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Hospitality in Crisis: Evaluating the Downside Risks and Market Sensitivity of Hospitality REITs

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Abstract

This study evaluates the risk-adjusted performance of Hospitality REITs using multi-factor asset pricing models and downside risk measures with the aim of assessing their diversification potential and crisis sensitivity. Unlike prior studies that examine REITs in aggregate, this study isolates Hospitality REITs to explore their unique cyclical and macroeconomic sensitivities. This study looks at the risk-adjusted performance of Hospitality Real Estate Investment Trusts (REITs) in relation to more general REIT indexes and the S&P 500 Index. The study reveals that monthly returns of Hospitality REITs increasingly move in tandem with the stock markets during financial crises, which reduces their historical function as portfolio diversifiers. Investing in Hospitality REITs exposes one to the hospitality sector; however, these investments carry notable risks and provide little protection, particularly during economic upheavals. Furthermore, the study reveals that Hospitality REITs underperform on a risk-adjusted basis relative to benchmark indexes. The monthly returns of REITs show significant volatility during the post-COVID-19 era, which causes return-to-risk ratios to be below those of benchmark indexes. Estimates from multi-factor models indicate negative alpha values across conditional models, indicating that macroeconomic variables cause unremunerated risks. This industry shows great sensitivity to market beta and size and value determinants. Hospitality REITs' susceptibility comes from their showing the most possibility for exceptional losses across asset classes under Value at Risk (VaR) and Conditional Value at Risk (CvaR) downside risk assessments. The findings have implications for investors and portfolio managers, suggesting that Hospitality REITs may not offer consistent diversification benefits during downturns but can serve a tactical role in procyclical investment strategies.

Keywords: hospitality; REITs; risk-adjusted returns; Sharpe ratio; multi-factor asset pricing model



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1. Introduction

In recent decades Real Estate Investment Trusts (REITs) have become a significant investment vehicle delivering stable income along with prospects of long-term capital gains. Real Estate Investment Trusts (REITs) influence local communities by playing a key role in economic structures and investment portfolios. REITs possess over 580,000 properties total, including data centers, hospitals, hotels, residential units, industrial sites, offices, retail stores, storage facilities, telecom infrastructure, timberlands, and free-standing shops. REITs generate employment. In 2023, REITs created jobs for 3.5 million people and produced USD 278 billion in labor income. Currently, half of the U.S. population—170 million

people—lives in homes holding REIT interests via their retirement plans and investment accounts. While owning assets with a total value of more than USD 4 trillion, U.S.-listed REITs have reached a market valuation of USD 1.3 trillion.¹ The scope of Real Estate Investment Trusts covers multiple property types like office buildings through telecommunications infrastructure and hotels. Hospitality-focused REITs stand out as a distinct investment category because their performance reacts specifically to macroeconomic trends and travel industry changes (Khan & Siddiqui, 2019).

Hospitality REITs focus on acquiring ownership and management responsibilities of full-service hotels alongside limited-service hotels and resorts. The financial performance of these assets fluctuates because they depend on discretionary consumer spending along with tourism and business travel dynamics, which create a cyclical pattern. Hospitality REITs achieve robust performance when economic growth creates more consumer spending power and travel demand increases. Investors achieve enhanced potential returns through diversified portfolios by including these assets, which provide sector-specific exposure that enables capitalizing on larger economic trends.

Hospitality REITs face a heightened risk of external disruptions because they rely heavily on the human movement. The COVID-19 pandemic caused substantial damage to the sector, resulting in sharp reductions in occupancy rates and cash flows. Prolonged travel limitations and decreased consumer mobility forced numerous REITs to revisit their operational approaches and manage their financial liquidity while renegotiating lease agreements. The sector experienced remarkable recovery due to government policy support and increased vaccination rates along with the resurgence of leisure and business travel.

Hospitality REIT performance depends on geographic location as well as hotel classification type and the structure of management agreements. Post-COVID-19 urban hotels experienced quick recovery because of renewed business travel activity, while resort properties witnessed strong leisure travel demand. The study by Demiralay and Kilincarslan (2022) demonstrates that hotel and lodging REITs exhibit the highest sensitivity to economic policy uncertainty (EPU) across all REIT sectors, especially during periods of bear markets. The research demonstrates that uncertainty impacts reveal asymmetry and dependence on market conditions, while hotel REITs show a heightened reaction to volatile crisis periods. Brady and Conlin (2004) suggest that hotels are affected by economic cycles, resulting in greater volatility in this sector. This research shows hotel REITs' sensitivity to macroeconomic shocks and demonstrates why they need a separate analysis from the complete REIT index.

Within the broader REIT sector, U.S. lodging/resorts REITs owned USD 80 billion in total property holdings as of the fourth quarter of 2024 according to Nareit's REIT Industry Tracker, and those holdings tended to skew towards more premium properties.² Furthermore, as of the end of the second quarter of 2024, the hotel REITs had a market capitalization of approximately USD 36 billion and a total enterprise value of approximately USD 72 billion.³

The scale of investment in Hospitality REITs and the changing dynamics in the sector make it crucial to analyze the risk-adjusted performance of Hospitality REITs. This study compares the performance of Hospitality REITs against broad real estate indices. Both investors and portfolio managers need to grasp sector-specific evaluations and explore opportunities in underutilized segments to navigate the dynamic Real Estate Investment Trust (REIT) industry. The sector of hospitality and lodging REITs presents a distinctive blend of challenges and opportunities that require detailed analysis. Optimizing investment portfolios requires investors to create strategies that are specifically adapted to the unique features of each sector.

Real estate segments display distinct risk–return profiles which are shaped by demand patterns as well as regulatory shifts and economic variations. The Hospitality REIT sector experiences greater sensitivity to market changes and external disruptions like the COVID-19 pandemic while also demonstrating strong possibilities for post-crisis recovery and growth (Chaudhry et al., 2023). The cyclical nature of demand and consumer discretionary trends make Hospitality REITs a poor fit for defensive portfolio strategies during market downturns. Hospitality REITs demonstrate strong rebound capabilities after economic downturns, making them suitable tactical investments for high-growth portfolios and opportunistic investors who aim to benefit from economic recovery periods. However, the growing global tourism industry along with evolving travel habits suggests these REITs will experience sustained growth over time. Investors who examine performance metrics of this sector can take advantage of its cyclical behavior to achieve high returns when the economy recovers.

The remainder of the study is structured as follows. Section 2 surveys prior REIT research and sets the groundwork for this work and its contribution to the performance of REITs via extension of earlier studies. The data and methodology employed in this work are covered in Section 3, including several models assessing how Hospitality REITs compare to different benchmark indices. Empirical analysis is carried out in Section 4. Our work is summarized and concluded in Section 5.

2. Literature Review

Real Estate Investment Trusts (REITs) previously praised for their diversification benefits have increasingly exhibited more co-movement with major equity markets during periods of heightened market volatility. During times of economic instability, REITs have been seen to move in tandem with major equity markets, which has weakened their role as stable portfolio hedges according to Malhotra et al. (2024). Their findings reveal increased sensitivity to macroeconomic elements, including yield curve shifts, which contradicts the long-held belief that REITs serve as portfolio safeguards.

Prior studies have consistently shown performance differences across REIT sub-sectors. Stevenson (2001) highlighted significant variation in downside risk profiles, while Lee et al. (2008) emphasized the inadequacy of aggregated REIT analysis in capturing sub-sectoral dynamics. For example, residential REITs often exhibit stable cash flows and lower drawdowns compared to the cyclical exposure of Hospitality REITs (Newell & Fischer, 2009; Newell & Marzuki, 2016). These distinctions underscore the importance of analyzing Hospitality REITs independently.

Research on operational efficiency and firm-level traits exists (Beracha et al., 2019; McIntosh et al., 1991), but these studies frequently analyze REITs as a uniform entity. The intricate nature of sectoral diversity receives insufficient examination. For instance, Beracha et al. (2019) showed that despite the absence of sector-specific weaknesses in their findings, smaller REITs with better operational efficiency deliver superior risk-adjusted returns. The study by McIntosh et al. (1991) highlighted the “small-firm effect” within the REIT sector but stops short of analyzing the performance of cyclical industries like hospitality which face stress.

REIT performance has served as a natural laboratory during major crises, including the 2008 global financial crash and the COVID-19 pandemic. Research conducted by Buttner et al. (2012) alongside Titman and Warga (1986) demonstrated that various sector-specific REITs respond differently to market shocks because some sectors show little resilience while others exhibit high sensitivity to policy uncertainty and investor mood. In the context of the COVID-19 crisis, studies by Milcheva (2021) and Akinsomi (2021) showed greater

market synchronization between REITs and broader markets for sectors heavily tied to consumer mobility and discretionary spending.

Scholarly research has paid notable attention to Hospitality REITs despite their relatively minor presence. According to [Ling et al. \(2020\)](#), the industry demonstrated heightened sensitivity during the pandemic which resulted in uneven declines when compared to other types of REITs. [Jackson \(2008\)](#) explained that hotel REITs deliver high nominal returns, but their substantial volatility undermines overall risk-adjusted performance. [Kim et al. \(2002\)](#) identify that hotel REITs' total risk mainly arises from company-specific elements, which create a distinct risk profile that warrants additional research beyond the REIT domain.

Despite the thorough analysis presented, systematic risk modeling research remains insufficient for Hospitality REITs during standard and turbulent economic periods. The majority of research relies on snapshot evaluations rather than longitudinal analysis and only a minimal number of studies apply conditional modeling to incorporate time-varying macroeconomic factors.

This study addresses the knowledge gap by evaluating Hospitality REITs using multi-factor models that include both unconditional and conditional analyses. The paper contributes to the academic literature through three distinct methods. The analysis begins by differentiating Hospitality REITs from other REIT categories and measures their exposure to market variables along with size, value, profitability, investment elements and momentum factors over time. This analysis examines the variation in responsiveness between two distinct economic periods which span before and after the COVID-19 pandemic. The analysis integrates Value at Risk (VaR) and Conditional VaR (CVaR) downside risk indicators to reveal tail risk characteristics which previous research frequently ignored.

The findings affirm those by [Chaudhry et al. \(2023\)](#), who found hotel REITs to display the weakest Sharpe ratios alongside the greatest volatility due to aggressive growth strategies and economic cycle sensitivity. The study reveals that despite monetary policy support through measures like reduced federal fund rates offering limited help, hotel REITs remain extremely vulnerable due to their broad sensitivity to GDP growth fluctuations.

Previous research established a general understanding of REIT performance during stress, but only a limited number of studies examined the hotel sub-sector through a detailed risk-adjusted analysis. This study delivers deeper insights by utilizing tail risk analysis combined with standard asset pricing techniques to create valuable data for policy analysts and investors in the high-risk hotel REIT market.

3. Data and Methodology

3.1. Data

The data for this study is sourced from Morningstar Direct. The study uses monthly returns data for Hospitality REITs from January 2010 to August 2022. In January 2010, there were only five REITs in this sector, and the number increased to eight in 2022. To assess Hospitality REIT performance against market benchmarks, the research collected monthly returns data for the Dow Jones Composite All REIT TR USD Index, Dow Jones Equity All REIT TR USD Index, FTSE NAREIT Equity REITs TR USD Index, and S&P 500 Index. The selected time frame is crucial as it reflects an age of notable economic and market fluctuation that acts as a thorough assessment of REIT performance under various market conditions.

We compare the performance of REITs with several benchmark indices especially developed for evaluating how the REIT market runs. They provide a broad measure of REIT performance, hence allowing a direct comparison of Hospitality REITs against the

overall REIT sector. Although the Dow Jones indexes provide a composite view with an equity-oriented strategy, the FTSE NAREIT index is a popular benchmark for REITs.

We also benchmark the performance of REITs relative to U.S. equities as proxied by the S&P 500 Index so that investors can assess Hospitality REITs against the general stock market. Examining Hospitality REITs in relation to the S&P 500 Index uncovers their return competitiveness in comparison to the broader stock market.

Table 1 presents summary statistics like average monthly return, standard deviation, and average return per unit of risk.

Table 1. Summary statistics of monthly rates of returns for Hospitality Real Estate Investment Trusts and benchmark indices.

	Hospitality Real Estate Investment Trusts	Dow Jones Composite All REIT TR USD Index	Dow Jones Equity All REIT TR USD Index	FTSE NAREIT Equity REITs TR USD Index	S&P 500 Index
	January 2010 to August 2022				
Mean	0.81	0.93	0.96	0.92	1.04
Standard Deviation	9.47	4.69	4.74	4.96	4.17
Return per Unit of Risk	0.09	0.20	0.20	0.19	0.25
	January 2020 to September 2022 (Post COVID-19 period)				
Mean	0.41	0.48	0.52	0.47	0.90
Standard Deviation	16.85	6.54	6.30	6.75	5.92
Return per Unit of Risk	0.02	0.07	0.08	0.07	0.15

Table 1 displays the performance of Hospitality REITs against key market benchmarks from 2010 to 2022 including the challenging post-COVID-19 period (January 2020–August 2022).

From January 2010 to August 2022, Hospitality REITs generated average monthly returns amounting to 0.81% during this timeframe. The average monthly return for Hospitality REITs remained positive but fell short compared to benchmark indices like S&P 500, which achieved an average monthly return of 1.04%. Hospitality REIT returns come with significantly greater volatility than was experienced with benchmark indices. Hospitality REITs displayed substantially greater standard deviation in monthly returns of 9.47%, a value which is significantly greater than the volatility in monthly returns in benchmarks, which fluctuated between 4.17% and 4.96%. The return per unit of risk showed the lowest value for Hospitality REITs at 0.09 in comparison to the S&P 500 Index's significantly better risk-adjusted return of 0.25.

The post-COVID-19 period from January 2020 to August 2022 brought significant challenges for all sectors, yet Hospitality REITs faced extraordinary impacts. The average monthly returns diminished to 0.41% as volatility surged to reach 16.85%. S&P 500 displayed stronger resilience by achieving a 0.90% return and experiencing less volatility at 5.92%. The return per unit of risk for Hospitality REITs dropped to a mere 0.02, which stressed the catastrophic effects of the pandemic. S&P 500 demonstrated superior performance with a risk-adjusted return of 0.15 per unit of risk.

The analysis reveals that Hospitality REITs consistently fell behind the selected benchmark indices during the entire sample period and suffered even greater underperformance after the COVID-19 pandemic. The pandemic demonstrated the industry's susceptibility to macroeconomic disruptions and health emergencies, which caused natural volatility to rise while profitability declined. Investors evaluating this sector must understand these limitations.

3.2. Methodology

This study evaluates risk-adjusted performance results of Hospitality REITs through integrating performance ratios with multi-factor asset pricing models. This method provides a complete examination of investment return patterns and their volatility along with systematic risk sensitivities for individual assets and entire market levels.

To evaluate the risk-adjusted performance of Hospitality REITs, the study computes three widely recognized performance measures: the Sharpe ratio alongside the Sortino ratio and the Omega ratio. Each measure of risk-adjusted performance offers a unique perspective for assessing how well these REITs reward investors for their risk exposure when compared to typical market indices.

3.2.1. Risk-Adjusted Returns

The Sharpe ratio ([Sharpe, 1966](#)) serves as a basic measure to determine investment efficiency. The Sharpe ratio measures how much investment returns surpass the risk-free rate during periods of total investment volatility. A Sharpe ratio greater than one suggests superior risk-adjusted returns, which investors typically view as strong. This assessment assumes a normal distribution of returns and treats both positive and negative volatility equally, which does not apply well to hospitality sectors because their return distribution is usually skewed.

The analysis implements the Sortino ratio because it improves upon the Sharpe ratio by examining only downside volatility so as to exclude positive return fluctuations from the risk assessment. The Sortino ratio becomes especially pertinent for Hospitality REITs whose returns demonstrate asymmetric patterns amid economic disruptions. [Stevenson's \(2001\)](#) research into emerging markets revealed the limitations of mean-variance approaches in non-normal settings and subsequently guided improvements in REIT performance measurement methods. The research by [Lee et al. \(2008\)](#) demonstrated that performance measures need to be tailored to reflect the unique return behaviors of different REIT sectors.

The study uses the Omega ratio to enhance its analysis through its comprehensive assessment of the entire monthly returns' distribution. The Omega ratio provides a comparison of probability-weighted gains and losses against a user-defined threshold unlike the Sharpe and Sortino ratios according to [Keating and Shadwick \(2002\)](#). It becomes an indispensable tool to evaluate tail risk and deliver detailed insights into investment efficiency which Hospitality REITs in cyclical markets must consider.

This research creates a stronger analytical framework by combining the Sortino and Omega ratios with the Sharpe ratio to reflect the sector's empirical realities. The alternative performance metrics accommodate non-normal REIT returns while delivering improved insights into risk-adjusted performance, especially under market stress, where traditional measures do not fully capture downside risks. This multifaceted approach enhances the accuracy and relevance of the performance evaluation while contributing significantly to the growing literature on REIT risk assessment.

3.2.2. Multi-Factor Asset Pricing Models

The study assesses the risk-adjusted performance of Hospitality Real Estate Investment Trusts (REITs) by combining performance ratios with multi-factor asset pricing models. This integrated approach allows for a more robust evaluation of returns relative to risk and underlying market factors. According to [Yang \(2014\)](#), U.S. hotel REITs display marked vulnerability to general market trends, which stems from the hotel industry's natural cyclical volatility. The study demonstrated through Fama-French three- and five-factor models that market return is a dominant factor in hotel REIT performance, while size, value, investment, and profitability factors lack significant explanatory power for their returns.

Therefore, we complement our analysis with the Fama-French five-factor model (Fama & French, 2015). This model enables us to attribute REIT performance to systematic risk factors and isolate any abnormal returns (alphas). The study utilizes the Fama-French five-factor model (Fama & French, 2015) because this model offers a more complete structure for analyzing Hospitality REITs' systematic risk exposures compared to single factor or three-factor models. The five-factor model expands beyond market, size and value factors by adding profitability and investment as new dimensions while the traditional Capital Asset Pricing Model (CAPM) and three-factor model do not include these additional drivers. The two additional dimensions of profitability and investment gain importance when evaluating capital-intensive asset classes like REITs, which depend heavily on operating efficiency and investment strategy.

Hospitality REITs exhibit trends that mirror overall economic conditions. Their quick response to market cycles allows them to feel economic shocks while facing liquidity pressures in downturn periods. Their distinctive characteristics make them well-suited for examination through the Fama-French five-factor model with momentum which identifies multiple forces that influence returns throughout different periods.

Market exposure (MKT-RF) serves as the initial factor in the model to show the correlation between REITs' returns and overall market movements. The size factor (SMB) takes on special importance for Hospitality REITs because these entities often operate within the small- to mid-cap range. This accounts for the distinct return patterns displayed by emerging firms or those that exhibit high agility.

The value factor (High minus Low) HML serves as an essential component within this framework. The value component captures investor preference for REITs because they have strong asset backing and predictable income streams similar to value stocks. The profitability factor [Robust minus Weak (RMW)] recognizes that real estate profitability shows significant variation across different sub-sectors. The measure identifies companies with strong operational efficiency and separates them from organizations that show weaker profit margins.

The investment factor [Conservative minus Aggressive (CMA)] shows the intensity at which an REIT allocates capital towards reinvestment. The capital-intensive nature of real estate enables this factor to distinguish between various growth strategies.

In addition, we enhance the Fama-French five-factor model by adding a sixth factor which represents momentum. Hospitality REITs experience significant market reversals during periods of economic recovery following downturns or global events such as the COVID-19 pandemic. The momentum factor demonstrates that REITs, which perform well, continue their strong performance in the near future according to common patterns observed in real estate markets.

Equation (1) shows the five-factor plus momentum model and is estimated based on monthly returns:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_1 \times (R_{m,t} - R_{f,t}) + \beta_2 \times SMB_t + \beta_3 \times HML_t + \beta_4 \times RMW_t + \beta_5 \times CMA_t + \beta_6 \times MOM_t + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ = the percentage return for firm i in month t .

$R_{f,t}$ = the yield on US Treasury bill month t .

$R_{m,t}$ = the return on CRSP value-weighted index for month t .

$(R_{m,t} - R_{f,t})$ = the market risk factor variable, which measures the overall market's excess return while covering the general risks of stock market investments.

SMB_t (Small minus Big) = the computation of small-cap returns minus large-cap return during month t , which reflects the capitalization factor realization. The SMB factor assesses the past return disparity between small-cap and large-cap equities. This element is the

profit disparity between a large-cap stock portfolio and a small-cap stock portfolio. A positive SMB indicates that small-cap equities have outperformed large-cap stocks.

HML_t (High minus Low) = the realized value factor for month t , which is the difference between growth return and value return. Based on past data, the HML factor tracks value stock performance in relation to growth stock performance. The calculation contrasts the return of a growth stock portfolio with high price-to-book ratios versus the return performance of a portfolio invested in value companies with low price-to-book ratios. A good HML outcome indicates that value equities outperformed growth stocks in returns.

RMW_t (RMW (Robust minus Weak) = a factor that assesses how well businesses have historically fared in relation to unprofitable ones). This factor is computed as the difference between the returns produced by portfolios of profitable companies and those produced by portfolios of unprofitable companies. RMW being positive means that successful businesses outperformed failing ones.

CMA (Conservative minus Aggressive) = a factor which measures historical performance variances between companies with low investment strategies and those with high investment strategies. The CMA factor measurement evaluates conservative company portfolio returns against aggressive company portfolio returns. When CMA shows a positive result, it means conservative companies deliver better performance compared to aggressive companies.

MOM_t (Momentum) = a factor which captures the persistence of relative performance of an asset. Momentum is the propensity of stocks or other assets that have done well in the recent past to keep doing well in the near future; conversely, it is the propensity for badly performing assets to keep underperforming.

$\varepsilon_{i,t}$ = an error term.

3.2.3. Conditional Factor Models

To further strengthen the robustness of the findings, the study supplements this analysis with both unconditional and conditional multi-factor asset pricing models. While unconditional models offer a static view of factor exposures, they often fail to incorporate economic state information that shapes managerial and investor expectations. [Chen and Knez \(1996\)](#) together with [Ferson and Schadt \(1996\)](#) recommend using conditional models to solve these problems. Conditional expected returns and time-varying betas substitute unconditional betas within these models. The models employ multiple established tools that have shown reliable performance in stock return prediction. Key instruments for conditional models consist of the three-month Treasury bill rate (TB3M), S&P 500 dividend yield (DY), term structure slope (30-year Treasury bond yield minus three-month Treasury bill yield) (TERM), and the corporate bond quality spread (Moody's BAA corporate bond yield minus Moody's AAA corporate bond yield) (QS). The analysis employs one-month lagged versions of all these financial instruments. Equation (2) illustrates the conditional model structure, with $z_{j,t-1}$ representing the demeaned unconditional elements. The models allow for expressing the market beta through a linear relationship with the predetermined instruments. The term spread and credit quality spread serve as proxies for future economic activity and investor risk aversion, respectively. Their inclusion allows for dynamic modeling of time-varying sensitivities, as suggested by [Chen and Knez \(1996\)](#) and [Ferson and Schadt \(1996\)](#).

Conditional Five-Factor plus Momentum Model

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_1(R_{m,t} - R_{f,t}) + \delta\{z_{j,t-1} \times (R_{m,t} - R_{f,t})\}_2 + \beta_2 \times SMB_t + \beta_3 \times HML_t + \beta_4 \times RMW_t + \beta_5 \times CMA_t + \beta_6 \times MOM_t + \varepsilon_{i,t} \quad (2)$$

4. Empirical Analysis

The empirical analysis begins with an examination of correlations among the monthly returns of Hospitality Real Estate Investment Trusts and various benchmark indices.

4.1. Correlation Analysis

Table 2 presents the correlation coefficients between monthly returns of Hospitality REITs and several benchmark indices, including the Dow Jones Composite All REIT TR USD Index, Dow Jones Equity All REIT TR USD Index, FTSE NAREIT Equity REITs TR USD Index, and the S&P 500 Index. The correlations are calculated for both the full sample period (January 2010 to September 2022) and the post-COVID-19 period (January 2020 to August 2022).

Table 2. Correlation among monthly returns of Hospitality Real Estate Investment Trusts (REITs), Dow Jones Composite All REIT TR USD Index, Dow Jones Equity All REIT TR USD Index, FTSE NAREIT Equity REITs TR USD Index, and S&P 500 Index.

	Hospitality Real Estate Investment Trusts	Dow Jones Composite All REIT TR USD Index	Dow Jones Equity All REIT TR USD Index	FTSE NAREIT Equity REITs TR USD Index	S&P 500 Index
January 2010 to August 2022					
Hospitality Real Estate Investment Trusts	1				
Dow Jones Composite All REIT TR USD Index	0.67	1			
Dow Jones Equity All REIT TR USD Index	0.65	1.00	1		
FTSE NAREIT Equity REITs TR USD Index	0.68	0.99	0.99	1	
S&P 500 Index	0.69	0.75	0.74	0.73	1
January 2020 to August 2022					
Hospitality Real Estate Investment Trusts	1				
Dow Jones Composite All REIT TR USD Index	0.68	1			
Dow Jones Equity All REIT TR USD Index	0.66	1.00	1		
FTSE NAREIT Equity REITs TR USD Index	0.70	0.99	0.99	1	
S&P 500 Index	0.69	0.90	0.90	0.89	1

A correlation analysis shows that from January 2010 to August 2022, the S&P 500 Index (0.69) and the FTSE NAREIT Equity REITs Index (0.68) have the strongest relationship with their returns, while the Dow Jones Composite All REIT Index (0.67) and the Dow Jones Equity All REIT Index (0.65) demonstrate a slightly lower correlation. The substantial correlation between this REIT segment and both real estate-specific indices along with the broad market index illustrates how sensitive these investments are to both sector-specific and macroeconomic conditions.

During the post-COVID-19 period, correlations between monthly returns of Hospitality REITs and broader REIT indices together with the S&P 500 experienced slight increases. The correlation between Hospitality REITs and the FTSE NAREIT Equity REITs Index reaches 0.70, with their S&P 500 correlation staying strong at 0.69. The correlation between this segment and the Dow Jones Composite All REIT Index demonstrates an increase to

0.68. As the market recovered from the pandemic, Hospitality REITs demonstrated greater alignment with the broader market and sector trends, likely because of common reactions to policy changes and interest rate shifts along with investor mood.

Table 2 demonstrates that while Hospitality REITs maintain moderate correlations with the wider REIT and equity markets, these links became stronger during systemic disruptions like the COVID-19 pandemic.

4.2. Empirical Analysis of Risk-Adjusted Returns

Table 3 evaluates the risk-adjusted performance of Hospitality REITs over two distinct periods—January 2010 to August 2022 (the full sample) and January 2020 to August 2022 (the post-COVID period)—using three key performance ratios: the Sharpe ratio, the Sortino ratio, and the Omega ratio.

Table 3. Risk-adjusted performance of Hospitality Real Estate Investment Trusts, Dow Jones Composite All REIT TR USD Index, Dow Jones Equity All REIT TR USD Index, FTSE NAREIT Equity REITs TR USD Index, and S&P 500.

	Sharpe Ratio	Sortino Ratio	Omega Ratio
Hospitality Real Estate Investment Trusts			
January 2010 to August 2022	0.08	0.13	1.30
January 2020 to August 2022	0.03	0.05	1.11
Dow Jones Composite All REIT TR USD Index			
January 2010 to August 2022	0.19	0.29	1.64
January 2020 to August 2022	0.07	0.09	1.20
Dow Jones Equity All REIT TR USD Index			
January 2010 to August 2022	0.19	0.30	1.65
January 2020 to August 2022	0.08	0.11	1.22
FTSE NAREIT Equity REITs TR USD Index			
January 2010 to August 2022	0.18	0.27	1.58
January 2020 to August 2022	0.07	0.09	1.18
S&P 500 Index			
January 2010 to August 2022	0.24	0.38	1.85
January 2020 to August 2022	0.15	0.23	1.44

Table 3 reports the risk-adjusted performance of Hospitality REITs and four major benchmark indices—Dow Jones Composite All REIT Index, Dow Jones Equity All REIT Index, FTSE NAREIT Equity REITs Index, and the S&P 500 Index—across two periods: January 2010 to August 2022 and January 2020 to August 2022. The performance is evaluated using three key measures: the Sharpe ratio, the Sortino ratio, and the Omega ratio.

From January 2010 to August 2022, Hospitality REITs showed moderately low risk-adjusted performance throughout the sample period. The Sharpe ratio that evaluates return per unit of total risk showed a value of 0.08, which trails behind all benchmark levels, which ranged between 0.18 and 0.24. The Sortino ratio, which takes downside risk into account, reached 0.13, trailing all four benchmarks which ranged from 0.27 to 0.38, while the Omega ratio, which represents a probability-weighted measure of gains versus losses, achieved 1.30, also trailing all four benchmarks, which ranged from 1.58 to 1.85. Hospitality REIT risk-adjusted performance levels remained below those of the REIT indices and the S&P 500 throughout the examined period.

On a risk-adjusted basis, hotel real estate investment trusts (REITs) greatly underperformed regarding their benchmark indexes throughout the post-COVID-19 recovery period from January 2020 to August 2022. With a Sharpe ratio of just 0.03, investors received very little extra return for every unit of total risk. Falling further to just 0.05, the Sortino

ratio, which more strongly punishes negative volatility, fell. These numbers indicate that hospitality REITs not only found it difficult to produce significant profits but also could not properly control downside risk during this stormy period.

With a value of 1.11 for hospitality REITs during the post-COVID-19 recovery period, the Omega ratio measured the probability-weighted gains against losses. By comparison, the S&P 500 Index had much better ratios: a Sharpe ratio of 0.15, a Sortino ratio of 0.23, and an Omega ratio of 1.44. Among all REIT benchmarks, Hospitality REITs fell behind. For example, the Dow Jones Equity All REIT TR USD Index had an Omega ratio of 1.22 and a Sharpe ratio of 0.08.

The results in Table 3 imply that investors in Hospitality REITs were exposed to increased volatility and inadequate risk compensation, hence reflecting the sector's sensitivity to pandemic-related disruptions like travel restrictions and occupancy drops. These results are consistent with previous research on hotel REITs.

4.3. Empirical Analysis of Fama-French Five-Factor Plus Momentum Model

Table 4 reports the net monthly alpha and factor loadings for Hospitality REITs using the Fama-French five-factor plus momentum model across two periods: January 2010 to August 2022 (long-run) and January 2020 to August 2022 (post-COVID-19). The results shed light on how Hospitality REITs performed relative to what would be expected based on common risk factors.

Table 4. Net monthly alpha based on Fama-French five-factor model for Hospitality Real Estate Investment Trusts.

	January 2010 to August 2022	January 2020 to August 2022
Adjusted R ²	0.63	0.73
Alpha	−0.46	−0.62 ***
Mkt-RF	1.22 ***	1.38
SMB	1.07 ***	0.77
HML	0.44 **	0.50
RMW	0.33	−0.63
CMA	−0.05	0.34
MOM	−0.33 **	−1.53 ***

*** Statistically significant at 1% significance level. ** Statistically significant at 5% significance level.

With an adjusted R² of 0.63 across the whole period and 0.73 during the pandemic years, the model accounts for a significant amount of volatility in monthly returns. The later period's greater explanatory power implies that as uncertainty and volatility rise, market and style elements become more important.

Across both time periods, the measure of risk-adjusted excess return, Alpha, stays negative. Over the full sample period of January 2010 to August 2022, Hospitality REITs produced an average monthly alpha of −0.46 percent. This negative alpha grew to −0.62 percent during the COVID-19 era and became statistically significant at the 1-percent threshold. This result shows that even after accounting for known risk indicators, these REITs regularly underperformed, and that underperformance became worse as the epidemic affected travel, tourism, and hotel demand.

Reflecting the sector's higher-than-average sensitivity to general market fluctuations, the market factor (Mkt-RF) loads substantially in both eras with a coefficient of 1.22 over the full sample period of January 2010 to August 2022 and 1.38 during the pandemic. Though not statistically significant, the coefficient during the pandemic era confirms the sector's pro-cyclical nature given the probably higher return volatility.

The positive size loading (SMB) over both periods, which was statistically significant during the full sample period, implies that Hospitality REITs acted more like small-cap equities. Especially across the whole sample, where the SMB coefficient is 1.07, investors made returns in line with small-firm risk premiums.

Return variation is also significantly influenced by the value factor (HML). The positive and substantial coefficients of 0.44 in the overall period and 0.50 during the pandemic suggest that these REITs have traits like value equities, including strong asset backing or low growth expectations.

On the other hand, the investment factor (CMA) and the profitability factor (RMW) lack notable explanatory power. Though neither coefficient is statistically significant, RMW is positive for the whole time and negative during the pandemic, suggesting a possible change in how the market values profitability in the hotel sector. Though without statistical significance, the CMA coefficient changes from slightly negative to positive during the two eras, suggesting that investment intensity did not drive returns in a consistent or significant manner.

On the other hand, momentum (MOM) is important. The momentum factor loads negatively both times with coefficients of -0.33 and -1.53 . Particularly during the pandemic, the latter is statistically significant at the 1-percent level, suggesting that momentum acted against these REITs. Put another way, previous winners in this industry tended to reverse, and investors who pursued current success probably suffered losses. This finding highlights the erratic and means-reverting character of returns in the hotel REIT sector amid economic turmoil.

The findings suggest a sector that is very responsive to general market movements, shows traits of tiny and value companies, and has had difficulty producing risk-adjusted outperformance, especially during crisis times like the COVID-19 pandemic.

Table 5 presents the net monthly alphas for Hospitality REITs and four benchmark indices—the Dow Jones Composite All REIT Index, the Dow Jones Equity All REIT Index, the FTSE NAREIT Equity REITs Index, and the S&P 500 Index—using a multi-factor model over two periods: the full sample period from January 2010 to August 2022 and the post-COVID-19 period from January 2020 to August 2022. The alphas represent risk-adjusted excess returns after controlling systematic risk factors.

Table 5. Net monthly alphas for Hospitality Real Estate Investment Trusts and benchmark indexes for Fama-French multi-factor model.

	Hospitality Real Estate Investment Trusts	Dow Jones Composite All REIT TR USD Index	Dow Jones Equity All REIT TR USD Index	FTSE NAREIT Equity REITs TR USD Index	S&P 500 Index
January 2010 to August 2022	−0.46	−0.11	−0.10	−0.14	−0.05 ***
January 2020 to August 2022	−0.62	−0.84	−0.75	−0.77	−0.02

*** Significant at 1%.

Hospitality REITs experienced a monthly negative alpha of -0.46 percent over the full sample period. These REITs failed to produce returns exceeding those predicted by their risk factors. The negative alphas displayed by broader REIT indexes, including Dow Jones Composite All REIT, Dow Jones Equity All REIT and FTSE NAREIT Equity REIT, which were also less severe and varied between -0.10 and -0.14 percent. The S&P 500 showed the least negative alpha at -0.05 percent with statistical significance at the 1-percent level. After risk adjustment, Hospitality REITs showed weaker long-term performance compared to both the entire REIT sector and the general stock market.

During the pandemic period, underperformance intensified. The monthly alpha of Hospitality REITs declined to -0.62 percent which further enlarged their performance gap from the broader market. The benchmark REIT indexes recorded deeper negative alphas than expected: the Dow Jones Composite All REIT Index reached -0.84 percent, while the Dow Jones Equity All REIT Index saw a -0.75 percent alpha, and the FTSE NAREIT Equity REIT Index reported -0.77 percent. The Real Estate Investment Trust sector faced greater challenges than the hospitality sector throughout the peak of the COVID-19 pandemic. S&P 500 showed a marginally negative alpha of -0.02 percent, which lacked statistical significance, thereby demonstrating the broader equity market's relative resilience compared to real estate throughout this crisis period.

The analysis demonstrates that Hospitality REITs did not achieve risk-adjusted out-performance over time, but their performance experienced a minor improvement during the pandemic when the overall REIT sector experienced more severe losses. Investors in this sector encountered ongoing challenges that became more apparent when measured against the performance of S&P 500.

4.4. Empirical Analysis of Conditional Multi-Factor Model

Table 6 presents the net monthly alphas for Hospitality REITs using a conditional Fama-French five-factor model over two periods: the full sample from January 2010 to August 2022 and the post-COVID-19 period from January 2020 to August 2022. This model accounts not only for standard risk factors, market, size, value, profitability, and investment but also incorporates time-varying elements or economic conditions that may influence asset returns.

Table 6. Net monthly alphas for Hospitality Real Estate Investment Trusts for conditional five-factor model.

Hospitality Real Estate Investment Trusts Alpha	
January 2010 to August 2022	-0.56
January 2020 to August 2022	-5.34

Hospitality REITs generated a negative alpha of -0.56 percent each month during the entire time frame, which shows that their performance lagged the benchmark set by the conditional five-factor model. The REITs failed to deliver consistent excess returns despite adjustments for recognized risks and macroeconomic factors.

The level of underperformance experienced by Hospitality REITs intensified after the COVID-19 period. Hospitality REITs experienced a monthly alpha decline of -5.34 percent between January 2020 and August 2022. The drastic decline shows how the hospitality and lodging sectors encountered severe difficulties throughout and following the emergence of COVID-19 because of enforced lockdowns, travel limitations and evolving consumer patterns. The substantial negative alpha during this timeframe demonstrates the extreme difficulties Hospitality REITs experienced in their recovery process despite accounting for systematic risk fluctuations and market condition changes.

Table 6 clearly demonstrates ongoing substantial underperformance by Hospitality REITs throughout the COVID-19 period. The failure of Hospitality REITs to produce positive risk-adjusted returns despite using a conditional factor model that integrates economic changes demonstrates their susceptibility to broad economic disturbances and specific industry disruptions.

4.5. Empirical Analysis of Downside Risk

Table 7 reports the Value at Risk (VaR) and Expected Shortfall (ES) at the 95% confidence level for Hospitality REITs and several benchmark indices—including the Dow Jones Composite All REIT Index, Dow Jones Equity All REIT Index, FTSE NAREIT Equity REITs Index, and S&P 500—based on monthly returns from January 2010 to August 2022. These two risk measures assess the potential for extreme losses in adverse market conditions.

Table 7. The 95% Value at Risk and Expected Shortfall for Hospitality REITs and stock market indices that include the Dow Jones Composite All REIT TR USD Index, Dow Jones Equity All REIT TR USD Index, FTSE NAREIT Equity REITs TR USD Index, and S&P 500 Index.

	Hospitality Real Estate Investment Trusts (%)	Dow Jones Composite All REIT TR USD Index (%)	Dow Jones Equity All REIT TR USD Index (%)	FTSE NAREIT Equity REITs TR USD Index	S&P 500 Index
Value at Risk (VaR) at 95% confidence interval	−11.46	−6.48	−6.23	−6.51	−6.62
Conditional Value at Risk (CVaR)	−19.35	−9.34	−9.17	−8.60	−8.60

This study uses Conditional Value at Risk (CVaR), also known as Expected Shortfall, to quantify average losses in the worst 5% of scenarios. Unlike VaR, which only specifies a loss threshold, CVaR estimates the average loss beyond that threshold, offering a more comprehensive view of tail risk. Among all the asset classes examined, Hospitality REITs showed the greatest potential for downside risk. The Value at Risk (VaR) stood at −11.46%, which indicated that their monthly returns might drop by at least this amount during the worst-performing 5% of months. Hospitality REITs presented a much larger downside risk compared to benchmark indices, which showed VaRs between −6.23% and −6.62%. The data shows that Hospitality REITs face greater exposure to significant monthly losses than the wider REIT market and S&P 500.

The difference becomes clearer when we examine Expected Shortfall (ES), which calculates the mean loss during the worst 5% outcomes. Hospitality REITs showed an ES of −19.35%, which exceeds the benchmark indices' ES range of −8.60% to −9.34% by more than double. Hospitality REITs face both a higher chance of substantial losses and significantly greater loss sizes when those losses happen.

Table 7 demonstrates the higher tail risk that Hospitality REITs face. Hospitality REITs face greater risks for substantial and repeated losses during market instability than other REIT categories and the overall equity market. Investors must carefully assess the downside potential and insufficient downside protection before allocating funds to this REIT segment because of its elevated risk level.

5. Summary and Conclusions

The research investigated how Hospitality REITs functioned in terms of performance dynamics and risk traits while assessing their investment implications compared to major REIT benchmarks and the overall equity market. The paper demonstrated how this real estate sub-sector behaves differently in various market conditions by conducting a thorough analysis using multi-factor asset pricing models and evaluating risk-adjusted performance and downside risks.

The results show that Hospitality REITs consistently perform worse on a risk-adjusted basis while also being especially sensitive to economic disturbances. These REITs continue to underperform despite systematic risk adjustments, which cast doubt on their capacity to generate excess returns in diverse investment portfolios. The combination of Hospitality

REITs' acute market condition sensitivity and their restricted access to quality or conservative investment approaches strengthens their vulnerability to downturns within travel and tourism sectors along with wider macroeconomic uncertainties.

Hospitality REITs displayed strong correlation with major markets during crises which reduced their protective value as defensive assets despite their diversification potential during stable times. The substantial downside risk that investors face necessitates a careful evaluation of potential returns versus the probability of major losses during adverse market conditions.

The research brings new knowledge to the literature through its specialized in-depth analysis of Hospitality REITs, which are frequently excluded from comprehensive REIT evaluations. Portfolio managers and institutional investors together with policymakers can benefit from their practical insights, which offer an understanding about property segments that show the highest exposure to economic fluctuations. Asset allocation decisions involving real estate securities require nuanced risk evaluation according to the research findings.

While this study focuses on systematic and macroeconomic risk exposures, future research should incorporate industry-specific indicators such as hotel occupancy rates, RevPAR, and travel demand indices. These variables would likely enhance the explanatory power of risk models for Hospitality REITs.

Additionally, the increasing integration of ESG considerations into real estate investment raises questions about whether ESG-rated REITs demonstrate greater resilience. Although ESG data were unavailable at the sub-sector level for this study, this represents a promising avenue for future research.

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Notes

¹ <https://www.reit.com/data-research/data/reits-numbers> (accessed on 7 May 2025).

² <https://www.reit.com/news/articles/lodgingresorts-reits-focus-on-high-quality-assets-in-prime-locations> (accessed on 7 May 2025).

³ <https://www.capright.com/wp-content/uploads/2024/09/Mid-Year-2024-Hotel-REIT-Update.pdf> (accessed on 7 May 2025).

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