Міністерство освіти і науки України

Національний університет «Києво-Могилянська академія»

Факультет економічних наук

Кафедра фінансів

Кваліфікаційна робота

освітній ступінь - бакалавр

на тему: «СТРАТЕГІЇ АКТИВНОГО ТА ПАСИВНОГО УПРАВЛІННЯ ІНВЕСТИЦІЙНИМИ ПОРТФЕЛЯМИ. **STRATEGIES FOR MANAGING ACTIVE AND PASSIVE INVESTMENT PORTFOLIOS**»

Виконала: студентка 4-го року навчання,
спеціальність 072
«Фінанси, банківська справа та страхування»
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з оцінкою «_____»

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«____» _____ 2025 р.

Київ 2025

Table of contents

INTRODUCTION

Investing plays a fundamental role in the modern economy, serving not only as a pathway for individuals and institutions to accumulate wealth but also as a mechanism for channeling capital into businesses, infrastructure, and technological advancement. As global financial markets grow increasingly complex and dynamic, investors are presented with a wide range of strategies and instruments, each carrying distinct risks, costs, and return profiles. One of the ongoing debates in this context is the effectiveness of active investment strategies—particularly during volatile or changing market conditions—compared to passive, low-cost approaches.

A key tool for evaluating the performance of actively managed funds is the Capital Asset Pricing Model (CAPM). This asset pricing model provides a framework for understanding how returns on a given investment relate to broader market risk, helping to assess whether a fund generates returns in excess of what would be expected based on its market exposure. This concept—known as alpha—lies at the heart of evaluating fund manager performance.

The primary aim of this thesis is to examine the risk-adjusted performance of five actively managed U.S. mutual funds using the CAPM framework, with a focus on growth-oriented, dividend-focused, and sector-specific strategies. The analysis spans a full business cycle (2015–2025), capturing different phases of economic expansion, contraction, and recovery. In doing so, the study investigates whether active managers can consistently deliver excess returns and whether certain strategies are more effective under specific market conditions.

Key research questions include:

• How effectively do actively managed mutual funds generate excess returns relative to their market risk exposure?

• What is the role of different fund strategies (growth, value, sector-specific) in navigating changing market cycles?

• Can active management justify its higher fees compared to passive investing over the long term?

This study contributes both scientifically and practically. On the theoretical side, it applies the CAPM model to real-world fund performance data, critically evaluating its assumptions and limitations. On the practical side, it offers guidance to investors and fund managers seeking to align investment strategies with market realities.

The thesis is structured as follows: Chapter 1 reviews the historical development of investment strategies and the theoretical frameworks underlying active and passive investing. Chapter 2 outlines the methodology, including dataset characteristics and the econometric tools used for the analysis. Chapter 3 presents the regression results, fund performance across market conditions, and practical recommendations. The final section offers conclusions and suggestions for further research, including the exploration of multi-factor models and the integration of ESG (Environmental, Social, and Governance) criteria in active investment strategies.

Ultimately, this study finds that while active funds vary in their sensitivity to market movements, none of the analyzed funds produced statistically significant alpha. This reinforces the challenges of consistently outperforming the market, especially in efficient, transparent environments like U.S. large-cap equities. Nevertheless, strategic flexibility, international diversification, and responsible investing remain areas where active management can still offer added value.

Key words: active investing, passive investing, CAPM (Capital Asset Pricing Model), mutual funds, market efficiency, portfolio management.

CHAPTER 1
LITERATURE REVIEW

1.1 Historical Overview of Investing

Investing is the process of allocating money or resources with the expectation of generating a return in the form of income or capital appreciation over time. Unlike saving, which typically involves placing funds in low-risk accounts without aiming for significant growth, investing requires taking calculated risks to potentially earn higher returns.

According to Investopedia (Picardo, 2025), investing is a fundamental strategy for building wealth and reaching financial goals. By allocating money to financial instruments or tangible assets, investors aim to grow their purchasing power and protect themselves against inflation. Factors such as economic conditions, interest rates, and individual risk tolerance significantly influence investment decisions and help shape portfolio strategies.

The value of investing extends beyond personal financial gain. It plays an essential role in economic development by channeling capital into businesses, infrastructure, and innovation. When individuals and institutions invest, they support job creation, technological progress, and economic resilience. On a personal level, investing contributes to financial security and prepares individuals for key life expenses such as education, homeownership, and retirement. Regular investment over time can help build long-term financial stability and improve the ability to navigate economic challenges.

The concept of investing has evolved significantly over time, influenced by financial innovation, regulation, and major economic events. Its roots trace back to the early 17th century with the founding of the Amsterdam Stock Exchange in 1602, where the Dutch East India Company became the first publicly traded company. Over the years,

developments such as investment trusts, stock market regulations, and new financial instruments have shaped today's investing practices. The growing globalization of financial markets since the late 20th century has further expanded opportunities, enabling access to international markets and a wider range of asset classes.

Figure 1.1 illustrates major milestones in the history of investing, showing how financial markets have evolved through both innovation and crisis. For example, the 1720 Bubble Act in Britain marked an early attempt to regulate speculative investing, while the 1844 Joint Stock Companies Act and the 1855 Limited Liability Act established the legal framework for corporate investment. The launch of mutual funds in Britain (1868) and the United States (1924) introduced collective investment vehicles that remain widely used today.

Figure 1.1 The evolution of investing

Source: Created by author based on Homepage | CFA Institute Research and Policy Center, n.d.

The 1929 stock market crash led to major reforms in the United States, including the Securities Act of 1933 and the Securities Exchange Act of 1934. These laws aimed to restore trust and regulate market activities. Another turning point came in 1971, when Wells Fargo Investment Advisors launched the first index fund, marking a shift toward passive investment strategies. Despite regulatory progress, volatility remained a challenge—highlighted by the 1987 Black Monday crash, one of the most severe in stock market history.

More recently, the rise of digital technologies has reshaped investing. Developments such as algorithmic trading, robo-advisors, and blockchain-based assets like cryptocurrencies have introduced new opportunities and risks. The 2008 global financial crisis underscored the importance of risk management, leading to increased regulatory oversight and stronger investor protections. With financial technology advancing rapidly, the future of investing will likely be shaped by automation, data analytics, and greater accessibility for individual investors.

In addition, recent developments have brought greater attention to regulatory frameworks that aim to ensure market stability and protect participants. In response to the 2008 financial crisis, the Dodd-Frank Act (2010) introduced stricter financial oversight, especially affecting hedge funds and active management strategies (Hayes, 2025). In Europe, MiFID II legislation has enhanced transparency and redefined investment advisory practices. These reforms have had a lasting impact on modern investing, helping reduce systemic risks and improve investor confidence (Liberto, 2024).

Taken together, these historical milestones demonstrate how investing has developed alongside legal reforms and market shifts, shaping the investment environment we know today. As financial markets continue to change, understanding past trends and innovations remains essential for making informed and strategic investment decisions.

1.2 Diverse Investment Opportunities and Their Impact

Investment opportunities come in many forms, enabling individuals and institutions to allocate capital according to their financial goals, risk tolerance, and investment horizon. Traditional assets such as stocks and bonds remain among the most widely used options. Stocks represent ownership in a company and provide the potential for capital gains and dividend income. While they offer opportunities for high returns, they also expose investors to market volatility and risk. Bonds, by contrast, are debt instruments issued by governments or corporations that provide regular interest payments. Typically considered lower risk than stocks, bonds generally deliver more modest, stable returns.

Beyond these conventional choices, alternative investments offer a broader range of opportunities, each with distinct risk-return profiles. Real estate can generate rental income and long-term appreciation, although it usually requires a longer investment period and is less liquid than equities or bonds. Commodities such as gold, oil, and agricultural goods act as hedges against inflation and geopolitical uncertainty but are often subject to significant price fluctuations.

Venture capital presents another path, where investors fund early-stage startups in exchange for equity. These investments can yield substantial returns if the startups succeed, but they are also high-risk and less liquid, with many ventures failing to mature. Additionally, venture capital typically requires a long-term commitment and is often reserved for experienced investors.

Mutual funds provide a structured and diversified way to invest across different asset classes, catering to a range of financial goals and risk profiles. Equity funds focus on stocks and offer high growth potential, but with greater sensitivity to market fluctuations (Investopedia, 2023). Bond funds concentrate on fixed-income securities, offering consistent income with lower volatility (What Are Bond Funds?, 2024). Balanced

funds combine both asset types to aim for moderate returns and a balanced risk approach (Chen, 2022c). Money market funds invest in short-term debt instruments, emphasizing liquidity and minimal risk, making them attractive to conservative investors (Money Market Funds, n.d.).

Index funds replicate the performance of market indices like the S&P 500, providing broad exposure, lower fees, and returns that reflect market trends (Index Funds | Investor.gov, n.d.). Hedge funds pursue aggressive strategies such as leveraging and short selling to maximize gains. These are typically high-risk and available mainly to accredited investors (Investopedia, 2023). ESG (Environmental, Social, and Governance) funds focus on companies that meet ethical, environmental, and sustainability criteria, appealing to investors seeking financial returns alongside positive societal impact (Understanding Environmental, Social and Governance (ESG) Funds, n.d.). Understanding the range of fund types and their asset allocations is essential for tailoring investment portfolios to individual goals and risk preferences.

As shown in Figure 1.2, the wide variety of investment types highlights the importance of aligning investment decisions with personal or institutional objectives and risk appetite. Diversification across asset classes remains a core strategy for managing risk and reducing vulnerability to market swings. This approach not only strengthens portfolio performance but also contributes to the overall stability of financial markets.

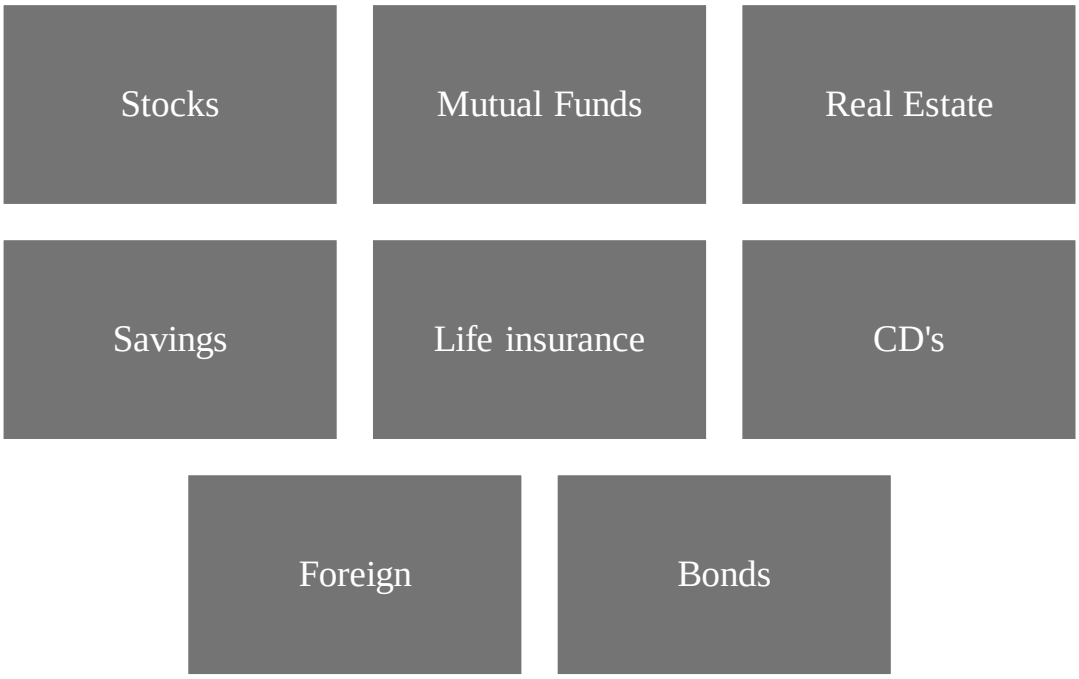

Figure 1.2 – Types of investments

Source: Created by author based on (Understanding Types of Investment: Stocks, Bonds, and Mutual Funds, n.d.)

Investment opportunities are accessible to a wide array of participants. Individual investors—including working professionals and high-net-worth individuals—commonly engage in stock, bond, or real estate investments to grow their assets. Institutional investors, such as pension funds and sovereign wealth funds, manage substantial portfolios to meet long-term obligations. Corporations often invest surplus capital to enhance shareholder value, while governments direct funds into public infrastructure and development projects. Financial institutions support the investment ecosystem through wealth management and advisory services. Non-profits also invest via endowments to fund mission-driven activities, and foreign investors contribute to diversification by exploring cross-border opportunities (Different Type of Investors | Eqvista, 2022).

In conclusion, today's investment landscape is diverse and increasingly inclusive, serving as a key driver of economic growth and financial progress. Whether pursued by

individuals, institutions, or governments, investing plays a crucial role in building wealth, promoting economic resilience, and supporting long-term prosperity.

1.3 Strategies for passive and active investing

Investing can generally be divided into two approaches: passive and active. Each method has distinct characteristics, advantages, and limitations. The most suitable strategy depends largely on an investor's financial goals, risk tolerance, and available time for portfolio management. Table 1.3 summarizes the key differences between these approaches (Campbell & Safane, 2024).

Passive investing focuses on replicating market performance, typically through index funds or exchange-traded funds (ETFs). This strategy involves purchasing and holding assets over the long term, with minimal trading, under the assumption that markets are generally efficient and outperforming them consistently is difficult. The goal is to mirror the market's returns with lower costs and reduced risk. Because passive funds are broadly diversified, they can help minimize the impact of market volatility and typically incur lower management and transaction fees compared to active funds.

By limiting trading activity, passive investing reduces both transaction costs and tax liabilities. It is particularly effective during stable or rising markets, where overall growth supports returns. Passive strategies are well-suited for long-term goals like retirement savings, where the compounding effect over time can significantly grow portfolio value. For risk-averse or cost-sensitive investors, the diversification and low fee structure of passive investing provide an appealing and accessible solution (Vanguard, 2023).

Among the most common passive approaches is the buy-and-hold strategy, where investors consistently allocate capital at regular intervals and maintain their positions over

extended periods. This strategy is especially popular among beginners and retail investors seeking long-term growth with minimal involvement.

In contrast, active investing seeks to outperform the market through strategic decisions based on economic trends, market research, or technical analysis. This approach typically involves frequent trading and a hands-on management style. Tactics may include stock picking, market timing, short-selling, and hedging to manage risk or capitalize on short-term opportunities. However, the higher trading frequency and specialized oversight usually result in increased management fees, which can reduce net returns over time.

Active investing often appeals to experienced investors who are willing to accept greater risk for the chance of higher returns. It may be especially effective in volatile or declining markets, where proactive decision-making can help limit losses. Active strategies also support tactical asset allocation—adjusting portfolios based on changing economic conditions. However, despite these advantages, research indicates that active investing often underperforms passive approaches in the long term, particularly once fees are taken into account.

The relative performance of passive and active strategies largely depends on prevailing market conditions. In prolonged bull markets, passive investing generally outperforms due to lower costs and broad exposure. Conversely, during bear markets or periods of uncertainty, active management may offer advantages by shifting allocations to reduce losses. Passive investing tends to be more effective in highly efficient markets where prices reflect available information, while active strategies may be more appropriate in less efficient environments, such as emerging markets or niche sectors (Morningstar, Inc., 2024).

Table 1.3 Comparison of Passive and Active Investing

Criteria	Passive Investing	Active Investing
Goal	Match the market performance	Outperform the market
Risk Level	Lower risk due to diversification	Higher risk due to more frequent trading and strategies like shorting
Cost	Low fees, minimal management costs	Higher fees due to active management and frequent trading
Management	Minimal involvement, long-term buy-and-hold	Frequent decisions and trades based on market analysis
Return Potential	Steady, long-term growth, often outperforming in the long run	Higher potential returns but also higher potential for losses
Ideal For	Beginners, long-term investors	Experienced investors, those seeking short-term opportunities
Market Efficiency	Believes markets are efficient and reflect fair value	Believes there are inefficiencies to exploit in the market

Source: created by author based on Campbell & Safane, 2024

Choosing between passive and active investing depends on an individual's financial objectives, level of investment knowledge, and risk appetite. Passive strategies are often recommended for beginners or those pursuing a low-cost, long-term approach. In contrast, active investing appeals to those seeking higher returns and who are comfortable managing investments actively, accepting both the risk and effort involved.

One ongoing debate in the financial community centers around the dominance of passive investing and its possible implications for market efficiency. Some critics argue

that the rise of index funds undermines price discovery, since passive investors do not actively evaluate or select individual stocks. This can potentially distort markets and inflate valuations for heavily weighted companies. Nonetheless, supporters of passive investing emphasize its affordability, simplicity, and consistent long-term performance relative to actively managed alternatives.

A parallel debate surrounds the cost-effectiveness of active investing—particularly in the hedge fund space—where high fees and inconsistent results have raised questions. While some active managers do generate excess returns, research suggests that the majority underperform passive benchmarks when accounting for fees, challenging the overall value proposition of active management.

To better understand the scope of active investing, it is helpful to examine its internal diversification. Active investing is not a single unified strategy but a broad category encompassing multiple fund types, each shaped by its investment objectives, sector focus, and risk profile. These categories serve different purposes, such as pursuing aggressive growth, stable income, sector-specific opportunities, or global diversification.

One major category is growth-oriented funds, which target companies expected to deliver above-average earnings or revenue growth. Managers of these funds look for firms with innovative leadership, scalable products, and expanding market presence. These funds often invest in companies trading at higher valuations based on future potential rather than current earnings. While growth funds can generate strong performance in bullish markets, they are vulnerable to interest rate hikes and economic slowdowns. Active oversight is essential to respond to market sentiment and changing fundamentals (Chen, 2022).

Another important category is equity income funds, which aim to provide regular dividend income alongside moderate capital growth. These funds typically invest in large-cap companies with stable financial performance and a strong track record of dividend

payments. The strategy is attractive to investors seeking reliable income without giving up on equities entirely. Managers employ fundamental analysis to identify undervalued dividend payers and often shift between defensive sectors such as utilities, healthcare, and consumer goods based on economic conditions and interest rate cycles (Fidelity International, n.d.).

Closely related are dividend-focused value funds, which prioritize undervalued companies offering sustainable dividends and strong balance sheets. These funds emphasize capital preservation while seeking growth through price appreciation as market inefficiencies correct over time. Active managers in this category aim to avoid value traps—stocks that appear cheap but lack long-term prospects—by conducting in-depth financial analysis and sector evaluation (Dividend Funds - Quickly and Simply Explained | DWS, n.d.).

Sector-specific funds provide targeted exposure to particular industries like technology, energy, or healthcare. These funds are inherently more volatile due to their narrow focus and require specialized knowledge. Active managers play a critical role in tracking industry trends, regulatory shifts, and technological advancements. Sector funds can be used to express high-conviction themes or to tactically adjust broader portfolio exposures (What Is Sector Specific Funds? Definition of Sector Specific Funds, Sector Specific Funds Meaning - the Economic Times, n.d.).

Global and international active funds expand the investment universe by seeking returns beyond domestic markets. These funds invest in companies across both developed and emerging economies. Given the complexities of foreign investment—ranging from currency risk to political instability—active management is crucial. Successful strategies in this space depend on a deep understanding of global trends, regional dynamics, and local market conditions. These funds offer diversification benefits and access to growth opportunities unavailable in domestic markets (Chen, 2022a).

In conclusion, while debates over the relative merits of passive and active investing continue, the diversity within active strategies highlights their relevance in today's investment landscape. From growth-focused portfolios to dividend-driven value strategies and globally diversified funds, active investing provides tailored approaches that can address a wide range of investor needs. Ultimately, the success of active management depends on skill, strategy alignment, and market understanding—demonstrating that, when applied thoughtfully, active investing remains a valuable and adaptable tool.

1.4 Theoretical foundation

Modern investment strategies are grounded in key economic and financial theories that shape both passive and active investing approaches. These frameworks offer structured insights into market behavior, risk management, and portfolio optimization, enabling investors to make more informed and rational decisions. Among the most influential theories are Modern Portfolio Theory (MPT), the Capital Asset Pricing Model (CAPM), the Efficient Market Hypothesis (EMH), and Behavioral Finance Theory. Each provides a distinct perspective on how markets operate and how investors should allocate capital.

Modern Portfolio Theory (MPT), introduced by Markowitz (1952), remains a foundational concept in portfolio management. It emphasizes diversification as a way to reduce overall investment risk while optimizing returns. According to MPT, assets should not be assessed individually but as components of a broader portfolio. The key insight is that the correlation between assets determines the degree of risk reduction. By combining securities with varying levels of risk and correlation, investors can construct an efficient portfolio that offers the highest expected return for a given level of risk (Markowitz, 1952).

Central to MPT is the concept of the efficient frontier—a curve that represents the set of optimal portfolios delivering the best possible returns for each level of risk. Portfolios below this frontier are considered inefficient because they either take on unnecessary risk or fail to maximize returns. MPT also introduces the capital market line (CML) and the security market line (SML), tools that help illustrate how investors can blend risk-free and risky assets to construct optimal portfolios (Markowitz, 1952).

From an application perspective, MPT provides strong support for passive investing. Index funds naturally align with its emphasis on diversification, allowing investors to achieve broad market exposure while minimizing idiosyncratic risk and associated costs. Instead of selecting individual stocks in an attempt to beat the market, passive investors can hold diversified index-based portfolios that closely mirror overall market performance.

Building on MPT, the Capital Asset Pricing Model (CAPM) offers a quantitative framework for estimating the expected return on an asset based on its systematic risk. CAPM introduces the concept of beta (β), a measure of an asset's sensitivity to market movements. The model suggests that an asset's expected return equals the risk-free rate plus beta multiplied by the market risk premium. CAPM distinguishes between diversifiable (idiosyncratic) risk, which can be eliminated through diversification, and non-diversifiable (systematic) risk, which is rewarded with higher returns. It also provides a basis for evaluating investment performance using risk-adjusted metrics such as alpha (α). A positive alpha indicates that a portfolio or asset has outperformed its expected return, suggesting effective active management. In this study, CAPM is used as the main analytical framework to test whether actively managed mutual funds generate significant alpha, thereby justifying an active investment approach (Team, 2024).

While CAPM helps explain asset pricing and performance relative to market risk, the Efficient Market Hypothesis (EMH), developed by Fama (1970), focuses on how efficiently information is reflected in asset prices. EMH asserts that markets incorporate all available information, meaning that it is impossible to consistently achieve above-

average returns through either technical or fundamental analysis (Fama, 1970). The theory identifies three levels of market efficiency:

Weak-form efficiency – Past price and volume data do not predict future prices, rendering technical analysis ineffective.

Semi-strong form efficiency – All publicly available information is already priced into securities, limiting the effectiveness of fundamental analysis.

Strong-form efficiency – All information, including insider knowledge, is reflected in prices, making consistent outperformance virtually impossible.

EMH implies that efforts to outperform the market through active trading are likely futile, reinforcing the appeal of passive investing through broad, low-cost index funds. It also helps explain why many actively managed funds fail to consistently generate returns that exceed benchmarks once fees and costs are taken into account (Fama, 1970).

Despite the theoretical strength of MPT and EMH, critics argue that markets do not always behave rationally due to human psychology. Behavioral Finance Theory, introduced by Kahneman and Tversky (1979), challenges the assumption of fully rational investors by identifying cognitive biases that influence financial decisions. These psychological factors can lead to predictable deviations from market efficiency:

Overconfidence bias – Investors often overestimate their predictive abilities, resulting in excessive trading and underperformance (Barber & Odean, 2001).

Herd behavior – Market participants may follow crowd trends, fueling speculative bubbles and subsequent crashes (Shiller, 2000).

Loss aversion – Investors tend to fear losses more than they value equivalent gains, leading to conservative or irrational decisions (Kahneman & Tversky, 1979).

Anchoring bias – Individuals rely too heavily on initial information, even when new data becomes available, distorting investment judgments (Tversky & Kahneman, 1974).

These behavioral patterns suggest that markets are not always efficient, and that mispricings can and do occur. As a result, active strategies like momentum investing, which exploits trends in investor sentiment, or value investing, which targets undervalued stocks, become viable. For instance, Benjamin Graham's value investing framework aims to identify stocks trading below intrinsic value, while research by Jegadeesh and Titman (1993) supports momentum-based strategies that capitalize on recent price trends.

In conclusion, theories such as MPT and EMH provide a strong foundation for passive investing by emphasizing diversification and the efficiency of markets. CAPM adds an essential layer for analyzing performance and managing systematic risk, particularly in evaluating active fund returns. Meanwhile, Behavioral Finance reveals how psychological factors can lead to market inefficiencies, offering a rationale for active strategies that aim to exploit these irregularities. Together, these theories offer complementary insights that underscore the complexity of investment decision-making and the ongoing tension between passive and active investment philosophies.

Conclusion for Part 1:

In conclusion, this chapter has provided a comprehensive overview of the historical evolution of investment strategies, with an emphasis on both passive and active approaches. It examined foundational theories such as Modern Portfolio Theory (MPT), the Capital Asset Pricing Model (CAPM), the Efficient Market Hypothesis (EMH), and Behavioral Finance. Each framework offers distinct insights into market efficiency, portfolio construction, and risk assessment. While MPT and EMH support passive investing based on the assumption of efficient markets, CAPM introduces a structure for evaluating risk-adjusted performance, particularly relevant to active management.

The chapter also explored a wide range of investment opportunities, including traditional assets like stocks and bonds, as well as alternatives such as real estate and

venture capital. It emphasized that passive investing tends to perform well in stable market conditions, whereas active strategies may offer advantages in times of volatility or when market inefficiencies are present.

Investment strategy selection is shaped by broader market dynamics, investor psychology, and macroeconomic events. Although passive investing is often favored for its simplicity and low cost, active management remains valuable for its potential to exploit inefficiencies—especially through specialized or tactical funds. Looking ahead, further research will analyze the performance of specific types of actively managed funds under varying market conditions to determine their capacity to generate excess returns. This chapter lays the groundwork for a deeper investigation into the role and effectiveness of active investment management in today's complex financial landscape.

CHAPTER 2
METHODS AND MATERIALS

2.1 Data Description and Methodology

This chapter outlines the empirical framework and methodology employed to analyze the performance of actively and passively managed mutual funds. The primary objective is to determine whether active management leads to superior returns after adjusting for risk and fees. The analysis applies the Capital Asset Pricing Model (CAPM) to measure alpha generation across different mutual fund types and investment strategies.

The mutual funds selected for this study are based in the United States and represent a mix of active and passive strategies across different investment styles. The sample includes five funds:

1) FBRGX (Fidelity Blue Chip Growth Fund): This fund targets large-cap growth stocks with strong earnings momentum. It primarily invests in established companies with solid revenue expansion, particularly in technology and healthcare sectors. While this strategy can result in elevated volatility, it also offers potential for significant capital appreciation. (FBGRX - Fidelity ® Blue Chip Growth Fund | Fidelity Investments, n.d.)
2) VEIPX (Vanguard Equity-Income Fund): A dividend-oriented fund focusing on large-cap companies with reliable dividend histories. Its objective is to provide consistent income alongside moderate growth, making it a suitable choice for more risk-averse investors. (VEIPX - Vanguard Equity-Income Fund Investor Shares | Fidelity Investments, n.d.)

3) SWDSX (Schwab Dividend Equity Fund): This fund follows a value-investing approach, concentrating on dividend-paying stocks with attractive valuations. It often includes exposure to cyclical sectors, offering opportunities to benefit from market undervaluations. (SWDSX - Schwab Dividend Equity Fund TM | Fidelity Investments, n.d.)
4) FSPTX (Fidelity Select Technology Portfolio): A sector-specific fund dedicated to technology stocks, including fast-growing and innovative firms. Its focus on a high-growth sector contributes to greater volatility but also offers strong return potential. (FSPTX - Fidelity ® Select Technology Portfolio | Fidelity Investments, n.d.)
5) ANWPX (American Funds New Perspective Fund): This global fund invests in companies across international markets with a long-term growth outlook. Its diversified global exposure helps reduce reliance on U.S. market trends and enhances geographic diversification. (ANWPX - American Funds New Perspective Fund ® Class a | Fidelity Investments, n.d.)

Each fund in the dataset exhibits distinct levels of risk and return, making them suitable candidates for evaluating systematic risk exposure through the Capital Asset Pricing Model (CAPM). In addition to individual fund returns, the dataset includes monthly values for the market return (Rm) and the risk-free rate (Rf), both expressed as percentages.

The risk-free rate (Rf) represents the theoretical return of an investment with no risk of financial loss and serves as a benchmark for calculating excess returns under CAPM. In this study, the risk-free rate is derived from monthly U.S. short-term government securities—specifically one-month Treasury bills—due to their minimal default risk and high liquidity. Their widespread use in financial literature ensures consistency and comparability when assessing risk-adjusted performance (1-Year Treasury Bill: Secondary Market Rate (DISCONTINUED), 2001)

In this study, the market return (RM) is represented by the return of the S&P 500 index, one of the most recognized benchmarks for overall U.S. equity market performance (FXAIX - Fidelity ® 500 Index Fund | Fidelity Investments, n.d.). The index comprises 500 of the largest publicly traded U.S. companies, spanning a diverse set of industries and sectors. Its breadth and depth make it a widely accepted measure of market return in asset pricing models, including CAPM.

The S&P 500's prominence in financial research makes it a reliable choice for representing the market portfolio. It reflects aggregate U.S. equity movements and provides a robust benchmark for evaluating systematic risk. However, it is important to note that the index may not fully capture global exposure for certain funds within the sample. For instance, ANWPX (American Funds New Perspective Fund) employs a globally diversified strategy, meaning its performance is influenced by non-U.S. markets. As such, using the S&P 500 as a benchmark may underestimate the true systematic risk exposure of international funds within the CAPM framework.

Although the S&P 500 provides a strong benchmark for U.S. market performance, it does not fully capture the global market dynamics influencing certain funds in the dataset. For instance, ANWPX (American Funds New Perspective Fund) follows a globally diversified strategy, and its return structure reflects exposure to international markets beyond the U.S. This geographic misalignment limits the explanatory power of the S&P 500 and may result in an underestimation of the fund’s systematic risk exposure in CAPM analysis.

Moreover, the S&P 500 has a pronounced sectoral bias toward large-cap technology firms, primarily driven by the dominance of FAANG stocks (Meta, Apple, Amazon, Netflix, and Google) (TipRanks, n.d.). This structural skew inflates the beta coefficient of technology-oriented funds such as FSPTX (Fidelity Select Technology Portfolio), which displayed both the highest volatility and one of the highest beta values in the regression results. As such, the S&P 500 may not serve as a fully neutral benchmark for evaluating

sector-specific or globally diversified funds. Future research could benefit from using alternative market proxies or multifactor models to more accurately capture these diverse risk exposures.

To ensure consistency in measurement, all percentage returns were converted into decimals before analysis. For each fund i, the **excess return** was calculated as Ri−Rf, where Ri represents the fund return and Rf the corresponding risk-free rate. The **market excess return** was computed similarly as Rm−Rf, where Rm is the market return.

The performance of each fund was evaluated using the Capital Asset Pricing Model (CAPM), expressed in the following linear form:

$$(Ri - Rf) = \alpha + \beta\,(Rm - Rf) + \varepsilon$$

(Ri – Rf) is the excess return of fund i,

(Rm – Rf) is the excess return of the market,

α represents the fund's abnormal return or performance independent of the market,

β measures the systematic risk, i.e., the sensitivity of the fund to market movements,

ε is the error term.

While the Capital Asset Pricing Model (CAPM) is commonly used to estimate risk-adjusted returns, it assumes that only market risk explains differences in returns. Other models, like the Fama-French three-factor model, build on this by including additional factors such as company size and value. However, CAPM remains suitable for this study because of its straightforward structure and focus on market risk, which aligns with the study's objectives.

To better understand how each fund behaves, the distribution of excess returns was analyzed using histograms with normal distribution curves. These charts help show how returns are spread out, whether they tend to cluster around the average, and how closely they follow a normal (bell-shaped) distribution.

The histograms for FBRGX, VEIPX, FSPTX, and ANWPX (Figure 2.1) suggest that their excess returns are roughly normally distributed, with most values grouped near the center. FSPTX has a wider spread, reflecting its higher volatility due to its focus on the technology sector. In contrast, VEIPX and ANWPX have narrower spreads, indicating more stable and lower-risk performance.

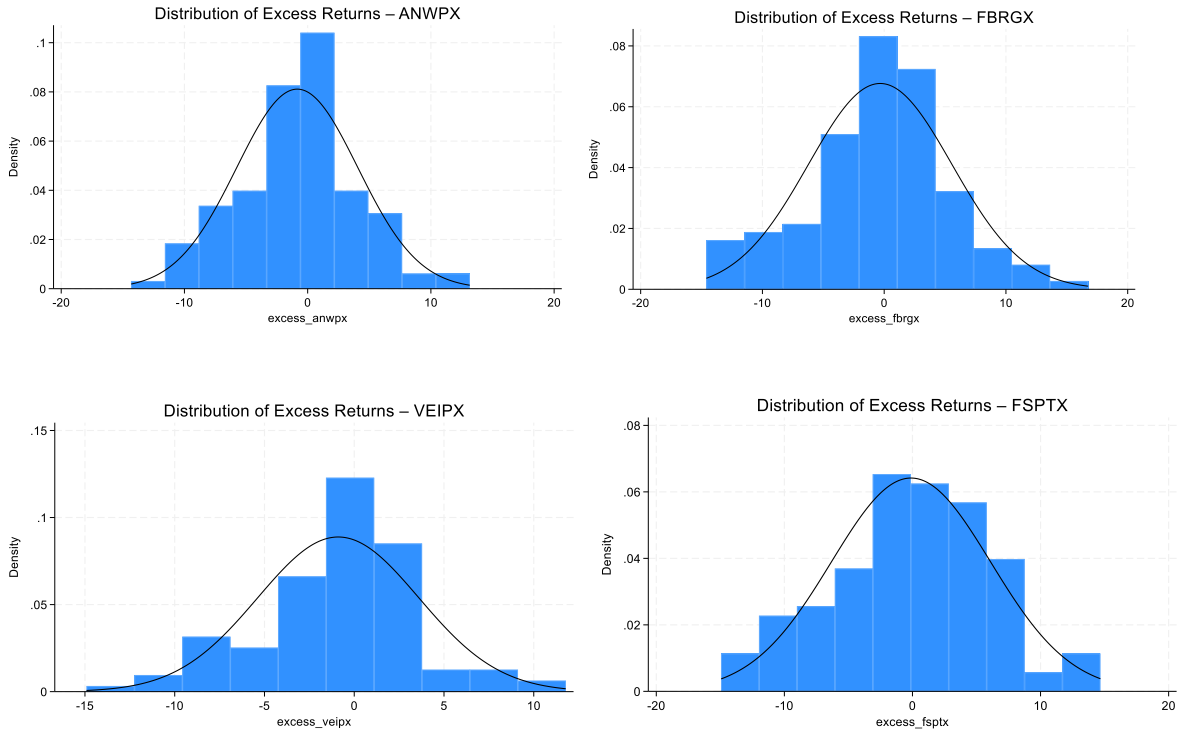

Figure 2.1 Distribution of excess returns for funds

Source: created by author based on [29-35]

The distribution for SWDSX looks different—it is skewed to the left and shows heavier tails, meaning it does not follow a normal distribution. This pattern supports the regression results, which found that the fund's beta (its sensitivity to the market) was not statistically significant. This suggests that SWDSX does not move closely with the overall market.

In summary, the histogram analysis supports the assumption that excess returns for most funds follow a normal distribution, which is important for using Ordinary Least

Squares (OLS) regression. However, for SWDSX, both the visual and statistical evidence suggest that CAPM is not a strong fit for explaining its performance.

2.2 Statistical Analysis

The model was estimated for each fund using Ordinary Least Squares (OLS) regression. The statistical analysis was conducted using Stata, a software package well-suited for managing regression models and financial time series data. Given the characteristics of financial datasets, several diagnostic tests were performed to ensure model validity:

Multicollinearity: Checked using the Variance Inflation Factor (VIF) test, which confirmed no multicollinearity between independent variables.

Heteroskedasticity: White's test was used to detect non-constant variance in residuals. Homoscedasticity was confirmed for all funds except SWDSX.

Normality of residuals: The Shapiro-Wilk test indicated that residuals followed an approximately normal distribution.

Autocorrelation: Durbin-Watson and Breusch-Godfrey LM tests could not be performed due to time gaps in the data; therefore, robust standard errors were applied.

In terms of variable and interpretation:

- A positive and statistically significant alpha indicates that the fund outperformed the market on a risk-adjusted basis. A non-significant or negative alpha suggests no excess return beyond market movements.
- Beta indicates the fund's exposure to systematic risk. A beta greater than 1 implies higher volatility relative to the market, while a beta less than 1 suggests lower sensitivity.

- R^2 measures the proportion of variation in the fund's excess return explained by the market excess return.
- P-values are used to assess the statistical significance of alpha and beta. A p-value below 0.05 typically denotes statistical significance.

The analysis assumes stationarity of return series and homoscedasticity of residuals—assumptions that real-world financial data may not always meet. Moreover, CAPM only accounts for market risk, excluding other factors such as liquidity, momentum, or sector-specific influences. Nonetheless, due to its simplicity and theoretical clarity, CAPM remains a valuable framework for evaluating systematic risk exposure.

The results of White's test confirmed homoscedasticity for FBRGX, VEIPX, FSPTX, and ANWPX (p-values > 0.1). However, SWDSX exhibited clear signs of heteroskedasticity ($p < 0.01$), indicating non-constant residual variance. Additionally, SWDSX showed an insignificant beta coefficient ($\beta \approx 0$, $p \approx 0.99$), suggesting no meaningful relationship with market excess returns. Due to these violations of CAPM assumptions, SWDSX was excluded from the main regression analysis.

Descriptive statistics for excess returns across the five mutual funds and the market are presented in Table 2.2. All funds recorded negative mean excess returns during the study period (March 2015 – January 2025), indicating underperformance relative to the risk-free rate. This trend may reflect broader market conditions, sector rotation, or macroeconomic headwinds.

Standard deviations highlight differences in fund volatility. FSPTX displayed the highest volatility (6.22%), consistent with its focus on high-growth, technology-sector equities. VEIPX and ANWPX showed lower standard deviations (4.49% and 4.92%, respectively), pointing to more stable returns. SWDSX had the lowest average excess return (-1.15%) and the most negative minimum value (-18.45%), reinforcing its weak performance—further supported by the regression results.

SWDSX has the lowest mean return (-1.15%) and the highest negative minimum value (-18.45%), reinforcing its weak performance, which is further supported by the regression results.

Table 2.2 Excess returns across mutual funds

Variable	Observations	Mean	Std. Dev.	Min	Max
Excess Market Return (Rm - Rf)	119	-0.69	4.74	-13.87	12.53
Excess Return FBRGX	119	-0.33	5.90	-14.60	16.75
Excess Return VEIPX	119	-0.89	4.49	-14.91	11.78
Excess Return SWDSX	119	-1.15	4.75	-18.45	11.36
Excess Return FSPTX	119	-0.11	6.22	-14.93	14.67
Excess Return ANWPX	119	-0.84	4.92	-14.32	13.15

Source: created by author *based on [29-35]*

The CAPM-based regression confirms that FBRGX, VEIPX, FSPTX, and ANWPX show statistically significant exposure to market risk, with beta coefficients significant at $p < 0.001$. Conversely, SWDSX's weak beta, coupled with its heteroskedasticity and poor model fit, indicates that its performance cannot be reliably explained by the CAPM framework.

These results provide a strong empirical basis for the more detailed analysis in Chapter 3, which will explore alternative investment strategies and introduce additional explanatory variables.

Conclusion for chapter 2:

This chapter introduced the dataset, which includes five actively managed U.S. mutual funds, alongside market return and risk-free rate data. Descriptive statistics of excess returns were presented, followed by CAPM-based regression analysis. Diagnostic testing confirmed that most funds exhibit significant exposure to market risk, supporting the validity of CAPM for performance evaluation. However, SWDSX was excluded due to its insignificant beta and violations of key model assumptions.

The methodology applied in this chapter ensures a robust framework for risk-adjusted performance analysis. These findings set the stage for Chapter 3, where more advanced strategies and multifactor models will be explored to enhance the understanding of mutual fund performance.

CHAPTER 3
RESULTS

3.1. Overview of Regression Findings

The regression analysis aimed to evaluate the risk-adjusted performance of five actively managed mutual funds using the CAPM. By estimating each fund's alpha and beta, the study sought to determine whether active managers were able to generate excess returns beyond what would be expected given their exposure to systematic market risk.

The results (table 3.1) reveal that four out of the five funds—FBRGX, VEIPX, FSPTX, and ANWPX—exhibit statistically significant beta coefficients. This indicates that their returns move systematically with the broader market, confirming that equity mutual funds, regardless of style or sector, are inherently exposed to market risk. The strength of the R^2 values (ranging from 0.78 to 0.92) suggests that a large proportion of return variability in these funds is explained by fluctuations in the S&P 500 index.

Table 3.1 CAPM Regression Results for Actively Managed Funds

Fund	Alpha (α)	Beta (β)	R^2	Significance of β (p-value)
FBRGX	0.45	1.13	0.82	$p < 0.001$
VEIPX	-0.29	0.88	0.86	$p < 0.001$
SWDSX	-1.15	-0.001	0.00	$p \approx 0.99$
FSPTX	0.68	1.16	0.78	$p < 0.001$
ANWPX	-0.16	1.00	0.92	$p < 0.001$

Source: created by author based on [29-35]

A more critical insight from the regression analysis concerns the alpha coefficients. None of the five funds delivered a statistically significant alpha, meaning that their returns—once adjusted for market risk—did not exceed what CAPM would predict. This finding directly challenges the main claim of active management: that skilled fund managers can consistently generate excess returns above the market.

The absence of significant alpha supports the Efficient Market Hypothesis (EMH), which holds that financial markets rapidly incorporate all available information into prices, leaving little room for consistent outperformance. In such conditions, even well-informed and experienced fund managers face considerable difficulty beating passive benchmarks. Additionally, the higher fees associated with actively managed funds, along with frequent trading costs, may further reduce any potential alpha.

These findings align with a growing body of empirical literature showing that passive strategies, such as index funds, often outperform active funds over the long term—particularly in developed and information-efficient markets like the United States. For investors, this raises important questions about the cost-effectiveness and long-term value of active management in portfolios where simple market exposure may be more efficient.

The SWDSX fund presented an interesting anomaly in this analysis. Unlike the other funds, SWDSX did not conform to the typical CAPM framework. Its beta coefficient was close to zero, and statistically insignificant, meaning that its returns did not show any meaningful relationship with the broader market's excess return. This stands in stark contrast to the other funds, which were highly correlated with the market movements.

One likely explanation for SWDSX's lack of correlation with the broader market is that it follows a bottom-up investment strategy. In contrast to top-down strategies, which start with analyzing macroeconomic trends (such as GDP growth, interest rates, or inflation), bottom-up investing focuses on analyzing individual companies. Fund managers using this approach carefully study a company's financial statements, valuation,

dividend policy, business model, and competitive position, regardless of broader market conditions.

This means that the fund's performance depends more on company-specific developments—such as changes in earnings, management decisions, or balance sheet strength—than on general trends in the economy or stock market. For example, a bottom-up manager might invest in a utility company with stable cash flow and strong dividends even during a market downturn, if the fundamentals are solid. According to I. Team (2024), bottom-up investing is often used in actively managed equity funds that seek to generate alpha by exploiting mispricings at the company level. However, this approach may result in lower beta values, particularly if the chosen companies are less correlated with major indices like the S&P 500.

Such a strategy is especially common in value or dividend-oriented funds, which seek to find undervalued companies with consistent income streams. This may explain why SWDSX does not react strongly to the ups and downs of the market—its holdings may be concentrated in stable, income-generating sectors like utilities, consumer staples, or financials, which are less sensitive to market-wide volatility.

3.2 Performance Across Different Periods and Strategies

An important part of evaluating actively managed mutual funds is understanding how their performance changes over time—especially during periods of market stress or recovery. One of the most significant periods for performance evaluation occurred during **the global market downturn** in early 2020, triggered by the COVID-19 pandemic. This period was marked by increased market volatility and uncertainty, as reflected in the spike in excess return volatility for most funds, as shown in Figure 3.2.

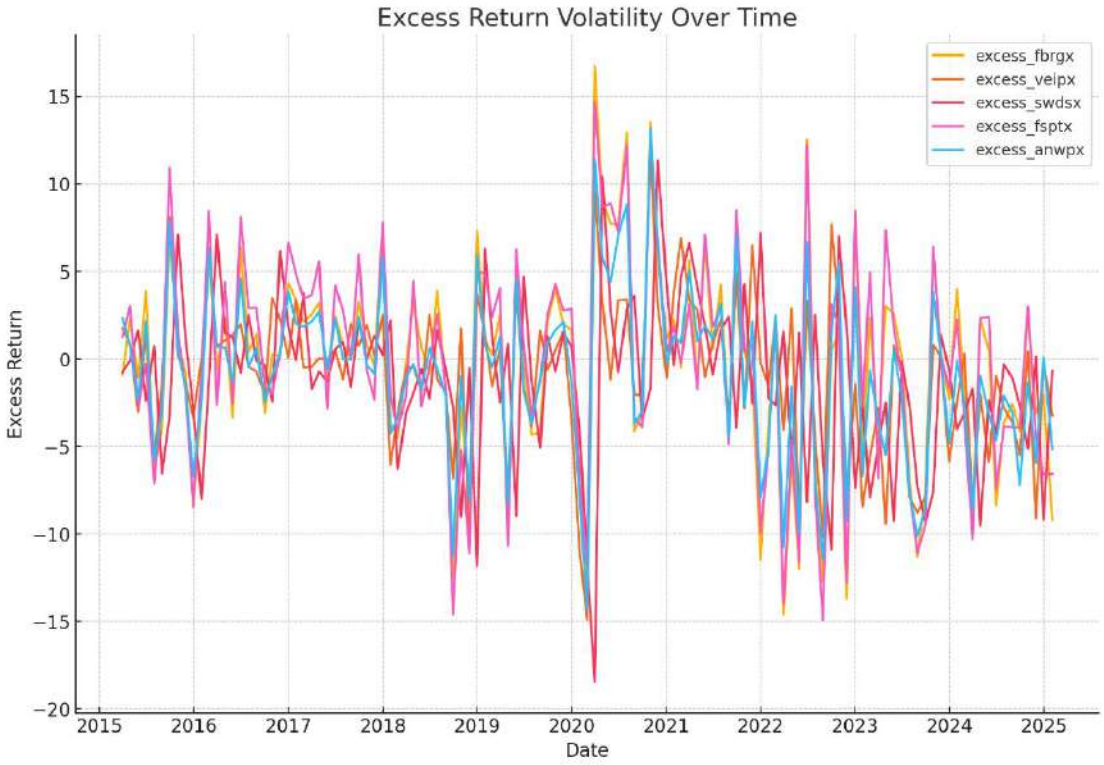

Figure 3.2 Excess Return Volatility Over Time

Source: created by author based on [29-35]

During this time, Fidelity Select Technology Portfolio (FSPTX) exhibited the highest volatility but also the most significant potential for recovery and growth. The fund's focus on fast-growing technology companies made it especially sensitive to investor sentiment and market uncertainty. However, as tech stocks led the recovery during the shift to remote work and digital tools, FSPTX quickly rebounded, showing strong performance in the second half of 2020 and into 2021.

In contrast, Vanguard Equity-Income Fund (VEIPX) was more stable during the pandemic crash. Its strategy, centered on large, dividend-paying companies, helped soften the downside. But because these companies tend to grow slowly, VEIPX did not benefit as much during the rebound. This illustrates a classic trade-off between stability and growth potential: lower volatility during downturns often comes at the cost of slower gains in recoveries.

During periods of **sustained market growth**, such as the recovery post-2018 and during the latter half of 2021, FBRGX (Fidelity Blue Chip Growth Fund) performed particularly well. This fund targets large-cap companies with strong earnings potential, many of which are in high-performing sectors like healthcare and technology. FBRGX's exposure to these areas helped it benefit from long-term growth trends, especially when investor confidence was high.

American Funds New Perspective Fund (ANWPX) also showed solid performance during these periods, largely due to its globally diversified approach. Unlike FBRGX, ANWPX's international exposure allowed it to benefit not only from U.S. market rallies but also from international opportunities. This diversification helped reduce risk and contributed to more balanced performance across different market cycles.

During **market corrections**, such as in 2018 and 2022, funds that focused on dividend income or defensive stocks, like Schwab Dividend Equity Fund (SWDSX), proved to be more resilient. Despite its underperformance in the CAPM regression analysis, which indicated a weak relationship with market excess returns, SWDSX showed that its value-oriented, dividend-paying approach provided a cushion during downturns. Its emphasis on undervalued, dividend-paying stocks allowed it to hold up relatively well during downturns in 2018 and 2022. These types of stocks typically belong to more stable industries, such as utilities or consumer staples, which are less affected by short-term market shocks.

However, it’s important to note that during these correction periods, SWDSX did not provide the upside seen in more aggressive growth funds. This highlights the trade-off between seeking stability during downturns and missing out on the growth potential during recoveries.

The findings suggest that growth strategies (such as those employed by FSPTX and FBRGX) tend to perform better in bull markets and recoveries. These funds benefit from

the expansion of sectors like technology, healthcare, and consumer services, which typically outperform in periods of economic growth. However, these funds also face higher risks and volatility, particularly during market corrections or downturns.

On the other hand, income-focused strategies (such as those of VEIPX and SWDSX) work well in bear markets and market corrections. These funds provide a level of stability, helping to preserve capital during market downturns. However, they tend to lag in strong growth periods when investors are more focused on capital appreciation rather than dividend yield.

In conclusion, the performance of actively managed funds is highly dependent on the prevailing market conditions. Growth-focused strategies outperform in periods of economic expansion, while income-focused strategies offer more stability during downturns. The ability to align a fund's strategy with market conditions is crucial for achieving consistent returns. As such, the success of actively managed funds is not only determined by their asset selection but also by the timing of their strategies in relation to broader economic cycles. This insight is vital for understanding how funds can optimize their performance in different market environments and for guiding future investment decisions.

3.3 Recommendations for Fund Managers

Still, passive investing should not be seen as inferior or outdated. On the contrary, it remains highly effective in certain scenarios—particularly for long-term investors who seek stable, cost-efficient exposure to broad markets. For example, during prolonged bull runs like the one between 2016 and early 2018, or the recovery period after March 2020, passive strategies tracking the S&P 500 would have yielded strong returns with minimal fees and little effort. In these periods, actively managed funds in the sample—such as

FBRGX and ANWPX—exhibited returns closely aligned with market performance, as shown by their high beta values (1.13 and 1.00, respectively) and R^2 values (0.82 and 0.92). However, their alphas remained statistically insignificant, meaning they did not add measurable value above what a passive index would deliver. This strengthens the argument that in predictable or upward-trending markets, a low-cost index fund is often the more efficient choice.

This reinforces a key idea: in well-functioning, transparent markets—like U.S. large-cap equities—passive strategies often match or even outperform active ones, particularly when the market follows a clear upward trajectory. Investors in these markets may benefit more from minimizing fees and tracking the benchmark rather than relying on stock picking or timing.

In contrast, the strength of active management becomes more visible during turbulent or uncertain phases, when asset prices deviate from fundamentals, and when benchmarks do not capture sector-specific risks or opportunities. A clear example was the COVID-19 crash in Q1 2020. While all funds experienced a volatility spike, FSPTX, which invests heavily in technology, quickly rebounded as digital transformation accelerated. Despite its high volatility (standard deviation of excess returns at 6.22%), the fund captured post-crisis momentum better than income-focused VEIPX or SWDSX. Similarly, in late 2022, when inflation fears and rising interest rates hit the markets, growth funds fell harder, while dividend and value-oriented funds demonstrated relative resilience. SWDSX, even though it showed a statistically insignificant beta (≈ 0), displayed less severe drawdowns—a sign that its performance is more idiosyncratic and less tied to index-wide movements.

This implies that active management adds value not by always outperforming, but by responding to asymmetries, dislocations, and hidden risks—conditions under which passive funds remain fully exposed. For example, ANWPX, through its global scope,

could buffer U.S.-centric shocks by gaining exposure to international markets. This type of risk spreading is nearly impossible in purely domestic index funds.

However, even in volatile times, active management must justify its cost. According to SPIVA data (2025), over 85% of U.S. large-cap active funds underperformed their benchmarks over a 10-year horizon. This is consistent with this study's findings: despite strong sector-specific rebounds or diversified portfolios, no fund in the sample showed statistically significant alpha, even over a full business cycle (2015–2025). This raises critical questions about the role of skill versus luck in active management—and about the market's growing tilt toward quantitative, rule-based, or hybrid strategies that combine the best of both worlds.

Nevertheless, one area where active managers can still maintain a clear advantage over passive strategies is in the integration of Environmental, Social, and Governance (ESG) factors. Unlike index-based investing, which mirrors existing market structures, active funds are uniquely positioned to evaluate companies not just on financials, but also on sustainability practices, governance quality, and social impact. This capability is becoming increasingly valuable as investors demand that portfolios align with their values—not just their return targets. Global ESG assets are expected to surpass $50 trillion by 2030 (Parrish, 2024), reflecting a fundamental shift in capital allocation. Moreover, a comprehensive review by Whelan et al. (2021) shows that ESG investing tends to be return-neutral or even return-positive, especially when it is integrated proactively and intelligently. For active managers, this is not merely a branding exercise—it is an opportunity to embed long-term thinking, mitigate non-financial risks, and meet growing stakeholder expectations.

Given these insights, rather than treating active and passive investing as opposing schools of thought, fund managers should consider adopting a conditional, blended strategy. In stable or efficient markets, passive exposure may form the portfolio's core—particularly for retirement investors, institutions, or those focused on capital preservation.

In contrast, more complex investment contexts—such as emerging markets, thematic opportunities (e.g., AI, energy transition), or ESG-specific mandates—call for active management that can respond dynamically, integrate alternative data, and capture mispriced opportunities that indices may overlook.

Conclusion for chapter 3:

This chapter analyzed the performance of five actively managed mutual funds using the CAPM framework, highlighting their exposure to market risk and evaluating their ability to generate excess returns. While all but one fund showed strong correlations with the market, none achieved statistically significant alpha, suggesting limited value added through active management during the studied period. The analysis of fund behavior across different market conditions further emphasized that growth-oriented strategies perform well in bull markets, while income-focused funds offer resilience during downturns. The results support a conditional investment approach, where passive strategies dominate in efficient markets, while active management may add value during volatility or in specialized contexts such as ESG or global diversification.

CONCLUSION

This thesis investigated the performance of actively managed mutual funds using the Capital Asset Pricing Model (CAPM) to determine whether fund managers can generate excess returns beyond market expectations. Drawing on data from five U.S.-based mutual funds over the period 2015–2025, the analysis focused on estimating each fund's alpha and beta. The results revealed that although most funds exhibited strong correlations with the market—demonstrated by high beta and R^2 values—none delivered statistically significant alpha. In other words, the funds did not outperform the market on a risk-adjusted basis, reinforcing the premise of the Efficient Market Hypothesis (EMH), which argues that it is difficult to consistently beat the market through active management.

At the same time, the study highlighted meaningful differences in how various fund strategies performed under different market conditions. Growth-oriented funds such as FSPTX and FBRGX showed stronger results during bull markets and recovery phases, benefiting from their exposure to high-performing sectors like technology and healthcare. On the other hand, dividend and value-focused funds like VEIPX and SWDSX provided more stable returns during periods of volatility, reflecting a more defensive investment style. ANWPX, with its global diversification, managed to perform steadily across different cycles, offering exposure beyond the U.S. market and thereby reducing geographic risk.

One notable exception in the analysis was SWDSX, which demonstrated a statistically insignificant beta and a very low R^2. This suggests that its returns were largely disconnected from overall market trends. A likely explanation lies in its bottom-up investment approach, which emphasizes company-specific fundamentals over macroeconomic indicators. While such a strategy may reduce exposure to systematic risk,

it also challenges CAPM's assumptions and calls for the use of more comprehensive models in future research.

The findings suggest that passive strategies—especially in developed and transparent markets—can offer cost-effective exposure to market performance, particularly in times of stability or long-term growth. However, active strategies can play an important role during uncertain or volatile periods, when market inefficiencies emerge, and index-based investing fails to capture sectoral or regional nuances. Furthermore, active managers are uniquely positioned to incorporate Environmental, Social, and Governance (ESG) factors into investment decisions—an increasingly important consideration as global ESG assets are projected to exceed $50 trillion by 2030.

Given these insights, a blended, conditional strategy appears most appropriate. Passive funds may form the foundation of long-term, low-cost portfolios, especially for retirement or institutional investors. At the same time, active strategies should be applied selectively—particularly in emerging markets, thematic investing (e.g., AI or energy transition), and ESG-focused mandates. This hybrid approach enables investors to balance efficiency with adaptability while responding to evolving market dynamics and stakeholder expectations.

For future research, the use of multifactor models—such as the Fama-French three- or five-factor models—could offer deeper insight into drivers of fund performance. Additionally, comparing ESG-integrated strategies with conventional approaches could shed light on the long-term impact of sustainable investing on both returns and risk.

Overall, this thesis contributes to the ongoing debate on active versus passive investing, showing that while active management faces structural challenges, it retains strategic relevance when applied under the right conditions and with the right tools.

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