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The Impacts of COVID-19 on Capital Structure Determinants of Hotel Real Estate Investment Trusts

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ABSTRACT

Real estate investment trusts (REITs) are responsible for more than 75% of the hotel ownership structure in the USA. The effects of COVID-19 restrictions on hotel REITs were devastating due to the unpredictability of revenues and cash flows, directly impacting managerial decisions on how to adapt REITs' capital structure quickly. This paper used quarterly hotel REIT financial data of the 18 most representative US H-REITs from January 2015 through December 2020 to understand the moderating effects of COVID-19 on hotel REITs' capital structure determinants. Analyzing a panel data of 472 observations, this study found robust empirical evidence that confirms COVID-19 moderates the relationships between hotel REITs' capital structure and its determinants. Adapting constructs from the pecking order theory and trade-off theory, this study found that hotel REITs' capital structure determinants were different during the COVID-19 pandemic. The results, theoretical contributions, and managerial implications were explored in the final section.

Keywords: hotel real estate, capital structure, COVID-19, hotel REIT, real estate investment trust, REIT

Introduction

The adoption of the real estate investment trust (REIT) ownership structure by the US hotel and lodging industry has gained increasing relevance over the past decades (Paek et al., 2020; Jain et al., 2017). By the year 2000, the number of hotel and lodging real estate investment trusts (H-REITs) accounted for less than 50% of the total publicly listed hotel and lodging corporations (Kim & Jang, 2012). Twenty years later, this number raised to nearly 75%, considerably increasing its relevance in the vast array of hospitality-related investment portfolios (Akinsomi, 2020). Moreover, H-REITs have experienced steady and robust growth in market value since 1993 (Almudhaf, 2018), achieving a record high by January 2020, nearing \$100 billion in equity market capitalization, according to the National Association of Real Estate Investment Trusts (NAREIT). However, since the beginning of the COVID-19 pandemic in February 2020, the market equity value of all US publicly listed

H-REITs experienced a historical drop of more than 50% devaluation, being evaluated at \$ 49.15 billion by the end of September 2020 (Nareit, 2020).

Not differently from other sectors' REITs (i.e., office, industrial, retail, residential, self-storage, commercial, and others), the H-REIT market has been severely affected by the COVID-19 outbreak. Recent studies focused on the impacts of COVID-19 in the US economy have suggested devastating consequences. Estimations expect at least \$2.14 trillion of losses in the US GDP, considering only the economic cost during the first months of fighting the pandemic (Makridis & Hartley, 2020). Furthermore, the number of job losses achieved higher numbers than during the entire Great Recession, exceeding 20 million job losses by April 2020 (Coibion et al., 2020).

Contrasting to other studies investigating the impacts of crisis on firms' capital structure determinants (Morri & Parri, 2017; Jaafar et al., 2019), the unprecedented impacts of the COVID-19 pandemic on the hospitality sectors merits more in-depth

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investigation. The hospitality and the tourism-related industries are among the most impacted sectors (Fernandes, 2020). Government mandates for safety, including stay-at-home orders, cross-border closures, restrictions of public gatherings and citizens' mobility, and mandatory curfews have caused the most severe disruption in the tourism industry since World War II (Gössling et al., 2020). Mobility restriction and lockdown implementation have deeply affected the general economy and, even more severely, hotel and lodging corporations (Ozili & Arun, 2020). Smith Travel Research reports that by June 2020, 60% of open hotel rooms were empty, and there is a projection of more than 50% in revenue losses in 2020, compared to the previous year. (STR, 2020). This significant and negative effect on hotel revenues, profits, and cash flow limit hotels' ability to pay rent, debt interest, and bank services.

H-REITs differ from other REITs because the revenues originating from the underlying assets (i.e., hotels and lodging operations) are considered more volatile than other commercial properties such as multi-family residential homes, business offices, shopping malls, or retail stores (Jain et al., 2017). For this reason, the impact of the COVID-19 pandemic on H-REIT markets can be more severe and devastating than in other REITs in which underlying assets are invested in less volatile sectors. Moreover, revenue volatility increases the unpredictability of cash flows, making REITs capital structure decisions even more critical (Harrison et al., 2011) due to increasing the risks associated with firms' debt leverage. Understanding the risks associated with the capital structure decision, and how these determinants are affected by crises, catastrophes, and unprecedented extreme situations that can abruptly and unexpectedly affect the revenue generation, such as the COVID-19 pandemic, is crucial not only to REIT investors aiming for higher returns, but especially for regulators, lawmakers, and all real estate sector stakeholders that could be affected by the market volatility during difficult times.

Although past researchers have explored the effect of crises on REITs' capital structure determinants (Morri & Parri, 2017), H-REITs' focus is yet to be unveiled. The effects of the pandemic, especially in the hospitality sector, have potentially

changed the way how H-REIT financial managers decide how to leverage their portfolios. To fill this gap, the purpose of this study is to understand the effects of COVID-19 on capital structure determinants through an analysis of the most representative H-REITs listed in US markets. In this sense, the current study's primary goal is to provide a detailed assessment of the capital structure determinants of US publicly listed H-REITs from 2015 to 2020, a period that does not include other financial crisis or extreme lockdown situations in the USA other than the COVID-19 pandemic. This investigation's findings will help investors, hospitality-related stakeholders, and academicians better understand the factors influencing H-REITs' capital structure decisions and the role that disease pandemics can play in this type of decision.

Literature Review

REITs' Capital Structure

Capital structure is the mix of equity and debt on a firms' operation, which optimizes the tradeoff of three main variables: (1) the tax advantages of debt financing; (2) the increase of REITs' financial performance and return on equity; and (3) the potential risks of a significant rise of debt costs due to financial distress (Howe & Shilling, 1988). A considerable number of researchers have dedicated their work to study the consequences of REITs' capital structure decisions (Howe & Shilling, 1988; Feng et al., 2007), evaluating, for example, capital structure impacts on REITs' leverage, profitability, and market-to-book ratios (Harrison et al., 2011). Several other academicians have investigated the financial crisis' impact on REITs' value and performance (Philippas et al., 2013; Sun et al., 2015; Dimovski et al., 2017; Shen et al., 2020), including the periods of the terrorist attacks of 2001 and the SARS epidemic (Sarheim, 2006). Besides, investigating the determinants of REITs' capital structure during the economic crisis has also been the primary goal of other scholars, such as Morri and Parri (2017). More specifically, within the hotel and lodging realm of H-REIT literature, finance and hospitality scholars have focused on the analysis of H-REITs' risk-return

relationships (Kim et al., 2002; Kim & Jang, 2012), on H-REITs' market microstructure properties during pre- and post-financial crisis (Jain et al., 2016), and on the benefits of having institutional investors for H-REITs' firm value (Paek et al., 2020). However, to the authors' best knowledge, there is no evidence of empirical investigation of how H-REITs capital structure can influence their market value and the role a severe crisis or disease pandemic plays in this relationship.

Hotel and Lodging Real Estate

Recent statistics from the AHLA (2022) indicate that there are approximately 5 million hotel rooms and 54,200 hotels in the United States, generating \$185 billion in annual revenue. However, research related to the hotel and lodging industry's real estate aspects is still understudied, and it can be considered an emerging area of academic literature in the field of commercial real estate (Manning et al., 2018). Furthermore, real estate research has historically focused on the traditional forms of properties (i.e., office buildings, shopping malls, commercial centers, industrial buildings, residential apartment complexes, and other fixed asset forms), being a relatively unexplored field in the hotels, resorts, vacation homes, second homes, sharing economy and other lodging-related real estate properties. For this reason, there is a consensus in the hospitality academia that while hotels and other lodging properties represent a significant portion of the entire real estate industry, there is still limited research focusing on real estate scholarship within hospitality-related programs (Manning et al., 2015; Manning et al., 2018).

Hotel and lodging real estate is considered a unique class of investment asset because it embraces a mix of both operating (i.e., housing and retail activities) and real estate investments. For example, while hotel real estate is composed of investments in land, buildings, fixtures, equipment, and even furniture; its operations also require investments in inventories, working capital, labor, specialized management companies, and ongoing marketing strategies more similar to a retail type of investment. In this sense, hotel real estate investments are more closely related to retail, business, and service types of investment

than they are to pure residential property investments (Manning et al., 2015).

Hotel and Lodging REITs

Despite the limited research on real estate in the realm of hotel and lodging operations, hospitality and real estate scholars have conducted more investigation on H-REITs. Generally, REITs are defined as "any corporation, trust or association that acts as an investment agent specializing in real estate and real estate mortgages" (CCH, 2008, p. 681). REITs should mandatorily distribute at least ninety percent of their income to shareholders and typically own and operate income-producing commercial real estate (NAREIT, 2020). For this reason, REITs' ownership structures are exempt from corporate taxes to avoid double taxation on owner and corporation income (CCH, 2008). This fiscal advantage encouraged investors to explore H-REITs as a tax-efficient structure to carry hotel and lodging assets, indicating a common form of hospitality asset ownership (Liu, 2010). According to Manning et al. (2015), H-REITs enable researchers to understand better the value of hotel properties and related investment trends.

One example of previous research focus on H-REITs is the study by Beals and Singh (2002), in which they provide interesting historical information on the evolution of equity REITs as an advantageous structure to finance the US lodging assets. Kim et al. (2002) revealed that H-REITs have a significant underperformance and bring more risk than do other REITs subsectors. This latter result is consistent with Jackson's (2009) findings, confirming that H-REITs consistently underperform retail and other commercial-related REITs and have a higher crash risk during financial hardships (An et al., 2016). Adding fuel to the revelations of market underperformance of H-REITs, Chung et al. (2012) used stochastic frontier analysis to attest H-REITs as the most operationally inefficient category of REITs. Moreover, Almudhaf (2018) confirmed the high possibility of multiple bubbles and explosive behavior in H-REIT prices and price-dividend ratio. Less pessimistic, Kim et al. (2011) conducted a performance comparison of H-REITs, hotel C-Corps, and casinos, highlighting the advantages of diversification

strategy in real estate investors' portfolios. Also, Jain et al. (2017) concluded that H-REITs presented a quick recovery of performance, trading volume, and liquidity compared with traditional REITs in both pre- and post-periods of the 2008 real estate crisis.

Theoretical Background

The theoretical backbone of this study relies on the previous theories to investigate firms' capital structure: the pecking order theory (POT), proposed by Myers and Majluf (1984), and the trade-off theory (TOT), developed by Modigliani and Miller (1958). Scholars have embraced both frameworks as the theoretical protagonists of several investigations related to capital structure determinants (Kurzrock et al., 2011; Kumar et al., 2017; Morri & Jostov, 2018; Sutarka et al., 2018). Even though REITs have no benefit of the tax shield (Harrison et al., 2011), REITs can issue debt as a source of financing (Feng et al., 2007). As a consequence, REITs should distribute high dividends to shareholders to get the benefit of tax exemption, and the POT and TOT frameworks have also immensely contributed to explain their leverage determinants (Brown & Riddiough, 2003; Ott et al., 2005; Morri & Artegiani, 2015; Morri & Parri, 2017; Abdul Rahim et al., 2021).

Capital structure theories have been used to analyze the optimal balance between debt and equity to finance a firm's operations. Historically, capital structure theories are employed to support the investment decisions of the best mix between debt and equity of a firm, considering the tradeoff between the tax-shield advantaged risks of a potential increase in debt costs. According to Morri and Parri (2017), both TOT and the POT are the most used theories to explore firms' capital structure decisions. Since the investments in real estate properties demand intensive capital, the capital structure's decision is highly relevant for the REIT industry. To this end, several scholars have investigated the determinants of capital structure on REITs based on TOT and POT, and also considered how the financial crisis has impacted firms' capital structure strategies and decisions (Jaafar et al., 2019).

Discussions of capital structure within the corporate finance literature traditionally adopt TOT to explain the relationship between marginal debt

tax shield and marginal bankruptcy costs. The TOT of capital structure, first developed by Modigliani and Miller (1958), considers a positive relationship between firms' market value and their capital structure, meaning that the more leverage the firm is, the higher its equity value. However, a question could be raised if a firm decides to leverage 100% of its capital structure. Under this perspective, authors have agreed that an optimum balance between leverage benefits (tax deductibility, increased returns on equity) and risks (bankruptcy, high agency costs) should be taken into consideration when deciding the best capital structure (Morri & Parri, 2017).

According to the POT, managerial decisions over capital structure follow a "preference order" (Myers, 1977). For most firms, internal financing is preferable over external funding, and among external financing options, the debt financing options are preferable over any type of equity financing. Furthermore, the POT defines capital structure decisions based on asymmetric information, free cash flow, and agency costs (Myers & Majluf, 1984). Several studies found empirical evidence that corroborates the applicability of POT on firms' capital structure decisions (Rovolis & Feidakis, 2014).

REITs are regulatorily mandated to distribute at least 90% of their revenues to shareholders. For this reason, REITs are allowed a tax exemption to avoid double taxation. Hence, the debt tax-shield and information asymmetries, previously indicated by TOT and POT, could not be applied to REITs' capital structure decisions. Although REITs have no tax-shield benefits on raising leverage, Harrison et al. (2011) argued that TOT is the most relevant theory explaining REITs' capital structure decisions. Furthermore, other investigations confirmed that TOT and POT, and the explanatory variables that influence financial leverage, have a significant and robust influence on REITs' capital structure decisions and impact on equity value (Morri & Parri, 2017; Zarebski, & Dimovski, 2012).

Two major factors influenced the model's selection of specific theories and variables. To begin, an analysis of the most influential factors influencing real estate investment vehicle financing decisions was conducted, as well as an analysis of the most influential studies conducted in previous years with reference to the specific issue (Brown & Riddiough,

2003; Ott et al., 2005; Kurzrock et al., 2011; Morri & Jostov, 2018; Kumar, 2007; Abdul Rahim et al., 2021). Also, the variables chosen were those that have been demonstrated to be economically and statistically significant in such research (Morri & Artegiani, 2015; Morri & Parri, 2017; Sutarka et al., 2018). In this sense, this study will examine their applicability to the US H-REITs sector, as well as the unprecedented effects of the COVID-19 pandemic on their ability to drive financing decisions. The H-REIT leverage ratio was chosen as the dependent variable because it is similar to the loan-to-value ratio, a key measure widely used in property financing. According to the two aforementioned theories, the explanatory variables are “profitability,” as measured by the EBIT-to-total assets ratio, which indicates an HREIT’s ability to generate operating profit from its investments; “interest coverage,” as measured by the EBITDA/interest expense on debt (Dogan et al., 2019), which indicates a company’s ability to pay interest on outstanding debt; and “tangibility of assets,” as measured by the tangible fixed assets-to-total assets ratio, which indicates the presence of tangible fixed assets. Finally, COVID-19 is a dummy variable that is included in the model to determine whether the pandemic had a direct impact on H-REITs’ financing decisions and the magnitude of that impact.

Hypotheses Development

In addition to TOT and POT, which provided the theoretical support for defining the variables that are associated as determinants of capital structure, this study also took into consideration one of the most utilized utility theoretical frameworks in behavioral economics and behavioral finance: the risk aversion theory. First introduced by Bernoulli (1738), behavioral economic scholars such as Pratt (1964) and Arrow (1965) provided empirical evidence that individuals tend to be risk averse. Following this idea, the hypotheses development of this study also assumes that H-REIT decision makers, especially in periods of crisis, take risk averse decisions. In this case, risk aversion refers to the manager’s financial decision to minimize the firm’s overall risk, including the risk associated with issuing debt to finance investment opportunities, resulting in lower debt but higher retained earnings (Coudert & Gex, 2008).

More recent studies exploring economic crisis also employed the risk aversion theory to explain their proposed relationships in firms’ capital structure decision making. For example, Abdeldayem & Sedeek (2018) found strong support to argue that risk averse managers differ from non-risk averse managers in terms of the leverage level at which their firms operate, as risk averse managers typically operate at a lower leverage ratio. Guiso et al. (2018) tested risk aversion theory during the economic crisis of 2008, finding that, following the crisis, both qualitative and quantitative measures of risk aversion significantly increased, significantly affecting individuals’ investment decisions. Also, Chang et al. (2019) employed the risk aversion theory to specifically explore capital structure decision making. In their study, correlation and regression econometric models were adopted to investigate the relationship between profitability, growth potential, and size. They hypothesized that high profitability, growth, and size refers to a lower level of risk in capital structure decisions. Their study discovered a significant negative relationship between leverage and profitability in Taiwan, Korea, and Hong Kong, but a significant positive relationship between growth and leverage in each country.

During periods of uncertainty and reduced cash flows, such as the COVID-19 crisis, managerial risk aversion can be a critical predictor for the leverage decisions of the firm (Adeneye & Chu, 2020). Managerial risk aversion decisions during economic crisis are more prone to increase the use of all-equity financing instead of debt (Iqbal & Kume, 2014). For example, Romano et al. (2001) found strong evidence that risk aversion assumes prominence in the managerial financing decisions.

Therefore, this study found support on behavioral economic and behavioral finance theory of risk aversion to propose that the uncertain environment created by the COVID-19 pandemic had negatively affected the relationship between H-REITs’ capital structure determinants and its leverage. Therefore, in order to analyze the overall moderating effect of COVID-19 in the relationships between H-REITs’ leverage and its capital structure determinants, the following hypothesis is proposed:

- H1. The COVID-19 pandemic negatively affected the relationship between H-REITs capital structure determinants and H-REITs’ leverage;

To measure the individual moderating effects of COVID-19 in the relationship between H-REITs' leverage and each one of the proposed capital structure determinants, the following hypotheses are proposed:

- H2a. The COVID-19 pandemic negatively affected the relationship between H-REITs' profitability and H-REITs' leverage.
- H2b. The COVID-19 pandemic negatively affected the relationship between H-REITs' tangibility of assets and H-REITs' leverage.
- H2c. The COVID-19 pandemic negatively affected the relationship between H-REITs' growth potential and H-REITs' leverage.
- H2d. The COVID-19 pandemic negatively affected the relationship between H-REITs' company size and H-REITs' leverage.
- H2e. The COVID-19 pandemic negatively affected the relationship between H-REITs' interest coverage and H-REITs' leverage.

Methodology

Based on TOT and POT theories, and in order to explain capital structure determinants, this study adopted the financial leverage as the dependent variable. Financial leverage is the most meaningful variable when measuring firms' capital structure (Harrison et al., 2011). Financial leverage is the debt-to-total assets ratio measured at book values for the purpose of this paper. Indeed, this type of ratio is more critical when considering REITs' financing decisions, while the debt-to-equity ratio may be an appropriate measure when considering accounting.

Following Rovolis and Feidakis's (2014) study employing both TOT and POT theoretical background to evaluate the impact of economic factors on REITs' capital structure around the world, and Morri & Parri's (2017) study investigating US REITs' capital structure determinants and economic crisis effects, this study proposes the following dependent and independent variables:

Dependent variable:

- H-REIT leverage = total liabilities/total assets. This variable has been used by many authors in similar studies (Qureshi & Azid, 2006; Morri & Beretta, 2008; Dang 2011; Rovolis &

Feidakis 2014; Morri & Artegianni, 2015; Morri & Parri, 2017).

Independent variables:

- H-REIT profitability = EBIT/total assets. EBIT is the measure for earnings before interest and taxes. It measures the capability of firm operating activities to generate profit. Profitability is considered a good approximation of the net operating income and is a key metric used in real estate investments (Qureshi & Azid, 2006; Morri & Beretta, 2008; Dang 2011; Rovolis & Feidakis 2014; Morri & Artegianni, 2015; Morri & Parri, 2017).
- H-REITs' tangibility of assets = tangible fixed assets/total assets. This ratio measures the relationship between fixed assets and total assets. A high ratio means that some of the fixed assets are financed through debt. This proxy was used by Rajan and Luigi (1995), Qureshi and Azid (2006), Morri and Beretta (2008), Dang (2011), Rovolis and Feidakis (2014), Morri and Artegianni (2015), and Morri and Parri (2017).
- H-REITs' size = natural logarithm of total assets at book value. It is acknowledged by both TOT and POT, that larger firms tend to make greater use of debt. Total assets are identified as the more straightforward and meaningful approximation of a firm's size. To avoid issues because of the relative magnitude compared to other variables, the natural logarithm function is proposed (Qureshi & Azid, 2006; Morri & Beretta, 2008; Dang, 2011; Rovolis & Feidakis, 2014; Morri & Artegianni, 2015; Morri & Parri, 2017).
- H-REIT growth potential = market to book ratio = total liabilities + market value of equity/total assets. This ratio compares a company's market price to that company's value, as seen in its financial statements. A high ratio may mean that there are good growth opportunities for the business. Antoniou et al. (2002), Frank and Goyal (2004), and Rajan and Luigi (1995) use this proxy. The tradeoff principle assumes that companies with more investment opportunities would be characterized by a lower amount of debt. This activity can also be interpreted as a debt disciplinary role: firms with more

investment opportunities need less of a debt payment disciplining impact to manage free cash flows. Moreover, assuming that companies are concerned with potential and current funding issues, it is very likely that firms with high anticipated growth prospects will preserve low-risk debt capacity to avoid financing future equity investments. On the other hand, as suggested by POT, debt should increase if investments surpass retained earnings and decrease if investments are smaller. For businesses that face greater investment opportunities, debt is expected to be higher than retained earnings and therefore higher (Rovolis & Feidakis, 2014).

- Interest coverage = EBITDA/interest expense on debt. This independent variable is also supported by POT, which states that firms should pick the least expensive alternatives first. Interest coverage measures the company's ability to pay interest on outstanding debt, which can influence the capital structure decisions. This determinant is a measure of the safety margin of a company in relation to its credit risk, which directly affects the external debt price. The lower the ratio, the more vulnerable the organization is to the cost of debt. In comparison, a high coverage ratio implies that the business is adequately financially stable to make its interest payments on time. However, according to the TOT, a high ratio can also be an indication that a business has an undesirable lack of debt or pays off its debt too fast, using profits that could be better invested in projects that could yield higher returns.

This study aims to identify the H-REITs' capital structure determinants and understand the effects of the 2020 COVID-19 pandemic in these financing decisions. To this aim, a dummy variable "COVID" was added to the proposed model as follows:

- Zero for periods different from 2020, thus taking into consideration the expansion period before the pandemic.
- One for the entire year of 2020, representing the strong impact of the COVID-19 pandemic on H-REITs' financial indicators.

Therefore, the econometric model proposed is the following:

$$\begin{aligned} \text{H-REIT Leverage}_{i,t} = & \alpha + \beta_1 \times \text{H-REIT Profitability}_{i,t} \\ & + \beta_2 \times \text{H-REIT Tangibility of Assets}_{i,t} \\ & + \beta_3 \times \text{H-REIT Size}_{i,t} \\ & + \beta_4 \times \text{Growth Potential}_{i,t} \\ & + \beta_5 \times \text{Interest Coverage}_{i,t} \\ & + \beta_6 \times \text{COVID}_{i,t} \\ & + \beta_7 \times (\text{H-REIT Profitability}_{i,t} \times \text{COVID}_{i,t}) \\ & + \beta_8 \times (\text{H-REIT Tangibility of Assets}_{i,t} \times \text{COVID}_{i,t}) \\ & + \beta_9 \times (\text{H-REIT Size}_{i,t} \times \text{COVID}_{i,t}) \\ & + \beta_{10} \times (\text{Growth Potential}_{i,t} \times \text{COVID}_{i,t}) \\ & + \beta_{11} \times (\text{Interest Coverage}_{i,t} \times \text{COVID}_{i,t}) + \varepsilon \end{aligned}$$

Sample and Data Collection

Considering each chosen explanatory variable's influence on the dependent variable, a fixed effect panel regression model was generated when adjusting for other explanatory variables. A simple multivariate linear regression model could not be used, according to Morri and Parri (2017), due to the cross-sectional correlations produced by each H-REIT being calculated over the five-year time frame. Therefore, this study adopted a panel regression equation to consider the heterogeneity of each H-REIT's specific characteristics. This study combines panel data and time-series observations of quarterly public H-REITs' financial information of all cross-section observations to give more degrees of freedom and reduce collinearity among variables. To incorporate the effect of H-REIT specific characteristics, a fixed and random effect model was used. While the fixed effect model assumes that the firm-specific effect is correlated with the independent variable, the random effect model assumes individual-specific effects are uncorrelated with independent variables. Finally, the fixed-effect model was adopted because it evaluates intercept variations that may be due to individual H-REIT attributes, such as differences in management style or managerial talent (Aggarwal & Padhan, 2017).

The 18 H-REITs included in the sample were identified by referring to the hotel/lodging NAREIT index constituents (Table 1). The panel data was built over the information available on public financial data collected from H-REITs' balance sheets

Table 1. *H-REITs Used in This Study*

REIT Name	Ticker
Ashford Hospitality Trust, Inc.	(AHT)
Apple Hospitality REIT, Inc.	(APLE)
Braemar Hotels & Resorts, Inc.	(BHR)
Chatham Lodging Trust	(CLDT)
Corepoint Lodging, Inc.	(CPLG)
Danaher Corporation	(DHR)
Host Hotels & Resorts, Inc.	(HST)
Hersha Hospitality Trust	(HT)
Summit Hotel Properties, Inc.	(INN)
MGM Growth Properties LLC	(MGP)
Pebblebrook Hotel Trust	(PEB)
Park Hotels & Resorts, Inc.	(PK)
Ryman Hospitality Properties, Inc.	(RHP)
RLJ Lodging Trust	(RLJ)
Sunstone Hotel Investors, Inc.	(SHO)
Sotherly Hotels, Inc.	(SOHO)
Service Properties Trust	(SVC)
Xenia Hotels and Resorts, Inc.	(XHR)

and income statement listed in the USA. The panel data and information were refined, and cases with errors or missing values in the accounting data were removed.

The sample for access and analysis consists of secondary publicly available data on H-REITs. Quarterly H-REIT data of the 18 most representative US H-REITs from January 2015 through December 2020 was retrieved, totaling 472 time-series observations. All data used in this study is available in the New York Stock Exchange Trades and Quotes database and in the Center for Research in Security Prices database. Descriptive statistics of the variables during the period before COVID-19 (2015–2019)

and during the COVID-19 pandemic (2020) can be found on Table 2 and Table 3, respectively. The influence of the pandemic in the H-REITs capital structure selected variables is noticeable. Unsurprisingly, all capital structure predictors (i.e., profitability, tangibility of assets, growth potential, size and interest coverage) ratio means have decreased during the pandemic.

Results

According to POT and TOT, all the selected variables (i.e., profitability, tangibility of assets, growth potential, size, and interest coverage) were expected to have a significant correlation with the H-REITs' capital structure (i.e., leverage) during both observed periods (before COVID-19 and during COVID-19). The results in the period before COVID-19, reveals statistical significance of negative correlation of all selected variables and H-REIT capital structure, meaning that the higher the profitability, tangibility of assets, growth potential and size, the lower the leverage of H-REITs (Table 4).

Contrasting results were found when testing the same correlations with the moderating effect of the COVID-19 pandemic (i.e., Hypotheses 1, 2a, 2b, 2c, 2d, and 2e). Following the risk aversion theory, Hypotheses 1 is supported, because this study found significant statistical evidence that the COVID-19 pandemic had negatively impacted the overall relationship between capital structure determinants and leverage. Furthermore, according to

Table 2. *Descriptive Statistics—Period Before COVID-19*

	Mean	Std. Dev.	Min	Max
Profitability	0.01	0.02	(0.12)	0.08
Tangibility of Assets	0.88	0.06	0.66	1.00
Growth Potential	0.59	0.21	0.01	1.00
Company Size	22.00	0.70	19.70	23.80
Interest Coverage	6.30	41.06	(10.52)	893.43

Table 3. *Descriptive Statistics—Period During COVID-19*

	Mean	Std. Dev.	Min	Max
Profitability	(0.03)	0.03	(0.12)	0.03
Tangibility of Assets	0.86	0.07	0.70	0.98
Growth Potential	0.40	0.23	0.01	0.82
Company Size	21.80	0.76	19.70	23.24
Interest Coverage	(0.25)	2.17	(5.16)	5.23

Table 4. Correlation Among H-REITs' Capital Structure Determinants—Before COVID-19

Correlation among H-REITs capital structure determinants						
Variables	1	2	3	4	5	6
Leverage	1					
Profitability	-0.2197*	1				
Tangibility of Assets	-0.1208*	-0.0373	1			
Growth Potential	-0.8074*	0.3377*	-0.0226	1		
Company Size	-0.2225*	0.1789*	-0.0370	0.3986*	1	
Interest Coverage	-0.1018*	-0.1836*	-0.2785*	-0.2139*	-0.2257*	1

* $p < 0.05$

the same theory, the COVID-19 pandemic should significantly moderate the relationship between profitability, tangibility of assets, growth potential, company size, and interest coverage with H-REITs' leverage. However, while COVID-19 has been found significantly and negatively affecting the relationship between profitability and H-REITs' leverage (supporting Hypothesis 2a), both tangibility of assets and company size were found to positively affect H-REITs' leverage during the pandemic (rejecting Hypotheses 2b and 2d). Contrary to the Hypotheses 2c and 2e, it is also worth highlighting that the COVID-19 pandemic has not demonstrated a significant moderation on the relationship between growth potential and interest coverage with H-REITs' leverage, as shown in Table 5. Therefore, Hypotheses 2c and 2e were rejected. Despite the argument that during difficult periods and economic crisis, H-REITs tend to increase their leverage to face the uncertain times of reduced cash flows from operations, the results of this study were consistent with other investigations (Morri & Parri, 2017) pointing to the significant moderating effects of crisis on the relationship between REITs' capital structure determinants and their leverage.

Considering the selected variables as predictors of H-REITs' capital structure before the COVID-19 pandemic, the results of this study found that only the growth potential had a significant and negative impact on H-REIT's leverage. Before the pandemic, the hospitality sector had a promising potential with H-REITs increasing their market value. As expected, the higher the market value and access to equity investors, the lower the need for increasing debt and leverage. The fixed effect model with H-REITs' capital structure determinants show only growth potential as a significant predictor before the pandemic (Table 6). Similar results were found on previous investigations within US REITs in general (Morri & Parri, 2017), which revealed that only growth potential and operating risk had a significant and negative impact on REIT capital structure before the financial crisis of 2008.

During the COVID-19 pandemic, this study found robust evidence that: (1) the pandemic had a significant and negative impact on H-REITs' capital structure; and (2) other predictors (i.e., profitability and size) can assume a significant role among the H-REITs' capital structure determinants. The results of fixed effects model (Table 6) reveal that

Table 5. Correlation Among H-REITs' Capital Structure Determinants—During COVID-19

Correlation among H-REITs' Capital Structure Determinants							
Variables	1	2	3	4	5	6	7
Leverage	1						
COVID (Dummy)	0.2298*	1					
Profitability x COVID	-0.2175*	-0.6173*	1				
Tangibility of Assets x COVID	0.2395*	0.9957*	-0.6264*	1			
Growth Potential x COVID	0.0181	0.8465*	-0.5130*	0.8178*	1		
Company Size x COVID	0.2285*	0.9993*	-0.6121*	0.9938*	0.8531*	1	
Interest Coverage x COVID	-0.0048	-0.1070*	-0.3950*	-0.1179*	-0.1233*	-0.1012*	1

* $p < 0.05$

Table 6. Fixed Effect Model for H-REITs' Capital Structure Determinants

Dependent Variable = Leverage				
	Estimate	t-value	$P > t $	Significance
Profitability	-0.164	-0.77	0.4420	
Tangibility of Assets	0.018	0.31	0.7580	
Growth Potential	-0.322	-10.86	-	***
Company Size	-0.015	-1.29	0.1980	
Interest Coverage	0.000	1.04	0.3010	
COVID (Dummy)	-0.566	-2.56	0.0110	**
Profitability x COVID	-1.187	-4.12	-	***
Tangibility of Assets x COVID	-0.083	-0.88	0.3800	
Growth Potential x COVID	-0.084	-2.69	0.0070	**
Company Size x COVID	0.030	3.40	0.0010	**
Interest Coverage x COVID	0.004	1.56	0.1190	

* Statistically significant as $0.01 \leq p\text{-value} < 0.05$; **robust significance if $0.001 \leq p\text{-value} < 0.01$; ***extremely significant if $p\text{-value} < 0.001$.

profitability is a significant capital structure determinant. Similar results have been found in previous investigations analyzing REITs' capital structure determinants during crisis (Morri & Parri, 2017). According to empirical evidence, the lower the profitability of the H-REITs, the higher its leverage should be during the COVID-19 pandemic. In other words, H-REITs with lower profitability should seek funding in other alternatives than their own cash flows from operations, especially during critical periods of uncertainty. More leverage increases the cost of capital and interest rates, which, in turn, also contributes to reducing profitability. On the other hand, more profitable H-REITs have more resources to reduce their leverage, interest rates, and debt service, which can help to increase their profitability.

Another outcome expected from TOT is a negative and significant relationship between REITs' growth potential and leverage during the COVID-19 pandemic. This study supports the theoretical framework and finds similar results proposed by previous investigations on general US REITs (Morri & Parri, 2017). H-REITs' growth potential significantly and negatively impacted the leverage during the COVID-19 period. However, according to this study's empirical results, the growth potential impact on leverage was higher before the pandemic (estimate of -0.33) than during the pandemic (estimate of -0.08). Unsurprisingly, during extreme pandemics and periods of high uncertainty, managers are less confident in predicting the growth potential of H-REITs, and this variable becomes less relevant than during normal periods of economic growth.

Also, the TOT proposes a positive effect of the company size and interest coverage as a significant capital structure determinant. According to the TOT, the larger the company, the higher its financial leverage since it can benefit from being more robust and safer in terms of stability of cash flows. The same analogy is applied to interest coverage. This study supported this theory and found significant evidence that the COVID-19 pandemic moderated the effect of size on the leverage of H-REITs. However, in the period before the COVID-19 pandemic size does have a significant effect on H-REIT capital structure. This contradiction was also found in previous research on general US REITs (Morri & Parri, 2017), suggesting that the size variable was not considered a relevant capital structure determinant. According to the results, in the period before the pandemic, H-REITs' size, despite not significant, negatively impacted their leverage. During the COVID-19 pandemic, however, the size positively and significantly impacted the H-REITs' leverage. This means that the more significant the size of a H-REIT, the higher the expected leverage. In this sense, managers of big companies with a higher ability to increase leverage due to access of bigger banks and more sophisticated financial products tend to increase leverage.

Conclusions

Implications

Previous investigation on the determinant factors influencing global REITs' capital structure decisions

has found mixed results. While Rovolis and Feidakis (2014) recommend that the tangibility of assets and size of the company had a positive effect on REITs' financial leverage, Morri and Parri (2017) suggested that size and profitability did not appear to have a strong influence on US REITs' capital structure. In addition, both studies agreed that assets' tangibility is a relevant predictor of REITs' capital structure. This study extends previous findings revealing unprecedented results of REITs' capital structure determinants examining Hotel REITs' capital structure before and during the COVID-19 pandemic.

From the theoretical point of view, this study increases the body of knowledge of finance and real estate research in the hospitality literature by analyzing the determinants of H-REITs' capital structure and the impacts of crisis and pandemics in such determinants. Second, this study tested and verified if previous TOT and POT results found in other REIT investigations are aligned with the hospitality and lodging environment, especially considering crisis and pandemic periods. Third, this paper extended the previous theoretical models of H-REITs' capital structure determinants with new independent variables such as growth potential, which has never been explored to the author's best knowledge. Lastly, this study successfully increased the REIT crisis-related literature with the effects of COVID-19 in one of the most severely impacted sectors, the hotel and hospitality REITs.

From the managerial and practical points of view, this paper suggests critical insights to H-REITs' investors, managers, and hospitality stakeholders on the determinants of capital structure decisions. First, understanding the H-REITs' leverage determinants during the COVID-19 pandemic can drive managers to decide in similar situations in the future, improve their ability to maintain their companies' value, return to shareholders, and the risks associated with unexpected exogenous situations impacting the H-REIT industry. Second, this study explains the differences of predicting capital structure variables in periods of economic growth (2015–2019) and extreme stress (2020). These differences can influence H-REIT managers and stakeholders' decision-making process to be prepared for difficult times. For example, during economic shocks such as the COVID-19 pandemic, this paper revealed

that tangibility of assets and company size positively affected H-REITs leverage. During crisis and periods of uncertainty, H-REIT managers are expected to increase leverage to form a safety cushion of liquidity to maintain their operations during periods of negative cash flows. This paper revealed that bigger H-REITs with more tangible assets could benefit from their size to increase leverage during crisis, enabling them to keep their operations running for longer crisis periods. On the other hand, this study empirically demonstrated that variables, such as growth potential and interest coverage, did not significantly affect H-REITs leverage during crisis, suggesting H-REITs managers to keep focusing on other more relevant leverage determinants during extreme crisis situations. Hence, this study provided a deeper understanding of the relationship of TOT and POT in the determinants of H-REITs' capital structure, and significant differences have been pointed out to help future H-REIT leverage decisions.

Furthermore, this paper provides firm executives and lawmakers information to adjust policies to protect individual investors. For example, these study findings can enhance public and law protection regulation to H-REITs' investors looking for a safe harbor in periods of crisis, avoiding overleverage and increasing risks. And finally, this investigation provides critical information to investors aiming to reduce their portfolio risks and maximize equity wealth. The proposed model's capital structure determinants provide insightful information to analyze better and project their H-REITs' asset portfolios' inherent risks.

Limitations and Directions for Future Research

This study is not immune from limitations. First, the data set adopted contains the essential H-REITs in the USA. Future studies could incorporate more H-REITs located in different countries and regions to test the same relationships and effects of COVID-19. Second, by the end of this study, the COVID-19 pandemic was far from being completely over, and financial results were limited to the fourth quarter of 2020. Future research should include 2021 and 2022 financial data, and a second analysis can be conducted to confirm the robustness of results with a lagged model to avoid multicollinearity

issues. Lagged variables added to the model, combined with other explanatory variables, time- and non-time-dependent variables, can be analyzed together in the model rather than adding different time trends or adding dummy variables. Thirdly, the proposed model did not consider the impact of supply of capital and cost of capital on the H-REITs' leverage. Such variables were also found to be significant determinants of REITs' leverage (Bai et al., 2014; Allen & Letdin, 2020), and the COVID-19 pandemic could have affected this relationship. Further investigation could include these two variables to measure the moderating effect of COVID-19 on the relationship between cost/supply of capital and H-REITs leverage. Finally, although this study successfully adopted POT and TOT framework, a limited number of antecedents were utilized to examine the determinants of H-REITs' capital structure. Future research may investigate different financial ratios and other possible antecedents such as operational risk, internationalization of hotel properties (i.e., geographical diversification, properties, and interest rates). Furthermore, the dependent variable leverage can also be measured by short term and long term and be investigated under different theoretical frameworks.

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