

## **Beyond Stocks and Bonds: The Role of Alternative Investments in Modern Portfolios**

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### **ABSTRACT**

This research paper investigates the influence of incorporating alternative investments, including commodities such as gold ETFs and Real Estate Investment Trusts (REITs), into traditional investment portfolios comprising stocks and bonds. The primary objective is to evaluate how the inclusion of these alternative asset classes impacts portfolio diversification, risk mitigation, and enhancement of risk-adjusted returns. By conducting a comparative analysis between a conventional portfolio and one augmented with these alternative investments, the study delves into several key areas, including portfolio construction, performance evaluation, and an in-depth analysis of return measures, risk assessments, and risk-adjusted performance metrics, such as the Sharpe ratio, Covariance, and other relevant indicators.

The research seeks to explore the broader implications of diversification through alternative assets, shedding light on how these investments can complement traditional portfolios by reducing volatility and potentially increasing returns. It also examines how investors might optimize their portfolios to achieve better risk-return trade-offs. The findings of this study aim

to provide valuable insights for both institutional and individual investors who are looking to diversify their investments and improve the overall performance of their portfolios by leveraging the benefits of alternative asset classes.

*Keywords: Alternative investments, portfolio diversification, risk mitigation, risk-adjusted returns, alternative investment classes*

## **INTRODUCTION**

In modern portfolio theory, diversification is widely regarded as a fundamental strategy for managing investment risk and maximizing returns. While traditional portfolios typically comprise stocks and bonds, the quest for higher returns and effective risk management has sparked increasing interest in alternative investments. Assets such as private equity, commodities, and real estate investment trusts (REITs) possess distinct characteristics that may enhance portfolio performance.

This study explores the impact of integrating alternative investments into conventional stock-and-bond portfolios. By analyzing the performance of a traditional portfolio versus one incorporating alternative assets, we aim to determine how these investments contribute to diversification, risk mitigation, and improved risk-adjusted returns.

The study will focus on the following key areas:

- **Portfolio Construction:** Two portfolios will be developed—one consisting solely of stocks and bonds, and another that includes a mix of stocks, bonds, and alternative investments.
- **Performance Evaluation:** The returns, risk indicators (e.g., standard deviation, beta), and risk-adjusted returns (e.g., Sharpe ratio) of both portfolios will be compared.
- **Diversification Benefits:** The study will assess how alternative investments reduce correlation with traditional assets, enhancing overall portfolio diversification.
- **Hypothesis Testing:** Hypotheses regarding the influence of alternative investments on risk and return will be formulated and statistically tested.

By examining these factors, this research aims to offer valuable insights for investors and financial professionals looking to refine their portfolio strategies through the inclusion of alternative investments.

## **LITERATURE REVIEW**

**Wencheng Zhang (2021)** found that not all alternative assets provided diversification benefits; investments in art and natural resources demonstrated higher risk and lower returns. [Zhang, W. (2021). Can Alternative Investments Benefit Diversification? <https://doi.org/10.17615/xb1g-pr08>]

**C. Geczy (2016)** conducted a study that compares the performance of traditional indices like the S&P 500 with alternative investments, suggesting that alternatives can offer distinct risk-return benefits, particularly during financial crises, as seen by the huge losses traditional indices incurred in the 2007 downturn. [Geczy, C. (2016). The New Diversification: Open Your Eyes

to Alternatives. The Journal of Private Equity, 20(1), 72–81.  
<http://www.jstor.org/stable/44396819>]

The paper "Alternative Investments in the Institutional Portfolio" by **Schneeweis, Karavas, and Georgiev, (2002)** states that alternative assets, such as hedge funds, private equity, and managed futures, are increasingly being used in institutional portfolios. [Schneeweis, T., Karavas, V. N., & Georgiev, G. (2002). *Alternative investments in the institutional portfolio*. London: Alternative Investment Management Association.]

**Rzeczynski (2022)** explores the less quantifiable aspects of due diligence in alternative investments, emphasizing the power of storytelling in assessing potential investments. The study highlights how narratives, whether from fund managers or investment firms, can influence investors' perceptions of value. [Rzeczynski, M. S. (2021). *Narrative, Storytelling, and Qualitative Due Diligence*. *The Journal of Alternative Investments*.]

**Mundi and Kumar (2022)**'s study identifies emerging trends like cryptocurrency investments, highlighting the growing importance of alternative assets in modern portfolios. They underscore the diversification benefits and resilience that alternatives provide, especially in volatile markets, while acknowledging limitations in liquidity and valuation. [Mundi, H. S., & Kumar, D. (2023). *The potential of alternative investments as an asset class: a thematic and bibliometric review*. *Qualitative Research in Financial Markets*, 15(1), 119-141.]

**Balp and Strampelli (2023)** analyze the growing role of alternative assets like private equity (PE) and venture capital (VC) in institutional portfolios. The authors focus on the EU's regulatory initiatives under the European Green Deal, examining how ESG concerns are reshaping investment strategies. [Balp, G., & Strampelli, G. (2022). *Institutional investor ESG engagement: The European experience*. *European Business Organization Law Review*, 23(4), 869-904.]

This study by **Edwin O. Fischer (2009)** analyzes performance indices of various asset classes over a ten-year period (April 1999 to April 2009), focusing on the contrasting behaviors of stocks, commodities, real estate, private equity, bonds, hedge funds, and managed futures. [Fischer, E. O., & Lind-Braucher, S. (2010). *Optimal portfolios with traditional and alternative investments: An empirical investigation*. *Journal of Alternative Investments*, 13(2), 58.]

This study looks at the best ways to build a passive investment portfolio, specifically comparing hedge funds (HFs), private equity (PE), and commodities against traditional assets like stocks and bonds. Historical trends suggest that portfolios benefit from larger allocations to commodities and hedge funds while keeping equities and volatility exposure relatively lower. [Pézier, J., & White, A. (2008). *The Journal of Alternative Investments*, 10(4), 37.]

By 1995, major pension funds, endowments, and foundations in the U.S. and Canada had committed nearly \$70 billion to alternative investments—an impressive 92% increase from 1992. These investments made up an average of 5.5% of total assets, up from 3.6%, with public and corporate funds contributing over 86% of total commitments. Interest in international private equity and venture capital also saw significant growth. [Healey, T. J., & Hardy, D. J. (1997). *Financial Analysts Journal*, 53(4), 58-65.]

For a long time, investment conversations revolved mainly around equities. However, market downturns have shifted attention toward alternative investments. More investors are now

looking at hedge funds, private equity, venture capital, managed futures, and commodities—seeking assets that can move independently from stocks and bonds to better balance risk and returns. [Opiela, N. (2002). *Journal of Financial Planning*, 15(10).]

**Richard M. Ennis** finds that for pension funds in the public sector in the United States since the global financial crisis, they have earned about 1.2% less alpha than otherwise would have been achieved per year, much of which can be explained as an effect of their exposure to alternative investments. [11. Ennis, R. (2023). Have alternative investments helped or hurt. In *Have Alternative Investments Helped or Hurt?*: Ennis, Richard. [SI]: SSRN.]

**Phillipe Jorion** states that compared to traditional assets such as equities and bonds, AIs usually demonstrate low correlations with these asset classes and, therefore, can be used as diversification instruments offering in general favorable returns at low volatility. [12. Jorion, P. (2012). Risk management for alternative investments. Prepared for CAIA Supplementary Level II Book. [https://merage.uci.edu/~jorion/varseminar/Jorion-CAIA-Risk\\_Management.pdf](https://merage.uci.edu/~jorion/varseminar/Jorion-CAIA-Risk_Management.pdf).]

A study finds that over the last decade, these alternative investments have significantly increased in value. The vehicles include venture capital, private equity, hedge funds, infrastructure, real estate, and sovereign wealth funds. [13. Shawky, H., Siegel, D. S., & Wright, M. (2012). Financial and real effects of alternative investments. *Journal of Corporate Finance*, 18(1), 105-107.]

## **RESEARCH OBJECTIVES**

1. To understand the evolving financial landscape and how it goes beyond traditional investments like stocks and bonds.
2. To explore the role of alternative investments such as REITs, private equity, and commodities in the context of modern investment portfolios.
3. To assess the impact of incorporating alternative investments on portfolio diversification, particularly in terms of risk mitigation and return enhancement.
4. To evaluate how these alternative asset classes influence the overall risk-return dynamics of portfolios.
5. To provide insights for investors on the benefits of diversification through alternative investments, helping optimize portfolio performance.

## **HYPOTHESIS**

### **Null Hypothesis (H<sub>0</sub>):**

Incorporating alternative investments in a portfolio does not result in significant risk minimization or diversification benefits compared to a traditional portfolio consisting solely of stocks and bonds.

The findings from the data analysis will help in determining whether the inclusion of alternative investments reduces overall portfolio risk and improves returns. Hypothesis testing results will provide statistical validation for these observations.

## METHODOLOGY

This research project follows a systematic approach to assess the impact of alternative investments on portfolio performance. The methodology can be broken down into the following key steps:

### 1. Data Collection and Preparation

Data Source:

Data for this research was extracted from reliable financial databases, specifically the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). We collected data for a five-year period (2018–2023), focusing on selected equities, bonds, and alternative investments.

Securities Used:

- Equities: HDFC, Infosys, Tata Consumer
- Bonds: HDFC Bond
- Alternative Investments: Embassy REITs and Gold ETFs
- Data Fields: The following fields were collected for analysis: open, high, low, close, adjusted close, and volume.
- Data Cleaning and Processing: Data cleaning was performed to remove inconsistencies and outliers. Adjusted closing prices were used to reflect corporate actions such as dividends and stock splits, ensuring more accurate return calculations.

### 2. Portfolio Construction

Two portfolios were constructed to assess the impact of alternative investments:

- Portfolio A: Comprising traditional asset classes with 80% allocated to equities (HDFC, Infosys, and Tata Consumer) and 20% to bonds (HDFC Bond).
- Portfolio B: A diversified portfolio with 40% allocated to equities, 10% to bonds, and 50% to alternative investments (Embassy REITs and Gold ETFs).

### 3. Return Calculation

- Individual Asset Returns: For each asset, returns were calculated using the formula:

$$\text{Return} = (\text{Adjusted Close} - \text{Open}) / \text{Open}$$

- CAGR: Compound Annual Growth Rate (CAGR) was calculated for each asset over the five-year period.
- Average Return: Average annual returns were computed for each asset class.

### 4. Risk Calculation

- Standard Deviation: The standard deviation of returns (STDEV.S) was calculated for each asset, serving as a measure of risk.
- Portfolio Risk Calculation: The risk of each portfolio was determined using the weighted standard deviations and the covariance of asset returns:

### Portfolio Risk=

$$\sqrt{\text{Weight}_1^2 + \text{Standard Deviation}_1^2 + \text{Weight}_2^2 + \text{Standard Deviation}_2^2 + 2 * W_1 * W_2 * CoV}$$

### 5. Portfolio Performance Metrics

Sharpe Ratio: The Sharpe Ratio was calculated for each portfolio to assess its risk-adjusted returns:

$$\text{Sharpe Ratio} = (\text{Portfolio Return} - \text{Risk-Free Rate}) / \text{Portfolio Risk}$$

The risk-free rate was set as the ten-year CAGR of T-bills, which is 6.86%.

### 6. Coefficient of variation and Correlation Analysis

Coefficient of variation: Coefficient of variations was calculated to assess the degree to which they are dispersed from the standard deviation. Portfolio A exhibited a high CoV (32.17%), indicating more risk under market fluctuations, while Portfolio B showed a lower CoV (7.39%), signalling less risk due to diversification.

Correlation Matrix: A correlation matrix was constructed to analyze the relationships between individual assets. Gold and REITs demonstrated low or negative correlations with equities and bonds, contributing to risk diversification.

### 7. Hypothesis Testing

Normality and Homogeneity Tests: Normality and homogeneity tests confirmed that the data was normally distributed and homogeneous (p-value < 0.05).

- Student's t-Test: A Student's t-test was conducted to compare the returns of Portfolio A and Portfolio B. The results (p-value < 0.05) allowed us to reject the null hypothesis, confirming that the returns of Portfolio B (which includes alternative investments) are higher than those of Portfolio A with 95% confidence.

## Rationale for Stock Selections in the Portfolio

### 1. **HDFC (Financial Services)**

- **Reason for Selection:**

In order to analyse the financial services sector to select the best stock for our portfolio, we performed a quantitative as well as a qualitative analysis of the industry as it was in the year 2019.

Qualitatively, we understood that HDFC stands as a dominant force in India's financial sector, offering a comprehensive range of services, including home loans, insurance, and asset management. As a market leader with a solid reputation, it represents a stable equity choice with substantial growth potential, largely driven by India's expanding financial landscape and increasing demand for financial products.

	Growth in Net Profit	Growth in EPS
<b>HDFC Bank</b>	21.90%	19.86%
<b>ICICI Bank</b>	-1.09%	-3.29%
<b>State Bank of India</b>	-818.49%	-387.97%
<b>Axis Bank</b>	-18.01%	-18.71%
<b>Kotak Mahindra Bank</b>	-116.11%	-114.51%

Figure 1: Analyzing performance of Banking Stocks (2014-2019)

Our initial assessment highlighted HDFC's dominant position in India's financial landscape, offering a diversified suite of services and boasting a strong market reputation. This stability, coupled with the potential for substantial growth driven by India's expanding financial market, positioned HDFC as a compelling equity choice. Furthermore, a quantitative analysis of key financial metrics, specifically the growth in net profit and earnings per share (EPS) from 2014 to 2019, revealed HDFC Bank's superior performance compared to its peers. While other banks exhibited fluctuating or negative growth, HDFC Bank demonstrated consistent positive growth in both net profit (21.90%) and EPS (19.86%), solidifying its position as a financially robust and strategically sound investment. Notably, HDFC Bank was the only bank in the analysed group to demonstrate positive growth in both categories, further reinforcing its selection as the top performer.

- **Portfolio Role:** HDFC serves as a cornerstone in the portfolio, offering lower volatility compared to smaller financial institutions. Its consistent performance, through dividends and capital appreciation, ensures a balanced approach to risk management, making it a reliable component in an investment strategy.
- **Growth Potential:** The growth trajectory of HDFC is firmly supported by the rise of India's middle class and the country's push toward broader financial inclusion, positioning it for steady, long-term growth.

## 2. Infosys (Technology)

- **Reason for Selection:**

To increase our exposure to the technology sector, we performed a similar study, however, a third variable was added when performing the quantitative analysis, which is the average Net Profit Margin. Selecting a technology stock based on the average 5-year net profit margin offers a more robust and sustainable investment strategy compared to focusing solely on 5-year average growth in net profit and EPS, which we did for the Financial Services sector. While growth metrics can be influenced by short-term market fluctuations, aggressive accounting practices or unsustainable business

models, a consistently high net profit margin indicates a company's fundamental efficiency and pricing power. A strong margin demonstrates the ability to convert revenue into actual profit, reflecting operational excellence and a competitive advantage. In the dynamic technology sector, where rapid innovation and market disruption are common, companies with consistently high margins are better positioned to weather economic downturns, reinvest in R&D and maintain profitability in the long term. Therefore, prioritizing net profit margin provides a clearer picture of a company's financial health and its capacity to generate enduring value for investors, making it a more reliable indicator for long-term portfolio success in the tech industry.

	<b>Growth in Net Profit</b>	<b>Growth in EPS</b>	<b>Net Profit Margin</b>
<b>TCS:</b>	13.78%	14.43%	22.12%
<b>Infosys:</b>	11.25%	12.40%	21.95%
<b>HCL Technologies:</b>	21.07%	20.88%	18.73%
<b>Wipro:</b>	6.03%	7.77%	16.90%
<b>Tech Mahindra:</b>	32.39%	10.83%	12.31%

*Figure 2: Analyzing performance of Technology Stocks (2014-2019)*

Infosys is a globally recognized leader in IT services, offering stability through its commitment to innovation and extensive international presence. As the technology sector continues its rapid expansion, Infosys stands out as a financially stable and forward-thinking choice.

In 2019, selecting Infosys over TCS for our portfolio proved to be a sound decision, primarily driven by its superior balance between consistent profitability and growth potential. While TCS boasted a slightly higher net profit margin of 22.12% compared to Infosys's 21.95%, the difference was marginal, indicating both companies were highly efficient. Infosys offered a compelling combination of strong profitability and promising growth, making it a strategically advantageous choice for long-term portfolio performance.

Infosys was often perceived as being more aggressively focused on digital transformation initiatives. If an investor or client was particularly interested in a company with a strong emphasis on emerging technologies, Infosys's investments and growth in this area might have been more appealing. This focus could be seen in the percentage of revenue being generated from digital services, and how those numbers were increasing with the increasing number of projects signed recently. Quantitatively, the minimal difference in net profit margin was outweighed by Infosys's stronger growth indicators, positioning it for potentially higher returns in the future.

- **Portfolio Role:** Infosys serves as a key growth driver within the portfolio, benefiting from the rising demand for IT services, cloud computing, and digital transformation

solutions. Its relatively low correlation with other sectors also adds to portfolio diversification, mitigating risk while maximizing growth potential.

- **Growth Potential:** The growth outlook for Infosys remains robust, fuelled by the ongoing digitalization of businesses worldwide and technological advancements across multiple industries.

### 3. Tata Consumer Products (FMCG)

- **Reason for Selection:**

Tata Consumer Products operates within the essential goods sector, ensuring stable returns driven by the consistent demand for food and beverages. Its ability to maintain performance during market downturns positions it as a resilient and dependable defensive asset in the portfolio.

	Growth in Net Profit	Growth in EPS
<b>HUL</b>	6.62%	6.60%
<b>ITC</b>	8.52%	7.75%
<b>Tata Consumer</b>	201.30%	1446.11%
<b>Nestle India</b>	16.99%	16.99%
<b>Godrej Consumer</b>	16.71%	17.76%

*Figure 3: Analyzing performance of FMCG Stocks (2014-2019)*

Tata Consumer Products stood out as a compelling choice for FMCG exposure within a portfolio. The company exhibited an extraordinary 201.30% growth in net profit and an even more remarkable 1446.11% growth in Earnings Per Share (EPS). These figures significantly outpace its competitors, demonstrating exceptional financial performance and potential for substantial returns. While other established players like HUL, ITC, Nestle India and Godrej Consumer show steady growth, Tata Consumer's dramatic increase suggests a period of rapid expansion and significant strategic improvements. This level of growth can translate to higher shareholder value and makes Tata Consumer a potentially lucrative investment for those seeking strong returns within the FMCG sector.

- **Portfolio Role:** Tata Consumer Products contributes defensive strength by reducing the overall portfolio's volatility. Given the less cyclical nature of the FMCG sector, it provides a reliable hedge against market fluctuations, safeguarding returns even in uncertain economic environments.

- **Growth Potential:** While moderate, the growth potential is bolstered by rising consumption levels among India's expanding middle class, offering steady, long-term prospects.

#### 4. **HDFC Bonds**

- **Reason for Selection:** HDFC Bonds are incorporated to mitigate portfolio volatility, offering stability and a lower risk profile compared to equities. As a reliable source of fixed income, they contribute to the portfolio's overall balance by generating consistent returns.
- **Portfolio Role:** HDFC Bonds play a crucial role in reducing risk, particularly during periods of equity market turbulence. Their steady returns provide a safety net, ensuring portfolio resilience in times of market stress.
- **Growth Potential:** While the growth potential is limited compared to equities, the returns are predictable and consistent, making bonds an essential component for risk-averse, long-term stability.

#### 5. **Embassy REITs (Alternative Investment)**

- **Reason for Selection:** REITs provide valuable exposure to the real estate sector, delivering consistent income streams and offering significant diversification benefits. With their low correlation to equities and bonds, REITs play a critical role in mitigating portfolio risk.
- **Portfolio Role:** REITs enhance portfolio stability and diversification, particularly during periods of market volatility. They generate income through property rents, serving as a hedge against both inflation and market downturns, thereby contributing to long-term resilience.
- **Growth Potential:** The growth potential for REITs is moderate, supported by rising demand for commercial real estate, which ensures steady and sustained returns over time.



Figure 4: 5-year revenue of REITs



Figure 5: 5-year price chart of Embassy REITs

## 6. Gold ETFs (Alternative Investment)

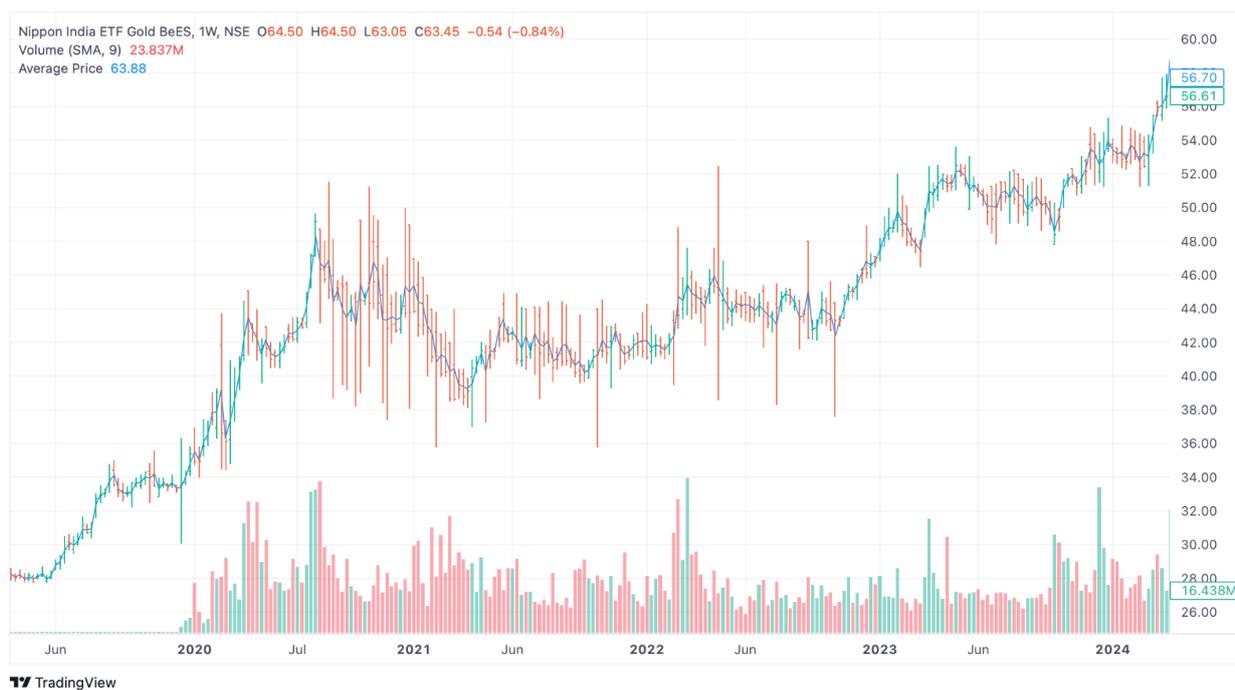
- **Reason for Selection:** Gold ETFs serve as a hedge against inflation and provide a reliable safe-haven asset during periods of economic uncertainty. Due to gold’s negative correlation with equities, it plays an essential role in reducing overall portfolio risk.
- **Portfolio Role:** Gold ETFs contribute to portfolio stability by offering protection during economic downturns, effectively counterbalancing volatility in equity markets. This risk-reduction feature makes it a critical asset for long-term resilience.

- **Growth Potential:** The growth potential for Gold ETFs is moderate and largely influenced by global macroeconomic factors such as inflation, interest rates, and geopolitical events, which drive demand for gold as a secure asset.

**Returns**

	1Y	3Y	5Y	All
Fund Returns	31.8%	16.0%	13.2%	11.4%
Category Average	32.2%	16.2%	13.4%	-
Rank within Category	15	12	19	-

*Figure 6: Returns from Nippon India ETF Gold BeES*



*Figure 7: 5-year price chart of Nippon India ETF Gold BeES*

**Analysis of the Portfolios Based on Financial Goals and Investor Mindset**

**Portfolio A (80% Equities + 20% Bonds)**

- **Suitability for Investor Goals:** This portfolio is tailored for growth-oriented investors who are seeking higher returns and are comfortable with moderate to high levels of risk. With equities making up the majority, the portfolio offers significant potential for capital appreciation, while the bond allocation provides a measure of risk mitigation without significantly compromising returns.

- **Financial Goals:** Portfolio A is well-suited for long-term wealth accumulation, typically designed for investors with a time horizon of 7 to 10 years or longer. It caters to those who can endure short-term market volatility in exchange for the possibility of higher returns over the long term.
- **Investor Profile:**
  - **Age:** Likely within the 25-40 age range, with ample time to recover from potential market downturns.
  - **Risk Tolerance:** Moderate to high, willing to accept fluctuations in the equity market for the prospect of higher growth.
  - **Investment Horizon:** Long-term, with a focus on growth, typically over 7 years, and minimal need for liquidity.
  - **Profession:** Likely professionals in fields such as technology, finance, or entrepreneurship, where growth is prioritized over short-term security.

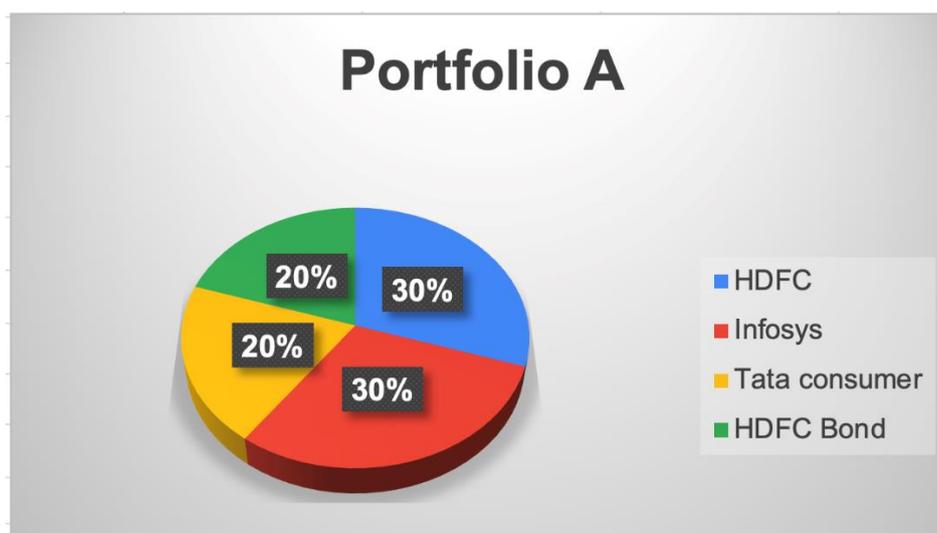


Figure 8: Composition of Portfolio A

#### Portfolio B (40% Equities + 10% Bonds + 50% REITs & Gold ETFs)

- **Suitability for Investor Goals:** This portfolio is ideal for investors who prioritize risk reduction and stability but still desire moderate growth. The inclusion of REITs and Gold ETFs enhances diversification and provides downside protection during market volatility. Although returns may be slightly lower compared to Portfolio A, the significantly reduced risk makes it attractive for those focused-on capital preservation alongside steady growth.

- **Financial Goals:** Portfolio B is designed for investors aiming to preserve capital while achieving moderate returns. It offers a balanced approach between growth and stability, particularly suited for individuals looking to navigate unpredictable markets with a focus on minimizing losses during downturns.
- **Investor Profile:**
  - **Age:** Typically, in the 30-45 age range, likely managing growing financial responsibilities such as responsibilities of raising a family and mortgages.
  - **Risk Tolerance:** Low to moderate, with a preference for consistent returns and minimal volatility.
  - **Investment Horizon:** Medium to long-term (5-10 years), focused on wealth accumulation while maintaining controlled risk exposure.
  - **Profession:** Likely professionals in fields such as management, healthcare, consulting, or those with families, who value a diversified and conservative investment strategy.
  - **Mindset:** Conservative, looking to avoid the turbulence of equity markets while still benefiting from stable, long-term growth.

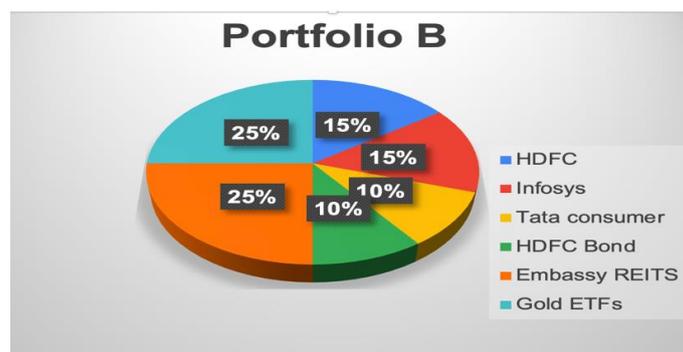


Figure 9: Composition of Portfolio B

## Why Portfolio B Suits Investors Aged 30-45

### 1. Balanced Risk and Growth Potential

Portfolio B is well-suited for investors in the 30-45 age range, who often desire a balanced capital preservation with the need for continued growth. The inclusion of alternative investments like REITs and Gold ETFs provides a diversified, lower-risk option compared to portfolios heavily skewed toward equities. These alternative assets generate stable returns, offering a buffer against equity market volatility, while equities like HDFC, Infosys, and Tata Consumer ensure steady capital appreciation over the long term.

### 2. Risk Mitigation through Diversification

A key strength of Portfolio B lies in its diversification. By incorporating REITs and Gold ETFs—assets that typically have low correlations with equities and bonds—the portfolio smooths out the overall volatility. This diversification is particularly beneficial in managing risk, ensuring that no single market fluctuation significantly impacts the entire portfolio. For investors at this life stage, diversification helps protect accumulated wealth while still allowing for moderate growth.

### **3. Hedge Against Inflation and Economic Uncertainty**

The presence of both real estate (through REITs) and Gold ETFs provides strong hedges against inflation and economic uncertainty. Historically, these asset classes have performed well during periods of rising prices and market instability, which offers long-term security for investors concerned about preserving the purchasing power of their wealth.

### **4. Steady and Predictable Income**

The portfolio's allocation to REITs ensures a reliable income stream through rental property dividends, while gold ETFs act as a safeguard during economic downturns. This predictable income is ideal for investors managing increasing financial responsibilities such as family expenses, mortgages, or saving for their children's education. The focus on steady returns allows investors to meet ongoing financial obligations without exposing themselves to excessive risk.

### **5. Moderate Risk, Consistent Returns**

Investors in the 30-45 age bracket often prefer portfolios that offer consistent, moderate returns over volatile, high-risk options. Portfolio B mitigates the stress associated with extreme market swings, providing a more stable investment journey. The inclusion of bonds also contributes to reduced volatility, further supporting the goal of consistent, reliable returns.

### **6. Liquidity and Financial Flexibility**

With exposure to a diversified mix of equities, REITs, and bonds, Portfolio B offers sufficient liquidity to meet medium-term financial needs, such as major life expenses or unexpected costs. This ensures that investors have access to their capital without needing to liquidate higher-risk or volatile assets, preserving the long-term integrity of the portfolio.

For a **30-45-year-old professional**, Portfolio B strikes the ideal balance between **risk management** and **moderate growth**. It allows for wealth accumulation while preserving capital, suiting those who seek financial security alongside long-term growth opportunities in a diversified and measured way.

## **DATA ANALYSIS AND FINDINGS**

**Excel link -**

[https://docs.google.com/spreadsheets/d/1\\_ibgoYMrUmWd\\_P72GRigDzpCWUR2dQEizcQA\\_TeDEOA0/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1_ibgoYMrUmWd_P72GRigDzpCWUR2dQEizcQA_TeDEOA0/edit?usp=sharing)

PORTFOLIO A									
					5 year returns			Risk	
Sr. no.	Asset class	Security	Value	Allocation (%)	Total return	Average	CAGR	Std. Deviation	Var
1	Equity	HDFC	300000	0.3	53.60%	10.72%	5.74%	1.79%	0.0319%
	80%	Infosys	300000	0.3	146.68%	29.34%	19.17%	3.48%	0.1209%
		Tata consumer	200000	0.2	238.32%	47.66%	40.80%	2.08%	0.0433%
2	Bonds	HDFC Bond	200000	0.2	29.66%	5.93%	5.91%	2.00%	0.0401%
	20%								

Figure 10: Portfolio A data

PORTFOLIO B									
					5 year returns			Risk	
Sr. no.	Asset class	Security	Value	Allocation (%)	Total return	Average	CAGR	Std. Deviation	Var
1	Equity	HDFC	150000	0.15	53.60%	10.72%	5.74%	1.79%	0.0319%
	40%	Infosys	150000	0.15	146.68%	29.34%	19.17%	3.48%	0.1209%
		Tata consumer	100000	0.1	238.32%	47.66%	40.80%	2.08%	0.0433%

2	Bonds	HDFC Bond	100000	0.1	29.66%	5.93%	5.91%	2.00%	0.0401%
	10%								
3	Alternative Investments	Embassy REITS	250000	0.25	32.13%	6.43%	5.38%	1.55%	0.0240%
	50%	Gold ETFs	250000	0.25	75.00%	15.00%	14.42%	0.93%	0.0087%

Figure 11: Portfolio B data

For the scope of this research, we have taken two portfolios as sample representatives of two types of investment strategies. Portfolio A is a combination of different types of equity shares and bonds. This portfolio is representative of the traditional asset classes in which a classic investor invests.

On the other hand, portfolio B is a culmination of equity shares, bonds, and alternative investments, namely REITs and gold ETFs which are used to diversify the risks. The comparison between the two portfolios tells us how the returns and the risks differ with the fusion of alternative investments, and further comparisons have been made based on the following parameters:

#### Portfolio Overview

Portfolio A with three types of equity shares and a bond has a return of 16.82% over the past 5 years. The portfolio has a risk of 5.41% as the investments went through a global pandemic and bounced back and it depicts the sensitivity of all these to market fluctuations.

Portfolio B with equity shares, bonds, REITs and gold ETFs has a return of 13.36% and a risk of 1.06%. The risk has significantly reduced but the return has only been marginally affected.

#### Performance Ratio

Sharpe Ratio measures the risk-adjusted return performance of a portfolio. It tells us how well the investments in a portfolio have performed compared to the risk-free rate of return. We have taken the risk-free rate of return as the CAGR of T-bills across 10 years, which is 6.86% and compared the performance of both the portfolios based on that. Portfolio A has a sharpe ratio of 1.84. It is a positive performance indicator as if it is above 1, it provides a better return in comparison to the risk taken. However, when pitted against sharpe ratio of portfolio B which is 6.13, 1.84 falls short as the returns from alternative investments are significantly 4.29 times more in terms of sharpe ratio. In general, a sharpe ratio above 3 is considered to be excellent and 6.13 is significantly higher than 3 which tells us that alternative investments not only help to diversify risks but also provide higher returns.

#### Coefficient of variation

Coefficient of variation measures how far the risk-return of the portfolio lies from the standard deviation. A higher CoV means that the assets in the portfolio are more dispersed from the

standard deviation and are less likely to achieve average returns. A more diversified portfolio will have a lower CoV as the risks are distributed among different asset classes to hedge against market fluctuations. Portfolio A has a very high CoV of 32.17% which means that the asset classes tend to exhibit more risk per unit return under market fluctuations. On the other hand, a CoV of 7.39% in portfolio B is an indicator that the assets are diversified and might react differently under different situations by exhibiting low risk per unit return.

### **Correlation Matrix**

Any individual or entity in the market gets rewarded not for holding on the unsystematic risk (i.e., company specific risk) but for market risk which is inherent to all. This is because unsystematic or business risk is something which can be reduced via diversification. The correlation matrix here allows us to understand the strength and direction of relationship that individual securities movements hold for each other. Now particularly breaking down the portfolio separately for traditional and alternative investments and seeing how it affects the overall portfolio diversification and risk.

1. Low or negative correlation:

Diversification's key lies in correlation between securities being low or negative. A low or negative correlation implies that asset prices move typically in opposite directions. It reduces the portfolio risk without necessarily reducing the returns.

Like given in the matrix, Gold has strong negative correlations with almost all equity assets (HDFC: -0.79/ Infosys: -0.71/ Tata Consumer: -0.47). This simply signifies the fact that in a bearish market for equity securities, gold as a commodity performs better and acts as a hedge against market downturn.

Similarly, REITS also exhibit a low to moderate correlation with other asset classes, providing a degree of diversification benefit to the existing portfolio.

2. Impact of bonds

Bonds generally act as an anchor to volatility, keeping the portfolio standard deviation to minimum. Here, in the portfolio too we can see bonds have negative correlation with other assets while a low positive correlation with gold, showing that they might move in a similar direction during market downturns but still have different risk profiles.

Mixing various asset classes in a portfolio thus provides us with risk mitigation, stability during downturns, hedge against volatility and better risk return balance.

All this helps in optimal portfolio construction.

	HDFC	Infosys	Tata consumer	HDFC bond	Gold	REITS
HDFC	1					
Infosys	0.888551511	1				
Tata consumer	0.73072831	0.862260001	1			
HDFC bond	-0.669843243	-0.453571316	-0.01137	1		
Gold	-0.797451539	-0.717432271	-0.46703	0.643812	1	
REITS	-0.068933233	0.239098956	0.156697	0.18636	-0.405415837	1

Figure 12: Correlation matrix

## **HYPOTHESIS TESTING**

### Null Hypothesis (H<sub>0</sub>):

Incorporating alternative investments in a portfolio does not result in significant risk minimization or diversification benefits compared to a traditional portfolio consisting solely of stocks and bonds.

## **Independent Samples T-Test**

### Independent Samples T-Test

		Statistic	df	p
return	Student's t	-21.093 <sup>a</sup>	2134.000	<.001

Note. H<sub>a</sub>  $\mu_{\text{Expected Return A}} < \mu_{\text{ER B}}$

<sup>a</sup> Levene's test is significant ( $p < .05$ ), suggesting a violation of the assumption of equal variances

Figure 13: Hypothesis testing

### Assumptions

#### Homogeneity of Variances Tests

		F	df	df2	p
return	Levene's	124.470	1	2134	<.001
	Variance ratio	3.297	1067	1067	<.001

Note. Additional results provided by *moretests*

#### Tests of Normality

		statistic	p
return	Shapiro-Wilk	0.767	<.001
	Kolmogorov-Smirnov	0.083	<.001
	Anderson-Darling	39.200	<.001

Note. Additional results provided by *moretests*

#### Group Descriptives

		Group	N	Mean	Median	SD
return	Expected Return A		1068	-0.030	-0.030	0.020
	ER B		1068	-0.015	-0.014	0.011

Figure 14: Assumptions taken for hypothesis testing

The data of average returns of both the portfolios showed p value <0.05 for the normality test and homogeneity test thus it was normally distributed and homogeneous. Therefore, we performed the Student's test.

P value of student's t-test <0.05, therefore we reject the null hypothesis and accept the alternate,

Ha: Expected returns of portfolio A < Expected returns of portfolio B which has alternative investments with 95% confidence level.

The standard deviation for portfolio B is also less than that of A which further strengthens our hypothesis.

### **CONCLUSION**

This research paper aimed at showing a comparative performance of two distinct portfolios: One made up purely of traditional investments and one mixed with alternative investments. The objective was to show how involvement of alternative investments provides diversification

benefits and study the impact of various risk return profiles that securities like gold commodity and Real estate offers.

The study confirms the hypothesis that alternative investments can increase the overall portfolio diversification providing reduced risks accompanied with slightly lower returns.

These investments options do not always offer lower risks and higher returns, so a prudent investor should assess his/her risk profiles and recognise that while traditional assets can give very high yields in bull markets, it is equally important to have a hedge against the downside by investing and having securities with negative correlation i.e., more diversification.

## **LIMITATIONS**

### **1. Strategy Employed**

Alternative investments are not solely dependent on the asset classes but also on the strategy employed. One cannot use a cookie cutter strategy as the risk appetite and the return expectations in terms of the time period can differ. Based on this time frame, different investors may have to employ different strategies.

### **2. Highly capital intensive**

The AIFs in India invest in a combination of fund options ranging from private equity, ventures, angel funds and so on. The minimum capital requirement for these projects is very high-approximately 1 crore rupees.

### **3. Lock up periods**

A lot of alternative investments like hedge funds, private equity funds, art and collectibles and real estate may have a long lock-up period or require significantly more time to be easily sold or converted into more cash. This reduces the liquidity of these asset classes.

This study is based on **historical data**, so there is no guarantee on how accurately the future performance or trends can be predicted. Market conditions can change dramatically over time, and past performance may not promise future results. There could be a regime shift in financial markets (for example, there may be changes in volatility, interest rates, and possibly other economic conditions) that affect the correlation between asset classes and thus skew the risk-return assessment.

Other methods of analysis which do not incorporate all the dimensions of risk include the coefficient of covariance and Sharpe ratio. Indeed, the risk profile for alternative investments might be unique or nonlinear, which these tools might not be able to capture well. The study might be restrictive in nature or assume that investors are rational but that does not represent the real-world decision processes; psychological and emotional considerations may be exempted. Changes in regulations, changes in the economic policy, or shocks from external

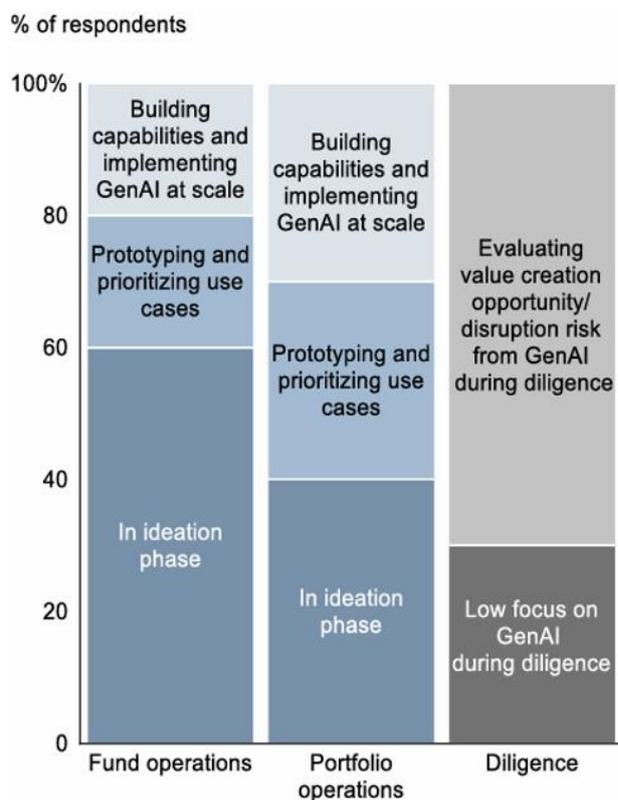


Figure 15: Prototype for use of GenAI in AIFs by Bain & Co.

wealth preservation especially for HNIs who can save a lot of time that is spent in tracking the market and feel like they are contributing to the bigger picture by having a different impact and supporting businesses. The ratio of AIFs compared to GDP stood at 3% as of 2023 and is expected to rise by 6% by 2027. This is also backed by the fact that AIs are less volatile to market fluctuations both in the long run.

India experienced rapid economic growth from 2022-23, at a rate of 7.2% and is expected to become the fastest growing economy by 2024 (6.5% growth vs. 4.1% for emerging markets, likely to result in higher capital deployment) and with this expansion comes an increase in wealth management knowledge as people continue to look for alternate ways to invest their money and increase their financial stability. REITs are being perceived as a high value investment by HNIs across the country and **according to Moody's**, India's real estate sector is projected to reach upwards of USD 1 trillion by 2030. The commodity trading industry has also enjoyed an uptick in the past 5 years and has nearly doubled from \$27 billion to \$52 billion through 2018 to 2021. This rapid growth coupled with shifting trade flows promises a bright future for commodity trading.

Indian alternative funds are actively exploring opportunities to employ generative AI use cases reap potential 30-40% potential productivity benefits and ease work processes like conducting market scans, aiding portfolio companies, drive productivity in finance processes, software development, marketing content generation and legal compliance base tasks. They can also come handy while conducting company and sectoral analysis especially in cases of VCs and PEs.

factors or geopolitical events may significantly affect the performance of portfolios that history fails to consider.

Additionally, it only includes investments for which data was readily available and fails to analyse the importance and impact of other alternative investments especially PEs and VCs which are the emerging trends in India.

### FUTURE SCOPE

Having shown an impressive investment of 9.54 trillion rupees, depicting a 13% quarter on quarter increase and 36% year-on-year jump, the AIFs are attracting more and more people. This sort of diversification into all categories of funds can offer long term returns and protect against inflation by enhancing

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