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## The real estate risk of hospitality firms: Examining stock-return sensitivity to property values

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#### ABSTRACT

The value of a hospitality firm is often believed to be dependent on the market price of the properties they own. However, the core business of a hospitality firm is the production of products and services. Since the real estate assets are depreciated throughout their useful life, short-term covariance of firm value with real estate prices seems implausible. Using a two-factor model, the current study examined the real estate exposure of US hospitality firms through daily stock return data from 2005 to 2009. Results indicate that the majority (88%) of the hospitality firms were exposed to real estate risk at some point during the sample period, while the second-stage analysis of real estate betas suggests that exposure is conditional on the financial status of the hospitality firm. Implications and suggestions for future research are presented with the findings of the study.

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#### 1. Introduction

Real estate is an essential asset for hospitality businesses. The extent to which a business uses its real estate is directly linked with the production capacity and demand accessibility of all hospitality firms. In order to expand sales, a hospitality firm must increase real estate inputs at a certain point. Further, to tap into remote demand hospitality firms must acquire or lease real estate at the geographic location of interest.

Accordingly, many researchers have proposed that the value of hospitality firm is dependent on the value of their properties. For example, Gyourko and Keim (1993) posited that stock returns on vacation and restaurant businesses should be related to real estate returns since the companies own valuable properties. Parrino (1997) argued that Marriott's unfavorable financial status in the 1990s was due to a decline in operating cash flows and a weak market in the properties it owned. Ling and Naranjo (1999) implicitly suggested that returns on hotels and motels are related to property appreciation returns. More recently, Newell and Seabrook (2006) asserted that hotels comprise both a business and a property risk.

Formally, the supposition that a hospitality firm's value is correlated with property prices can be interpreted as the firm's *exposure* to real estate risk. The return series on real estate assets is generally regarded as exhibiting random walk behavior (Kleiman et al., 2002). If the firm value is influenced by random changes in the price of assets it owns the firm would be perceived as susceptible to this specific uncertainty or risk, hence being *exposed* to the asset price of interest (Adler and Dumas, 1984). With real estate risk exposure, the stock returns of hospitality firms become a function of the real estate return factor, as well as other random return-generating factors.

However, as intuitive as the above reasoning may seem a critical question remains. Hospitality firms' real estate assets are primarily deployed to produce the products and services that constitute their core business and generate recurrent earnings. The acquisition and construction of properties are based on the premise that these book assets will be depreciated throughout their useful life in order to generate cash flow from operating activities (Dalbor and Upneja, 2004; Upneja and Dalbor, 1999) just as manufacturing firms utilize their property, plant, and equipment. Since hospitality firms have rather long depreciation schedules or lease agreements, temporary (i.e. daily) shifts in property prices do not affect a firm's balance sheet (book value of assets) or income statement (user cost of capital).

Thus, a theoretical gap is identified. If the core business of hospitality firms requires the use of real estate as factor inputs, temporary variations in the market price of properties should not affect firm value. Theoretically, a firm could sell its real estate assets if the realization of the sale was more desirable than the expected operating cash flows from utilizing the asset. However, this is not expected to significantly influence firm value, as valuation of the hotel is likely to be made based on the sum of future cash flows it

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Table 1		
Sample	industry	grounings

Industry	NAICS	No. of firms	Average real estate holdings (\$ millions)	% Total assets	
Hotel firms					
Hotels	721110	8	1995	63.15	
Casinos and Casino hotels	721120/713210	12	1613	65.17	
Restaurant firms					
Full service restaurants	722100	26	1604	65.64	
Limited-service restaurants	722211	11	2268	63.45	

provides through operations (Corgel and deRoos, 1993). Moreover, if hospitality firms do not carry real estate assets with the primary objective of selling them at a profit, firm value should not be systematically related to the market price of these assets. Thus, in an asset-pricing scheme, unexpected returns from property transactions, such as gains from salvage value, are best explained by the abnormal return (*alpha*) rather than exposure to systematic risk (*beta*).

Meanwhile, the limited empirical evidence to date allows only an inconclusive perspective. Using national data from Singapore, Ong and Yong (2000) found that hotels and restaurants had the highest positive (increasing returns from property appreciation) real estate exposure among non-real estate industries. On the other hand, using U.S. data, Hsieh and Peterson (2000) reported that the lodging industry was not exposed to real estate risk, while the restaurant industry was negatively exposed (decreasing returns from property appreciation). Nevertheless, understanding this prominent risk is important. If the returns on hospitality firms are correlated with property prices, corporate financial managers should take the variations in property prices into consideration, as the firm values would be dependent on the random movements of the real estate market. Furthermore, since real estate risk is likely to be systematic (Tuzel, 2010), valuation by investors and portfolio managers of a firm's capital assets would be dependent on real estate prices.

Therefore, this study intends to fill in this theoretical and evidentiary gap by examining hospitality firms' exposure to real estate risk and the potential determinants of exposure. Specifically, the objectives of this study were to (1) examine individual and time-variant exposure of hospitality firms to real estate risk at the firm-level and (2) test potential determinants of real estate exposure based on hypotheses developed from a review of the previous literature. Implications, limitations, and suggestions for future research are discussed along with the findings of the study.

#### 2. Literature review and hypotheses

#### 2.1. Real estate as a systematic risk

Real estate accounts for a significant portion of corporate wealth. On average, real estate accounts for 25% of firms' net worth and 19% of total corporate assets at historic cost (Laposa and Charlton, 2001). Further, 30% of all companies own their land and buildings rather than to lease them (Brounen and Eichholtz, 2005). Regardless of size, age, and sector, all firms use real estate in one way or another. Manufacturing firms deploy real estate to accommodate their inventory, production equipment, and finished goods, whereas hi-tech industries need real estate to house research facilities and staff. On balance sheets of any firm, real estate assets are listed under the long-term asset category. Similarly, a company's income statement accounts for the real estate 'costs' in generating revenue through such items as depreciation, occupancy expenses, or rental expenses (Tuzel, 2010).

Because real estate is a common asset category across all industries and businesses, many distinguish it as a source of systematic risk (He, 2002). If all firms own the same type of asset, it seems convincing that exposure to this risk is non-diversifiable. Drawing on the efficient market hypothesis (Fama, 1970) and the arbitrage pricing theory (Ross, 1976; Roll and Ross, 1980) and assuming that real estate returns are random (Kleiman et al., 2002); this implies that a firm's returns are generated by the real estate factor as well as a number of other non-diversifiable risk factors:

$$r_{i,t} = r_{f,t} + \sum \beta_{i,k} F_{k,t} + \beta_{\text{RE}} R_{\text{RE},t}$$
(1)

where  $r_i$  is the return on hospitality firm *i* stock,  $r_f$  the risk-free rate of return,  $F_1 \sim F_k$  the *k* common return-generating factors,  $\beta_{1,1} - \beta_{i,k}$  the firm-specific exposures to the *k* risk factors,  $R_{\text{RE}}$  the return from real estate,  $\beta_{\text{RE}}$  the exposure to real estate risk, and *t* the time subscript.

Consequently, a number of studies have tested the role of real estate risk in asset pricing, or equivalently, the significance of  $\beta_{RE}$ . Testing with a single-factor model, Liu et al. (1990) first reported the existence of real estate risk premium in the market. Mei and Lee (1994) provided evidence for a significant real estate factor premium in addition to stock and bond factors. Hsieh and Peterson (2000) revealed the systematic relation between stock returns and REITs returns between 19 out of 53 industries in the U.S. He (2002) found that there is a sixth real estate factor, in addition to the three stock factors: market, size, book-to-market, and two bond factors: term structure and default risk, of Fama and French (1993). Kullmann (2001) and He (2002) reported that the explanatory power of multifactor asset-pricing models improves when the real estate factor is added. More recently, Tuzel (2010) found higher industry-adjusted returns on firms with more real estate holdings, after accounting for the Fama-French stock factors and the momentum factor (Jegadeesh and Titman, 1993; i.e. the inertia of stock performance proxied by a zero-investment portfolio constructed from a long position on stocks that have performed well in the past and from a short position on stocks that have performed poor in the past).

Consequently, there seems to be a general consensus on the role of real estate risk as a return-generating factor. Further, given that the risk is common (Hsieh and Peterson, 2000), much of corporate wealth is concentrated in real estate (Kullmann, 2001), and essentially a macroeconomic risk is also theoretically appealing to categorize real estate risk as non-diversifiable (He, 2002).

Yet there is still a missing link. Even though real estate risk is priced in the market, in terms of providing higher returns it is not risk but exposure that is relevant in the asset-pricing scheme. To date, studies have implicitly assumed that having more real estate will increase exposure to real estate risk (Tuzel, 2010; Hwa, 2006). This may seem intuitive, but it leaves room to consider additional determinants of real estate exposure.

Evidence also supports this notion, as Hsieh and Peterson (2000) failed to find that the lodging industry was exposed to real estate risk. If real estate exposure was governed solely by the real estate holdings of a firm, hotel firms would be among the most exposed industries. However, at the industry level hotel firms did not show significant exposure, whereas the restaurant firms showed a surprising net negative exposure despite their sizable real estate holdings (see Table 1). In turn, we deduced three

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