

Impact of direct flights on tourist volume: Case of Turkish Airlines

Gurel Cetin¹ (Istanbul University)

Orhan Akova (Istanbul University)

Dogan Gursoy (Washington State University)

Fazıl Kaya (Istanbul University)

Abstract

Accessibility of a destination is an important factor affecting the volume of arrivals to a region. This paper discusses the role of direct flights in development of tourism in Turkey by analyzing Turkish Airlines (THY / TK). THY has transformed into a leading airline by number of international destinations served within the past decade. Parallel to THY, Turkey as a tourist destination also experienced a metronomic rise in international arrivals. Secondary data is used to assess the number of international arrivals to Turkey before and after her air connectivity with certain countries is established. Findings confirm that direct flights to/from generating regions have significant impact on number of arrivals to destinations. Considering availability of direct flights to/from a destination as an important determinant of momentum in tourism development, the cost-benefits analysis of new flight routes would be based on a more holistic approach rather than mere airline revenue and costs.

Keywords: THY, destination development, accessibility, flight routes, airlines

Introduction

The development of tourist destinations is a central theme in tourism literature and researchers approach the topic from various perspectives and disciplines. Temporal and spatial evolution of destinations, impacts of development (Sörensson & von Friedrichs, 2013), sustainability (Sinclair-Maragh, Gursoy & Vieregge, 2015), government policies, planning imperatives (Valente, Dredge & Lohmann, 2015), collaboration (Fyall, Garrod & Wang, 2012), marketing (Lugosi & Walls, 2013), competitive strategies (Wong & Teoh, 2015) and stakeholders (Zehrer & Hallmann, 2015) are amongst numerous topics studied (Henderson, 2006). Well-established transport networks can stimulate tourism activity between origin and destination (Lohmann & Duval, 2014). Hence destination development can also be seen as a factor of its accessibility (Lohmann, Albers, Koch, & Pavlovich, 2009). Transport systems playing a major role in destination development is also available in Lohmann and Pearce (2012).

Improvements in aviation as a major mode of transport and airline deregulation made tourism movements faster, safer and more convenient. On the supply side, the route network and geographical position of a destination within these networks can influence destinations' accessibility (Bieger & Wittmer, 2006). Airfare also constitutes an important part of financial

¹ Corresponding Author; Gurel Cetin, Istanbul University, Turkey; gurelc@istanbul.edu.tr

cost of a vacation. Availability of cheaper flights (e.g. Low Cost Carriers) is also recognized as one of the factors for development of destinations (Iniguez, Plumed & Martinez, 2014). Particularly availability of direct nonstop flights is a major determinant in destination choices of tourists (Banno & Redondi, 2014). Flight frequency and service quality are also considered important. When a traveler has limited time (e.g. business traveler), flight times and duration may become more influential than the monetary cost of travel (Ishii et al., 2009).

Because the journey is a fundamental part of the vacation, development of tourism industry is closely linked to the progress in transport systems (Kozak & Rimmington, 1998; Borodako & Rudnicki, 2014). A well-organized connectivity by air transport is an important requirement for countries to become leading international destinations (Henderson, 2009). Lohmann et al. (2009) also emphasize development of transport networks that have allowed small, low populated regions to become major international tourism destinations. Despite their importance airlines as international organizations are not usually considered among the local stakeholders and overlooked in tourism and destination management literature (Barros, 2012). This is typically true as most large international commercial airlines would not be committed to local development issues unless a trade off is offered. However considering their role in accessibility, particularly flag carriers controlled partially or fully by national governments should be regarded as a fundamental element in destination management.

Flight networks and cost, improvements in air transport infra-structure, particularly the role of Low Cost Carriers (LCC) in attracting tourists received increasing attention in the literature (Iniguez, Plumed & Martinez, 2014). However opening up a new international route which is not served by any other airline is a large long-term investment. A new exclusive long-haul route also needs time to settle before it becomes profitable and involves various risks that a LCC as a *cost leader* would usually avoid. Flag carriers on the other hand are motivated by long-term requirements of countries (e.g. promoting national identity, improving trade and accessibility) rather than mere airline revenues. Superiority of flag carrier services, location of airports used (e.g. central rather than peripheral), branding and membership to major alliances also affect characteristics of tourists (e.g. spending power) arriving to a destination (Bieger & Wittmer, 2006). Moreover airfare makes up a significant part of travel expenditure and having a national airline serving incoming and outgoing tourists reduces the amount of leakage.

National legacy carriers have also been considered as major national symbols, sources of national pride and are important in the representation of the country at international level. Because of deregulation, competition and bureaucracy involved, these historically government controlled organizations usually make losses (Appiah-Adu, Fyall & Singh, 2000) and most of them have already been privatized (Jimenez, Claro, Sousa & 2012). Emirates, Singapore Airlines, Etihad and Turkish Airlines are few of the major examples that successfully survived. However, there is a lack of research on the role of FSC (Full Service Carriers) that are partially or fully operated by governments. Thus the study is also an initial attempt to demonstrate the contribution of FSCs to destination development by exploring THY as a case.

Literature review

The distance between tourist generating regions and receptive destinations and the cost of travel (expressed as monetary value and time required for the journey), have significant impact on the mode of the transport used (Prideaux, 2000). Developments in the air transportation, especially

progress in jet engine and wide body passenger jets contributed to development of tourism. Besides technical developments, deregulation and liberalization within the air transport industry in US and Europe in 80s (Bieger & Wittmer, 2006) open skies and freedom of cabotage agreements during 90s between North America, Europe and Asia also advanced development of international air traffic (Chang et al., 2011; Williams & Balaz, 2009). Since then air travel became major means of transportation for both leisure and business travelers (Kilinc et al., 2012). Increased volume is not the only outcome, developments in airline industry is also recognized as a key element particularly for geographic spread of tourism demand into new destinations.

Tourism demand is also considered price elastic (Cetin, 2014). The liberalization and competition in air transport made flight fares more affordable over the past few decades, and thus greatly stimulated growth of international tourism activities (Pearce, 1987). Extensions in flight range and connections are other factors that facilitated the progress of international tourism (Forsyth, 2006) and accessibility of remote destinations (Khadaroo & Seetanah, 2007). Air transport has opened up new tourist markets and become the main travel mode for international travel (Barros, 2012) and for travelers staying more than four nights in a destination (Bieger & Wittmer, 2006). Thus more countries started off competing for the same demand, seeking to have a larger slice of the global aviation market.

Tourist volume, particularly international arrivals in many destinations has become increasingly dependent on air transportation. Hence non-aeronautical benefits of direct flights are recognized as larger than revenue generated just for airlines (Forsyth, 2006) principally in the case of advantages associated with increased tourist volume (e.g. income, employment, investment). The industry stakeholders realizing direct flights as a key to destination development and competition also started to heavily lobby with governments on additional flight routes offered by national carriers. Yet, there is limited empirical evidence concerning how large these benefits might be and the influence of flag carriers' direct flights remained an unexplored research topic.

The introduction of a new flight route increasing the visitation from the origin country is common knowledge, but its actual affects has not been explored so far and the causal relationship still remains a *black box* (Williams & Balaz, 2009). The level of impact might be considered as an important criterion of success especially in introducing new destinations and increasing frequency of flights particularly for flag carriers owned or subsidized by their governments. The tourism industry in general would be in a better position to defend the role of accessibility, airline incentives, and new airports if the rate of impact can be justified (Laurino & Beria, 2014).

Although there is extensive research about transportation networks and economic development (e.g. Banno & Redondi, 2014), the impact of air connectivity on tourism destinations is less publicized. Despite their importance, airlines as large international organizations are not usually considered as one of the local stakeholders and overlooked in tourism and destination management literature (Barros, 2012) as well. On the other hand air transportation has also been affected by increased tourism volume, creating a vicious cycle. Therefore, collaborating on local destination development benefits airlines in the long term as well.

Literature is particularly scant on specific role of non-stop direct flights on arrivals during the initial stage of their introduction. In order to identify the causality relationship between direct flights and arrivals this paper compares statistics on international arrivals to Turkey with Turkish Airlines' new routes from tourist generating countries based on secondary data acquired from

TurkStat and Turkish Airlines' corporate reports. Through utilizing regression analysis and exploring rank differences it also measures the impact of individual direct routes and its significance on volume of incoming tourists.

The Turkish case

Turkey has been one of the destinations enjoying a rapid tourism growth particularly after 1980s and ranks currently as the 6th in terms of international arrivals (Ozturk & Niekerk, 2014). Despite political tensions in the region affected the volume of incoming tourism within the past two years, Turkey's strength concerning its tourism resources and promotional campaigns have frequently mentioned as reasons of success (Tosun, Okumus, & Fyall, 2008). Yet, Turkish Airlines' role in transforming Turkey into a major international destination has often been neglected. Particularly direct connectivity between the initiating and receiving countries is considered key in attracting travelers from generating countries (Castillo-Manzano, Lopez-Valpuesta, & Pedregal, 2012). By constantly adding new routes to its flight network and increasing the frequencies of existing flights THY, not only made the country more accessible globally, but it also diversified the tourist market in Turkey. According to TurkStat (2015) 73% of the international tourists (37 million) to Turkey arrived by air (27 million) in 2014.

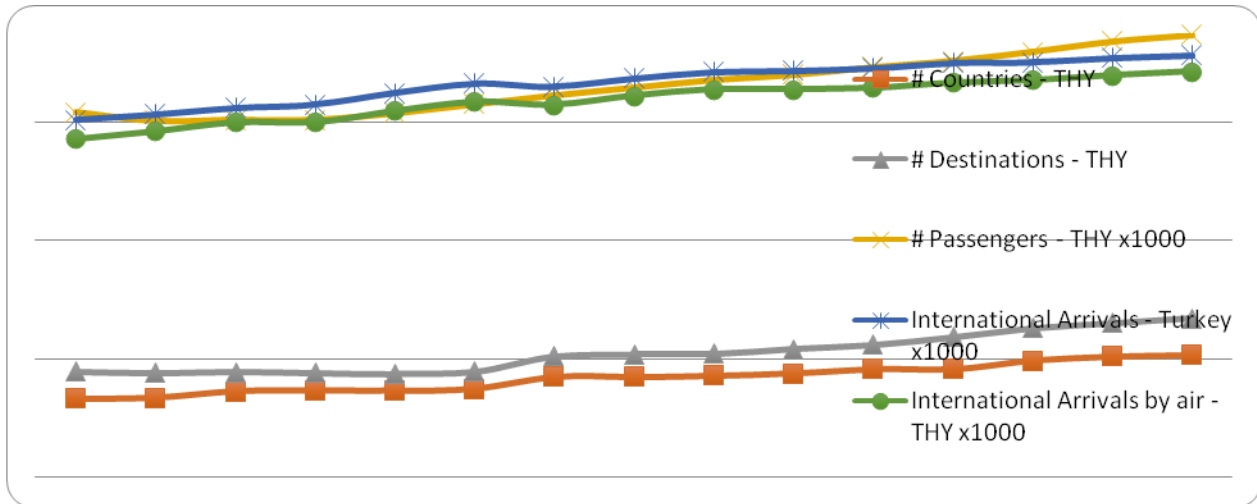
Investigating Turkish Airlines is important for several reasons. Firstly THY is the flag carrier of Turkey which is becoming a major international destination. Secondly THY has been challenging the global airline industry by widening its network constantly for the past decade and some of these flight routes do not yet have direct competition. Turkish Airlines is also considered to be a quality service airline, awarded with various international prizes (e.g. Europe's best by Skytrax between 2011-2015). Finally, THY can act as an excellent benchmark depicting transformation of a loss-making national FSC into a growing successful airline.

Compared to THY's 80 year history, particularly the last 15 years represents a large turnaround. Established in 1933 as a state-owned enterprise, the airline had a substandard performance. In fact until late 80s Turkish Airlines was a government monopoly, subsidized by central funds to cover its large losses, customer service was also suffering and delays were common (Kozlu, 2008). THY's shares were offered to public several times in 2003, 2004 and 2006 while the airline became a partially (49%) government owned enterprise. Since the initial public offering, THY has been changing its strategies (e.g. expanding international network, renewing fleet, vertical and horizontal integration, improving utilization), image (e.g. marketing, branding, sponsorship) and priorities (e.g. HR, service, on-time departures, safety). Within 10 years the service attitude of a typical bureaucratic government investment was transformed from the "They Hate You" airlines into a top airline with the vision of talented CEOs (Dursun et al., 2014; Kozlu, 2008). Financial figures also improved; despite expansion and renewal of fleet (from 65 in 2003 to 261 aircraft in 2014) THY recorded net income since 2002 (THY, 2016).

Aircraft utilization increased from 10 hours (2003) to almost 13 hours (2014). In 2003 THY was carrying 1013 passengers per employee, labor efficiency measures improved this metric to 2084 passengers in 2013. The number of passengers grew (16%) almost twice as much as IATA average (8%) between 2003 and 2016 (10 million to 61 million). Load factors were also respectable at 79% (from 66% in 2003) creating 845 million USD profits in 2014 placing THY as 8th among her peers (THY, 2016). Although THY (TK) does not have the same structure as Low Cost Carriers, she can be considered as a cost leader among intercontinental FSCs. Dursun et al.

(2014) compared six major FSCs (TK, AF, BA, LH, CX, EK) and found THY rates as the lowest among randomly selected origin-destination pairs.

Figure 1. THY flights and international arrivals to Turkey between 2000-2014



Year	# Countries	# Destinations	# Passengers (x 1000)	International Arrivals (x 1000)	International Arrivals by air (x 1000)
2000	46	78	12.031	10.428.153	7.274.869
2014	108	219	54.675	36.837.900	26.794.191

Source : THY (2016), TurkStat (2015) (compiled by the authors).

THY inherits some macro environmental competitive advantages as well. Turkey as a transcontinental country is geographically located between three continents (Asia, Europe and Africa). More than 50 countries are accessible from Turkey with narrow body aircrafts (Dursun et al. 2014). Using this geographical advantage THY was able to convert Ataturk International Airport (IST) in Istanbul into a mega-hub that collect air traffic from intercontinental flights and redistributes its traffic from IST as the base transfer point (Nenem & Ozkan-Gunay, 2012). Advantages for destinations being served by hubs are well supported in the literature (e.g. Ismail & Baum, 2006). IST hosted 61 million passengers in 2015, an increase from 11 million in 2002. The city became the fastest growing destination in Europe (10% growth between 2009-15) and attracted around 12 million international visitors in 2014 from diverse source markets (50% from 33 different countries) (Hedrick-Wong & Choong, 2015).

Hence, THY clearly aims to increase its international presence through direct flights and become a global “super connector” (Dursun et al., 2014). Currently Turkey is tied to 111 countries and 277 destinations (counting) through direct flights of THY (THY, 2016). The airline is ranked first in the World by number of countries flown to and fourth concerning the number of destinations served. Including Star Alliance network THY passengers are able to reach 1330 destinations in 192 countries (Star Alliance, 2015) and more than 1000 CIP lounges worldwide (THY, 2015). As shown on figure 1, despite various crises (e.g. terrorist attacks, economic crises, epidemics and natural disasters) affecting the aviation industry in the last decade, THY increased number of its

passengers from 12 million in 2000 to 61 million in 2015 (TYH, 2016). Parallel to this growth number of international arrivals to Turkey have also increased from 10 million (2000) to 40 million (2015) (WTO, 2016). Table 1 displays the annual figures concerning THY flight network development and international arrivals to Turkey. There clearly seems to be a correlation yet it is imperative to show whether the changes are statistically significant and if so to what degree.

Table 1. THY flights and International Arrivals between 2000-2014

Years	# Countries	# Destinations	# Passengers (x 1000)	# International Arrivals (x 1000)	# International Arrivals by air (x 1000)
2000	46	78	12.031	10.428.153	7.274.869
2001	47	76	10.227	11.619.909	8.459.489
2002	53	77	10.382	13.248.176	9.983.741
2003	54	76	10.420	13.956.405	10.012.886
2004	54	75	11.991	17.548.384	12.574.463
2005	56	78	14.134	21.124.886	14.981.462
2006	71	105	16.947	19.819.833	14.084.734
2007	71	109	19.636	23.340.911	16.807.681
2008	72	111	22.597	26.336.677	18.838.735
2009	75	120	25.102	27.077.114	18.959.340
2010	82	132	29.119	28.632.204	19.555.705
2011	82	152	32.649	31.456.076	21.788.642
2012	96	182	39.045	31.782.832	22.920.640
2013	105	202	48.268	34.910.098	24.871.759
2014	108	219	54.675	36.837.900	26.794.191

Source : THY (2016), TurkStat (2015), DHMI (2016) (compiled by the authors).

Methodology

Relation between flight network and tourism volume is common knowledge. What is known about the particular impact of international direct flights and arrivals however is limited. This paper explores the influence of direct air connection on international arrivals to a destination through analyzing Turkey as a case study. Utilizing commercial direct flights as a means of measuring connectivity and arrivals has also been discussed as a valid metric in the literature (e.g. Zook & Brunn, 2005). We assume that introduction of a direct route typically reduces the travel time and transportation cost which in turn would increase international arrivals.

Turkish Airlines is a rapidly expanding international carrier and several of the routes introduced are not served by any other airline. Hence THY offers a unique data to measure the impact of

exclusive direct flights on incoming tourists to a destination. Thus the objective of this study is to identify the importance of national carriers in development of destinations by assessing international arrivals. In order to reach this aim contribution of direct flights to/from Turkey as a destination is explored by looking at recently connected destinations' of THY (2003-2011) and international arrival statistics (2000-2014). Moreover, the study compares statistics between origin-destination pairs concerning incoming tourists during six (three former and three post) years which direct flight routes were inaugurated by THY. Data included three years before and three years after the introduction of the exclusive route. The year the flight was established (t_0) was not included in the measurement to prevent any bias that might result from a late introduction or promotional inadequacy during the first year.

The paper adopted the following steps to assemble data and to analyze relationship of direct flights and international arrivals.

Step 1: Choosing an airline in order to measure the impact of direct flights on international tourist arrivals to a particular destination. Turkish Airlines has been selected because it has been successfully expanding in global airline industry, she is a flag carrier which is still controlled by government and information considering routes, dates and load factors were convenient to collect. Likewise, Turkey has also been experiencing a rapid growth in international arrivals and served extensively by THY.

Step 2: Obtaining worldwide THY flight data from Turkish Airlines annual reports and public announcements about new international routes (67 new destinations) opened between 2003-2011. Removing routes that are also served by other airlines, keeping origin-destination pairs offered first by THY which remained exclusive for three years. Direct flights to 29 countries were identified that fit in the criteria.

Step 3: Based on the list of exclusive routes, collecting incoming tourist data from TurkStat regarding the number of tourist arrivals from those generating countries between 2000 and 2014. Exploring the relationship between total number of international destinations served by THY and international arrivals (Table 2). Identify the level of impact of each additional direct route.

Step 4: Creating the dataset based on historical data on incoming tourists for destination-origin pairs for six years based on: year (t_0) direct flight was introduced. Produce the moving averages of arrivals generated in the three year intervals before (t_{0-1} , t_{0-2} , t_{0-3}) and after (t_{0+1} , t_{0+2} , t_{0+3}) the introduction of direct flight for each destination and nationality (Table 3).

Step 5: Run the analysis and test the hypothesis that introduction of a direct flight increases the number of international arrivals comparing the ranks of 3 year moving averages of pre- and post-flight data. Because the data was not normally distributed Wilcoxon signed-rank test was used instead of the parametric version of paired sample mean difference tests.

The data set used for this study was retrieved from two separate sources; Turkish Airlines' corporate reports and public announcements, and TurkStat's bulletins concerning annual number of arrivals by nationality. Destinations included in the sample were expected to satisfy some criteria, first they needed to have a direct route introduced between 2003 and 2011 with THY. Additionally no previous direct flights would be available before introduction year and no additional flights would be introduced to/from these destinations within three years after the introduction. We also allocated international tourist arrivals from all new THY routes and removed routes that are operating with competition either by another airline or another

destination in the same country, hence only exclusive international routes served just by THY and without direct rivalry was considered. That is to say before THY's direct flight was introduced the residents of the respective generating countries were used to make a stop-over in another country other than origin to fly to Turkey. These criteria are expected to enhance the homogeneity of the data and improve validity.

Existing routes even from different airports in a country was a reason of removal from the data set. Thus if there is an existing connection to for example Stockholm in Sweden, a new connection even to another airport (e.g. Gothenburg) was not considered. Hence just the first connections between the origin countries and Turkey were analyzed because of the difficulties associated with removing a possible impact of an earlier/later route to/from the same country. Yet there was an exception to this in the case of South Africa, THY introduced direct flights to both Johannesburg and Cape Town in 2011 and these two destinations stayed exclusive until 2015 when the third destination (Durban) to South Africa was introduced. Because these two destinations were inaugurated at the same year, and stayed exclusive until 2015 it was decided that South Africa should also be included in the data set.

Destinations served through block space and code share agreements with other airlines and any flight that include a stop-over was not included in the data set either. For example, THY was flying to Singapore since 1986 however via stop-over in Bangkok, in 2006 non-stop direct flights to Singapore were introduced. Because the preceding flight included a stopover, the non-stop Singapore flight introduced in 2006 was considered as the first non-stop direct flight. At the end of this screening process 67 new international destinations offered by THY between 2003 and 2011 was reduced to 29 exclusive non-stop destinations.

First the percentages of change on international tourist arrivals before and after the introduction of direct flight was calculated. Then defining international arrivals as the dependent variable, the impact of expansion of international destinations offered by THY (independent variable) was identified using regression analysis. Finally teaming up each exclusive new routes' arrival statistics with three years before and after the introduction, a Wilcoxon signed-rank test was utilized regarding introduction of direct flight as the treatment in order to compare pre- and post-direct flight arrivals and check whether the differences were significant and positive.

Findings

The association between new international countries flown to and volume of international arrivals are evident on figure 1. In order to identify the significance of the relationship and direct flights' impact on international arrivals a regression analysis was conducted. The results of the analysis are depicted below on table 2. Based on the results the number of countries flown to (independent variable) is positively correlated ($r=0,957$, $p\leq 0,01$) with international arrivals (dependent variable). The findings also confirmed each new country flown to created around 410.000 (B) annual additional arrivals to Turkey and 91% of the variance in international arrivals can be accounted for increase in flight routes introduced to new countries.

Table 2. Results of regression explaining the impact of number of countries flown to by THY on international arrivals to Turkey.

Independent Variable	B	SE	β	t	Sig.
Constant	-6047776	2544003		-2,4	0.033*
# of countries flown to	409362	34335	0.96	11,9	0.00**

Note: B: Coefficient; SE: Standard Error; β : Standardized Coefficient; t: t-Value; Sig.: Significance, Dependent Variable: International Arrivals; R = 0.957; R² = 0.916; Adjusted R² = 0.91; Standard Error = 2599925. *Significant at p<0.05 level. **Significant at p<0.01 level.

Table 3. Nonstop exclusive destinations of THY and average arrivals to Turkey before and after the introduction between 2000 and 2014.

Country	Destination	Arrivals (\bar{x}) (t-1, t-2, t-3)	Flight Introduction Year (t)	Arrivals (\bar{x}) (t+1, t+2,t+3)	Arrivals(Δ) %
Morocco	Casablanca	11.259	2005	35.318	214
Portugal	Lisbon	10.520	2005	19.892	89
Norway	Oslo	90.728	2005	184.533	103
Slovenia	Ljubljana	18.635	2006	30.165	62
UAE	Abu Dhabi	7.290	2006	17.493	140
Tajikistan	Dushanbe	4.195	2006	29.873	612
Yemen	Sana'a	1.932	2006	4.546	135
Serbia	Belgrade	54.842	2006	83.310	52
Finland	Helsinki	70.333	2006	98.062	39
Oman	Muscat	686	2006	3.530	415
Ireland	Dublin	67.368	2006	102.670	52
Latvia	Riga	21.026	2006	49.253	134
Ethiopia	Addis Ababa	5.019	2006	15.893	217
Sudan	Khartoum	2.182	2006	8.142	273
Belarus	Minsk	58.547	2006	130.136	122
Nigeria	Lagos	1.855	2006	7.199	288
Singapore	Singapore	8.783	2006	17.578	100
Kenya	Nairobi	2.308	2006	4.078	77
South Africa	Johannesburg	8.385	2007	18.891	125
Syria	Aleppo	21.524	2008	53.865	150
Senegal	Dakar	2.346	2009	5.273	125
Brazil	São Paulo	20.368	2009	59.207	191
Canada	Toronto	53.203	2009	80.847	52
Indonesia	Jakarta	10.439	2009	32.956	216
Ghana	Accra	15.893	2010	38.439	142
Tanzania	Dar es Salaam	15.893	2010	38.439	142
Uganda	Entebbe	15.893	2010	38.439	142
Montenegro	Podgorica	16.988	2010	75.451	344
Afghanistan	Kabul	13.857	2011	18.642	35

Source : THY (2015), TurkStat (2015) (compiled by the authors).

Descriptive percentages confirm an increase after the introduction of the direct flight. All countries qualified to have an exclusive nonstop direct flight introduced between 2003 and 2011 reported an increase based on three-year average arrivals after the introduction of the direct flight. The percentage increase differed between 35% (Afghanistan) and 612% (Tajikistan) (\bar{x} = 135%). Looking at the overall data particularly arrivals from countries in Africa and Asia recorded a higher increase than European destinations. Increase in Western arrivals to Turkey were lower

but still respectable. This might be attributed to the fact that flight network and alternative stop-over flights are limited to/from Africa and Asia while European destinations are already supported with a wide flight network by various airlines offering convenient stop-overs when the direct flight was not available.

Table 4. Results of Wilcoxon Signed Rank-Test demonstrating significance of moving average differences between pre- and post- flight introduction arrivals

Post – Pre Flight	Groups	N	Mean Rank	Sum of Ranks	Z	p
	Negative Ranks	0	0	0		
	Positive Ranks	29	15	435		
	Ties	0				
	Total	29			4,704	0.00**

**Significant at $p < 0.01$ level.

After identifying the percentage increases we explored whether the differences between moving averages of pre- and post- flight arrival values were significant (Table 4). Because data was not distributed normally a non-parametric test based on ranks rather than means was needed. The Wilcoxon signed-rank test was utilized among exclusive destination pairs and the analysis confirmed that the median of average post three $(t_{0+1} + t_{0+2} + t_{0+3}) / 3$ year direct air connection arrivals are significantly higher than average three $(t_{0-1} + t_{0-2} + t_{0-3}) / 3$ year pre-flight arrivals ($Z = -4,704$, $p \leq 0,00$). Therefore, number of international tourists from the originating destination has significantly increased in destinations that were connected by an exclusive direct route to Turkey between 2003 and 2011.

Conclusion and discussions

The study offers empirical data concerning impact of direct flights on tourism volume by exploring international arrivals to Turkey between 2000 – 2014 and THY’s non-stop flights which are launched between 2003 – 2011. The analysis revealed that there is a significant positive relation between direct flights and international arrivals. Before direct flights were established tourists from these generating regions were either using other modes of transportation or connection flights with multiple stops. When a direct flight became available the average impact on demand was calculated as 410 thousand additional annual arrivals for each international exclusive direct flight introduced. Thus the expansion strategy of Turkish Airlines had a positive impact on the number of arrivals to Turkey. The study also compared international arrivals from respective countries during three-years pre- and post- direct flights’ introduction year. It was also confirmed that average post- direct flight arrivals are significantly higher than average pre- direct flight arrivals.

The findings provide solid empirical evidence on impact of direct flight routes between origin and destination on tourist flows. Hence policies and legislation targeted to attracting direct flights could be better supported. Tourism industry and DMOs trying to increase tourist numbers to a particular destination should facilitate and lobby for introduction of new flight routes. Therefore, from the policy perspective despite developments of airline networks and alternative connections, direct flights are still vital. A direct flight not only contributes to airline revenue but increases international arrivals from the origin to the destination. Hence, increasing direct flights from generating regions with high potential is a viable strategy for tourist destinations (Graham, 2013).

Other investments including new airports, improvements in capacities, increasing frequencies and facilitating new airlines are among the policies that can be considered by destination planners.

There is also a need to integrate destination planning and marketing with developments in airline networks. In some cases airlines might also be involved in promotional initiatives. Because flag carriers are usually controlled or influenced by policy makers at a national level, target markets and marketing campaigns might be better aligned with flight network development. THY, for example actively supports Turkey's official tourism promotion (e.g. Turkey Home Campaign) within its own marketing strategies and activities (e.g. Inflight entertainment, Euroleague games). As long as it is managed efficiently having a national carrier is essential for countries' regional development and achieving a greater global interaction.

One major problem that is faced by Turkey is that the capacity of Ataturk (IST) airport (27,5 million annual passengers), during peak season the airport is operating with full capacity, and delays are common. THY operations are very centralized on Ataturk airport particularly for international flights, if this node fails the damage to the whole TK network would be extreme. However, another airport in Istanbul is under construction; with 150 million annual passenger capacity the new airport is planned to be the largest in the World in 2018 (IBB, 2015). GDP growth of Turkey also confirms possible expansion of routes to/from Istanbul since there is also a supporting relationship between economic activity and air travel (Laurino & Beria, 2014). Commerce volume in a destination parallels the scale of the airport. Turkey is expected to grow by 4% on the average until 2017, the fastest among OECD members (OECD, 2015). Developments in aircraft technology greater speeds, more capacity, fuel efficiency (O'Connor, 2003) and extended distances will strengthen Turkey's position in the air traffic.

Another contribution of the study is utilization of a paired sample difference test in tourism research. This hypothesis test is usually used in medical science to explore before- and after-effects of treatments. Yet, its implications and coverage in tourism research is limited. This is one of the rare studies in tourism that use Wilcoxon signed-rank test to compare two pairs of non-parametric data (pre- and post- flight arrivals) based on a treatment (introduction of direct flight) as a pair wise comparison. Hence the analysis and the data presented in the study might also be used as an example in methodology courses.

Destinations are obviously served through different regions by various airlines. Hence there are different parameters that might influence the impact on tourist numbers besides existence of a direct flight. The unobserved factors (e.g. exchange rates, political stability, general growth in tourism, attractiveness of the destinations, relations between respective countries) may also account for some of the impact other than existence of a new route. However, since the study used the introduction year and moving average of pre- and post three year arrivals, the impact of these variables might be considered random. Flight days, arrival and departure times, code share agreements, connection flights, distance to the destination, type of aircraft, airport capacity, frequency, load factors, charter flights operated by tour operators and availability of other means of transport might also affect arrivals. These variables can be considered in future empirical studies.

Another major concern is that flights normally serve an international clientele from wide catchment area. However particularly for exclusive destinations a direct flight is still an incentive to visit the destination considering alternative stop-over flight which usually takes longer and

costs more. Therefore, it can still be discussed that introduction of a new direct route, facilitates tourist flow between connected countries. The impact of non-stop direct flights on arrivals cannot be adequately measured until a) the nationality of passengers for certain flights are known b) their willingness to use an alternative mode of transportation or a connected flight is measured and c) the dependency relationship among these two variables are discerned. The best way to measure impact of direct flights is to collect primary data from travelers, whether they would travel without the existence of a direct flight. We leave this task to a future study.

Finally, it would be myopic to consider the influence of air traffic on tourism as unidirectional. Arrivals to a destination and air connections heavily depend on each other. Potential tourism volume stimulates air transport as well. Yet, the reliance among these two is not very clear. These variables have the potential to reinforce each other and create a virtuous cycle as happened in Las Vegas and Dubai. Increased tourism activity after an initial air linkage might attract additional air connections and carriers to the destination, which would in turn result in increased tourism and so on (Laurino & Beria, 2014). Thus, there is a need for additional empirical research in various sub topics under international tourism and air connectivity, particularly stressing the direction of causality between direct flights and arrivals. The geographic distance might also be utilized in as a mediating variable in order to identify the impact of distance on this relationship.

References

- Appiah-Adu, K., Fyall, A., & Singh, S. (2000). Marketing culture and business performance in the airline industry. *Journal of Travel & Tourism Marketing*, 8(3), 47-70.
- Banno, M., & Redondi, R. (2014). Air connectivity and foreign direct investments: economic effects of the introduction of new routes. *European Transport Research Review*, 6(4), 355-363.
- Barros, G.V. (2012). Transportation choice and tourists' behaviour. *Tourism Economics*, 18(3), 519-531.
- Bieger, T., & Wittmer, A. (2006). Air transport and tourism—Perspectives and challenges for destinations, airlines and governments. *Journal of Air Transport Management*, 12(1), 40-46.
- Borodako, K., & Rudnicki, M. (2014). Transport Accessibility in Business Travel—a Case Study of Central and East European Cities. *International Journal of Tourism Research*, 16(2), 137-145.
- Castillo-Manzano, J. I., López-Valpuesta, L., & Pedregal, D. J. (2012). How can the effects of the introduction of a new airline on a national airline network be measured? A time series approach for the Ryanair case in Spain. *Journal of Transport Economics and Policy (JTEP)*, 46(2), 263-279.
- Cetin, G. (2014). Sustaining Tourism Development Through City Tax: The case of Istanbul. *E-review of Tourism Research*, 11 (1/2), 26-41.
- Chang, Y. C., Hsu, C. J., & Lin, J. R. (2011). A historic move—the opening of direct flights between Taiwan and China. *Journal of Transport Geography*, 19(2), 255-264.
- DHMI (2016). *2015 Faaliyet raporu (In Turkish)*. Ankara: Devlet Hava Meydanları İşletmesi.

- Dursun, M. E., O'Connell, J. F., Lei, Z., & Warnock-Smith, D. (2014). The transformation of a legacy carrier—A case study of Turkish Airlines. *Journal of Air Transport Management*, 40, 106-118.
- Forsyth, P. (2006). Martin Kunz memorial lecture. Tourism benefits and aviation policy. *Journal of Air Transport Management*, 12(1), 3-13.
- Fyall, A., Garrod, B., & Wang, Y. (2012). Destination collaboration: A critical review of theoretical approaches to a multi-dimensional phenomenon. *Journal of Destination Marketing & Management*, 1(1), 10-26.
- Graham, A. (2013). Understanding the low cost carrier and airport relationship: A critical analysis of the salient issues. *Tourism Management*, 36, 66-76.
- Henderson, J. (2009). Transport and tourism destination development: An Indonesian perspective. *Tourism and Hospitality Research*, 9(3), 199-208.
- IBB (2015). Istanbul Municipality: The 3rd airport will be opened on 29 October 2017. Retrieved from <http://www.ibb.gov.tr/tr-TR/Pages/Haber.aspx?NewsID=22505#.VnRDuPmLTIV>.
- Iñiguez, T., Plumed, M., & Martínez, M. P. L. (2014). Ryanair and Spain: Air connectivity and tourism from the perspective of complex networks. *Tourism & Management Studies*, 10(1), 46-52.
- Ishii, J., Jun, S., & Van Dender, K. (2009). Air travel choices in multi-airport markets. *Journal of Urban Economics*, 65(2), 216-227.
- Ismail, H., & Baum, T. O. M. (2006). Urban tourism in developing countries: In the case of Melaka (Malacca) City, Malaysia. *Anatolia*, 17(2), 211-233.
- Jimenez, E., Claro, J., & de Sousa, J. P. (2012). Spatial and commercial evolution of aviation networks: a case study in mainland Portugal. *Journal of Transport Geography*, 24, 383-395.
- Khadaroo, J., & Seetanah, B. (2008). The role of transport infrastructure in international tourism development: A gravity model approach. *Tourism management*, 29(5), 831-840.
- Kilinc, I., Oncu, M. A., & Tasgit, Y. E. (2012). A Study on the Competition Strategies of the Airline Companies in Turkey. *Tourismos: An international multidisciplinary journal of tourism*, 7(1), 325-338.
- Kozak, M., & Rimmington, M. (1998). Benchmarking: destination attractiveness and small hospitality business performance. *International Journal of Contemporary Hospitality Management*, 10(5), 184-188.
- Kozlu, C. (2008). *Bulutların üstüne tırmanırken: THY, bir dönüşüm öyküsü (In Turkish)*. Ankara: Remzi.
- Laurino, A., & Beria, P. (2014). Low-cost carriers and secondary airports: Three experiences from Italy. *Journal of Destination Marketing & Management*, 3(3), 180-191.
- Lohmann, G., Albers, S., Koch, B., & Pavlovich, K. (2009). From hub to tourist destination—An explorative study of Singapore and Dubai's aviation-based transformation. *Journal of Air Transport Management*, 15(5), 205-211.

- Lohmann, G., & Duval, D. T. (2014). Destination morphology: A new framework to understand tourism–transport issues?. *Journal of Destination Marketing & Management*, 3(3), 133-136.
- Lohmann, G., & Pearce, D. G. (2012). Tourism and transport relationships: The suppliers' perspective in gateway destinations in New Zealand. *Asia Pacific Journal of Tourism Research*, 17(1), 14-29.
- Lugosi, P., & Walls, A. R. (2013). Researching destination experiences: Themes, perspectives and challenges. *Journal of Destination Marketing and Management*, 2(2), 51-58.
- Hedrick-Wong, Y., & Choong, D. (2015). Master Card 2015 Global Destination Cities Index, Master Card.
- Nenem, M. S., & Ozkan-Gunay, E. N. (2012). Determining hub efficiency in Europe, the Middle East, and North Africa: the impact of geographical positioning. *Eurasian Economic Review*, 2(2), 37-53.
- OECD (2015). *Real GDP forecast*. Retrieved from <https://data.oecd.org/gdp/real-gdp-forecast.htm>.
- Ozturk, A. B., & van Niekerk, M. (2014). Volume or value: A policy decision for Turkey' s tourism industry. *Journal of Destination Marketing & Management*, 3(4), 193-197.
- Pearce, D. G. (1987). Mediterranean charters—a comparative geographic perspective. *Tourism Management*, 8(4), 291-305.
- Prideaux, B. (2000). The role of the transport system in destination development. *Tourism management*, 21(1), 53-63.
- Sarilgan, A. E. (2016). Impact of Low Cost Carriers on Turkish Tourism Industry. *International Journal of Academic Research in Business and Social Sciences*, 6(4), 176-188.
- Sinclair-Maragh, G., Gursoy, D., & Vieregge, M. (2015). Residents' perceptions toward tourism development: A factor-cluster approach. *Journal of Destination Marketing & Management*, 4(1), 36-45.
- Sörensson, A., & von Friedrichs, Y. (2013). An importance–performance analysis of sustainable tourism: A comparison between international and national tourists. *Journal of Destination Marketing & Management*, 2(1), 14-21.
- Star Alliance (2015). *Star Alliance – The way the Earth connects*. Retrieved from <http://www.staralliance.com/documents/20184/22080/General+Star+Backgrounder/0e31a9c3-2a75-4091-b1ae-8324db1997d7>.
- Tosun, C., Okumus, F., & Fyall, A. (2008). Marketing Philosophies: Evidence from Turkey. *Annals of Tourism Research*, 35(1), 127-147.
- THY (2016). *Turkish Airlines corporate and financial reports*. Retrieved from <http://investor.turkishairlines.com/en/financial-operational/financial-statements/1/2016/all-period>
- TurkStat (2015). *Tourism statistics*. Retrieved from http://www.tuik.gov.tr/PreTablo.do?alt_id=1072.

- Valente, F., Dredge, D., & Lohmann, G. (2015). Leadership and governance in regional tourism. *Journal of Destination Marketing & Management*, 4(2), 127-136.
- Williams, A. M., & Baláž, V. (2009). Low-cost carriers, economies of flows and regional externalities. *Regional Studies*, 43(5), 677-691.
- WTO (2016). *Tourism highlights*. Retrieved from <http://www.e-unwto.org/doi/book/10.18111/9789284418145>
- Wong, P. P., & Teoh, K. (2015). The influence of destination competitiveness on customer-based brand equity. *Journal of Destination Marketing & Management*, 4(4), 206-212.
- Zehrer, A., & Hallmann, K. (2015). A stakeholder perspective on policy indicators of destination competitiveness. *Journal of Destination Marketing & Management*, 4(2), 120-126.
- Zook, M. A., & Brunn, S. D. (2005). Hierarchies, regions and legacies: European cities and global commercial passenger air travel. *Journal of Contemporary European Studies*, 13(2), 203-220.