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Yaz Gulnur Muradoglu[1]
Sheeja Sivaprasad[2]

[1] School of Business and Management, Queen Mary University
[2] Westminster Business School, University of Westminster

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THE IMPACT OF LEVERAGE ON STOCK RETURNS IN THE HOSPITALITY SECTOR: EVIDENCE FROM THE UK

YAZ GŰLNUR MURADOĞLU* AND SHEEJA SIVAPRASAD†

*School of Business and Management, Queen Mary University, London, UK
†Department of Accounting, Finance and Governance, University of Westminster, London, UK

This article examines the relation between capital structure and abnormal returns for the UK hospitality sector by using an investment strategy based on hospitality firms' capital structure. We find that abnormal returns are higher, 0.53% per annum, for medium leverage hospitality firms, and it can be increased up to 0.91% by investing in medium leverage and low price-to-book value firms. The findings raise an important issue for the hospitality sector as the firms in this sector are continually aiming to raise external finance to fund expansion. This is a unique situation when compared to other sectors in the economy whereby investors earn higher abnormal returns when investing in low levered firms.

Key words: Leverage; Capital structure; Abnormal returns; Hospitality sector

Introduction

Leverage is a key variable that plays an important role on firm performance (Delcoure & Dickens, 2004; Mandelker & Rhee, 1984). Borde (1998), Gu and Kim (2002), H. Kim, Gu, and Mattila (2002), W. Kim, Ryan, and Ceschini (2007), and Lee and Jang (2007) found that leverage is an important risk factor that affects hospitality firms in particular. Thus, we examine the relation between leverage and stock returns in the hospitality sector, which is a sector that is very reliant on external financing.

The hospitality industry is capital intensive. Although a hospitality business typically needs a relatively low level of operating inventories, it requires a relatively high level of capital for its real estate component. This component often includes buildings, operating systems, furniture, and restaurant equipment, and this ordinarily involves securing external financing to acquire these assets.

This article addresses an important question regarding the relation between leverage and its effect on stock returns of firms in the hospitality sector. The nature of the industry is important when studying the leverage return relation. Arditti (1967) and Melicher (1974) argued that the true nature of leverage return relation can be disclosed only by testing this relation within industries. The

Address correspondence to Sheeja Sivaprasad, Department of Accounting, Finance and Governance, University of Westminster, 35 Marylebone Road, London, NW1 5LS, UK. Tel: +44 20 7911 5000, ext. 66508; E-mail: S.Sivaprasad@westminster.ac.uk *or* sivaprs@wmin.ac.uk

hospitality sector deserves a specific industry-level analysis about the relation between leverage and financial performance due to their industry-specific characteristics such as management contracts in hotels and franchising in hotels and restaurants. Madanoglu, Lee, and Catrogiovanni (2011), Hsu and Jang (2009), Srinivasan (2006), Combs and Ketchen (1999), and Alon (2001) found a negative relation between leverage and performance when they examine the effect of franchising on the financial performance of restaurants.

The hotel industry is also characterized by the relationships between owners and operators, arising from the growth in hotel management contracts. Thus, this separation of ownership and management signifies that investment decisions are made with the involvement of two distinct organizations in hotel investment decision making (Guilding 2003). Harris and Brander Brown (1998) argued that the hotel industry is recognized as high risk by investors and operators alike. However, the assessment of investment risk appears to be little understood or at least rarely applied in the majority of investment decisions.

Harris and Brander Brown (1998) argued that besides dividends, the second reward that hotel owners would like to see is an increase in the value of their investment. He documents that this reward is easily measured by hotel companies whose capital stock is traded on stock exchanges. In this article, we address this issue and analyze the relation between leverage and stock returns for hospitality firms listed in the London Stock Exchange.

Measure of Returns

Work on accounting information and performance in the hospitality industry has used profitability as a balance sheet-based measure of performance. For example, Jeon, Kim, and Lee (2006) used earnings, which relate to the clean surplus concept. Lee and Jang (2007) used return on assets. We do not use these accounting-based measures. Our line of thinking considers a stock market investor and thus the use of abnormal stock returns would be more appropriate to a trader or investor while evaluating and monitoring the performance of his investments as opposed to the use of balance sheet performance measures. We use Cumulative Average Abnormal Returns (CAARs). CAARs measure the return an investor makes in excess of the market return if she/he buys a stock and holds it for 1 year depending upon its leverage. In this sense, CAARs measure the abnormal returns to an equity investor that has a trading strategy based on the leverage level of a hospitality firm.

We use book leverage, which is a decision made by corporate managers and revealed to investors in a timely manner by balance sheet announcements (Schwartz, 1959). These data are available to investors at no additional cost, indicating the fragility of the hospitality firms, and can be used as the basis of a trading strategy. This study is related to Muradoglu and Sivaprasad (2012a), who reported that the relation between leverage and stock returns is not the same across industries as defined by three-digit SIC codes. We argue that the analysis of the hospitality sector is important because it is known for its reliance on external finance and leverage has been used by previous researchers to explore its predictability as a risk factor in determining performance using accounting-based measures (W. Kim et al., 2007; Shin, Hancer, Leong, & Palakurthi, 2010). Our analysis is different from theirs as we use a market-based measure of performance that is integrated into an investment strategy. Our sample includes 11 travel firms, 6 restaurants, 6 hotels, 14 pubs, and 2 entertainment firms.

Previous work in the hospitality industry is limited to understanding the riskiness of the industry (Jeon et al., 2006; Lee & Jang, 2007). Financial leverage is one of the sources of fixed costs due to interest payments and induces additional constraints on cash flows to shareholders, especially when sales levels drop. Irrespective of whether or not a company makes a profit, interest must be paid to the debt holders (Nicolau, 2005). Skalpe (2003) stated that financial leverage is an important factor in assessing the risk of a firm and its securities. Similar to his study, we also use share prices as a future-oriented measure of cash flows to the investor (Horsky & Swyngedouw, 1987; Tarras, 1991). Our measure is scaled as abnormal returns to the investor. We use leverage as the source of financial risk of the firm as our main variable. We consider the impact of both market risk and other known sources of idiosyncratic risk such as size, book to market, and price earnings ratio. Our results are robust to the inclusion of Fama and French's (1993) and Carhart's (1997) risk factors.

The purpose of this study is to investigate the effect of firm leverage on stock returns in the hospitality sector in the UK. The proposition that is explored here is Proposition 2 of Modigliani and Miller's (1958) capital structure theorem. Modigliani and Miller argued that returns increase in leverage due to the risk attached to debt. This article reports that the highest abnormal returns in the hospitality sector are earned by investing in medium leverage companies.

The article is organized as follows. Section 2 provides a background to the theory of capital structure. In section 3 we describe the rationale behind our sample selection procedure, the variables we use, and the method we apply. We present our results in section 4. Section 5 concludes.

Research Background

Policy makers are always keen to know how the positive economic aspects of tourism development can lead to income generation, job opportunities, government taxes, and foreign exchange earnings in an economy. The hospitality sector normally feels the effects of a weak economy first. However, as soon as the economy takes a turn for the better, consumers return, spending increases, and the industry prospers. Since the 2008 crisis, under capital constraints, the leverage choices of the hospitality industry have gained importance. For example, Thomas Cook, Europe's second largest tour operator, was recently in the news for its excessive debt and plunging share prices as a result (Wembridge & Blitz, 2011).

H. Kim et al. (2002), Lee and Jang (2007), Borde (1998), Gu and Kim (2002), and W. Kim et al. (2007) found leverage as a key risk factor in explaining the performance of firms in the hotel, airline, and casino industries, respectively. In this article, we investigate the relation between leverage and stock returns of all hospitality firms listed in the London Stock Exchange with operations as hotels, restaurants, pubs, travel companies, and entertainment firms.

Theory of Capital Structure

In their seminal work, Modigliani and Miller (1958) stated that the expected yield of a share is equal to the appropriate capitalization rate plus a premium related to financial risk equal to the debt–equity ratio. Modigliani and Miller showed that the relation is positive in the oil and gas and utilities sectors. Some authors (Bhandari, 1988; Hamada, 1972) have shown that returns increase in leverage; others have shown that they decrease in leverage (Baker, 1973; Dimitrov & Jain, 2008; Gomes & Schmid, 2010; Hall & Weiss, 1967; Korteweg, 2010; Muradoglu & Sivaprasad, 2012a, 2012b). Thus, it is evident from these studies that leverage can explain returns.

If the analysis is conducted in the cross section of all firms, the findings may be misleading due to the different capital structures in various industries. The results from empirical work thus is inconclusive when all firms are analyzed without due reference to the industry. The capital structures of financial companies such as banks and insurance companies are very different from that of nonfinancial firms. The interpretation and treatment of leverage in the balance sheet of a nonfinancial firm is such that it represents the claims of the debt holders. Second, the relation between firm leverage and returns can differ from one industry to another among nonfinancial firms. Muradoglu and Sivaprasad (2012b) reported that abnormal returns decrease in firm leverage except in the utilities sector, where abnormal returns increase in firm leverage. This is due to the capital-intensive nature of this regulated industry. Likewise, hospitality firms are different from other manufacturing firms in many respects. It is difficult to assess the relation between leverage and stock returns in hospitality firms without considering their capital-intensive industry characteristics and highly seasonal revenue structures.

Leverage and the Hospitality Sector

The main focus of this study is to examine the effect of leverage in the stock returns of the hospitality sector. We argue that it is imperative to understand the financing patterns of firms and their effect on stock returns in order to effectively manage the business. Lee and Jang (2007) examined the systematic risk in the US airline industry and find that effective financial policy is important in managing systematic risk. There are a few studies that examined the effect of leverage in the hospitality sector from various aspects (Cave, Gupta, & Locke, 2009; Jang & Tang, 2009; H. Kim & Gu, 2005; Lee & Jang, 2007; Nicolau, 2005; Phillips and Sipahioglu,

2004; Sheel, 1994; Skalpe, 2003). Sheel (1994) examined the relation between a firm's capital structure, its cost of capital, and its stock value and found that all determinants of leverage affect capital structure decision of hospitality firms and shed light on the short-term and long-term behavior of hospitality firms as opposed to manufacturing firms. On the other hand, H. Kim and Gu (2005) found that in addition to growth, profitability, and stock performance, leverage did not play a role in determining CEO compensation in the restaurant industry.

Singh (2009) investigated the relation between interest rate derivatives, interest rate exposure, and debt maturity structure in a sample of lodging firms from 2000 to 2004. The results show that small unrated firms are more likely to issue short-term debt and swap into fixed-rate debt to reduce exposure to interest rate risk. Skalpe (2003) found that the high variability in earnings is mainly caused by operational and financial leverage. He found that the market rewards risk but not risk induced by high leverage. Jeon, Kang, and Lee (2004) found that although persistence in earnings is higher for the hotel industry than in manufacturing companies, hotels do not utilize the accounting information such as leverage. Jeon et al. (2006) argued that financial leverage explains the systematic risk of firms. Jang and Tang (2009) found an inverted U-shaped relationship between financial leverage and profitability, implying an optimal leverage pattern for maximum profitability.

Nicolau (2005) argued that operating leverage represents the sensitivity of profits to changes in sales. Lee and Jang (2007) found that effective financial policy helps lower debt in airlines and helps them prepare for manage their risk. Hence, they concluded that management needs to pay special attention to debt ratio in order to reduce systematic risk of the firm. Phillips and Sipahioglu (2004) found no significant relation between the levels of debt found in the capital structure of firms and financial performance. Based on the discussion above, we conclude that leverage is an important firm characteristic that can explain the variation of stock returns of firms in the hospitality sector.

Data and Method

The data were obtained from DataStream. DataStream is a large financial database with time series and static data on equities, bonds, economies, futures, and options. It is operated by Thomson Reuters. All listed firms in London Stock Exchange (LSE) classified under the hospitality sector were selected for the period 1988–2008.

For each firm year observation to enter the sample, we had two selection criteria: the study required that a fiscal year-end leverage and stock price series be available for at least 12 months, and firms with negative book-to-market ratios were excluded because firms with negative book-to-market ratios are not meaningful in measuring growth opportunities (Fama & French, 1992). Accordingly, our sample includes 39 companies that are listed at LSE. We began our analysis in 1988 as there are no listed hospitality firms with full information prior to that period. Firms that are listed after this date were added into the database if they met the above criteria. Firms that were delisted due to various reasons, including mergers and acquisitions and bankruptcy, remained in the sample until they were delisted from the LSE. Therefore, our sample does not have survivorship bias. Hence, all firms do not have balance sheet information throughout the whole research period. Thirteen firms have observations for the full research period of 20 years, five firms have the minimum data requirement of 2 years, and other firms have data between 2 and 20 years with the median firm having data for 20 years. The resulting sample contains 464 firm year-end observations from 39 hospitality companies during the research period from 1988 to 2008.

Firms are ranked each year according to the leverage reported in their annual reports with year-end dates December 31. We make annual portfolio assignments that are based on the leverage of the firms. Each year, the firms are divided into three groups based on their leverage. The bottom 30% of companies constitutes the low leverage group and the top 30% of the companies constitute the high leverage group. The capital leverage definition is used to represent the leverage of firms in the sample. The leverage of a company (expressed as a percentage) represents the total debt to total financing of the firm and is defined as:

$$\text{Leverage} = \frac{\text{Long-term debt} + \text{Short-term debt}}{\text{Total capital} + \text{Long-term debt} + \text{Short-term debt}} \quad (1)$$

The book value of leverage is the relevant measure of cash flows to the firm over which

management has discretion in making decisions regarding capital structure (Bowman, 1980; Rajan & Zingales, 1995; Schwartz, 1959). Schwartz (1959) argues that using market-based measurements of leverage ignores the cash flows that the firm receives at the time of capital structure decision. This study bases the analysis on the same belief. The difference between the book and market equity is accounted for by using price-to-book ratio as a risk factor (Fama & French, 1992). Firm size is represented by a firm's market value defined as the closing share price multiplied by the number of ordinary shares in issue. The price-to-book value refers to a firm's closing share price divided by the book value. The price/earnings ratio refers to the ratio of price to earnings. The market risk measure is the beta coefficient (β), which is estimated over a 5-year period in a rolling window, using monthly data. The impact of market conditions on capital structure is also taken into account by examining interest rates. Interest rate is the average monthly Bank of England (BoE) rate that is observed over the 1-year period.

The stock returns for each company are estimated monthly, using the percentage change in consecutive closing prices adjusted for dividends, splits, and rights issues (Fama, Fisher, Jensen, & Roll, 1969). We measure abnormal returns using the market model. Practitioners prefer this as it is intuitive and easy to compute. It also has the additional econometric advantage of reducing the variance of abnormal returns, which leads to an increased ability to detect the outcome (Campbell, Lo, & MacKinlay, 1997). Abnormal returns are expressed on month t for stock i as:

$$AR_{i,t} = R_{i,t} - E(R)_{i,t} \tag{2}$$

where $R_{i,t}$ is the monthly return of the share i on day t; and $E(R_{i,t})$ is the expected return on stock i in month t, which is represented by the return on FTSE All-Share index.

Next the cumulative average abnormal returns (CAARs) on portfolios are estimated starting on May 1 each year. CAARs are calculated for the 12 months following the period of portfolio formation and use t tests (Brown & Warner, 1980; Campbell et al., 1997) for differences from zero, using the following equations:

$$CAR_{i,t} = \sum_{t=1}^{12} AR_{i,t} \tag{3}$$

$$CAAR_t = \frac{1}{n}\sum_{i=1}^{n}\sum_{t=1}^{12} AR_{i,t} \tag{4}$$

$$t = \frac{CAAR_T}{s(CAAR)_T} \tag{5}$$

where $s(CAAR_t) = s(AR_t)/(t+1)^{½}$; and $s(AR_t)$ is the variance over t months.

In equation 3 CAR_{it} represents the summation of the abnormal returns of each firm i for t, which is the 12-month period over which we cumulate the returns. Equation 4 represents the CAARs for n firms in our sample. Equation 5 gives the t statistic test, which is used to measure the statistical significance of the CAARs.

The next step is to determine whether CAARs at the firm level can be explained by firms' leverage. We also conduct a number of robustness tests. We repeat the exercise with subsamples based not only on leverage but also on size of the company (SIZE), price-to-book ratio (PTBV), price/earnings (P/E), and market risk (BETA). We construct portfolios from the intersection of the three leverage portfolio and three size portfolio assignments. We calculate the CAARs for each leverage/size portfolio. Similarly, we construct portfolios from the intersection of leverage and price-to-book ratio, leverage and price/earnings, and leverage and market risk and leverage portfolios.

The article also estimates equation 6 below first in the full sample. In equations 7 and 8, the estimations are carried out in the full sample with other firm characteristics.

$$CAAR_{i,t} = \alpha + \beta_1 leverage_{i,t} + \varepsilon_t \tag{6}$$

$$\begin{aligned} CAAR_{i,t} = {} & \alpha + \beta_1 leverage_{i,t} + \beta_2 size_{i,t} \\ & + \beta_3 MB_{i,t} + \beta_4 P/E_{i,t} \\ & + \beta_5 interest_t + \beta_6 risk_{i,t} + \varepsilon_t \end{aligned} \tag{7}$$

$$\begin{aligned} R_t = {} & \alpha + \beta_1 leverage_t + \beta_2 SMB_t \\ & + \beta_3 HML_t + \beta_4 MOMENTS_t + \varepsilon_t \end{aligned} \tag{8}$$

Equation 6 aims to examine the effect of leverage as the only explanatory variable on the CAARs

of firms. Stock returns can be influenced by other variables. We add those to the right-hand side of the regression equation to test the robustness of our results. In equation 7, we add other firm characteristics such as size, market risk, price-to-book, price/earnings, and a macroeconomic variable the interest rates as further determinants of stock returns. Considering that the firms might want to maintain an optimal capital structure, we use a two-stage least squares estimation method whereby we first predict the optimal capital structure using these variables and then use the predicted values of leverage as a determinant of abnormal returns. We conduct alternative estimations in panel using Generalized Method of Moments (GMM) estimators with whitening in the cross section [we repeat the estimations using OLS panel estimators. Results (not reported here) do not alter conclusions]. GMM estimators ensure that no assumptions are made about the variables' distributional properties, and take into account the dynamic nature of the relation (Campbell et al., 1997). We use firm fixed effects following Flannery and Rangan (2006) so as to account for the richness of firm-specific information [we repeat the estimations with random effects for the full sample and all subsamples, as well as industry fixed effects for the full sample. Results (not reported here) do not alter our conclusions].

It is well documented that the two factors of Fama and French (namely, SMB for size and HML for distress) and Carhart's momentum factors have an important influence on variation in stock returns. Thus, as our second robustness test we examine these three additional factors when estimating the relation between leverage and stock returns of the hospitality firms.

Equation 8 presents the relation between stock returns and leverage controlling for Fama-French and Carhart factors, where R_t is the monthly stock returns in excess of the risk-free rate in month *t*. The risk-free rate is the 1-month UK Treasury discount bill. The α stands for constant, leverage is the ratio of total debt to total equity plus debt, SMB (small minus big) is the size-mimicking portfolio, HML is the price-to-book-mimicking portfolio, and MOMENTS is the momentum-mimicking portfolio. SMB is the average return on three small portfolios minus the average return on three big portfolios. The portfolio SMB (small minus big) is meant to mimic the risk factor in returns related to size (Fama & French, 1993). The portfolio MOMENTS (high minus low) is meant to mimic the risk factor in returns related to momentum (Carhart, 1997). It is the difference each month between the simple average of the returns on the three high returns portfolios and the average of the returns on the three low returns portfolios. Thus, MOMENTS is the difference between the returns of the high and low returns stock portfolios.

Empirical Findings

The main aim of the study is to examine the effect of leverage on stock returns of hospitality firms. First, we rank the firms each year according to the leverage reported in their annual reports with year-end dates December 31. We then make annual portfolio assignments that are based on the leverage of the firm. We calculate abnormal returns for each leverage portfolio and test whether they are different from zero. We also conduct a number of robustness tests by repeating the exercise with subsamples based not only on leverage but also on size of the company (SIZE), price-to-book ratio (PTBV), price/earnings (P/E), and market risk (BETA). We also undertaken regressions using two-stage least squares and GMM.

Summary Statistics

Table 1 presents the summary statistics for the six variables: CAARs, leverage, size, price-to-book, price/earnings ratio, risk, and, interest rates. The sample's mean and the median CAARs are 0.37% and 0.51%, respectively. The distribution is dispersed with a standard deviation of 2.97% and a range between −13.04% and 10.19%. At 32.08% and 32.16%, respectively, the mean and median of the leverage are quite close. The standard deviation is 20.71%, with a range between 0% and 97.61%. The JB statistic indicates that there is nonnormality in the data set.

Leverage and Cumulative Average Abnormal Returns

Table 2 represents the CAARs for leverage portfolios. Leverage group 1 (low) contains firms with

Table 1
Summary Statistics

	CAARs	Leverage	Price/ Earnings	Price-to-Book	Market Value	Interest Rates	Risk
Mean	0.37	32.08	17.87	2.44	829.49	6.72	0.82
Median	0.51	32.16	15.45	1.39	167.27	5.92	0.76
Max	10.19	97.61	87.00	11.6	916.07	15.25	2.83
Min	−13.05	0	0	0.20	7.44	3.71	−0.63
SD	2.98	20.71	11.25	6.10	14.87	2.94	15.52
JB statistic	94.93	11.37	61.89	13.8	16.79	23.33	30.86

Summary statistics for our sample. We have a total of 464 year-end observations for a sample of 39 companies for the period 1988–2008. CAARs are returns accumulated from May of year *t* over a 1-year period. Leverage represents the total debt to total financing of the firm and is defined as in equation (1). The market value of firms represents the size factor. The price/earnings is the price divided by the earnings per share and is as of the beginning of May of year *t*. The price-to-book of firms is the share prices of firms divided by the net book value and is as of the beginning of May of year *t*. The market risk measure is the beta coefficient estimated over 5 years using monthly data and is as of the beginning of May of year *t.*

the lowest leverage; leverage group 2 (medium) consists of firms with medium leverage, whereas leverage group 3 (high) consists of firms with the highest leverage. Group 1 has an average leverage of 9.26%, group 2 has an average leverage of 31.59%, and in group 3 the leverage increases to 55.57%. Firms in the lowest group (low levered firms) earn CAARs of 0.36%, which are not significantly different from zero, the medium levered firms in group 2 earn 0.53%, and the highly levered firms in group 3 earn CAARs of 0.22%.

Leverage and Risk Sorted Portfolios

Table 3 reports CAARs for portfolios based on leverage as well as on risk. Abnormal returns increase as risk increases. Firms in the highest risk group and the medium levered firms earn excess returns of 0.72% while companies in the highest market risk and highest leverage group earn abnormal returns of 0.10%. Firms with high risk coefficients and low leverage levels earn abnormal returns of up to 0.73% while firms with low risk coefficients and high leverage earn abnormal returns as low as 0.60%. Firms with low market risk earn positive abnormal returns in most leverage levels, with higher abnormal returns for lower and medium debt levels.

Leverage and Size Sorted Portfolios

Table 4 reports CAARs of portfolios based on leverage and size. Abnormal returns decrease as firm size increases. Smallest firms earn a return

Table 2
Leverage and Cumulative Average Abnormal Returns (CAARs)

Leverage Groups	Average Leverage	CAARs
Low	9.26	0.36*
Medium	31.59	0.53*
High	55.52	0.22*

The 12-month holding period average leverage and CAARs for each leverage group for the full sample during 1988–2008. Leverage represents the total debt to total financing of the firm. We make portfolio assignments yearly from the beginning of May in year *t* to the end of April of year *t* + 1. Low represents the firms with the lowest leverage, Medium represents firms with medium leverage, and High represents firms with the highest leverage. Column 2 shows the average leverage for each group. Column 3 shows the average cumulative returns (CAARs) for each leverage group.

Table 3
Leverage and Risk

	Low Leverage	Medium Leverage	High Leverage	Grand Total
Low risk	0.12*	0.05*	0.60*	0.25
Medium risk	0.46*	0.63*	0.02	0.35
High risk	0.73*	0.72*	0.10*	0.51
Grand total	0.36	0.53	0.22	0.37

The results of the portfolios based on leverage and betas for 1988–2008. The market risk measure is the beta coefficients estimated over 5 years using monthly data and is as of the beginning of May of year *t*. We subdivide each leverage group into three risk sorted portfolios. *1% significance level.

Table 4
Leverage and Size

	Low Leverage	Medium Leverage	High Leverage	Grand Total
Small	0.44*	0.10*	0.25*	0.28
Medium	0.60*	0.81*	0.13*	0.53
Big	–0.83*	0.68*	0.26*	0.31
Grand Total	0.44	0.49	0.36	0.37

The results of the portfolios based on leverage and size for 1988–2008. Market value of companies represents the size factor of firms. Each leverage group is subdivided into three size portfolios. *1% significance level.

of 0.28%, medium-sized firms earn 0.53%, and the largest firms earn 0.31%. Small firms with medium leverage earn abnormal returns of 0.10% while small firms with high leverage earn returns of 0.25%. For medium levered firms, CAARs range from 0.10% to 0.68% as size increases small to big.

Leverage and Price-to-Book Sorted Portfolios

Table 5 presents the CAARs for portfolios based on leverage and price-to-book value (PTBV). Across all the leverage groups, CAARs increase with increase in PTBV in the low and medium levered firms. Firms with medium leverage and high PTBV earn 0.91%. Firms in the highest leverage and PTBV groups have abnormal returns not significantly different from zero. Firms with low leverage and high PTBV earn 0.82% CAARs while firms with high leverage and high PTBV earn 0.04%.

Table 5
Leverage and Price-to-Book

	Low Leverage	Medium Leverage	High Leverage	Grand Total
Low PTBV	–0.01	0.30*	1.12*	0.30
Medium PTBV	0.64*	0.42*	0.01	0.32
High PTBV	0.82*	0.91*	0.04	0.51
Grand Total	0.36	0.53	0.22	0.37

The results of the portfolios based on leverage and price-to-book ratio for 1988–2008. Each leverage group is subdivided into three price-to-book ratio portfolios (PTBV). *1% significance level.

Leverage and Price/Earnings Sorted Portfolios

Table 6 presents CAARs earned by portfolios formed on the basis of leverage and price/earnings (P/E). The results indicate that CAARs decrease as P/E increases. This result is in line with earlier studies where value stocks (with low P/E) outperform growth stocks (with high P/E) as value stocks offer a safe long-term investment. Companies in the lowest leverage and P/E group overperform the market with CAARs of 0.89%, firms with medium leverage and low P/E earn 0.78%, while firms with highest leverage and low P/E earn CAARs of 0.50%. For firms with highest leverage, CAARs decrease as P/E increases from low to high.

Regression Results

Table 7 reports the results of the two-stage least squares regressions for the full sample. In stage one we estimate the optimal capital structure using interest rates and firm-specific determinants as independent variables. In stage two we use the predicted values of optimal capital structure as the independent variable. We use firm level fixed effects, and coefficients for fixed effects are significant in all estimations. For the overall sample, two-stage least squares regressions reveal a negative and significant relationship between leverage and cumulative abnormal returns. Cumulative abnormal returns decline in leverage. A 1% increase in leverage is associated with a 0.01% decline in CAARs. The negative and significant coefficient on interest rates indicates CAARs are higher during periods of low interest rates. Although we account for the effect

Table 6
Leverage and Price/Earnings Ratio

	Low Leverage	Medium Leverage	High Leverage	Grand Total
Low P/E	0.89*	0.78*	0.50*	0.70
Medium P/E	0.15*	0.61*	–0.27*	0.18
High P/E	0.04	0.31*	0.33*	0.24
Grand Total	0.36	0.53	0.22	0.37

The results of the portfolios based on leverage and price/earnings (P/E) ratio for 1988–2008. The P/E ratio is the share prices of companies divided by the earnings per share. We subdivide each leverage group into three price-earnings ratio portfolios. *1% significance level.

Table 7
Regression Results for Firm Leverage

Overall Sample	C	Leverage	Price/ Earnings	Price-to-Book	Market Value (Size)	Interest Rates	Risk
Two-stage least squares	0.64	–0.01					
	(2.51)	(–1.25)					
	1.14	−0.01	0.01	0.01	−0.02	−0.09	0.43
	(1.78)	(−1.79)	(0.21)	(0.49)	(−0.24)	(−2.01)	(1.39)
GMM	0.87	−0.02					
	(2.90)	(−1.89)					
	7.28	−0.02	0.01	0.01	−1.01	−0.21	0.16
	(4.28)	(−1.88)	(0.80)	(0.33)	(−3.25)	(−4.43)	(0.43)

Our cross-sectional regression results on cumulative average abnormal returns (CAARs) and leverage, size, price-to-book ratios, price/earnings ratios, risk (beta), and interest rates. The sample comprises 464 observations of 39 companies for the period 1988–2008. Interest rates are as of the beginning of May of year *t* to the end of April of year *t* +1 and are averaged over the 12-month period. We use two-stage least squares and panel regression with GMM estimators and fixed effects for time with whitening in the period. We report *t* statistics for all coefficient estimates in parentheses.

of several idiosyncratic and macroeconomic risk factors, the negative effect of leverage on CAARs remains significant.

Table 7 also reports the regression results of GMM regressions for the full sample. We find that CAARs decline in leverage. For every 1% increase in leverage, CAARs will fall by 0.02%. The negative and significant coefficient on interest rates and size indicates CAARs are higher during periods of low interest rates. Although we account for the effect of several idiosyncratic and macroeconomic risk factors, the negative effect of leverage on CAARs remains significant.

Table 8 reports results for equation 8 using two-stage least squares when we include the Fama-French and Carhart risk factors. We find that returns fall by 0.03% for every 1% increase in leverage. The negative coefficient for SMB indicates that CAARs are higher for big firms and the positive and significant coefficient for HML indicates that returns are higher for high book-to-market firms.

Table 8 also reports the empirical results of equation 8 in the full sample when we include portfolio-mimicking risk factors in the regression model as control variables using GMM estimators. We find that returns fall by 0.03% for every 1% increase in leverage. The negative and significant coefficient on SMB indicates CAARs are higher for big firms and the positive coefficient on HML indicates that CAARs are higher for high book-to-market firms. Although we account for the effects of Fama-French and Carhart's portfolio-mimicking risk factors, the negative effect of leverage on CAARs remains negative and significant.

In this section, our results indicate that that it is possible to earn abnormal returns up to 0.53% by investing in hospitality firms with medium leverage. If investors were to invest in a portfolio of medium leverage and high risk it would yield investors a return of 0.72%; a portfolio of medium leverage and medium sized firms would yield a return of 0.81%. From the regression results, we also show that, regardless of the risk adjustments we make,

Table 8
Regression Results for Firm Leverage and Fama-French plus Carhart Factors

Overall Sample	C	Leverage	SMB	HML	MOMENTS
Two-stage least square	0.96	−0.03			
	(2.80)	(−2.47)			
	0.16	−0.03	0.10	0.16	0.03
	(0.24)	(−2.90)	(−1.43)	(3.27)	(0.91)
GMM	1.01	−0.03			
	(2.81)	(−2.55)			
	0.50	−0.03	−1.65	0.06	−0.01
	(0.54)	(−2.67)	(−3.92)	(0.57)	(−0.18)

Our regression results on stock returns and leverage, Fama-French and Carhart factor-mimicking portfolios for size (SMB), price to book (HML), and momentum (MOMENTS), respectively. The sample comprises 7,549 observations of 39 companies for the period 1988–2008. The *t* statistics are reported in parentheses.

estimated excess returns and firm leverage remain negatively related.

Conclusion

This study investigates the effect of leverage on stock returns in the hospitality sector. To our knowledge, this is the first empirical investigation on whether capital structure is value relevant to the equity investor in the hospitality sector. We integrate Modigliani and Miller's (1958) findings into an investment approach by estimating abnormal returns on leverage portfolios in the hospitality sector in the UK. The results indicate that leverage can explain stock returns. It is possible to earn abnormal returns up to 0.53% by investing in hospitality firms with medium leverage. Medium leverage hospitality firms with high market risk yield 0.72% while medium leverage and medium sized firms would yield a return of 0.81%.

Further contributions of this article include the use of several risk adjustments in examining the relation. We first use firm-level variables such as size, price/earnings ratio, market risk, and price-to-book ratio as well as interest rates that reflect the macroeconomic climate in addition to leverage while we examine the relation between leverage and stock return of hospitality firms. Additionally, we use factor-mimicking portfolios of Fama and French for size and distress and Carhart's momentum-mimicking portfolio, which are known to have an important influence on variation in stock returns to test the relation. Our results show that leverage has an inverse relation to abnormal returns in both the cases.

The hospitality sector is one of the most important drivers of the economy. Our results provide a useful framework for investors in the hospitality industry for earning abnormal returns on their equity investments. Our findings are especially important during the current crisis climate where there is a lot of discussion on the downside of debt financing. We show that the hospitality industry is in a unique position where medium leverage firms earn the highest abnormal returns for equity investors in this sector. In other sectors, either low or high leverage leads to high abnormal returns (Muradoglu & Sivaprasad, 2012a).

The results of this article will have far-reaching implications on the financing policy of the hospitality sector. The financial management of hospitality firms may need to identify novel ways of expanding the business without overstretching the levels of debt to high leverage in their particular industry. Also, this finding can be particularly useful for an astute hospitality investor who is able to accurately predict the economic fluctuations, and know when to buy and sell hospitality assets.

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References

Alon, H. (2001). The use of franchising by U.S.-based retailers. *Journal of Small Business Management*, *39*, 111–122.

Arditti, F. D. (1967). Risk and return on equity. *Journal of Finance*, *22*(1), 19–36.

Baker, S. H. (1973). Risk, leverage and profitability: An industry analysis. *Review of Economics and Statistics*, *55*(4), 503–507.

Bhandari, L. C. (1988). Debt/equity ratio and expected common stock returns: Empirical evidence. *Journal of Finance*, *XLIII*, 507–528.

Borde, S. (1998). Risk diversity across restaurants. *The Cornell Hotel & Restaurant Administration Quarterly*, *39*, 64–69.

Bowman, R. G. (1980). The importance of a market value measurement of debt in assessing leverage. *Journal of Accounting Research*, *18*(1), 242–254.

Brown, S., & Warner J. (1980). Measuring security price performance. *Journal of Financial Economics*, *8*(1), 205–258.

Campbell, J. Y., Lo, A. W., & MacKinlay, A. C. (1997). *The econometrics of financial markets*. Princeton, NJ: Princeton University Press.

Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of Finance*, *52*, 57–82.

Cave, J., Gupta, K., & Locke, S. (2009). Supply-side investments: An international analysis of the return and risk relationship in the Travel and Leisure sector. *Tourism Management*, *30*, 665–673.

Combs, J. G., & Ketchen, D. J. (1999). Explaining inter-firm cooperation and performance: Toward a reconciliation of prediction from the resource-based view and organizational economics. *Strategic Management Journal*, *20*, 867–888.

Delcoure, N., & Dickens, R. (2004). REIT and REOC systematic risk sensitivity. *The Journal of Real Estate Research*, *26*(3), 237–254.

Dimitrov, V., & Jain P. C. (2008). The value relevance of changes in financial leverage beyond growth in assets

and GAAP earnings. *Journal of Accounting*, *Auditing and Finance*, *23*, 191–222.

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, *10*(1), 1–21.

Fama, E. F., & French, K. (1992). The cross section of expected stock returns. *Journal of Finance*, *47*(2), 427–465.

Fama, E. F., & French K. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*, 3–56.

Flannery, M. J., & Rangan, K. (2006). Partial adjustment towards target capital structures. *Journal of Financial Economics*, *79*, 469–506.

Gomes, J. F., & Schmid, L. (2010). Levered returns. *Journal of Finance*, *65*(2), 467–494.

Gu, Z., & Kim, H. (2002). Determinants of restaurant systematic risk: A reexamination. *The Journal of Hospitality Financial Management*, *10*(1), 1–13.

Guilding, C. (2003). Hotel owner/operator structures: Implications for capital budgeting process. *Management Accounting Research*, *14*, 179–199.

Hall, M., & Weiss, L. (1967). Firm size and profitability. *The Review of Economics and Statistics*, *49*(3), 319–331.

Hamada, R. S. (1972). The effect of the firm's capital structure on the systematic risk of common stocks. *Journal of Finance*, *27*(2), 435–452.

Harris, P. J., & Brander Brown, J. (1998). Research and development in hospitality accounting and financial management. *International Journal of Hospitality Management*, *17*, 161–181.

Horsky, D., & Swyngedouw, P. (1987). Does it pay to change your company's name? A stock market perspective. *Marketing Science*, *6*(4), 320–335.

Hsu, L. T., & Jang, S. (2009). Effects of restaurant franchising: Does an optimal franchise proportion exist? *International Journal of Hospitality Management*, *28*(2), 204–211.

Jang, S., & Tang, C. (2009). Simultaneous impacts of international diversification and financial leverage on profitability. *Journal of Hospitality & Tourism Research*, *33*(3), 347–368.

Jeon, S., Kang, I., & Lee, S. (2004). The relationship between persistence of abnormal earnings and usefulness of accounting information in hotel companies. *Tourism Management*, *25*, 735–740.

Jeon, S., Kim, J., & Lee, S., (2006). The persistence of abnormal earnings and systematic risk. *Tourism Management*, *27*, 867–873.

Kim, H., & Gu, Z. (2005). A preliminary examination of determinants of CEO cash compensation in the U.S. restaurant industry from an agency theory perspective. *Journal of Hospitality & Tourism Research*, *29*(3), 341–355.

Kim, H., Gu, Z., & Mattila, S. (2002). Hotel real estate investment trusts' risk features and beta determinants, *Journal of Hospitality & Tourism Research*, *26*(2), 138–154.

Kim, W., Ryan, B., & Ceschini, S. (2007). Factors affecting systematic risk in the US restaurant industry. *Tourism Economics*, *13*(2), 197–208.

Korteweg, A. (2010). The net benefits to leverage, *Journal of Finance*, *65*(6), 2137–2170.

Lee, J., & Jang, S. (2007). The systematic-risk determinants of the US airline industry. *Tourism Management*, *28*(2), 434–442.

Madanoglu, M., Lee, K., & Catrogiovanni, G. J. (2011). Franchising and firm financial performance among U.S. restaurants. *Journal of Retailing*, *87*(3), 406–417.

Mandelker, N., & Rhee, S. (1984). The impact of the degree of operation and financial leverage on systematic risk of common stock. *Journal of Financial and Quantitative Analysis*, *19*(1), 45–57.

Melicher, W. (1974). Financial factors which influence beta variations within a homogeneous industry environment. *Journal of Financial Quantitative Analysis*, *9*(2), 231–241.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, *48*(3), 261–297.

Muradoglu, G., & Sivaprasad, S. (2012a). Using firm level leverage as an investment strategy. *Journal of Forecasting*, *31*(3), 260–279.

Muradoglu, G., & Sivaprasad, S. (2012b). Capital structure and abnormal returns. *International Business Review*, *21*(3), 328–341.

Nicolau, J. L. (2005). Leveraging profit from the fixed variable cost ratio: The case of new hotels in Spain. *Tourism Management*, *26*, 105–111.

Phillips P. A., & Sipahioglu, M. A. (2004). Performance implications of capital structure: Evidence from quoted UK organizations with hotel interests. *The Services Industries Journal*, *24*(5), 31–51.

Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance*, *50*(5), 1421–1460.

Schwartz, E. (1959). Theory of the capital structure of the firm. *Journal of Finance*, *14*(1), 18–39.

Sheel, A. (1994). Determinants of capital structure choice and empirics on leverage behavior: A comparative analysis of hotel and manufacturing firms. *Journal of Hospitality & Tourism Research*, *17*(3), 1–16.

Shin, Y. H., Hancer, M., Leong, J., & Palakurthi, R. (2010). An investigation of systematic risk determinants in the casino industry. *Tourism Analysis*, *15*(6), 689–700.

Singh, A. (2009). The relation between interest rate derivatives, debt maturity structure, and exposure in the lodging industry. *Journal of Hospitality & Tourism Research*, *33*(3), 391–416.

Skalpe, O. (2003). Hotels and restaurants-are the risks awarded? Evidence from Norway. *Tourism Management*, *24*, 623–634.

Srinivasan, R. (2006). Dual distribution and Intangible firm value franchising in restaurant chain. *Journal of Marketing*, *70*(3), 120–135.

Tarras, J. M. (1991). *Practical Guide to Hospitality Finance*. New York: Van Nostrand Reinhold.

Wembridge, M., & Blitz, R. (2011, November 25). Thomas Cook plunges on debt concerns. *Financial Times*.