Daily Sharpe Ratio per Week			0.024	0.026	
Standard Deviation			0.496	0.491	
Variance			0.246	0.241	
P-Value					0.490

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Table 9 (Hypothesis 9) compares the mean daily returns, mean daily Sharpe Ratios, standard deviations, and variances of the small value fund category with the passively managed Russell 2000 Value Index over the study period (Prondzinski, 2010; Prondzinski & Miller, 2018). The mean daily returns were lower for the Russell 2000 Value Index compared to the small-value fund category across all three periods. The mean daily Sharpe Ratios for the small value category were higher than those of the Russell 2000 Value Index. The standard deviations and variances were generally similar, with the small value category exhibiting lower standard deviations and variances than the passive index during the study period (Prondzinski, 2010; Prondzinski & Miller, 2018).

TABLE 9
SMALL VALUE VERSUS RUSSELL 2000 VALUE INDEX

Number/Returns/Ratios/ Standard Deviation/ Variance/P-Value	Hypothesis Number	Time Period	Active Index	Passive Index	P-Value
	$H9_0$	2018-2023	Small Value	Russell 2000 Value	
Number of Funds Within Category			1122		
Mean Daily Return			0.039	0.021	
Mean Daily Sharpe Ratio per Week			0.039	0.021	
Standard Deviation			0.608	0.631	
Variance			0.371	0.398	
P-Value					0.024
	$H9_0$	2020-May 11, 2023	Small Value	Russell 2000 Value	
Mean Daily Return			0.029	0.006	
Mean Daily Sharpe Ratio per Week			0.030	0.007	
Standard Deviation			0.590	0.632	
Variance			0.348	0.399	
P-Value					0.031
	$H9_0$	March 17, 2022-2023	Small Value	Russell 2000 Value	
Mean Daily Return			0.001	-0.017	
Mean Daily Sharpe Ratio per Week			-0.004	-0.021	
Standard Deviation			0.484	0.484	
Variance			0.234	0.235	
P-Value					0.039

From "Passive versus active management of mutual funds: Evidence from the 1995-2008 period" by D. Prondzinski, 2010, Retrieved from http://search.proquest.com.proxy.davenport.edu/docview/516280447?accountid=40195.

Results of the Study

Large Growth Fund/Index (Hypothesis 1)

Weekly Sharpe ratios were calculated from daily returns for the Russell 1000 Growth Index and the Morningstar large growth investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first period and a normal distribution for the remaining two periods. Consequently, the non-parametric Wilcoxon test was used for the first period, while the F-test for two samples for variance was used for the latter periods, as described in the study's methodology section. The p-values for the three periods listed in Table 1 were 0.239, 0.498, and 0.454, respectively. These results led to the retention of the null hypothesis for all three periods, indicating that the actively managed large growth investment category

Sharpe ratio was not significantly greater than that of the passively managed Russell 1000 Growth Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Midcap Growth Fund/Index (Hypothesis 2)

Weekly Sharpe ratios were calculated from daily returns for the Russell Midcap Growth Index and the Morningstar midcap growth investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first period and a normal distribution for the remaining two periods. Thus, the non-parametric Wilcoxon test was used for the first period, while the F-test for two samples for variance was used for the latter periods, as outlined in the study's methodology section. The p-values for the three periods, provided in Table 2, were 0.955, 0.442, and 0.411, respectively. Based on these results, the null hypothesis for all three periods was retained, suggesting that the actively managed midcap growth investment category Sharpe ratio was not significantly greater than that of the passively managed Russell Midcap Growth Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Small Growth Fund/Index (Hypothesis 3)

Weekly Sharpe ratios were calculated from daily returns for the Russell 2000 Growth Index and the Morningstar small growth investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for all three periods. Therefore, the non-parametric Wilcoxon test was used for all periods, as detailed in the study's methodology section. The p-values for the three periods listed in Table 3 were 0.000, 0.005, and 0.574, respectively. Consequently, the null hypothesis was retained for the third period, indicating no significant difference between the actively managed small growth investment category and the passively managed Russell 2000 Growth Index Sharpe ratios for this period. For the first two periods, the null hypothesis was rejected, indicating that the actively managed small growth investment category Sharpe ratio was significantly greater than that of the passively managed Russell 2000 Growth Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Large Blend Fund/Index (Hypothesis 4)

Weekly Sharpe ratios were calculated from daily returns for the Russell 1000 Index and the Morningstar large blend investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first two periods and a normal distribution for the third period. Therefore, the non-parametric Wilcoxon test was used for the first two periods, and the F-test for two samples for variance was used for the third period, as specified in the study's methodology section. The p-values for the three periods, shown in Table 4, were 0.303, 0.908, and 0.480, respectively. These results led to the retention of the null hypothesis for all three periods, indicating that the actively managed large blend investment category Sharpe ratio was not significantly greater than that of the passively managed Russell 1000 Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Midcap Blend Fund/Index (Hypothesis 5)

Weekly Sharpe ratios were calculated from daily returns for the Russell Midcap Blend Index and the Morningstar midcap blend investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first two periods and a normal distribution for the third period. Consequently, the non-parametric Wilcoxon test was used for the first two periods, and the F-test for two samples for variance was used for the third period, as described in the study's methodology section. The p-values for the three periods, provided in Table 5, were 0.001, 0.013, and 0.471, respectively. Based on these results, the null hypothesis was retained for the third period, indicating no significant difference between the actively managed midcap blend investment category and the passively managed Russell Midcap Blend Index Sharpe ratios for this period. For the first two periods, the null hypothesis was rejected, indicating that the actively managed

midcap blend investment category Sharpe ratio was significantly greater than that of the passively managed Russell Midcap Blend Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Small Blend Fund/Index (Hypothesis 6)

Weekly Sharpe ratios were calculated from daily returns for the Russell 2000 Index and the Morningstar small blend investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for all three periods. Therefore, the non-parametric Wilcoxon test was used for all periods, as detailed in the study's methodology section. The p-values for the three periods listed in Table 6 were 0.596, 0.306, and 0.129, respectively. These results led to the retention of the null hypothesis for all three periods, indicating that the actively managed small blend investment category Sharpe ratio was not significantly greater than that of the passively managed Russell 2000 Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Large Value Fund/Index (Hypothesis 7)

Weekly Sharpe ratios were calculated from daily returns for the Russell 1000 Value Index and the Morningstar large value investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first two periods and a normal distribution for the third period. Consequently, the non-parametric Wilcoxon test was used for the first two periods, and the F-test for two samples for variance was used for the third period, as specified in the study's methodology section. The p-values for the three periods, shown in Table 7, were 0.947, 0.510, and 0.481, respectively. These results led to the retention of the null hypothesis for all three periods, indicating that the actively managed large value investment category Sharpe ratio was not significantly greater than that of the passively managed Russell 1000 Value Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

Midcap Value Fund/Index (Hypothesis 8)

Weekly Sharpe ratios were calculated from daily returns for the Russell Midcap Value Index and the Morningstar midcap value investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for the first two periods and a normal distribution for the third period. Therefore, the non-parametric Wilcoxon test was used for the first two periods, and the F-test for two samples for variance was used for the third period, as described in the study's methodology section. The p-values for the three periods, provided in Table 8, were 0.003, 0.021, and 0.490, respectively. Based on these results, the null hypothesis was retained for the third period, indicating no significant difference between the actively managed midcap value investment category and the passively managed Russell Midcap Value Index Sharpe ratios for this period. For the first two periods, the null hypothesis was rejected, indicating that the risk-adjusted returns for active midcap value mutual fund management were significantly greater than those for passive management (Prondzinski, 2010; Prondzinski & Miller, 2018).

Small Value Fund/Index (Hypothesis 9)

Weekly Sharpe ratios were calculated from daily returns for the Russell 2000 Value Index and the Morningstar small value investment category for the period from January 1, 2018, to December 31, 2023, covering 302 periods (Prondzinski, 2010; Prondzinski & Miller, 2018). The KS-test indicated a non-normal distribution for all three periods. Therefore, the non-parametric Wilcoxon test was used for all periods, as detailed in the study's methodology section. The p-values for the three periods listed in Table 9 were 0.024, 0.031, and 0.039, respectively. These results rejected the null hypothesis for all three periods, indicating that the actively managed small value investment category Sharpe ratio was significantly greater than that of the passively managed Russell 2000 Value Index (Prondzinski, 2010; Prondzinski & Miller, 2018).

CONCLUSION

The purpose of the study was to examine the mutual fund performance of active versus passive managers during the period from 2018 through 2023. The aggregate period, the pandemic period, and the interest rate hiking cycle periods were tested for each of the Morningstar style categories.

Prondzinski (2010) found that active managers outperformed passive managers for the midcap blend category for the periods 1995 to 2008 and 1995 to 1999, the small blend category for 1995 to 2008 and 1995 to 1999, and the small value category for the periods 1995 to 2008, 1995 to 1999, and 2000 to 2002. Another study by Prondzinski and Miller (2018) found that passive managers outperformed active managers for all categories for the period tested. In this study, it was found that active managers outperformed passive managers in the small growth category, midcap blend category, and small value category for 2018 to 2023. During the Pandemic period, the small growth category, midcap blend category, midcap value category and the small value category, the active managers outperformed the passive managers. Finally, during the interest rate hiking period, only the small value category, the active managers, outperformed the passive managers.

Several studies have indicated that when aggregating significant periods, passive managers have outperformed active managers (S&P Dow Jones Indices, 2022, Malkiel, 2023, Prondzinski, 2010, Prondzinski & Miller, 2018). However, Plan Advisor (2020) has found that active managers do outperform passive managers during certain periods, given the state of the economy. These findings would indicate that the best choice for the investor, dependent upon personal risk profiles and goals would be a mix of both active and passive funds. These findings are supported by the Journal of Financial Planning (2020). During the pandemic, two-thirds of the advisers queried preferred a blend of active and passive management.

Boyde (2022) and Evans (2023) have found that cumulative global fund flows show that passive funds have attracted significant inflows at the expense of active equity funds. Evans (2023) reported that the U.S. assets associated with active funds are expected to continue to shrink to 44% by 2027.

The study suggests that mutual fund managers might justify higher expense ratios for active funds by delivering higher risk-adjusted returns, especially during market volatility and potential declines. However, investors should scrutinize fund expenses to ensure fees are competitive with those of index funds. If active fund fees are significantly higher, the likelihood of outperforming the index diminishes due to lower net returns.

These findings contribute to the ongoing debate over active versus passive mutual fund management. For active managers to justify higher management fees, they must continue to produce greater returns than their benchmark indexes. Since anomalies in Morningstar fund categories and other investment groups shift over time relative to their benchmark indexes, ongoing research is essential. Identifying these trends can validate active management fees and offer investors opportunities to achieve returns exceeding those of the corresponding index.

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