Journal of Hospitality Financial Management
The Professional Refereed Journal of the International Association of Hospitality Financial Management Educators

Volume 26 | Issue 2 Article 2

2018

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Recommended Citation
Khalilzadeh, Jalayer; Kizildag, Murat; Ridderstaat, Jorge; and Madanoglu, Melih (2018) "How Is the Premium Calibrated for the Speculative Risk in Lodging Firms?," *Journal of Hospitality Financial Management*: Vol. 26 : Iss. 2 , Article 2.
DOI: https://doi.org/10.7275/6j55-9g07
Available at: https://scholarworks.umass.edu/jhfm/vol26/iss2/2

THE JOURNAL OF HOSPITALITY FINANCIAL MANAGEMENT
2018, VOL. 26, NO. 2, 63–74
https://doi.org/10.7275/6j55-9g07

How Is the Premium Calibrated for the Speculative Risk in Lodging Firms?

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ABSTRACT
The overarching themes of our paper are to calibrate the risk premium relative to the speculative risk parameters in capital markets and to analyze the pre- and post-recession patterns in the U.S. lodging portfolios from 2000 to 2016. We decompose several risk parameters speculated by the markets and risk-adjusted proxies to make solid judgments about the anomalies in excess return patterns and risk-reward trade-off calibration in our annualized heterogeneous portfolio sorts. Our primary findings reveal that our portfolio sorts did not return the efficient premium to the investors, as they should have been based on the speculative risk levels before the recession. However, after the recession, there was a correction in this pattern. Lastly, speculative risk-adjusted proxies and risk parameters generally co-move with the value-weighted benchmark.

Keywords: *equity premium, lodging portfolio sorts, risk-adjusted excess return, speculative risk parameters*

Introduction

Conventional performance efficiency measurement was long based on a comparison of the total return of a portfolio with those of an unmatched portfolio, created by disregarding the universal portfolio of firms (benchmark/market portfolio). However, a simple comparison of the total return of the created portfolio with an unmatched portfolio may most likely produce invalid results and estimations for the speculative risk-reward assessment. Later on, due to asymmetric information and market inefficiencies, risk-reward estimations are improved with multivariate risk-adjusted performance efficiency proxies when calibrating the premium tied to the speculative risk parameters. Investors become wiser and rely heavily on analysts' recommendations made by these proxies to select among available investment funds and/or to form efficient portfolios. The applications and rules of thumbs of the risk-adjusted excess return estimations are not only common but are often the basis for real-life investment decisions. Rather than mechanical algorithm estimations, advocates strictly emphasize that restricting peers to the same industry in the cross section, as opposed to clustering all firms in one portfolio, improves the accuracy in estimations due to the existence of comparable assets and identical firms in a standardized manner (i.e., Kim & Ritter, 1999; Gibson, Hotchkiss, & Ruback, 2000; Yee, 2004). Also, Alford (1992) stated that errors in asset return analysis decline if a set of comparable firms are chosen from the same industry or, at least, subcategory of a certain industry. Therefore, a more nuanced understanding of how the premium is calibrated for the speculative risk parameters is critical as it draws a much more accurate risk-adjusted reward evaluation for firms and investors.

This phenomenon is even more critical for firms that have a unique history of volatile financial structure (i.e., high levels of capital expenditure, unstable earnings and free cash flow, and low liquidity and reduced possibilities for risk diversification) that adversely affects the risk premiums (Kizildag & Ozdemir, 2017). Our interest has been piqued by the aforementioned financial nature of the lodging firms. Thus, we believe that measuring speculative

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risk-adjusted efficiency for those firms over time is worthwhile. In our paper, we quantify three risk-adjusted proxies, the Treynor Index, Sharpe ratio, and Jensen's Alpha (α), along with the five properties of the speculative risk parameters calibrated to the systematic risk, total risk, and price volatility movement. We define our proxies and parameters consistently with the preceding analysis so that we can obtain uniform estimations across the sampled firms in our lodging portfolios over the long haul. Additionally, as an economy enters a recession, it definitely causes severe blips on firms' excess returns. Hence, we also aim to provide compelling empirical evidence of risk premium structure and economic significance on the pre- and post-effects of the recent 2007–2009 recession. Consistent with the evidence and assessments above, we attempt to rationalize and demonstrate the current patterns of speculative risk-adjusted premium calibration for each of the annualized portfolio sorts to lay out persuasive and pervasive investing strategies within the context of the lodging industry. Our study departs from the existing literature because it exhibits the unique effects of speculative risk parameters on equity premiums, and thus, the risk-adjusted efficiency for capital-intensive lodging portfolios over the long run. Within all the evidences, we contribute to and complement the existing evidence by providing an extensive economic outlook and across-the-board practical understanding in this manner.

Economic Foundations of Risk-Reward Properties

In general, the ultimate and inevitable connection and trade-off between risk and reward is fundamental to many theories (i.e., modern portfolio theory), concepts (i.e., efficient market hypothesis), and building blocks (i.e., the higher the risk, higher the return) of mainstream finance (Chou, Engle, & Kane, 1992). The general assertion is that ". . . historically, equities that produce the highest return simultaneously have the highest risk" (Brigham & Ehrhardt, 2017). Nevertheless, numerous studies, which have investigated this matter, still put forth inconclusive empirical evidence (Lee, Jiang, & Indro, 2002). This might be due to many reasons; however, advocates' specific attitudes for a stringent validity of the estimations are clear that the premium calibration against critical risk parameters is best understood when a single industry is analyzed (i.e., Asness, Frazini, & Pedersen, 2012). Therefore, several empirical documentations on risk-adjusted measurement for the excess returns especially tied to speculative markets have been lightening the needs for future examinations, understandings, and explanations in different research areas with a narrow focus, stance, and angle.

In today's research, some authors have looked at the lack of fully diversified portfolios as a source for excess returns, as real-life investors often hold under-diversified portfolios in which idiosyncratic risk cannot completely be eliminated (Goetzmann & Kumar, 2008; Levy, 1978). A study by Merton (1987), for example, showed that there could be larger expected returns than in fully diversified portfolios. Other researchers considered investors' sentiments as a primary driver of the premium. Lee et al. (2002), for instance, found that investors' sentiments were positively correlated with excess returns, as sentiments are considered systematic risks that are being priced by the speculative markets. Excess return measurement with various risk parameters is pervasive and coherent because it entails calculating unique effects of risk on the premium in a related benchmark. Performance measurement that is unadjusted for risk is not quite meaningful, and that is why there has been a pursuit for indicators that measure risk-adjusted performance based on various risk components (Asness et al., 2012). The Sharpe ratio is the most commonly used proxy for adjusting total upside and downside risk (standard deviation σ) for both for the risk premia (Muralidhar, 2002). Jensen's *Alpha* had the highest explanatory power in demonstrating the risk-adjusted performance and return in relation to the benchmark returns (Bodson, Cave, & Sougne, 2012). Scholz and Wilkens (2005) reported that systematic risk components (both levered and unlevered) may offer a better assessment of "risk-fit analysis," particularly if the firms' capital expenditures are levered and risky (i.e., lodging firms). So, it is inevitable to examine systematic risk for the portfolio excess return optimization with various risk-adjusted proxies, such as the Treynor Index. Moreover, the price volatility movement measured by the structural differences between annualized high and low closing prices in a given year (hi/lo risk) has received some attention by the researchers as well (i.e., Fornell, Mithas, Morgeson, & Kirshan, 2006).

Although most research in the hospitality industry does not present an extensive and comprehensive line of understanding equity premium calibration with the existence of the speculative risk, the current line of research has touched base with some of the risk parameters while analyzing returns. Some studies showed that lodging firms outperform other subsectors of real estate (office retail, industrial, and apartment) regarding the total return and they also produced second-best risk-adjusted returns for the period of 1992 to 2001 (Petersen, Singh, & Sheel 2003). Accordingly, risk-adjusted performance evaluation with the Sharpe ratio for the U.S. airline, hotel, restaurant, and travel and leisure industries showed underperformance of the equity portfolios resulting in a poor investment consideration (Ming-Hsiang, 2012). Further, four risk-adjusted performance proxies (Treynor Index, Sharpe ratio, Jensen's Alpha, and Appraisal ratio) were employed by Mao & Gu (2007) to measure the premium efficiency of hotel/motel, restaurant, and casino/gaming industries. Their results indicated that the gaming/casino industry portfolio outperformed the hotel/motel industry portfolio. Taken all together, a solid comprehensive analysis, which relies on mechanical analysis with comparable assets/firms in identical years for the long run, is still needed, although there is some evidence in the existing literature.

Data and Sampling Methods

Longitudinal equity data for each comparable firm in each lodging portfolio sort was gathered from Damadoran Online Data Source, which is compiled from Morningstar, Bloomberg, and Capital IQ filings.[1] Monthly financial and market data (i.e., risk-free rate) for 16 years were gathered from CRSP/COMPUSTAT files. The most straightforward analysis involves the risk-reward efficiency measurement in equities in portfolio sorts against a broader market index that measures the value weighted average price movements (i.e., Elton, Gruber, & Blake, 1996). Thus, we picked Standard and Poor's 500 Composite Index (S&P 500 Composite) as a market benchmark for our measurement and analyses. Our estimations have been annualized so that we can produce economically significant outcomes for the risk-adjusted performance measures. Given the structure of the archived data for the lodging industry, we split our final sample into 16 portfolios for each year from 2000 to 2016. In order to construct both speculative risk parameters and risk-adjusted proxies for excess return, financial and market data lagged by a fiscal year for 2000. Since absolute closing prices of stocks are adjusted for tax and dividends and they have skewed distributions, those prices cannot be utilized for both estimation and comparison purposes. To overcome this issue in our examinations, we quantified standardized values rather than market values of the stocks. We eliminated all of the observations that did not have a record of at least five-year speculative risk metrics and equity prices (both high and low bid and ask prices). Also, we did not include other hospitality subsectors, such as gaming or cruise lines, due to lack of data and large gaps of missing data in firm records. Therefore, our final sample has a minor selection bias that could be attributed to this selection factor. Further, we have kept the outliers, which do not lie only on one side of the distribution, so that our results can be free of estimation bias. Lastly, comparable firms in the portfolio sorts must have been listed in COMPUSTAT for at least two years prior to the particular estimation year to mitigate the backfilling and survivorship biases (Fama & French, 1993). Taken all together, this estimation process helped us accurately differentiate how big the equity premium is for the speculative risk proxies and assess losing or winning annual portfolios in our final sample.

Decomposition of the Speculative Risk Parameters

In the current disposition and dynamics of capital markets, advocates' recommendations and assertions (i.e., Asness, Hood, & Huss, 2015) are not heavily dependent upon quantifying excess return metrics and analyzing its distributions without risk-adjusted parameters when measuring risk-reward efficiency. Convex and speculative risk parameters, such as volatility in price movement between high and low closing prices (hi/lo risk), communicate with the investors better and more efficiently in the essence of their risk-adjusted risk-reward yields. This

[1] Dr. Aswath Damadoran's archived data is available at: http://people.stern.nyu.edu/adamodar/.

is mainly because the premium for any equity is an increasing and/or decreasing function of speculation in risky assets, and hence, an increasing and/or decreasing function of both idiosyncratic and non-idiosyncratic risk values. Further, nearly all of the variation in premium assessment and equity performance is explained and dominated by the variation in stocks' risk exposures in equity markets (Asness et al., 2012; Garleanu & Pedersen, 2011). Risk-adjusted excess return decomposition is also critical for diverse investment opportunities as it provides a clear foundation of portfolio value creation with various parameters and proxies that signal the true market price of a share vis-à-vis its risk components. To address our analysis with an economic accuracy and an empirical relevancy, we documented various proxies for the excess return based on speculative risk parameters assessing the degrees of the investors' exposure to risk-reward structure and the premium calibrated for these speculative risk parameters in lodging portfolio sorts over the long haul. The risk-reward proxies and metrics we employed in our analyses are defined in detail below.

Levered Beta (β_levered)

Levered beta is directly associated with the probability distribution of returns of a firm's stock, such as the second and third moments of the distribution and the coefficient of correlation between the returns from a single stock and/or all other available stocks in the capital markets (Arditti, 1967). Beta coefficient (β) better absorbs the roles of excess returns by providing the quantifiable effect of systematic risk when combined with size (high minus low–HML) and book-to-market equity (small minus big–SMB) factors (Fama & French, 2002). Additionally, lodging firms' capital structure is highly sensitive to systematic risks due to high volatility in cash flows yielding higher leverage amounts (Kizildag, 2015; Kizildag & Ozdemir, 2017; Andrew & Schmidgall, 1993). Therefore, we utilized Fama and French's three-factor model with a 36-month rolling window to extract β_levered as follows:

$$R_{it} - R_f = \beta_{it}(R_{mt} - R_f) + s_i SMB_t + h_i HML_t + \varepsilon_{it} \quad (1)$$

where $R_{it} - R_f$ is the premium for the return and β_{it} is the estimated levered beta for stock *i* at time *t*. $R_{mt} - R_f$ is the excess return on a market portfolio. *SMB* and *HML* are the size and book-to-market-equity factors, respectively. ε_{it} is the error term. The 30-day T-bill rate was taken as a proxy for the risk-free rate (R_f).

Unlevered Beta (β_unlevered)

This risk proxy is unlevered by the market value debt to equity ratio for the sector. Unlevering a beta removes the financial effects from both operational and financial leverage (debt). That is, it is the beta coefficient of each firm without any debt when analyzing the equity performance in relation to the overall market (Kiselakova, Horvathova, Sofrankova, & Soltes, 2015; Damadoran, n.d.). Hence, the β_unlevered is quantified as indicated below:

$$\beta\_unlevered_{it} = \beta\_levered_{it} / [(1 + (1 - T)*(Debt/Equity\ Ratio_{it})] \quad (2)$$

where *T* is the corporate tax rate. Debt defined as including short-term and long-term debt, excluding accounts payable and/or non-interest bearing liabilities, and the book value of debt is used as a proxy for market value of debt for β_unlevered estimations.

Unlevered Beta Corrected for Cash (β_unlevered′)

As corrected for cash holdings, this unlevered beta measure reflects both each firm's operating assets and cash holdings. Since the latter should have a beta close to zero, we estimated this beta coefficient of just the operating assets by using two numbers: the unlevered beta and the cash as a percent of overall firm value in market terms in our portfolio sorts (Damadoran, n.d.).

$$\beta\_unlevered'_{it} = [\beta\_unlevered_{it} / (1 - Cash_{it} / Firm\ Value_{it})] \quad (3)$$

where $Cash_{it}$ is the total value of cash and marketable securities reported in a firm's balance sheet. $Firm\ Value_{it}$ is equal to $Market\ Value\ of\ Equity_{it}$ + $Book\ Value\ of\ Interest\text{-}bearing\ Debt_{it}$ + $PV\ of\ Lease\ Commitments_{it}$.

Hi/Lo Risk Coefficient (Annualized)

This is a risk parameter of price volatility adjusted for the year based on daily price ranges. Hi/lo captures the maximum difference between any equity transaction prices that were realized in a given daily trading day. Hi/lo risk proxy is not only very efficient and stringent but also robust to microstructure noise (deviation from stock's fundamental value such as bid-ask bounce, the discreteness of price change, etc.) when analyzing price adjusted for risk. The coefficient will be zero, if the equity price is constant (Sassan, Brandt, & Diebold, 2002; Damadoran, n.d.). Therefore, consistent with these prior studies, hi/lo is simply computed as:

$$Hi/Lo = [(52wk\ High\ Price - 52wk\ Low\ Price)*2] / (52wk\ High\ Price + 52wk\ Low\ Price) \quad (4)$$

where *wk* is the week.

Standard Deviation of Equity (σ_equity)

Besides levered and unlevered idiosyncratic risk components of equities, we also investigated total risk undertaken by all the stocks in our yearly portfolio sorts to scrutinize both the volatility sensitivity of our portfolio sorts' performance in relation to the market as a whole and the total risk inherent to individual equity prices in each portfolio sort. This allowed us to observe and deliver a sustainable analysis and a clear framework of the premium sensitivity for the aggregate (total) speculative risk exposures, as Sullivan, Hutchingson, and O'Connell (2009) and Fornell, Morgeson, and Hult (2016) reported this conclusion in their papers as well. Also, Petersen (2009) stated that analysts and advocates frequently base their premium judgments on a combination of idiosyncratic and non-idiosyncratic risk constructs. σ_equity is derived as follows:

$$\sigma_r = \sqrt{\sum_{j=1}^{n} (r_j - \overline{r})^2 \times Pr_j} \quad (5)$$

where *Standard Deviation of Equity* is the squared root of each equity's (j) total squared distance from the mean ($\Sigma_{j=1}^{n}(r_j - \bar{r})^2$) multiplied by the probability of occurrence of the j^{th} equity in each portfolio sorts a given year (n).

Measurement of the Equity Premium

Most of the empirical approaches compute premium metrics based on longitudinal historic data and are mostly justified on the basis of predicted relationships with accounting items on the books (i.e., conventional indicators such as return on assets – ROA, Tobin's *Q*, etc.). Those accounting-based proxies ignore the ex-post excess return that firms receive for exposing themselves to the extra volatility and risk that are speculated and emerge by holding risky assets in risky markets (i.e., Katchova & Enlow, 2013; Sorensen & Jagannathan, 2015). However, when compared to the conventional proxies, risk-calibrated measurements make adjustments to the excess returns in order to take account of the differences in various speculative risk levels between the portfolio returns and the benchmark returns. Specifically, the risk-adjusted and market-based proxies diversify the risk estimations across the versatility of portfolio and index return distributions with an absolute decomposition and performance of excess returns (Modigliani & Modigliani, 1997). As a result of these, we picked the most notable risk-adjusted and market-based proxies to measure the premium levels calibrated by the fluctuating degrees of speculative risk parameters.

Treynor Index

The Treynor Index is critical and effective when measuring the excess return in relation to market risk factor without leveraging the return of the equity as Jensen's Alpha estimation does. Thus, it is empirically worthwhile and necessary to assess the index coefficients in combination with the estimations of the two other risk-adjusted proxies (Sharpe ratio and Jensen's Alpha) to infer solid economic significance of the outcomes (Treynor, 1965; Eling & Schuhmacher, 2007). This index computes the risk premium as in the Sharpe ratio. However, the major difference between the Treynor Index and the Sharpe ratio is that the premium in this index is computed per unit of systematic risk (β) instead of the total upside and downside risk (σ) of the portfolio as the estimation considers a non-diversifiable portion of the total risk, which cannot be eliminated through diversification. We quantified the Treynor Index as follows:

$$GM\left\{[\prod_{i=1}^{n*p}(1+r_i)]^{\frac{1}{n*p}}-1\right\}*p-\left\{[\prod_{i=1}^{n*p}(1+r_f)]^{\frac{1}{n*p}}-1\right\}*p/\left(\frac{\rho_{i,m}\sigma_i}{\sigma_m}\right) \quad (6)$$

Reduced to,

$$GM\frac{E[r_i-r_m]}{\left(\frac{\rho_{i,m}\sigma_i}{\sigma_m}\right)} \quad (7)$$

Derived as,

$$Treynor\ Index_{it}=GM\frac{E[r_i-r_m]}{\beta_i} \quad (8)$$

where *Treynor Index*$_{it}$ is the co-product Π of firms' annualized stock returns r_{it} with geometric means GM_{it}, number of periods per year p, and number of years n minus the co-product Π of 30-day T-bill (r_f), number of periods per year p, and number of years n over in parenthesis, covariance of market and firms' annualized stock returns $\rho_{i,m}\ \sigma_m$ over standard deviation of annualized benchmark returns σ_m, which estimates the beta (β_{it}).

Sharpe Ratio

Pioneered by Sharpe (1966), the Sharpe ratio relies on the first two moments of the asymmetric return distributions as the expected value and the standard deviation (σ). This ratio takes into account the correlation between the benchmark and the respective equity (Sharma, 2004; Brooks & Kat, 2002). The Sharpe ratio computes the risk premium of the selected portfolio per unit of total risk of that portfolio by capturing the reward (premium) for investing in a risky portfolio in excess of the risk-free rate of interest and variability of returns of the selected portfolio. Based on the properties of the Sharpe ratio, we derived this proxy as follows:

$$GM\left\{[\prod_{i=1}^{n*p}(1+r_i)]^{\frac{1}{n*p}}-1\right\}*p-\left\{[\prod_{i=1}^{n*p}(1+r_f)]^{\frac{1}{n*p}}-1\right\}*p/[\sqrt{var(r_i-r_m)}] \quad (9)$$

Simplifying equation (9) into,

$$GM\frac{E[r_i-r_m]}{\sqrt{var[r_i-r_m]}} \quad (10)$$

Thus,

$$Sharpe\ Ratio_{it}=GM\frac{E[r_i-r_m]}{\sigma_i} \quad (11)$$

where *Sharpe Ratio*$_{it}$ is the co-product Π of firms' annualized stock returns r_{it} with geometric means GM_{it}, number of periods per year p, and number of years n minus the co-product Π of 30-day T-bill (r_f), number of periods per year p, and number of years n over under square root variance var_{it} of firms' annualized stock returns r_{it} with geometric means GM_{it} and annualized benchmark return r_m, which estimates the standard deviation (σ_{it}).

Jensen's Alpha (Jensen's α)

Jensen's Alpha, the intercept in a regression, is another proxy in providing the absolute excess return obtained when deviating from the benchmark. Along with the other two metrics assessing the premium, Jensen's Alpha represents the part of the mean return of the equity that cannot be explained by the systematic risk exposure (i.e., β_levered) to benchmark variations. Thus, α is given by the annualized return of the equity, deducted the yield of an investment without risk, and minus the return of the benchmark multiplied by the stock's β given a particular year (Jensen, 1968). The linear formula to extract α coefficient is as follows:

$$\overline{\alpha_{it}}=\overline{r_{it}}-\left[\overline{r_f}+\ \beta_{it}\left(\overline{r_m}-\overline{r_f}\right)\right] \quad (12)$$

where *Jensen's Alpha*$_{it}$ ($\overline{\alpha_{it}}$) is the annualized geometric return of firms' annualized stock returns r_{it} minus 30-day T-bill (r_f), plus firms' annualized beta β_{it} multiplied by the market risk premium ($r_m - r_f$).

Empirical Results and Findings

There were not extensive fluctuations in the mean and median values for both speculative risk parameters and the risk-adjusted equity premium measures. Thus, the pattern in descriptive values demonstrated that the premium estimations based on risk derivations are highly aligned with each other. For instance, hi/lo risk proxy had the lowest mean and median value ($\bar{x}$ = 0.45 and $\tilde{x}$ = 0.42), whereas σ_equity fluctuated within the upper bound of 62.02% and the lower bound of 25.71% with the highest mean and median values ($\bar{x}$ = 43.39% and $\tilde{x}$ = 46.07%) in our final sample of 56 lodging firms with 1,259 firm observations. Additionally, risk-adjusted premium measures signaled consistencies with the underlying risk parameters since the same pattern of descriptive values holds validity for these proxies as well. For example, upper and lower bound distribution of Sharpe ratio was between 1.121 and –0.922 with $\bar{x}$ = 0.525 and $\tilde{x}$ = 0.842 in the aggregate portfolio sorts. Table 1 provides the characteristics and descriptive values of the portfolio sorts along with the sample size for each year in detail.

To draw more meaningful estimations in our multi-proxy analyses and derivation, we report annualized risk parameter estimates along with the risk-adjusted premium measures for both our equity lodging portfolios and the value weighted aggregate benchmark, S&P 500 Composite from 2000 to 2016 in Table 2. One striking result in this paper is that the annualized premiums are not as efficient as they should have been when lodging portfolios are adjusted to both levered and unlevered per unit of systematic risk between 2000 and 2004. We observed the same patterns when we analyzed the annualized, mean excess returns earned by lodging portfolios in excess of the risk-free rate per unit of total risk. Parallel to this, equity premium performance was not superior when deviating from the benchmark returns in this period. Portfolios' Treynor Index, Sharpe ratio, and Jensen's Alpha were low in 2002 (0.342, 0.003, and 0.023 respectively) but they bore higher degrees of non-diversifiable risk (β_levered: 0.90 and β_unlevered: 0.56), even when they were corrected for cash (β_unlevered′: 0.58). However, the movement in price volatility (hi/lo: 0.22) and the total risk distribution both upside as well as downside was narrower (σ_equity: 25.71%). Lodging portfolios only performed well, provided higher risk-adjusted proxies, and had better premiums overall in 2004 in this period (Treynor Index: 0.842, Sharpe ratio: 0.059, and Jensen's α: 0.031). One explanation might be that equities were possibly exposed to low or inconsistent growth in earnings (i.e., diluted per share earnings). Also, equity prices are possibly subject to market speculations causing undervaluation, and thus, poor risk-adjusted excess returns for the investors although they co-move with the aggregate market (Treynor Index$_m$: 0.581, Sharpe ratio$_m$: 0.022, and Jensen's α_m: 0.061).

Annualized estimations from 2005 to 2007 gave us enough clues about the meltdown in prices as well as drastically minimal excess returns. Therefore, before drawing conclusions about the aftermath of the recession, we also checked how big the risk and premium differences were in our lodging portfolio sorts before and after the recent economic

Table 1. Descriptive Statistics
This table reports the annualized summary of fundamental descriptive values for both speculative risk parameters and risk-adjusted excess return measures along with the associated total number of lodging firms for the aggregate portfolio sorts from 2000 to 2016. Annualized aggregate market (S&P 500 Composite) descriptive values are not included.

	Min.	Max.	Mean	Obs.
Speculative Risk Proxies				
Levered Beta (β_*levered*)	0.74	1.75	1.18 (*0.97*)	N=1,259 n=56
Unlevered Beta (β_*unlevered*)	0.50	1.24	0.78 (*0.66*)	N=1,259 n=56
Unlevered Beta Corrected for Cash (β_*unlevered′*)	0.52	1.35	0.82 (*0.69*)	N=1,259 n=56
Hi/Lo Risk Coefficient (*Annualized*)	0.22	0.75	0.45 (*0.42*)	N=1,259 n=56
Standard Deviation of Equity (σ_*equity*)	25.71%	62.02%	43.39% (*46.07%*)	N=1,259 n=56
Risk-Adjusted Premium Measures				
Treynor Index	–0.019	1.121	0.038 (*0.059*)	N=1,259 n=56
Sharpe Ratio	0.001	0.135	0.525 (*0.842*)	N=1,259 n=56
Jensen's Alpha (α)	–0.083	0.075	0.020 (*0.033*)	N=1,259 n=56

Note: Numbers in parentheses are the median figures for the corresponding proxies and measures.

crisis, lasting roughly 2.5 years in the 2007–2009 period. Figures 1 and 2 report the results and patterns in detail. Our chief understanding was that when the global economy started to slow down during the years preceding the recession, the net effect of the crisis was severe on lodging firms because their vulnerability to the risk speculated in markets worsened their financial gains. That is, the premium was not equally calibrated for the speculative risk generated in the benchmarks. Although the speculative risk parameters scored high (β_levered: 0.88, β_unlevered: 0.61, β_unlevered′: 0.63, hi/lo risk: 0.44, and σ_equity: 45.00% in the 7-year pre-crisis moving average), lodging portfolios did not achieve higher premiums per unit of risk they bear, (Treynor Index: −0.04, Sharpe ratio: 0.002, and Jensen's α: −0.01 in the 7-year pre-crisis moving average). This pattern was an indicator of a drastic volatility and tumble in equity prices along with the great level of uncertainty, and hence, the inevitable recession. In the heat of the downturn at the beginning of 2008, lodging portfolio sorts' excess returns drastically degraded to the lowest levels. For instance, the Treynor Index was around −0.80 score range, indicating that lodging firms' net earnings and liquidity conditions from the excess returns were not strong enough to offset their residual risk levels. During the post-upheaval period, credit creation of aggregate long-term loans and eased lending procedures enabled lodging firms to relax their borrowing capacity rapidly and grow their leverage ratios aggressively (Altin, Kizildag, & Ozdemir, 2016; Kizildag & Ozdemir, 2017). Thus, the bounce back from a recent crisis gave those firms solid opportunities to reap higher rewards with associated higher risk levels. This pattern has been long drawn out until the current day. Financial and economic relief in the macro- and micro-environment economy as well as the recovery in firms' earnings, cash flows, leverage, and liquidity in the markets were the main reasons why portfolio sorts' premium levels skyrocketed. The post-crisis 7-year moving averages

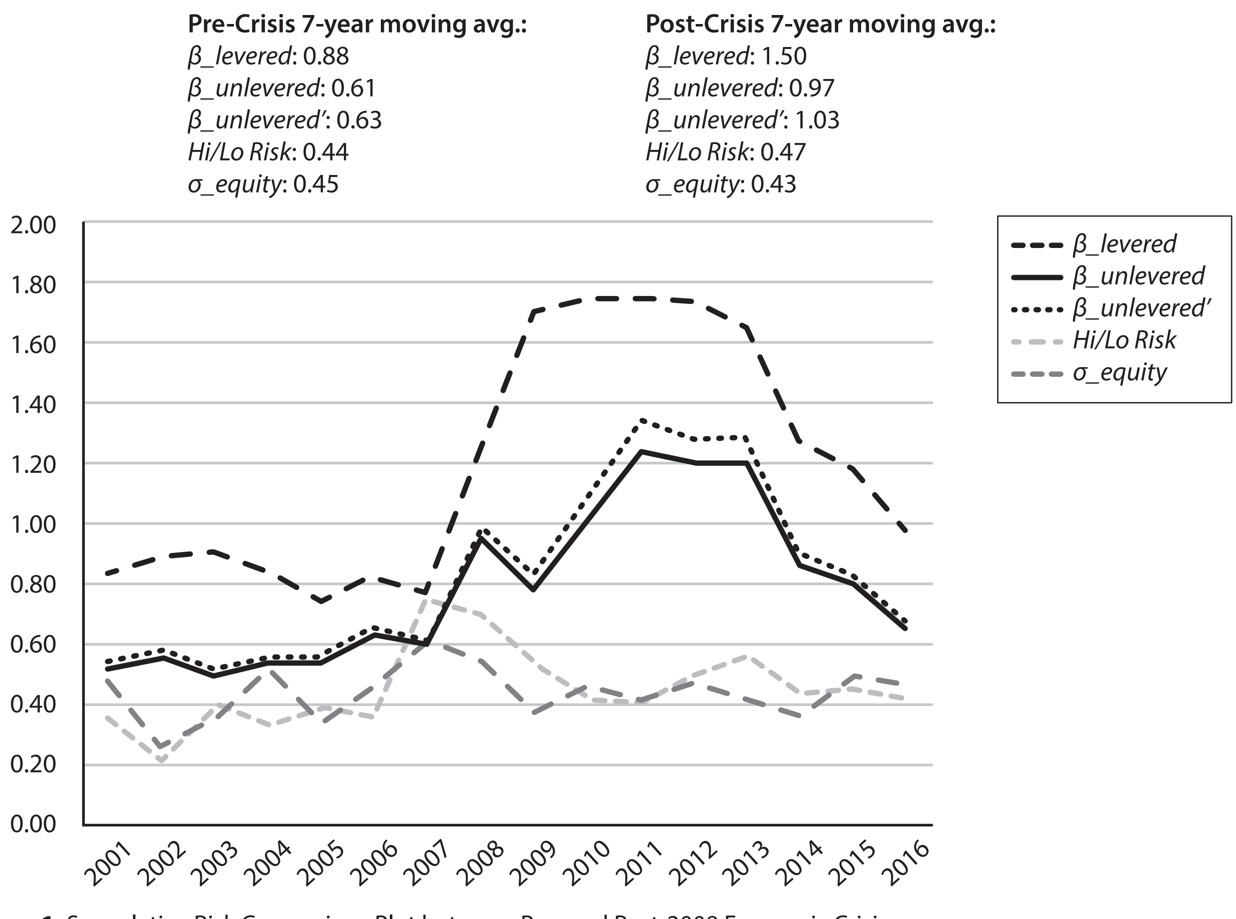

Figure 1. Speculative Risk Comparison Plot between Pre- and Post-2008 Economic Crisis
The pre-2008 period corresponds to fiscal years between 2001 and 2008. Post-2008 era includes fiscal years of 2009 to 2016 for an equal 7-year comparison. Vertical dashed lines demonstrate where the equity prices started to free fall.

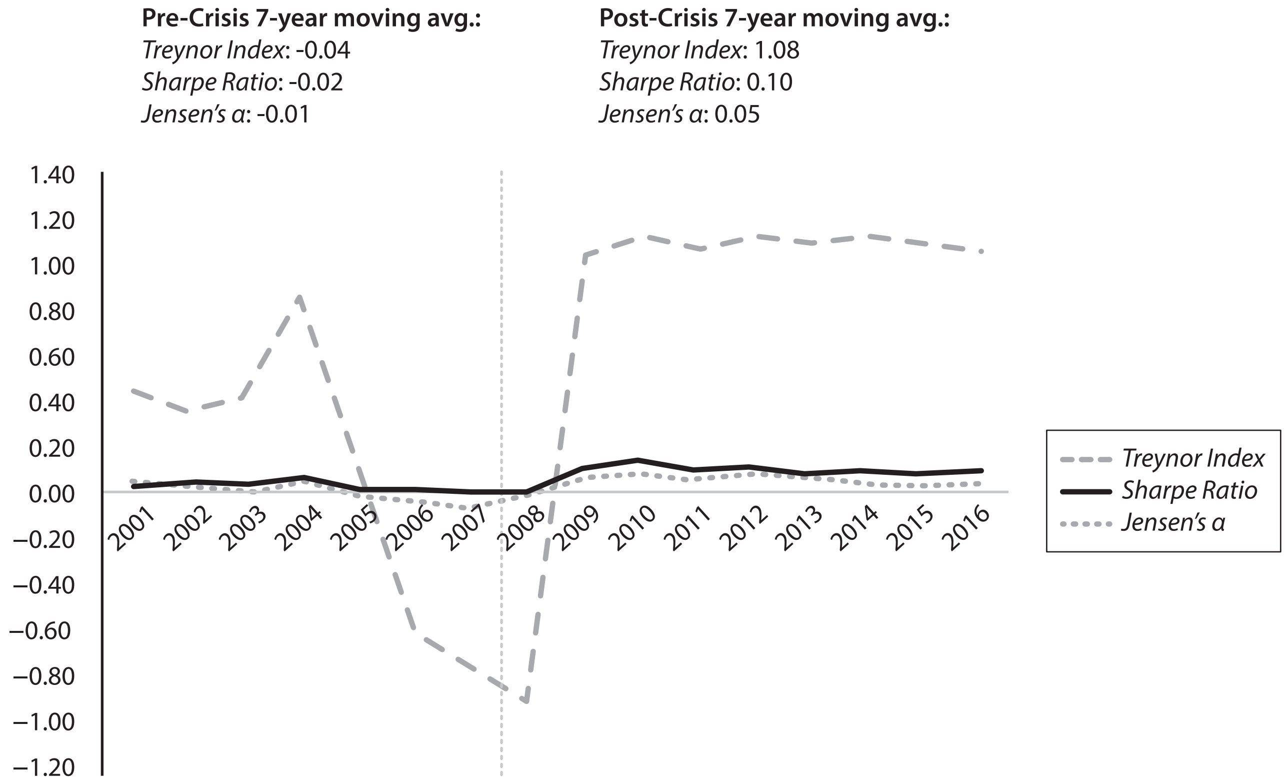

Figure 2. Risk-Adjusted Proxy Comparison Plot between Pre- and Post-2008 Economic Crisis
The pre-2008 period corresponds to fiscal years between 2001 and 2008. Post-2008 era includes fiscal years of 2009 to 2016 for an equal 7-year comparison. Vertical dashed lines demonstrate where the equity prices started to free fall.

for Treynor Index, Sharpe ratio, and Jensen's α were 1.08, 0.10, and 0.05, respectively, yielding high premiums for the investors. As it can clearly be inferred from the first figure, the positive sentiment and confidence (both individual and institutional) on Wall Street raised risk levels parallel to the excess return generated in capital markets in the aftermath of the upheaval. β_levered was 1.50 and hi/lo risk parameter was 0.47 when post-crisis 7-year moving averages were analyzed. Investment fear dip enabled lodging firms to capitalize on capital investments and +Net Present Value (+NPV) projects. Bottom line, lodging firms entered an unprecedented "excess return era" after 2008.

In the aftermath of the recession, investors' bullish sentiment bumped share prices, and thus, overall firm values in benchmarks yielded high excess returns. Based on the Treynor Index estimation, 1.119 units of excess return were generated per unit of levered and unlevered systematic risk. This scenario was the same for the Sharpe ratio and Jensen's α as well. These measures scored the highest levels at 0.135 and 0.075, respectively, in 2010 along with the high levels of speculative risk parameters, which are very natural to observe (β_levered: 1.74, β_unlevered: 1.00, β_unlevered′: 1.06, hi/lo risk: 0.42, and σ_equity: 46.07%). This means that for every point of return, investors are shouldering 0.135 units of total upside and downside risk given the expected return in the benchmark. Our estimations signal and imply that investors not only gain competitive positioning in "good" investments and excess returns but also earn higher solid income generated from the relaxed market conditions and macro- and micro-investment practices. Our findings and results also tell us that there is a fair trade-off between speculative risk parameter values and the risk-adjusted premium measures, which demonstrates that obtained estimations are reasonable given the estimation patterns. For the short-term predictions, these results support expected momentum investing, forward-looking investment potential, and sustainable financial productivity in the lodging industry.

Concluding Remarks, Implications, and Future Directions

The standard and very practical advice provided by the advocates and analysts is that risk identification

Table 2. Annualized Estimations for the Excess Return and Speculative Risk Exposure
This table reports the annualized estimations of the speculative risk parameters and the risk-adjusted performance proxies quantified for assessing the risk premium. Estimations are presented as an integer for both Equity Portfolio Sorts and the Aggregate Market Value Weighted Benchmark (S&P 500) in Parts A and Part B respectively.

Part A: Annualized Estimations of the Equity Portfolio Sorts

	Speculative Risk Parameters					Risk Premium Proxies		
Years	β_levered	β_unlevered	β_unlevered′	Hi/Lo Risk	σ_equity	Treynor Index	Sharpe Ratio	Jensen's α
2000	0.93	0.66	0.69	0.33	30.12%	0.566	0.026	0.057
2001	0.84	0.53	0.55	0.36	47.82%	0.438	0.012	0.038
2002	0.90	0.56	0.58	0.22	25.71%	0.342	0.033	0.023
2003	0.91	0.50	0.52	0.39	36.15%	0.416	0.034	−0.019
2004	0.84	0.54	0.56	0.34	51.60%	0.842	0.059	0.031
2005	0.74	0.54	0.56	0.40	34.55%	−0.019	0.002	−0.028
2006	0.82	0.63	0.66	0.36	46.75%	−0.634	0.001	−0.046
2007	0.77	0.60	0.62	0.75	62.02%	−0.767	0.005	−0.083
2008	1.25	0.96	0.98	0.70	55.06%	−0.922	0.007	−0.021
2009	1.70	0.78	0.84	0.55	37.84%	1.037	0.092	0.059
2010	1.74	1.00	1.06	0.42	46.07%	1.119	0.135	0.075
2011	1.75	1.24	1.35	0.40	41.58%	1.061	0.088	0.049
2012	1.74	1.20	1.28	0.50	47.82%	1.121	0.107	0.066
2013	1.65	1.21	1.29	0.56	41.71%	1.088	0.083	0.046
2014	1.27	0.87	0.90	0.44	36.49%	1.113	0.091	0.033
2015	1.18	0.80	0.83	0.45	49.55%	1.078	0.079	0.029
2016	0.97	0.65	0.68	0.42	46.75%	1.054	0.085	0.037

Part B: Annualized Estimations of the Aggregate Market Value Weighted Benchmark (*S&P500*)

	Speculative Risk Parameters					Risk Premium Proxies		
Years	β_levered$_m$	β_unlevered$_m$	β_unlevered′$_m$	Hi/Lo Risk$_m$	σ_equity$_m$	Treynor Index$_m$	Sharpe Ratio$_m$	Jensen's α$_m$
2000	0.86	0.70	0.75	0.35	38.16%	0.581	0.022	0.061
2001	0.87	0.72	0.73	0.36	34.55%	0.445	0.018	0.030
2002	0.89	0.73	0.78	0.28	36.17%	0.362	0.041	0.017
2003	0.99	0.72	0.81	0.41	40.88%	0.403	0.029	−0.022
2004	0.91	0.68	0.72	0.42	41.58%	0.881	0.061	0.028
2005	1.00	0.81	0.87	0.46	46.75%	−0.032	0.004	−0.037
2006	1.15	0.89	0.97	0.69	47.82%	−0.826	0.002	−0.041
2007	1.14	0.90	0.89	0.60	68.90%	−0.912	0.004	−0.080
2008	1.26	0.98	1.05	0.49	59.06%	−1.003	0.006	−0.019
2009	1.19	0.77	0.86	0.38	57.84%	1.001	0.090	0.055
2010	1.17	0.82	0.90	0.45	51.60%	1.009	0.186	0.073
2011	1.15	0.80	0.93	0.44	46.75%	1.198	0.091	0.051
2012	1.13	0.83	0.82	0.31	49.87%	1.213	0.111	0.055
2013	1.17	0.87	0.96	0.43	50.66%	1.076	0.085	0.039
2014	1.01	0.60	0.64	0.47	52.34%	1.088	0.088	0.031
2015	1.06	0.67	0.70	0.46	53.60%	1.092	0.074	0.027
2016	0.13	0.61	0.77	0.44	51.65%	1.061	0.081	0.034

Note: Risk parameters and the risk premium proxies are in monthly values that are adjusted to annual values. To annualize any monthly estimation in our data analyses, we employed an economic derivation as: $g_m = \left[\left(\frac{X_m}{X_{m-1}}\right)^{12} - 1\right] \times 100$ where X_m and X_{m-1} are the values of the parameters in months *m* and *m-1*, respectively, and g_m is the annualized percent change. Estimations for the aggregate benchmark are signified by *m* in Part B.

in every type of financial investment is not a one-faced phenomenon. It is the dynamic practice that is assessed and re-assessed periodically and continuously according to the investment objective(s) because no economic and/or financial factors can fully predict the likelihood of financial occurrence and outcome in asymmetric markets (i.e., Barreda & Kizildag, 2015). Tangled findings in previous research have not shown a solid consensus about how the premium is calibrated for the various speculative risk parameters over time (i.e., Eling & Schuhmacher, 2007). Therefore, our paper aimed to develop an extensive understanding of how a variety of risk factors relative to market speculation shape the changing behavior of excess return effectiveness and performance in our portfolio sorts at various time frames for investors in the capital-intensive lodging industry. During the years preceding the 2007–2009 recession, lodging portfolio sorts interestingly did not provide higher levels of excess returns in exchange for the relative speculative risks (i.e., levered market risk) although lodging firms bear high levels of risk (i.e., total upside and downside risk) and high levels of price volatility. We interpreted this stagnancy in equity trades, stock prices, and investments as investors' potential recessional sentiment. Shortly after, our portfolio sorts experienced a great level of negative price disturbances and a downturn in macro- and micro-structure, and hence, the economic recession that negative risk-adjusted returns caused a very dry environment on Wall Street in terms of liquidity in equity exchange, trade, and investments. When the economy was in a "boom" state, investors' confidence had re-achieved enabling lodging firms to recover from losses in markets and to have high productivity and output growth. The re-established positivity and information efficiency also enabled investors to "correctly" price the value of liquid assets in benchmarks. As a result of these, asset supply in markets and investors' demand created a new equilibrium in equity prices that risk-reward trade-off was balanced with the highest excess returns and maintained this bullish pattern until the present time.

Our results and findings are closely relevant to industry professionals and practitioners, such as the management of the lodging firms, fund or money managers supplying funds to these firms for investment purposes, and lodging industry consultants, who utilize speculative risk-adjusted proxies to measure the excess returns, as well as to related academic researchers. The choice of risk-adjusted proxies does not have a crucial influence on the relative evaluation of how big the premium is for the speculative risk exposure in lodging portfolio sorts. In other words, the selection process for portfolio formation and diversification varies. Practitioners' and/or investors' points of view and investment objectives and risk-aversion levels become essential in such cases. For instance, any particular portfolio formation might give more weight to systematic risk or total risk adjusted estimations for the excess return assessment. Therefore, considering investors' diverse utility maximization strategies and levels, it is best for practitioners to identify comparable assets with identical firms for any selected target firms or portfolios or peer industry standards with various risk and reward parameters and measures. Our analyses, results, and findings provide informed knowledge about different speculative risk-adjusted excess return calibration and patterns as well as shed a light on various decision-making strategies and momentum in investing and portfolio formation within the lodging industry.

The use of the results and findings of our paper is generalizable to a comprehensive population of U.S. lodging firms; however, as in any other study, our paper is not free of limitations and has some minor exclusions. Our estimations for the calibration of the equity premium against speculative risk exposure can be extended by including additional parameters and proxies such as the sortino ratio, upside potential ratio, excess return on value at risk, etc. Moreover, a worthwhile extension might pay attention to factor-analytic techniques, such as path analysis or causal models that mitigate presumptive measurement issues encountered when working with factors affecting speculative risk parameters and premium measurement such as financial leverage (i.e., total debt-to-equity ratio). Additionally, analyses concentrating upon the likelihood of financial distress and bankruptcy/default-risk along with the lodging portfolio aggregate risk levels can also move the related research forward.

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