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Determinants of Indebtedness in Expanding Portuguese Hotels

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Abstract: The hotel industry has been one of the fastest-growing economic sectors in Portugal in recent years. According to the European Best Destinations website, Portugal has consolidated itself as a destination of excellence. The explanation of the capital structure of firms remains relevant in financial research. However, prior international empirical evidence is not exclusive and is still scarce in the Portuguese hotel sector, which motivated this research. This study aimed to analyse the influence of determinants on the capital structure of 821 Portuguese hotels between 2011 and 2019 (until the constraints of the COVID-19 pandemic affected the international tourism sector) and to determine whether strategies were conducted according to trade-off and pecking order theories. This study used an econometric approach based on the static panel data model, with tests recommending the fixed effects model estimated by the least squares dummy variables (LSDV) within. The analysed determinants were return on assets, size, tangibility, growth opportunities, risk and other tax benefits besides debt in order to explain the indebtedness through three alternative measures. The results of this research show that managers sought an optimal combination of equity and debt, which was weighted between tax savings and the cost of financial distress. However, they pursued this objective through the hierarchical sequencing of funding sources in order to minimise the costs of information asymmetry.

Keywords: trade-off theory; pecking order theory; debt; tax saving; hospitality; tourism development

1. Introduction

Capital structure and its determinants continue to be a topical issue in financial research. Throughout the development cycle, firms need to make investments supported by financing decisions that consider equity and debt. However, the decision between these two sources of financing depends on the characteristics of the firms and how they are monitored by the market.

This theme has assumed greater relevance since the seminal work of [1,2], according to which the value of a firm in a perfect market could be (in)dependent of its capital structure. Later, other theories emerged, notably the trade-off theory (TOT) presented by [3] and the pecking order theory (POT) presented by [4,5]. TOT suggests that firms adopt debt-tending targets to offset debt costs against their tax benefits. Consistent with this theory, [6,7] found evidence that firms tend to increase debt because they can benefit from tax savings on interest. POT suggests that firms prioritise internal resources over debt and equity issuance. In the same vein, [8] argued that less profitable firms issue debt when they do not have sufficient internal funds to invest. These approaches are important in terms of the agency problems among stakeholders and the signal that the financing decision sends to the market.

The strong development of the Portuguese hotel sector in recent years due to domestic and foreign tourism has become essential to the economy as a source of growth, job creation and development of peripheral areas. This development strategy reflects the way of life of modern societies, namely, through the search for knowledge of peoples and cultures. Although there are several studies on capital structure, the results are far from being

exclusive, and in the Portuguese hotel industry, they are still very scarce, justifying new work in this field. This constituted the motivation for this study.

The main objective of this empirical study was to analyse the influence of determinants on the indebtedness of firms in the Portuguese hotel industry and to ascertain whether strategies were driven by TOT and POT theories. From the literature review, the factors profitability, size, tangibility of assets, growth opportunities, risk and other tax benefits besides debt were selected to explain corporate indebtedness, which, in turn, was defined by the total debt ratio, debt-to-equity ratio, and medium- and long-term debt ratio to include a robustness analysis.

The data consisted of accounting information collected over the period from 2011 to 2019 for 821 entities. This sample period was chosen to avoid biasing the data due to the COVID-19 pandemic (declared by the World Health Organisation on 11 March 2020), which was characterised in Portugal by low consumption, credit contraction and troubled labour market conditions. This study used ordinary least squares (OLS); fixed effects, which were estimated with least-squares dummy variables (LSDV) within, and random effects estimation for the static panel data model.

The manuscript is organised into three more sections. Section 2 describes the importance of the hotel industry in Portugal, develops the literature review focused on TOT and POT, and identifies some determinants of the capital structure. Section 3 develops the empirical study by characterising the sample, the working variables, the research hypotheses and the models. In addition, it presents the descriptive statistics, the estimation results and the discussion (Section 4). Section 5 highlights the main conclusions.

2. Literature Review

2.1. Characterisation of Hotel Activity in Portugal

Considering the generality of tourist accommodation, which consists of establishments (hotels, apartment hotels, tourist apartments, tourist villas, pousadas, rural/lodging tourism, and local accommodation), camping and holidays camps, and youth hostels, in 2019, there were 7155 units in operation (an increase of 19.2% relative to the previous year). According to [9], hotels, local accommodation and rural/lodging tourism concentrated 92.0% of the guests and 90.2% of the overnight stays. The internal market provided 26.1 million overnight stays, corresponding to 33.6% of the total, and grew by 5.9% in 2019 (+6.0% in 2018), while the foreign markets provided 51.7 million and grew by 3.5% (+2.0% in 2018). In tourist accommodation establishments (hotels, local accommodation, and rural/lodging tourism), the total revenue was EUR 4.3 billion (+7.8%) and revenue from accommodation was EUR 3.2 billion (+7.9%), which were decelerations compared with the previous year (+8.1% and +9.1%, respectively).

According to [9], the number of non-resident tourists arriving in Portugal in 2019 was around 24.6 million, corresponding to a growth of 7.9% over the previous year. Spain kept being the main inbound market (share of 25.5%), with growth of 8.2%. Tourists from the United Kingdom (15.4% of the total) increased by 7.6%, tourists from France (share of 12.6%) grew by 2.1%, tourists from Germany (share of 7.9%) had null variation, while the Brazilian market (5.5% of the total) increased by 13.9%.

According to the European Best Destinations website, Portugal has consolidated itself as a destination of excellence, returning to the top of the tourists' preferences in 2021, distinguished by its natural beauty; gastronomy; classified historical heritage by the United Nations Educational, Scientific and Cultural Organization (UNESCO); and beaches. Table 1 shows the ranking of the best European destinations in 2019, highlighting Portugal (except in 2011 and 2012) among the annual growth of tourist arrivals in accommodation by the most preferred countries over the study period.

Table 1. Annual growth of tourist arrivals in accommodation by most preferred countries.

Years	UE27	Hungary	Portugal	Italy	France	Poland	Spain	Switzerland	Croatia
2011	4.7	3.9	2.4	5.0	18.2	5.0	4.3	n.a.	7.6
2012	2.0	16.1	−1.4	0.0	0.0	5.4	−2.6	n.a.	35.5
2013	2.7	5.8	8.6	0.1	3.3	3.4	1.3	n.a.	5.7
2014	3.6	8.8	12.6	2.6	−0.5	7.2	5.8	n.a.	5.5
2015	5.5	7.7	10.5	6.4	3.0	7.4	6.4	n.a.	9.9
2016	4.1	6.7	10.8	3.1	−0.1	11.8	7.9	n.a.	9.1
2017	e 5.9	7.0	12.0	5.3	6.1	6.2	4.7	6.0	12.7
2018	e 4.4	5.3	5.3	4.0	2.8	6.0	1.1	5.0	7.1
2019	3.2	2.6	7.8	2.6	1.8	5.2	3.2	1.8	4.9
2020	−53.3	−58.1	−60.6	−57.6	−47.4	−49.9	−66.2	n.a.	−64.2

Units: %. "e" means an estimated value. "n.a." means not available. Data source: https://www.europeanbestdestinations.com/european-best-destinations-2019/ (accessed on 30 March 2023). Data source: https://www.pordata.pt/tema/europa/turismo-60 (accessed on 30 March 2023).

2.2. Trade-Off Theory

Modern financial theory is marked by the capital structure irrelevance theorem of [1]'s models. These models emerged in the context of a tax-free economy, in which corporate value was independent of its financial structure. Later, [2] considered corporate taxes, where debt increases corporate value through tax savings from interest. Considering bankruptcy probability and agency costs, [10,11] overcame some of the limitations of previous formulations.

Debt provides significant advantages over equity. In addition to the tax effect of interest, debt imposes greater discipline on managers, making them more conscientious about investment decisions [12]. However, tax savings depend on the existence of positive pre-tax income [13] and the nature of the tax system adopted by countries [14]. On the other hand, these advantages must be weighed [15] by considering that (1) the level of debt is proportional to the risk of default, (2) rising debt increases the potential conflict between creditors and investors, and (3) leverage impairs financial flexibility. The risk arising from excess leverage can make managers reluctant to accept minimal risks, fear financial default and give up good investment opportunities (underinvestment problem).

TOT was presented by [3] with the central argument of balancing the costs of debt and its tax benefits to find an optimal capital structure [16] in which the maximisation of corporate value is achieved [17]. The theory considers a model that includes the impact of taxation on corporate financing under the assumption of constant assets and investments [18].

According to [19], the classical presentation of the static TOT is due to [20]. The underlying formulation was not considered entirely realistic due to the tax structure it assumed. Tax laws include dynamic aspects that cannot be represented using a single-period model. Frank and Goyal [19] highlighted another omission of the static model: the interpretation of the reversal trend of debt around its mean (debt mean reversion).

Considering [17]'s proposals, [19] established two definitions. The first considers that a firm follows the static theory if the debt level is determined through a single trade-off period between the tax benefits of debt and the cost of financial default. The second considers that a firm follows a dynamic adjustment if it has an established debt target and if deviations are gradually compensated over time.

2.3. Pecking Order Theory

The transaction costs approach from [4] explains the preference for internal resources as a source of financing. Generally, these costs are associated with external financing (issuance of debt and equity). Meanwhile, the approaches of information asymmetry and adverse selection from [17,21] explain the preference for debt over equity issuance. In general, information asymmetries affect the choice between internal and external (preferred) financing.

According to [22], most external financing is due to debt issuance, even in the most efficient markets, not least because equity issuance is more difficult and rarer in less developed markets. This does not mean that firms should aspire to high debt ratios, but that it would be more advantageous to retain earnings than to issue equity, avoiding involvement in costs and other problems related to information.

In the information asymmetry model of [23], firms decide to opt for internal financing (cash flow generated internally) instead of any form of external financing [4,5]. This constitutes the first rule of the POT hierarchy. The second rule encourages managers to use simple bond issuance (i.e., the "safe debt" designated by [17]). If external financing is required, debt should be used preferentially, and only when the debt capacity limit is reached should the firm consider using equity.

According to [17] and later supported by [16,24,25], the rules of POT determine a preferential hierarchy in establishing the corporate capital structure: (1) firms favour internal financing; (2) dividend policy is conditioned by cash flow generation and investment opportunities, which should remain stable; (3) if external financing is required, first, firms issue simple bonds and, second, firms issue hybrid products; and (4) as a last resort, firms finance themselves by issuing equity.

Myers [17] highlighted two strategies to explain corporate financing decisions, as stated by [22]. The first, which incorporates several factors (including information asymmetry) in static TOT models, consolidates into a generalised TOT. The second, which incorporates elements of the TOT (including default risks), consolidates into a modified POT. While the TOT model focuses on the target debt ratios, the modified POT assumes that the debt target is overtaken by inherent issues of external financing costs.

2.4. Determinants of Indebtedness and Research Hypotheses

2.4.1. Return on Assets

TOT suggests a positive relationship between the return on assets and indebtedness. The most profitable firms face higher tax rates [26] and generate greater debt capacity [6,7,27], which can be used to derive tax benefits from debt costs. Furthermore, [19] argued that more profitable firms have lower bankruptcy costs, and thus, greater ability to use more debt.

POT suggests a negative relationship between the return on assets and indebtedness. Rajan and Zingales [28,29] argued that the most profitable firms generate more internal resources and tend to rely on self-financing rather than debt. On the other hand, less profitable firms issue debt when they do not have sufficient internal funds to invest and because debt is preferable to external financing [8]. In the same vein, [30] found that Portuguese hotel profitability is negatively related to debt.

Hypothesis H1.1: *There is a positive relationship between the return on assets and indebtedness of Portuguese hotels, as suggested by TOT.*

Hypothesis H1.2: *There is a negative relationship between the return on assets and indebtedness of Portuguese hotels, as suggested by POT.*

2.4.2. Size

TOT suggests a positive relationship between size and indebtedness. Larger firms are more diversified, have more stable cash flows and are less likely to default [31], allowing them to use more leverage [6,7,30,32–34] and benefit from tax savings [21,35–37]. In addition, [38] stated that these firms disclose more information, which is monitored by market analysts, and are therefore less exposed to the asymmetry problem, which allows them to issue cheaper debt.

On the other hand, [32] argued that small firms face higher costs of equity and long-term debt.

POT suggests a negative relationship between size and indebtedness. Frank and Goyal [24] argued that larger and more mature firms have had the opportunity to retain earnings over time. However, [25] found a negative relationship between size and short-term debt and a positive relationship between size and long-term debt.

Hypothesis H2.1: *There is a positive relationship between the size and indebtedness of Portuguese hotels, as suggested by TOT.*

Hypothesis H2.2: *There is a negative relationship between the size and indebtedness of Portuguese hotels, as suggested by POT.*

2.4.3. Tangibility

TOT suggests a positive relationship between tangibility and indebtedness. Firms with a higher proportion of tangible assets are less likely to default according to [38]. These types of assets are easier to quantify [24], which justifies fewer information asymmetries and more guarantees in the event of financial difficulties. In addition, firms with more valuable tangible assets have a higher liquidation value and greater debt capacity [6,7,34–37,39], and thus, achieve higher levels of investment [8].

On the other hand, bankruptcy costs increase for firms with a higher proportion of intangible assets, which therefore have a lower level of debt in their capital structure [21,25].

POT suggests a negative relationship between tangibility and indebtedness. Firms with large fixed assets are associated with a lower risk of default. This allows them to choose strategies that are more geared to the long term rather than using external financing to only cover internal financing shortfalls.

Hypothesis H3.1: *There is a positive relationship between the asset tangibility and indebtedness of Portuguese hotels, as suggested by TOT.*

Hypothesis H3.2: *There is a negative relationship between the asset tangibility and indebtedness of Portuguese hotels, as suggested by POT.*

2.4.4. Growth Opportunities

TOT suggests a negative relationship between growth opportunities and indebtedness. Titman and Wessels [32] claimed that more monitored firms tend to invest less. The costs associated with this agency relationship are likely to be higher for growth firms [38], which are expected to have lower debt levels in the long term [6–8,40]. According to [38,41], growth opportunities are assets that increase corporate value but do not serve as collateral for creditors. In the case of Portuguese hotels with growth opportunities, the seasonality of activity may also explain the lower use of debt to avoid financial risk [30].

POT suggests two possible effects. On the one hand, firms with more investment while maintaining profitability accumulate more debt, suggesting a positive relationship between growth opportunities and indebtedness [24]. This is justified because firms with greater growth opportunities tend to seek external funds when internal funds become insufficient [38]. On the other hand, financial flexibility suggests a negative relationship between growth opportunities and indebtedness. When firms anticipate long-term external financial needs, they may choose to borrow less in the present.

Hypothesis H4.1: *There is a negative relationship between the growth opportunities and indebtedness of Portuguese hotels, as suggested by TOT.*

Hypothesis H4.2: *There is a positive relationship between the growth opportunities and indebtedness of Portuguese hotels, as suggested by POT.*

2.4.5. Risk

Risk in finance is related to the degree of uncertainty in the activity and can be measured using volatility. This uncertainty includes the ability to produce results and meet commitments.

TOT suggests a negative relationship between business risk and indebtedness. Titman and Wessels [32] found that the optimal level of debt is a decreasing function of earnings volatility. Firms with higher business risk tend to reduce the weight of debt in their financing structure [20] because they face higher costs of financial distress [17]. Conversely, firms with lower risk should be able to hold more debt because they are less likely to default.

POT suggests mixed evidence, although a positive relationship prevails between entrepreneurial risk and debt, which is only issued when internal financial resources are exhausted.

Hypothesis H5.1: *There is a negative relationship between the risk and indebtedness of Portuguese hotels, as suggested by TOT.*

Hypothesis H5.2: *There is a positive relationship between the risk and indebtedness of Portuguese hotels, as suggested by POT.*

2.4.6. Other Tax Benefits Besides Debt

Myers [5] demonstrated the existence of a marginal effect on tax benefits from debt interest. This may suggest that this dimension of tax savings is less important in corporate governance insofar as it does not constitute bank collateral to finance investment [8]. However, [26] considered that these benefits are limited and suggested other variables that also provide tax benefits, such as contributions to pension funds, tax credits for investment and, along with [42], depreciation of fixed assets.

According to proponents of TOT, firms have incentives to use debt up to an optimal level in order to benefit from tax protection [19,37]. However, increasing debt reduces earnings and firms cannot obtain tax benefits other than those related to interest [6–8,17,21].

Hypothesis H6: *There is a negative relationship between the tax benefits besides debt and the indebtedness of Portuguese hotels, as suggested by TOT.*

2.5. Empirical Evidence on the Determinants of Capital Structure

The work of [34] aimed to investigate the influence of a set of variables in the composition of the financial structure of Portuguese start-ups. The methodology used was based on cross-sectional data that integrates multivariate regressions (logit, tobit and OLS), enriched by panel data analysis. A comparison of the results obtained highlighted the positive relationship between the variables debt and size, agreeing with TOT.

Using the panel data model with random effects for individuals, [6] investigated the determinants that underlie the decisions on the capital structure of 55 Portuguese firms in the period 2014 to 2016. The positive relationship between the dependent variable debt and the independent variables tangibility and size suggests that the lower probability of default resulting from the guarantees of these assets and the diversification of activities, respectively, support TOT. However, the positive relationship with the other tax benefits suggests the importance of taxes, contrary to TOT.

To empirically test the capital structure of 4952 Portuguese family-owned businesses between 2009 and 2016, [7] used static models and dynamic panel models. The results of the joint test justify the better performance of TOT in the explanation of the sample's financing decisions. This is in line with the positive relationship between the debt and size variables.

In a study on the capital structure of 4846 Portuguese industrial small- and medium-sized enterprises (SMEs), [8] resorted to an alternative empirical methodology that used the fractional dynamic tobit (DPF) estimator in the partial adjustment model. The negative correlation between debt and return suggests that firms follow the POT, while the positive

correlation with tangibility suggests that firms follow the TOT in financing decisions. The author also concludes that SMEs adjust to optimal debt levels and follow a pecking order in the financing process.

The capital structure of Portuguese hotel firms has also been the subject of research, albeit to a lesser extent. Abrantes [43] used a multiple linear regression model to study capital structure in 177 Portuguese SMEs in the hospitality sector between 2000 and 2009. The author concluded that decisions about funding converge with the principles of POT, although they do not exclude TOT. The results indicated that internal financing insufficiencies are relevant in explaining changes in the indebtedness of those SMEs.

Using the statistical technique of partial least squares and the corresponding structural equation model, [30] investigated the determinants of the capital structure of 356 Portuguese hotels over the period 2006–2014. The results also support the idea that TOT and POT are important and not mutually exclusive.

Correia [44] analysed a sample of 900 Portuguese hotel SMEs in the period from 2009 to 2013. The author used a panel data regression, showing the value of asset collateral, profitability, growth, non-debt tax savings and reputation as determinants of capital structure.

In another study, [45] aimed to identify the determinants that influence the capital structure of Portuguese four- and five-star hotels. The author used a multiple linear regression model to analyse 320 firms in 2014. The evidence revealed that capital structure is influenced positively by non-debt tax savings and negatively by asset tangibility, profitability, overall liquidity and firm size. The results suggest that the most profitable entities prefer to finance their investments internally and only then resort to debt.

The work of [46] analysed the capital structure of 2719 Portuguese hotel firms between 2010 and 2017. Using a panel data model, the results show a positive relationship between total debt and profitability, size, tax savings and tangibility.

3. Sample and Methods

3.1. Sample and Variables

The accounting data for the empirical study was collected from the SABI (SABI (Iberian Balance Sheet Analysis System): https://www.bvdinfo.com/en-gb/our-products/data/national/sabi, accessed on 30 March 2023) database. The sample was selected from the 5116 Portuguese firms with activity classified under CAE 551 "Hotel Establishments in Portugal" over the period from 2011 to 2019. Then, the following criteria were applied to filter the firms in the sample:

- Selection of active entities with a minimum value of EUR 10,000 in sales;
- Selection of entities with positive equity.

The purge procedures led to the final sample consisting of 821 entities with a total of 7389 firm-year observations.

With the expectation of contributing to a better understanding of the capital structure of Portuguese hotels and in the light of TOT and POT, this empirical study considered the following dependent variables representative of indebtedness: total debt ratio (TD), natural logarithm of debt-to-equity ratio (*ln*DE), medium and long-term debt ratio (MLD), respectively:

$$\frac{Total\ Debt}{Total\ Assets} \tag{1}$$

$$ln\left(\frac{Total\ Debt}{Equity}\right) \tag{2}$$

$$\frac{Medium\ and\ Long\ term\ Debt}{Total\ Assets} \tag{3}$$

In addition, this study used the independent variables listed in Table 2, which are representative of the structural determinants.

Table 2. Independent variables and expected signs by TOT and POT.

Independent Variables (Acronym)	Proxy	Authors	Sign TOT	Sign POT
Return on assets (ROA)	$\frac{EBIT}{Total\ Assets}$	[7,8,13,47–49]	+	−
Size (SIZE)	*In (Sales)*	[6,7,13,49]	+	−
Tangibility (TANG)	$\frac{Tangible\ Fixed\ Assets}{Total\ Assets}$	[6–8,13,47–49]	+	−
Growth opportunities (GROWTH)	$\frac{Total\ Assets_N - Total\ Assets_{N-1}}{Total\ Assets_{N-1}}$	[6,7,48]	−	+
Risk (RISK)	$\frac{Standard\ Deviation\ of\ Sales\ Variation}{Average\ Sales}$	[20,32,50]	−	+
Other tax benefits besides debt (OTBBD)	$\frac{Depreciation\ and\ Amortization}{Total\ Assets}$	[6–8,13,48,49]	−	n.a.

"EBIT" means earnings before interest and taxes. "n.a." means not applicable. Source: own elaboration.

3.2. Empirical Models

This empirical study used OLS; fixed effects, which were estimated with LSDV within, and random effects estimation for the static panel data model.

OLS Model

The OLS model can be represented as follows [51]:

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + \epsilon_{it} \tag{4}$$

where Y_{it} is the dependent variable of firm i at time t; β are the regression coefficients; X_{it} are the independent variables; and ϵ_{it} are the residuals, which should be independent and normally distributed with zero mean and constant variance. This empirical study relied on the following OLS econometric model:

$$Indebtedness_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 GROWTH_{it} + \beta_5 RISK_{it} + \\ + \beta_6 OTBBD_{it} + \epsilon_{it} \tag{5}$$

LSDV within Model

Panel data consider the effects of individuals and the effects of time. This is an advantage because the firms' characteristics might not be captured by the remaining independent variables in the linear regression model. In addition, panel data tend to have more degrees of freedom and less multicollinearity than cross-sectional data, on the one hand, and, on the other hand, a greater ability to capture the complexity of time series behaviour [33].

The panel data model with fixed effects estimated using LSDV within for individuals and for time can be represented by [51]

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + \alpha_i + \theta_t + \epsilon_{it} \tag{6}$$

where α_i are constants representing the specific effects of each individual and θ_t are constants representing the specific effect of each instant in time. This empirical study relied on the following fixed effects model:

$$Indebtedness_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 GROWTH_{it} + \beta_5 RISK_{it} + \\ + \beta_6 OTBBD_{it} + \alpha_i + \theta_t + \epsilon_{it} \tag{7}$$

Random Effects Model

A panel data model with random effects for individuals can be represented by [51]

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + b_i + \epsilon_{it} \tag{8}$$

where b_i are the values of a random variable with normal distribution and zero mean, and are independent of the residuals ϵ_{it}. This empirical study relied on the following random effects model:

$$Indebtedness_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 GROWTH_{it} + \\ +\beta_5 RISK_{it} + \beta_6 OTBBD_{it} + b_i + \epsilon_{it} \tag{9}$$

4. Results and Discussion

4.1. Descriptive Statistics

Table 3 shows the means of the variables in the empirical study and the correlations between them.

Table 3. Means of the variables and Pearson correlations.

Variables	Mean	TD	*ln*DE	MLD	ROA	SIZE	TANG	GROTH	RISK	OTBBD
TD	0.5396	1	0.09	0.04	−0.01	0.00	0.02	0.00	0.00	0.00
*ln*DE	0.2239		1	0.61	−0.13	0.19	**0.21**	0.05	−0.05	0.03
MLD	0.2415			1	0.13	0.07	**0.27**	0.03	0.01	0.01
ROA	0.0502				1	0.08	−0.16	0.01	−0.05	0.01
SIZE	6.4340					1	0.06	0.01	**−0.32**	−0.06
TANG	0.5681						1	−0.01	−0.09	**0.22**
GROWTH	0.1225							1	0.00	−0.03
RISK	0.0017								1	−0.04
OTBBD	0.0485									1

Source: own elaboration.

A joint analysis of the average values of the TD and MLD ratios suggests that more than half of the assets of Portuguese hotel firms were financed by debt, mainly short-term. This may also be explained by the weak average ROA needed to accumulate internal resources.

The independent variables were associated with weak correlations, highlighting the (negative) relationship between SIZE and RISK and the (positive) relationship between TANG and OTBBD. These preliminary results devalue eventual problems of multicollinearity between the independent variables.

Although the TD ratio is subject to low correlations, the more pronounced positive relationship between TANG and the other debt ratios suggests that creditors lend more money to capital-intensive firms because they have lower levels of information asymmetry and default risk.

4.2. Regression Analysis and Discussion of Results

The results of the estimated indebtedness models and the usual tests are presented in Table 4.

The coefficient of determination R^2 was low in all regressions when estimating the variability of the dependent variables that was explained by the independent variables in each model.

In panel A, the result of the F-test of joint significance of the estimated individual coefficients was not statistically significant and, therefore, did not reject the null hypothesis of no relationship between the independent variables and the TD ratio, suggesting the adoption of the OLS model. The result of the LM test was also statistically insignificant and therefore fails to reject the null hypothesis of no individual (unobservable) effects, which also suggests the use of an OLS model. Regarding the explanatory variables of the TD ratio, none of the estimated parameters were statistically significant. In fact, the poor fit of this regression model to the sample was already predicted by the correlation analysis.

Conversely, panels B and C show that the F-test favoured the fixed effects model over the OLS model. Furthermore, the choice of fixed or random effects models was suggested by the statistical significance of the LM test. Finally, the statistical relevance of the Hausman test suggests the adoption of the fixed effects model.

All explanatory variables of the *ln*DE ratio were statistically significant at the 1% level, except for the estimate of OTBBD. Furthermore, this ratio was only negatively affected by ROA. The MLD ratio was negatively influenced by ROA and OTBBD, with all independent variables being statistically relevant at the 1% level.

Table 4. Estimated debt ratio models.

Panel A—Determinants for Total Debt Ratio (TD)			
Variables/Statistics	**OLS Model**	**Fixed Effects Model**	**Random Effects Model**
ROA	−0.2321	−0.3300	−0.2321
SIZE	−0.0044	−0.0091	−0.0044
TANG	0.3579	0.3620	0.3579
GROWTH	0.0069	0.0060	0.0069
RISK	−2.7683	−3.2951	−2.7683
OTBBD	0.2741	−0.2775	−0.2741
R^2	0.0004	0.0004	0.0004
F	1.0130		
LM ($\mathcal{X}^2$)	1.1182		
Hausman ($\mathcal{X}^2$)		4.9137	
Panel B—Determinants for the Logarithm of the Debt-to-Equity Ratio (*ln*DE)			
ROA	−1.0678 ***	**−0.8922 ***	−1.0678 ***
SIZE	0.1865 ***	**0.2039 ***	0.1865 ***
TANG	0.8711 ***	**0.8557 ***	0.8711 ***
GROWTH	0.0331 ***	**0.0318 ***	0.0331 ***
RISK	6.9063 **	**8.5550 ***	6.9063 **
OTBBD	0.1857	**0.1015**	0.1857
R^2	0.0917	0.0936	0.0917
F		26.7520 ***	
LM ($\mathcal{X}^2$)		787.8900 ***	
Hausman ($\mathcal{X}^2$)		242.0400 ***	
Panel C—Determinants for the Medium- and Long-Term Debt Ratio (MLD)			
ROA	−0.1338 ***	**−0.1226 ***	−0.1338 ***
SIZE	0.0117 ***	**0.0127 ***	0.01170 ***
TANG	0.2012 ***	**0.2001 ***	0.2012 ***
GROWTH	0.0029 ***	**0.0028 ***	0.0029 ***
RISK	2.1540 ***	**2.2507 ***	2.1534 ***
OTBBD	−0.2844 ***	**−0.2914 ***	−0.2844 ***
R^2	0.0912	0.0898	0.0911
F		16.4360 ***	
LM ($\mathcal{X}^2$)		607.9500 ***	
Hausman ($\mathcal{X}^2$)		24.3520 ***	

** *p*-value < 0.05; *** *p*-value < 0.01. Source: own elaboration

Table 5 summarises the signs of the estimates of indebtedness determinants in the fixed effects model against the TOT and POT expectations.

Table 5. Summary of the estimated signs against TOT and POT.

Determinants	Expected Sign TOT/POT	TD Ratio Estimated Signal	*ln*DE Ratio Estimated Signal	MLD Ratio Estimated Signal
ROA	+/−	s.n.s.	−	−
SIZE	+/−	s.n.s.	+	+
TANG	+/−	s.n.s.	+	+
GROWTH	−/+	s.n.s.	+	+
RISK	−/+	s.n.s.	+	+
OTBBD	−/n.a.	s.n.s.	s.n.s.	−

"s.n.s." means statistically insignificant. "n.a." means not applicable. Source: own elaboration.

The signs of the estimates for the determinants ROA, GROWTH and RISK differed from the interpretations proposed by TOT. Regarding the *ln*DE and MLD ratios for indebtedness in the fixed effects model, the results of the estimated structures did not support hypotheses H1.1, H4.1 and H5.1. In the case of ROA, a positive estimate was expected, meaning that the most profitable Portuguese hotels would increase their debt in order to benefit from the tax savings on interest [6,7,26,27,44,46]. Nevertheless, [19,28,44] also found a negative sign for this determinant. This result suggests that hotel firms with a higher ROA prefer internally generated financial resources. For GROWTH and RISK, a negative relationship with debt was expected. In the first determinant, this would mean that firms retain financial flexibility for use in the investment phases [6–8,30,40] and, in the second determinant, it would mean that the volatility (uncertainty) of activity determines the weight of debt in the financing structure [20]. Nevertheless, [52,53] also found a negative sign on these determinants.

The estimates of the determinants SIZE and TANG support the expectations in terms of signs and statistical significance, converging to the TOT assumptions. Regarding the *ln*DE and MLD ratios, the results supported hypotheses H2.1 and H3.1. On the one hand, this theory argues that larger firms are more diversified, have more stable cash flows and are less likely to fail, and thus, are more leveraged [6,7,24,25,32–34,38,46]. On the other hand, the theory argues that firms with lower tangibility face more information asymmetry problems, offer less collateral to creditors and are, therefore, less leveraged [6,21,24,25,37,46,47]. This means that these determinants provide guarantees that facilitate the sampled Portuguese hotels to borrow.

The sign of the estimated OTBBD determinant in the MLD ratio model also converged to that expected from TOT. The econometric result support hypothesis H6. This negative relationship was supported by the theory to the extent that firms had the incentive to use debt to benefit from interest tax protection [6–8,19,44,47]. In addition, it also suggests that Portuguese hotels were relying less on debt as other tax benefits increased.

The estimates of the determinants of ROA, GROWTH and RISK converged to the expectations of POT. Regarding the *ln*DE and MLD ratios for indebtedness in the fixed effects model, the results of the estimated structures supported hypotheses H1.2, H4.2 and H5.2. According to [6–8,13,44], this theory suggests that less profitable firms resort more to debt after exhausting surplus funds from viable projects. The results also show that Portuguese hotels with higher GROWTH relied more on external funds to compensate for insufficient internal funds, confirming [6,24,38,44] for long-term debt. The evidence for the RISK determinant was consistent with the work of [32,50].

The signs of the estimates for the determinants SIZE and TANG differed from those proposed by POT. Regarding the *ln*DE and MLD ratios, the results supported hypotheses H2.2 and 3.2. In the case of SIZE, a negative relationship with debt was expected, implying that larger Portuguese hotels would primarily use self-financing to avoid information disclosure and market scrutiny. The results could mean that larger hotels were more closely monitored by the market and, therefore, faced fewer information asymmetry problems and were able to issue less costly debt. Finally, a negative sign was also expected for TANG, meaning that Portuguese hotels with higher tangibility would mainly use self-financing

(for the same reasons as above). The results could mean that hotels with less tangible assets faced more information asymmetry problems, offered less collateral to creditors and, therefore, had less debt on their balance sheet.

5. Conclusions

Given the strong growth and importance of the hospitality sector in the Portuguese economy, the main objective of this manuscript was to identify and analyse the most relevant determinants of indebtedness in terms of TOT and POT. The filtering process resulted in a sample of 821 Portuguese hotels that operated between 2011 and 2019, and therefore, were free from COVID-19 constraints. The methodology of the empirical study used the panel data regression model, in which the tests selected the fixed effects model. The estimated independent variables were not significant in any of the regressions for the TD ratio. With regard to the models for the lnDE ratio and the MLD ratio, the results were convergent but not exclusive.

The empirical results for the determinants SIZE, TANG and OTBBD suggest that the Portuguese hotels decided on their capital structure according to TOT. The largest hotels were more diversified, had more stable activity and disclosed more information that was monitored by the market. Therefore, they were less prone to default and less subject to information asymmetry problems, allowing them to issue cheaper debt. On the other hand, Portuguese hotels with more tangible assets had higher liquidation values and more collateral to offer creditors. This also supported the traditional principle of the minimum financial equilibrium rule, according to which fixed assets should be financed by long-term liabilities [35]. The tax structure of the hotel sector is complex in the sense that an increase in tax benefits unrelated to leverage will induce less interest in debt as a means of tax savings.

The empirical results for the determinants ROA, GROWTH and RISK suggest that Portuguese hotels decide on their capital structure according to POT. More profitable hotels generate more internal resources and tend to rely on self-financing, while less profitable hotels issue debt when internal funds are exhausted and because debt is preferable to external financing. This may also suggest that these entities can rely on internal resources to maintain optimal debt levels. This result is consistent with the argument that TOT and POT are not mutually exclusive [25,30,54–56]. In addition, the recent growth of the sector in Portugal, which was characterised by low average returns, justified the accumulation of debt in hotel firms. Finally, Portuguese hotels with more volatile and uncertain activities were more likely to issue debt when internal financial resources are scarce.

Overall, the results confirmed that the TOT and POT theories provided support for decisions on the capital structure of Portuguese hotels. Their managers sought an optimal mix of equity and debt, which was weighted between tax savings and the cost of financial distress. However, they pursued this objective through the hierarchical sequencing of funding sources in order to minimise the costs of information asymmetry.

Local tourism is expected to recover from the COVID-19 pandemic faster than the international tourism industry. Measures to support tourism businesses and job/income protection will be crucial for the sector, especially for SMEs. In this context, this study highlights the financial instruments that these companies can use to structure their capital. However, tourism is a sector known for its resilience and can play a key role in the recovery of the global economy. Nevertheless, it is important to reflect on the opportunity that the crisis has created for the industry to converge towards more sustainable management, in line with the Sustainable Development Goals (SDGs), and to become more inclusive of workers in the sector.

The main limitation of our study was the constraints of the COVID-19 pandemic, which drastically affected the international tourism sector. With this in mind, the time series of data for the empirical study was truncated in December 2019 in order to avoid biasing the results.

For future research, it is suggested that other relationships should be investigated: on the one hand, whether the academic background of managers has an impact on the profile

of financing decisions, and, on the other hand, whether the expansion of the Portuguese hotel industry has an impact on the sector's financing strategies.

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