

Financial Failure Estimation of Companies in BIST Tourism Index by Altman Model and its Effect on Market Prices¹

Samuray Karaca

PhD Candidate in Management and Business Administration Sciences, Lecturer,
Çivril Vocational High School, University of Pamukkale, Çivril/Denizli, Turkey
samuraykaraca@hotmail.com,

Ercan Özen²

Phd.in Banking and Finance, Associate Professor
School of Applied Sciences, University of Uşak, Uşak, Turkey
eozentr@hotmail.com

Abstract

In this study, it is aimed to measure the negative effects of recent developments in the Turkish tourism sector on the financial failures of companies on Istanbul Stock Exchange tourism index. Financial tables of companies in the tourism sector during 2009-2016 period were analyzed with Altman Z Score Model and it was researched whether they carry the of bankruptcy risk or not. However, the exchange prices of the stocks are compared with the calculated Z scores and the probability of bankruptcy that was measured to what extent the priced in the exchange.

Result of analyzes show that the problems occurred in 2015-2016 years increased tourism companies' bankruptcy risk. In this period, there was no significant change in stock prices of companies in general. Panel data regression analysis results also did not provide evidence for the existence of a statistically significant relationship between the likelihood of bankruptcy and its effect on prices.

Predicting the risk of bankruptcy is of vital importance for both companies and shareholders. Findings will make a significant contribution in determining strategy for companies in this sector. The results from the other side will also guide investors on their share preferences.

Keywords: Altman Z Model, Probability of Bankruptcy, Borsa Istanbul, BIST, Tourism Index.

1. Introduction

The financial crises that have taken place have caused the concept of financial failure to become the foreground. Especially in 2008, the global financial crisis in 2008 caused the real estate sector in the US and spread to other countries and became a global crisis. This crisis has threatened all business areas and shows that companies can go bankrupt if they do not depend on the effectiveness and efficiency of their activities to survive.

Recent economic problems also have led to the bankruptcy of many companies, and research on risk and business has become the focus of the companies and shareholders (Aliakbari, 2009). Before encountering such a problem, it was taking place at the lowest level of the risk in the shareholders world-wide. However, due to recent developments, stakeholders have begun to look for ways to provide predicting of these risks since affects the financial system of bankruptcy that creates a risk for the economy.

To this end, negative developments in last decade, the effects of financial failures on tourism companies listed in BIST have been tried to be measured by the Altman Z-Score model, which has a very widespread used.

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² corresponding author

The Russian jet was dropped in November of 2015, and the tension between Turkey and Russia continued to cause a significant decline in the visited number of Russian tourists, especially in the second half of 2016. After the aircraft was dropped, the increasing tension went to the highest level on 28 November 2015, when Russia decided to sanction Turkey. A number of restrictions such as stopping tourism to Turkey, canceling charter flights, bringing a ban on Turkish citizens to work in some areas, removing visa-free travel, and stopping Russian Universities cooperation with Turkey. (<https://www.morogluarseven.com/news/24-kasim-2015ten-itibaren-rusya-tarafindan-turkiyeye-karsi-uygulanen-ekonomik-yaptirimlar-ve-ticaret-engelleri>).

Moreover, regional problems in Syria have bring with great risks in terms of Turkish tourism companies. The probability of physiological threat, i.e. physiological risk is one of the most significant factor influencing an individual tourist's engagement in tourism activities (Taskin et al., 2017).

This study aims to predict the bankruptcy of companies in Turkish tourism sector by using Altman Z score model. The anticipation of the financial risk is a power element. It helps both companies and investors to make prudent and correct decisions. Altman Z score model managers can help the company to take precautions before they become troubled and to find solutions before the situation gets worse. The model, however, may also allow investors to avoid losses by attracting their investors from bankruptcy-prone companies (Thai, 2014: 197-207). Altman (1968) Z-score model is a model that helps investors to predict the risk of bankruptcy of a particular companies. This score is based on 5 financial rates: Profitability, leverage, liquidity, activity and payment power is the rates. Altman has succeeded in developing a model that increases companies predictions of bankruptcy risk by applying discriminant analysis to the data obtained from these ratios.

In this study, it was aimed to reveal the bankruptcy probabilities of the tourism companies traded in BIST using Altman Z score model. In addition, how the situation is reflected in stock prices in the stock market has been identified as another goal. Following the introductory chapter, the study was continued with the evaluation of explanation of developments in Turkey and in world tourism, explanation of financial failure, explanation of Altman model, literature, methods, applications and findings, and completed with the results and evaluation section.

2. Tourism sector and its importance for Turkish economy in recent years

Tourism sector is one of the fastest growing and largest sectors (Koç and Boz, 2014; Şahin et al.; Meyer and Meyer, 2015; Boz and Yılmaz, 2017). A significant number of tourists visiting the world travel to Europe. Europe, which is visited by 609 million people in 2015, is followed by America with 191 million people and Asia-Pacific with 277 million people. The countries that attract the most tourists are France, USA and Spain respectively. Turkey, ranked 6th in the world rankings in 2014, this position gradually rose due to the initiatives that have been taking place since the 1980s. While the same in the number of tourists in the first 10 countries in the world rankings such as China and France remained in 2014, the number of tourists coming to Turkey show an increase by 5,3%. The highest increase in the ranking of the top 10 countries was seen in Mexico with 20,5%. (Resources: UNWTO, TSI)

World tourism has been declining due to the increasing global terrorist attacks for last three years. Spain and Greece, which were able to transform the "Crisis" into flourishing countries, were the most profitable countries in this period, while Turkey was at the head of the affected countries. While Turkey ranks 6th in the list of the most visited countries in the world in 2013 and then drops behind to 44th rank in 2016.

In 2014, according to the figures reached from the website Movehub compiled by World-Statistics.org, Turkey ranks 34th and 6th in the list of the countries that attract the most tourists in the world. The country at the top of the list was France with 81 million 400 thousand tourists. Turkey listed was taking place on the countries such as the United Kingdom, Germany and Russia. After Turkey's dropping of Russia's war planes due to border violations, after the tension between the two

countries, Russian tour operators have also decided to stop their Turkish sales and have canceled their previous reservations. Reservation cancellations, which started after the bombed mass terrorist attacks that were carried out afterward, have had a negative impact on Turkey's tourism.

After Russia, even with the European countries where the most tourists come have further deepened the crisis the political disputes that have been taking place since last year. The stagnation in the economy, the increasing terrorist incidents, the Russian crisis and the political problems experienced by EU countries negatively affected the tourism sector. The decline in tourism receipts in Turkey began in 2015. According to Turkish Statistical Institute (TSI) data, tourism receipts declining to 31 billion 464 million 777 thousand dollars in 2015, decreased by 8,3 percent in 2014.

After the terrorist attacks in 2016, reservation cancellations rise by 50 percent. While the Ministry of Culture and Tourism shows that tourism declines further in 2016 compared to 2015, the Turkish Statistical Institute (TSI) data also indicate a crime in the tourism sector. Turkey's first quarter tourism receipts were announced as 34 billion dollars, with recession 17 percent by TSI.

When Turkey's tourism data for the last 10 years are analyzed, it has been observed to rise continuously except for 2006, 2015 and 2016. While the fact that the World Cup in Germany in 2006 caused this recession, in 2015, the crisis with Russia has been effective in declining. In 2016, it decreased by 29,7% compared to 2015. Figure 1 shows the amount of tourism receipts Turkey has acquired in recent years and the number of tourists.

Turkish tourism receipts approximately come 80% from foreigners and 20% from Turkish citizens residing abroad. Compared to 2014 in 2015 of foreign tourists that both in personal spending of 70% and in spending on package tours of 30% that decreasing as well as, package tour expenditures were significantly decreased by 19,6%.

From economic aspects of the tourism; contribution to the development of foreign trade balance, the potential for employment of labor force, national income, inflow of foreign currency and tourist attractions is incontrovertible. It provides easier foreign exchange flow compared to the foreign exchange provided by goods and services export.

Turkey, which meets its energy needs from the outside, needs a foreign exchange for the structurally emerging external deficit. The foreign exchange gaps that arise, whatever the purpose of tourism receipts, its role in financing is great.

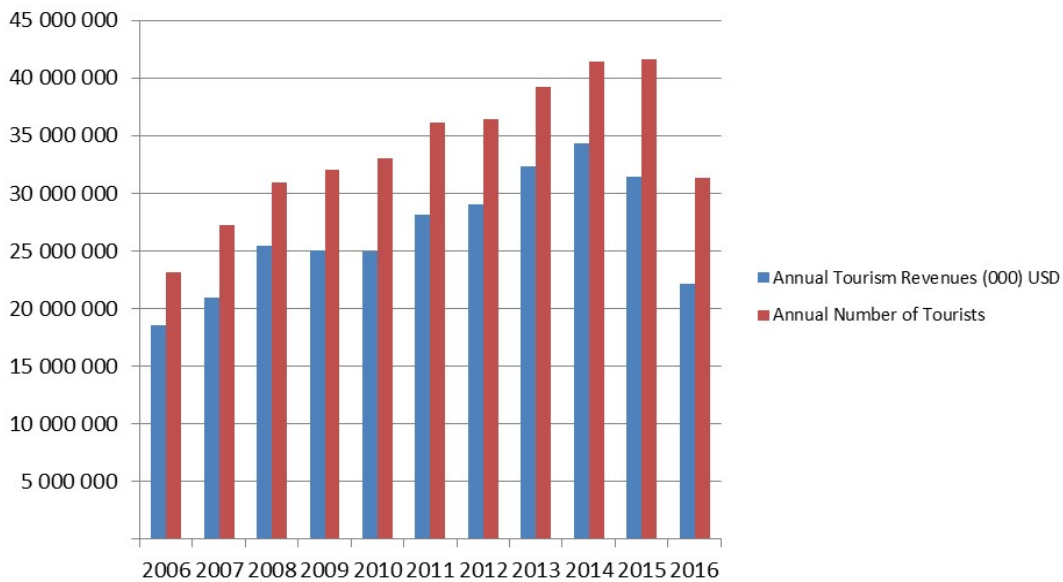


Figure 1. Turkey's Tourism Receipts (US Dollars) and Incoming Tourist Number

Resource: http://www.tuik.gov.tr/PreTablo.do?alt_id=1072

Tourism sector in Turkey has an important influence with the direct and indirect contribution of economic activities. While the services provided by the accommodation, transport and entertainment sectors provide direct contribution to the economy, input purchases of these sectors, new investments and government spending indirectly affect the economy. The expenditures of the employed workforce in the sector creates the effect of the economy “induced consumption”. According to the calculations of the World Travel and Tourism Council, while the total contribution of the tourism sector to GDP is around 12,9% in 2015, the total contribution of sector to employment increases to 8,3%.

The tourism sector is linked many sectors according to its structure. While the tourism sector provides inputs from 49 sectors, the services provided by this sector are also used as input to different sectors of 55. Developments in the tourism sector have a significant impact on the food and beverage sector, the agriculture and livestock sectors, which provide inputs to this sector. The activities of travel agencies and wholesale and retail trade sectors are also significantly influenced by developments in the sector.

([https://ekonomi.isbank.com.tr /UserFiles/pdf/sr201606_turizmsektoru.pdf](https://ekonomi.isbank.com.tr/UserFiles/pdf/sr201606_turizmsektoru.pdf)).

Table 1. Other Sectors that Provide Input to the Tourism Sector

| Business Lines | % |
|------------------------------------|--------------|
| Food and beverage production | 29,0 |
| Agriculture and husbandry | 14,7 |
| Transportation | 6,0 |
| Energy production and distribution | 5,3 |
| Retail trade | 5,3 |
| Finance sector | 5,0 |
| Estate | 4,5 |
| Wholesale trade | 4,4 |
| Other business activities | 3,9 |
| Chemical industry | 2,9 |
| Other | 19,1 |
| Total Production | 100,0 |

Source: https://ekonomi.isbank.com.tr/UserFiles/pdf/sr201606_turizmsektoru.pdf

Table 2. Other Sectors that Provided Output by the Tourism Sector

| Business Lines | % |
|--|--------------|
| Logistics activities | 24,9 |
| Transportation | 12,9 |
| Wholesale trade | 12,8 |
| Airways transporting | 8,5 |
| Banking services | 5,7 |
| Retail trade | 4,7 |
| Sale, rental, maintenance and repair of motor vehicles; fuel sales | 3,0 |
| Estate sector | 2,6 |
| Other business activities | 2,2 |
| Activities of affiliated organizations not elsewhere classified | 2,1 |
| Other | 20,5 |
| Total Production | 100,0 |

Source: https://ekonomi.isbank.com.tr/UserFiles/pdf/sr201606_turizmsektoru.pdf

3. Financial failure

It was mentioned two types of financial failures in the literature. These are; 1- Technically insolvency and 2 - Bankrupt. Technical failure is defined as the inability of the operator to make short-term debts of the liquidity of the liquidity, and inability to pay its outstanding debts (Gönenli, 1998: 600). The fact that a business can not pay its current debts indicates that this entity is

technically unsuccessful (Dağlı, 1994: 129). Bankruptcy is defined in differently in many countries. While bankruptcy in Turkey is defined as companies become insolvent it denominated in the form of stopping of bankrupt payment in England and Altman has described financial failure as bankruptcy, stated that financial failed businesses were either legally bankrupt or were reorganized according to bankruptcy provisions (Altman,1971: 3). The reasons of bankruptcy can be specified as follows (Reen, 1990:393-394):

- Decrease in profitability,
- The shift of capital non-operating,
- Access of imported goods to the inner market,
- Failure of the equity and liability balance
- The difficulty in market control,
- Undercapitalisation
- Inadequate financial control,
- Unable to control of the working capital,
- The failure to eliminate the deficiency.

As can be understood from the above explanations, financial failure; it is a process that begins with the situation where the companies cannot pay their debts and end with bankruptcy. If the payment difficulty is long, the risk of bankruptcy will of course arise.

4. Methods of forecasting financial failure and Altman model

It is very important that the financial failure prediction is forecasted in advance in order to protect the company and its stakeholders and to maintain their profitability by establishing the causes of failure of the enterprises (Barto and Nartin, 1991). 223-224). They are the shareholders as well as the company that is most damaged by financial failure and possible adverse effects. Creditors can not reclaim the credits they give, employees are faced with at risk of losing their jobs. The financial failure forecast early warning system is an important model for deciding and evaluating about businesses by offering independent and real knowledge to the manager.

Altman, using financial statements, identified 22 potential import the financial ratios and categorized them for evaluation. The ratios in hand the in five categories: these are; liquidity, profitability, leverage, debt payment, and activity ratio. These ratios were chosen according to their relation to the work and their popularity in the literature. While in the Altman model successful and unsuccessful company that creating are dependent variables, the coefficients that determine the significance of the ratios used to distinguish these companies are modeled as follows. In this model, while the Z value on the left side of the equation shows companies' survival power, the variables to the right of the equation that represent the ratios and coefficients. The Z value consists of from sums that multiplied by the coefficients with the ratios. The Mathematical equality of the Altman Model is like this (Altman, 1968):

$$Z = 1,2X1 + 1,4X2 + 3,3X3 + 0,6X4 + 0,999X5 \quad (1)$$

$$X1 = \text{Working Capital} / \text{Total Assets}; \quad (2)$$

$$X2 = \text{Retained earnings} / \text{Total Assets}; \quad (3)$$

$$X3 = \text{EBIT} / \text{Total Assets}; \quad (4)$$

$$X4 = \text{Total Stock Exchange Value} / \text{Total Liabilities}; \quad (5)$$

$$X5 = \text{Sales} / \text{Total Assets}; \quad (6)$$

The original Z-Score model can only be applied to publicly held companies since it is based on the market value of the company. Altman (1983) emphasized that the Z-Score model was designed as open to public. The interpretation of the model in question is as follows:

- Companies with a Z value smaller than ($Z < 1.81$) 1.81 is higher the bankruptcy risk.
- Companies with Z value $1.81 < Z < 2.99$ among are in the gray area.
- Companies with a Z value greater than ($Z > 2.99$) 2.99, the probability of bankruptcy is very low.

Altman (1983) revised the first model it developed in 1968, creating a new model for private companies with different coefficients.

$$Z=0.717(X1) + 0.847(X2) + 3.107(X3) + 0.420(X4) + 0.998(X5) \quad (7)$$

Critical limits for private companies are:

- Companies with a Z value less than ($Z < 1.23$) 1.23 are higher the bankruptcy risk.
- Companies with Z value $1.23 < Z < 2.99$ among are in the gray area.
- Companies with a Z value greater than ($Z > 2.99$) 2.99, the probability of bankruptcy is very low.

X1 - Net Working Capital / Total Assets;

Net Working Capital / Total Assets ratio; is a financial asset that measures the liquidity of a company. The operating capital consists of the difference between Current Assets and Short Term Liabilities. If this difference is negative, the debts will be less able to pay. If it is positive, the risk of not paying the debts decreases. Therefore, this ratio is high in successful companies but low in unsuccessful companies, and is also positively associated with a company being financially sound (Altman, 1968).

X2 - Retained earnings / Total Assets.

This ratio can be said to be related to the age of the companies, as well as to the measure of total profitability. This is because, are opinions that a young company is growing and there is not enough time to increase its total profitability. For this reason the results of this ratio of young companies may be relatively low. It can be argued that the probability of bankruptcy of young companies in this distinguishing process will be higher than the companies in the market for a long time. But the failure of a company in its first years of establishment and the possibility of bankruptcy are higher.

X3 - Earnings before Interest and Taxes / Total Assets.

The total EBIT / Assets ratio can be seen as an indication of how effectively a company uses its assets. At the same time, this ratio is also a measure of the productivity of the companies. The rate result of a company, if the how higher it is, it can be said that earnings are higher than assets and the financial difficulty is lower. In financially difficulties firm, this ratio occur low.

X4 – Owners Equity / Total Liabilities.

This ratio a company's that is a measure of balance the liability and equity with financial leverage. It also consists of two variables, one is the market value of the equity and the other is the company's obligations. Except financing, this structure provides a higher earning potential to a firm than others. Besides, a firm's that exceed its debts assets that it shows how much the value of their assets can fall and their can go bust (Altman, 1968).

X5 - Sales / Total Assets.

The Net Sales / Total Assets ratio is an indication of the winning power of the assets and how effectively they are being used. While this ratio, which represents the winning power of each TL invested in assets, increases as the usage efficiency of assets increases, the decrease in sales for companies experiencing financial difficulties will result in a low ratio.

5. Literature

Academic researchers around the world, used various techniques and methods in estimating and assessing the risk of bankruptcy. The most used popular methods are the multiple discriminant method (Altman, 1968) and logit analysis (Ohlson, 1980). Altman has been accepted as continuously developed "standard method of bankruptcy forecast" based on Z score model (Altman and other 1977), Deakin (1972), Edmister (1972), Blum (1974), Deakin (1977), van Frederikslust (1978), Bilderbeek (1979), Dombolena and Khoury (1980), Taffler (1982), Micha (1984), Betts and Belhoul (1987), Gloubos and Grammatikos (1988), Declerc and other. (1991), Laitinen (1992), Lussier (1994), and Altman et al. (1995). An important contribution to bankruptcy forecast work

has also been provided by J. Ohlson (1980). J. Ohlson used logit regression to obtain the bankruptcy forecast model using nine variables such as business size, liquidity, profitability and performance (Altman, et al., 2014).

The most common feature of Altman Z Score Model is the use of other forecast models and country specific data. The use of multivariate discriminant analysis in this model ratio has improved forecast ability. The application of new data to US companies and to firms outside of these has improved the performance of the model. Kwak et. al, (2005) using the Multi-Criteria Linear Programming model, they applied 5 Altman variables and 9 Ohlson variables to companies that went bankrupt in America and compared them to control companies about 6 times between 1992 and 1998. Multi-Criteria Linear Programming performed better than the original of the Altman model.

Merkevicius et. al (2006), using company data from the United States and Lithuania, they have developed a hybrid artificial discriminant model that combines MDA and uncontrolled learning artificial neural networks. This hybrid model has reached a high estimation power of 92,35%. Xu and Zhang (2009), these models for bankruptcy forecast in Japan, in order to test whether it is useful, Altman's Z-score, Ohlson's O-score and Merton's D-score models have been tested in Japanese companies. They also combined these models into a new C-Score model. C-score model, was constituted using variables specific to Japan to check whether the institutional structure variables had any effect on the probability of bankruptcy.

Tinoco and Wilson (2013), used the original Z- score as a criterion the performances of models combining accounting information, market and macroeconomic for United Kingdom firms. While the Altman Z-score model offers very high classification accuracy (87%) for firms experiencing financial difficulties, it is not possible to say the same for successful firms. Another modification introduced by Zhdanov (2013) and questioning the inclusion of variables related to investment opportunities has developed the prediction power of the other three models (Altman Z-score, Zmijewski's and Shumway's models).

Reisz and Perlich developed a model of preclusion options for bankruptcy prediction and compared the differentiating powers to other accounting and Market based models. The data set covers about 6.000 industrial firms between 1988-2002. The authors documented the superiority of Altman's Z-score model and other Z-score models for short-term (1 year) bankruptcy predictions. The preclusion option model for medium and long-term bankruptcy prediction performed better than the other models.

Pindado et al. (2008) developed a preliminary model to estimate the likelihood (FDL) of financial distress using a panel data methodology and presented a financial distress definition. Their sample includes companies in 1.583 US company and 2.250 G7 countries (1990-2002). They used the Z-score as a benchmark in their re-forecast. The FDL model outperformed the Z-score model in terms of stability and classification power for different countries and periods. In the case of re-forecast, only profitability and retained earnings in the Z-score model remain important for different periods and countries.

Wu et. al,(2010), evaluated the performance of 5 models (Altman, 1968; Ohlson, 1980; Zmijewski, 1984; Shumway, 2001; Hillegeist et. al, 2004) using a current data set for companies registered in the USA. Based on these models, authors can use their integrated model in other words they constructed a very cyclic logit model with a set of extended variables. The integrated model, combining accounting and market data as well as firm characteristics, performed better than the other models.

Gonzales and Rodrivals (2014) used logit model for bankruptcy forecast and Schwarz Genetic Algorithms with Information Criteria (GASIC) for variable selection. Altman's Z-score model was used as one of two criteria for model evaluation of authors. To predict a step further is better at predicting unsuccessful firms, but the mistake has come out high without guessing beyond two and three steps. The performance of the models is similar to those of the unsuccessful firms, but the accuracy of the estimation of the Altman model is poor for successful firms. The GASIC model

performed better for unsuccessful companies that forecast four steps ahead however, for successful firms, similar results were obtained.

The Z score model, developed by Altman, serves as a unique guide, for bankruptcy estimate, handling and taking precaution for private and public manufacturing and non-manufacturing companies. There is evidence that the Z-score model is better at competition-based markets.

The Z score for bankruptcy prediction is a powerful diagnostic tool that predicts the likelihood of a company entering the bankruptcy process. Studies that measure the effectiveness of Z score have shown that they have a confidence of 70% to 80% (Altman, et. al, 2014; Taffler, 2011). Z score model, uses 95% accuracy using the MDA method (Ohlson, 1980).

In the study of Kulalı (2016), financial statements data last 2 years before to bankruptcy of companies that were traded between 2000 and 2013 on BIST were used, Altman showed that according to the Z score, businesses are bankruptcy signaling. In Türk and Kürklü (2017) determined whether the 166 BIST company experienced financial difficulties during the period of 2014-2016 by Altman Z model. The authors have determined that 69% of companies that do not work with the Altman model do not have financial difficulties.

Most of the literature studies have investigated the calculation of bankruptcy probabilities of companies and the realization ratios of these probabilities. In this study, it is aimed to calculate the bankruptcy probabilities of the tourism companies traded in BIST and to determine the relations between these possibilities and the market values of the companies.

6. Method

In this study, the Z scores were calculated by taking the companies listed in BIST Tourism Index into consideration. 10-year balance sheet and income statement data of these companies between 2009-2016 were used and all financial statement data were taken from BIST and Public Disclosure Platform (KAP). The financial data of the companies are included in the calculation annually starting from the year when they are opened to the public. As the of the Istanbul Stock Exchange financial statements were announced in February-March, the market values of the companies are calculated by taking the average of the daily stock market closing prices of January, February and March. The Altman Z-Score model was used to determine whether the companies in the sector were financially successful or not. Altman's Z-Score model, which is regarded as the basic model for the financial risk ratios of companies, that it involves the calculation of a combined ratio by analysis and weight by multiple discriminant analysis of the relationships between the five ratios in order to determine firms' risk of bankruptcy (Aksoy, 1993:160). The Altman Z-Score Model is as follows:

$$Z = 1,2T1 + 1,4T2 + 3,3T3 + 0,6T4 + 0,999T5 \quad (8)$$

T1- Net Operating Capital Assets Ratio = Net Operating Capital / Total Assets

T2 - Ratio of Unallocated Profit Assets = Unallocated Profit / Total Assets

T3 - Total Assets Earning Rate = EBIT / Total Assets

T4 - Financial ratio including market value = Own Capital's Current Value / Carrying Amount of Debts

T5 -Total Assets Turnover Rate = Net Sales / Total Assets

At the next stage of the study, it has been revealed that the companies whose bankruptcy probabilities are calculated, it is revealed to what extent, the Z scores explain the companies' stock market prices. For this reason panel data analysis was carried out to explain the stock price of the companies in the study. Three companies with missing data in panel data analysis were not included in the analysis. Data for other companies' 2009-2016 years were used to perform balanced panel data analysis. To see the effect of Altman Z scores on the market prices of tourism companies, the following model was established:

$$Price_{it} = \beta_{1i} + \beta_2 Z Score_{it} + U_{it} \quad (9)$$

7. Findings

Table 3 shows the Z scores calculated according to years for the 10 tourism companies listed in BIST Tourism index. Accordingly, in 2015, there are 4 companies with high probability of bankruptcy. In 2016, the number of companies with a high risk of bankruptcy rose to 6 due to the effects of problems experienced with Russia. When the table is examined from the other side, it is seen that the Z scores of all companies except Kuştur and Mememtur decreased in the period when Turkey-Russia Aircraft crisis was experienced. This result shows that the crisis between the two countries and the geopolitical problems have an impact on the probability of bankruptcy of tourism companies.

Table 4 shows the average of the 3-month stock market closing prices of the companies in the BIST tourism index during the year in which annual financial statements are disclosed. According to the table, in 2016, the stock market prices of companies have not changed significantly compared to the previous year despite increasing bankruptcy risk.

Table 3. Altman Z Scores of the Tourism Establishments in the BIST

| YEARS | AYÇEŞ | KUŞTUR | AYMAR | MARTI | MERİT | METEM TUR | NETTUR | UTOPIYA | PETRO KENT | TEK-ART |
|-------|-------|--------|-------|-------|-------|-----------|--------|---------|---------------|---------|
| 2009 | 4,46 | - | 5,81 | 0,56 | - | -0,13 | 0,96 | 0,54 | 1,34 | 8,91 |
| 2010 | 7,95 | - | 11,04 | 0,52 | - | -0,43 | 4,34 | 0,51 | 1,73 | 10,01 |
| 2011 | 4,09 | 3,43 | 10,07 | 0,60 | 5,03 | -0,54 | 0,90 | 0,69 | 3,89 | 9,14 |
| 2012 | 3,70 | 3,74 | 10,01 | 0,21 | 27,07 | 0,48 | 0,63 | 0,52 | 2,52 | 3,64 |
| 2013 | 1,91 | 2,76 | 29,94 | -0,07 | 8,98 | -0,92 | 1,66 | -0,07 | 2,94 | 1,90 |
| 2014 | 2,65 | 7,31 | 37,08 | -0,35 | 8,96 | -1,31 | 3,01 | 0,02 | 2,47 | 0,85 |
| 2015 | 1,42 | 5,20 | 14,83 | -0,38 | 8,86 | 2,62 | 3,56 | -0,16 | 2,07 | 0,59 |
| 2016 | 0,97 | 13,57 | 8,48 | -0,54 | 8,57 | 8,39 | 1,73 | -0,50 | -0,01 | 0,14 |

Table 4. Stock Prices of Tourism Enterprises in BIST

| YEARS | AYÇEŞ | KUŞTUR | AYMAR | MARTI | MERİT | METEM TUR | NETTUR | UTOPIYA | PETRO KENT | TEK-ART |
|-------|-------|--------|-------|-------|-------|-----------|--------|---------|---------------|---------|
| 2009 | 6,72 | - | 13,50 | 1,27 | - | 1,87 | 1,07 | - | 67,75 | 2,00 |
| 2010 | 12,00 | - | 17,68 | 1,11 | - | 1,51 | 1,05 | - | 78,00 | 1,32 |
| 2011 | 8,02 | - | 17,90 | 0,79 | 7,52 | 1,02 | 0,74 | 2,09 | 89,00 | 1,04 |
| 2012 | 7,01 | - | 17,32 | 0,74 | 6,49 | 0,93 | 0,84 | 1,68 | 64,67 | 0,78 |
| 2013 | 4,13 | 97,84 | 11,53 | 0,50 | 5,57 | 0,56 | 0,97 | 1,45 | 57,16 | 0,57 |
| 2014 | 5,31 | 15,07 | 13,15 | 0,61 | 5,13 | 0,55 | 1,34 | 1,27 | 73,35 | 0,61 |
| 2015 | 3,68 | 11,17 | 10,42 | 0,48 | 4,94 | 1,06 | 1,44 | 1,72 | 52,17 | 0,58 |
| 2016 | 4,05 | 8,31 | 18,42 | 0,48 | 5,45 | 1,58 | 1,55 | 2,33 | 47,17 | 0,75 |

Source: <http://finans.mynet.com/borsa/hisseler/>

Table 5. Panel Data Regression Analysis Results

Dependent Variable: Price
 Method: Panel Least Squares
 Date: 09/10/17 Time: 21:15
 Sample: 2009 2016
 Periods included: 8
 Cross-sections included: 7
 Total panel (unbalanced) observations: 55

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------------|-------------|----------|
| C | 12.99884 | 3.709799 | 3.503921 | 0.0009 |
| Z | 0.069572 | 0.464752 | 0.149696 | 0.8816 |
| R-squared | 0.000423 | Mean dependent available | | 13.29218 |
| Adjusted R-squared | -0.018437 | S.D. dependent available | | 23.14885 |
| S.E. of regression | 23.36128 | Akaike info criterion | | 9.175723 |
| Sum squared resid | 28924.71 | Schwarz criterion | | 9.248717 |
| Log likelihood | -250.3324 | Hannan-Quinn criter. | | 9.203950 |
| F-statistic | 0.022409 | Durbin-Watson stat | | 0.069621 |
| Prob(F-statistic) | 0.881572 | | | |

Table 5 shows the results of a panel data regression analysis conducted to measure the relationship between the bankruptcy risk of companies and the stock market prices of companies according to years. The dependent variable is the stock market prices of the companies, and the independent variable is the Altman Z scores.

According to Table 5 there is no statistically significant relationship between Z scores and stock prices. The reason for this is that despite the increase in the probability of bankruptcy of companies in the last two years, stock prices did not show a significant decrease.

Apart from the financial performance of the companies, it is often seen that the market prices of equities are affected by other factors. Mostly, while macroeconomic and microeconomic expectations and economic conjuncture determine share prices, is able to avoid financial performance.

8. Result

This study aims to detect the effects of recent developments on the financial failures of firms in the Stock Exchange Istanbul (BIST) tourism indices. For this purpose, the Altman Z scores were calculated by using the financial statements data between 2009-2016 for the companies in the tourism sector. The Z values of stocks of tourism companies were calculated and the prices of the bankruptcy probabilities in the stock market were researched.

According to the results of the analysis, it is seen that in the period of 2015-2016, Turkey Russia aircraft crisis and regional problems generally shows decrease the Z scores of companies in BIST tourism index. Also, Altman Z-Score model, while a significant number of firms in the sector in question were faced with bankruptcy risk, a few firms were also found to have the low financial risk. The falling Z scores indicate that companies have increased bankruptcy risk. However, there has been no significant decline in the market value of the companies in the BIST tourism index. Panel data analysis reveals that there is no significant relationship between bankruptcy probabilities and market prices.

The limitation of this study is that some companies have limited data because they start to trading at BIST recently. On the other hand, the pricing of stocks is a very complicated process, the manipulative movements, the different financial structures of the companies, the very different form of investors' buying decisions, the differences in anticipation, the bankruptcy probabilities with macro and microeconomic developments and the market prices are affected differently.

This study can be repeated in future studies to include other sectors with a wider data set. There are many studies in the literature investigating the factors affecting the market price of equities. It can be investigated whether firms' bankruptcy probabilities are one of these factors.

References

- Acosta-Gonzalez, E. and F. Fernandez-Rodríguez, (2014). Forecasting Financial Failure of Firms via Genetic Algorithms,” *Computational Economics*, 43, 133–157.
- Aliakbari, S. (2009). Prediction of corporate bankruptcy for the UK companies in manufacturing industry, Brunel University.
- Aksoy, A. (1993). *İşletme Sermayesi Yönetimi*, Gazi Büro Kitabevi, Ankara.
- Allayannis, G., Brown, G. W., and Klapper, L. F. (2003). Capital structure and financial risk: Evidence from foreign debt in East Asia. *Journal of Finance*, 58(6), 2667–2709.
- Altman, E.I. (1968), Financial Ratios, Discriminant Analysis and Prediction of Corporate Bankruptcy, *Journal of Finance*, 23(4), 589-609.
- Altman, E.I. (1971). *Bankruptcy in America*, D.C. Heathand Company, Lexington.
- Altman, E.I. (2000). Predicting Financial Distress of Companies: Revisiting the Z-Score and Zeta® Models, Working Paper.
- Altman, E.I. (2002). *Bankruptcy, credit risk, and high yield junk bonds: a compendium of writings*. Oxford: Blackwell Publishing.
- Altman, E. I., Drozdowska M. I., Laitinen, E. K., and Suvas A. (2014). Distressed Firm and Bankruptcy Prediction in A International Context: A Review and Empirical Analysis of Altman’s Z Score Model, *Journal of International Financial Management & Accounting*, doi: 10.1111/jifm.12053.
- Argenti, J. (1976). *Corporate Collapse*, Published by Mc Graw-Hill Book Company Limited, U.K.
- Bartol, Kathryn K. and Nartin, C. D. (1991), *Management* (New York: McGraw-HillInc.).
- Beynon, M. J., and Peel, M. J. (2001). Variable precision rough set theory and data discretisation: An application to corporate failure prediction. *Omega*, 29, 561-576.
- Boz, H., and Yılmaz, Ö. (2017). An eye tracker analysis of the influence of applicant attractiveness on employee recruitment process: A neuromarketing study. *Ecoforum Journal*, 6(1).
- Blum, M. P. (1974). Failing company discriminant analysis. *Journal of Accounting Research*, 12 (1), 1-25.
- Calandro, J. (2007). Considering the utility of Altman's Z-score as strategic assessment and performance management tool. *Strategic & Leadership*, 35(5), 37-43.
- Chung, K. C., Tan, S. S., and Holdsworth, D. K. (2008). Insolvency prediction model using multi variate discriminant analysis and artificial neural network for the finance industry in New Zealand. *International Journal of Business and Management*, 3(1), 19-29.
- Citron, D. B., and Taffler, R. J. (2004). The comparative impact of an audit report Standard and an audit going-concern standard on going-concern disclosure rates. *Auditing: A Journal of Practice and Theory*, 23(2), 119–130.
- Dağlı, H. (1994). *İşletme Başarısızlıkları ve Alınması Gerekli Önlemler*”, *Verimlilik Dergisi*, MPM Yayınları, 1, Ankara.
- Deakin, E.B. (1977). Business failure prediction: An empirical analysis. In E. Altman, & A. Sametz (Eds.), *Financial crises: Institutions and markets in a fragile environment*. New York: John Wiley.
- Edmister R. (1972). An Empirical Test of Financial Ratio Analysis for Small Business Failure Prediction; *Journal of financial and quantitative analysis*, 7(2), 1477-1493.
- Frydman, HE, Altman EI, and Kao, DG (1985). Introducing recursive partitioning for financial classification: The case of financial distress. *Journal of Finance*, 40 (1), 269-291.
- Gönenli, A. (1988). *Finansal Yönetim*, İstanbul Üniversitesi Yayınları, No: 3463, İstanbul.
- Griffin, J., and amp; Lemmon, L. (2002). Book-to-market equity, distress risk, and stock returns. *Journal of Finance*, 57(5), 2317–2336.
- Koc, E., and Boz, H. (2014). Psychoneurobiochemistry of tourism marketing. *Tourism Management*, 44, 140-148.

- Kulalı, İ. (2016). Altman Z-Score Modelinin BIST Şirketlerinin Finansal Başarısızlık Riskinin Tahmin Edilmesinde Uygulanması. *Uluslararası Yönetim İktisat ve İşletme Dergisi*, 12(27), 283-292.
- Kwak, W., Shi, Y., J.J. Cheh and H. Lee. "Multiple Criteria Linear Programming Data Mining Approach: An Application for Bankruptcy Prediction," *Data Mining and Knowledge Management* 3327 (2005), 164–173.
- Marchesini, R., Perdue, G., and Bryan, V. (2004). Applying bankruptcy prediction models to distressed high yield bond issues. *Journal of Fixed Income*, 13(4), 50–56.
- Merkevicius, E., Garsva, G. and S. Girdzijauskas, (2006). A Hybrid SOM-Altman Model for Bankruptcy Prediction, *International Conference on Computational Science*, 3994, 364-371.
- Meyer, N. and Meyer, D. (2015). The role and impact of tourism on local economic development: A comparative study, *African Journal for Physical Health Education, Recreation and Dance*, 21; 197-214.
- Meyer, PA. and Pifer, HW. (1970). Prediction of Bank Failures. *The Journal of Finance*, 25, (September), 853-868.
- Mills, W. R., and Robertson, J., (1991), *Fundamentals of Managerial Accounting and Finance*, Published by Mears Business Associates Limited, Leachlade.
- Molina, CA., (2005). Are firms underleveraged? An examination of the effect of leverage on default probabilities. *Journal of Finance*, 60(3), 1427–1459.
- Neophytou, E., Charitou, A., and Charalambous, C. (2001), Predicting corporate failure: Empirical evidence for the UK. Discussion Paper No. 01-173, March, School of Management, University of Southampton, Southampton.
- Ohlson, J. (1980). Financial ratios and probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 18 (1), 109-131.
- Pindado, J., Rodrigues, L. and C. de la Torre. (2008). Estimating Financial Distress Likelihood, *Journal of Business Research*, 61, 995–1003.
- Reen, B. (1990), *Financial Analysis*, Prentice Hall, UK
- Reisz, A.S. and C. Perlich, (2007). A Market-Based Framework for Bankruptcy Prediction, *Journal of Financial Stability*, 3, 85–131.
- Selimoğlu, S., and Orhan, A. (2015). Finansal Başarısızlığın Oran Analizi ve Diskriminant Analizi Kullanılarak Ölçülmesi: BİST’de İşlem Gören Dokuma, Giyim Eşyası ve Deri İşletmeleri Üzerine Bir Araştırma. *MUFAD Muhasebe ve Finansman Dergisi*, Nisan, 66, 21-40.
- Sudarsanam, S., and Lai, J. (2001). Corporate financial distress and turnaround strategies: An empirical analysis. *British Journal of Management*, 12(3), 183-199.
- Şahin, B., Sönmez, B., & Kahveci, H. (2014). Kişilerin Uluslararası Seyahat Engellerini Ölçmeye Yönelik Bir Araştırma. *Gazi Üniversitesi Turizm Fakültesi Dergisi*, 1(2), 109-126.
- Taffler, C. (2011). Alternative Financial Ratios as Predictors of Failure. *Accounting Review*, XLIII, 113-122.
- Taskin, C., Koc, E. & Boz, E. (2017). Perceptual Image of Conflict-Ridden Destinations: An EEG and Eye Tracker Analysis, *Business and Economics Research Journal*, 8(3), 533-553.
- Thai, S. B., Goh, H. H, HengTeh, B., Wong, J.C. and Ong T. S. (2014). A Revisited of Altman Z-Score Model for Companies Listed in Bursa Malaysia. *International Journal of Business and Social Science*, 5 (12), 197-207.
- Tinoco, M. and N. Wilson, (2013). Financial Distress and Bankruptcy Prediction Among Listed Companies Using Accounting, Market and Macroeconomic Variables, *Inter-national Review of Financial Analysis*, 30, 394–419.
- Trippi, R., and Turban E (Eds). (1996). *Neural networks in finance and investing: using artificial intelligence to improve real-world performance* (pp. 367-394). London: IRWIN Professional Publishing.

- Türk Z. and Kürklü E. (2017). Financial Failure Estimate in BIST Companies with Altman (Z-Score) and Springate (S-Score) Models, *Osmaniye Korkut Ata Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 1(1), 1-14.
- Xu, M. and C. Zhang, (2009). Bankruptcy Prediction: The Case of Japanese Listed Companies, *Review of Accounting Studies*, 14, 534–558.
- Wu, Y., Gaunt, C. and S. Gray. (2010). A Comparison of Alternative Bankruptcy Prediction Models, *Journal of Contemporary Accounting and Economics*, 6, 34–45.
- Zhang, L., Altman, E.I. and J. Yen. (2010). Corporate Financial Distress Diagnosis Model and Application in Credit Rating for Listing Firms in China, *Frontiers of Computer Science in China*, 4, 220–236.
- Zmijewski, M.E. (1984). Methodological Issues Related to Estimation of Financial Distress Prediction Models. *Journal of Accounting Research*, 22(1), 59-82.
<http://finans.mynet.com/borsa/hisseler/>, Accessed: 02.06.2017.
- https://ekonomi.isbank.com.tr/UserFiles/pdf/sr201606_turizmsektoru.pdf, Accessed: 02.06.2017.
- http://www.tuik.gov.tr/PreTablo.do?alt_id=1072, Accessed: 02.06.2017.
- <https://www.morogluarseven.com/news/24-kasim-2015ten-itibaren-rusya-tarafindan-turkiyeye-karsi-uygulanen-ekonomik-yaptirimlar-ve-ticaret-engelleri>. (Accessed: 14.05.2017.)



Samuray Karaca (b. June 01, 1972) received her BSc in Faculty of Economics and Administrative Sciences, Department of Business Administration (1998), MSc in Business Administration Department, Management Organization Science (2001) from University of Pamukkale- Denizli/TURKEY and she is training PhD in Business Administration Department at University of Afyon Kocatepe. Now she is working as a lecturer at University of Pamukkale, Çivril Atasay Kemer Vocational School.



Ercan Özen (b. April 11, 1971) received his BSc in Public Finance (1994), MSc in Business-Accounting (1997), PhD in Business Finance (2008) from University of Afyon Kocatepe. Now he is associate professor of finance in department of banking and finance, School of Applied Sciences, "University of Uşak, Turkey. His current research interests include different aspects of Finance. He has (co-) authored 3 book chapters and more than 30 papers, more than 20 conferences participation, member in International Program Committee of 3 conferences and workshops.