

Determinants of Profitability in the Airline Industry: A Comparison with Turkish Airlines

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ABSTRACT

In order to be competitive, the profitability of a firm plays an undeniable role. Therefore, investigation of the factors determining profitability of a firm would provide useful insights for firms in the process of decision making and strategic planning. The airline industry of Turkey has been known as a prominent sector because of its significant contribution to economic development and growth of employment over time. Therefore, the main aim of this study is to investigate the determinants of profitability for the Turkish airlines. Accordingly, a sample of major airlines is chosen and their data is extracted from Data Stream covering 1994 to 2013.

Based on the panel data analysis, findings show that tangibility of assets, growth opportunities and liquidity ratios have significant impacts on the profitability of the firms. Tangibility of assets are negatively affecting the profitability of the firms in the airline industry, while growth opportunities are also inversely affect the profitability of airline companies in the sample. In addition, liquidity ratio is another factor which represents a negative and statistically significant relationship with the profitability of the firms.

Keywords: Determinants of Profitability, Airline Industry, Turkish Airlines, Panel Data Analysis.

ÖZ

Bir firmanın kârlılığı, o firmanın rekabet içinde kalmasında göz ardı edilemez bir rol oynar. Bu yüzden bir firmanın kâr oranını belirleyen faktörleri inceleme, o firmanın stratejik planında ve karar alma aşamalarında faydalı ipuçları sağlar. Ekonomik gelişmeye ve istihdamda artışa sağladığı önemli katkılarından dolayı, Türkiye'nin havayolları endüstrisi öne çıkan sektör olarak kabul edilir. Dolayısı ile bu araştırmanın başlıca amacı Türk Hava Yollarına kâr sağlayan belirleyici faktörleri araştırmaktır. Buna uygun olarak, ana hava yollarından biri örnek olarak seçilmiş ve 1994'ten 2013'e kadar olan veriler Data Stream kullanılarak çıkarılmıştır.

Panel veri analizlerine dayanarak, somut mal varlığının, büyüme fırsatlarının ve likidite oranlarının, şirketin kâr sağlamasında göz ardı edilemez etkilerinin olduğu belirlendi. Örnek havayolları şirketlerinin somut varlığı, verimliliği olumsuz etkilerken, büyüme fırsatları tam tersi bir etki yaratıyordu. Ayrıca, bir diğer faktör olan likidite oranları şirketin karlılık oranıyla önemli bir ilişkiye sahip olup, olumsuz bir etki sergiler.

Anahtar Kelimeler: Kar Belirleyici Faktör, Havayolları Endüstrisi, Türk Hava Yolları, Panel Veri Analizi

TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZ	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
1 INTRODUCTION	1
1.1 Background	1
1.1.1 Financial Performance and Profitability	1
1.1.2 Importance of Turkish Airline Industry.....	3
1.2 Aim and Contribution of the Study	3
1.3 Thesis Structure	4
2 TURKEY AIRLINE INDUSTRY VERSUS GLOBAL AIRLINE INDUSTRY	5
2.1 Introduction	5
2.2 Airline Industry in Turkey.....	5
2.3 Major Airline Companies in Turkey	9
2.3.1 Turkish Airlines (THY)	9
2.3.5 SunExpress Airlines.....	12
2.3.6 AnadoluJet	13
2.3.7 Borajet.....	14
2.3.8 Fly Air.....	15
2.3.9 Sky Airlines	15
2.3.10 Turkuaz Airlines	15
2.4 Global Airline Industry.....	16

3 LITERATURE REVIEW.....	18
3.1 Introduction	18
3.2 Profitability.....	18
3.3 Determinants of Profitability.....	19
3.3.1 Company size.....	19
3.3.2 Company Growth.....	20
3.3.3 Leverage.....	21
3.3.4 Liquidity.....	22
3.3.5 Tangibility of Assets	22
4 DATA AND METHODOLOGY	24
4.1 Introduction	24
4.2 Data	25
4.3 Variables.....	25
4.4 Panel Data Methodology	26
4.4.1 Empirical Model of the Study.....	27
4.4.2 Panel Unit Root Tests	28
4.5 Time-Series Methodology	28
5 EMPIRICAL RESULTS.....	30
5.1 Descriptive Statistics	30
5.2 Correlation Analysis.....	32
5.3 Panel Unit Root Tests Results	33
5.4 Regression Results	35
5.5 Turkish Airline Performance.....	39
5.5.1 Descriptive Statistics for Turkish Airlines.....	39

5.5.2 Determinants of Profitability for Turkish Airlines versus Other Airline Companies in the Sample	41
6 CONCLUSION	48
6.1 Conclusion.....	48
6.2 Policy Implications.....	49
6.3 Limitations of Study and Further Research.....	50
REFERENCES.....	51

LIST OF TABLES

Table 1: Domestic Competitors in Turkish Airline Industry after Deregulations	7
Table 2: Measurements of Variables.....	26
Table 3: Descriptive Statistics.....	31
Table 4: Correlation Analysis	32
Table 5: Panel Unit Root Tests	34
Table 6: Regression Results (ROA as the dependent variable)	36
Table 7: Regression Results (ROE as the dependent variable).....	38
Table 8: Turkish Airline Performance	39
Table 9: Time Series Unit Root Tests Results for Turkish Airlines	41
Table 10: VAR Model Results.....	46

LIST OF FIGURES

Figure 1: 2012 Domestic Aircraft Shares By Company (%)	8
Figure 2: 2012 Domestic Passenger Shares By Company (%)	8
Figure 3: Freight Tons Kilometers by Region	16

Chapter 1

INTRODUCTION

1.1 Background

1.1.1 Financial Performance and Profitability

Investors and savers transfer funds through financial systems and this transfer is facilitated by employing financial institutions, instruments and markets which all together improve the effectiveness of payment process and risk transfer. Moreover, financial markets have impacts on both in everyday life and in fund transfers in an economy (Fredric et al. ,2009).

Undoubtedly, firms are continuously concerned with the level of their profitability because their performance is highly dependent on their profitability. In addition, financial analysis includes profitability ratio as one of the main ratios to analyze the performance of a firm. So, both managers and stakeholders are concerned about the measures of profitability of a firm.

All mentioned emphasizes the growing trend in the literature about the investigation of determinants of profitability in various industries. The first important aim of any firm is to acquire more profit in order to improve its stakeholders' level of wealth (Gitman, 2007).Therefore, the investigation of determinants of profitability of a firm has gained attention from different fields of studies. For instance, industrial economics takes into the competition as a leading factor for companies in the market

in order to discuss firms' profitability (Olson and Slater, 2002). From the strategic management and finance point of view, companies' profitability is investigated based on their internal resources (Barney, 2001).

In addition, some firm-specific characteristics could play important roles in the profitability of a company. As Dilling and Hansen (2003) suggest, company size could be a determinant of profitability. Similarly, Hawawini et al. (2005) state that profitability of firms depend on their characteristics. They add that the markets in which firms operate should also be taken into consideration.

There are various studies which are focused on the profitability determinants for different sectors. In particular, manufacturing companies are investigated in many studies. However, there are some industries which are not considered while they are leading in many countries, such as service industry.

Based on various theories of capital structure theory, profitability is known as one of the main determinants of capital structure. Considering the trade-off theory (Kraus and Litzenberger, 1973), the higher the profitability is, the less the probability of financial distress would be. Therefore, firms prefer to use more leverage to exploit the tax-deductibility of interests. In other words, as Frank and Goyal (2009) suggest, the level of leverage in a firm is positively related to its level of profitability.

Similarly, according to the agency theory (Jensen, 1986), the size of the firm and its level of profitability are positively related with each other. As the firm makes more profit, more funds are available to be invested although those investments are not

profitable. Hence, more debt financing forces managers to direct excess cash flows to debt obligations.

1.1.2 Importance of Turkish Airline Industry

Turkish air transportation sector has developed greatly during recent decades and this sector currently plays a crucial role in the public air transport both in Europe and other parts of the world. Turkish airlines have developed not only their capacity, but they have also been successful in improving their services in comparison with other operators in the market which has resulted in an increasing willingness among passengers to choose these companies for their travel (Turkish Civil Aviation Assembly Sector Report, 2012). Therefore, Turkish civil aviation has gained a good reputation globally.

Moreover, Turkish air transportation has grown both in national level and global level. EUROCONTROL has reported a growth for Turkey from being the seventh in air traffic in 2006 to the first in air traffic in 2012 (<https://www.eurocontrol.int>).

Turkish Airlines corporation (THY) conducts air transportation as one of the main air transporters in Turkey and is recognized as a preferred airline in the world. In 2012, Turkish Airlines has reported a flight schedule to 217 cities and in 96 countries. In terms of profitability, Turkish Airlines has reported an operating profit of 1,604,833,888 Turkish lira in 2012 with a 26 percent increase in sale revenues compared to 2011 figures (Turkish Airlines annual report, 2012).

1.2 Aim and Contribution of the Study

In the framework of free markets, a firm would not be survived unless it would be competitive. In order to be competitive, the profitability of a firm plays an

undeniable role. Therefore, investigation of the factors determining profitability of a firm would provide useful insights for firms in the process of decision making and strategic planning.

The airline industry of Turkey has been known as a prominent sector because of its significant contribution to economic development and growth of employment over time. Therefore, the main aim of this study is to investigate the determinants of profitability for the Turkish airlines.

1.3 Thesis Structure

This thesis starts with a brief introduction of the subject of the study in Chapter 1 and the aim of study is mentioned. Chapter 1 ends with a short review of thesis structure. Then, in Chapter 2, there is an overview of both Turkish airline industry and global airline industry. Afterwards, Chapter 3 reviews the literature and previous studies concerning the determinants of profitability. Chapter 4 introduces the methodology and the model of study. The next chapter, Chapter 5, shows the outcomes of this study empirically. Chapter 6 makes some conclusions based on the empirical findings of study and some policy implications are suggested for the parties involved in this sector.

Chapter 2

TURKEY AIRLINE INDUSTRY VERSUS GLOBAL AIRLINE INDUSTRY

2.1 Introduction

In this chapter, a review of airline industry in Turkey is represented. In addition, a brief review of global airline industry is discussed and important trends in this industry are reviewed.

2.2 Airline Industry in Turkey

Turkey is located in a strategic position connecting different continents, Europe, Asia and Africa. In addition, this country is not only experiencing a fast growing urbanization with an increasing population, but it is also benefiting from tourism industry and commercial activities. Therefore, a demand for developing airline industry and civil aviation is inevitable.

After liberalization period in Turkey, airline industry has been growing significantly. Currently, 12 airlines are actively operating in this sector in order to transport passengers in various routes (Gerede, 2010). Out of these 12 firms, one carries national flag with approximately half of the available aircrafts in the industry while the other 11 active companies share the second half of aircrafts. There are different categorizations for private firms varying from scheduled or charter airlines to big or small fleets.

In 1933, Turkish airline industry was firstly established by the foundation of Turkish Airlines (THY). Turkish Airlines was the only operating airline in Turkey until 1982 when a deregulation was introduced resulted in entrance of local competitors in the market. According to a government report (Turkey Directorate General of Press and Information, 2009), out of 29 newly-founded airlines in 1982, 22 were bankrupted because of intensive competition in the market.

Later on in 1983, a new law was made by which private sector was allowed to enter this market. This new legislation was a the beginning of a new era in the history of Turkish airline industry which led to a fast growth in civil aviation.

In the early 80's, according to the growth of tourism industry all over the world , the demand for air transportation showed an upward trend. As Turkey was also a favorable touristic destination, many airlines started to transport tourists from Europe to Turkey.

In 2003, domestic air transportation also experienced a deregulation and private airlines were allowed to operate in domestic routes. In addition, taxation system for domestic flight deregulated by reducing tax rates for domestic routes. This tax reduction has provided an incentive for private sector to invest more in the domestic market. Airlines were enabled to decrease their prices up to 35% which resulted in a rapid growth in the demand for air transportation.

Competition in the domestic airline market has evolved after 2003 deregulations. However, earlier in 2001, the structure of pricing has been deregulated for domestic flights in Turkey. Therefore, with the combination of this deregulation of price

determination and 2003 huge deregulations, the market evolved to a highly-competitive market. In the new situation, the market which was previously a monopolistic one was improved to a competitive one with a variety of operating airlines. Table 1 depicts a list of airlines which started operating after the regulation, and their entrance dates and current status are also mentioned.

Table 1: Domestic Competitors in Turkish Airline Industry after Deregulations

Airline	Entrance date to the domestic market	Current Status
Fly Air	October 20., 2003	Transportation license cancelled officially.
Onur Air	December 9., 2003	Currently Operating
Atlasjet	July 1., 2004	Currently Operating
Pegasus Airlines	November 1., 2005	Currently Operating
Sunexpress	March 26., 2006	Currently Operating
AnadoluJet ¹	April 23., 2008	Currently Operating
Borajet	May 7., 2010	Currently Operating
Turkuvaz Airlines	September 22., 2010	Transportation license cancelled officially.
Sky Airlines	January 15., 2011	Resigned from domestic flights.

Source: General Directorate of Civil Aviation (www.shgm.gov.tr)

According to 2012 Turkish Civil Aviation Assembly report , all domestic aircrafts are distributed as: 52.5% for Turkish Airlines (THY) serving 49,5% of the domestic passengers, 23% for Pegasus (PGT) serving 25,5% of the domestic passengers, 9.5% for SunExpress (SXS) serving 9,7% of the domestic passengers, 6.4% for Onur Air (OHY) serving 8,2% of the domestic passengers, 4.9% for AtlasJet (KKK) serving 5,9% of the domestic passengers and 3.5 % for Borajet (BRJ) serving 1,1 % share of the market (Figures 1 and 2).

¹ A sub-brand of Turkish Airlines.

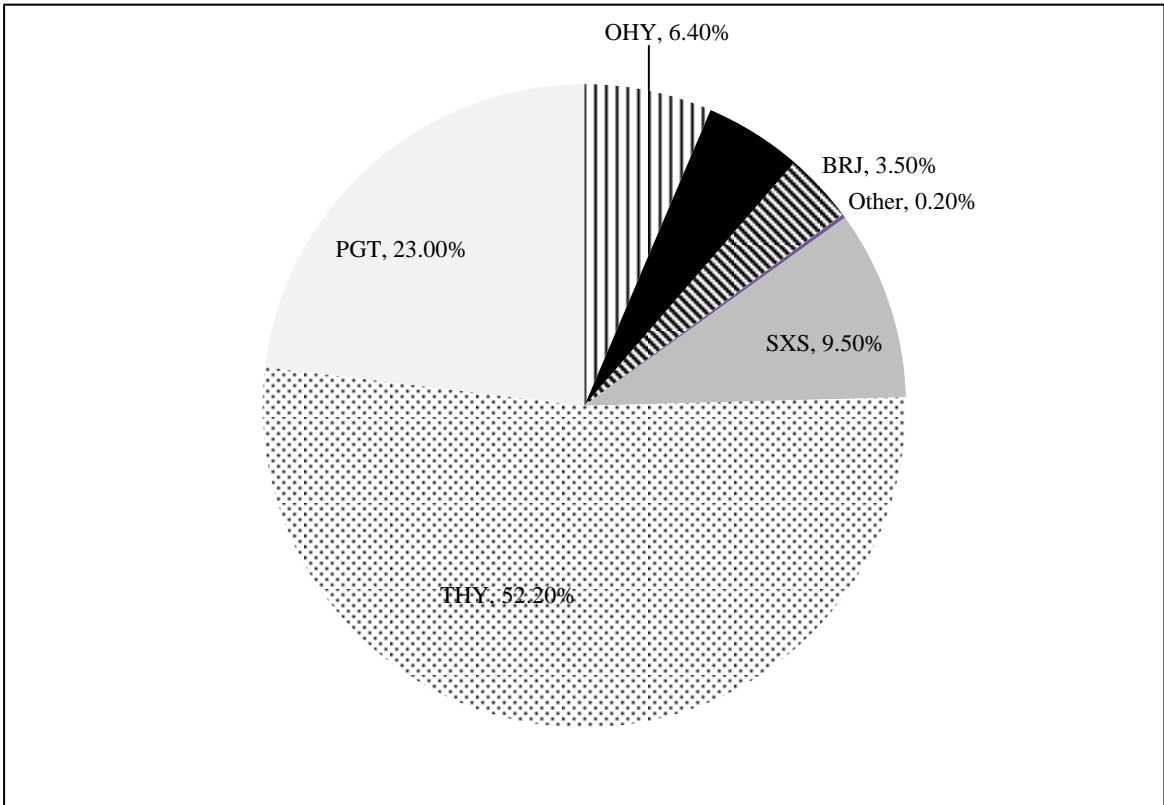


Figure 1: 2012 Domestic Aircraft Shares By Company (%)
 Source: Turkish Civil Aviation Assembly report (2012)

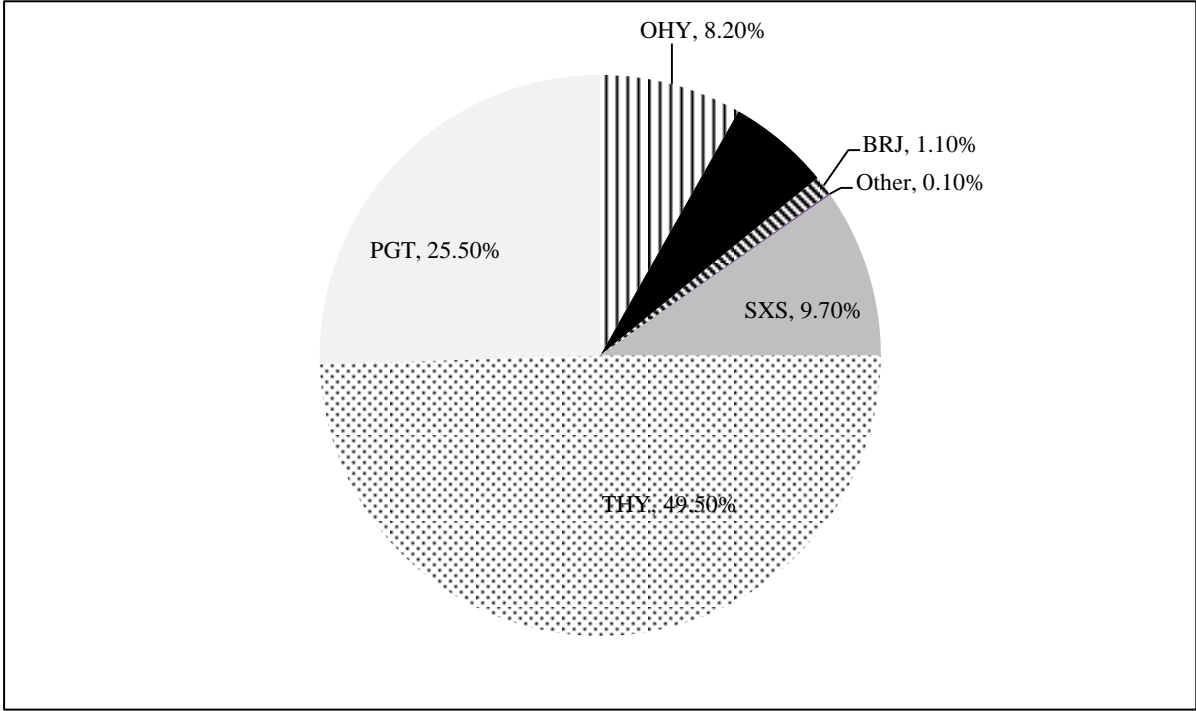


Figure 2: 2012 Domestic Passenger Shares By Company (%)
 Source: Turkish Civil Aviation Assembly report (2012)

So, with this rapid development of air transportation in Turkey, the important role of Turkish civil aviation industry in the economic development of this country is undeniable. In the following sections, a brief review of some major airlines is provided.

2.3 Major Airline Companies in Turkey

2.3.1 Turkish Airlines (THY)

As mentioned above, deregulation in 2003 provided an opportunity for private sector to enter the market. Consequently, eight carriers started to operate in the new competitive market. However, as of December 2011, only six airlines remained in competition beside Turkish Airline. As privatization of airlines and airports goes forward, competition among operators spreads both nationally and globally (Forsyth, 2003).

Turkish airline industry has also experienced some crises during its life. For instance, September -11th. –terrorist attack caused many problems for airline transportation companies and some airlines become bankrupted. Moreover, as the sector recovered from 2001 attacks, SARS illness and Iraqi war raised new challenges in 2003. Fortunately, Iraqi war ended soon and the illness was controlled rapidly, therefore airline industry again flourished (Torlak et al., 2011).

It is worth noting that although Turkish airline was suffering from these crises, in the long-term perspective, it has never stopped its contribution to the economic development, globalization and international trade. Moreover, during these years, Turkish airline expanded its services and were successful to achieve a high level of customer satisfaction.

Regarding the fuel prices, Turkish airline industry competitiveness is highly dependent on the fuel prices because ticket fares are directly affected by fuel price changes. So, it can be inferred that the demand for air transportation decreases when fuel prices increase. In other words, there is a negative relationship between fuel prices and air transportation. In addition, fuel prices are comparatively higher in Turkey due to higher taxation on fuels. Hence, a combination of higher fuel price and higher taxes on fuels are significant factors affecting the profitability of firms operating in this sector

By introducing deregulation in Turkish civil aviation industry, Turkish Airlines needed to apply some changes to remain competitive. And, in order to survive in this newly-founded and highly-competitive market, Turkish Airlines had to employ new strategies. In this respect, Turkish Airlines decided to change its business model and operate with a modified business model. In this respect, their business model which was firstly the “yield increase” model was modified to a “increase of passenger numbers” model. Indeed, they chose to benefit from economies of scale by increasing the units of production in order to decrease the units costs in comparison with their competitors. To achieve a larger number of passengers, they had to reduce their prices in the favor of passengers.

Domestically, the market for airlines evolved more competitive by deregulation and costs became a determinant for firms operating in this sector. When an environment becomes complete, a cost reduction would provide an advantage. Therefore, Turkish Airlines employed a new strategy to reduce costs (Torlak et al., 2011).

2.3.2 Pegasus Airlines

Based in Istanbul, Pegasus Airlines has been one of the growing airlines in recent years. This company operates charter flights from Europe to Turkey, especially in holiday season. Its base is located in Sabiha Gokcen Airport (SAW) in Istanbul.

Originally, the airline was founded in 1989 but it was bought by Yapi Kredi Bank in 1994. The current ownership of this airline is shared between Esas Holdings owning 85 percent of the shares and Silkar owning 15 percent of the shares. In comparison with other competitors, Pegasus Airlines recognized as one of leading air transporter in Turkey with an annual capacity of more than 4 million passengers (Torlak et al., 2011).

Pegasus Airlines employs a strategy of low-cost leadership. It provides the passengers a low-price flight characterized by a simple service causing the costs to lower. The pricing strategy works in way that as the date of flight gets closer the price raises more. In addition, internet sales are another important factor in the attraction of more customers from all over the world (Orhan et. al, 2013).

2.3.3 Onur Airlines

Onur Air operates in both domestic and foreign routes. The company is located in Istanbul and the main base of its fleet is in Ataturk International Airport. Its foundation dates back to 1992 when it started operating by two Airbus aircrafts. In addition, this airline transport 1.4 million passengers on average during a year. Its ownership belongs to Cankut Bagona owning one-third of the total shares, Hayri Icli owning another one-third of the total share and Unsal Tulbentci owning the other one-third.

2.3.4 AtlasJet Airlines

Atlasjet known as one of the significant domestic operators in Turkish civil aviation which is based in Istanbul, Turkey. It has a regular domestic flight schedule and it is usually chartered for some foreign routes such as Europe, United Arab Emirates and Kazakhstan.

The main base for Atlasjet aircrafts is Ataturk International Airport in Turkey. Also, this airline has located some hubs at Adnan Menderes Airport and Antalya Airport as well. The beginning of its operation dates back to 2001.

Firstly, this company was a subsidiary of Oger Holdings and it was known as Atlasjet International Airlines. Later in 2004, 45 percent of its total shares were bought by ETS Group. Afterwards, in 2006, ETS Group bought another 45 percent of Atlasjet and increased its ownership proportion up to 90 percent of the total. Therefore, ETS group, owned by Tuncay Doganer, currently holds 90 percent of Atlasjet shares.

2.3.5 SunExpress Airlines

Established in 1989 through the partnership of Turkish Airlines and Lufthansa, in order to operate international charter flights to and from Antalya, SunExpress decided to structure all its flight operations based in Izmir and selected a niche geographical market in domestic market instead of entering markets where there were other carriers present following deregulation. Thus, it enabled the opening up of new markets with the domestic flights it operated from Izmir and started operating in a grid network structure model that is based on connecting cities with one another that had not previously been connected. Eventually, it paved the way for the development of a new flight structure in the domestic market.

On the one hand, selecting markets that lack competition and that had never previously been flown brought SunExpress a competitive advantage. However, it proved a challenge for the airline to create passenger potential in these markets.

2.3.6 AnadoluJet

AnadoluJet was established as a sub-brand of Turkish Airlines and it may be regarded as the most important reaction of Turkish Airlines to deregulation. In order to operate efficiently and productively in the domestic market where the dynamics underwent a change after deregulation, and to better respond to customer needs, Turkish Airlines established the AnadoluJet brand which operates a different strategy than its own competitive strategy. The basic reasons for establishing AnadoluJet were as follows: to respond to the demands and requirements of the customer profile in the domestic airline market with a more accurate product; to enhance the efficiency of Turkish Airlines' flights from Ankara; and to make it profitable making Ankara a new hub for Turkish Airlines. As Ankara Esenboğa Airport was structured as a hub for the domestic airline market, the aim was to relieve Turkish Airlines transit traffic at Atatürk Airport and make improvements concerning this traffic.

Having Ankara as a hub brings many advantages to AnadoluJet. Due to the geographical position of Ankara, following deregulation, AnadoluJet has been able to implement a H&S network strategy, extremely efficiently in the domestic airline market. Travelling time for domestic flights that start from Ankara, especially in the north-south direction, are currently shorter. Another important impact is that it enables an increase in flight frequency. Frequency is an important tool in AnadoluJet's competitiveness. In addition, customer demands and requirements are analyzed in order to plan flight schedules efficiently. There is always less traffic in Ankara and, using this system, the waiting time for flights that have a connection in

Ankara are shortened and thus the airline's flight wave (collection and distribution) costs are reduced. The technical infrastructure of Esenboğa Airport promises facilitated stop-overs in a shorter period of time with fewer problems and eventually at lower cost.

2.3.7 Borajet

After deregulation, air transportation between major cities, where there is high passenger potential in domestic routes gained momentum. However, although many new markets opened up in this structure, in cities where passenger potential is low or where there is usually STOL (Short Take-off Landing) type airports, air transportation did not develop. This gap was seen as an opportunity by Borajet and so it started scheduled flights in domestic routes with a strategy that may bring these markets to life. All other private airline companies that entered the market before Borajet had first been charter airlines before transiting to become scheduled airlines whereas Borajet was established and started operations back in May 2010 as a domestic airline with scheduled flights.

Borajet entered the market with a regional airline model that basically connects smaller cities to bigger cities in order to capture the momentum it was targeting in domestic routes. Its network and fleet structure were designed according to this strategy as well. With ATR-72 type turboprops in its fleet, it aims to collect passengers from small cities where other airlines do not operate, bring them to major cities and leave the rest of their travel from this hub to other airlines; or another perspective, Borajet is willing to undertake the distribution of passengers to smaller domestic destinations from the hub where they were transported by major airlines. In this context, Borajet is willing to feed airlines that fly between major hubs in the market

2.3.8 Fly Air

The airline was established and started operations in 2002 with holiday charter flights and added scheduled services in October 2003. It was launched on the back of charter carrier Air Anatolia. Fly Air was the first charter airline in Turkey with domestic flights. The first domestic flight gained a lot of media coverage as the monopoly of Turkish Airlines was broken. Other charter airlines entered the domestic flights which lowered the prices of the tickets, leading to many Turkish residents flying for the first time instead of long bus travels between cities. Fly Air ceased operations after financial problems in 2007.

2.3.9 Sky Airlines

Sky Airlines was an airline which operated chartered flights. It was based in Antalya, Turkey, operating on behalf of tour operators on short and medium haul routes into Turkey. The company was established in 2000 and started operations in 2001. It was wholly owned by Kayi Group. In 2010, the airline started scheduled domestic operations in Turkey making it the 9th airline to enter the domestic market. It downsized operations for the winter season 2012-13, returning three Boeing 737-800s to their lessors.

A subsidiary, German Sky Airlines, based in Düsseldorf, was launched in 2010. On 1 December 2012 it announced a suspension of services (due to the economic downturn) and returned two Boeing 737-800s to their lessors. The airline hopes to resume services in Spring 2013. On 4 June 2013, the airline filed for bankruptcy and ceased all flight operations with immediate effect.

2.3.10 Turkuaz Airlines

Turkuaz Airlines operated an extensive program of charter flights on behalf of various tour operators. They also supplied aircraft for lease to other airlines.

Their international destinations were to Belgium, Denmark, United Kingdom, Israel, Germany, and the Netherlands. Their domestic destinations from Ankara were to Istanbul, Izmir, and Kayseri. Turkuaz Airlines declared bankruptcy in 2010.

2.4 Global Airline Industry

Having a glance over the global airline market, it is appeared that about 2000 Airlines are operating more than 23,000 aircrafts over the world and these airlines provide service to more than 3700 airports globally. In 2009, there were 32 million scheduled flight departures and carried over 2 billion passengers. Growth of world air travel has averaged approximately 5% per year over the past 30 years (Hansman, 2009). Moreover, as depicted in the figure 3, airlines play an important role in transportation through freighting.

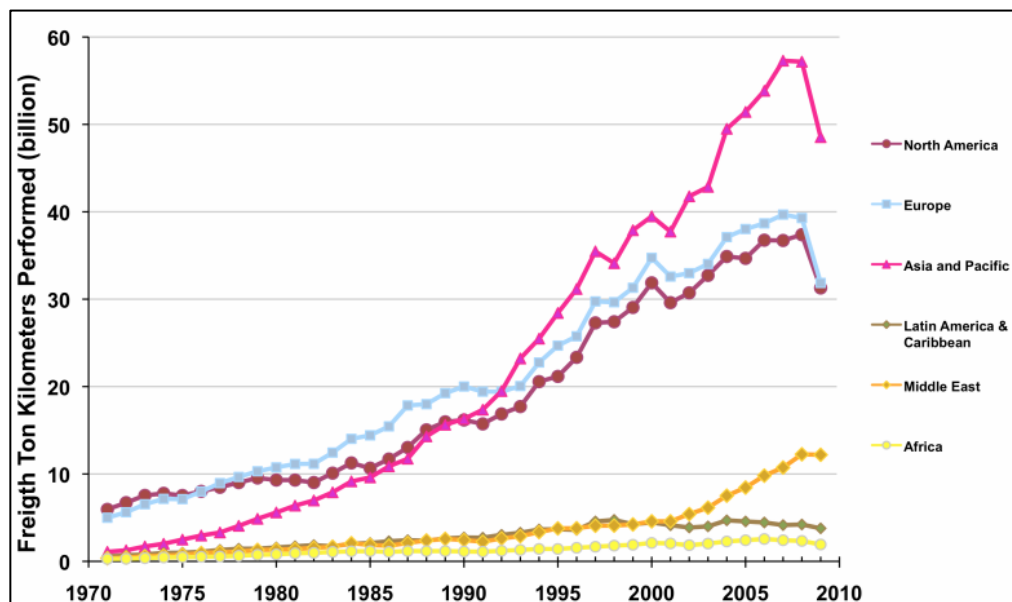


Figure 3: Freight Tons Kilometers by Region

All above points confirm the importance of being competitive in the market in order to survive. This study aims to determine the factors which can affect the profitability

of airlines. Next step is to find those factors which have significant impacts on the performance and profitability of Turkish Airlines as one of the leading airlines in Turkey and the global market.

Next chapter briefly reviews the relevant literature and summarize the findings of previous studies in the same subject

Chapter 3

LITERATURE REVIEW

3.1 Introduction

In this section of the study, the related literature is reviewed in order to distinguish the factors which are believed to affect the performance of a firm. In this respect, the studies which have investigated the relationship between the firm's profitability and the firm-specific factors have been taken into account. Therefore, firstly, the factors which are important to performance are listed and , consequently, the impact of each factor on the firm's performance is discussed.

3.2 Profitability

Profitability could be mentioned as one of the major aims of any kind of economic activity. As McMahon (1995) suggests, one of the main objectives of financial management is maximizing the shareholder's value. In other words, profitability is a measure to analyze whether a business has been successful or not. However, a business might not generate profit as soon as it starts operating since there are initial investments costs. As business gets mature, it should start its profit making.

There are various measures for profitability of a firm. One of the most known and widely used of all financial ratios is return on equity (ROE). It represents the performance of a firm in an accounting sense by reporting the ratio of net income to total shareholder's equity (Ross et al., 1999). Another measurement is return on

assets (ROA) which reflects the ability of management to employ firm's assets in order to make profits (Rugman, 1979; Lin et al., 2005).

Return on equity depicts the growth potentials of a company in the long term. So, if a firm has a high return on equity, it could imply that there are enough internal funds which could be allocated to good investment opportunities. However, firms might decide differently whether to invest all of the profits or a proportion of them.

As financial managers perform in different ways, empirical researches have reported various relationships between potential growth and profitability of a firm (Coad and Holz, 2010). In addition, in the literature, it is suggested that the profitability of firm should not be necessarily related to its growth (Goddard et al., 2004). This belief is confirmed by Coad's study (2007). His concern could be summarized as there is not an uniform and globally accepted theory about the sign of the relationship between profitability and growth.

3.3 Determinants of Profitability

In the following sections, based on the literature, some possible determinants of profitability are discussed from previous studies.

3.3.1 Company size

Some studies have mentioned that the size of a firm is significantly related to its rate of profitability (Hardwick, 1997; Gschwandtner, 2005). It could be inferred that as the size of the company grows, it would be able to benefit from economies of scale more. In addition, a larger company would diversify its assets easier and could exist in a competitive market with the possibility of new competitors.

It is worth mentioning that there is another contrary point of view regarding the impact of company size on profitability. Based on a study by Pi and Timme (1993), as companies grow, it could result in a diminishing rate of profitability. Their statement takes its credit from the agency theory, considering conflicts of interests between agents and owners. In other words, they suggest that the greater company size is, the less control of management's behavior would be. Moreover, Jensen and Murphy (1990) show that job security of managers increases as company size grows, therefore, it could result in a deviation from the main objective of a firm which is maximizing its shareholders' wealth.

3.3.2 Company Growth

In the literature, the impact of company growth on profitability is investigated in various studies. As Greiner (1997) states, a growing firm would face a diminishing profitability. A later study by Jovanovic (1982) suggests that firms could be categorized into two groups; those which grow by increasing profitability and those which leave the market because of incurring losses.

Some studies argue that the result of company growth could be different, either increased or decreased profitability (Delmar et al. , 2003; Wiklund and Shepherd 2003). On the one hand, a growing firm would experience an inspiration among its agents which leads to better expectations of future economic conditions. Therefore, this process may contribute to a better performance and ,indeed, a higher profitability. On the other hand, company growth could be interpreted differently by the agents leading to a diminishing productivity and motivation among them and as a result to a decreased profitability.

3.3.3 Leverage

The financial structure of a firm plays an important role in its financial performance. Financial structure, or capital structure, is referred to the proportion of debt and equity in a firm.

According to the pecking order theory, companies would prefer to firstly finance their investments by internal sources (Myers and Majluf, 1984). There are various studies concentrating on the impact of leverage on performance and profitability. Campello (2006) suggests that debt level could be either helpful or hurtful to the firm's performance. Considering the helpful part, some studies (Maksimovic, 1986; Brander and Lewis, 1986) support the helpfulness of debt saying that debt enables firms to increase their capacity and boost their performance.

Another study by Goddard (2005) shows that there would be a negative relationship between the level of leverage and profitability in a firm. They argue that as a company employs more debt, due to debt repayment obligations, it would have a lower capacity for profitable investment opportunities; therefore, this phenomena could result in a diminishing profitability.

The relationship between leverage ratio and the profitability of a firm could also be analyzed in the risk-return trade-off, that is the direct relationship between degree of risk and rate of return (Fletcher, 2000). Hence, when cash flows of a firm are obligated by debt repayment, it is more vulnerable to financial distress costs and consequently more variability in profits (May, 1995). To sum up, as leverage ratio increases, profitability would turn to be less stable. However, higher debt level is a tool in hands of shareholders to prevent managers from wasting firm's resources.

3.3.4 Liquidity

According to the previous studies, higher levels of liquidity in a firm could lead to agent-principal conflict (Fama and Jensen,1983; Myers and Rajan,1995). It is stated that managers would exploit the resources to increase their individual benefits rather than allocating resources in investment opportunities which enhance firm's profitability.

Similar studies by Pottier (1998) as well as Buckle and Adams (2003) show that greater level of liquidity is associated with decreased profitability because managers would more likely allocate firm's resources in a way that increase their prestige which would not be the optimal allocation of investments.

On the other hand, firms with higher level of liquidity could be more profitable according to Goddard et al. (2005). They state in their study that companies holding more liquidity would be more likely to adopt with market movements. In addition, those companies could benefit from a greater probability of allocating their investments optimally to grow. Similarly, Deloof (2003) shows that companies with greater levels of liquidity are more flexible in terms of providing short-term financing which could lead to a higher profitability.

3.3.5 Tangibility of Assets

In the competitive markets, companies need to be innovative to survive and perform well. Therefore, companies with higher proportions of intangible assets have more potential for innovation (Nucci et al. , 2005). Accordingly, there would be a negative relationship between tangibility of assets and profitability of a firm (Deloof, 2003).

Firms with a higher level of tangible assets are potentially inclined to employ more debt financing rather than equity financing since more costs are tied to equity financing (Biger et al., 2008). In addition, according to the literature (Frank and Goyal, 2009; Mjos, 2007), the asset structure has significant impact on leverage ratio. Therefore, as asset structure affects leverage ratio of a firm, it could also affect profitability of a firm. Considering pecking order theory, there would be a negative relationship between leverage and profitability. So, as tangibility of assets increases, there would be a higher potential for debt financing which could adversely affect the profitability of a firm.

Chapter 4

DATA AND METHODOLOGY

4.1 Introduction

As discussed in the previous chapters, the main aim of this study is to investigate the determinants of profitability in the airline industry. In this chapter, the framework which is used to analyze the determinants of profitability is introduced. Econometrically, in order to test whether there is any relationship between variables, one needs to conduct a regression analysis. In this respect, there are statistical techniques which are employed by researchers. Moreover, conducting a regression analysis demands a researcher to collect enough observations by mass numeric data. Afterwards, the analysis is done by a econometrical software, EVIEWS.

Firstly, the data set used in the study is described and the source of data and the list of companies are represented. Secondly, the empirical model of the study is proposed including the variables definitions. Lastly, the methodology employed to analyze the model of the study is discussed briefly. It should be notified here that this study employs two econometric methodologies. World major airline are analyzed based on a pooled panel and then Turkish Airlines performance is analyzed by a time-series analysis and finally these two analyses are compared with each other.

4.2 Data

In order to analyze the determinants of profitability in the airline industry, the required data is taken from the DataStream software, a product of Thomson Reuters. In this respect, five major airline industries are identified and then their corresponding balance sheets and income statements are gathered for the maximum available time periods. According to our sample, the data provides a period starting from 1994 to 2013. The airlines chosen are American Airlines, Jet Blue, Qantas, Japan Airlines, Hainan Airlines, Eva Airlines, Comair, Asiana Airlines, Aeroflot, Easy Jet, Deutsche Lufthansa, Singapore Airlines and Turkish Airlines.

4.3 Variables

This study aims to test the determinants of profitability, so the dependent variable is profitability. In addition, in the previous chapter, a review of the literature identified the determinants of profitability as: company size, company growth opportunities, leverage, liquidity and tangibility of assets (Goddard et al. , 2005; Nunes et al., 2009).

There are different proxies for the company's profitability. According to the literature (Rugman, 1979; Lin et al., 2005), return on assets or ROA is one of the most common proxies to measure the profitability of a firm which is measure by the ratio of net income to total assets.

The following table depicts the independent variables and their corresponding measurement: Company size is measured by taking the logarithm of sales; growth opportunities measured by growth sales; leverage measured by the ratio between total debt and total assets; liquidity measured by the ratio between current assets and

current liabilities; and tangibility of assets measured by the ratio between fixed assets and total assets.

Table 2: Measurements of Variables

Variable	Measurement
Company Size	Logarithm of Sales
Company Growth Opportunities	Growth of Sales
Leverage	Ratio between Total Debt and Total Assets
Liquidity	Ratio between Current Assets and Current Liabilities
Tangibility of Assets	Ratio between Fixed Assets and Total Assets

4.4 Panel Data Methodology

Econometrically speaking, data for analysis can be categorized into different forms: time-series, cross section and panel data. In time series analysis, the same units are gathered over a time period, while cross sectional data are gather for different unites at one specific point in time. The combination of these two would result in a third form recognized as panel data.

There are several reasons why panel data approach is employed in this study. To mention some of the panel data approach, one would start with its efficiency in controlling for heterogeneity. In the framework of panel data analysis, firms are considered heterogeneous, while time-series and cross-section analysis do not include this issue in their analysis which might result in biases.

Secondly, panel data approach provides both higher variations in data sets and less multicollinearity among the variables. Simultaneously, due to higher observations, they are associated with more degrees of freedom. Multicollinearity is a major problem in time-series analysis (Hsiao, 2007).

4.4.1 Empirical Model of the Study

The next step after the identification of proxy variables is to propose a model which will be used to test whether there are any relationships between the dependent variables and the independent variables. Based on the literature, the model should follow a functional of form as below:

$$\textit{Profitability} = f(\textit{Size}, \textit{Growth}, \textit{Leverage}, \textit{Liquidity}, \textit{Tangibility})$$

In other words, the profitability of a firm is a function of its size, growth opportunities, leverage ratio, liquidity ratio and tangibility of its assets (Nunes et al., 2009).

To analyze the relationship between variables, one should convert the functional form to an equation in order to be plugged in EVIEWS for regression analysis. The proposed model is as below:

$$\begin{aligned} \textit{Profitability}_{i,t} = & \beta_0 + \beta_1 \cdot \textit{Size}_{i,t} + \beta_2 \cdot \textit{Growth}_{i,t} + \beta_3 \cdot \textit{Leverage}_{i,t} + \beta_4 \cdot \textit{Liquidity}_{i,t} \\ & + \beta_5 \cdot \textit{Tangibility}_{i,t} + e_{i,t} \end{aligned}$$

Where,

i denotes each firm in the sample; *t* is the time period; Profitability_{*i,t*} is the profitability of firm *i* in the time *t*; Size_{*i,t*} represents the size; Growth_{*i,t*} is the growth opportunities; Leverage_{*i,t*} is the leverage ratio; Liquidity_{*i,t*} is the liquidity ratio; Tangibility_{*i,t*} is the tangibility ratio and *e*_{*i,t*} is the error term.

4.4.2 Panel Unit Root Tests

Unit root tests have to be conducted in order to make sure that regression results are not spurious. In this respect, panel unit root tests have been adopted in the study in order to investigate the order of integration of series which are assumed to be stationary in regression models (Gujarati, 2003).

Levin and Lin (1993) suggested that panel unit root tests are more efficient than the time series unit root tests. Their method is originated from the time series ADF unit root tests. Technically, ADF tests are done for all units of the panel and then the overall t-statistics enables one to assess the validity of the null hypothesis.

Understanding the differences between these methods would equip the researchers with an insight to interpret the results more efficiently. Therefore, a comparison of these approaches reveal that the Levin Lin (LL) approach is established on a very constraining hypothesis. So, it would not be proper for practical purposes. In addition, Im, Pesaran and Shin (IPS) approach is being considered as a generalized form of Levin and Lin (LL) approach.

4.5 Time-Series Methodology

In order to compare the performance of Turkish Airlines with other major airlines in the world, we need to investigate its performance by a time-series analysis. In this respect, we have to conduct unit root tests to check whether our variables are stationary or not.

If our variables are in the same level of integration, we can proceed to OLS regression. Otherwise, we need to check whether the variables are co-integrated or not. Johansen co-integration results determine the possibility of a significant

relationship between variables. So, if co-integration test shows that there is at least one relationship between variables, we have to use VAR models to find the possible associations among variables.

ADF and PP Unit Root Tests are carried out in order to determine the possible co-integration and the level of integration between variables. ADF and PP procedures are employed to test the stationarity of series in the present thesis. The PP procedures are applied to search for unit roots which is an alternative to ADF unit root test and compute a residual variance that is robust to auto-correlation (Katircioğlu, 2009). After the determination of the order of integration for variables, co-integration among variables should be tested and the validity of the long-run equilibrium relationship should be identified. The Johansen trace test is more reliable than the maximum Eigen value test for co-integration (Katircioğlu et al., 2007). The Johansen (1988) and Johansen and Juselius (1990) approach allows us to estimate co-integrating vectors between the set of regressors and a dependent variable and it is a contemporary approach to avoid the problems which arise from Engel and Granger (1987) methodology. The last step would be using an error correction model to evaluate how short-run values reach long-run equilibrium values. In other words, the results estimate the speed by which the disequilibrium between short-run and long-run values is being eliminated.

This chapter summarized the data and methodology which are employed in this study. In the next chapter of study, the empirical findings of the study are presented and discussed.

Chapter 5

EMPIRICAL RESULTS

In this section of study, firstly a sample of top airline companies from different countries is analyzed to establish a framework which determines the factors affecting the performance of major airline companies. Then, Turkish Airlines performance is compared to the average of the sample of the industry.

5.1 Descriptive Statistics

As provided in the following table, descriptive statistics represent a summary of dependent and independent variables of the study. The measures which are shown in the table are : mean, median, maximum, minimum and standard deviation of the variables for a sample of 13 airline companies over the period of 1994 to 2012.

Descriptive statistics table gives an insightful view of measurements by providing two aspects: the location of the variables and the variability of variables. Location of variables gives some information about the average value of variables. Taking the central value measurement into consideration, mean is the most widely used measurement . Variability or deviation from mean is also another valuable information about the sample of the study. Variance and standard deviation are among the most common measurements of variability.

Table 3: Descriptive Statistics

	ROA	ROE	TANGIBILITY	SIZE	LIQUIDITYLEVERAGE	GROWTH	
Mean	0.017273	-0.059948	0.709345	16.77165	1.029274	0.345198	-0.022798
Median	0.026445	0.094506	0.722961	16.49137	0.925997	0.316596	0.063170
Maximum	0.585980	3.555441	0.887296	22.49616	2.935413	0.809276	31.33231
Minimum	-1.784145	-26.69565	0.325373	11.55807	0.341361	0.000729	-19.00000
Std. Dev.	0.143705	1.942716	0.105647	2.267242	0.444172	0.193125	3.747494
Observations	201	201	201	201	201	201	201

As it is appeared in the table, the average ROA of the airline companies in the sample over the period of 1994 to 2012 is 1.72%. In addition, the standard deviation of ROA shows that there is a high level of volatility in terms of ROA. In other words, as ROA is one of the profitability measurement instruments, a high volatility for ROA could be translated into a highly volatile profitability for the airline companies in the sample. Similarly, ROE as another profitability measurement instruments reveals not only a negative average over the sample, but it also suffers from a high standard deviation. So, it could be inferred from these statistics that the airline companies in the sample have experienced a very volatile stream of profits in the period of study. Taking the explanatory variables into consideration, one could conclude that, except for growth opportunities, the volatility of these variables are

not particularly high because their standard deviations are less than their average values.

5.2 Correlation Analysis

Econometrically, there would be some problems with the validity of the model of study while a model is being constructed to investigate a phenomena. Multicollinearity could be one of the problems which is a consequence of high correlation among explanatory variables (Wooldridge, 2009). Therefore, correlation analysis would help one to test the degree of association between variables. In the following table, the correlation analysis is represented.

Table 4: Correlation Analysis

	ROE	ROA	TANGIBILITY	SIZE	LIQUIDITY	LEVERAGE	GROWTH
ROE	1						
ROA	0.0626	1					
TANGIBILITY	-0.1246	-0.0562	1				
SIZE	0.0070	-0.1028	0.2697	1			
LIQUIDITY	0.1025	-0.1158	-0.6494	-0.2876	1		
LEVERAGE	-0.0718	-0.0150	0.3607	0.3142	-0.3927	1	
GROWTH	0.0447	-0.5072	-0.1398	-0.0356	0.2272	-0.1946	1

As appeared in the table, the highest level of correlation between explanatory variables and ROE exists between ROE and tangibility (-0.1246). In other words, changes in tangibility would have a higher (negative) impact on ROE compared to other variables. On the other hand, ROA is significantly affected by changes in

liquidity in a negative direction (-0.1158). It is also worth noting that there is not a significant association between ROE and ROA (0.0626).

According to the above table, the correlation between tangibility and liquidity has the highest level of correlation among explanatory variables which is consistent with what is expected since higher levels of tangibility are tied to higher amount of fixed assets leading to less current assets or less liquidity. The lowest level of correlation appears between size and ROE. In other words, the amount of net revenues gained from total sales has not a significant impact on ROE.

To sum up, correlation analysis provides an overview of correlations among variables and gives some insightful information about the relationships among variables before conducting regression analysis.

5.3 Panel Unit Root Tests Results

In order to test whether a variable series is stationary or non-stationary, unit root tests are employed. Unit root tests have to be conducted in order to make sure that regression results are not spurious. In this respect, panel unit root tests have been adopted in the study in order to investigate the order of integration of series which are assumed to be stationary in regression models (Gujarati, 2003). When variables with different order of integration are regressed on each other, the regression outcome could be spurious leading to incorrect conclusions. In the following table, the results of unit root tests are represented for all variables.

It should be notified here that although unit root tests for panel data are commonly known as “panel unit root test”, they are indeed multiple series of unit root test

included in a panel data structure. The null hypothesis is that each series in the panel has a unit root and the alternative is that all series in the panel are stationary.

Table 5: Panel Unit Root Tests

Variables	LLC	Breitung t-test	IPS W-stat	ADF – Fisher Chi-square	PP- Fisher Chi-square
ROA					
τ_T	-4.71*	-1.19	-1.68*	39.50*	50.55*
τ_μ	-4.27*	-	-3.32*	53.17*	71.62*
τ	-4.90*	-	-	84.36*	102.32*
ROE					
τ_T	-2.32*	-2.48*	-1.7*	38.69*	84.09*
τ_μ	-1.75*	-	-3.00*	50.91*	94.39*
τ	-4.13*	-	-	86.31*	125.18*
Tangibility					
τ_T	-1.50*	-2.93*	-0.83	30.86	63.22*
τ_μ	-0.80	-	-0.44	27.32	47.53*
τ	-1.84*	-	-	23.42	40.61*
Growth					
τ_T	-4.91*	-1.51*	-3.15*	64.39*	110.35*
τ_μ	-5.07*	-	-5.54*	85.59*	390.72*
τ	-7.55*	-	-	120.97*	154.96*
Leverage					
τ_T	0.45	-0.13	-0.85	34.37	71.81*
τ_μ	-0.22	-	-1.22	37.18*	55.76*
τ	-1.27	-	-	19.73	24.16
Liquidity					
τ_T	-0.59	-2.61*	-0.48	28.98	55.61*
τ_μ	-1.31*	-	-0.94	29.66	39.12
τ	-2.04*	-	-	29.96	17.21
Size					
τ_T	-0.44	-1.09	-0.15	24.34	59.98*
τ_μ	-2.39*	-	1.40	19.17	68.13*
τ	7.23	-	-	2.12	2.86

τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. * denotes the rejection of null hypothesis.

While a panel unit root test is being conducted, the null hypothesis is that each series contains a unit root. So, in order to avoid spurious regression results, one needs to ensure that all variables of the regression are in the same order of integration. In this respect, one has to test the stationary status of each variable separately. For instance, ROA series is tested to check whether it is stationary or not with a null hypothesis of having a unit root. If the null hypothesis is being rejected by the test results, the

alternative hypothesis of not having unit root is accepted. Similarly, all other variables are also tested by the panel unit root tests. According to the unit root tests, all variables are stationary at their level form or $I(0)$.

Therefore, the next step would be regression analysis to evaluate the possible relationships between the dependent variable of the study and the independent variables.

5.4 Regression Results

The overall results of the regression analysis are shown in the following tables. As shown, in the first model which ROA is taken into account as the profitability proxy, the R-square is 0.3032 or 30.32% representing that 30.32% of the changes in the profitability of the firms in the sample could be explained by the changes in the dependent variables of the study namely TANGIBILITY, SIZE, LEVERAGE, GROWTH and LIQUIDITY.

However, only TANGIBILITY, GROWTH and LIQUIDITY variables are statistically significant in this regression analysis according to their t-statistic values. Therefore, SIZE and LEVERAGE do not significantly affect ROA of the firms in the sample. According to the results, the regression model is validated by F-statistics (16.97) which shows that the model is statistically significant

Table 6: Regression Results (ROA as the dependent variable)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TANGIBILITY	-0.2593	0.1085	-2.3890	0.0178
LIQUIDITY	-0.0600	0.0265	-2.2592	0.0250
GROWTH	-0.0196	0.0023	-8.2735	0.0000
SIZE	-0.0060	0.0040	-1.4750	0.1418
LEVERAGE	-0.0662	0.0505	-1.3114	0.1913
C	0.3865	0.1141	3.3873	0.0009
R-squared	0.3032			
F-statistic	16.976			
Prob(F-statistic)	0.00			

The coefficient of TANGIBILITY is negative (-0.259) which implies that as the tangibility of assets increases in the airline companies included in the sample of study, keeping other things fixed or *ceteris paribus*, the profitability ratio decreases which is measured by return on assets. TANGIBILITY variable is defined as the ratio of fixed assets to total assets. So, when a firm increases its tangible assets, it could be interpreted as a firm with higher potential for debt financing. Firms with a higher level of tangible assets are potentially inclined to employ more debt financing rather than equity financing since more costs are tied to equity financing (Biger et al., 2008). In addition, according to the literature (Frank and Goyal, 2009; Mjos, 2007), the asset structure has significant impact on leverage ratio. Therefore, as asset structure affects leverage ratio of a firm, it could also affect profitability of a firm. Considering pecking order theory, there would be a negative relationship between leverage and profitability. So, as tangibility of assets increases, there would be a higher potential for debt financing which could adversely affect the profitability of a firm. Our regression results are consistent with what mentioned.

GROWTH is another explanatory variable which has shown a significant relationship with ROA. The GROWTH coefficient is statistically significant ($t = -8.27$, $\text{prob.} = 0$) and negative (-0.019). It is worth noting that the relationship between growth opportunities of a firm and its profitability has been studied in the literature and the results have revealed various responses from the profitability due to the changes in the growth opportunities. Some studies argue that the result of company growth could be different, either increased or decreased profitability (Delmar et al. , 2003; Wiklund and Shepherd 2003). On the one hand, a growing firm would experience an inspiration among its agents which leads to better expectations of future economic conditions. Therefore, this process may contribute to a better performance and ,indeed, a higher profitability. On the other hand, company growth could be interpreted differently by the agents leading to a diminishing productivity and motivation among them and as a result to a decreased profitability.

To summarize, our regression results are consistent with the findings of Greiner (1997) stating a growing firm would face a diminishing profitability and are contrary to the finding of Nunes et al. (2009) and Pattitoni et al. (2014) suggesting a positive effect between growth opportunities and the profitability. In other words, an increase in the growth opportunities in these firm in the airline industry would lead to a diminishing productivity and motivation which results in a drop in the profitability.

LIQUIDITY is also statistically significant in this regression ($t = -2.25$, $\text{prob.} = 0.02$). The regression coefficient of this explanatory variable suggests a negative relationship (-0.06) between the liquidity of assets and ROA of the firms in the sample. According to the previous studies, higher levels of liquidity in a firm could lead to agent-principal conflict (Fama and Jensen,1983; Myers and Rahan,1995). Our

results are consistent with Pottier (1998) and Buckle and Adams (2003) which greater level of liquidity is associated with decreased profitability because managers would more likely allocate firm's resources in a way that increase their prestige which would not be the optimal allocation of investments. This could be the case for the airline companies since their prestige is an important factor for the managers.

It is worth noting that we also regressed return on equity (ROE) on the explanatory variables as another proxy for the profitability of the firms in the sample of study. However, as shown in the table, this regression is not statistically significant according to the F-statistics (0.79).

Table 7: Regression Results (ROE as the dependent variable)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TANGIBILITY	-1.877316	1.740630	-1.078527	0.2821
LIQUIDITY	0.150637	0.425960	0.353641	0.7240
GROWTH	0.009161	0.038083	0.240562	0.8101
SIZE	0.048287	0.065485	0.737371	0.4618
LEVERAGE	-0.359938	0.810170	-0.444274	0.6573
C	0.431280	1.829420	0.235747	0.8139
R-squared	0.020015			
F-statistic	0.796537			
Prob(F-statistic)	0.553347			

5.5 Turkish Airline Performance

5.5.1 Descriptive Statistics for Turkish Airlines

In order to evaluate the performance of Turkish Airlines in comparison with its competitors in the global market, the following table provides a descriptive statistics of Turkish Airlines performance between 1994 to 2013.

The first variable is ROA which shows an average of 1.59 percent over the period which is close to the average of all companies in the sample (1.72 percent). In other words, the ability of Turkish Airlines in generating income by employing the assets of the company is close to other companies in the sample, considering the average value of ROA. Another important statistic here is the standard deviation of ROA (0.1) . Turkish Airlines has a lower standard deviation for ROA compared to the average of all companies (0.14). This could imply that there has been less volatility associated with the earnings of Turkish Airlines in comparison to the sample over the period of 1994 to 2013.

Table 8: Turkish Airline Performance

	ROA	ROE	GROWTH	LEVERAGE	LIQUIDITY	SIZE	TANGIBILITY
Mean	0.0144	-0.0071	0.3410	0.2932	1.0737	14.9469	0.6525
Median	0.0365	0.1051	0.2569	0.3807	1.0414	14.9595	0.6734
Maximum	0.1441	0.3798	0.7717	0.4920	1.5986	16.5175	0.8061
Minimum	-0.2521	-1.0602	0.1083	0.0007	0.5918	12.7792	0.3254
Std. Dev.	0.0941	0.3636	0.2157	0.1720	0.2758	0.9790	0.1231
Observations	57	57	57	57	57	57	57

Taking into consideration the other proxy of profitability, ROE, Turkish Airlines has a higher average (-0.7 percent), but still negative, in the period compared to the average of the whole sample (-5 percent). This negative return on equity could be

interpreted by both the operating and financial cost structure of the airline industry companies. In addition, another explanation could be the cyclical business changes and the vulnerability (Gritta, 2003).

The first explanatory variable to be discussed is tangibility of assets. According to the descriptive statistics table, 65 percent of Turkish Airlines' assets are tangible assets which is close to 70 percent average of the whole sample. Size of the companies which is defined by the natural logarithm of net sales has a mean value of 14.94 which is lower than the size of the whole sample (16.77). Liquidity ratio as another independent variable is almost same comparing Turkish Airlines with the whole sample. Average leverage ratio for Turkish Airlines is about 30 percent which represents the proportion of debt financing to total assets. In comparison, the whole sample represents an average of 35 percent over the sample period. Unlike the whole sample, Turkish Airlines has shown a positive average for growth opportunities (34.88 percent).

To summarize, Turkish Airlines not only has been operating closely to its competitors, but also it has been more successful in some factors such as growth opportunities. This shows how Turkish Airlines has experienced a tripled operating profit in 2012 associated with a 26 percent in revenues and 18 percent increase in passenger capacity (CAPA report, 2014).

5.5.2 Determinants of Profitability for Turkish Airlines versus Other Airline Companies in the Sample

In this section of study, the determinants of profitability for Turkish Airlines are compared with the other companies in the sample. Therefore, time series data for the Turkish Airlines is collected in a quarterly format and the same variables which were identified for the panel data analysis are being regressed on ROA.

The first step is conducting unit root tests to check whether the data is stationary or non-stationary. In this respect, ADF and PP unit root tests are done and the results are shown in Table 9.

Table 9: Time Series Unit Root Tests Results for Turkish Airlines

Level						
	ROA	Size	Tangibility	Liquidity	Leverage	Growth
τ_T (ADF)	-3.87**	-2.82	-3.12	-3.43***	-3.34***	-2.53
τ_μ (ADF)	-3.05**	-1.19	-2.28	-3.21**	-1.94	-2.35
τ (ADF)	-3.01*	1.20	0.02	-0.97	-0.49	-1.48
τ_T (PP)	-2.32	-2.94	-1.98	-1.99	-2.14	-1.60
τ_μ (PP)	-1.91	-3.53**	-1.43	-1.92	-1.23	-1.90
τ (PP)	-1.87***	5.08	0.34	-0.39	-0.10	-1.74***
First Difference						
	ROA	Size	Tangibility	Liquidity	Leverage	Growth
τ_T (ADF)	-	-1.79	-3.02	-2.46	-3.23***	-2.78
τ_μ (ADF)	-	-1.92	-3.04**	-2.47	-3.25**	-2.85***
τ (ADF)	-	-1.52	-3.03*	-2.48**	-3.21*	-2.84*
τ_T (PP)	-	-1.82	-3.25***	-2.63	-3.47***	-2.99
τ_μ (PP)	-	-1.93	-3.26**	-2.64***	-3.50*	-3.04**
τ (PP)	-	-1.52	-3.25*	-2.65*	-3.45*	-3.02*

Note: τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. *, **, *** denotes the rejection of null hypothesis in 1%, 5%, and 10%, respectively.

The null hypothesis is defined as the series has a unit root against the alternative hypothesis of not having a unit root. As shown in the table, considering ROA, the

results suggest the rejection of the null hypothesis. In other words, ROA is stationary in its level form or it is I(0). Similarly, other variables are also tested.

The next step is defining a model to regress the variables on each other. As all the variables are not in the same level of integration, the simple regression is not plausible because it would lead to spurious regression results. So, the following model is defined based on the level of integration for the variables:

$$\text{ROA} = \beta_0 + \beta_1 \cdot \text{SIZE} + \beta_2 \cdot \text{GROWTH} + \beta_3 \cdot \text{D(LEVERAGE)} + \beta_4 \cdot \text{D(TANGIBILITY)} \\ + \beta_5 \cdot \text{D(LIQUIDITY)} + \varepsilon_t$$

Above equation suggests that SIZE and GROWTH to be plugged in the model by their level form while other variables are in their first difference form, namely D(LEVERAGE), D(TANGIBILITY) and D(LIQUIDITY).

The last step is conducting a VAR analysis on the proposed model. Table 10 depicts the results of VAR analysis. The figures in the parentheses are standard errors and the ones in the brackets are the t-statistics values. According to the results, t-values are statistically significant for the independent variables except GROWTH.

Table 10: VAR Model Results

	ROA
ROA(-1)	0.791544 (0.04512) [17.5428]
SIZE(-1)	0.017987 (0.00377) [4.77709]
GROWTH(-1)	0.014918 (0.01795) [0.83110]
D(LEVERAGE(-1))	-0.276111 (0.13180) [-2.09488]
D(LIQUIDITY(-1))	0.340328 (0.05915) [5.75319]
D(TANGIBILITY(-1))	0.565115 (0.20391) [2.77133]
C	-0.268666 (0.05890) [-4.56157]
R-squared	0.967383
Adj. R-squared	0.963389
F-statistic	242.2125

Standard errors in () and t-statistics in []

According to the panel data analysis, tangibility of assets (TANGIBILITY), liquidity ratio (LIQUIDITY) and growth opportunities (GROWTH) of airline companies affect the profitability (ROA) of these firms. In case of Turkish Airlines, the first lag of TANGIBILITY and LIQUIDITY represent a statistically significant impact on ROA while GROWTH does not. It should also be notified that the direction of impact is also opposite for Turkish Airlines in comparison with the panel sample. TANGIBILITY and LIQUIDITY show a negative impact in case of airline companies panel while the relationship is positive in case of Turkish Airlines. If

TANGIBILITY and LIQUIDITY in the previous quarter increases by one percent, ROA in the current quarter would be increased by 56 and 34 percent, respectively.

For Turkish Airlines, the TANGIBILITY impact could be interpreted by the changes in the level of tangible assets. It might be the case that this company would be able to borrow at lower interest rates compared to those with lower tangible assets (Bradley et al., 1984; Leary et al., 2014).

In addition, higher levels of liquidity diminishes the financing constraints (Gill and Mathur, 2011). In other words, holding more cash enables a company to finance its investment opportunities with less friction and with a lower cost. So, the case of Turkish Airlines could be interpreted similarly. As the VAR results show, the liquidity in the previous quarter could affect the profitability positively by providing the company higher surplus cash to invest in growth opportunities which could lead to higher profitability.

Chapter 6

CONCLUSION

6.1 Conclusion

In the present study, the determinants of financial performance and profitability for the airline companies have been analyzed. The focus was on the financial ratios which measure profitability, tangibility of assets, firm size, leverage ratio, growth opportunities and liquidity ratio. The data was collected from DataStream software for a sample of major airline companies and panel data analysis was used for the analysis. Moreover, the performance of Turkish Airlines company was compared with other international major airlines over the period of 1994 to 2013.

The results showed that among all explanatory variables which were regressed on the profitability of the firms in the sample, only tangibility of assets, growth opportunities and liquidity ratios have significant impacts on the profitability of the firms. Tangibility of assets are negatively affecting the profitability of the firms in the airline industry. This finding is consistent with the findings of Deloof (2003) Frank and Goyal (2009) and Mjos (2007).

Moreover, the empirical analysis showed that growth opportunities are also inversely affect the profitability of airline companies in the sample. However, previous studies are distinctly various in their findings of the relationship between growth opportunities and profitability. Some studies argue that the result of company growth

could be different, either increased or decreased profitability (Delmar et al. , 2003; Wiklund and Shepherd 2003).

According to the empirical results of this study, liquidity ratio is another factor which represents a negative and statistically significant relationship with the profitability of the firms in the sample, consistent with the studies of Pottier (1998) and Buckle and Adams (2003).

Finally, it is worth noting that the descriptive statistics of Turkish Airlines over the period of study showed that Turkish Airlines has a similar average in its operating status. Hence, Turkish Airlines not only has been operating closely to its competitors, but also it has been more successful in some factors such as growth opportunities. This explains how Turkish Airlines has experienced a tripled operating profit in 2012 associated with a 26 percent in revenues and 18 percent increase in passenger capacity (CAPA report, 2014).

6.2 Policy Implications

According to the empirical findings , one could suggest some recommendations for policy makers in the airline companies.

Firstly, considering the negative relationship between liquidity and profitability, greater level of liquidity is associated with decreased profitability because managers would more likely allocate firm's resources in a way that increase their prestige which would not be the optimal allocation of investments (Pottier ,1998; Buckle and Adams,2003). Therefore, firms which are targeting higher levels of profitability should keep their liquidity ratio lower in order to decrease the probability of agent-principle conflict.

The other recommendation for decision makers could be the relationship between the tangibility of assets the profitability. As the greater levels of tangible assets are associated with lower levels of profitability, the firms in the industry which are targeting higher profitability should control the level of their tangible assets.

6.3 Limitations of Study and Further Research

Like any other study, our thesis also suffers from various limitations. Firstly, we used data which are limited to the time period 1994 to 2013. Using data over a longer time period would have led to more accurate results of the study but enough data was not available covering a longer period. Secondly, one could find other variables to add to independent variables which affect the profitability of the firm. Moreover, there are some major airline companies which could be analyzed in the sample but they are not listed in any exchange market so their data are not available.

Some suggestions for further research would be analyzing other Turkish airline companies such as Pegasus Airlines, Atlas Jet and etc. to enhance the findings about Turkish airline industry. Or, a time-series analysis of Turkish Airlines performance could also give an insightful view of its performance and provide decision makers with more accurate information.

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