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Financial Failure Risk - Firm Value Nexus: Evidence from The European Lodging Companies

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Finansal Başarısızlık Riski Firma Değeri Örüntüsü: Avrupa Konaklama İşletmelerinden Kanıtlar

Abstract

This research study aims to determine the relationship between the financial failure risk and firm value in lodging companies operating in the European lodging industry. The impact of financial failure risks on firm value in lodging companies is tested with the Generalized Method of Moments (GMM) on several econometric models established for the research study. As a result of the analysis, according to the Fulmer H Score, Ohlson Score, and Springate Score models, it is determined that the firm values increase as the financial failure risks of lodging companies decrease. There is a limited number of studies in the finance literature examining the effect of the financial failure of lodging companies on financial performance. In this context, the study tries to reveal the relationship between the risk of financial failure and firm value in lodging companies by contributing to the tourism and finance literature.

Keywords : Financial Failure Risk, Bankruptcy, Firm Value, Lodging Companies, Europe.

JEL Classification Codes : C33, G33, L83.

Öz

Bu araştırmanın amacı, Avrupa konaklama sektöründe faaliyet gösteren konaklama işletmelerinin finansal başarısızlık riski ile firma değeri arasındaki ilişkiyi belirlemektir. Konaklama işletmelerine ait finansal başarısızlık risklerinin firma değeri üzerindeki etkisi, araştırma doğrultusunda oluşturulan Genelleştirilmiş Momentler Yöntemi (GMM) ile test edilmiştir. Yapılan analizler sonucunda Fulmer H Skoru, Ohlson Skoru ve Springate Skoru modellerine göre konaklama işletmelerinin finansal başarısızlık riskleri azaldıkça firma değerlerinin arttığı belirlenmiştir. Finans literatüründe konaklama işletmelerinin finansal başarısızlığının finansal performans üzerindeki etkisini inceleyen sınırlı sayıda araştırma bulunmaktadır. Bu bağlamda çalışma, turizm ve finans literatürüne katkı sağlayarak konaklama işletmelerinde finansal başarısızlık riski ile firma değeri arasındaki ilişkiyi ortaya koymaya çalışmaktadır.

Anahtar Sözcükler : Finansal Başarısızlık Riski, İflas, Firma Değeri, Konaklama İşletmeleri, Avrupa.

1. Introduction

Along with the rapid growth in economies, globalisation has caused the removal of commercial, economic, and political borders, a rapid change in technology and trade in the international sense, and the intensification of economic relations; hence, this situation has affected all enterprises. With the rapidly developing economy in recent years, global financial crises and pandemics are seen as worldwide issues and negatively affect the countries' economies, as well as the real and financial markets (Peric et al., 2021: 2; Salehi & Pour, 2016: 546; Türksoy, 2007: 101). Problems experienced in national economies on a global or local scale may adversely affect the financial performance of enterprises and aggravate financial failure or bankruptcy risks.

The tourism sector, as one of the largest sectors of the world economy, is highly crucial to the economies of both developed and developing countries in terms of generating new employment opportunities, contributing positively to the foreign trade balance, eliminating the differences among regions and countries in terms of economic development, and boosting other sectors in the economy by creating investment and income (Bahar & Kozak, 2006: 159; Sacco & Cassar, 2019: 87). One of the basic elements of the service chain offered in the tourism sector is the lodging service. Lodging companies offering this service are enterprises that need capital-intensive investments for which the demand is highly flexible and in which both economic and political risks are high (Karadeniz, 2017: 168; Karadeniz et al., 2009: 595; Song & Kang, 2019: 1489). Lodging companies are adversely affected by developments such as natural disasters, internal conflicts, epidemics, terrorist attacks, economic and political instability, and national and international economic and financial crises occurring in different parts of the world (Köşker, 2017: 217; Tse, 2006: 20), and ultimately, they are likely to encounter financial failure and bankruptcy. In this context, making effective investment and funding decisions and proactively managing the risk of financial failure by continuously measuring the financial failure risk are of great importance for maximising firm value and maintaining sustainable financial performance in lodging companies in which operational risks are quite high (Gemar et al., 2019: 1547; Karadeniz & Öcek, 2020: 395).

The primary purpose of this research study is to examine the relationship between financial failure risk and firm value in lodging companies operating in European countries. On the other hand, it is determined whether or not the models that predict the financial failure risk probability of enterprises in finance theory successfully predict the impact of financial failure on the firm value of lodging companies. Upon examining the literature on the subject, it is seen that there are studies examining the impact of financial failure risk on the financial performance of enterprises. However, the number of research studies on lodging companies is limited. From this point of view, this research study is intended to help to predict the relationship between financial failure risk in lodging companies and firm value, provide investors and managers with the helpful information in the context of lodging companies in Europe, and contribute to the literature.

The research study consists of five sections in compliance with the specified purposes. In the introduction section, the importance of the subject is explained by presenting general information regarding the issue. In the second section, similar studies conducted in the financial literature are reviewed by mentioning financial failure and bankruptcy concepts. The third section presents the data and methodology used in the research study. The fourth section includes the findings of the research study. In the last section, analysis results are discussed, and related suggestions are made.

2. Literature Review

2.1. Prediction of Financial Failure

Financial failure and legal bankruptcy at the end of this process are two significant risks for enterprises. In the event of financial failure and bankruptcy, many groups, such as business owners, shareholders, employees, investors, government bodies, external auditors, and public institutions, are affected by this process. In this regard, it is crucial to anticipate enterprises' financial failure risk and make economic and managerial decisions. Investigation of the financial failure risk has enabled the development of prediction models in research studies (Buzgurescu & Elena, 2020: 21). Upon examining the literature on the subject; it is seen that studies are using different methodologies to predict and measure either financial failure or bankruptcy risk (Altman, 1968; Dewi & Hadri, 2017; Edmister, 1972; Fulmer et al., 1984; Meyer & Pifer, 1970; Wilcox, 1971). In most of these studies, models have been developed with the help of financial ratios, and the financial failure risk was tried to be predicted in advance (Altman, 1968; Beaver, 1966; Fulmer et al., 1984; Legault, 1987; Ohlson, 1980; Springate, 1978; Weibel, 1973). In general, it is seen that the studies that develop the theory concentrate on issues such as the extent to which companies incur the financial failure risk, the level of applicability of the model, the accessibility of the financial information used in the model, and the extent to which the model predicts financial failure.

Studies conducted on the financial failure of enterprises were first encountered in the finance literature throughout the 1930s. In the first studies ever performed, financial ratios were calculated by evaluating the financial statements of the enterprises classified as successful and unsuccessful. It was observed that the financial ratios of the unsuccessful enterprises in previous years have deteriorated. Among the financial ratios examined in the first studies; net working capital, current ratio, leverage ratio, and equity/total equity and liabilities ratio are found to be more important than other ratios under examination (Merwin, 1942: 14; Pereira et al., 2017: 277; Smith & Winakor, 1935: 51). With the oil crisis in 1973, the concept of financial failure first started to be discussed sophistically. In this process, along with comprehending the importance of predicting financial failure, prediction models began to be developed. Studies conducted on financial failure prediction have been initiated with one-dimensional methods. Towards the 1980s, the most preferred methods were multivariate statistical methods, multiple discriminant models, logistic regression models, and probit regression models (Özdemir, 2011: 56). It is possible to observe the signs of financial failure experienced by enterprises in financial statements. In this context, it is seen

that financial ratios yield the most successful results regarding the estimation of financial failure or bankruptcy risk (Kiyak & Labanauskaite, 2012: 897).

One of the pioneering research studies in the finance literature to estimate the financial failure risk with the help of financial ratios was conducted by Beaver (1966). Beaver (1966) analysed 158 enterprises to assess the financial failure risk of enterprises and found that it was possible to predict financial failure five years in advance courtesy of the predetermined financial ratios. Beaver (1966) suggested that the ratios under examination did not indicate a normal distribution, multivariate models could be realised under the assumption of normal distribution, and it was more advantageous to utilise a one-dimensional model in that respect. Nonetheless, the matched sampling technique used in the research study is mainly criticised because keeping variables such as year and total assets under control may adversely predict financial failure. In the following years, multidimensional models began to be used in research studies due to the disadvantages of one-dimensional models, such as the presentation of contradictory results, the inability to measure all the features of enterprises as well as the relationship among components, and poor predictive power compared to multidimensional models. Achievement of results that differ from the multidimensional models (Outecheva, 2007: 87). Altman (1968), who performed the most basic analysis on the financial failure risk, utilised a multivariate discriminant analysis to estimate the financial failure risk of 66 companies. As a result of the analysis, financial failure was correctly predicted at 94% two years before the financial failure. Altman (1968) was criticised because the study was not based on a theoretical framework, the model's predictive power was sufficient for only 1 and 2 years before the failure, and the basic assumptions were not checked for multidimensional analysis. Nevertheless, it is one of the most referenced studies in the literature (Wilcox, 1971: 390). Weibel (1973) performed the univariate statistical analysis method for small-scale enterprises operating in Switzerland. In the study, it was stated that the cash flow rate of successful enterprises was higher compared to unsuccessful ones. In that context, the cash flow rate significantly predicted financial failure. Springate (1978) tried to measure the financial failure risks of enterprises in Canada, performing multivariate discriminant analysis and determined the predictive power of the model, which was established based on Altman (1968), as 88%.

In the 1980s, it was seen that a transition existed from multivariate discriminant methods to the logit method in predicting the financial failure of enterprises. Ohlson (1980) indicated that financial failure could be expected five years in advance with the model developed using the logit method, one of the statistical methods, on 2,163 enterprises. Fulmer et al. (1984) determined that the established model was successful at 81% in predicting the financial failure risk of 60 companies operating in the USA. Legault (1987) found that the CA-Score model, which they developed by utilising the Altman Z score model, was successful at 83% in predicting the financial failures of enterprises. Since the 2000s, new models have been developed in the financial failure prediction methods in compliance with the development of technology and statistical analysis methods and the needs of enterprises. These methods consist of multinomial logistic regression analysis,

multiple linear regression analysis, probit models, multidimensional statistical models, artificial neural networks, support vector machines, genetic algorithms, and fuzzy logic models (Gritta et al., 2008: 194).

It is seen that the number of models which have been developed to predict financial failures in the tourism sector is quite limited in the literature. Firstly, Gu and Gao (2000) determined 14 ratios to measure the financial failure risk in the tourism sector, using previous studies and considering the sector's characteristics. In the multivariate discriminant analysis they developed, it was determined that 28 enterprises in the tourism sector of the USA were successful with 93% accuracy in predicting the financial failure risks over the period 1986-1987, one year before the failure. It was stated that this study was more suitable for restaurant businesses. Hence its small sample size was criticised. Upon these criticisms, Gu (2002) expanded the sample from 1986-1998 to 36 restaurant businesses in the USA. Upon conducting the multivariate discriminant analysis that was developed with 12 ratios using previous studies (Gu & Gao, 2000), the accuracy rate in predicting financial failure one year before was determined as 92%. Although the performances of predicting financial failure in both of the studies above are found to be successful, the time frame of predicting failure was relatively short for businesses to take appropriate measures. Kim and Gu (2006) generated a logit model to predict the financial failure risks of 32 accommodation businesses in the USA over the period 1999-2004 to eliminate the such deficiency. As a result of the analysis, the accuracy percentage of the logit model in predicting financial failure ranged between 84% and 91%. Youn and Gu (2010) developed a logistic regression model and an artificial neural network model to predict financial failure for 66 hospitality businesses in Korea from 2000 to 2005. The study concluded that both models successfully predicted financial failure; artificial neural networks reliably assessed the future financial situation of hospitality businesses, and the logistic regression model successfully described the measures to prevent failure. According to the results of the research study, it was seen that the success power of the models generated in predicting financial failure in hospitality businesses was relatively high. However, the prediction time frame was short.

2.2. Financial Failure and Financial Performance

Upon examining the literature chronologically, it is seen that besides the pioneering literature on financial failure prediction, there are studies that examined the financial performance characteristics of enterprises with financial failure risks and the relationship between financial failure risk and financial performance. It is observed that these studies used accounting and market-based financial performance criteria.

Tan (2012) examined the relationship between financial failure and firm performance of 277 companies in 8 East Asian countries from 1993 to 2002. The research study measured financial performance by the asset profitability ratio and Tobin's Q, while the financial leverage ratio expressed financial failure. As a result of the research study, it was determined that companies with low financial leverage, similar to previous studies (Asgharian, 2002; Opler & Titman, 1994), performed better than those with higher financial leverage ratios.

Moreover, it was observed in the research study that companies with high leverage ratios exhibited lower financial performance during the crisis period. In a study conducted in Japan, Shean (2019) investigated internal and external factors affecting the firm value of Honda Motor Company from 2013-2017. While firm value was expressed with Tobin's Q, factors affecting firm value were categorised into two groups. The corporate governance index, return on assets, return on equity, and the Altman Z score was the internal factors. In contrast, the external factors were the gross domestic product, unemployment, and exchange rate. As a result of the research study, it was concluded that the firm value of the company (Tobin's Q) was affected mainly by the Altman Z score.

Shaukat and Affandi (2015) examined the impact of financial failure on the financial performance of 15 Pakistani fuel and energy enterprises over the period 2007-2012. In the study, the financial failure risks of the companies were measured with the Altman Z Score model, and earnings per share measured their financial performance. As a result of the research study, a significant and inverse relationship was found between financial failure risk and financial performance. Al Kassar and Soileau (2014) examined the relationship between the financial performance and financial failure of companies operating in different sectors in Jordan from 1998 to 2011. As a result of the research study, it was determined that a strong relationship existed between financial performance and financial failure risks of the companies.

In Shahwan's (2015) study, the relationship between the financial performances (Tobin's Q) and financial failure risks (Altman Z Score) of 86 enterprises in Egypt for the year 2008 was examined. According to the results of the regression analysis, it was revealed that a significant negative relationship exists between the performance of the enterprises and their financial failure risks. In other words, similar to the literature in general, it was determined that the financial performances of the enterprises without the financial failure risk were high. Delavar et al. (2015) examined the relationship between the financial performances and failures of 71 enterprises listed on the Tehran Stock Exchange from 2004-2012. The financial performances of the enterprises were measured with Tobin's Q, whereas the financial failure risks were measured with the Altman Z Score model. According to the results of the research study, it was determined that no relationship existed between the firm values and the financial failure risks of the enterprises, contrary to the general studies conducted in the literature.

Aina (2019) investigated the impact of the financial failure on the operating performance of five sub-companies of the International Mondelez operating in the USA from 2012-2016. In the study, while the financial failure risk was expressed with the Altman Z score, the firm performance was categorised into two groups: firm-specific and macroeconomic factors. While defining the corporate governance index, return on assets, return on equity, and Tobin's Q ratio as firm-specific factors, the gross domestic product, exchange rate, and unemployment rate were determined as macroeconomic factors. As a result of the research study, it was concluded that business performance affected financial

success, macroeconomic factors had a more significant impact than firm-specific factors, and the exchange rate mostly affected financial failure.

In the literature, it is seen that there are studies conducted on financial failure risk estimation of lodging companies. Still, there are a limited number of studies investigating the relationship between financial failure risk and financial performance or firm value. Aggarwal and Padhan (2017) concluded that significant relationships of the leverage ratio, liquidity ratio, firm size, economic growth, and Altman Z score with the firm value (market value, book value ratio, business value) existed in lodging companies in India. In a study conducted on Turkey's BIST tourism index, Karaca and Özen (2017) examined the impacts of financial failure risks on stock prices of lodging companies over the period 2009-2016. As a result of the analysis, it was determined that companies, in general, had financial failure risks. Still, the financial failure risk did not affect the companies' stock prices. Using different methods from other studies, Kim (2018) investigated the factors of financial failure risks of 7,011 accommodation enterprises operating in the USA over the period 1988-2010. In the research study where machine learning, artificial neural networks, and decision tree analyses are performed, it is determined that stock prices, debt/equity ratio, and turnover ratio affect financial failure.

3. Methodology

3.1. Sample and Data

In line with the purposes of the study, the sample of the study is constituted of lodging companies operating in 19 European countries (Turkey, Bulgaria, Croatia, Cyprus, France, Germany, Greece, Jersey, Macedonia, Malta, the Netherlands, Poland, Portugal, Republic of Montenegro, Romania, Slovakia, Slovenia, Spain, the United Kingdom) and listed on the stock markets of the relevant countries. Accordingly, the annual financial data of 70 lodging companies trading in the European stock markets over the period 2012-2019 are utilised in the analyses. The data are obtained from the Thomson Reuters Eikon database and the corporate websites of the lodging companies.

3.2. Models and Variables

First, the financial failure risks of the lodging companies included in the analysis are calculated annually from 2012-2019. In this context, the Altman Z Score, Altman Z' Score, Altman Z'' Score, Springate, Ohlson Score, Fulmer, and CA-Score models are the most accepted ones in the financial literature. Tobin's Q ratio measures financial performance. The dependent variables used in the analysis and the calculation methods of the independent variables are presented in Table 1.

Table: 1
Variables Used in the Analysis

Variables	Calculation Method
Dependent Variable	
Tobin's Q Ratio	(Total Assets + Equity Market Value - Equity Book Value) / Total Assets
Independent Variables	
The Altman Z Score	X_1 = Net Working Capital/Total Assets X_2 = Unpaid Dividends/Total Assets X_3 = Earnings before Interest and Tax/Total Assets X_4 = Equity (Current Value)/Total Debts X_5 = Sales/Total Assets $Z = (0{,}012\ X_1) + (0{,}014\ X_2) + (0{,}033\ X_3) + (0{,}006\ X_4) + (0{,}999\ X_5)$
The Altman Z' Score	X_1 = Net Working Capital/Total Assets X_2 = Unpaid Dividends/Total Assets X_3 = Earnings before Interest and Tax/Total Assets X_4 = Equity (Book Value)/Total Debts X_5 = Sales/Total Assets $Z' = (0{,}717\ X_1) + (0{,}847\ X_2) + (3{,}107\ X_3) + (0{,}420\ X_4) + (0{,}998\ X_5)$
The Altman Z'' Score	Y_1 = Net Working Capital/Total Assets Y_2 = Retained Earnings/Total Assets Y_3 = Earnings before Interest and Tax/Total Assets Y_4 = Total Equity/Total Debt $Z'' = (0{,}0656\ Y_1) + (0{,}0326\ Y_2) + (0{,}0675\ Y_3) + (0{,}0105\ Y_4)$
The Springate Score	A = Working Capital/Total Assets B = Earnings before Interest and Tax/Total Assets C = Income Before Taxes/Short-term Debts D = Sales / Total Assets $Z = 1{,}03A + 3{,}07B + 0{,}66C + 0{,}4D$
The Ohlson Score	WC = Working Capital SIZE = Log (Total Assets) TA = Total Assets TL = Total Liabilities CA = Current Assets CL = Current Liabilities NI = Net Income EBITDA = Earnings Before Interests, Taxes, Depreciation, and Amortization INTWO = Net Income in the past two years (1, if negative; 0 if positive) OENEG = Whether or not total liabilities exceed total assets (1, if exceed; 0, if do not exceed) O-SKOR = -1,32 - 0,407(SIZE) + 6,03(TL/TA) - 1,43(WC/TA) + 0,08(CL/CA) - 2,37(NI/TA) - 1,83(EBITDA/TL) + 0,285(INTWO) - 1,72(OENEG) - 0,52[(NIt-NIt-1) / (|NIt|+|NIt-1|)]
The Fulmer H Score	V1 = Unpaid Dividends/Total Assets V2 = Sales/Total Assets V3 = Earnings before Tax/Total Equity V4 = Cash/Total Liabilities V5 = Total Debts / Total Assets V6 = Short-term Debts/Total Assets V7 = Logarithm of Tangible Fixed Assets V8 = Working Capital/Total Debts V9 = (Log Earnings before Interest and Tax)/Interest Rate H = 5,528(V1) + 0,212(V2) + 0,073(V3) + 1,270(V4) - 0,120(V5) + 2,335(V6) + 0,575(V7) + 1,083(V8) + 0,894(V9) - 6,075
CA-Score	CA-Score = 4,5913(Shareholders' investments/Total Assets (1)) + 4,5080 (Ordinary Operating Profit or Loss + Financial Expenses(1)/Total Assets(1)) + 0,3936(Sales(2)/Total Assets (2)) - 2,76716 In model, 1 = One year ago, 2 = Two years ago
ROA	Net Profits/Total Assets
Log(Sales)	Natural Logarithm of Total Sales

Upon considering the studies in which the variables presented in Table 1 are included, the following models are developed to measure the impact of financial failure on the financial performance of lodging companies.

Model 1:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 ALTZ_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (1)$$

Model 2:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 ALTZ'_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (2)$$

Model 3:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 ALTZ''_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (3)$$

Model 4:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 FUL_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (4)$$

Model 5:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 CA_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (5)$$

Model 6:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 OHL_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (6)$$

Model 7:

$$TQ_{it} = a_i + \beta_1 TQ_{t-1} + \beta_2 SPR_{it} + \beta_3 ROA_{it} + \beta_4 FS_{it} + \varepsilon_{i,t} \quad (7)$$

In the models;

TQ_{it} = the Tobin's Q ratio of the i^{th} company in year *t*,

TQ_{it-1} = the one-period lagged value of the Tobin's Q ratio, as a dependent variable, which is included in the model as required by the GMM method,

ROA_{it} = the return on assets of the i^{th} company in year *t*,

FS_{it} = the logarithms of the sale of the i^{th} company in year *t*,

$ALTZ_{it}$ = the Altman Z score of the i^{th} company in year *t*,

$ALTZ'_{it}$ = the Altman Z' score of the i^{th} company in year *t*,

$ALTZ''_{it}$ = the Altman Z'' score of the i^{th} company in year *t*,

FUL_{it} = the Fulmer H score of the i^{th} company in year *t*,

CA_{it} = the CA-score of the i^{th} company in year *t*,

OHL_{it} = the Ohlson score of the i^{th} company in year *t*,

SPR_{it} = the Springate score of the i^{th} company in year *t*,

β_1 = estimation coefficients,

$\varepsilon_{i,t}$ = the error term.

Panel data analysis, which provides the opportunity of combining the time-series and cross-sectional data, is conducted in the study. Since the panel data analysis allows for analysis with an extensive data set, short time series can be expanded through included cross-sections and provide the opportunity to study the data with short time dimensions (İskenderoğlu et al., 2012: 301). Dynamic panel data analyses are mostly preferred in the studies since they allow for stronger predictions in situations such as endogeneity problems encountered during the analyses, heteroscedasticity, and autocorrelation. One of the most widely used methods of dynamic panel data analysis is the Generalized Moments Method (GMM), which was first coined by Balestra and Nerlove (1966) and later developed by Arellano and Bond (1991) (Topal & Hayaloğlu, 2017: 198; Yerdelen-Tatoğlu, 2018: 136). In this study, the analysis was performed using the Difference Generalized Moments Method. In the GMM method, the first difference model is transformed by using the instrumental variable matrix. Following the transformation, the model is estimated using the Generalized Least Squares method. Therefore, the Generalized Moments Method can also be expressed as a Two-Stage Instrumental Variables Estimator (Yerdelen-Tatoğlu, 2018: 136). The prediction results' validity from the GMM method can be analysed with different post-prediction tests, such as the Sargan and autocorrelation tests. The Sargan test is performed to determine whether or not the instrumental variables used in the models are valid and whether or not the main variables are fully reflected (Gujarati, 2014: 442). The AR1 and AR2 autocorrelation tests are performed to determine whether or not an autocorrelation problem exists in the dynamic panel data prediction model results. It is expected to be statistically significant and negative in the AR1 test result, whereas statistically insignificant in the AR2 test result (Arellano & Bond, 1991: 288). In GMM studies, the Wald test determines whether the model estimation is correct (Roodman, 2006: 123).

3.3. Hypotheses

The hypotheses tested in compliance with the research study's main objectives and the subject's theoretical framework are listed below.

H1. There is a positive relationship between the Altman Z Score and Tobin's Q.

H2. There is a positive relationship between the Altman Z' Score and Tobin's Q.

H3. There is a positive relationship between the Altman Z'' Score and Tobin's Q.

H4. There is a positive relationship between the Fulmer H-Score and Tobin's Q.

H5. There is a positive relationship between the CA-Score and Tobin's Q.

H6. There is a negative relationship between the Ohlson O Score and Tobin's Q.

H7. There is a positive relationship between the Springate Score and Tobin's Q.

4. Results

4.1. Descriptive Statistics

In this section, the descriptive statistical findings of the variables in the models, which are established within the scope of the analysis over the period 2012-2019, are presented in Table 2.

Table: 2
Descriptive Statistics

Variables	Mean	Minimum	Maximum	Std. Dev.	Total Observation
Tobin's Q	1,012	0	10	1,515	539
Altman Z	3,100	-8,225	20	4,251	
Altman Z'	2,517	-4,987	20	3,858	
Altman Z''	0,075	-0,436	2,1	0,198	
Springate	0,536	-6,940	8,037	1,204	
Fulmer	-0,467	-12,76	20	5,433	
CA-Score	0,248	-10	10	1,692	
O-Score	0,365	0	1	0,357	
Return on Assets	0,024	-10	10	1,814	
Log(Sales)	7,067	0	16,68	2,347	

The mean Tobin's Q value of the lodging companies included in the analysis is 1,01. Tobin's Q value exceeding 1 indicates that enterprises use their assets and resources effectively and have growth opportunities. They are highly competitive (Canbaş et al., 2005: 25). Nevertheless, it is also noteworthy that the mean Tobin's Q values of the lodging companies within the scope of the analysis are well above the limit.

In the Altman Z score model, if the Z value is equal to or lower than 1,81, the enterprise has a financial failure risk; if the Z value ranges between 1,81-2,99, the financial failure risk cannot be fully interpreted since the enterprises are in the grey zone, and if the Z value is higher than 2,99, the enterprise does not have any financial failure risk. It is considered financially successful in the coming years (Altman, 1968: 602). Upon examining Table 2, it is seen that the mean Altman Z value of the lodging companies included in the analysis is 3,10. It is noticed that the lodging companies included in the study are, in general, financially successful according to the mean Altman Z score and do not have any financial failure risks.

In the Altman Z' score model, if the Z' value is equal to or lower than 1,23, the company has a financial failure risk; if the Z' value ranges between 1,23 and 2,99, it cannot be interpreted since the company is in the grey zone, and if the Z' value is higher than 2,99, it indicates that the company does not incur any financial failure risk (Altman & Hotchkiss, 2006: 43). In Table 2, it can be asserted that the mean Altman Z' value of the companies is 2,51, and the lodging companies are generally in the grey zone according to the Altman Z' model, and no comments can be made regarding their financial status.

In the Altman Z'' model, the Z'' score being equal to or lower than 1,1 indicates that the company has a financial failure risk; if the Z'' score ranges between 1,1 and 2,6, it means that the enterprise is in the grey zone and no comment can be made; if the Z'' score is higher than 2,6, it means that the financial situation of the company is good (Altman, 2013: 437). It is seen that the mean Altman Z'' value in Table 2 is 0,07, and the companies included in the analysis, in general, have financial failure risk according to the Altman Z'' value.

In the Springate model, enterprises with a Z value lower than 0,862 are considered to be financially unsuccessful (Vickers, 2006: 6). The mean Springate value in Table 2 is 0,53, and it is seen that the companies included in the analysis are, in general, have financial failure risks according to the Springate model.

According to the Fulmer model, if the H value is lower than zero, the company is considered to have financial failure risk, whereas if the H value is higher than zero, the company is considered successful (Sevil et al., 2014: 192). The mean value of the Fulmer H score in Table 2 is -0,46. Therefore, it is observed that lodging companies, in general, have financial failure risks according to the Fulmer H model.

In the CA-score model, if the CA Score is lower than -0,3, the company is considered to have a financial failure risk (Aydın et al., 2010: 503). It can be claimed that the mean value of the CA-score in Table 2 is 0,24 and that the companies generally do not have financial failure risks according to the CA model.

According to the Ohlson model, the company incurs the financial failure risk if the O-Score value is higher than 0,50. On the other hand, if the O-Score value is lower than 0,50, it is accepted that the company does not incur any financial failure risk. The mean O-Score value in Table 2 is 0,36. In this context, it can be claimed that the companies included in the analysis generally do not have any financial failure risks; hence, they are financially sound enterprises.

The mean value of ROA, one of the control variables, is determined as 0,02, and the mean value of sales is 7,06. Upon examining the standard deviation values of the variables included in the analysis in the sample of lodging companies presented in Table 2, it is seen that the Altman Z, Altman Z' and Fulmer score variables are higher than the mean values. Accordingly, it can be said that the values of these three variables contain high differences. Furthermore, upon examining the smallest and largest values of the variables, it can be asserted that there are lodging companies with extreme values.

4.2. Correlation Analysis Results

The obtained findings of the correlation analysis of the variables included in the analysis over 2012-2019 for the study are presented in the table below. The obtained correlation analysis results in the study reveal bilateral relationships among the variables.

Table: 3
Correlation Analysis Results

	Altman Z	Altman Z'	AltmanZ''	Springate	Fulmer	CA-S	O-Score	ROA- Log (Sales)
Return on Assets	0,137	0,076	0,074	0,182	0,067	0,064	-0,245	-0,014
Log Sales	-0,118	-0,123	-0,095	0,065	-0,014	-0,105	-0,161	

Upon examining Table 3, it is seen that there is a weak and positive correlation between the rates of return of lodging companies and the models such as the Altman Z, Altman Z', Altman Z'', Springate, Fulmer, and CA-score that measure the financial risks of the enterprises. Also, it is found that a negative correlation exists between the return on assets and the Ohlson model. There is a weak and positive correlation between sales, one of the variables presented in Table 3, and the Springate model. It is determined that a weak and negative correlation exists between sales and the models such as Altman Z, Altman Z', Altman Z'', Fulmer, CA-score, and Ohlson.

4.3. GMM Analysis Results

Table 4 presents the estimation results of seven models tested with the GMM on lodging companies. Upon examining Table 4, the level of explanation of dependent variables by independent variables is examined within the scope of control tests. The Wald test determines the power of independent variables in explaining the established models. According to the Wald test results, a 1% significance level indicates that the explanation levels of the models are statistically sufficient. In this context, the independent variables discussed in the analysis have the power and competence to explain the dependent variable. The Sargan test is performed to reveal whether or not the independent variables used in the models are valid, in other words, whether or not the overidentification restrictions apply. The Sargan test results reveal that overidentification restrictions apply. According to the GMM method, the absence of the second-order autocorrelation is required for the significance of the model for parameter estimators to be effective in dynamic panel data analysis. According to the AR2 test results, it is concluded that no second-order autocorrelation exists.

Table: 4
GMM Results

	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII
Constant	0,343*	0,354*	0,335*	0,528*	0,318*	0,399*	0,058
Tobin's $Q_{(t-1)}$	0,217*	0,217*	0,221*	0,220*	0,225*	0,215*	0,228*
Financial Failure Risk	-0,004	-0,009	-0,148	0,129*	0,005*	-0,003	-0,588*
	Altman Z	Alt. Z'	Alt. Z''	Springate	Fulmer	CA-S	O-Score
Return on Assets	-0,003	-0,004	-0,004	0,011	0,004	-0,001	0,014
Log (Sales)	0,039**	0,038**	0,039**	0,021	0,039**	0,027**	0,048**
Post-GMM test results							
Wald (prob.)	0,000	0,000	0,000	0,000	0,000	0,000	0,000
AR2 (prob.)	0,519	0,519	0,523	0,474	0,522	0,521	0,453
Sargan (prob.)	0,320	0,313	0,280	0,159	0,283	0,346	0,178

** denotes %99 significance level, ** denotes %95 significance level.*

As a result of the performed analyses, it is observed that the financial failure models such as the Springate, Fulmer, and Ohlson scores affect Tobin's Q ratio. It is determined that

a positive and significant relationship exists between the Z value in the Fulmer H and Springate model and Tobin's Q ratio; however, a negative and significant relationship exists between the Ohlson O-Score value and Tobin's Q ratio. There is no statistically significant relationship between the financial failure risks calculated with the Altman Z, Altman Z', Altman Z'' and CA-score models and Tobin's Q ratio. It is determined that no relationship exists between the ROA and Tobin's Q ratio for all models presented in Table 4. Table 4 shows that Tobin's Q ratio is statistically significantly and positively affected by the firm size in all models except for Model IV. Therefore, hypotheses 4, 6 and 7 established within the scope of the research study are accepted, whereas hypotheses 1, 2, 3 and 5 are rejected.

5. Discussion and Conclusion

5.1. Conclusions

The study examined the relationship between financial failure risks and the firm value of 70 lodging companies listed on 19 European countries' stock markets from 2012-2019. In the analysis, financial failure is represented by the Altman Z Score, Altman Z' Score, Altman Z'' Score, Springate Score, Ohlson Score, Fulmer Score, and CA- Score. In contrast, the firm value is represented by Tobin's Q. Besides, the return on assets and sales (logarithmic), which are thought to affect financial performance, are included in the analysis as control variables. The models established for the study are analysed by the GMM, one of the dynamic panel data analysis methods. During the analysis process, the analysis is conducted with seven different GMM models in which the dependent variable is Tobin's Q.

According to the analysis results, a relationship is determined between the financial failure models such as the Fulmer H, Springate, and Ohlson O-Scores and Tobin's Q ratio. A positive and significant relationship exists between the models, such as the Fulmer H-Score and Springate Z score value and Tobin's Q ratio. In this context, the decline in the financial failure risk based on the increase in the H score obtained from the Fulmer model, and the Springate Z score increases the firm value of the lodging companies. This finding is consistent with the previously conducted studies, which stated that companies did not have a financial failure risk, positively affecting the firm value (Shean, 2019). Again, according to these models, the decline in the financial failure risk positively affects the firm value of the enterprise and increases the willingness of investors to invest. As a result of the analysis, it is determined that a negative relationship exists between the Ohlson O-Score value and Tobin's Q ratio. In this context, as the O-Score value obtained from the Ohlson model increases, the firm value declines as the financial failure risk of the enterprise increases. These obtained results are similar to the studies conducted by Shahwan (2015) and Shaukat and Affandi (2015). On the other hand, it can be claimed that the Altman Z, Altman Z', Altman Z'' and CA-Score models are not in a statistically significant relationship with the firm values of the companies. In this context, these models are ineffective in determining the lodging companies' firm values.

5.2. Theoretical Implications

Theoretically, the most significant contribution of this research study involves revealing the relationship between financial failure risks and financial performances using financial failure prediction models in lodging companies. As a result of the research study, it is determined that the financial failure risks of lodging companies do not yield the same results in all prediction models. Still, some models yield approximately the same results. According to all three of the financial failure prediction models (the Altman Z', Springate, and Fulmer) included in the analysis, it is determined that lodging companies will have financial failure risks in the coming years (Table 2). On the other hand, in all three models (the Altman Z, CA-Score, and Ohlson O-Score), it is determined that lodging companies do not have financial failure risks in terms of the mean values for the coming years. According to the Altman Z' model, no comment can be made regarding the financial failure of the lodging companies. It can be asserted that these differences arise from the differences in financial data considered in each model and the cut points in the financial failure criteria.

The study determined that financial failure risks measured according to the Fulmer H, O-Score, and Springate models significantly affect the firm value in lodging companies (Table 4). According to the models above, as the financial failure risk increases, the firm value decreases, and vice versa. Therefore, theoretically, it can be claimed that the Fulmer H-score, Ohlson O-Score, and Springate models are effective and successful in estimating the firm values of lodging companies.

Upon examining the literature, various studies on prediction models are used to determine the financial failures of lodging companies (Altman, 1968; Edmister, 1972; Fulmer et al., 1984; Meyer & Pifer, 1970; Wilcox, 1971). In the literature, financial failure is generally considered in the estimation dimension (Altman, 1968; Fulmer et al., 1984; Legault, 1987; Ohlson, 1980; Springate, 1978). Therefore, only a limited number of studies have been conducted on the relationship between financial failure and financial performance in the international literature (Aggarwal & Padhan, 2017; Aina, 2019; Asgharian, 2002; Al Kassar & Soileau, 2014; Kangarluei & Motavassel, 2015; Karaca & Özen, 2017; Kim, 2018; Shahwan, 2015; Shean, 2019; Shaukat & Affandi, 2015; Tan, 2012; Opler & Titman, 1994). This research study is thought to contribute to both the theory and literature in terms of determining the relationship between financial performance and financial failure, as well as obtaining findings about which financial failure prediction model would effectively predict financial performance rather than determining the financial failure risk in lodging companies merely with estimation methods.

5.3. Practical Implications

Lodging companies, among the most critical actors in the tourism sector, are enterprises with many fixed assets and, therefore, need a significant amount of fixed assets throughout the investment phase. On the other hand, lodging companies need renovation, expansion and modernisation investments during their activities; they are enterprises in

which energy, personnel, and raw material expenses are increasing daily. Hence, risk and uncertainty are always present. Since most of the assets of lodging companies consist of fixed assets, there is a possibility of problems in terms of liquidity and profitability. Long-term liabilities and equities are of great importance in funding these assets. Moreover, lodging companies are also affected by the constant change in consumer behaviour. As a result of this fact, to follow modern and technological improvements during the activity phase, it may be encountered to venture into renewal, merger, and acquisition investments for financial purposes. The sensitivity of lodging companies toward systematic risks beyond their control also aggravates the financial risk of these enterprises. Measuring and managing lodging companies' financial failure and bankruptcy risks is crucial. It is of great importance for the financial sustainability of these enterprises to determine the possible impacts of such factors on lodging companies with a proactive approach and to develop appropriate financial strategies.

As a result of the research study, it is determined that financial failure risk affects the firm value of lodging companies according to the Fulmer H, O-Score, and Springate models. Again, according to the Fulmer H and Springate models, the lodging companies' financial failure risks existed for the consequent years. In contrast, according to the Ohlson O-Score model, it is determined that lodging companies do not have financial failure risks in terms of average values for the coming years. In this context, the managers of the lodging companies operating in Europe may be advised to pay attention to the financial ratios (Unpaid Dividends/Total Assets Ratio, Sales/Total Assets Ratio, Earnings before Tax/Equity Ratio, Cash/Total Debt Ratio, Debts/Total Assets Ratio, Short-Term Debt/Total Assets Ratio, Tangible Asset Size, Working Capital/Total Debt Ratio, Earnings Before Interest and Tax/Interest Ratio, Working Capital/Total Assets Ratio, Earnings Before Interest and Tax/Total Assets Ratio, Earnings Before Interest and Tax/Short Term Debt Ratio, Working Capital, Total Asset Size, Total Debt Amount, Current Assets, Short Term Foreign Resources Level, Net Income and EBITDA) that are included in 3 of these models. It is considered that keeping financial data such as asset turnover rate, financial leverage, working capital, short-term borrowing, and operating profit under constant control, mainly used in all three models, would be necessary for terms of mitigating the financial failure risk. In this context, it is thought that lodging companies operating in Europe should pay attention to liquidity, profitability, financial structure, and activity efficiency and effectively manage their liquid assets, composition, and funding of tangible fixed assets.

5.4. Limitations and Future Research

Some limitations should be taken into account upon interpreting the findings of the research study. Firstly, considering the difficulties in obtaining financial data, an analysis is conducted on the data of public lodging companies trading in the European countries' stock markets over the period 2012-2019 and whose financial data can be accessed. Therefore, the study covers a certain analysis period and 19 countries. In future studies, annual and quarterly analyses including different variables may be conducted more broadly throughout the longer term. Secondly, the enterprises included in the analysis consist of companies

entirely in the lodging activities. Hence the companies that are also engaged in other activities such as casinos, real estate investment partnerships, etc. are excluded from the study. Therefore, it would be beneficial to include lodging companies with ancillary activities in future studies to make a comparison. Furthermore, it is thought that research studies involving other sub-sectors of tourism, as well as the impact of the COVID-19 pandemic on the financial failure risks and financial performances of lodging companies, would contribute to the tourism literature.

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