ABSTRACT

AKTAS MEHMET CELALETTIN. The Effects of Terrorism and Political Instability on International Tourist Arrivals: A Focus on Turkey. (Under the direction of Dr. Kathryn Boys)

Tourism is an important industry for many countries including those in Eastern Europe and the Middle East. For Turkey, the industry is both national and global importance; in 2017, Turkey ranked eighth in international tourist arrivals and thirteenth in tourism receipts. After 2010, however, the tourism industry in several Middle Eastern countries, including Turkey, suffered a loss of international tourist arrivals. As during this time, the Turkish currency was relatively devalued and there was no global economic crisis, the economic dynamics were in favor of an increase in international tourist arrivals in Turkey. During this period, however, the number of terrorist incidents increased and there was a period of political instability in Turkey. These circumstances offer an opportunity to examine the potential negative effects of terrorism and political instability on international tourist arrivals.

A majority of previous studies which have examined tourist arrivals solely examine economic factors and disregarded non-economic ones which may affect arrival counts. This research fills the gap by analyzing whether non-economic context variables, such as political instability and terrorist incidents, influenced the Turkish tourism industry. Seven cases are analyzed which examine the impact of terrorism and political instability on tourist arrivals to Turkey on national and sub-national regions, over different time horizons (annual, monthly), and in considering the different motivations tourists might have to visit. To see if other countries are similarly affected by terrorism and political instability events, the tourism industries of Egypt and Tunisia are also considered.

In the case of Turkey, terrorism had explanatory power in international tourist arrivals, but the magnitude of the effect was small. On the other hand, political instability had a significant negative effect on international tourist arrivals in almost every case. Separate analyses of each country showed that an increase in income increased international tourist arrivals to the destination country. Incidences of terrorism and political instability negatively affected tourism demand in Egypt and Turkey, while political instability and price level of products and services negatively affected tourism demand in Tunisia. The results are robust to heteroskedasticity and serial

correlations problems. These results indicate that policy makers in these countries need to concentrate on after crisis promotion activities for their tourism industries.

The Effects of Terrorism and Political Instability on International Tourist Arrivals: A Focus on Turkey

by
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ACRONYMS

ADF	Augmented Dickey Fuller Test
GDP	Gross Domestic Product
FETO	Fethullah Terrorist Organization
MENA	Middle East and North Africa Region
OECD	The Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
REER	Real Effective Exchange Rate
TURKSTAT	Turkish Statistical Institute
TURSAB	Association of Turkish Travel Agencies
UK	United Kingdom
UNWTO	United Nations World Tourism Organization
USA	United States of America
VIF	Variance Inflation Factor

1 Introduction to the Study

1.1 Research Problem

Tourism plays a critical role in the economies of many developing countries. In the past, some Middle Eastern and North African countries have heavily depended on the tourism industry for income generation. Between the 1980s and the 2000s, tourism was an important sector for Turkey and received heavy emphasis from Turkish authorities.

Turkey has the seventeenth largest economy in the world (GDP, World Bank Development Indicators 2017 statistics). According to the United Nations World Tourism Organization (UNWTO) Tourism Highlights (2018 ed.), Turkey ranked eighth in terms of international tourist arrivals in 2017. Therefore, the Turkish tourism industry is also globally important.

Since the Arab Spring, the Turkish tourism industry has not been performing well. From an economics perspective, there was no significant change in the main factors determining tourism demand. In fact, world GDP was increasing, and the relative costs of tourism services were decreasing. Over a period of seven years (2009-2016), the Turkish Lira depreciated to almost half of its original value, which gave Turkey a competitive advantage in terms of costs. Interestingly, these economic developments did not boost tourism arrivals as one might expect. This paper anticipates that non-economic factors likely had an effect on tourism demand. In the case of Turkey, these factors can possibly be political instability and terrorism.

Terrorism and political instability are not unique to Turkey as these problems are prevalent in most of the countries in the Middle East and North Africa (MENA) Region. During and after the Arab Spring, beginning in Tunisia in 2010, most North African countries have faced political turmoil. As a result, some of the countries still face instability and do not currently disclose dependable statistics. Fortunately, Tunisia and Egypt have functional governments in place. Hence, they are good candidates to further analyze the effects of terrorism and political instability on tourism.

It is anticipated that international tourism demand for Turkey is not only a function of economic factors but also non-economic ones. This study examines non-economic factors, including terrorism and political instability as well as core economic factors, such as the price of tourism services and income level of tourists, as factors of international tourism demand to Turkey.

A cross-country case examining Turkey, Tunisia, and Egypt more broadly analyzes the effects of terrorism and political instability on international tourist arrivals in each country.

Although the role and impacts of non-economic factors have been recognized as important factors of international tourism demand in previous studies (Enders and Sandler 1991, Sonmez and Graefe 1998, Llorca-Vivero 2008, Basu and Marg 2013, Saha and Yap 2014, Samitas et al. 2018), these studies have a few drawbacks. Some studies focused only one non-economic factor. In studying multiple non-economic factors, it is necessary to study all the factors together and discuss possible interactions among them. Other studies solely examine economic factors and disregard non-economic ones in assessing international tourism demand. Moreover, studies which consider more than one country and multiple non-economic factors are almost non-existent.

The major contribution of this study is the analysis of effects of political instability and terrorism on international tourist arrivals in Turkey, which was previously non-existent. Different from the existing literature on international tourism demand, this study investigates the effects of terrorism and political instability on international tourism arrivals in Turkey by several dimensions (city-based, origin of countries, monthly and yearly). This study also contributes a cross-country analysis of terrorism and political instability to the existing literature which was limited in this regard.

By understanding the role of non-economic factors on tourism demand, policy makers can design policies targeting the development of more resilient tourism industries. Depending on the magnitude of the effects of non-economic factors on the tourism industry, it may be necessary to develop after crisis promotion campaigns. New marketing campaigns may help recover the previous upward trend in international tourism arrivals.

1.2 Objectives of the Study

Considering the research needs noted above, this study has the following objectives:

1. To examine fluctuations in international tourist arrivals to Turkey, specifically in the years following the Arab Spring.
2. To analyze the sensitivity of international tourism demand to core economic factors such as the price of tourism services and income of tourists.

3. To examine non-economic factors, such as terrorism and political instability, in addition to economic ones. In addition to economic ones, non-economic factors could also determine international tourism demand especially in the case of Turkey. After the Arab Spring, the Middle East and North Africa (MENA) region had witnessed political instability and increased terrorist activities. In addition to increasing violence in the region, especially after 2013, Turkey faced political issues and political instability because of FETO (Fethullah Terrorist Organization) organization. This organization formed the parallel structure in the state and caused terrorist activities such as letting bomb attacks happen, involvement in government affairs, damaging inter-country relations of Turkey with the United States and Russia and finally coup attempt in 2016, July 15th.
4. To explore the extent to which results from Turkish case also hold in other countries in the region such as Tunisia and Egypt which have similar challenges with terrorism and political instability.

Turkey was chosen for the study due to two reasons. First, while Turkey was previously experiencing growth in international tourist arrivals there have been recent fluctuations coinciding with increased non-economic factors (terrorism and political instability). Second, the results of this study will help policymakers in Turkey and in other parts of the world which have experienced terrorist activities and political unrest improve their decision-making concerning tourism planning. Tunisia and Egypt were included in the study due to their similar challenges with terrorism/political instability in recent years as well as their regional proximity to Turkey. Since the Arab Spring (Uprisings), all three countries have experienced some form of political instability and terrorist incidents are prevalent in the MENA region.

1.3 The significance of the Study

Analyzing the role and impacts of both economic and non-economic factors on international tourist arrivals in developing countries like Turkey, Egypt and Tunisia is useful in two important ways. First, this could help policymakers understand the importance of negative context factors such as terrorism and political instability and could help them build develop a more resilient tourism industry. Second, the results of the study may indicate that policymakers need to develop policies and plans regarding promotion of tourism industry after political instability period ended , which may be applied to other developing or even developed countries.

1.4 Hypothesis

Price and income level do not fully explain the demand for products and services. In the case of the Turkish tourism industry, every economic indicator suggests that international tourist arrivals to Turkey should have increased between 2014 and 2017. If the relative cost of a commodity or service is lower, it has a competitive advantage over similar products and services. Turkish currency depreciated to almost half of its 2011 value by the end of 2016, indicating that the relative costs of tourism accommodation services in Turkey were lower than before. Moreover, there has been an upward trend in the income of the people visiting Turkey. In addition to the increase in tourist income and the decrease in Turkish accommodation costs, there were no economic crises in Turkey after 2011. Given this context, it was expected that international tourist arrivals to Turkey would increase, however, they did not.

Nonetheless, there was fluctuation in international tourist arrivals in the MENA region, particularly after 2011, at which time Arab Uprisings brought political instability to the region. Tension among people of the MENA region arose and terrorism levels increased. After 2013, Fethullah Terrorist Organization (FETO)[1] intervened in political affairs in Turkey, resulting in bombings almost every two months and ending with the attempt of coup d'état in 2016. In addition, a crisis arose between Russia and Turkey after a Russian plane was shot down by Turkey at the end of November 2015. This incident brought Turkey-Russia relations to the lowest level and negatively affected the Turkish tourism industry. Tunisia and Egypt were also performing well in the tourism sector prior to 2010 with an increasing trend in the number of international tourist arrivals between 1995-2010. However, Tunisia and Egypt faced political turmoil during the Arab Uprisings (2010 to 2013) and their economies, including the tourism sector, suffered during the time of political crises. Moreover, the number of terrorist incidents rose dramatically.

Hence, non-economic factors such as terrorism and political instability could affect international tourist arrivals to such countries. In the Turkish case, it is possible that these factors mentioned played a critical role in the fluctuation of international tourist arrivals especially between 2011-2017. Similar impacts are likely to be observed in Egypt and Tunisia as well.

[1] Regarded as a terrorist organization by the Turkish government, which is led by Fethullah Gulen, a Turkish cleric who has been living in Pennsylvania since the late 1990s. It is alleged that his organization (have members in Turkish police and army forces) was involved in a failed coup in 2016 and are responsible for the political instability, worsening of inter-country relations and bombings especially between 2015-2016.

1.5 Assumptions

International tourist arrivals are one of the measures of tourism demand in a country. The other popular measure is tourism income from those people who visited the country. However, as the income is gathered from different sources it is advisable to take international tourist arrivals as the main proxy for the international tourism demand instead of tourism income.

Determinants of any commodities and services are strongly linked with price, the price of substitute goods or services, and income level of the people purchasing those products and services. In the case of tourism, the price of tourism services is also one of the main factors that change customer behaviors. The important factors which affect the price level in a country are inflation rate and exchange rates. Since these factors are strongly related to each other, including both in the regression could give erroneous results (Devita, Kyaw, 2013). If independent variables are strongly related with each other the results of the regression analysis are questionable. The Real Effective Exchange (REER) from Bruegel.org is included as a weighted measure to capture the effect of the prices on international tourism demand. The REER index is calculated by taking a weighted geometric average of a country price level and price levels of other countries which are trading with the country of interest. If the REER decreases, products and services become relatively cheaper in the country being analyzed.

It is also assumed that Gross Domestic Product (GDP) per capita in terms of Purchasing Power Parity (PPP) is representative of the income of the tourists. The effect of price changes and population are also taken into account if real GDP per capita is used.

2 Tourism and Political Instability in Turkey, Egypt, and Tunisia

2.1 Tourism in the World

Tourism creates jobs, decreases the current account deficit, and generates global prosperity, making it a major economic sector. According to the World Travel and Tourism Council's 2018 Economic Impact Report, the travel and tourism sector accounted for 10.4% of global GDP, and 313 million jobs (9.9% of total employment) in 2017. This was also one of the strongest years of GDP growth in the past decade. In recent years there was a strong performance in the tourism sector, particularly across Asia. In 2017, countries such as Tunisia, Turkey, and Egypt, previously devastated by the impacts of terrorist activities and political instabilities, seemed to recover.

As noted in Table 2.1, the overall global capital investment in the tourism industry increased by approximately 25% from 2012 to 2017. Meanwhile, government collective spending increased by 12%. The direct contribution of the sector to GDP increased by 23% over the same period. These developments only created a 9% increase in employment in the tourism industry. Globally, tourism arrivals are highly dominated by industrialized regions of Europe, the Americas, and Asia and the Pacific (Table 2.2). Nonetheless, many emerging countries have shown fast growth over recent years which may be attributable to rising levels of disposable income in these areas.

When countries are ranked according to tourism arrivals and receipts in 2017, the rankings in arrivals and receipts differ (Figure 2.1). Tourism arrival statistics are gathered from border police statistics, tourism establishment records, and, in some countries, surveys. Tourism receipts are defined by the World Tourism Organization as the expenditure of international visitors including their payments to national carriers for international transport. The statistical data for international tourism expenditure is collected through international visitors' surveys, tourism expenditure surveys, the balance of payments, and tourism satellite accounts. There are differences in data collection in terms of arrivals and receipts, especially between developed and developing countries. Therefore, direct comparisons between countries with different levels of sophistication in statistical techniques are questionable. However, comparisons could be made between advanced OECD countries where statistical data collection methods have been harmonized and standardized to some extent.

Table 2.1. The Global Economic Contribution of Travel and Tourism, 2012-2017

World USD billion	2012	2013	2014	2015	2016	2017	2018E	2028F
Visitor exports	1,221.4	1,289.0	1,355.5	1,396.7	1,432.6	1,494.2	1,552.6	2,311.4
Direct contribution of Travel & Tourism to GDP	2,086.8	2,169.1	2,258.5	2,362.3	2,456.2	2,570.1	2,674.2	3,890.0
Capital investment	705.6	724.4	760.6	804.8	848.6	882.4	924.5	1,408.3
Government collective spending	393.9	401.2	408.8	421.5	434.0	444.4	456.8	603.4
Direct contribution of Travel & Tourism to employment ('000)	108,131	109,640	111,658	114,014	116,095	118,454	121,356	150,139
Capital investment (2012-2017)	25% increase							
Government Spending (2012-2017)	12% increase							
Direct Cont. to GDP (2012-2017)	23%increase							
Employment Increase	9 %							

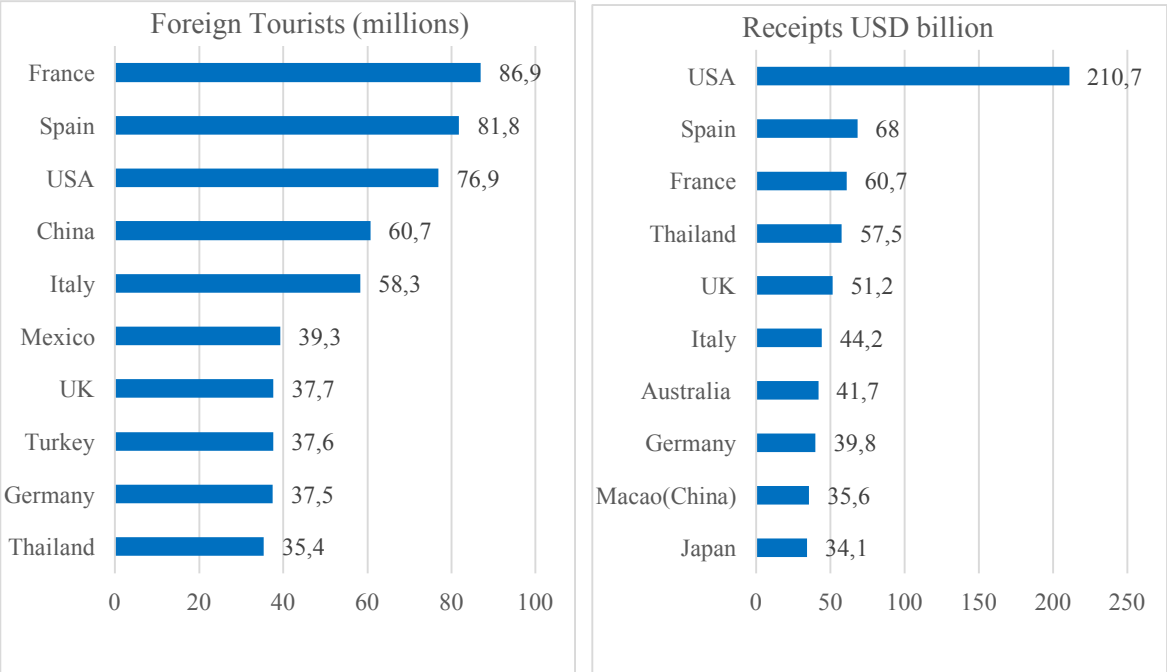
Source: World Travel and Tourism Council, Economic Impact 2018. Figure: The Economic Contribution of Travel & Tourism and the author's own calculation
Note: E stands for expected value and F stands for predicted value.

Table 2.2. World Tourist Arrivals 1997, 2017

Tourism Originating Countries	1997		2017		Change in Market Share %
	Tourist Arrivals (millions)	Market Share in the World (%)	Tourist Arrivals (millions)	Market Share in the World (%)	
Europe	371.1	60	671.7	51	-15
Asia and the Pacific	93.1	15	323.1	24	60
Americas	116.6	18.9	210.9	16	-15.3
Africa	23.2	3.8	62.7	5	31.6
Middle East	14.3	2.3	58.1	4	73.9

Source: United Nations World Tourism Organization. Tourism Highlights 2000 and 2018. Figure: World International Tourist Arrivals by (sub)Region and author's calculations

In this context, the differences in rankings could be attributable to relative price levels and exchange rates in the destination countries. However, the top three countries are OECD countries with close exchange rates. Then the question arises whether there are other factors explaining why the USA came first in receipts while it is ranked third in terms of arrivals. According to Figure 2.1, Thailand has also been performing well in income generation from tourism arrivals, ranked fourth in terms of receipts. On the other hand, Turkey seems to have underperformed in terms of receipts.



Source: United Nations World Tourism Organization Tourism Highlights 2018. Figure: International tourist arrivals and Figure: International tourism receipts

Figure 2-1. International Tourist Arrivals and Receipts, 2017

In addition to differences in prices in destination countries, there are several other factors that can contribute to income differences in the tourism industry, such as sociodemographic characteristics of tourists, length of stay, geographic location of the country, pattern of spending, and tourism facilities in destination countries. For instance, travel to the USA requires a long-distance flight from other continents. Therefore, many individuals may be inclined to lengthen their duration of stay to feel that the duration was worth the burden of travel. Tourism facilities like theme parks and natural endowments like the Grand Canyon, Niagara Falls, and other national parks in the USA also attract many tourists. The size of the parks as well as the costs and spending associated with theme park attendance increase the duration and cost of stay, increasing tourism income as a result. Meanwhile, additional complementary tourism packages increase the spending

of tourists in natural places. Hence, the complexity of tourism products in addition to the aforementioned factors affects the income generated from tourism.

2.2 History and Development of International Tourism in Turkey

Turkey is closely located to the junction of three continents, Asia, Europe, and Africa. Historically, this land was a bridge between ancient civilizations: India/China and Mediterranean states. Catalhoyuk, located in southeast Konya, the central part of Turkey, is regarded as the first settlement and widely accepted as being the oldest village or town in the history of mankind. Therefore, the rich cultural history of this area gains attention from travelers all around the world.

Prior to the 1980's, Turkey only attracted tourists who had the goal of visiting sites and events with cultural and historical values. Turkey did not have developed infrastructure and superstructure for the tourism and hospitality industry at that time. Additionally, the political instability, the negative view of modern international tourism on moral grounds, and ambiguous strategies held back the development of international tourism in Turkey (Kusluvan, 2016). It was not until the 1980's that the Turkish tourism industry started to grow. After 1980, international tourism was not only a foreign currency earning industry but also an international image booster. Therefore, after the 1980's the restraints in the tourism industry started to be removed and factors were put in place to boost international tourism in Turkey. In addition to historic places, Turkey is abundant in tourism facilities and varieties. Antalya and Alanya in the southwestern region, and Marmaris, Kusadasi, Bodrum, Izmir in the western (Aegean) region are well known places for beach tourism. Uludag, Palandoken, and Kartalkaya are popular areas for winter tourism, such as skiing. Additionally, thermal resorts are very abundant in different regions for tourists that prefer to relax through the thermal power of water.

2.2.1 The Factors Boosting International Tourism after the 1980s

After the 1980's, Turkey liberalized its economy, open borders for foreign capital, and abandoned import substitution policies. Turkey started to follow a more export-oriented approach in the economy. In order to get foreign exchange to balance the current account after abandoning import substitution policy, Turkey preferred to focus more on the Tourism industry and other specific export industries (Fifth Development Plan, 1985-1989). Development plans in Turkey were the main catalyzers in many social and economic sectors, especially in the 1980s. There were specific core industries with objectives and policies in these plans. Governments focused on these

industries and tried to achieve objectives and realize the policies mentioned in the plans. These plans also led the private sector and helped them with incentives and subsidies in the supported industries.

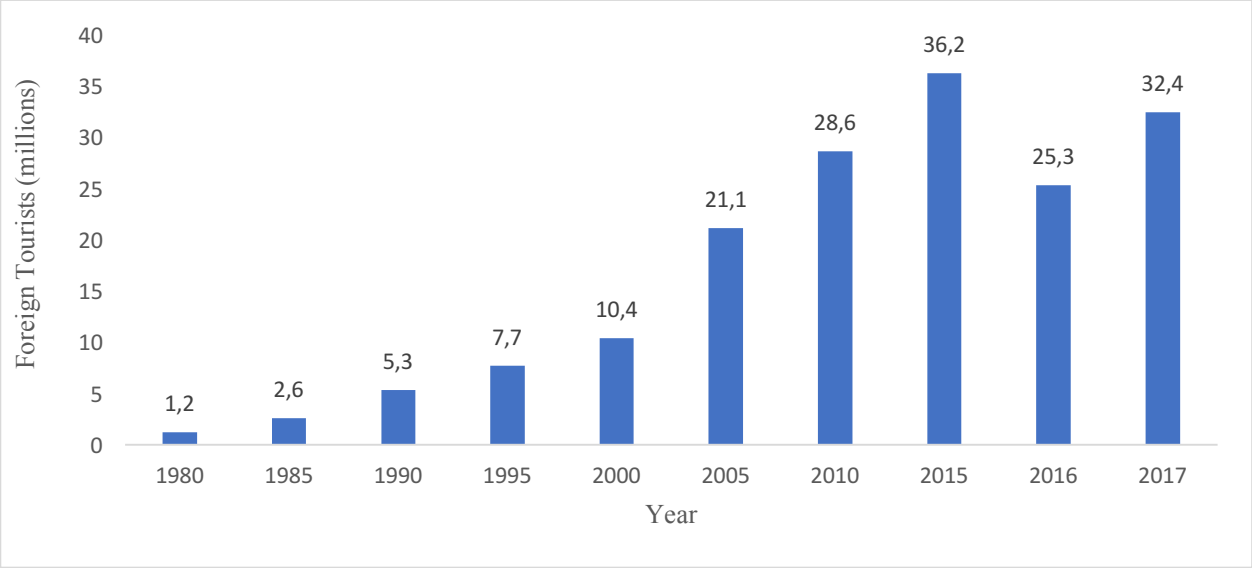
In this context, the main objectives and policies in the Fifth Development Plan (1985-1989) regarding the tourism industry were "Priorities will be given to mass tourism while not neglecting individual tourism…, Government will focus more on building and developing infrastructure for conference, thermal, yacht and winter tourism. The government will incentivize foreign capital and support development of superstructure, increasing bed capacity and administration education in tourism sector…" In addition, there were also numerical economic and structural objectives to be realized until the end of the plan period such as "540 million US dollars net foreign exchange earnings" and "100.000-bed capacities." In the following development plans, tourism remained one of the priority industries.

There were several factors that aided the Turkish tourism industry in achieving the objectives and implementing the policies stated in the development plans, especially right after the 1980s. The most important factors were socio-political stability; change in attitude towards modern international tourism; creation of tourist regions, zones, and centers; increased infrastructure investments; increased tourism investment incentives; devaluation of Turkish lira; and foreign investment (Kusluvan, 2016). More importantly, the tourism sector was identified as a top priority export industry after the 1980s. Other factors that have boosted the Turkish tourism industry between the 1980s and now are:

- Focusing on beach tourism instead of history-culture tourism
- Regulations and legislation to standardize some tourism services to make them compatible with modern facilities
- Credit availabilities with lower interest rates with longer payment durations to tourism investors
- Promotion of the Turkish tourism industry by governments
- Lower costs of tourism services in Turkey vis a vis European Countries (low-level relative value of Turkish currency)

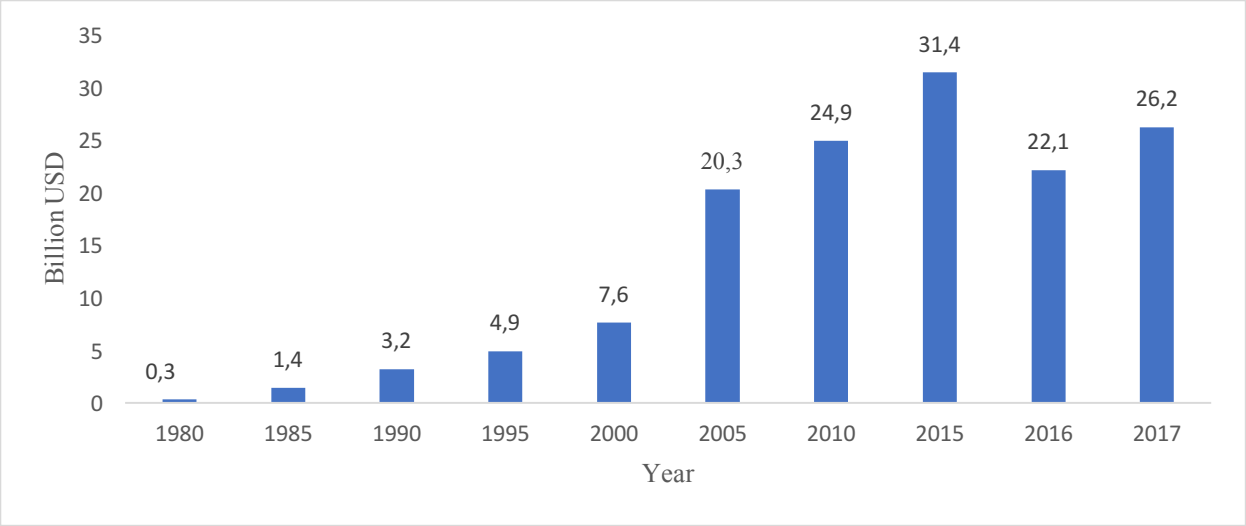
- Increased per-capita disposable income of the visitor countries (European Countries, Russia, Middle Eastern Countries) and increased transportation means and opportunities
- Urbanization, congestion and environment pollution in developed tourism destinations

When the period after 1980's is analyzed quantitatively, it is observed that compound yearly growth or increase rate in international tourist arrivals to Turkey between 1980-2017 is 9% (Figure 2.2). Meanwhile, the growth of total tourism receipts is about 12% for that same period (Figure 2.3). When looking at the average expenditure of international tourists (Figure 2.4), it is observed that the average income from international tourists is decreasing for the period 2003-2017.



Data Source: Ministry of Culture and Tourism of Turkey. Border Arrivals and Departure Statistics.

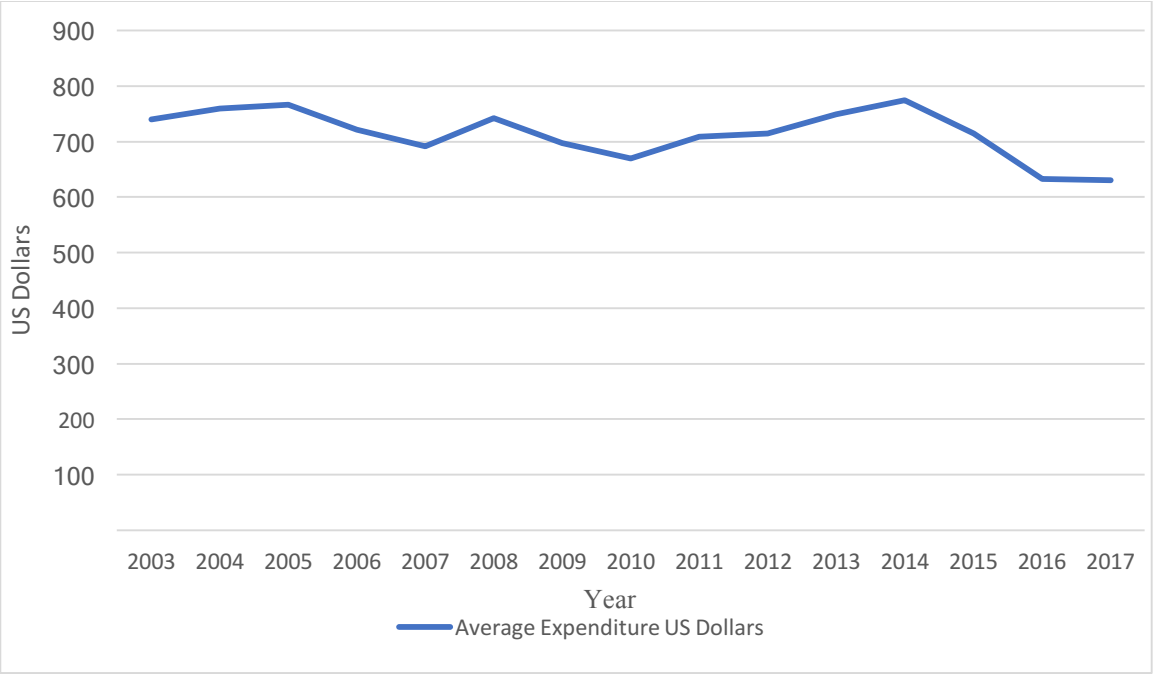
Figure 2-2. International Tourist Arrivals to Turkey, 1980-2017



Data Source: Ministry of Culture and Tourism of Turkey. Border Arrivals and Departure Statistics.

Figure 2-3. Tourism Total Receipts, 1980-2017

While total international tourist arrivals increased from 2003-2017, the average expenditure of tourists is decreased over this same period (Figure 2.4). The decreasing number of arrivals could be explained by non-economic factors. On the other hand, the decrease in average expenditure for the latest period is attributable to the composition of tourists and the relative devaluation of Turkish currency.

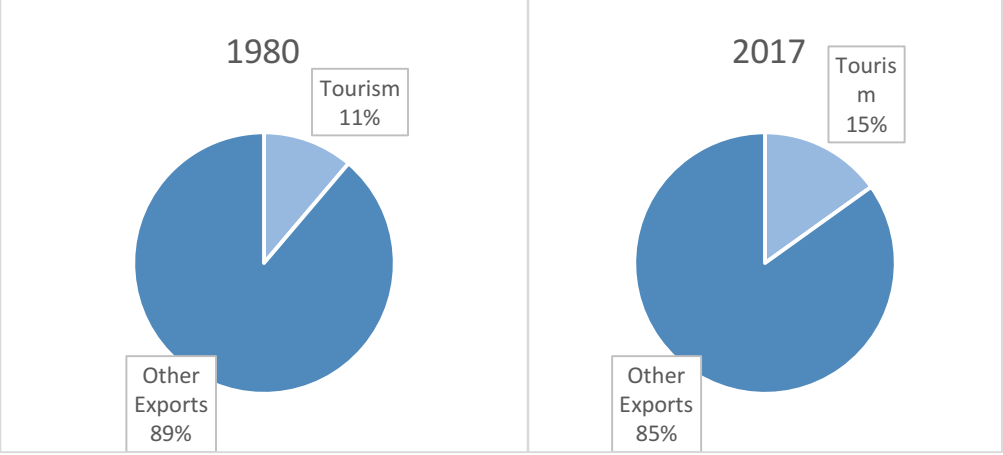


Data Source: Ministry of Culture and Tourism of Turkey. Tourism Income and Expenditures Statistics.

Figure 2-4. Average Expenditure of Foreign Tourists (Nominal US Dollars), 2003-2017

In 1980 the share of international tourism income in total exports of Turkey was 11%. In 2017, it had increased to 15% (Figure 2.5). Considering there was a 49-fold increase in total exports from 1980 to 2017, the magnitude of the ratio is bigger than it seems.

In addition to external factors, there has been an increase in the internal dynamics of the Turkish tourism industry. The share of tourism in Gross National Income of Turkey was 0.6% in 1980 and it increased to 3.1% in 2017. While the bed capacity of hotels was 56,044 in 1980, it reached 935,286 in 2017 (TURSAB, tourism establishments, 2018). The yearly rate increase in bed capacity is 8% and is lower than the rate increase in the number of international tourist arrivals. This indicates that an additional investment to increase the bedding capacity of hotels in Turkey to match tourism demand in the future may be warranted. However, considering the unused capacity of tourism establishments, this may not be necessary.

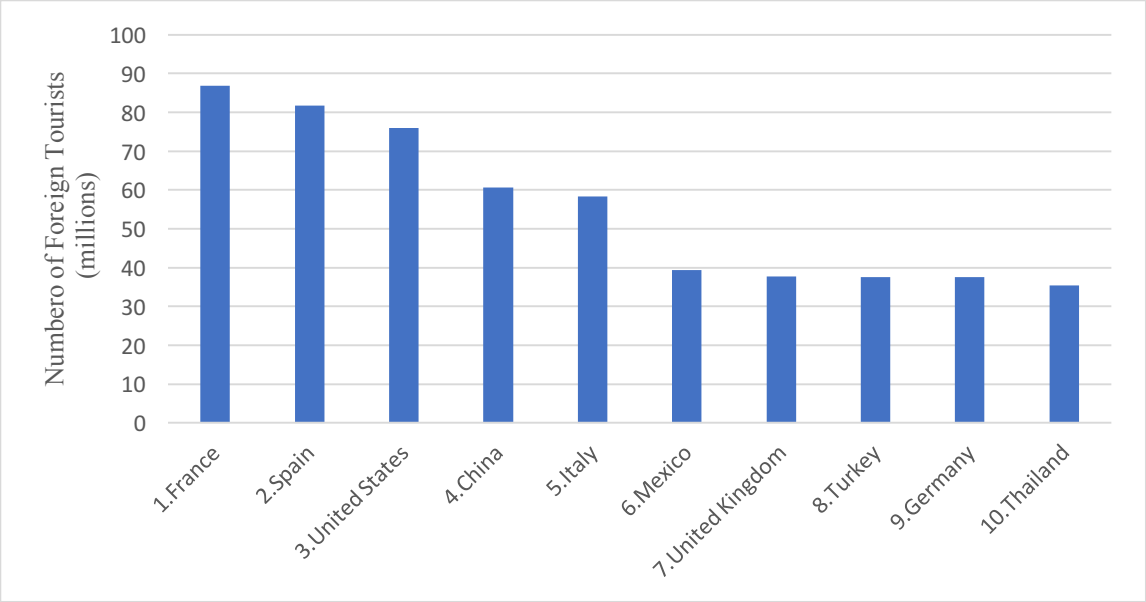


Data Source: Association of Turkish Tourism Agencies (TURSAB), Tourism in Turkish Economy. World Bank World Development Indicators. International tourism, receipts (% of total exports).

Figure 2-5. Comparison of the share of tourism income in exports of Turkey between 1980 and 2017

2.3 Tourism in Turkey

It is useful to begin with analyzing global tourist movements and then compare the Turkish tourism industry within the global context. In 2016, Turkey ranked tenth according to the number of international tourist arrivals. As a result of the recovery of the Turkish tourism industry in 2017, the number of arrivals increased 30% from the previous year, moving Turkey to the eighth spot in the global rankings.

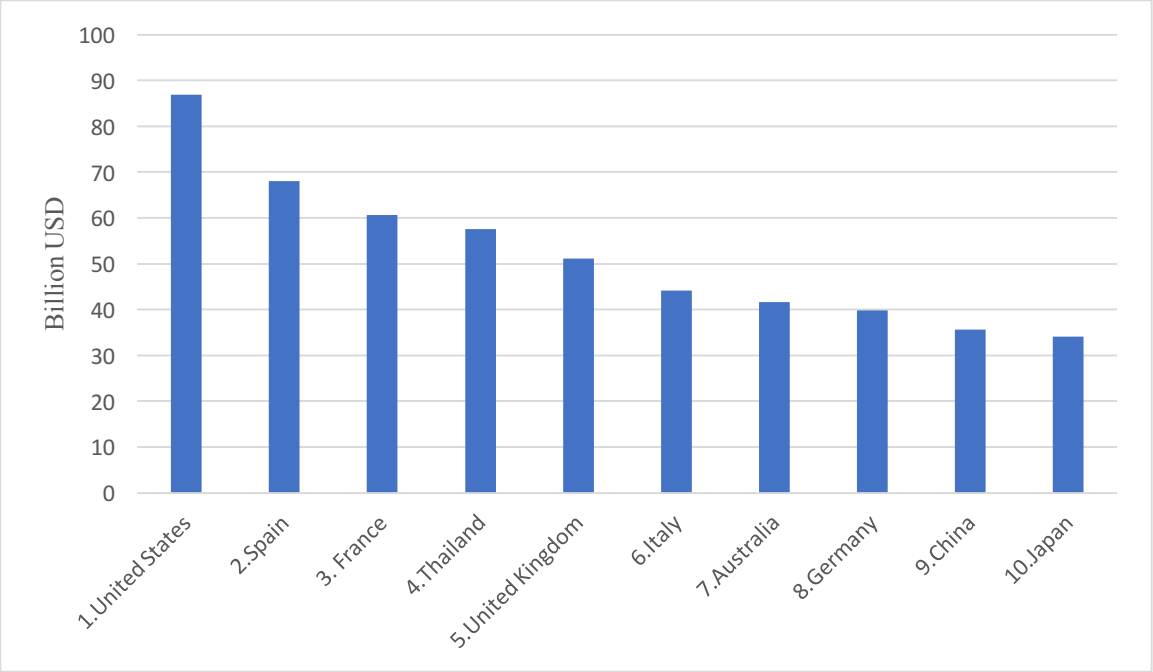


Source: United Nations World Tourism Organization (UNWTO). Tourism Highlights 2018. Figure: International Tourist Arrivals, 2017.

Figure 2-6. Ranking of Countries by Number of International Tourist Arrivals, 2017

On the other hand, the performance in terms of income from tourism is not at par with tourism arrivals. Figure 2.7 shows the ranking of the top ten tourism destinations by tourism receipts. Turkey ranked thirteenth in terms of tourism income in 2017 (World Development Indicators, international tourism receipts 2018) while eighth in international tourist arrivals. The tourists are mainly coming from nearby countries in addition to some European countries. Therefore, due to different types and origin of tourists, spending nature and spending amount may differ from other destination countries.

There could be various reasons for the mismatch between ranking of the countries according to tourism income and international tourist arrivals. For instance, the cost of accommodation and the nature of tourism may have played a major role in determining the level of income from tourism and caused different rankings in terms of receipts. In the Turkish case, relatively low cost and ease of access to Turkey make it easier for European visitors to come for short trips, which increases the number of arrivals from European countries but possibly decreases income receipts due to shorter duration of stay.



Source: UNWTO. Tourism Highlights 2018. Figure: International Tourism Receipts

Figure 2-7. Ranking of Top Tourist Destination Countries by Tourism Receipts, 2017

Breaking down arrivals by the country of origin is important in the Turkish case because over 60% of the market is dominated by only ten countries (Table 2.3). Historically, German tourists have dominated international tourist arrivals in Turkey. After the Soviet regime collapsed (1991), Russian tourists started to spend their holidays abroad. They have preferred the nearest beach locations and especially Turkey for their summer holidays. In time they started to influence the tourism industry especially in the southern part of Turkey. The share of Russian tourists in total tourism arrivals in 2017 was 14.55 %. The country with the second highest share of tourist arrivals to Turkey in 2017 was Germany. This is consistent throughout many of the recent decades as German tourists have been dominating the tourism industry.

In looking at the descriptive analysis of the countries from which tourists traveled to Turkey from 2015-2017, it can be easily stated that the proximity of the originating country to Turkey played a major role in tourism. Moreover, the visa facilities between Turkey and European countries may have also affected the decisions of tourists coming from Germany and the Netherlands. Table 2.3 shows the composition of countries in international tourist arrivals.

Table 2.3. International Tourist Arrivals to Turkey, 2015-2017

Countries	2015 (Ratio in Total)	2016 (Ratio in Total)	2017 (Ratio in Total)
Russia	10.1	3.4	14.5
Germany	15.4	15.3	11.0
Iran	4.7	6.5	7.7
Georgia	4.7	6.6	7.7
Bulgaria	5.3	8.7	7.5
UK	5.0	6.7	5.7
Ukraine	6.9	6.7	5.1
Iraq	1.9	4.1	3.9
Netherlands	3.0	1.7	2.8
Azerbaijan	3.4	3.6	2.5
Data Source: Association of Turkish Tourism Agencies (TURSAB). Statistics. Foreign Arrivals by Nations.			

2.3.1 Tourism Receipts and Its Impacts on Current Account

Inter alia, the importance of tourism sector lies in its ability to decrease the current account deficit and its role in employment generation. These factors are vital for the Turkish case due to the current, long-term account deficit. Since income from tourism services is considered a service export, the increase in tourism receipts has a positive effect on current account deficit. If the current account deficit decreases, a country can more easily adjust its balance of payments. Otherwise, the country should get international capital credit or capital transfers from abroad to balance the net payments.

After the advent of financial liberalization in the 1980s, Turkish authorities focused much of their attention on export industries at the expense of import substitution policies (Decisions of 24 January 1980 Stability Program, Kose 2000, 5th Development Plan 1985-1989). The export industries could not keep up with rival industries (with the exception of automobile and home appliances) and Turkey had an account deficit on nearly an annual basis (General Directorate of Budget and Fiscal Control, 2019). Nonetheless, the performance of one export-oriented service industry, the tourism industry, has met the expectations of Turkish authorities and has helped to decrease the current account deficit.

When annual data from the last decade is analyzed, it is observed that, on average, almost one-third of the trade deficit in the current Turkish account balance is covered by tourism receipts (Table 2.4). Almost all services balance is driven by tourism activities for the same period in

Turkey. However, the current account balance has been negative because of the imbalance in external trade and assumed to stay negative unless terms of trade will be in favor of Turkey.

Table 2.4. Current Account Deficit, Trade Balance, and Tourism, 2008-2017

Years	Current Account Balance	External Trade Balance	Services Balance	Tourism	Tourism/Trade Deficit
2008	-39,425	-52,917	18,908	19,541	-0.4
2009	-11,358	-24,762	18,728	18,405	-0.7
2010	-44,616	-56,325	16,749	17,391	-0.3
2011	-74,412	-89,160	20,288	20,171	-0.2
2012	-47,963	-65,367	22,541	21,251	-0.3
2013	-63,642	-79,917	23,618	23,180	-0.3
2014	-43,644	-63,593	26,675	24,480	-0.4
2015	-32,109	-48,128	24,228	21,248	-0.4
2016	-33,137	-40,892	15,263	13,960	-0.3
2017	-47,170	-58,844	20,106	17,655	-0.3
Data Source: Central Bank of the Republic of Turkey. Balance of Payments and Related Statistics. Million Dollars.					

In 2017, the ratio of exportable goods and services in the Turkish tourism industry to total Turkish exports was 19 %. The automobile industry is an important export industry in the Turkish economy, comprising 14% of the total exports (TURKSTAT, 2019). In this respect, these figures demonstrate the relative importance of tourism in the Turkish economy.

2.3.2 Types of Tourism in Turkey

There are various classifications of tourism types. However, classifications and definitions can change according to the country-specific environment. According to purpose classification by UNWTO, there are two main categories: Personal, and Business and Professional. Within the Personal classification, there are 8 different purposes: 1. holidays, leisure and recreation, 2. visiting friends and relatives, 3. education and training, 4. health and medical care, 5. religion/pilgrimages, 6. shopping, 7. transit, 8. other (UNWTO, 2015).

On the other hand, 14 different tourism types based on specific subjects were mentioned in the UNWTO report on Definitions Committee on Tourism and Competitiveness (UNWTO, 2017). These include, but are not limited to, are cultural tourism, ecotourism, rural tourism, adventure tourism, health tourism, wellness tourism, medical tourism, business tourism, gastronomy tourism,

coastal maritime and inland water tourism, urban/city tourism, mountain tourism, education tourism, sports tourism. Therefore, the number of tourism types increases depending on the subject or context. Some tourism types and explanations are given in Table 2.5.

Table 2.5. Types of Tourism

Cultural Tourism	A type of tourism activity in which the visitor's essential motivation is to learn, discover, experience, and consume the tangible and intangible cultural attractions/products in a tourism destination
Health Tourism	Covers those types of tourism which have as a primary motivation, the contribution to physical, mental, and/or spiritual health through medical and wellness-based activities which increase the capacity of individuals to satisfy their own needs and function better as individuals in their environment and society.
Business Tourism	A type of tourism activity in which visitors travel for a specific professional and/or business purpose to a place outside their workplace and residence with the aim of attending a meeting, an activity, or an event. The key components of business tourism are meetings, incentives, conventions, and exhibitions
Coastal (Beach)	Coastal Tourism refers to land-based tourism activities such as swimming, surfing, sunbathing, and other coastal leisure, recreation and sports activities which take place on the shore of a sea, lake or river.
Ecotourism	A type of nature-based tourism activity in which the visitor's essential motivation is to observe, learn, discover, experience and appreciate biological and cultural diversity with a responsible attitude to protect the integrity of the ecosystem and enhance the well-being of the local community.
Source: Excerpted from UNWTO, 2017. Definitions Committee on Tourism and Competitiveness Report	

Prior to the 1980s, Turkish tourism authorities solely focused on cultural and historical tourism. After the 1980s, beach (coastal) tourism emerged as the most important dynamic type of tourism and continues to comprise a huge portion of total tourism (Fifth Development Plan, 1984).[2] Currently, there are various types of tourism in Turkey. Some examples include health and thermal tourism, winter tourism, cave tourism, highland tourism, hunting tourism, golf tourism, yacht tourism, and religious tourism. Beach tourism remains the most important type. However, demand for health and thermal tourism has increased over the last decade as a result of the devaluation of Turkish currency increasing comparative advantage in terms of relative costs in the health sector. Table 2.6 shows the increasing share of thermal tourism in total tourism.

[2] The ratio of international tourist arrivals in beach tourism cities as Antalya, Aydin, and Mugla over total tourism is 0.61 in 2017. Ministry of Culture and Tourism, City-Province Accommodation Statistics.

Table 2.6. International Tourist Arrivals for Thermal Tourism in Turkey

Years	Thermal	Total	Thermal/Total (%)
2000	13,148	8,466,081	0.1
2005	33,033	16,210,441	0.2
2010	359,148	25,250,065	1.4
2015	558,110	27,614,421	2.0
2016	264,201	18,047,874	1.4
2017	364,472	22,927,768	1.5
Data Source: Ministry of Culture and Tourism of Turkey. Accommodation Statistics.			

2.3.3 Political Instability in Turkey

Beginning with the Gezi Parki protests (28th May 2013), FETO increased involvement in protests and actions against the Turkish government (Hatipoglu, Can, Kaya, 2019). Between December 17-25, 2013, FETO used the power of trained police personnel and attempted to detain the Prime Minister of Turkey on allegations of corruption in an effort to get the government to step down (Lowen, 2014). However, FETO's attempt was not successful. Many officers who were in charge of the attempts were arrested and arrests were made in all of the ministries after the coup attempt. After their failing attempts, FETO continued to initiate protests and make deals with other terrorist organizations (they had been already considered a terrorist organization because of using Turkish police force). Interestingly, there were no protests or armed attacks in Turkey in 2014 and it could be maintained that 2014 was a stable year.

Between 2015 and 2016 there were bombings in Turkey, most of which have been blamed on ISIL and armed Kurdish groups. In addition, a Russian Su-24 jet plane was shot down by Turkish F-16s near the Turkey-Syria border on November 24th which deteriorated Turkish-Russian relations dramatically. Russian president Vladimir Putin banned Russian citizens from spending holiday in Turkey in 2016 (November 28, 2015 Decree no:583). This ban remained until an amendment in the decree was made on June 30, 2016 (Amendment in Decree no:583, 2016). By the summer of 2017, relations had improved, and Russian citizens were able to spend holiday in Turkey. Meanwhile, the number of bombings and other armed attacks escalated and on July 15th, 2016 a coup attempt was made by a Turkish army group led by FETO terrorist personnel. It then became apparent that FETO was involved in all of the previous armed attacks, bombings (Pamuk, 2016), and the Russian jet shoot down (Paksoy, 2016). It is assumed that FETO

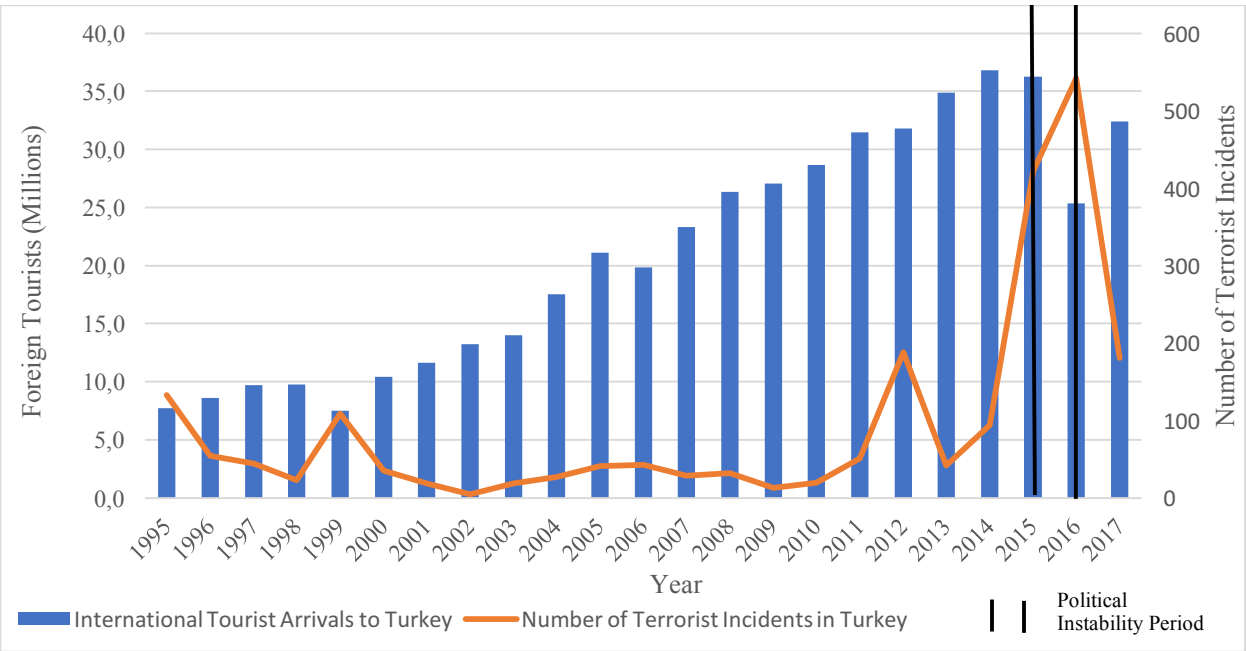
coordinated with other terrorist organizations such that it would make it legitimate for Turkish army to take power because government was unable to stop armed attacks and bombings.

After the unsuccessful attempts of FETO to take down the government in charge, there were vigorous attempts to disclose their structure in various government organizations and ministries. Most members of FETO were disclosed and, as a result, some of them fled the country. They sought political asylum in the United States (Cingil, Kenasari, 2018) and Germany (Gurbuz, Kirikcioglu, 2018). The threat of FETO to take government down was eradicated at the end of 2016.

To summarize, between 2015-2016, there were bombings, armed conflicts, and protests in Turkey which were attributable to FETO. In addition, inter-country relations between Turkey and the US deteriorated because of the arrest of a US consulate employee in Turkey (DeYoung, Fahim, 2017). The arrest was made due to the allegation of FETO involvement of the consulate employee. The political instability generated by the FETO attempt to overthrow the government damaged the overall economy, including the tourism industry, and disturbed relations between Turkey and Russia, and Turkey and the US.

According to Figure 2.8, it appears that political instability may have caused a decline in international tourist arrivals. The vertical lines in the figure reflect the period of political instability described above which began in June of 2015 and ended at the end 2016.

Between 1995 and 2013 the annual growth rate in international tourist arrivals was 18.5%. The number of international tourist arrivals increased over this period even when the Turkish currency was strong. However, this upward trend in tourist arrivals ended in 2014 at which time the number of international tourist arrivals started to decrease. The downward trend in tourist arrivals beginning in 2014 could be attributable to cyclical trends in international tourism and should not necessarily be considered a result of political instability or other negative events.



Data Source: Ministry of Culture and Tourism of Turkey. Border Arrivals and Departure Statistics. University of Maryland Global Terrorism Database (GTD) 2018

Figure 2-8. International Tourist Arrivals, Terrorist Incidents and Political Instability in Turkey, 1995-2017

According to the media and the University of Maryland Global Terrorism Database (GTD), the number of bombings and armed assaults increased in 2013. GTD is an open-source database including information on terrorist events around the world from 1970 through 2017. According to GTD, an incident is deemed a terrorist attack if the threatened or actual use of illegal force and violence is used by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation. Each terrorism case is recorded as one terrorist incident with specific information regarding location, time, involved parties, death loss, wounded people. It can be seen in Figure 2.8 that the number of terrorist incidents was higher in 2012 than in 2013 and 2014. This explains that the reason for the downward trend in 2014 may not be attributed to terrorist incidents. Moreover, 2014 was a stable year before the storm of a negative economic environment. Hence, a regression specification is needed to control these factors.

2.4 Tourism in Egypt

Tourists from all over the world are attracted to Egypt for its cultural aspects and natural features. According to the 2019 UNESCO World Heritage List, many sites in Egypt, such as Abu Mena, Ancient Thebes with its Necropolis, Historic Cairo, Memphis and its Necropolis, the Pyramid Fields from Giza to Dahshur, Nubian Monuments from Abu Simbel to Philae, Saint

Catherine Area, Wadi Al-Hitan (Whale Valley) are deemed World Heritages. In addition to the cultural appeal, Egypt also has beach tourism facilities and diving experiences in world renowned places such as Sharm El-Seyh and Hurghada that attract tourists globally. Tourism is a crucial sector of the Egyptian economy. In 2017, the direct contribution of this sector to the overall economy was 5.6% of GDP. Additionally, this sector generated 1,099,000 jobs (3.9% of total employment) in 2017 and is forecasted to grow by 4% in 2018 (World Travel and Tourism Council, Economic Impact Egypt, 2018).

Table 2.7. The Economic Contribution of Travel and Tourism in Egypt, 2012-2017

Egypt	2012	2013	2014	2015	2016	2017	2018E	2028F
Visitor exports (EGP)	109.4	70.5	77.4	65.8	38.8	141.7	147.5	214.1
Direct contribution of Travel & Tourism to GDP (EGP)	149.4	119.5	132.3	125.8	110.1	190.3	196.5	289.7
Capital investment[3] (EGP)	51.7	48.4	47.8	49.6	53.7	59.6	63.6	113.3
Government collective spending[4] (EGP)	18.9	19.7	21.2	22.0	22.4	23.0	23.4	39.9
Direct Employment in Tourism ('000)	1,184.6	953.2	1,031.7	982.5	823.0	1,099.0	1,143.0	1,383.3

Source: World Travel and Tourism Council, Economic Impact Egypt 2018. Figure: The Economic Contribution of Travel & Tourism. March 2018.
Note: E stands for expected value and F stands for predicted value.
Note: Billion Egyptian Pound (EGP) Real Prices 2017

Table 2.7 shows the contribution of the travel and tourism sector to the overall economy in Egypt. The government increased its spending in the tourism sector for a 6-year period between 2012 and 2017. On the other hand, capital investment has been volatile because of past

[3] Includes capital investment spending by all industries directly involved in Travel & Tourism. This also constitutes investment spending by other industries on specific tourism assets such as new visitor accommodation and passenger transport equipment, as well as restaurants and leisure facilities for specific tourism use.
[4] Government spending in support of general tourism activity. This can include national as well as regional and local government spending. For example, it includes tourism promotion, visitor information services, administrative services, and other public services.

performance of the sector during the Arab Uprisings. Since investment and employment are closely related to each other, employment has also been volatile.

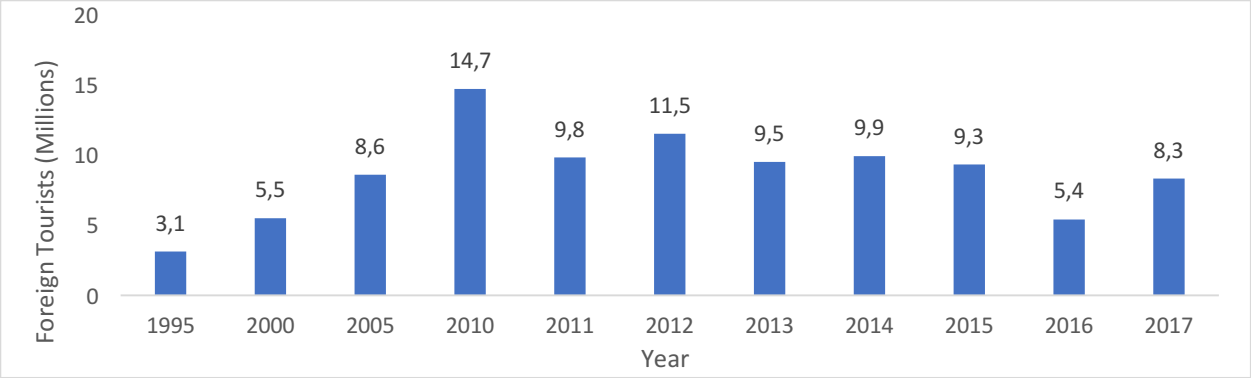
The relative contribution of the tourism sector to Egypt's economy is presented in the tables below. In 2017, Egypt ranked 53rd in terms of the contribution of the tourism sector to GDP and 81st in terms of the direct contribution of this sector (Table 2.8). Since these figures are ratios, cleared from currencies, they show the share of the tourism sector to the economy and to employment in the respective countries.

Simple graphical representations such as that presented in Figure 2.9 help us understand the trend in international tourist arrivals in Egypt. Overall there has been an increasing trend in world international tourist arrivals, however, this was not the case in Egypt. Between 1995 and 2010, the annual growth rate in international tourist arrivals was 23.4. The growth rate was high compared to Turkey. The increasing trend in international tourist arrivals stopped after the uprisings began in 2011. According to reports from the UNWTO (2018) and the World Travel and Tourism Council (2018), the Arab Uprisings damaged the tourism industry in Egypt and the tourism industry only started to recover in 2017. The sudden decrease in international tourist arrivals in the first year of uprisings can be observed in Figure 2.9.

Table 2.8. Country Rankings Relative Contribution of Tourism Sector

Ranking	Direct contribution of Travel & Tourism to GDP	2017 % Share	Ranking	Direct contribution of Travel & Tourism to Employment	2017 % Share
32	Morocco	8.2	20	Greece	12.2
34	Greece	8.0	36	Morocco	7.1
39	**Tunisia**	**6.9**	45	Italy	6.5
43	Lebanon	6.5	46	Lebanon	6.4
53	**Egypt**	**5.6**	**48**	**Tunisia**	**6.3**
54	Italy	5.5	55	Saudi Arabia	5.3
	North Africa	5.2		North Africa	4.4
86	**Turkey**	**3.8**	**81**	**Egypt**	**3.9**
95	Saudi Arabia	3.4		World	3.8
	World	3.2	156	Israel	1.9
144	Sudan and South Sudan	2.3	167	Sudan and South Sudan	1.7
169	Israel	1.7	**168**	**Turkey**	**1.6**

Source: World Travel and Tourism Council, Economic Impact Egypt 2018. Figure: Country Rankings: Relative Contribution, 2017.



Data Source: World Tourism Organization (UNWTO) 2018, Compendium of Tourism Statistics dataset

Figure 2-9. International Tourist Arrivals to Egypt, 1995-2017

Table 2.9 shows detailed international tourist arrivals to Egypt by country. The top five countries in terms of arrivals were Germany, Saudi Arabia, Ukraine, Libya, and Sudan. The international tourist arrivals were diverse, and tourists came to Egypt from almost all continents.

To balance payments with the rest of the world, a country needs to create services and products and sell them to the world with its exporting sectors. According to World Bank World Development Indicators (2018), between 2008 and 2017, the ratio of international tourism receipts to total exports of Egypt was 20%. Therefore, it can be stated that tourism is one of the backbone industries in exporting sectors.

Table 2.9. International Tourist Arrivals to Egypt, 2015-2016

Country	2015	2016	Share of Total Tourist Arrivals in 2016
Germany	1,020,879	653,915	12.1
Saudi Arabia	433,067	507,325	9.4
Ukraine	363,586	425,000	7.9
Libya	268,541	282,845	5.2
Sudan	212,127	265,107	4.9
Israel	161,035	234,676	4.4
United Kingdom	869,481	231,299	4.3
USA	188,712	184,341	3.4
Jordan	177,131	179,827	3.3
China	115,158	179,459	3.3
Kuwait	139,666	150,352	2.8
Italy	332,932	131,458	2.4
France	136,623	101,075	1.9
Total	9,327,700	5,398,900	
Data Source: World Tourism Organization (UNWTO) 2018, Yearbook of Tourism Statistics dataset			

2.4.1 Political Instability in Egypt

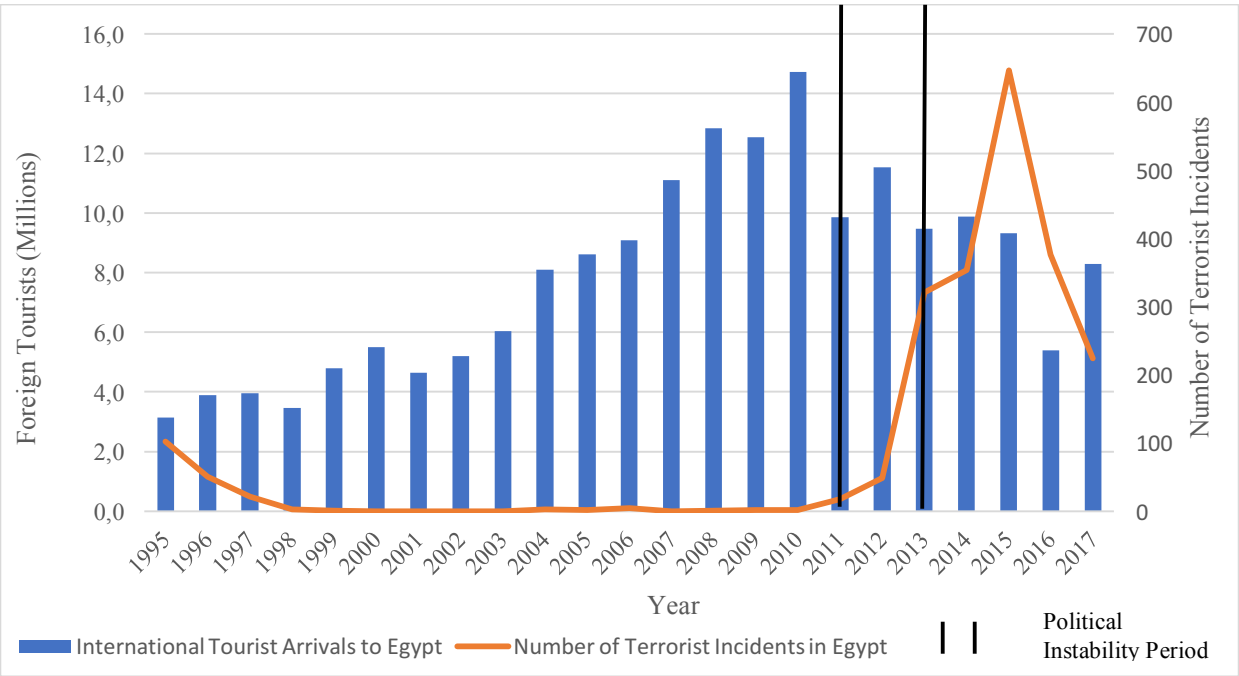
Poverty, unemployment, government corruption, and the three-decade rule of president Hosni Mubarak were the main issues that led to uprisings and government protests in Egypt. On January 25, 2011, thousands of people gathered in downtown Cairo and headed towards the offices of the ruling National Democratic Party, the foreign ministry, and the state television ("Timeline: Egypt's revolution", 2011). This was the start of an 18-day protest. The protesters were from various opposition groups representing a wide cross-section of Egyptian society including secularists, feminists, Islamists, anti-capitalists, and many others. In office since 1981, President Hosni Mubarak was removed on February 11, 2011, after which the Supreme Council of the Armed Forces dissolved the Egyptian Parliament ("Egypt Uprising of 2011", 2019).

In January 2012, Islamists won parliamentary elections, and in June 2012, Mohamed Morsi won Egypt's first free presidential election. Morsi introduced a new constitution in a controversial referendum that led to conflicts between Islamists and their opponents. In June 2013, wide protests broke out against Morsi's presidency, demanding that he step down and complaining of poverty and instability. In July, the Egyptian military, under the leadership of Abdel Fattah el-Sisi, took control of Egypt, and by August, hundreds of Morsi supporters were massacred by security forces. Sisi was then elected president in 2014 on promises of stability with almost 97 percent of the vote (Aboulenein, Davison, 2018). Political instability in Egypt lasted more than 3 years from January 2011 to March 2014 when a presidential elections law was issued. It is assumed that the political instability covered the three-year period of 2011, 2012 and 2013. This period is reflected in Figure 2.10 by the vertical event lines.

A time trend of periods of political instability and international tourist arrivals are shown in Figure 2.10. Between 1995 and 2010 the annual growth rate in international tourist arrivals was 23.4 and there was an increasing trend. When the uprisings began in 2011, the number of international tourist arrivals to Egypt started to decrease. The sudden decrease of international tourist arrivals appears to be strongly related to political instability in Egypt in the first year.

The terrorist incidents in Egypt also increased during the period of instability. Figure 2.10 shows the relationship between the period of political instability and terrorist incidents in Egypt. Terrorist incidents continued to increase until the number of incidents peaked in 2015. Nonetheless, there was not a large decrease in international tourist arrivals in 2015. There may be

a lag in tourist decisions or other factors could have caused this situation. From the Figure 2.10, it can be stated that either terrorism or political instability harmed international tourist arrivals to Egypt. Therefore, a regression analysis is needed to examine individual relations.



Data Source: World Tourism Organization (UNWTO, 2018), Compendium of Tourism Statistics dataset

Figure 2-10. International Tourist Arrivals, Terrorist Incidents, and Political Instability in Egypt, 1995-2017

2.5 Tourism in Tunisia

Cultural and historical sites as well as the nature of Tunisia have attracted many tourists from all around the world. According to the UNESCO World Heritage List (2019), the Amphitheatre of El Jem, Archaeological Site of Carthage, Medina of Tunis, Ichkeul National Park, Punic Town of Kerkuane and its Necropolis, Kairouan, Medina of Sousse, Dougga / Thugga in Tunisia are all deemed as world heritages. In addition to cultural and historical appeal including famous Carthage (Phoenician Site) and Bardo National Museum, global tourists are attracted to Tunisia for beach tourism facilities in Hammamet and Sidi Bou Said areas, and safari tour experiences in the Sahara Desert.

As in Egypt, tourism is a crucial sector of the Tunisian economy. In 2017, the direct contribution of this sector to the Tunisian economy was 6.9% of GDP. This sector generated

225,000 jobs in 2017 (6.3 % of total employment) and was forecasted to grow by 4% in 2018 (World Travel and Tourism Council, Economic Impact Tunisia 2018).

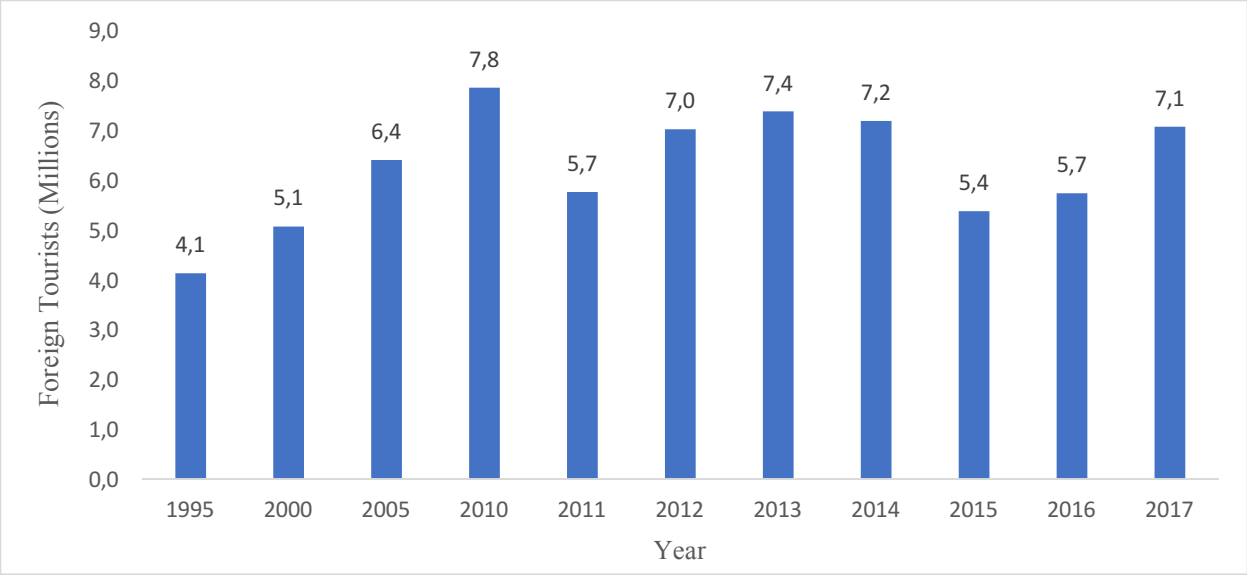
Table 2.10. The Economic Contribution of Travel and Tourism in Tunisia, 2012-2017

	2012	2013	2014	2015	2016	2017	2018E	2028F
Visitor exports (TND)	5,657.1	5,532.8	5,874.0	4,022.1	3,810.2	4,385.8	4,667.4	6,392.4
Direct contribution of Travel & Tourism to GDP (TND)	7,551.6	7,485.2	7,993.5	6,175.5	6,165.3	6,631.7	6,908.2	9,246.6
Capital investment (TND)	1,822.9	1,757.9	1,813.0	1,864.5	1,816.1	1,850.3	1,893.9	2,328.9
Government collective spending (TND)	1,025.7	1,083.0	1,120.7	1,188.8	1,234.1	1,279.3	1,315.9	1,859.0
Direct Employment in Tourism ('000)	255.5	250.1	268.3	209.4	210.2	225.1	234.2	247.6

Source: World Travel and Tourism Council, Economic Impact Tunisia 2018. Figure: The Economic Contribution of Travel & Tourism. March 2018.
Note: E stands for expected value and F stands for predicted value.
Note: Million Tunisian Dinar (TND) Real Prices 2017

The contribution of the travel and tourism sector to the economy of Tunisia is presented in Table 2.10. The government did not increase government spending on this sector during the period of political turmoil. Capital investment also remained relatively flat during the Arab Uprisings. Since investment and employment are often correlated with each other, there have not been notable significant developments in tourism employment.

The relative contribution of the tourism sector to the overall Tunisian economy is also presented in Table 2.8. In 2017, Tunisia ranked 39th in the world in terms of the contribution of the tourism sector to GDP and 48th in the world in terms of the direct contribution of this sector to employment. When compared to Egypt and Turkey, it is clear that tourism plays a more important role in the economy in Tunisia.



Data Source: World Tourism Organization (2018), Yearbook of Tourism Statistics dataset

Figure 2-11. International Tourist Arrivals to Tunisia, 1995-2017

There was an increasing trend in international tourist arrivals to Tunisia until 2011. Between 1995 and 2010 the growth rate of international tourist arrivals to Tunisia was 5.6 which is lower than the international tourist arrivals growth rates prior to periods of political instability in Egypt and Turkey. The sharp decrease in international tourist arrivals to Tunisia in 2011 is observed in Figure 2.11. After 2010, the Tunisian tourism industry was negatively impacted by the Arab Uprisings and the increasing trend was disrupted. According to reports from the UNWTO and the World Travel and Tourism Council, the tourism industry in Tunisia started to recover in 2017.

Table 2.11 details international tourist arrivals to Tunisia by country. The top five countries in terms of arrivals were Algeria, Libya, France, the Russian Federation, and Germany. There are a high number of neighboring countries contributing to tourist arrivals to Tunisia. The international tourist arrivals are not as diversified as Egypt, indicating the potential vulnerability of the Tunisian tourism industry to conflicts in the region.

Table 2.11. International Tourist Arrivals to Tunisia, 2016-2017

Country	2016	2017	Share of Total Tourist Arrivals in 2017
Algeria	1,808,315	2,497,788	35.4
Libya	1,117,007	1,318,956	18.7
France	390,684	570,518	8.1
Russian Federation	623,397	515,804	7.3
Germany	129,085	181,377	2.6
Italy	71,982	87,616	1.2
Czech Republic	30,586	61,862	0.9
Belgium	22,946	50,518	0.7
Morocco	46,547	46,911	0.7
United Kingdom	23,428	27,956	0.4
Ukraine	*	23,436	0.3
Switzerland	18,157	23,423	0.3
China	7,396	18,959	0.3
USA	15,286	18,659	0.3
Total	5,724,100	7,051,800	
Data Source: World Tourism Organization (2018), Yearbook of Tourism Statistics dataset *** not available**			

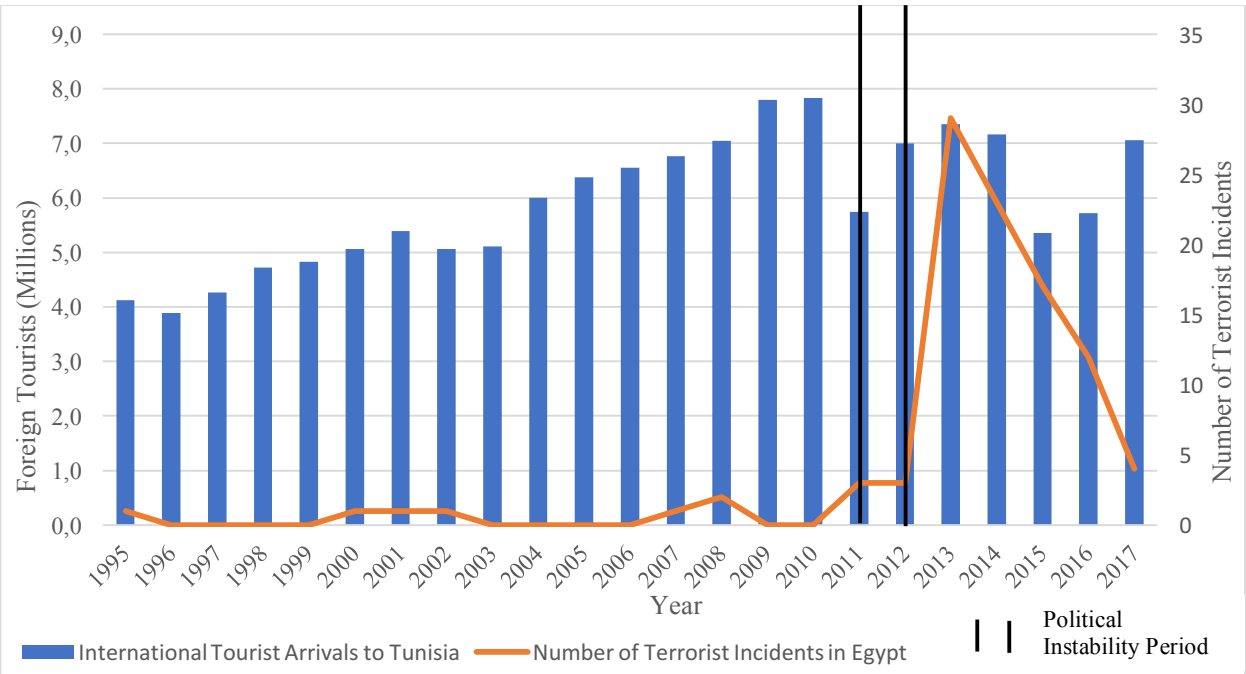
According to World Bank World Development Indicators (2018), the ratio of international tourism receipts to total exports of Tunisia was 13% between 2008 and 2017. While the contribution of the tourism sector to the overall economy was higher in Tunisia than Egypt, the ratio of international tourism receipts to total exports of Tunisia was lower than that of Egypt.

2.5.1 Political Instability in Tunisia

December 17, 2010 marked the start of political instability in Tunisia, when a young Tunisian street vendor, Mohamed Bouazizi set himself on fire to protest the authorities. Market inspectors in the area confiscated Bouazizi's wares due to lack of a necessary permit. During this incident, he was humiliated and slapped by a female officer. Bouazizi was denied a hearing with the governor to voice his complaints. Later that day, he set fire himself outside the governor's office. This issue quickly became a focal point for public anger and his fight against underemployment and corruption sparked a revolution for Tunisian youth who had been feeling the economic and societal difficulties for a long time (Tesch, 2019). Demonstrations broke out and were followed by protests in other areas of the country.

When protests reached the capital, the government responded fiercely, arresting demonstrators and activists, and shutting down communications. Although President Ben Ali changed his cabinet and promised to create 300,000 jobs, protesters wanted the regime to fall. On January 14, 2011, Ben Ali stepped down and escaped from the country ("A Research & Study Guide: Tunisia", n.d.). The prime minister, Mohamed Ghannouchi, assumed power. On January 17, 2011, Ghannouchi announced his interim cabinet. There were protests after the government was formed. Nonetheless, on October 23, 2011, Tunisia held its first democratic parliamentary elections and formed a stable government that continues to exist today. The political instability lasted for 2 years between 2010 and 2011. This period is reflected by the vertical event lines in Figure 2.12.

The relationship between political instability and international tourist arrivals is shown in Figure 2.12. Prior to 2011, there was an increasing trend in international tourist arrivals to Tunisia. The growth rate of international tourist arrivals was 5.6. From 2010-2011, when the uprisings happened, the international tourist arrivals started to decrease. This suggests that a relationship between tourism arrivals and political instability in Tunisia is likely.



Data Source: World Tourism Organization (2018), Yearbook of Tourism Statistics dataset

Figure 2-12. International Tourist Arrivals, Terrorist Incidents, and Political Instability in Tunisia, 1995-2017

International tourist arrivals were volatile after 2012 with ups and downs. International arrivals decreased over the of 2014-2015 which may be a result of increasing terrorist incidents in 2013. Figure 2.12 also shows terrorist incidents. International tourist arrivals may correlate with lagged terrorist incidents in the Tunisian case during the 2014-2015 period. When compared with Turkey and Egypt, the number of terrorist incidents in Tunisia was relatively low. However, it can still deter people from traveling to Tunisia. As such, simple graphical analysis is not enough to assess whether there is a causal relationship between terrorism and international visitors to Tunisia. This should be evaluated through a regression analysis.

3 Literature Review: Determinants of International Tourism Demand

3.1 International Tourism Demand

3.1.1 Economic Determinants of Tourism Demand

To understand the reasons for the recent volatility in Turkish, Egypt and Tunisia tourism arrivals, this study examines the determinants of tourism demand for these countries including major political and social events. To measure the effect of terrorism and political instability on tourism, it is important to use a suitable measure of tourism demand. Proxies for this measure used in previous empirical studies include the number of tourist arrivals/departures, tourist expenditures/receipts, tourist length of stay, and ratios of these factors to other major economic variables (Lim 1999, Song and Li 2008, Peng et-al. 2015, Martins et al. 2017).

Among these, the number of international tourist arrivals to a destination country is the most popular measure of tourism demand, followed by tourist expenditure. Results of a meta-regression analysis by Peng et al. (2015) indicate that a significant negative effect on estimates of income elasticity is likely to arise when tourist expenditure is used as the measure of international demand. Song et al. (2010) maintain that the selection of a demand variable depends on the aim of the study, and whether the researcher wants to evaluate the change in the number of arrivals or expenditures. Chu (2009) also maintains that forecasting tourism volume in the form of arrivals is especially important because it is also an indicator of future tourism demand. In this study, international tourism arrivals will be used as a proxy for the demand for tourism. Since non-economic terms could also play significant role in tourism, tourism expenditure is not considered.

To explain changes in tourism demand, previous studies focused mostly on income, price, and exchange rates as economic variables and major events as non-economic variables. Results of previous studies analyzing the effect of exchange rates on tourism arrivals vary. Dwyer, Forsyth, and Rao (2002) showed that for some countries the exchange rate and the inflation rate jointly determine the price competitiveness and is an important determinant of tourism demand. On the other hand, Oh and Ditton (2005) found that estimating exchange rate and relative prices separately offer superior approach to forecasting tourism demand.

In their study investigating determinants of the international travel and tourism service trade between the European, Asian and North American markets between 2001-2005, Chang and Lai (2011) found that, travel services exports are inelastic to appreciation of currency in the

destination countries. On the other hand, Cheng, Kim, and Thomson (2013) found that for US tourism services exports and imports between 1973-2010, a depreciation of the US dollar increased US tourism exports, while import spending was not affected.

Devita and Kyaw (2013) by analyzing Turkish international tourism arrivals for the period 1996-2009 found that the exchange rate alone is not a significant determinant of tourism demand, but real prices weighted by the exchange rate is. They conclude that the exchange rate and a proxy measure for relative prices should not enter the tourism demand model separately, but rather be combined as a single term. Supporting this view, Martins et al. (2017) found that using only price or exchange rate in tourism demand models had flaws, therefore, they need to be included as a term. They also maintain that since a change in the exchange rate can be offset by a change in the inflation rate and vice versa, exchange rates alone do not have enough information to compare prices.

Since tourists are aware of exchange rates before relative prices, exchange rates could be an important factor in predicting future tourism demand. In more recent literature, exchange rates are used to adjust relative prices of tourism services in each destination country. Therefore, instead of including both an inflation rate and exchange rate (which are largely collinear) in a model of tourism demand, a single term could be developed whereby weight the consumer price index of the destination country could be adjusted by assigning weights to it which considers the exchange rate of the country of tourist origin and destination country.

For the period 2000-2006, Song and Li (2008) analyzed 119 articles for tourism demand modeling and forecasting. They showed that there is no single model is superior to other models in all situations. They also found that man-made crises such as financial crises and natural disasters have had significant and negative impacts on international tourism demand.

Using a meta-analysis which reviews 195 studies over the period 1961-2011, Peng et al. (2015) found that the country of origin and destination, time period, modeling method, data frequency, and sample size all affected the estimates of demand elasticities. These authors also found that income has a positive effect on tourism demand. Moreover, the relative price of tourism was found by this study to be another important determinant of demand. They also report that income, own price, substitute prices, exchange rates, and travel costs have correlations among each

other in models assessing tourism demand. Therefore, maintaining a good range of explanatory variables is crucial to explaining tourism demand.

According to the study by Martins et al. (2017), an increase in world per capita GDP, depreciation of the national currency, and the decline of relative domestic prices boost the number of tourist arrivals.

Studies have also examined this issue in the context of the countries included in our analysis. Using a cointegration analysis to evaluate annual data for Tunisia over the period of 1970–2007, Belloumi (2010) found that there was a positive relationship between tourism and economic growth by analyzing the relationships among GDP, the real effective exchange rate[5], and real tourism receipts. Using panel data for eight countries with significant tourist outflows, Ibrahim (2011) analyzed Egypt tourism arrivals for the period 1990–2008. He found that tourism arrivals in Egypt were very sensitive to own- and competitor- price changes.

3.1.2 Terrorism and Political Instability Determinants of Tourism Demand

Non-economic issues can also have an impact on tourism demand. Among these, terrorism and political instability events such as disasters, wars, conflicts, political instability, and terrorism are worth examining.

3.1.2.1 Terrorism

Scholars started to analyze the effect of terrorism beginning in the 1990s. They studied not only the effect of terrorism on tourism but also considered whether tourism causes more terrorist activities. Enders and Sandler (1991) studied Spanish tourism for the period 1970-1988 and found that translational terrorism decreased tourism demand.[6] Enders, Sandler, and Parise (1992) showed that a series of terrorist attacks between 1974-1988 negatively affected tourism revenues in Greece, Italy, and Austria. Sonmez and Graefe (1998) analyzed the perceived risk of terrorism for US travelers and found that perceptions of risk influenced international vacation destination choice. Drakos and Kutan (2001) examined the cross-country effects of terrorism on tourism for

[5] The Real Effective Exchange Rate (REER) is a measure of the value of a currency against a weighted average of several foreign currencies divided by a price deflator or index of costs.
[6] Terrorism is considered transnational when an incident in the tourism host country involves attackers or victims from another country.

Greece, Israel, and Turkey. Their empirical study revealed that tourism visits to Israel and Turkey are more sensitive to terrorism than in Greece.

Llorca-Vivero (2008) analyzed a sample of 134 destinations to evaluate the effect of terrorism on tourism over the period of 2001-2003. Their study suggests that both the number of domestic victims and the number of international attacks are relevant factors when foreign tourists make their choice regarding their travel destination. In addition, this author found that the impact of terrorism is more severe in developing countries. It is worth noting, however, that this study examines only a 3-year period and as such the results may not be generalizable to other periods.

Raza and Jawaid (2013) studied tourist arrivals in Pakistan by using the Johansen and Jeuuselius, and Autoregressive-Distributed Lag (ARDL) bound testing cointegration approaches for the period 1980-2010 and found that there was a significant negative effect of terrorism on tourism in the short- and long-run. Using a time-series analysis, Morakabati and Beavis (2017) by analyzing international tourism arrivals of USA, Bali, Spain, UK and India for different time periods recently showed that there is no consistent disturbance in monthly tourism arrivals due to a terrorist attack. Bassil, Saleh, and Anwar (2017) studied Lebanon, Turkey, and Israel to analyze the relationship between terrorism and tourism demand using a seemingly unrelated regression (SUR) model for the period 1995-2007. However, in considering the case of Greece, Samitas et al. (2018) showed that terrorism had a significant negative effect on tourist arrivals to Greece for the period 1977-2012. They found that terrorism in one country affected visitor arrivals in both that country and other examined countries. On the other hand, in their analysis of 95 countries, Liu and Pratt (2017), found that there is no long-run global effect of terrorism on tourism, and that the short-run effect on international tourism is quite small.

3.1.2.2 Political Instability

In addition to terrorism, some scholars also considered other dimensions of political instability, such as human rights violations, conflicts, violent events, social and political unrest. Neumayer (2004) studied the impact of political violence on tourism and found that human rights violations, conflict, and other politically violent events negatively affected tourist arrivals. Basu and Marg (2013) studied Egypt, Lebanon, and Jordan to analyze the impact of political instability and terrorism on tourism. Using annual and monthly data for foreign tourist arrivals in an

intervention analysis[7], they found that the impact of any incident of violence was felt in the three countries in different time intervals. Tourism in Lebanon was immediately affected by a political violence event, but Jordan's tourism was impacted after a 9 months period, and Egypt felt the impact of the incident one month later.

Performing a cross-country panel analysis by using panel data from 139 countries for the period 1999–2009, Saha and Yap (2014) found that the effect of political instability on tourism is more acute than the effects of one-off terrorist attacks. Similarly, in examining Pakistan, India, Sri Lanka, and Bangladesh for the period 1995-2012, Mushtaq and Zaman (2014) found a negative relationship between political instability and tourism.

3.2 Determinants of International Tourism Demand to Turkey as a Destination

3.2.1 Economic Determinants

Several scholars have analyzed the impact of exchange rates on Turkish tourism. Var, Mohammad, and Icoz (1990) analyzed 20 countries to determine the factors that affect international tourism demand for Turkey for the period 1979-1987. They found that the effects of income of the originating country and relative exchange rate vary from country to country. In examining on tourism receipts and expenditures in Turkey between 1994-2013, Kilic and Bayar (2014) found that that there is a positive long-term relationship between the real effective exchange rate, and tourism receipts and expenditures after analyzing the effect of exchange volatility. Agiomirgianakis, Serenis, and Tsounis (2014) found that the exchange rate volatility, and relative price ratio (between origin and destination) negatively affected tourism arrivals, while the GDP per capita in the tourist country of origin had a positive effect on the number of international tourist arrivals into Turkey between 1994-2012. In their study of the effect of exchange rate volatility on Turkish tourism incomes for the period 2003-2011, Aktas et al. (2014) found that exchange rate volatility had a negative effect on tourism revenues in the short-run. A weaker relationship was found in the long run.

Dincer, Istanbullu Dincer and Ustaoglu (2015) use real effective exchange rate (REER) in their study on effects of real exchange rate volatilities on tourism revenues in Turkey for the period 2002-2014. These authors did not find a long-term effect of REER on tourism revenues.

[7] A transfer function model, the exogenous variable is an indicator or dummy variable, taking the value 0 and 1 of intervention.

3.2.2 Political Instability and Events

Several studies have also analyzed the impact of some negative political incidents and terrorism on tourism in Turkey. Uysal and Crampton (1984) found that the dummy variable for the special event (the Cyprus conflict) had a negative impact on international tourist flows. Yaya (2009) examined the number of tourist arrivals to Turkey over the period 1997-2006. He found that there was a small, negative impact of terrorism that was observed within about one year of the event. He also found that terrorist attacks in continental Europe and America, and an active war in the neighboring country, had no effects on tourism in Turkey. However, using raw data of tourism arrivals and ongoing wars in neighbor countries, he hypothesized that war, terrorism and political instability in the region could be the reason for the recent volatility in Turkey's tourist arrivals. Similarly, in examining the period 1986-2006, Feridun (2011) found that there was a negative causal effect of terrorism on Turkish tourism in the short and long run. Taken together these results do suggest that there could be some threshold in the degree of violence that could start deterring tourists from their decisions to visit Turkey.

Recently, Afonso-Rodriguez (2016) by analyzing Turkish tourism for the period 1977-2014 showed that there was a negative effect of terrorism, where the number of terrorist attacks exceeds threshold value (exogenously determined by the procedure), on real GDP (around 10% decrease) via decrease in average contribution of travel and tourism sector to GDP.

4 Data and Methodology

Our analysis will include many of the previously discussed economic variables that have explanatory power in tourism demand. The economic variables will include per capita GDP to capture the income of the tourists and a price index weighted by the REER to capture the impact of the relative price of tourism services in other competing countries.

However, economic variables alone are not sufficient to explain the current volatility of tourism in Turkey. For instance, the exchange rate in 2011 was about 1USD=1.88 TL. This rate gradually increased to 3.51 TL by the end of 2016. The inflation rate was not significant in comparison with the devaluation of the currency. During this period the average annual inflation rate was 7.9%. This currency devaluation could be expected to have had a positive impact on tourism arrivals during this period, but it did not. Thus, it is important to consider factors other than the common economic variables to understand tourism arrivals to Turkey.

Previous studies, especially more recent ones, focused on terrorism as the sole non-economic issue that affected the Turkish tourism industry. These authors interpreted all of the recent events in the region, including wars, political instability, terrorism, and other violence as contributing to an increase in terrorist activities and, as such, only included terrorism in their models. However, Yaya (2009) showed that the effect of terrorism on tourism was small and negative for the period before the escalation of events in the MENA region. Terrorism has been an ongoing issue in Turkey since the 1980s. Therefore, combining all other related issues (political, violence) as a single measure of terrorism masks the impact of these different types of events on tourism. To fully assess their impact on tourism, terrorism and political instability need to be included separately in the model.

This paper attempts to fill this gap in this literature. Further, to assess whether terrorism and political instability have had similar impacts on other countries in the MENA region, international tourist arrivals to Egypt and Tunisia will also be analyzed. Terrorism is a common characteristic of countries in the MENA region. During and after Arab Uprisings another characteristic is the resulting political instability in these countries. Our models are estimated using Ordinary Least Squares. Since Song and Li (2007) identified that there is no single model that is superior to the others in examining this issue, in alternative specifications, models incorporating panel fixed effects, and first differencing will be used.

4.1 Data Set

International tourism arrivals is one of the measures most commonly used to approximate tourism demand. Since the focus of this study is on terrorism and political instability, the other proxy for tourism demand, tourism income (Peng et al. 2015, Song et al. 2010, Chu 2009), is not used in this study. In an alternative model specification (Case 6), the type of tourism was examined. In this case, the departure of foreigners by purpose of visit is used as the dependent variable. Information regarding both the number of tourists and the purpose of their visit is accessed via the See Table 4.1 and Table 4.5 for details.

The independent variables included in the model were income, destination country price level (REER), average price level of seven rival countries adjusted by the REER, the number of terrorist incidents in destination country, and whether or not the destination country had a political instability event during the period.

As income is one of the main determinants of any commodity or service demand, per-capita income in the tourism originating countries is included in the economic determinants of this study (Peng et. al., 2015, Martins et al. 2017). Normally one would expect that the higher the income, the higher the demand for tourism services, leading to larger rates of international tourist arrivals, all else being equal. The data was obtained from the World Bank, International Comparison Program database (GDP, PPP (constant 2011 international $)). To approximate individual income, GDP per capita adjusted for Purchasing Power Parity (PPP) in constant 2011 US dollars is used. Therefore, the income variable is represented in real terms and adjusted to exchange rate variation. This helps alleviate the possible correlation problem in the price and income variables in the regression. In addition, controlling income of the visitors in the regression settings helps to partially capture impacts of any economic crisis during the analysis period.

Since there was no real price data for tourism is available, an approximation to the real situation is used. The Real Effective Exchange Rate (REER) data, which measures the development of the real value of a country's currency against the basket of the trading partners of the country, represents the overall price level change of a country (Dwyer, Forsyth and Rao 2002, Devita and Kyaw 2013, Dincer, Dincer and Ustaoglu 2015, Martins et al. 2017). According to IMF definition "REER is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of

costs." In the yearly index, 2007 was the base year, valued at 100. An increase in REER (i.e.105 index level) of a country implies that services and commodities have become expensive in the country considering the country's trade partners. Therefore, it is a good approximation to the real price variable in a regression setting. An increase in REER also implies that exports become more expensive and imports become cheaper; therefore, an increase indicates a loss in trade competitiveness.

Competition price is another main determinant used in demand regression in existing economics literature. When the price of rival goods increases, a positive effect on the demand of the good is expected. In the case of tourism, rival prices are prices of goods and services in other countries. As with the price variable, the price level of rival goods could be approximated with REER. Since Turkey is located at the intersection of Europe and Middle East Region, the number of competitors for tourism is expected to be high. From the MENA Region, Tunisia and Egypt are the important rivals. From Europe, Greece, Bulgaria, Italy, Spain, and Portugal are considered to be the main rivals of Turkey. In order to approximate to the competitor prices, the REER was simply averaged (sum of REER index of rival countries/number of countries) for each country to get a single competitor price. Since the aim of the study was not to deeply analyze each country's effect to get an idea of each country cross-price effects, only the average of competitor prices was taken into account.

The first non-economic variable of interest in this study was terrorism, an important variable which could drastically affect economic activities in a country (Drakos and Kutan 2003, Llorca-Vivero 2008, Raza and Jawaid 2013, Bassil, Saleh and Anwar 2017). The main reasons people spend holidays abroad are for relaxation purposes and beach tourism. This type of tourism is heavily affected by the context of destination country, i.e. price, overall quality of establishments, and other situations as terrorism and political instability. Therefore, terrorism should be controlled for and analyzed in this study. The University of Maryland Global Terrorism Database (GTD) has up to date information regarding terrorist incidents in almost every country in the world, detailed at the monthly and city-based level. The definition of terrorism in this database is such that an incident is considered a terrorist attack if the threatened or actual use of illegal force and violence is used by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation. Each terrorist incident is counted individually and summed according to the level specification (city-based, monthly, annually).

It has been observed that political instability dramatically affects domestic economic sectors. In this study, it was assumed that tourism was also affected by political instability of the country (Neumayer 2004, Basu and Marg 2013, Saha and Yap 2014, Mushtaq and Zaman 2014). For the Turkish case, there was a period between 2013-2016 that Fethullah Terrorist Organization (FETO) intervened in the political affairs of Turkey which created political instability. The intervention of this group ended in coup d'etat on July 15, 2016. This group was also responsible for bombings and creating tension between Russia and Turkey in 2015 and 2016. Thus, starting in 2015 a dummy variable was used to explain and control for political instability in the regression which ends in 2016. In the cases of Egypt and Tunisia, political stability was considered as a dummy and treated as one during the Arab Uprisings until a stable government controlled the country. In this study, common variables among the different cases were arrivals at the border, income, price level of products and services in destination country, average price level of products and services of competitor countries, terrorist incidents, and political instability.

Details of the data are given in Table 4.1 and 4.2 below:

Table 4.1. Data Description-Dependent Variables

Variable Name	Description	Source	Notes
Foreign Arrivals Turkey	For the yearly, monthly and city-based case for Turkish tourism, foreign arrivals data is the sum of foreign arrivals from originating countries. For the nation-based yearly and nation-based monthly case, the arrivals are at the country level, meaning that for each country arrival data is available at a monthly or annual level.	Ministry of Culture and Tourism of Turkey	For the Turkish case with a yearly setting (1995-2017) and city-based (2002-2017) cases the data was gathered from two different types of tourism establishments from Ministry of Tourism of Turkey Accommodation Statistics. 1. Licensed Establishments by Municipalities, 2. Licensed Establishments by the Ministry of Culture and Tourism For the nation-based yearly (1994-2017) and nation-based monthly (2007-2017) case, the data is gathered from the registries of the Passport Police from Ministry of Culture and Tourism of Turkey Border Statistics.
Foreign Arrivals Egypt and Tunisia	For the cross-country case, the Tunisia and Egypt arrivals data are nation-based annually. For each year arrival numbers from different countries are recorded.	UNWTO	For the cross-country case, the Tunisia and Egypt arrivals data were obtained from different sources (immigration, traffic counts, etc.) in nation-based yearly format from the United Nations World Tourism Organization (UNTWO). For Tunisia and Egypt, data was gathered for the 1995-2017 period from UNWTO Yearbook of Tourism Statistics dataset.
Nights Spent by Each Visitor $Ynights_t$	The total number of nights spent by tourism originating countries in yearly format. Gathered from tourism establishments for Turkish cases.	Ministry of Culture and Tourism of Turkey	The data was gathered from two different types of tourism establishments: 1. Licensed Establishments by Municipalities, 2. Licensed Establishments by Ministry The data covers the 1995-2017 period from Ministry of Tourism of Turkey Accommodation Statistics.
Departures by purpose of visit $Ypurpose_q$	The number of departures by purpose of visit represents the number of departing tourists according to their purpose in the country for Turkish case.	TURKSTAT	This setting is solely applicable to Turkey because of data availability. To identify the impact of non-economic factors on social aspects, the purpose of the visitors is taken into account. The data is based on surveys at the borders. The data has quarterly observations and covers the period 2003-2017. The data is downloaded from the Turkish Statistical Institution (TURKSTAT) tourism statistics, departing visitor statistics section.

Table 4.2. Data Description-Independent Variables

Variable Name	Description	Source	Notes
Income, Average income (averincome)	Income is taken as GDP per capita, PPP constant in 2011 international dollars. The data is used as income of the tourism originating countries. Average individual income is calculated by the weighted averaging income of the people that have visited Turkey. Average income is calculated from GDP per capita, PPP data constant in 2011 international $ World Bank Data. For settings which do not include nations, it is the average income of the visitors.	World Bank	For average income, the weights are calculated as the multiplication of arrivals with income from countries divided by total arrivals in that specific year. The weight is $\sum(arrivals_{it} * income_{it}) \div \sum arrivals_{it}$ In that sense, it reflects the income of the people that have visited Turkey in each year. The data is downloaded from World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)
Price (price, turkprice)	Real Effective Exchange Rate (REER) is used as the price variable. REER shows the price level of goods and services in the country by weighting exchange rate, inflation, and trade partners. In yearly format 67 trading partners are used in REER for each tourism countries. For monthly data 41 trading partners are used.	bruegel.org	By using this data, it is possible to account for price dimension in demand estimation in cross country relations. Since REER indicates the price level of the goods in a specific country, it helps us to control for price dimension in demand estimation of tourism. The data is downloaded from bruegel.org and has been used in the literature to account for the price in regression equations. For quarterly price data, the monthly data is simple averaged to get quarterly price data from 41 trading partner setting. The data are gathered from Bruegel organization Real Effective Exchange Rate database.

Table 4.2 (continued).

Variable Name	Description	Source	Notes
Competitor Price (comprice)	This variable indicates the average competitor price of the goods and services concerned. The same REER is used. In this setting 7 rival countries of each country in the tourism sector is used and averaged to get one competitor price.	bruegel.org	The data comprises of 7 rival countries' REER index. The rival countries are Turkey, Greece, Bulgaria, Italy, Spain, Portugal, Egypt and Tunisia. Competitor price data is the average of 7 country indexes not including the country of analysis. It gives us the relevant price approximation of rival goods and services in demand estimation. In our case, it gives us the price of tourism services in other countries. The data are gathered from Bruegel organization Real Effective Exchange Rate database.
Terrorism	In the data terrorism is defined as a terrorist attack as the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation. Each terrorist incident is recorded as one terrorism case and cumulated to get yearly, monthly, quarterly or city-based terrorism data.	University of Maryland Global Terrorism Database	A count of terrorism events for Turkey, Egypt and Tunisia were obtained from the database as the sum of all terrorist incidents in a given period. In the case of Turkey, terrorism events by city, case 5, and monthly data are also used to account for the effect of terrorism on either city-based arrivals in case 5 or monthly arrivals in the regression of case 3 and case 4.

Table 4.2 (continued).

Variable Name	Description	Source	Notes
Political Instability (instability)	For the Turkish case; between 2013-2016 Fethullah Terrorist Organization (FETO) intervened in government and public affairs in Turkey and tried to create political instability. The real damage from this terrorist organization happened in 2015 and 2016. Therefore, for the years that real damage occurs a dummy variable is used to control for this factor. For the Egypt and Tunisia cases, political stability is considered as a dummy and treated as 1 during the Arab Uprisings until a form of government controls the country.	Web, News Sources	After 2013 FETO intervened in political affairs in Turkey, which involves causing and supporting protests among the public, supporting other terrorist groups, using police forces for their goals and by using their people in the army causing coup d'etat in 2016. Bombings and Russia-Turkey tension caused and coordinated by this terrorist group happened in 2015 and 2016. In 2015, a Turkish Air Force F-16 fighter jet shot down a Russian Sukhoi Su-24M attack aircraft near the Syria–Turkey border on 24 November 2015. It turned out that the order was given by FETO commander in charge. This changed the international relations between Turkey and Russia negatively Between 2015-2016 the variable is treated as a dummy and counted as 1. For Tunisia (2010-2011) and Egypt (2011-2012, 2013) only Arab Uprisings intervals are considered.

4.2 Methodology

This analysis included seven different cases considering different dimensions of tourist across different periods of time (annual, monthly), different levels of geographic focus (national, city), and different countries. Case 1 and Case 3 were analyzed using cross-sectional Ordinary Least Squares (OLS) analysis; panel data regression techniques were used for the remaining five cases. Before moving forward with formulating any empirical methodology, it is important to check for possible correlation among variables to see whether they are appropriate to include in the same model. Correlation is evaluated in the baseline scenario presented in Case I. It was suspected that tourist arrivals would be positively correlated with tourist income and negatively correlated with the price of tourist services and terrorism events.

The results of the correlation analysis are presented in Table 4.3. It was expected that there would be positive correlation between arrivals and competitor price. Nonetheless, the positive correlation between price of goods and product in Turkey and international tourist arrivals to Turkey was surprising. During a period of political instability in Turkey, terrorism incidents also increased, and the correlation result showed that there is a high positive correlation between political instability and terrorism. In order assure that multicollinearity is not likely to be problematic, a variance inflation factor (VIF)[8] test is used. The mean result of VIF was 2.59 suggesting that the covariates are moderately correlated. Given this result and the results of the correlation analysis presented in Table 4.3, it was decided to retain all of these covariates.

The data were checked for stationarity by using Augmented Dickey-Fuller (ADF) unit root test and for panel data Harris–Tzavalis unit root tests. Since panel data has a large number of panel observations and a relatively small number of periods Haris-Tzavalis unit root test was used instead of Levin-Lin-Chu unit root test (xtunitroot, Stata code explanations, panel-data unit-root tests). The Harris-Tzavalis test assumes that the number of panels tends to infinity while the number of time periods is fixed.

[8] The VIF may be calculated for each explanatory variable by using a linear regression of that variable on all the other explanatory variables and then getting the R2 from that regression. The VIF is 1/(1-R2). A commonly given rule of thumb is that VIFs of 10 or higher (or equivalently, tolerances of .10 or less) may be a reason for concern.

Table 4.3. Correlation Among Key Variables, 1994-2017

	Arrivals (Number of Arriving International Tourists)	Average Income of International Tourists	Turkish Prices for Tourism Services	Competitor Country Prices for Tourism Services	Terrorism Events (Annual)
Arrivals (Number of Arriving International Tourists)	1.0000				
Average Income of International Tourists	0.4762	1.0000			
Turkish Prices for Tourism Services	0.7512*	0.5170	1.0000		
Competitor Country Prices for Tourism Services	0.6933*		0.6921*	1.0000	
Terrorism Events (Annual)					1.0000
Political Instability					0.9159*

The common approach in the literature is the specification of double logarithmic form, in which the betas of regression are elasticities except in the case of dummy and level form variables. Therefore, the logarithmic form of the variables, excluding terrorism and political instability, were used in this study. The first difference of the data was to address non-stationarity of some variables. Since it is suspected that the effects of important events are felt after a period of instability, lag of political instability variable was used. A summary of cases and description of variables can be found in Table 4.4 and Table 4.5.

Case 1: Yearly Setting with Nights Spent

In Case 1 international tourism arrivals data from tourism establishments are analyzed. This data also includes duration of visits between 1995 and 2017. This enables us to identify the effects of independent variables on total number of arrivals and nights spent by visitors separately. The results can show how sensitive the duration of Turkey's international tourist visits is to terrorism and political instability events. In this case, a dummy variable is included to account for the lagged effect of political instability, and the model is estimated by OLS regression. The data was checked for stationarity and it was determined that arrivals, income, terrorism, price and competitor price variables have unit roots. To address this, data are first differenced and the yearly change in variables are used instead. Thus, the following functions with first differenced data are used for Case 1. To find the impacts of political instability and terrorism on tourism demand, two specifications are used:

$$Y_t = averincome_t + turkprice_t + \ comprice_t + terrorism_t + l.instability_t + \varepsilon_t \qquad [1.1]$$

$$Ynights_t = averincome_t + turkprice_t + \ comprice_t + terrorism_t + l.instability_t + \varepsilon_t \qquad [1.2]$$

Y_t denotes number of tourists staying at the tourism establishment in Turkey yearly in the first setting and $Ynights_t$ denotes the number of nights spent by those tourists in each year *t.*

$averincome_t$ denotes average income of tourists who visited Turkey in each year *t*. The weights are calculated as multiplication of arrivals with income from countries divided by total arrivals in that specific year.

$turkprice_t$ is the Real Effective Exchange Rate for Turkey for each year *t*. It is reflecting price changes of services and goods in Turkey. In yearly format the REER with 67 trading partners setting is used.

$comprice_t$ is the Real Effective Exchange Rate of seven rival countries for each year *t*. Seven rival countries are Egypt, Tunisia, Turkey, Bulgaria, Greece, Italy, Portugal, and Spain. Average is calculated by simple means of 7 countries excluding the country analyzed.

$terrorism_t$ is the sum of terrorism incidents in the destination country in each year *t*.

$l.instability_t$ denotes the political instability period in destination country in first lag.

ε_t represents errors which are not accommodated by the model.

Case 2: Yearly Arrivals by Nations Setting

The effect of terrorism and political instability on the number of tourist arrivals from important tourism originating countries is examined in Case 2. This case is similar to Case 1 but differs in time (1994-2017) and country dimension and the data have a panel setting. There are 198 tourism originating countries in this case. In addition, the arrivals data gathered at the border is obtained from the Ministry of Tourism of Turkey web page at the border statistics section (Table 4.1, Table 4.4).

The data are checked for stationarity in a panel setting. The results of the Haris-Tzavalis unit root test show that there is a unit root in the income variable. In addition, the arrivals variable is very close to exhibiting a non-stationary process. Therefore, the data are first differenced to get a more stationary process; this will also help in a fixed effects estimation (first difference setting).

To decide whether a fixed effect (FE) or random effect (RE) setting is used in a country year panel setting, a Hausman test was applied before differencing. The result of the Hausman test before differencing is Prob>chi2 =0.2362. Thus, either FE or RE could be incorporated into the regression specification depicted below. To get information regarding the effect of the estimators on arrivals for different countries of origin of tourists, the model needs to be run for each nation.

$$Y_{it} = income_{it} + turkprice_t + comprice_t + terrorism_t + l.instability_t + \varepsilon_{it} \qquad [2].$$

Y_{it} denotes number of tourism arrivals by tourism originating country *i* in year *t*.

$income_{it}$ denotes income of the tourists from originating country *i*, who visited destination country in year *t*. The income is based on GDP per capita, PPP constant in 2011 international dollars.

Case 3: Monthly Setting

This case seeks to identify the effects of monthly terrorist incidents and political instability on monthly international tourism arrivals. This case can help identifying the effect of lagged monthly terrorist incidents on monthly international tourism arrivals. The data is checked for stationarity and it was determined that the price variables have unit roots. Hence, differenced data will be used in OLS regression. In addition, the effect of terrorism could be felt after a period of time (1-2 months) since the time interval between observations is short the lag of terrorism variable

is used in this case. Since their variation is limited to year, the effects of dummy will decrease. However, the dummy of lag instability will still be included in the regression setting.

The model of interest is as follows.

$$Y_m = averincome_t + turkprice_m + comprice_m + l.terrorism_m + l.instability_t + \varepsilon_t \qquad [3]$$

Y_m is the sum of monthly tourism arrival data in each month m. The data range starts from January 1994 and ends in 2017 December.

$turkprice_m$ is the Real Effective Exchange Rate for Turkey for each month m. It is reflecting price changes of services and goods in Turkey on a monthly basis. In this format, the REER with 41 trading partners setting is used.

$comprice_m$ is the average Real Effective Exchange Rate of 7 rival countries of Turkey for each month m. 7 rival countries are Egypt, Tunisia, Bulgaria, Greece, Italy, Portugal, and Spain. Average is calculated by simple means of 7 countries' REER data.

$l.terrorism_m$ denotes lag of sum of terrorism incidents in Turkey in each month m.

Case 4: Monthly Arrivals by Nation

Case 4 is used to identify the effects of monthly terrorist incidents and political instability on tourism arrivals from important tourism originating countries. This scenario is similar to Case 3 but differs in time (2007 Month 1-2017 Month 12) and country dimensions (198 tourism originating countries). Therefore, a panel data approach will be used. The data is checked for stationarity with Haris-Tzavalis unit root test and it is found that the income variable is following a non-stationary process. Since the variation of income in the regression is low, levels of variables will be used in the analysis below.

The Hausman test was again used to determine whether FE or RE (tourism originating countries and year panel data setting) should be used. The result of the Hausman test is Prob>chi2 = 0.5458. Either setting could be used, and the fixed effects approach is preferred because of possible omitted variable bias.

Moreover, on account of the fact that there is seasonality of tourism and terrorism in the data, dummies for months are used. In addition, control for a yearly trend in all variables, an annual time trend has been added.

$$Y_{im} = income_{it} + turkprice_m + comprice_m + l.terrorism_m + l.instability_t + i.month_{m-1} + \alpha_t + \varepsilon_{it} \quad [4].$$

$i.month_{m-1}$ denotes dummies for months excluding one month from regression.

α_t denotes yearly trend variable starting from 1. The trend is cumulative, meaning that the second year is 2, the third year is 3 etc.

Case 5: Arrivals to the Turkey's Major Tourist Cities Setting

Case 5 is developed to analyze the effects of non-economic variables in Turkey, especially terrorism, on tourism arrivals at major tourism destinations (cities) in Turkey for the years 2002-2017. The arrivals data in this case are gathered on a per-establishment basis from the Ministry of Culture and Tourism of Turkey web page via the accommodation statistics section. All the tourism establishments sent their surveys to the Ministry, then ministry of compiles them on different classifications including city-based cumulative format. A regression analysis will also be performed for important tourism cities (having over 100,000 tourist arrivals per year) which are Ankara, Antalya, Aydin, Balikesir, Bursa, Denizli, Konya, Mugla, Nevsehir, Istanbul, and Izmir. Since there are city level and time level, a panel data approach will be used. The data were checked for stationarity; results of the Haris-Tzavalis unit root test show that there is a unit root in the competitor price variable. Moreover, there is a time trend in arrivals data. Therefore, differencing technique will be used with a robust option in panel data regression setting.

The Hausman test is again used to determine wither FE or RE should be added to the model specification. The result of the Hausman test before differencing is Prob>chi2 = 0.3255. Thus, either FE or RE could be used in the regression specification shown below [5]:

$$Y_{ct} = averincome_t + turkprice_t + comprice_t + terrorism_{ct} + l.instability_t + \varepsilon_{it} \quad [5].$$

Y_{ct} denotes the sum of yearly tourism arrival data for each city c. The data range starts from 2002 and ends in 2017.

$terrorism_{ct}$ is the sum of terrorism incidents in Turkey for each city c.

Case 6: Departures by Purpose Setting

The impact of terrorism and tourism on visitors on visitors arriving to Turkey for different purposes is examined in Case 6. In this case instead of tourism arrivals, departures by purpose are used as the dependent variable. This data was obtained from TURKSTAT Departing Visitors

Survey and it is gathered from TURKSTAT departing visitor statistics section. The data has quarterly frequency starting from 2003 1st quarter and ending in 2017, 4th quarter.

The purpose of visitors' data is broken down into details as "Travel, entertainment, sportive", "Visiting relatives and friends", Education training less than a year", "Health or medical reasons less than a year", "Religion/Pilgrimage", "Shopping, "Transit", "Business, conferences, meetings", "Other", and "Accompanying persons".

The model was checked for stationarity with an Augmented Dickey-Fuller test, and it was found that only the competitor price data has a unit root. The first differencing technique is also used in this case, and all variables are logged transformed excluding terrorism and political instability. An annual is also included in this specification. In this case, first differenced data Ordinary Least Squares regression with the robust standard errors option is applied.

$$Ypurpose_q = averincome_t + turkprice_q + comprice_q + l.terrorism_q + l.instability_t + \alpha_t + \varepsilon_t \qquad [6]$$

$Ypurpose_q$ denotes tourism arrivals by purpose of visit in each quarter q. Each purpose of visit is run in the regression as dependent variable.

Case 7: Turkey, Tunisia and Egypt comparison and analysis setting

To explore the extent to which results from Case 1 hold in other countries in the region with important tourism economies and similar political climates Case 7 is performed. In that sense, at least for a specific few other countries, we can compare baseline results for Turkey with that of other countries. Tunisia and Egypt are chosen because of their similarity in terms of their challenges with terrorism and tourism. After the Arab Spring, each of these three countries have had a period of instability and terrorism.

The first model [7.1] is a pooled OLS which includes the three countries: Turkey, Egypt, and Tunisia. Since previous models showed that there was a non-stationary problem, differencing technique will be applied. The second model is for analysis of each country in their specific panel regression.

$$Y_{jt} = income_{jt} + price_{jt} + comprice_{jt} + terrorism_{jt} + l.instability_{jt} + \delta_j + \varepsilon_{jt} \qquad [7.1]$$

$$Y_{it} = income_{it} + price_t + comprice_t + terrorism_t + l.instability_t + \varepsilon_{it} \qquad [7.2]$$

where Y_{jt} denotes the number of total tourism arrivals in destination country j in year t; $price_{jt}$ is the Real Effective Exchange Rate of destination country j for each year t; and $comprice_{jt}$ is the Real Effective Exchange Rate of 7 rival countries for country j for each year t; The measure of $terrorism_{jt}$ is the sum of terrorism incidents in country j in each year t, and $l.instability_{jt}$ denotes political instability in destination country j in their respective years. For Tunisia 2010-2011, for Egypt 2011-2012-2013 and for Turkey 2015-2016 years have dummies for periods of political instability. Fixed effects for tourist destination countries are denoted by δ_j. The model 7.2 is similar to Case 1 to compare results of each country in its own setting. The summary of the methodology and description of the variables examined in each case are summarized in the tables below.

Table 4.4. Summary of Cases Examined

Case	Case Description	Data Used	Dependent Variable	Independent Variables	Estimation Approach	Time Period	Number of Observations
Case 1	Two settings: 1.1 Analyzing yearly international tourist arrivals 1.2 Analyzing nights spent by each visitor	Accommodation statistics from the Ministry of Tourism of Turkey	1.1 International yearly cumulative tourism arrivals in first differenced log form 1.2 Nights spent by each visitor in first differenced log form	Average income, Turkish Price Level (REER), Average Competitor Price Level (REER), Yearly Terrorist Incidents, Lag of Political Instability (dummy 2015,2016), Apart from Political Instability each variable is in first differenced log format	OLS First Differencing	1995-2017 Yearly	22
Case 2	Yearly international tourist arrivals by Nations	Border statistics From the Ministry of Tourism of Turkey	Yearly International tourist arrivals by Nations in first differenced logged form	Income (Real GDP per capita for each Nation), Turkish Price Level (REER), Average Competitor Price Level (REER), Yearly Terrorist Incidents, Lag of Political Instability (dummy 2015,2016), Apart from Political Instability each variable is in first differenced log format	Panel Data First Differencing with Robust Standard Errors (Clustered at Nations Level)	1994-2017 Yearly	3117

Table 4.4 (continued).

Case 3	Monthly cumulative international tourist arrivals	Border statistics From the Ministry of Tourism of Turkey	Monthly cumulative international tourist arrivals in first differenced logged form	Average income (yearly), Monthly Turkish Price Level (REER), Monthly Average Competitor Price Level (REER), Monthly Terrorist Incidents (First Lag), Lag of Political Instability (dummy 2015,2016), Apart from Political Instability each variable is in first differenced log format	OLS First Differencing	January 1994-December 2017 Monthly	286
Case 4	Monthly arrivals by Nations	Border statistics From the Ministry of Tourism of Turkey	Monthly International tourist arrivals by Nations	Income (Real GDP per capita for each Nation yearly), Monthly Turkish Price Level (REER), Monthly Average Competitor Price Level (REER), Monthly Terrorist Incidents (First Lag), Lag of Political Instability (dummy for 2015,2016), Dummies for Months Trend Variable representing a point increase with each year	Panel Data-Fixed Effects Approach	January 2007-December 2017 Monthly	23,377

Table 4.4 (continued).

Case 5	Yearly international tourist arrivals at the city level.	Establishment statistics From the Ministry of Tourism of Turkey	Cumulative yearly tourism accommodation at the city level in a first differenced logged form	Average income, Turkish Price Level (REER), Average Competitor Price Level (REER), Yearly Terrorist Incidents (first differenced), Lag of Political Instability (dummy 2015,2016), Apart from Political Instability and Terrorism each variable is in first differenced log format	Panel Data First Differencing with Robust Standard Errors (Clustered at City Level)	2002-2017	1,203
Case 6	Departures by purpose of visit	Departure statistics from TURKSTAT	Quarterly cumulative departures by purpose of visit in the logged form	Average income (yearly), Quarterly Turkish Price Level (REER), Quarterly Average Competitor Price Level (REER), Quarterly Terrorist Incidents (First Lag), Lag of Political Instability (dummy 2015,2016), Quarter dummies for quarter1, 2 and 3 Trend Variable representing a point increase with each year	OLS	2003 1st Quarter-2017 4th Quarter	59

Table 4.4 (continued).

Case 7	Turkey, Tunisia and Egypt comparison and analysis setting	Border statistics From the Ministry of Tourism of Turkey UNWTO Yearbook of Tourism Statistics for Egypt and Tunisia	7.1. Yearly International tourist arrivals by Nations in first differenced logged form 7.2. For Turkey and Tunisia Yearly International tourist arrivals by Nations in first differenced logged form For Egypt in only logged form	7.1. Income (Yearly real GDP per capita for each Nation), Own Price Level (REER), Average Competitor Price Level (REER), Yearly Terrorist Incidents (first differenced), Lag of Political Instability (dummy 2015,2016) 2 country dummies Apart from Political Instability and Terrorism each variable is in first differenced log format 7.2. For Egypt and Tunisia, the same variables above except country dummies	7.1. Pooled OLS First Differencing with Robust Standard Errors (Clustered at Nations Level) 7.2. For Egypt and Tunisia, First Differencing OLS	1994-2017	7.1. Pooled=6,862 Turkey=3,117 Egypt=3,014 Tunisia=935

Table 4.5. Description of Variables

Variable	Variable Abbreviation	Case	Variable Construction	Data Sources
Number of international tourists staying at tourism establishments	Y_t	1	The first difference of the logged number of cumulative tourists in each year *t*	MCTT Tourism Statistics/ Accommodation statistics /Bulletins/Annual Bulletins/Annually
Number of nights spent by tourists at tourism establishments	$Ynights_t$	1	The first difference of the logged number of cumulative nights spent by tourists each year *t*	MCTT Tourism Statistics/ Accommodation statistics /Bulletins/Annual Bulletins/Annually
Number of yearly international tourist arrivals by Nations	Y_{it}	2,7	The first difference of the logged number of tourist arrivals by country *i* in year *t*	MCTT Tourism Statistics/Border Statistics/ Annual Bulletins/border arrival-departure statistics/arrivals by nations, UNWTO (2018), Yearbook of Tourism Statistics dataset
Number of tourism arrivals by tourism originating country	Y_{jt}	7	The first difference of the number of tourism arrivals for destination country *j* in year *t*	MCTT Tourism Statistics/Border Statistics/ Annual Bulletins/border arrival-departure statistics/yearly arrivals by nations, UNWTO (2018), Yearbook of Tourism Statistics dataset
Number of cumulative yearly international tourist arrivals at the city level	Y_{ct}	5	The first difference of the logged sum of yearly tourism arrival data for each city *c* in year *t*	MCTT Tourism Statistics/ Accommodation statistics /Bulletins/Annual Bulletins/City-Province
Number of cumulative quarterly international tourism departures by purpose of visit to Turkey	$Ypurpose_q$	6	Logged tourism arrivals by purpose of visit in each quarter *q*	TURKSTAT Tourism Statistics/Departing visitor statistics/Foreign and Visitors by Purpose of Visit

Table 4.5 (continued).

Variable	Variable Abbreviation	Case	Variable Construction	Data Sources
Number of cumulative monthly international tourist arrivals	Y_m	3	The first difference of the logged sum of monthly tourism arrival data in each month *m*	MCTT Tourism Statistics/Border Statistics/ Annual Bulletins/border arrival-departure statistics/monthly arrivals
Number of monthly international tourist arrivals by Nations	Y_{im}	4	The tourism arrivals data in each month *m* from country *i*	MCTT Tourism Statistics/Border Statistics/ Annual Bulletins/border arrival-departure statistics/monthly arrivals by nations
Income of tourists by Nations	$income_{it}$	2,7	The first difference of logged income of the tourists from the originating country *i*, who visited destination country, in year *t*. The income is based on GDP per capita, PPP constant in 2011 international dollars	World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)
Income of tourists by Nations	$income_{it}$	4	Income of the tourists from a country *i*, who visited destination country, in year *t*	World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)
Income of tourists by Nations	$income_{jt}$	7	The first difference of logged average income of the tourists for destination country *j* in year *i*	World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)

Table 4.5 (continued).

Variable	Variable Abbreviation	Case	Variable Construction	Data Sources
Yearly average income of tourists who visited the destination country	$averincome_t$	1,3,5	The first difference of logged average income of tourists who visited destination country in each year *t*	World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)
Yearly average income of tourists who visited the destination country	$averincome_t$	6	Logged average income of tourists who visited the destination country in each year *t*	World Bank World Development Indicators, International Comparison Program database (GDP, PPP (constant 2011 international $)
Yearly Real Effective Exchange Rate for Turkey	$turkprice_t$	1,2,5	The first difference of logged Real Effective Exchange Rate for Turkey for each year *t*	bruegel.org/ Real Effective Exchange Rate dataset/67 Trading Partners
Yearly Real Effective Exchange Rate for Competitor Country	$comprice_t$	1,2,5,7	The first difference of logged average Real Effective Exchange Rate of 7 rival countries of destination country for each year *t*	bruegel.org/ Real Effective Exchange Rate dataset/67 Trading Partners
Yearly Real Effective Exchange Rate for Destination Country	$price_{jt}$ $price_t$	7	The first difference of logged Real Effective Exchange Rate for country *j* for each year *t*	bruegel.org/ Real Effective Exchange Rate dataset/67 Trading Partners
Yearly Real Effective Exchange Rate for Competitor Country	$comprice_{jt}$	7	The first difference of logged average Real Effective Exchange Rate of 7 rival countries for country *j* for each year *t*	bruegel.org/ Real Effective Exchange Rate dataset/67 Trading Partners
Quarterly Real Effective Exchange Rate for Turkey	$turkprice_q$	6	Logged Real Effective Exchange Rate for Turkey for each quarter *q*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners
Quarterly Real Effective Exchange Rate for Competitor Country	$comprice_q$	6	Logged average Real Effective Exchange Rate of 7 rival countries of Turkey for each quarter *q*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners
Monthly Real Effective Exchange Rate for Turkey	$turkprice_m$	4	The Real Effective Exchange Rate for Turkey for each month *m*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners

Table 4.5 (continued).

Variable	Variable Abbreviation	Case	Variable Construction	Data Sources
Monthly Real Effective Exchange Rate for Competitor Country	$comprice_m$	4	The average Real Effective Exchange Rate of 7 rival countries of Turkey for each month *m*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners
Monthly Real Effective Exchange Rate for Turkey	$turkprice_m$	3	The first difference of logged Real Effective Exchange Rate for Turkey for each month *m*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners
Monthly Real Effective Exchange Rate for Competitor Country	$comprice_m$	3	The first difference of logged average Real Effective Exchange Rate of 7 rival countries of destination country for each month *m*	bruegel.org/ Real Effective Exchange Rate dataset/41 Trading Partners
Number of yearly terrorist incidents	$terrorism_t$	1,2,7	The first difference of the logged sum of terrorist incidents in destination country in each year t.	University of Maryland Global Terrorism Database
Number of yearly terrorist incidents	$terrorism_{jt}$	7	The first difference of the sum of terrorist incidents in country *j* in each year *t*	University of Maryland Global Terrorism Database
Number of monthly terrorist incidents in Turkey	$l.terrorism_m$	3,4	The first difference of lag of sum of terrorist incidents in Turkey in each month *m*	University of Maryland Global Terrorism Database
Number of yearly terrorist incidents at the city level	$terrorism_{ct}$	5	The first difference of the sum of terrorist incidents in Turkey for each city *c* in each year *t*	University of Maryland Global Terrorism Database
Number of quarterly terrorist incidents in Turkey	$l.terrorism_q$	6	The sum of lagged terrorist incidents in Turkey in each quarter *q*	University of Maryland Global Terrorism Database
Political instability period	$l.instability_t$	1,2,3, 5,6,7	The first difference of lagged political instability years in a destination country	Web and news: Hatipoglu, Can, Kaya, 2019, Lowen, 2014, Cingil, Kenasari, 2018, Gurbuz, Kirikcioglu, 2018, Paksoy, 2016, Pamuk, 2016, "Timeline: Egypt's revolution", 2011, "Egypt Uprising of 2011", 2019, Aboulenein, Davison, 2018, Tesch, 2019, "A Research & Study Guide: Tunisia"

Table 4.5 (continued).

Variable	Variable Abbreviation	Case	Variable Construction	Data Sources
Political instability period	$l.instability_t$	4	Lag of political instability years in the destination country	Web and news: Hatipoglu, Can, Kaya, 2019, Lowen, 2014, Cingil, Kenasari, 2018, Gurbuz, Kirikcioglu, 2018, Paksoy, 2016, Pamuk, 2016, "Timeline: Egypt's revolution", 2011, "Egypt Uprising of 2011", 2019, Aboulenein, Davison, 2018, Tesch, 2019, "A Research & Study Guide: Tunisia"
Political instability period	$l.Instability_{jt}$	7	The first difference of lagged political instability in country j in their respective years. For Tunisia 2010-2011, for Egypt 2011-2012-2013 and for Turkey 2015-2016 years have dummies for political instability	Web and news: Hatipoglu, Can, Kaya, 2019, Lowen, 2014, Cingil, Kenasari, 2018, Gurbuz, Kirikcioglu, 2018, Paksoy, 2016, Pamuk, 2016, "Timeline: Egypt's revolution", 2011, "Egypt Uprising of 2011", 2019, Aboulenein, Davison, 2018, Tesch, 2019, "A Research & Study Guide: Tunisia"
Yearly Trend Variable	α_t	4,6	Yearly trend variable starting from 1. The trend is cumulative, meaning that the second year is 2, the third year is 3, etc.	
Month Dummy Variable	$i.month_{t-1}$	4	Stands for quarter dummies to account for seasonal effects. They will absorb fluctuations due to seasonality. 12th month is December	
Notes: MCTT: Ministry of Culture and Tourism of Turkey				

5 Results and Discussion

Ordinary Least Squares regression and panel data regression techniques were used in the study. After checking stationarity, the cases were set up and the models were run with the Stata software program. Each model has different dimension, therefore, their specific context should be considered.

5.1 Case 1: Yearly International Arrivals Including Nights Spent

In Case 1 tourism statistics from tourism establishments were analyzed. Tourism establishment data represent tourism arrivals more than border statistics; however, they are based on surveys that accommodation establishments filled out, therefore vulnerable to miscalculation. However, in this case, it is easy to differentiate between the number of arrivals and nights spent at the tourism establishment. It could show how sensitive are tourists to the negative context in Turkey in terms of the duration of the stay. Summary statistics for Case 1 is as follows:

Table 5.1. Case1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	23	17,200,000	7,369,035	6,225,707	30,300,000
nights	23	68,800,000	29,400,000	25,400,000	119,000,000
Average income (PPP, $)	23	28,646	1,125.7	25,636.1	30,223.9
turkprice (index)	23	84.0	14.6	58.6	106.7
comprice (index)	23	100.7	4.5	92.9	106.9
terrorism	23	94.2	133.6	5.0	542.0

Case 1 is the simplest set up that only considers yearly cumulative variables. However, the data was gathered from tourism establishments and included the duration of the tourist nightly stays. This specification helps to identify the difference between arrivals and duration of the stays. Since data are first differenced, the trend was also accounted for with the intercept coefficient. The regression results are shown in Table 5.2.

Table 5.2. Regression Results Case 1: Yearly Total International Tourist Arrivals

	(1) Model 1.1 Yearly Arrivals	(2) Model 1.2 Night Spent Yearly	(3) 1.1 First Lag in Terrorism	(4) 1.2 First Lag in Terrorism	(5) 1.1 First Lag in Political Instability	(6) 1.2 First Lag in Political Instability	(7) 1.1 First Lag in Political Instability and Terrorism	(8) 1.2 First Lag in Political Instability and Terrorism
D.logaverincome	3.532***	3.371***	3.529***	3.317***	3.423***	3.277***	2.647**	2.719**
	(3.73)	(4.01)	(2.95)	(3.21)	(2.99)	(3.24)	(2.21)	(2.67)
D.logturkprice	0.145	0.338	0.231	0.411	0.133	0.326	0.0883	0.327
	(0.42)	(1.05)	(0.63)	(1.31)	(0.40)	(1.05)	(0.20)	(0.92)
D.logcomprice	1.059	1.324	-0.123	0.146	0.258	0.684	-2.001	-1.198
	(0.60)	(0.96)	(-0.05)	(0.08)	(0.14)	(0.46)	(-0.84)	(-0.70)
D.terrorism	-0.00132**	-0.000861			-0.000908**	-0.000630**		
	(-2.12)	(-1.66)			(-2.54)	(-2.44)		
LD.terrorism			-0.000745	-0.000663*			-0.000210	-0.000407
			(-1.40)	(-1.78)			(-0.34)	(-0.82)
D.instability	0.116	0.0508	-0.323*	-0.224*				
	(0.44)	(0.26)	(-1.77)	(-2.09)				
LD.instability					-0.276*	-0.199*	-0.439**	-0.241
					(-2.04)	(-2.01)	(-2.33)	(-1.66)
_cons	0.0579	0.0502	0.0654	0.0586	0.0704*	0.0598	0.0747	0.0641
	(1.60)	(1.53)	(1.57)	(1.62)	(1.87)	(1.71)	(1.64)	(1.65)
N	22	22	21	21	21	21	21	21
R^2	0.574	0.552	0.473	0.505	0.579	0.543	0.415	0.452

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

In order to identify appropriate lag period, the model was run four times concerning lags of terrorism and political instability variables. According to the results, based on R squares, the equation with lag of political instability variable is explaining the tourism demand more than other settings. Therefore, in other Turkish cases lag of political instability were used.

Based on results presented in the fifth and sixth columns in Table 5.2, it is found that income, terrorism and lag of political instability have statistically significant explanatory powers in the regression specification. An increase in the income of the tourists visiting Turkey affects tourism arrivals positively. An increase in terrorist incidents and political instability period in Turkey affects tourism arrivals negatively. Since regression is specified in log-log formation, it can be stated that a 1% increase in income of the visitors increases tourism arrivals by 3.4% and a

political instability year decreased international tourism arrivals by over 20%, which is a tremendous decrease. It should be noted that however statistically significant the terrorism effects, the actual change in arrivals is minimal, which was not surprising since terrorists do not usually target tourists in Turkey.

In the second specification, duration of the visitors case, the effects of terrorist incidents decreased more. Income and political instability were statistically and economically significant in this specification. While the statistical significance of income increased, the economic effect decreased.

Due to negative context in Turkey, international tourism arrivals decreased significantly during political instability period. In this respect, promotion campaigns and marketing efforts regarding safety issues can help recover image of Turkish tourism industry in main tourism originating countries.

The R square from regressions is about 0.55. Since the number of observations is small, the results are questionable. According to the Breusch-Pagan / Cook-Weisberg test (for 1.1. chi2(1)=0.11and for 1.2 chi2(1)=0.00) for heteroskedasticity for Case 1, the model satisfies homoskedasticity assumption. Even there is no heteroskedasticity problem, robust standard errors were calculated instead of normal ones. The model was checked for regression misspecification error with the Ramsey RESET test (for 1.1. Prob > F = 0.8501 and for 1.2. Prob > F = 0.2526) and found that this was not a concern. Moreover, a Durbin-Watson test has been performed to test the presence of first-order serial correlation in the error terms. The data met the assumption of independent errors (Durbin-Watson value 1.1 = 2.24 and model 1.2. = 2.07).

5.2 Case 2: Yearly international tourist arrivals by Nations

This case brings arrivals by country dimension to the regression setting. In order to have more degrees of freedom and to have individual country results, international tourist arrivals by nations to Turkey was analyzed. Summary statistics for Case 2 is presented in Table 5.3.

Panel data first differencing technique was used in the regression specification. First differencing removes individual factors and trend in the data. Basic OLS regression on differenced variables results in fixed effect panel regression technique. The regression results are shown in Table 5.4.

Table 5.3. Case 2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	4,752	100679.6	387998.6	0	5580792
Income (PPP, $)	4,220	16185.9	19157.5	247.4	135318.8
turkprice (index)	4,752	82.7	15.3	52.7	106.7
comprice (index)	4,752	100.3	4.7	90.9	106.9
terrorism	4,752	102.8	134.4	5	542

The results show that income, competitor's price, terrorism, and political instability have statistically significant explanatory power in terms of tourism arrivals. The number of observations is 3117 and enough to infer from panel regression. Income, again, has positive effects on tourism arrivals, but this time coefficient effect decreased to 0.8%. Competitor countries' prices have positive effects on Turkish tourism arrivals, meaning that if other countries increase their prices, Turkish tourism arrivals increase. The effect is also economically significant that 1% increase in competitor price causes 1.9 % increase in tourism arrivals. On the other hand, political instability caused by FETO and other terrorist organizations had a negative effect on tourism arrivals causing a yearly about 25 % decrease in the number of tourist arrivals. A 100 increase in the number of terrorist incidents would cause 3% decrease in number of arrivals, which is low compared to the effect of political instability period.

Table 5.4. Regression Results Case 2: Yearly International Tourist Arrivals by Nations

	Model 2 Nation-Yearly
D.logincome	0.808***
	(4.45)
D.logturkprice	-0.221
	(-1.32)
D.logcomprice	1.983***
	(4.59)
D.terrorism	-0.000312***
	(-4.17)
LD.instability	-0.257***
	(-5.35)
_cons	0.110***
	(12.49)
N	3062
R^2	0.031

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

The results confirmed the results of the previous case. Terrorism(low) and political instability negatively affected international tourism arrivals. In addition, competitor prices became important in this case, which was not surprising. The R-squared was low at 0.03. However, the regression is based on the true theory of demand estimation and data are differenced, so one should not be worried about low R-squared.

A web dispute by Ford (2015) states that *"R-squared does not measure the goodness of fit. It can be arbitrarily low when the model is completely correct."* and *"R-squared cannot be compared between a model with untransformed Y and one with transformed Y, or between different transformations of Y. R-squared can easily go down when the model assumptions are better fulfilled."*. Therefore, transformed regressions could not be compared with each other.

According to mean values between 1994-2017 the following countries have most international tourist arrival numbers: Germany, Russian Federation, United Kingdom, Bulgaria, Iran, Netherlands, Georgia, France, United States, Greece, Ukraine, Belgium, Italy, Austria, and Azerbaijan. The regression was run for these countries to get country-based results.

According to regression results (Appendix A), tourists from Germany, Bulgaria, Netherlands, and Austria were only negatively affected by political instability in Turkey. Russian tourists were affected by terrorism and political instability negatively. The magnitude of negative effect of political instability on tourism arrivals is the highest in Russian case. In addition, inter country relationship in 2016 should also be noted and considered while evaluating Russian case. Interestingly, the sign of competitor prices is negative and statistically significant, meaning that Russian tourists still prefer Turkey as tourism destination while competing country prices are declining.

Tourists from United Kingdom were affected by terrorist incidents and political instability negatively. On the other hand, there is a positive correlation of price of goods and services in Turkey for UK case, meaning that tourists from this country still prefer Turkey as tourism destination while the price level is increasing.

Visitors from the United States, France, Georgia, Belgium and Italy were affected by competitor prices and political instability in Turkey. While increase in competitor prices affected tourism arrivals from these countries positively, incident of political instability affected tourism

arrivals negatively. In addition, tourists from France, Belgium, and Italy were also negatively affected by terrorist incidents.

Tourist arrivals from Iran and Greece were negatively affected by political instability in Turkey. Iranian tourist arrivals were positively affected by income rise. While Greece tourists still prefer Turkey when the price levels increased in Turkey. Greece is a very close neighbor country to Turkey and there are daily excursion tours. The proximity and daily excursion tours may have intervened the usual price relation. Tourists from Azerbaijan were only negatively affected by terrorist incidents in Turkey.

Considering the proximity and location of the countries, based on regression results, it is hard to generalize the results, e.g. European Countries refrained from price increases, political instability and terrorist incidents. Nonetheless, the results indicated that in general political instability played a major role affecting international tourist arrivals negatively. Therefore, policy makers need to promote Turkish tourism in terms of safety issues to recover the tourism industry in aforementioned important tourism originating countries. A message in the promotions could be "visit Turkey like visiting your families" with a bit of safety adjustments.

The case 2 was checked for heteroskedasticity problem and Breusch-Pagan / Cook-Weisberg test (Prob > chi2=0.0001) for heteroskedasticity was used since the model was run with first differenced OLS regression. The model did not satisfy the homoskedasticity assumption. Therefore, robust standard errors were used to correct for heteroskedasticity. According to the Ramsey RESET test (Prob > F = 0.2842), the model did not suffer from regression misspecification error. Wooldridge test for autocorrelation (Prob > F = 0.0000) in panel data showed that we reject the null hypothesis that there is no first-order autocorrelation. Therefore, our first difference technique with robust standard errors clustered at the level of the nation used in regression specification was justified.

5.3 Case 3: Monthly Setting

This case has monthly cumulative observations for Turkish tourist arrivals, price, and terrorism. To analyze international tourist arrivals on a monthly basis and to see correlations among monthly variables, this case was designed. Summary statistics for Case 3 is as follows:

Table 5.5. Case3: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	288	1708735	1253637	267658	5480502
Averincome (PPP, $)	288	28833.7	1405.1	25636.1	33139.4
turkprice (index)	288	77.0	14.8	39.5	104.0
comprice (index)	288	99.5	5.4	87.7	108.8
terrorism	288	8.6	14.9	0	130

Ordinary Least Squares first differencing method was used in this case. Since the time interval between observations was low, the lag of terrorism is used to account for the lag effect of terrorism on international tourist arrivals. Income variable and instability dummy are not varying from one month to another, therefore their effects may have reduced in the regression.

The regression results are shown in Table 5.6. The results show that only the income variable has a statistically significant explanatory power. The R-squared was also low as 0.01. Even there is no heteroskedasticity problem, robust standard errors were calculated instead of normal ones.

Table 5.6. Regression Results Case 3: Monthly Total International Tourist Arrivals

	Model 3 Monthly Basis
D.logaverincome	1.278**
	(2.47)
D.logturkprice	-0.436
	(-0.92)
D.logcomprice	2.667
	(0.99)
LD.instability	0.0140
	(0.22)
LD.terrorism	0.000855
	(0.53)
_cons	0.00694
	(0.38)
N	286
R^2	0.011

t statistics in parentheses
$^{*}p < .10$, $^{**}p < .05$, $^{***}p < .01$

There were trends in terrorism and tourism arrival variables and differencing made them more stationary. However, because of the monthly interval in the data, it was assumed that the

effect of terrorism could be felt after some period. Nonetheless, the regression results did not identify the effect of terrorist incidents and political instability on tourism arrivals in terms of statistical significance.

There was a positive correlation between terrorism and tourism in the level specification (without lag). Therefore, time-series techniques need to be used to find the exact relationship between these trending variables in future studies. However, the regression results still showed a positive correlation between income and arrivals.

5.4 Case 4: Monthly Arrivals by Nations

Monthly international tourist arrivals to Turkey were analyzed in this case. To investigate monthly data further and to have more observations, and to control for trend components this case was designed. The model was run in level specification instead of log transformation and fixed effect panel data estimation was used. Summary statistics for Case 4 is as follows:

Table 5.7. Case 4: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	26,136	12355.3	49456.7	0	842024
Income (PPP, $)	23,556	18085.1	20356.9	593.0	135318.8
turkprice (index)	26,136	89.1	7.2	70.4	104.0
comprice (index)	26,136	104.2	3.6	95.0	108.8
terrorism	26,136	12.2	19.2	0	130

Because of the time interval, the lag of terrorism variable was used. In addition, to eliminate monthly and yearly trend effects from the regression month dummies and yearly trend variable were used. Months are 12 in numbers and starts from January. The twelfth month, December, is omitted from the regression. The regression results are shown in Table 5.8.

The results show that competitor price, lag terrorism, and lag political instability had statistically significant explanatory power on the number of tourist arrivals. As expected all but competitor price had a negative sign in the regression results. Monthly dummies and yearly trend variable had significant explanatory powers. Moreover, the yearly trend was statistically significant and most of the month dummies had trend components. The results were not surprising since Case 3 showed that there are monthly trending variables in the regression specification.

Table 5.8. Regression Results Case 4: Monthly Arrivals by Nations

	Model 4 Monthly Nation Basis Fixed Effects
income	0.00637
	(0.08)
turkprice	-17.17*
	(-1.80)
comprice	211.7***
	(2.74)
L.terrorism	-26.42**
	(-2.07)
L.instability	-1593.6*
	(-1.95)
month1	-2622.1***
	(-4.34)
month2	-1240.4***
	(-3.96)
month3	1188.0
	(1.64)
month4	4073.4***
	(3.32)
month5	10187.8***
	(3.10)
month6	12470.1***
	(3.19)
month7	17587.8***
	(3.59)
month8	16100.3***
	(3.49)
month9	13179.1***
	(3.28)
month10	8804.9***
	(2.98)
month11	1356.9***
	(2.88)
yearly trend	530.4***
	(3.37)
_cons	-16433.3*
	(-1.68)
N	23377
R^2	0.052

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

The case 4 was tested against heteroskedasticity with Modified Wald test (Prob>chi2 = 0.0000) for groupwise heteroskedasticity in the fixed effect regression model and found that the model did not satisfy the homoskedasticity assumption. Wooldridge test for autocorrelation (Prob > F = 0.0000) in panel data showed that we reject the null hypothesis that there is no first-order autocorrelation. Therefore, robust standard errors clustered at nations level were used to correct for heteroskedasticity and autocorrelation problems.

5.5 Case 5: Arrivals at the City Level

This case analyzes the effects of the variables in a city-based yearly format. There are 81 cities in Turkey with different exposure levels to terrorism. In order to analyze and identify the effects of terrorism and political instability on important tourism cities (based on mean value of number of international arrivals) as Istanbul, Izmir, Antalya, Mugla, Aydin, and Nevsehir, this case is designed. The arrivals data was gathered from tourism establishments (Table 4.4). Summary statistics for Case 5 is as follows:

Table 5.9. Case 5: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	1,296	254179.3	1198714	0	14,400,000
Averincome (PPP, $)	1,296	29011.6	808.5	26753.6	30223.8
turkprice (index)	1,296	91.5	9.036968	72.4	106.7
comprice (index)	1,296	101.8	4.398231	94.92	106.9
terrorism	1,296	1.3	6.234025	0	86

Panel data first differencing technique was used in regression specification. First differencing removes individual factors and trend in the data. Basic OLS regression on differenced variables results in fixed effect panel regression technique. The regression was checked for the heteroskedasticity problem and found none. Nonetheless, robust with clustered standard errors were calculated due to the serial autocorrelation problem. The regression results are shown in Table 5.10.

The results show that only political instability had statistically significant effects on Turkish tourism arrivals in general. The results did not change even with lag of terrorist incidents were included. The effects of economic variables disappeared, which was not surprising since the data of income and prices did not vary from city to city. Some cities are not tourism cities and

some cities were not exposed to single terrorist incident; hence, it is important that important tourism cities are analyzed separately. Since the data is differenced the effects on important tourism cities could be found by regressing the same variables for important tourism cities.

Table 5.10. Regression Results Case 5: Arrivals at the City Level

	Model 5 City Based
D.logaverincome	1.015
	(1.42)
D.logturkprice	0.331
	(0.79)
D.logcomprice	-1.137
	(-1.00)
D.terrorism	-0.00124
	(-0.30)
LD.instability	-0.275***
	(-2.73)
_cons	0.105***
	(8.91)
N	1123
R^2	0.012

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

According to the mean value of arrivals by city, Ankara, Antalya, Aydin, Balikesir, Bursa, Denizli, Konya, Mugla, Nevsehir, Istanbul, and Izmir have over 100,000 tourist arrivals per year. The regression was run for these tourism cities and found that price level of products and services in Turkey and political instability affected international tourism arrivals to these cities (Table 5.11). The results did not change for political instability and terrorism variables, if lag of terrorism variable had been used in the regression. The sign of Turkish price level variable is positive instead of negative, which was surprising. There were no variations in price variables among cities, thus this result is questionable. Nonetheless, the results showed that lag of political instability variable in these two settings played major role in decreasing international tourism arrivals at the city level. The results are not surprising for terrorism variable due to nature of terrorist incidents in Turkey. Terrorists were targeting army bases and government buildings in Turkey, therefore terrorism had little effects on international tourism arrivals.

Case 5 was tested for the heteroskedasticity problem with Breusch-Pagan / Cook-Weisberg test (Prob > chi2 = 0.0000) and found that the model did not satisfy the homoskedasticity assumption. Wooldridge test for autocorrelation (Prob > F = 0.0000) in panel data showed that

there is a first-order serial correlation problem in the data. Therefore, robust standard errors with clustered errors at the panel id level were used to make standard errors robust to heteroskedasticity and serial correlation. According to Ramsey RESET test performed manually (Prob > F = 0.1372), there was not any misspecification in the model.

Table 5.11. Regression Results Case 5: Tourism Cities

	Model 5 Important Tourism Cities
D.logaverincome	-1.029
	(-1.13)
D.logturkprice	0.815*
	(2.07)
D.logcomprice	-1.263
	(-1.70)
D.terrorism	-0.000934
	(-0.34)
LD.instability	-0.717***
	(-6.53)
_cons	0.0687***
	(5.22)
N	154
R^2	0.312

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$
Note: According to mean value of arrivals tourism cities are Ankara, Antalya, Aydin, Balikesir, Bursa, Denizli, Konya, Mugla, Nevsehir, Istanbul, and Izmir

5.6 Case 6: Arrivals by Purpose

To identify the effects of terrorist incidents and political instability on visitors with different purposes this case was performed. According to UNWTO (2008), classification of tourism trips based on the main purposes are holidays, leisure and recreation, visiting friends and relatives, education and training, health and medical care, religion/pilgrimages, shopping, transit, other, business and professional. Share of each classification in total departures are shown in Table 5.12.

Since "other" classification is ambiguous, it is excluded from analysis. In addition, "Religion/pilgrimages" classification is also excluded from analysis due to its low share in total arrivals. The case was analyzed with differencing the variables. Yearly trend variable was used to account for change concerning time. Due to short duration between observations, lag of terrorist incidents was used. The regression results are shown in Table 5.13.

Table 5.12. Composition of Arrivals by Purpose of Visit to Turkey, 2003-2017

Purpose of Visit	Share in Total Departures
Travel, entertainment, sportive	0.60
Accompanying persons	0.14
Visiting friends and relatives	0.09
Business, conferences, meetings	0.07
Shopping	0.04
Education and training	0.01
Health or medical reasons	0.01
Transit	0.01
Religion/pilgrimages	0.00
Other	0.03
Data source: TURKSTAT Tourism Statistics/Departing visitor statistics/Foreign and Visitors by Purpose of Visit	

According to the results, political instability only effected tourists with shopping purpose negatively. In all cases terrorist incidents did not affected international tourism arrivals statistically. Interestingly, the sign of competitor prices is negative for tourists with shopping and business purposes. The decrease in price of products and services in Turkey seemed to increase international tourism arrivals only in business purpose case. Aside from these implications, the results are not meaningful for other cases. These results did not reflect demand estimation. It is understood that this setting is not a good case to identify effects of terrorist incidents and political instability on international tourism arrivals by purpose of visit.

Table 5.13. Regression Results Case 6: Arrivals by Purpose of Visit

	(1) Travel, entertainment, sportive	(2) Accompanying persons	(3) Visiting friends and relatives	(4) Business, conferences, meetings	(5) Shopping	(6) Education and training	(7) Health or medical reasons
D.logaverincome	11353189.5	-3563298.8	-1292508.4	5.582	-207040.7	8.786	-0.0879
	(0.62)	(-0.60)	(-0.58)	(0.90)	(-0.14)	(0.82)	(-0.02)
D.logquartturkprice	14074576.1*	6704951.5*	-35125.9	-6.530**	-396744.4	1.392	0.734
	(1.93)	(1.73)	(-0.04)	(-2.10)	(-1.21)	(0.50)	(0.28)
D.logquartcomprice	-16488688.6	10038369.0	6730710.2	-27.35***	-1694636.5*	-2.775	6.069
	(-0.48)	(0.66)	(1.60)	(-2.72)	(-2.00)	(-0.35)	(0.51)
LD.instability	1545155.8	317241.9	84089.6	-0.205	-188654.5***	1.164*	-0.118
	(0.63)	(0.78)	(0.16)	(-0.70)	(-5.14)	(1.83)	(-0.82)
LD.quartterrorism	-7719.5	313.2	-382.7	0.000850	405.3*	-0.000953	0.00196
	(-0.69)	(0.11)	(-0.35)	(0.32)	(1.84)	(-0.44)	(1.50)
yearly trend	20508.3	25347.1	6826.7	-0.0450	-2992.4	0.00512	0.0112
	(0.21)	(0.46)	(0.36)	(-1.13)	(-0.95)	(0.14)	(0.30)
_cons	-70311.6	-212240.5	-46309.6	0.391	26827.9	-0.0127	-0.0788
	(-0.09)	(-0.49)	(-0.36)	(1.07)	(0.87)	(-0.04)	(-0.22)
N	58	58	58	58	58	58	58
R^2	0.073	0.044	0.036	0.228	0.093	0.057	0.029

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

Case 6 was checked for heteroskedasticity and first order correlation problems. According to Breusch-Pagan / Cook-Weisberg tests (Prob > chi2 = 0.8600, 0.5103, 0.0016, 0.9615, 0.8699, 0.3200, and 0.2203), the model has heteroskedasticity problem. On the other hand, Durbin-Watson tests showed that there is no first-order autocorrelation. Therefore, our level model with robust standard errors was justified. Ramsey RESET tests showed that on average the model does not have misspecification problem.

5.7 Case 7: Turkey, Tunisia and Egypt comparison and analysis

To explore the extend to the results from the Turkish case also hold in Tunisia and Egypt which have similar challenges with terrorism/political instability, this case was performed. With this case, the sensitivity of international tourist arrivals to terrorism and political instability in different countries was analyzed. Summary statistics for Case 7 is as follows:

Table 5.14 Case 7: Cumulative Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
arrivals	68	11,700,000	9,202,049	3,133,461	36,800,000
Averincome (PPP, $)	68	28,727.6	3,013.8	19,857.9	33,371.5
price (index)	68	106.8	26.1	58.6	168.1
comprice (index)	68	97.5	6.6	82.9	107.7
terrorism	68	62.1	130.5	0	647.0

The case 7 has two specifications. In model 7.1, first differencing pooled OLS technique was used including country dummy variables for Tunisia and Turkey with robust standard errors. Model 7.2 includes analysis of each country on its own specification. The regression results for pooled OLS are shown in Table 5.15.

The pooled OLS regression result shows that only income has statistically significant explanatory power in tourism demand. Income affected international tourism arrivals positively. However, when a lag of terrorism is considered, terrorist incidents became important in explaining a decrease in international tourism arrivals. Therefore, it is understood that Turkish case cannot be generalized to international tourism arrivals to Egypt and Tunisia and these countries need to be analyzed separately.

Table 5.15. Regression Results Case 7: Pooled Country Analysis

	(1) Pooled OLS Turkey, Egypt, Tunisia	(2) Pooled OLS Turkey, Egypt, Tunisia (Lagterrorism)
dlogaverincome	1.042	1.036*
	(2.61)	(2.97)
dlogprice	0.211	0.0915
	(1.72)	(0.97)
dlogcomprice	0.657	-0.161
	(0.66)	(-0.22)
dterrorism	-0.000357	
	(-0.80)	
dlpoliticalinstability	-0.0603	-0.0141
	(-0.47)	(-0.12)
Tunisia	0	0
	(.)	(.)
Egypt	-0.0200	-0.00331
	(-2.05)	(-0.39)
Turkey	0.0349**	0.0443**
	(5.60)	(6.78)
dlterrorism		-0.000718
		(-2.62)
_cons	0.0343***	0.0364**
	(14.81)	(9.11)
N	62	62
R^2	0.267	0.311

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

Egypt and Tunisia were analyzed according to the model 7.2 separately. For Tunisia, income of the tourists, the price of products and services in Tunisia, and political instability significantly affected potential tourism arrivals for this country (Table 5.17). An increase in the price of the services and goods in Tunisia adversely affected tourism demand, whereas an increase in income positively affected Tunisian tourism demand. A one percent increase in overall income of tourists increases international tourism arrivals in Tunisia by 0.5%. A political instability year in Tunisia decreased international arrivals by about 6%. The model was also run with lag of terrorist incidents variable. According to the results, there is no first lag effect of terrorist incidents on tourism arrivals.

Table 5.16 Regression Results Case 7: Tunisia

	(1) First Difference Tunisia	(2) Tunisia (Lagterrorism)
dlogaverincome	0.520**	0.593***
	(2.71)	(3.38)
dlogprice	-2.250**	-2.225***
	(-2.87)	(-3.27)
dlogcomprice	0.965	0.758
	(1.34)	(1.09)
dterrorism	-0.00377	
	(-1.68)	
dlpoliticalinstability	-0.170***	-0.119***
	(-3.83)	(-2.99)
dlterrorism		0.00151
		(1.38)
_cons	-0.0183	-0.0179
	(-0.70)	(-0.74)
N	21	21
R^2	0.764	0.748

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

Egypt was analyzed with first differenced OLS method (Table 5.18). The model was also run with lag of terrorist incidents variable. It is understood that lag of terrorist incidents has explanatory power in Egypt case. This result assured the pooled OLS results. Since Egypt was included in the regression, the lag of terrorist incidents became important for pooled regression setting.

For Egypt, income, lag of terrorism, and political instability affected tourism demand. Interestingly, lag of political instability did not have explanatory power in Egypt case. Increase in income of the tourists by 1% increased international tourism arrivals by 2%. A political instability year in Egypt decreased international tourism arrivals by 40% while an increase in terrorist incidents by 10 decreased international arrivals by 1%. The impact of instability is also the highest in Egypt case.

Table 5.17. Regression Results Case 7: Egypt

	(1) First Difference Egypt	(2) Egypt (Lagterrorism)
dlogaverincome	3.111***	2.069**
	(3.02)	(2.37)
dlogprice	0.313	-0.134
	(0.82)	(-0.41)
dlogcomprice	5.348*	0.834
	(2.08)	(0.30)
dterrorism	0.000309	
	(0.56)	
dpoliticalinstability	-0.162***	-0.435***
	(-5.69)	(-4.14)
dlterrorism		-0.00175***
		(-3.19)
_cons	-0.0238	0.0548
	(-0.50)	(1.19)
N	21	20
R^2	0.525	0.693

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

For Tunisia and Egypt, data have heteroskedasticity problems as in Turkish case, therefore robust standard errors were calculated in each setting along with differencing the data.

To sum, it is understood that each country should be evaluated in its own environment. Nonetheless, according to each country analysis, political instability (lag of political instability in some cases) played major role in international tourism arrivals decrease. Income had explanatory power in all cases. Terrorist incidents had explanatory power in Turkish (low) and Egypt cases. Regarding price variables, competitor prices has explanatory power in only Tunisian case. Therefore, it can be maintained that tourism demand estimation holds for each country in their specific environment.

In this context, policy makers in these countries can propose law requiring higher punishments to terrorist or requiring higher observation mechanisms as security cameras to prevent such incidents. In addition, policy makers need to concentrate on after crisis promotion activities. They need to include safety dimension while planning promotion campaigns, such that the political instability period has ended, and it is safe to visit their country.

6 Conclusion and Discussion

The tourism industry is a crucial sector for many Middle Eastern Countries due to its aspect of decreasing current account deficit. Some of the countries in the region depend heavily on tourism income for their economy while others are only getting partial benefits. In the Middle East and East Europe regions, Turkey, Egypt, and Tunisia had been performing well in terms of yearly increase in international tourist arrivals until 2010. However, there were sudden decreases in international tourist arrivals after the first year of political instabilities in each of the three countries. In addition, the incidents of terrorism also increased in these countries, especially after periods of political instability. Between 2015-2016, there were bombings, armed conflicts and protests, and increased terrorist activities in Turkey which were attributable to FETO. In addition to disturbed inter-country relations between Turkey and Russia and Turkey and the USA, the political instability generated by FETO's attempt to take down the government damaged the overall economy.

The negative effect of terrorism and political instability on international tourist arrivals in Turkey could easily be seen in a graphical setting. The downward trend in international arrivals in 2014 could be attributable to cyclical trends in international tourism. However, incidences of terrorist activities were higher in 2012 than in 2014. Therefore, the reason for the downward trend in 2014 may not be attributable to terrorist incidents. Thus, a regression setting is needed to control for political instability and terrorism.

There was also a disturbance in international tourist arrivals in Egypt after 2010. Protests began in January 2011 and lasted until a stable government was formed in 2014. These three years of political turmoil in Egypt proved damaging for the country's economy, including tourism. Terrorist activities in Egypt also increased during this period of political instability until incidences of terrorism peaked in 2015. However, the decrease in international tourist arrivals was not high in 2015, indicating that terrorism may not have had a strong effect on Egyptian tourism during this time. As a result, it can be maintained that political instability played a major role in decreasing international tourist arrivals to Egypt.

After 2010, there was a volatile trend in Tunisia's international tourist arrivals. There was a sharp decrease in the number of arrivals in the first year of political instability in Tunisia. The first protests came at the end of 2010 and political instability lasted the following 2 years, during

which time the Tunisian economy suffered. There may be a relationship between lag of terrorist incidents and international tourist arrivals in the case of Tunisia, as incidences of terrorism increased after the period of political instability ended. A simple one-dimensional analysis is not enough to conclude whether terrorism or political instability affected international tourist arrivals in Tunisia. Therefore, the case should be empirically analyzed in a regression format.

Analysis of determinants of tourism varies with empirical studies in the literature. The economic independent variables most commonly used in the literature were GDP per capita (to capture the income of the tourists), price index, exchange rate, and competitor price index. However, as argued in the literature the exchange rate and a relative price proxy should not enter the tourism demand model separately, but rather be combined as a single unit. Therefore, a weighted price index (REER, taking into account the exchange rate) to capture the elasticity of demand to the price and competitor prices were used in this study. With regards to non-economic determinants, special events, economic crises, disasters, wars, conflicts, political instability, and terrorism were the main variables included in the literature. Nonetheless, most of the existing literature focused on analyzing only one non-economic factor and the studies which take into account more than one country and at least two non-economic factors are almost non-existent. Therefore, this study focused on the effects of political instability and terrorism, in addition to commonly assessed economic factors, on Turkish, Egyptian, and Tunisian international tourist arrivals in order to fill these gaps in the literature.

The study included seven cases, six of which focused on Turkish tourism. The regression methods were simple Ordinary Least Squares with a robust option, panel data fixed effects estimation, and first difference estimation. The results of the Turkish cases show that income has explanatory power in international tourist arrivals in some cases. As expected, when the setting did not have a variation of income from one observation to another, the effect of income disappeared from the results. This result parallels that of Martins, Gan, Ferreira-Lopes (2017) who found that an increase in world per capita GDP boosted the number of tourism arrivals.

Regarding price and competitor price, the results vary case by case. Nonetheless, the results usually followed a demand estimation result. The results showed that an increase in price of goods and services in Turkey decreased international tourism arrivals while an increase in competitor prices increased international tourism arrivals. These findings are in line with the works of Uysal

and Crompton (1984), Forsyth and Rao (2002), Salman, Shukur, Bergmann-Winberg (2008), Cheng, Kim and Thomson (2013), De Vita and Kyaw (2013), Kilic and Bayar (2014) Dwyer, Agiomirgianaki, Serenis and Tsounis (2014), Martins, Gan, Ferreira-Lopes (2017), which indicate that price or exchange rates affect tourism arrivals. On the other hand, these results are partly in contrast with the results of Dincer, Istanbullu Dincer and Ustaoglu (2015) which did not find the long-term effect of REER on tourism revenues.

Regarding political instability and terrorism variables in Turkish cases, terrorism had explanatory power in international tourist arrivals in some cases but the magnitude of decrease in international tourism arrivals due to incidences of terrorism is low. This result is not surprising given that most acts of terrorism in Turkey have targeted army bases and government buildings. Political instability, on the other hand, had a significant negative effect on international tourist arrivals in almost every case.

Overall, these findings are in line with those of Morakabati and Beavis (2017), Liu and Pratt (2017) and Yaya (2009). Morakabati and Beavis showed that there is no consistent disturbance from a well-fitted time series of monthly international arrivals created by a terrorist attack. In their analysis of 95 countries, Liu and Pratt (2017) found that long-term effects of terrorism on tourism do not exist and short-term effects on international tourism are quite small. Additionally, the results strongly align with those of Yaya (2009) who showed that the impact of terrorism on tourism was negative but small. He also found and maintained that terrorist attacks in continental Europe and the US as well as an active war in the neighboring country had no effects on tourism in Turkey.

To explore the extent to which results from Case 1 hold in other countries in the region with important tourism economies and similar political climates, Egypt and Tunisia were also analyzed. According to results of pooled Ordinary Least Squares, only income and terrorism(low) had explanatory powers in international tourist arrivals. These results were not expected, thus, the importance of analyzing each country on an individual basis was realized. The separate analysis of each country showed that an increase in income of tourists positively affected international tourist arrivals for all countries. An increase in the country's own price negatively affected tourism only in the case of Tunisia where the number of international tourist arrivals decreased. Competitor prices did not have explanatory power in the cross-country case. Incidences of terrorism had

negative effects in the cases of Egypt (high) and Turkey (low), while political instability affected all three countries negatively in terms of international tourist arrivals. These results confirm that political instability damaged tourism industries in these countries.

The results of this study confirm findings from existing literature (Uysal and Crompton 1984, Forsyth and Rao 2002, Salman, Shukur, Bergmann-Winberg 2008, Yaya 2009, Cheng, Kim and Thomson 2013, De Vita and Kyaw 2013, Kilic and Bayar 2014, Dwyer, Agiomirgianaki, Serenis and Tsounis 2014, Martins, Gan, Ferreira-Lopes 2017, Morakabati and Beavis 2017, Liu and Pratt 2017). Nonetheless, there was no previously published study focusing on the effects of political instability and terrorist incidents on the Turkish tourism industry. The major contribution of this study is the analysis of these factors in Turkey. In addition, studies analyzing more than two countries with two context variables were limited. This study, therefore, contributed to existing literature by maintaining that political instability harmed international tourism and each country should be analyzed in its specific environment.

The results of the study imply that policymakers need to focus on making tourism industries more resilient to negative contexts. This could be done by increasing security precautions and building strong prevention mechanisms for terrorism and other acts of violence. Ensuring democracy within the country would help reduce the occurrence of political instability. The period of political instability and terrorism between 2015 and 2016 harmed international tourism arrivals in Turkey. As a result, policymakers should focus on after crisis promotion activities. Such promotion activities should target safety issues, ensuring tourists that the conflict has ended, and Turkey is a safe place to visit. The promotion campaign could be prepared by the Ministry of Culture and Tourism of Turkey or Association of Tourism Agencies. The resulting safety messages could then be delivered via ambassador channels or via tourism package dealers and other tourism agencies. In addition, Turkey seems to have underperformed in terms of tourism receipts. This indicates an area of improvement in the Turkish tourism industry and should be regarded when planning and implementing new tourism policies. While preparing a tourism plan or policy, policymakers need also consider developing value-added services targeting high income tourism originating countries to get higher receipts and benefits from tourism.

6.1 Study Limitations

There are three main limitations to the study. The first is the availability of data across time. As the data covers a limited period after the incidents happened, the resulting model may prove problematic. Another limitation is related to the completeness and depth of terrorism data. Since the data is gathered by a non-government organization, its dependability could be questioned. However, the data is the best available and contains nearly all terrorism cases in Turkey and the MENA region. Lastly, the income variable, GDP per capita, was used as a general measure of real income. This could also be questioned as it may not perfectly reflect the income of the international tourists visiting Turkey. However, this approach is generally a good approximation as the income calculation is based on the average income of the people who visited Turkey, Egypt, and Tunisia.

It is important to mention that there are other factors and variables that can influence the number of international tourist arrivals. Due to competition from increasing numbers of tourism providers, prices of tourism services may have decreased and in turn increased the number of arrivals. The visa facilities between Turkey and European countries may have also affected the decisions of tourists coming from Germany and Netherlands, which was not considered in the study.

6.2 Suggestions for Future Research

Given that the period of political instability in Turkey ended fairly recently, the observation frame is relatively small. Therefore, the addition of more observations in the future will help the analyzer perform different analyses such as synthetic control methods and event analysis. International arrivals to Turkey can be re-examined with new data in upcoming periods. International arrivals data have monthly and yearly trend components. Terrorism data also has a monthly trend component. Therefore, additional analysis, such as a causality test, is needed to identify the relationship between terrorism and tourism which can also determine appropriate lag periods if they exist. Other factors which may explain tourism demand such as visa facilities, number of tourism agencies, and distance between origin and destination countries should also be considered in future studies.

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APPENDIX

Appendix A. Tourism Originating Countries Regression Results

	(1) Germany	(2) Russian Federation	(3) United Kingdom	(4) Bulgaria	(5) Iran
D.logincome	0.129	-0.596	-0.923	0.399	3.407**
	(0.11)	(-0.50)	(-1.19)	(0.29)	(2.54)
D.logturkprice	0.0307	0.233	0.720***	0.324	0.0987
	(0.06)	(0.80)	(4.24)	(0.49)	(0.19)
D.logcomprice	1.172	-7.528**	1.421*	-0.787	-1.359
	(0.79)	(-2.24)	(2.08)	(-0.47)	(-0.74)
D.terrorism	-0.000241	-0.00190**	-0.000320**	-0.0000557	-0.0000447
	(-0.71)	(-2.82)	(-2.22)	(-0.23)	(-0.13)
LD.instability	-0.330**	-1.730***	-0.312***	-0.215**	-0.505***
	(-2.89)	(-8.24)	(-5.82)	(-2.21)	(-3.00)
_cons	0.0473	0.205**	0.0541***	0.103**	0.0447
	(1.15)	(2.64)	(3.09)	(2.12)	(1.02)
N	22	19	22	22	22
R^2	0.221	0.876	0.686	0.092	0.470

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

	(1) Netherlands	(2) Georgia	(3) France	(4) United States	(5) Greece
D.logincome	-0.733	1.144	2.819	5.064	-0.182
	(-0.26)	(1.01)	(0.85)	(1.65)	(-0.19)
D.logturkprice	0.377	0.276	0.0603	-0.128	1.002**
	(0.43)	(0.65)	(0.14)	(-0.17)	(2.89)
D.logcomprice	1.323	3.712**	3.975***	5.549***	-1.027
	(0.71)	(2.21)	(4.21)	(2.92)	(-0.63)
D.terrorism	-0.000406	-0.000458	-0.000914***	-0.000186	-0.000298
	(-1.14)	(-1.51)	(-2.99)	(-1.02)	(-1.25)
LD.instability	-0.261*	0.266**	-0.180*	-0.278**	-0.292***
	(-1.90)	(2.17)	(-1.93)	(-2.33)	(-3.02)
_cons	0.0795	0.0645	0.0148	-0.0580	0.0657*
	(1.71)	(0.97)	(0.72)	(-0.92)	(1.82)
N	22	19	22	22	22
R^2	0.171	0.320	0.483	0.554	0.365

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

Appendix A (continued)

	(1) Ukraine	(2) Belgium	(3) Italy	(4) Austria	(5) Azerbaijan
D.logincome	1.068**	3.775	4.094	-1.207	-0.203
	(2.40)	(1.31)	(1.08)	(-0.35)	(-0.47)
D.logturkprice	0.435	-0.00790	-0.0439	0.445	0.580
	(1.74)	(-0.02)	(-0.05)	(0.64)	(1.53)
D.logcomprice	-0.223	2.528**	6.160*	1.370	-0.732
	(-0.14)	(2.68)	(2.08)	(0.57)	(-0.62)
D.terrorism	-0.000175	-0.000526**	-0.00150**	-0.000638	-0.000424**
	(-0.50)	(-2.23)	(-2.23)	(-1.34)	(-2.17)
LD.instability	0.323***	-0.292***	-0.509*	-0.344**	-0.0817
	(3.04)	(-3.79)	(-1.98)	(-2.38)	(-1.42)
_cons	0.0610	0.0279	0.0388	0.0466	0.112*
	(1.68)	(1.30)	(0.45)	(1.38)	(2.08)
N	19	22	22	22	19
R^2	0.577	0.470	0.387	0.204	0.239

t statistics in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$