The economic consequences of political upheavals: the case of the Arab Spring and international tourism

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April 26, 2016

Abstract

Political turmoil has negative repercussions on economic development. In this paper we provide evidence on how the great political shock known as the 'Arab Spring' (AS), which occurred in 2011, has affected international tourist arrivals. We use a gravity model of tourism flows to ascertain to what extent inflows of tourists from the rest of the world changed before and after the political upheaval once we condition bilateral tourism demand on a wide range of observed and unobserved shocks. We find that foreign tourists' demand to travel to countries experiencing 'Arab Spring' episodes was sharply reduced and that the AS magnified other extenuating shocks. We also find evidence of two different spillover effects: a contagion to other Arab countries that did not experience AS episodes, or if they did, on a minor scale, and a substitution effect in other competitor countries. We also find that these results are not due to the rise of terrorism in those countries after the 'Arab Spring.' We quantify that tourism losses due to the AS produced annual decreases in GDP ranging from 0.5 to 2.9 percent.

Keywords: political stability, terrorism, international tourism, gravity model, growth.
JEL codes: F14, F51, H12, O11.

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1   Introduction

In 2011, some Arab countries from the Middle East and North Africa (MENA) region became involved in episodes of political turmoil after experiencing a revolutionary wave of spontaneous demonstrations followed by widespread violent and non-violent protests. In some countries, civilian protests produced immediate political changes, and rulers were forced to resign from power. This was the case in Tunisia, Egypt, Libya, and Yemen. In other countries, civilian protests broke out or occurred on a minor scale. In the case of Syria, the government severely responded to disputes with harsh security measures and military operations. These episodes of the so-called 'Arab Spring' mark the end of a long period of political stability in the region.

In this paper, we assess the effects of the Arab Spring (AS hereafter) on international tourism inflows. Tourism is a source of direct employment and income for recipient countries as well as a source of service exports that can provide access to foreign currency reserves and even relax foreign exchange restrictions. Since the 70s, many Arab countries in the Mediterranean area focused their economic development on the tourism sector. Their goal was to foster the creation of jobs in the service sector and to attract foreign investment. Many tourist resorts were created, and tour-operators offered package holidays to attract international visitors. The development of the tourism industry was a success; it captured significant market share from European seaside tourism, as well as contributed to the socioeconomic development of vast coastal regions. Indeed, many Arab countries, including the ones that experienced AS episodes, such as Egypt, Libya, Syria, and Tunisia, recorded sizable growth rates since the 2000s. However, this trend was abruptly halted in early 2011, with the AS upheavals.

The instability created by the AS caused a shortage of financial resources, and thus, significant damage to the tourism sector and the loss of thousands of jobs. So, the AS actually aggravated the socioeconomic situation that motivated it. According to the World Travel and Tourism Council (WTTC), in 2010, just before the outbreak of the AS, the direct contribution of the tourism sector to GDP was 8.6% in Tunisia, 8.2% in Egypt, 8.2% in Syria, and 4.0% in Yemen. Countries like Tunisia and Egypt are well known tourist destinations, offering a large number of hotel beds and infrastructure for international visitors. Due to the relevance of the tourism sector in these economies, it is expected that a sudden stop of international tourist arrivals will have a large effect on the domestic economy, and therefore, exploring the impact of the AS on international tourism flows is a question of major interest.

We conduct an empirical study to estimate the effect of the AS events on tourism by using a gravity model of bilateral tourism flows. Our strategy is to identify the AS effect using a before and after comparison that considers observed and unobserved characteristics of both origin and destination countries as well as other macroeconomic shocks that might determine tourist inflows. An advantage of this methodology is that it allows us to simultaneously control for other possible shocks that affect tourism demand either at the destination, the origin country, or a particular destination-origin pair.

There is a long standing corpus of literature focused on studying the effects of political stability on economic outcomes (e.g. Alesina and Perotti 1996). Some papers have found that countries with a high propensity to experience government collapses tend to grow at lower rates

(i.e. Alesina, Özler, Roubini, and Swagel 1996, Barro 1991). Although lowered investment is the mechanism through which unstable political environments affect growth, there are other immediate channels that directly affect product demand such as a reduction in the number visitors, which, at the end of the day, contributes to a lower investment return in an industry open to foreign direct investment. And both visitors and foreign investors base decisions on their respective perceived uncertainties regarding political changes. Such changes could produce new policies and new institutions that might encourage businesses to leave and a lower number of tourists to visit. For instance, focusing on the effects on tourism, increasing uncertainty may generate personal safety fears when visiting the afflicted country which could possibly be related to a loss of trust in institutions such as the police or to a surge in criminal activity.

Uprisings against governments might also have long lasting effects on economic outcomes if political uncertainty produces further political instability. When AS episodes have led to immediate government collapses, periods of high political change have followed. More precisely, in some countries, underlying territorial or ethnic disputes have reemerged with renewed force (e.g., Libya, Syria, and Yemen) and in other cases have given way to a transition period underscored by political struggles aimed at establishing a new regime (e.g., Tunisia and Egypt). Furthermore, political stability is affected by economic outcomes; this means that other political conflicts might emerge due to the deteriorated economic environment caused by the original political instability. This reverse causality can lead to persistent conflict.

Only a few papers have addressed the issue of the effects of political instability on tourism. Neumayer (2004) presents evidence that several forms of political violence, such as human rights violations or politically motivated violent events, deter tourism arrivals. Saha and Yap (2014) have shown that political instability and terrorism reduce tourism development, although the effect of the former is stronger than the latter. Methodologically, these papers are similar as they employ broad measures of political variables in a cross-country panel analysis. Our approach is different to the existing literature because we are able to identify the time at which a specific political shock took place, and therefore, we can carry out an exhaustive comparison of changes in tourism demand before and after the substantial political episode occurred. As outlined before, a major advantage of our approach is that the gravity model allows us to consider a demand function with a high level of parameter heterogeneity. For example, we are able to control for other possible shocks that occurred concurrently in the origin and destination countries that likely affected tourism demand. Some of these shocks are observable, such as changes in the GDP, while others are non-observable, such as idiosyncratic perceptions of risk at origin countries –which is a demand shifter– or aggregate shocks affecting the world economy (e.g., rising food prices).

Our paper also focuses on the spillover effects of the AS episodes in other countries in and around the geographic boundaries of the MENA region. We distinguish two types of spillover effects. In the first, we presume that the AS events will affect other Arab countries that did not experience political instability episodes.[1] This contagion is likely occurring when tourists

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[1] Neumayer (2004) also finds evidence that political violence produces negative intraregional spillovers on tourism inflows.

at origin countries travel less to other Arab countries not affected, or only mildly affected, by the AS. Under the second effect, alternative destinations with similar characteristics, but in a more stable state, might experience an increase in tourist arrivals that are diverted from Arab countries. This substitution or competition effect occurs when competitor countries absorb the tourism flows displaced from the Arab countries due to the AS. In this sense, one can expect either contagion or substitution effects on third countries caused by the AS. Later, we discuss in which scenarios tourists are more likely to change their vacation destination based on the type of information they are able to collect and their risk aversion.

We find that the conditional effect of the AS on tourism inflows are well defined under various model assumptions such as the timing of the impact of the AS on tourism or the impact on competitor countries. Moreover, results are robust to alternative estimation methods. The effect is highly persistent over time, meaning that tourism losses are of a similar magnitude two years after the beginning of the political episodes. Analyzing effects by country, we find that the AS has a similar impact on the four countries used in the analysis. With respect to spillover, we find that some Arab tourism destinations in the region that did not experience AS events also had tourism losses, while the AS did not have an impact, or even a positive effect, on other Arab competitors. These facts highlight the ability of some governments to contain protests and to differentiate their countries as 'safe' tourism destinations. Similarly, some non-Arab Mediterranean countries have experienced increases in inbound tourism after the AS. This result might help us to identify substitution effects on the tourist's destination choice. Finally, we check the robustness of our results to the inclusion of terrorism in the models, as other papers have done previously.[2] Since terrorism is another likely consequence of political instability that has confounding effects on tourism, we deal with it by adding a variable to our original analysis that captures the intensity of terrorism in each tourism destination country. The results show that terrorism reduces tourist arrivals, but the AS effect remains the same. This suggests that recent episodes of political instability and terrorism are somehow interrelated, but the effect of the AS on the tourism sector is greater than the effect caused by the increase in terrorism. As far as we know, this is the first attempt to quantify the size of the impact of the AS on inbound tourism flows.

The paper is organized as follows. In section 2, we describe the Arab Spring episodes. In section 2.2, we discuss the structure of tourism inflows in the sample of Arab countries most affected by the AS events as well as the structure in other countries of interest before and after the AS events. In section 3, we present the benchmark model, and in section 4, we discuss the results. In section 5, we quantify tourism losses in terms of GDP. Finally, in section 6, we conclude.

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[2]There is a long standing body of literature dealing with the effects of terrorism on tourism. To cite some Araña and León (2008), Feridun (2011), Fletcher and Morakabati (2008), or Llorca-Vivero (2008).

2 The Arab Spring

As with most episodes involving political instability, the AS outbreak in 2011 had immediate consequences for economic activities in the affected countries. In this section, we provide a summary of what happened in the four countries most severely affected by the AS. We emphasize the role played by unconventional media to transmit news that would otherwise have been manipulated by news agencies and the mainstream media. The perception of political instability significantly reduced the arrival of foreign visitors to these countries. We detail how inbound tourism was affected by these episodes, describing the changes in tourism arrivals to these countries and the roles played by the largest tourist-origin markets.

2.1 Basic facts

On December 18, 2010, Mohamed Bouazizi, a young street vendor, set himself on fire in protest against police abuse in Tunisia. This isolated event triggered a wave of popular upheavals that led to the fall of the government and the subsequent resignation of the Tunisian president on January 14, 2011, after ruling the country for 23 years. The protests were preceded by widespread social unrest caused by high unemployment, rising food prices, political corruption, and lack of political freedom. The Tunisian revolution inspired further popular upheavals in the Arab world throughout 2011, which gave rise to the phenomenon known as the 'Arab Spring.'

Demands for greater freedom of speech and more political freedom were made by young demonstrators in countries like Egypt, Libya, Syria, and Yemen. In Tunisia and Egypt protests ended up with the ousting of their long-standing presidents, Zeni El Abidine Ben Ali and Hosni Mubarak, respectively. The government depositions were not intended to introduce democracy, but rather force out regimes that had failed to respond to the basic needs of society. However, they produced a period of great political uncertainty. Moreover, whilst the Tunisian revolution ended by June 2012, more violent responses occurred in Libya and Syria which resulted in the removal of Libyan dictator Colonel Gaddafi and in a civil war in Syria.[3] Similar protests in Yemen caused Ali Abdullah Saleh to resign after a 33-year rule. A new government was elected in 2012, and it was headed by the former vice president. However, during this period, ethnic struggles to control northwestern territories turned into a military conflict against the newly elected government, and foreign countries have since intervened.

Initially, the protests used different methods of civilian resistance including strikes, marches, and meetings in addition to using social media to organize and communicate. Social media was mostly used by the younger generations of Arab people and was very effective in the Tunisian and Egyptian revolutions. Importantly, the fact that the Arab Spring was broadcasted across social networks made its global reach even greater than if the news had been transmitted by the conventional press.[4] This is perhaps the most appealing feature of the Arab awakening and

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[3]In Libya, Gaddafi's government did not hesitate to aggressively use military force to repress peaceful street protests. This allowed for NATO's military forces to intervene in order to protect civilians and living areas via a UN authorization. In mid-2011, the Gaddafi regime was replaced by a transitional government. After elections in mid-2014, a new cabinet was created which was not recognized by rival groups.

[4]International organizations find that freedom of the press is highly constrained in the MENA region (see UNESCO 2014). For instance, Freedom-House (2015) classifies only one out of 19 MENA countries as being a

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definitively helps to explain why similar political claims were adopted simultaneously by other Arab countries in the MENA region.

The consequences of outbreaks in other countries in the region were far more limited, but not negligible. Most governments in Arab countries faced demonstrations and popular unrest of varying intensities, and governments typically responded with a mix of offering concessions and the use of force. In other countries, a number of leaders declared their intent to resign at the end of their current terms. For instance, the president of Sudan and the Iraqi prime minister announced that they would not run in the next elections, while the disorder in Kuwait resulted in the resignation of their prime minister's cabinet.[5]

The power of social media and modern information and communication technologies not only helped to spread the so called Arab Spring revolutions to other countries, but also to make them visible to the rest of the world. Most Arab citizens became journalists when using Twitter and other Internet platforms to transmit information challenging the mainstream media. In Western countries, the perceived existence of political conflicts by potential tourists was amplified by the same mechanisms that allowed the protests to spread successfully to other Arab countries. The fear of conflict persuaded many foreign tourists not to travel to those countries most severely affected by the political upheavals. What is more, if violence becomes more widespread and prolonged, official authorities will recommend abstaining from traveling to those countries, and tour operators will remove travel offers to the country due to insufficient bookings and the fear of liability suits. They might even opt to promote alternative destinations.

As a result of the political unrest, economic activity suffered with differing levels of intensity in each country. This in turn led to large drops in GDP growth rates, as can we see in Figure 1. Egypt experienced a significant slowdown, where the growth rate went from 5.2% in 2010, to 1.8% in 2011, and continued decreasing trough 2013. The rest of the economies affected by the Arab Spring suffered sharp economy-wide contractions with negative growth rates in 2011, but which, depending on the country, recovered at different rates in the following years. Again, it is worthwhile to mention the special case of Syria: after 2011, the country became involved in a years-long internal conflict.

2.2 Tourism inflows and the Arab Spring

In this section, we describe the basic structure of the tourism inflows for a sample of Arab countries that were strongly affected by the AS events, but we also look at other Arab and non-Arab countries of interest. Tourism data is taken from the World Tourism Organization (UN-WTO) and covers the years from 2008 to 2013. That is, we limited the sample period to cover the three years before and after the AS. The dataset includes data on tourist arrivals to 160 destination countries from 183 origin countries. Destination countries are classified into four groups: i) Arab Spring countries (AS), the countries most affected by the AS and for which tourism data is available (Egypt, Syria, Tunisia, and Yemen); ii) Arab competitors without AS

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free press country, meaning that 93% of the population in the region live under regimes without freedom of the press.

[5]Lieutenant Colonel El Hassane Aissa (2012). The Arab Spring: Causes, Consequences, and Implications. Strategy Research Project.
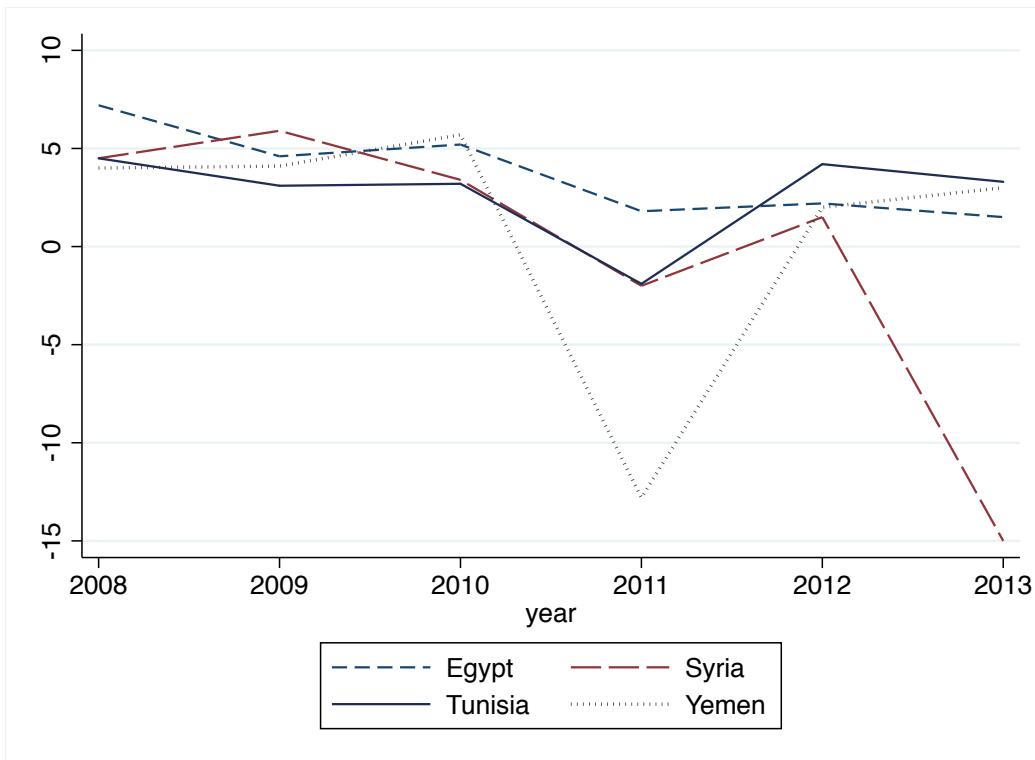
Figure 1: Real GDP growth (%) in Arab Spring countries.

events (ANS), namely those competitor countries which have tourism data available and which are located in the MENA region but did not directly experience the AS (Algeria, Iraq, Jordan, Kuwait, Lebanon, Morocco, and Saudi Arabia); iii) Mediterranean countries, including European competitor countries located in the Mediterranean region (Albania, Bosnia and Herzegovina, Croatia, Cyprus, France, Greece, Italy, Malta, Portugal, Slovenia, Spain, and Turkey); and iv) Rest of countries which are the 137 countries left in the sample. This last group is the excluded category in our analysis.[6]

Table 1 –panel A– compares the number of tourist arrivals before (2008-2010) and after (2011-2013) the AS period for different affected destinations. Clearly, the average number of tourists has fallen in all Arab Spring countries by more than 6 million tourists. The decline was most severe in Egypt and Syria which each experienced reductions of about 25%, compared to the pre-AS period. They are followed by Tunisia, which saw a 20% reduction, while in Yemen there was only a slight decrease (0.3%) in tourism. This small impact can be explained by the Yemeni revolution ending in early 2012. Regarding Syria, it should be noted that tourism data is not available after 2011. So, it is complicated to evaluate how persistent the total effect of the AS was on the country, although we expect that it was massive.[7]

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[6]Although Libya and Bahrein also experienced the AS, they are not included in the analysis due to a lack tourism data availability. Moreover, it should be noted that for Syria, data is only available from 2008 to 2011.

[7]Since the beginning of the civil war in 2011, inbound tourism has declined steeply, and according to UNESCO, five of Syria's six World Heritage Sites have been damaged. The tourism sector in the country collapsed since the majority of source countries for inbound arrivals have imposed travel bans and called on their citizens to leave Syria immediately. According to the WTTC, the total contribution of the tourism sector to Syria's GDP dropped from 10.1 US$ bn in 2010 to 3.5 US$ bn in 2013.

Table 1: Inbound tourists (millions)

	Before Arab Spring	After Arab Spring	Growth rate
A) Arab spring countries			
Egypt	12.10	8.97	-0.258
Syrian Arab Republic	7.14	5.37	-0.248
Tunisia	6.81	5.50	-0.192
Yemen	0.42	0.42	-0.003
B) Arab competitor countries			
Algeria	0.53	0.85	0.610
Iraq	1.19	1.14	-0.036
Jordan	4.12	3.40	-0.175
Kuwait	4.64	5.59	0.203
Lebanon	1.78	1.43	-0.197
Morocco	4.44	5.10	0.148
Saudi Arabia	11.60	14.70	0.267
C) Mediterranean competitor countries			
Albania	1.07	1.53	0.434
Bosnia and Herz.	0.26	0.37	0.412
Croatia	3.70	4.18	0.129
Cyprus	2.22	2.40	0.083
France	45.90	49.30	0.074
Greece	13.50	14.10	0.044
Italy	42.10	44.80	0.064
Malta	1.20	1.39	0.162
Portugal	6.32	7.04	0.114
Slovenia	1.79	2.01	0.121
Spain	50.00	54.10	0.082
Turkey	26.30	31.20	0.186
D) Rest of countries			
	701.89	807.35	0.150

Notes: The Pre-Arab Spring period is from 2008 to 2010, and it shows the average tourist arrivals. The Post-Arab Spring period refers to the years from 2011 to 2013, with the exception of Syria where it only refers to 2011, as explained in the main text.

When we look at the Arab competitor countries (Table 1 –panel B–), we can see that the AS has not had the same influence on other countries within the region. Inbound tourism figures decreased in Iraq, Jordan, and Lebanon after the AS, while tourist arrivals increased in the rest of the Arab competitors. Apparently, the effect of the AS on other Arab countries depends on their geographical location. For instance, inbound tourism was reduced in Lebanon, Iraq, and Jordan after the Arab Spring by 20%, 4%, and 17%, respectively, as these countries share a border with Syria.[8]

Despite the reduction in some Arab countries, all the Mediterranean competitors described in (Table 1 –panel C–) show increased average tourist arrivals after the AS. For instance, small countries such as Albania, Bosnia and Herzegovina, and Malta saw large percentage increases in tourist arrivals after the Arab Spring. At the same time, larger countries such as Turkey, Spain, Italy, and France, also experienced large increases in their tourism figures after the AS, though not as great as the aforementioned countries. Turkey, which has a large economy, has been the MENA country that has most benefited from the AS. Therefore, although we need to control for other variables that might also be affecting international tourism shifts, such as population or economic growth, it seems that the AS has had negative consequences for the tourism sector in AS countries and in some Arab competitors. Conversely, some other Arab competitors and the Mediterranean countries are benefiting from the AS in terms of tourism increases.

With regard to tourism composition, we show the five largest tourism-origin markets for each AS country in Table 2. Egypt is a major tourist destination amongst AS countries, having 46% of the market share of AS countries before the crisis. The five main tourist origin countries for Egypt are the Russian Federation, the United Kingdom, Italy, France, and Germany (Table 2 –Panel A–). French tourism has been the most affected by the Arab Spring (49% reduction) followed by the Italian, German, and British markets. However, Russian tourism remained unaltered after the AS. About quarter of Egyptian tourism comes from Germany and Russia.[9]

The Syrian Arab Republic was well-known as the second most important tourism destination amongst the Arab Spring countries, at least before 2011. Between 2008 and 2010, Syria received around 7.1 million tourists per year, but this number fell by 25% to 5.3 million tourists in 2011. About 78% of tourists come from other countries within the region, such as Lebanon, Jordan, Turkey, Saudi Arabia, or Iraq (Table 2 –Panel B–). About 70% less tourists from Saudi Arabia traveled to Syria after the Arab Spring, and Jordanian and Lebanese tourists reduced travel by 58% and 31%, respectively. Contrarily, Turkish tourists going to Syria increased by 40% in 2011. This is because most Turkish tourists in Syria also had business motives, as they could take advantage of cheap raw materials and the cheap currency.

Table 2 –Panel C– shows that the largest part (27%) of all tourists in Tunisia are Libyan, followed by French and Algerian tourists (18% and 15%, respectively). Compared to pre-Arab Spring levels, Tunisian tourism experienced a sharp decrease of 1.4 million inbound tourists. The

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[8]It is also possible that the duration of the AS revolutions generated tourism deviations to other neighboring countries, such as Algeria, which shares a border with Tunisia.

[9]This is due in part to the widespread use of travel as a payment in German worker incentive programs. Another explanation could be the existence of mutual agreements between Egypt and Germany, and Egypt and Russia to support tourism in Egypt. Furthermore, Western sanctions and low oil prices encouraged the Russian government to dissuade tourism to Italy, Spain, and Greece, and instead favor travel to Egypt.

Table 2: Inbound tourists at Arab Spring countries by origin (thousands)

	Before Arab Spring	After Arab Spring	Growth rate
A) Egypt			
Russian Federation	2233	2233	0.000
United Kingdom	1333	985	-0.261
Italy	1067	593	-0.444
France	579	285	-0.508
Germany	1233	908	-0.264
B) Syria			
Lebanon	1900	1300	-0.316
Jordan	1333	560	-0.580
Turkey	932	1300	0.395
Saudi Arabia	455	134	-0.705
Iraq	928	1000	0.078
C) Tunisia			
Algeria	1010	850	-0.158
France	1370	854	-0.377
Germany	488	369	-0.244
Italy	394	190	-0.518
Libya	1870	1900	0.016
D) Yemen			
Saudi Arabia	192	218	0.134
Oman	49	48	-0.016
United Arab Emirates	22	15	-0.294
India	20	17	-0.170
United States of America	18	20	0.107

Notes: The Pre-Arab Spring period is from 2008 to 2010, and it shows the average tourist arrivals. The Post-Arab Spring period refers to the years from 2011 to 2013, with the exception of Syria where it only refers to 2011, as explained in the main text.

most influenced tourists were the Italians, who decreased travel to Tunisia by 51.8%; they are followed by French, German, and Algerian tourists, respectively. Contrarily, Libyans increased travel to Tunisia by 1.6%.

Differing from other AS countries, Yemen (Table 2 –Panel D–) experienced only a slight decrease (0.3%) in tourism numbers after the Arab Spring. This reduction was tempered by an increase in the number of tourists from Saudi Arabia and the USA by 13.4% and 10.7%, respectively. Notably, tourists from United Arab Emirates were strongly affected by the Arab Spring, as arrivals declined by 29.3%.

So, the collapse of inbound tourism to AS countries was highlighted by differing levels of decreased travel from the largest tourist-origin markets, either European or from within the MENA region, likely reflecting not only the effects of the AS episodes but also other shocks that must be considered.

3   Model and estimation

Our approach for estimating the effect of the AS on international tourism inflows follows the events' literature, and it takes advantage of the fact that the AS was unexpected for tourists and, therefore, can be considered as an exogenous demand shock. By comparing bilateral tourism relationships before and after 2011, we can identify the causal implication of the AS event on tourism inflows once we condition for other potential shocks that likely interfered with the demand for tourism across countries and over the years.

The model we employ is a standard gravity equation for tourism between two countries: i–the origin and j–the destination. The gravity model has been used extensively to explain trade (e.g., Anderson and van Wincoop 2003, McCallum 1995, and Rose 2000), migration (e.g., Gallardo-Sejas, Pareja, Llorca-Vivero, and Martinez-Serrano 2006, and Karemera, Oguledo, and Davis 2000), and foreign direct investment (e.g., Bergstrand 1985, Eichengreen and Tong 2005, and Head and Ries 2008) between countries. It is based on the notion that any bilateral exchange between a given pair of countries (i, j) is related to the relative size (i.e., population, surface, GDP) and frictions (i.e., distance, common language, common borders) of the countries. Furthermore, these types of specifications are increasingly used in tourism research (Eilat and Einav 2004, Khadaroo and Seetanah 2008, Neumayer 2010; Vita and Kyaw 2013). Morley, Rosselló, and Santana-Gallego (2014) have shown that gravity models can be derived from consumer choice theory to explain bilateral tourism.

Our starting model is a very general version of the gravity equation:

$$\ln y_{ijt} = \alpha + X_{1it}\beta + X_{2jt}\gamma + X_{3ij}\lambda + X_{4ijt}\delta + AS_{it} + e_{ijt} \tag{1}$$

In this model, the dependent variable is the logarithm of tourist arrivals from origin i to destination country j in year t.[10] Our model is augmented with a set of control variables classified

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[10]The UN-WTO defines a tourist as an overnight traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure, or other personal purpose) other than to be employed by a resident entity in the country or place visited. Therefore, one-day visitors are not considered in this variable.

into three different groups. First, there is a set of time-variant country-specific characteristics related to the origin X_{1it} and to the destination country X_{2jt} such as the GDP per capita and the population of both the destination and the origin country. Moreover, we add rule of law as a proxy for the quality of the institutions. The rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Second, we include a set of time-invariant country-pair characteristics X_{3ij} such as the distance between the destination and origin countries and dummy variables that take a value of 1 if both countries in the pair share a common spoken language, a common land border, or a common colonial background, and 0 otherwise. Finally, a set of time-variant country-pair characteristics X_{4ijt}, is included which captures belonging to the same regional trade agreement and a religious similarity index.[11] Table A-1 in the appendix presents a definition of the variables and the data sources.

The variable of interest in this simple model is the product of two dummies: an AS dummy that takes a value of 1 for any j destination country where the AS occurred (and zero otherwise) and another indicator variable that measures the AS event (i.e., taking a value of 1 in 2011 onwards and 0 in the preceding years). By measuring the AS shock using a dummy variable we are likely capturing some other unobserved shocks that are country-specific or other unobserved aggregate shocks with confounding effects on tourism. Although we are controlling for different macroeconomic variables, a priori, it is hard to evaluate whether such unobserved shocks are relevant or not (i.e., are correlated with our variable of interest). Therefore, we are going to make different assumptions about them. First, we will estimate the model assuming that some of the unobserved shocks are related to idiosyncratic characteristics of both the origin and destination countries, μ_i and η_j respectively. Second, we will assume simultaneously that other relevant aggregate shocks are year-specific, ψ_t. Third, we will consider the possibility that unobserved shocks exist that are specific to every pair of origin and destination countries, θ_{ij}.

We consider two models based on the previous assumptions. In the first specification, we estimate the model as a pooled regression using OLS including country and time fixed effects (OLS-FE) (i.e., $e_{ijt} = \mu_i + \eta_j + \psi_t + \epsilon_{ijt}$ where ϵ_{ijt} is iid distributed). Accounting for the standard fixed effect shocks we are fairly certain that we are controlling for the relevant shocks that affected tourism arrivals that could potentially be confounded with the Arab Spring events. Omitting such shocks would produce biased and inconsistent estimates of the effect of the political turmoil on tourist inflows. In the second specification, we consider country–pair fixed effects in addition to the standard fixed effects (i.e., $e_{ijt} = \mu_i + \eta_j + \psi_t + u_{ij} + \omega_{ijt}$ where ω_{ijt} is iid distributed). The reason to include this particular type of fixed effect is to capture some other possible source of heterogeneity that is beyond the standard country fixed effect. This second specification is estimated as a Panel with pair fixed effects (Panel-FE) plus year fixed effects.

Under the pooled country fixed effect estimator (OLS-FE), identification is performed via

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[11] The religious similarity index is calculated as a Herfindahl index using the percentage of population affiliated to each of the five major religions in the destination and origin country. The percentages of affiliated populations are calculated every five years. See Fourie, Rosselló, and Santana-Gallego (2015) for further details on data construction.

the variation within each country over time. This prevents country fixed variables from being estimated, but not the time-varying regressors such as the AS coefficient. However, under the country-pair fixed effect model (Panel-FE), identification is carried out by analyzing the variation of single country pairs over time. This technique precludes the estimation of coefficients of constant variables at the pair–level, as would be the case for countries with common borders or a common colonial past, but not of the variables of interest in our empirical exercise. That is, with these two model estimates, we are ensuring that the AS coefficient is robust to different sources of individual and country–pair unobserved heterogeneity.[12]

4   Results

In this section, we present the results from the empirical analysis on the methodological grounds described in section 3. First, we quantify the effects of the AS, focusing on the affected economies. Second, we present evidence of the nature of spillover effects to other countries that the AS episodes generated. And last, we check the robustness of the estimates to the inclusion of terrorism in the model specification.

4.1   Main results

We proceed with the estimation in three stages. At each stage we consider both the OLS-FE and the Panel-FE estimate procedures. First, we run a benchmark model capturing the conditional mean effect of the Arab Spring event on tourism inflows. Second, we estimate the AS effect over the following years (i.e., 2011, 2012, and 2013) to ascertain the time adjustment pattern. Third, we split the AS effect by country to show the severity pattern that the AS had on each country's tourism. In this analysis the reference category is all of the non-AS countries.

Table 3 shows the main results for the impact of the AS on tourism flows.[13] Our gravity model works well for explaining around 86% of bilateral tourism under the OLS-FE model, and the within group R-squared is around 8% in the Panel-FE. In the first two columns, we observe a strong effect on tourism inflows that ranges from -0.58 (OLS-FE) to -0.64 (Panel-FE). So, the AS implies a decrease of inbound tourism of 44-47% when compared to tourism figures from countries that did not experience AS episodes.[14]

When splitting up the effect by year, we observe that there have been strong repercussions in all three years with an apparent reduction in intensity during 2012, but a maximum in 2013. This indicates that the AS had long term effects and/or the political unrest still persists in the regions, thereby discouraging tourists from visiting the country. As mentioned by Neumayer (2004),

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[12]In the Panel-FE estimate, country-pair fixed characteristics are dropped from the regression. Moreover, time-variant country-pair variables are not included since they are nearly fixed during the sample period and they are not significant in the Panel-FE estimate.

[13]We only display the coefficients of interest. In Table A-2 in the appendix we present the full range of estimated coefficients. In general, the sign and significance of explanatory variables are as expected. As predicted by the gravity model, the economic sizes of the destination and the origin country, measured in terms of the logarithm of the real GDP per capita, and population matter for explaining bilateral tourism flows, while distance between countries in the pair has the expected negative impact.

[14]We obtain these estimates from $e^{\beta} - 1$, where β is the estimated coefficient.

Table 3: Main results

	Overall effect		by year		by country	
	OLS-FE	Panel-FE	OLS-FE	Panel-FE	OLS-FE	Panel-FE
ArabSpring (AS)	-0.580***	-0.645***				
	(0.0367)	(0.0310)				
AS*2011			-0.596***	-0.647***		
			(0.0427)	(0.0376)		
AS*2012			-0.522***	-0.583***		
			(0.0372)	(0.0311)		
AS*2013			-0.620***	-0.710***		
			(0.0433)	(0.0387)		
AS*Egypt					-0.586***	-0.655***
					(0.0415)	(0.0381)
AS*Tunisia					-0.561***	-0.610***
					(0.0717)	(0.0700)
AS*Syria					-0.776***	-0.801***
					(0.0847)	(0.0852)
AS*Yemen					-0.468***	-0.549***
					(0.126)	(0.0832)
Constant	-10.04***	-9.790***	-9.975***	-9.717***	-10.01***	-9.750***
	(3.330)	(2.868)	(3.332)	(2.870)	(3.331)	(2.868)
Observations	63,556	64,276	63,556	64,276	63,556	64,276
R-squared	0.859	0.078	0.859	0.079	0.859	0.079
Number of pairs		12,342		12,342		12,342

Notes: Robust standard errors (in parentheses) clustered by destination country. The coefficients are statistically significant at the *10%, **5%, or ***1% level. Year fixed effects are included in both models. Origin, destination, and year fixed effects are not presented for simplicity.

events of instability and violence damage the image that a tourist has about the destination country, and this negative perception might last long after the event has passed and stability has been restored. This idea also applies to foreign investors. Tourists and investors will only travel or invest at before-violence levels if the negative image of the country is eradicated. Depending on the duration and intensity of the violent events and how negative the media coverage has been, this might take years. Finally, when the AS effect is considered by country, the estimated coefficients suggest a larger impact on inbound tourism in Syria (0.54-0.55) and Egypt (0.44-0.48). However, differences between estimated coefficients for each country are not significant, so it seems that the AS has had a similar impact on the tourism sector in each of the four countries used in the analysis.

4.2 Spillover effects

We have seen that the AS had a severe effect on tourist inflows in Egypt, Tunisia, and Yemen, with persistent effects over time. Now, our interest lies in estimating the effect that the AS had on both other Arab countries that did not experience political upheavals during the same time period as well as possible competitor countries in the Mediterranean region. In politics and international relations, the spillover effect occurs based on people's perception of risk and safety. If a country has a negative image or is perceived to be unsafe to visit, it is likely that these problems will also exist for other similar countries and not just those which experienced AS episodes. The spillover effect is possible when consumers have imperfect information on

what is going on in each tourism destination. If the media labeled Arab countries experiencing episodes of political and social protest as Arab Spring potentials, less informed tourists could end up confusing them with those countries that actually suffered conflict. Therefore, asymmetric information across consumers and via media labeling could be extending the negative effects of the AS to other Arab countries that did not experience such significant political turmoil. So, a negative spillover effect is expected in the Arab countries without AS. We refer to this negative spillover as a 'contagion'.

On the other hand, there is another possible spillover than takes place when tourists change their destination country, because they perceive it to be risky or unsafe, to one with similar features, rather than not traveling at all. The originally chosen country is thus substituted for a destination with comparable characteristics but which is perceived to be safer. In this case, there is a redistribution of international tourism flows from Arab countries towards the European Mediterranean countries. Mediterranean countries can be natural competitors for the Arab countries since they offer similar weather conditions, "sun, sea, and sand," as well as cultural heritage sites, but they are perceived as safer destinations. So, tourists who might have opted for destinations such as Egypt and Tunisia are now considering alternative choices such as Spain, Greece, and Albania. We refer to this positive spillover as a 'substitution effect'.

To this end, we generate two additional destination country groups in our regressions: the Arab countries that did not have Arab Spring events which we include in a category (ANS) separate from the Arab Spring countries, and the Mediterranean countries (MED) which are close substitutes in terms of the type of tourism specialization. In this case, the rest of countries are taken as the reference group. In Table 4 we repeat the same regressions we did before but with these two additional groups of countries and focusing only on the Panel-FE estimator.

Table 4 column (1) shows a similar estimated impact of the AS as the one presented in Table 3 column (6) including the two referenced country categories. Regarding the impact of Arab countries without AS events, the ANS effect ranges from negative to positive depending on the country. So we find evidence of an AS contagion in Algeria, Jordan, and Lebanon, with Jordan and Lebanon being affected to a greater extent and showing coefficients of about -0.28 and -0.21, respectively. Contrarily, other Arab countries benefited from the AS and saw large increases in international tourism: Iraq has a coefficient of 0.65 and Saudi Arabia a coefficient of 0.22. Regarding the group of Mediterranean competitors, the impact of the AS was also diverse, as there are small countries that experienced large increases, such as Albania and Bosnia & Herzegovina with respective figures of about 0.24 and 0.19, and large countries, such as Turkey and Spain, with significant increases in tourist arrivals after the AS episodes.[15]

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[15]Nevertheless, there were losers such as Greece and France which experienced significant reductions likely due to other country-specific shocks. However, it is important to mention that we cannot distinguish the spillovers effects due to the AS from other concurrent country-specific effects. For example, Greece had a great recession during this period, and some northern European leaders put pressure on the country to leave the euro. This situation generated widespread political, social, and economic uncertainty that drove away tourists.

Table 4: Contagion, substitution and terrorism

	(1)	(2)	(3)
	Panel-FE	**Panel-FE**	**Panel-FE**
ln Terrorism		0.0248	
ln Terrorism sq.		-0.0135**	
Terrorism			-0.467***
Terrorism sq.			0.0691***
AS*Egypt	-0.668***	-0.524***	-0.624***
AS*Tunisia	-0.622***	-0.611***	-0.624***
AS*Syria	-0.811***	-0.604***	-0.745***
AS*Yemen	-0.570***	-0.368***	-0.369***
ANS*Algeria	-0.0844***	-0.255***	-0.164***
ANS*Iraq	0.652***	0.696***	0.402***
ANS*Jordan	-0.279***	-0.289***	-0.294***
ANS*Kuwait	-0.0350	-0.0598	-0.0642
ANS*Lebanon	-0.214***	-0.212***	-0.212***
ANS*Morocco	0.0215	0.0340	0.0202
ANS*Saudi Arabia	0.218***	0.210***	0.213***
MED*Albania	0.243***	0.249***	0.249***
MED*Bosnia & Herz.	0.187***	0.200***	0.189***
MED*Croatia	0.0134	0.0170	0.0155
MED*Cyprus	-0.0508	-0.0566	-0.0552
MED*France	-0.0956***	-0.0929***	-0.0961***
MED*Greece	-0.137**	-0.149***	-0.149***
MED*Italy	-0.0195	-0.0234	-0.0251
MED*Malta	0.00647	0.00625	0.00788
MED*Portugal	0.0436	0.0470	0.0473
MED*Slovenia	0.0527	0.0421	0.0388
MED*Spain	0.0703**	0.0710**	0.0640**
MED*Turkey	0.0568**	0.166***	0.0989***
Observations	64,276	64,276	64,276
R-squared	0.082	0.087	0.087
Number of pairs	12,342	12,342	12,342

Notes: Robust standard errors (in parentheses) clustered by destination country. The coefficients are statistically significant at the *10%, **5%, or ***1% level. Year fixed effects are included in both models. Origin, destination, and year fixed effects are not presented for simplicity.

4.3 Revolutions versus terrorism

An important concern in our analysis is that the effect we are capturing is not due to the political and social unrest that characterized the AS but rather to the simultaneous increase of terrorism activities. Therefore, we want to differentiate between the AS revolutions and terrorism. According to O'Neil (2010), revolution is a form of political violence that means the overturning of a government and regime. So, a revolution can, but does not always, involve violence, and the citizens play a key role. Terrorism is the use of violence by non-state actors against civilians in order to achieve a political goal.

If terrorism is a relevant variable for explaining tourism flows and it is not properly controlled for, then there would be a correlation between our variable of interest and the error term, and the estimates would be biased and inconsistent. Moreover, the spillover effect we found in Table 4 is very likely reflecting the influence of a general increase of terrorism in the Arab world, which should be discerned from the type of contagion that we are trying to capture due to the labeling of the Arab Spring by the media and the existence of consumer confusion regarding countries that experienced AS events versus the rest of Arab countries.

A proxy for terrorism, i.e., the logarithm of the number of people killed in terrorist attacks per year, is included in the gravity model.[16] We introduce this variable along with a quadratic term to allow for some flexibility in the specification. Table 4 column (2) shows that terrorism has a significantly negative impact on tourist arrivals when the number of terrorism casualties are above one. In column (3), we introduce terrorism (in thousands) and its square, and we see that it has a negative impact, except in one case.[17] Therefore, in both specifications, any increase in the number of fatalities from terrorist attacks generally decreases inbound tourism. Even after controlling for terrorism, the estimated impact of the Arab Spring on the AS, ANS, and MED countries is significant, and coefficients are similar to those estimated in column (1). To sum up, this analysis suggests that the impact of the AS on tourism inflows is greater than the impact caused by the increase of terrorist attacks during this period, and its effects are not misrepresented by the omission of terrorism in our baseline specification.

5 Impact of tourism losses due to Arab Spring on economic activity

As mentioned before, Egypt, Syria, Tunisia, and Yemen focused their development strategy on promoting the tourism sector. Indeed, before the AS episodes, the tourism sector accounted for an important share of these countries' GDPs. In Table 5 we show some well-known figures regarding the relevance of tourism in AS economies. For instance, in 2010, the total contribution of the tourism sector to GDP was around 17.5% in Egypt and Tunisia, 19.6% in Syria, and 7.2%

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[16]Terrorism is defined 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. Some countries present 0 fatalities for some years. Given that the variable is expressed in logarithm, zero values of the variable will be transformed into missing observations. To avoid such a problem, we take the following transformation: $\ln(1 + \tau_{jt})$ where τ is the number of people killed in terrorist attacks.

[17]The minimum is only reached for one country in our sample.

Table 5: Contribution of tourism sector to GDP in 2010

	Direct (million US\$ and % of GDP)	Total (million US\$ and % of GDP)
Egypt	17505	37591
	8.2%	17.5%
Syria	4733	11299
	8.2%	19.6%
Tunisia	3760	7766
	8.5%	17.6%
Yemen	1237	2891
	4.0%	9.3%

Notes: Data obtained from World Travel and Tourism Council (WTTC) website accessed through http://www.wttc.org.

in Yemen. So, the large decrease in inbound tourism due to the AS is expected to have a significant impact on economic activity in this group of countries. A relevant issue for properly addressing the impact of the AS on the tourism sector is to quantify its expected impact on GDP. So, a counterfactual analysis is carried out to shed light on the economic losses caused by decreased inbound tourism stemming from the AS.

We proceed through several stages. First, we estimate the predicted losses of tourist arrivals due to the AS in Egypt, Syria, Tunisia, and Yemen. To do this, we use the estimates presented in sixth column of Table 3 to predict bilateral tourist arrivals which are aggregated by country of origin, and thus predict total tourist arrivals to each destination country. Then, we estimate the counterfactual model as if the Arab Spring episodes had not occurred (i.e., the AS dummy variable takes a value of zero). Again, predicted total tourist arrivals by destination are generated. Finally, predicted tourist arrivals from the baseline model and the counterfactual model are compared to obtain losses, in terms of inbound tourism, due to the AS. These results are presented in Table 6. We can see that tourism losses are generally significantly larger than observed losses. For instance, the total number of tourist arrivals to Tunisia is predicted to decrease by roughly 30% due to the AS, while observed losses were about 19%. That is, after controlling for a wide range of simultaneous shocks, the Arab Spring had a stronger impact than what was observed in the actual data.

Second, we calculate the impact of tourist arrivals on the direct and total contribution of the tourism sector to countries' GDPs.[18] An assessment of the economic consequences of the AS is obtained assuming that there is a linear relationship between the number of international

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[18]Under the input-output methodology the direct effect measures the direct impact of a shock on output of tourism-related sectors. The total contribution of tourism captures the direct effect plus two additional effects: the indirect and the induced effects. The indirect effect measures the direct impact of a shock on other sectors that are input providers to the tourism-related sectors. And the induced effect accounts for the output changes due to changing expenditure at the direct and indirect tourism-related sectors.

Table 6: Predicted losses of tourist arrivals (Tou) due to the Arab Spring (AS)

	year	Predicted Tou with AS	Predicted Tou without AS	Tou Losses
Egypt	2011	7593	10200	-34.3%
Egypt	2012	8231	11000	-33.6%
Egypt	2013	8485	11000	-29.6%
Syria	2011	3922	6866	-75.1%
Syria	2012	.	.	
Syria	2013	.	.	
Tunisia	2011	3993	5217	-30.7%
Tunisia	2012	4933	6469	-31.1%
Tunisia	2013	4925	6371	-29.4%
Yemen	2011	320	402	-25.7%
Yemen	2012	343	431	-25.8%
Yemen	2013	359	461	-28.1%

Notes: estimates based on benchmark model presented in first column Table 3. Predicted Tou are in thousands.

tourist arrivals and the contribution of tourism to a country's GDP. Analytically, this is done by estimating the following equation:

$$\ln GDP_{jt}^{Tou} = \phi_0 + \phi_1 \ln Tou_{jt} + \psi_j + \omega_t + v_{jt} \tag{2}$$

Where $\ln GDP_{jt}^{Tou}$ is the logarithm of the contribution of the tourism sector to GDP in country j in year t and directly depends on the total tourist arrivals to country j in year t. This simple model is estimated for the 157 destination countries included in the sample using panel fixed effects where year fixed effects are also included. Because $\ln GDP_{jt}^{Tou}$ is a partition of the total GDP into direct and total effects, we display the analysis separately for each variable. Data on direct and total contribution of the tourism sector to GDP are obtained from the World Travel and Tourism Council. Results of this analysis are presented in Table A-3, and they show that a 1% increase in tourist arrivals would increase the direct contribution of the tourism sector to GDP by 0.218% and total contribution by 0.203%.

Third, using the results presented in Tables 5, 6, and A-3, the predicted impact of the AS on a country's GDP can be computed straightforwardly. Using Egypt as an example, the predicted decrease of tourist arrivals due to the AS is 34.3% in the year 2011; this implies that the AS reduced the direct contribution of the tourism sector to Egypt's 2011 GDP by $1,310 million (0.343x0.218x17505) and the total contribution by $2,620 million (0.343x0.203x37591). In relative terms, the direct GDP decrease due to the AS was 0.6% of the pre-crisis GDP level in 2010, while the total GDP decrease due to the AS was 1.2%. GDP losses attributed to the AS take similar relative values in the two following years with respect to pre-crisis levels, implying a highly persistent effect. We show the results of this exercise in Table 7 for the remaining countries and years. The Arab Spring had a drastic impact on international tourism and ended up reducing GDP by around 1.1 percentage points per year in Egypt and Tunisia and around 0.5 percentage points in Yemen. The effect in Syria is even more pronounced, and it is simpler

Table 7: Impact of Arab Spring on GDP

Post *AS* period	year	Direct losses (million US$)	Total losses (million US$)	Direct GDP losses (% GDP)	Total GDP losses (% GDP)
Egypt	2011	-1310	-2620	-0.6%	-1.2%
Egypt	2012	-1284	-2567	-0.6%	-1.2%
Egypt	2013	-1131	-2262	-0.5%	-1.0%
Syria	2011	-774	-1721	-1.3%	-2.9%
Syria	2012	.	.	.	.
Syria	2013	.	.	.	.
Tunisia	2011	-251	-484	-0.6%	-1.1%
Tunisia	2012	-255	-491	-0.6%	-1.1%
Tunisia	2013	-241	-463	-0.5%	-1.0%
Yemen	2011	-69	-151	-0.2%	-0.5%
Yemen	2012	-69	-151	-0.2%	-0.5%
Yemen	2013	-76	-165	-0.2%	-0.5%

Notes: direct losses represents the direct impact *AS* had on tourism-related sectors, additionally, total losses measures the indirect and induced impacts on other sectors, as explained in the text. GDP losses are presented as a percentage of the pre-crisis GDP level in year 2010.

to explain, given the confluence of two internal conflicts: the one related to the AS and the outbreak of a civil war.

6 Conclusion

The tourism sector represents an important share of the GDP for some Arab countries located in the MENA region. Since the 2000s, many of these countries had large inbound tourism growth rates. However, this trend abruptly halted in early 2011 during the Arab Spring. The consequences were substantial for the tourism sectors not only in the countries experiencing the turmoil but also in neighboring countries. Quantifying the damage caused by the AS in terms of tourist arrival losses is the main objective of this research. To this end, a gravity model for tourist arrivals from 183 countries of origin to 160 destination countries for the period 2008-2013 is estimated.

We find that the effect of the AS on tourism inflows was severe and persistent over time. Tourism losses two years after the events were of a similar magnitude to those seen at the beginning of the episodes. Although no hostile acts were registered against tourists after the revolutions, the AS seriously damaged the perception that tourists have about the countries' risk profiles. Moreover, international mass media coverage ensures that potential tourists are informed of potential troubles. Hence, destinations that had long-standing images of being safe and stable are now considered dangerous and hostile, and as a result, they are suffering from decreased visitation.

Looking at the effect by country, we find that the AS had a persistent negative impact in the four countries used in the analysis. As a result, there were notable GDP losses, ranging from 0.5% of annual GDP in Yemen to over 1% in Egypt and Tunisia. With respect to spillover effects, some Arab tourism destinations in the region saw tourism losses. Substitution effects showed up in other Arab countries such as Iraq and Saudi Arabia as well as in Albania, Bosnia

and Herzegovina, Turkey, and Spain in the Mediterranean region. Moreover, we distinguish between two phenomena–the pure revolution effect and the terrorism effect–and show that both negatively affect international tourism. These facts highlight the ability of some governments to contain protests and to differentiate their countries as 'safe' tourism destinations.

The total impact of the AS on the tourism sector will depend on how the countries recover after the revolutions. Once political stability is achieved, governments should create policies to encourage both businesses and foreigners to re-enter the market. Moreover, they need to take the necessary measures to reassure international tourists, such as stepping up security in tourist areas and organizing international marketing campaigns.

A Appendix: Additional Tables

Table A-1: Data definition and sources

Definition	Source
Log of bilateral tourist arrivals to the destination country from the origin one	Compendium of Tourism Statistics by the World Tourism Organization (http://www.e-unwto.org/loi/unwtotfb)
Log of real GDP per capita in the destination country	World Development Indicator Database elaborated by the World Bank (http://data.worldbank.org/data-catalog/ world-development-indicators)
Log of real GDP per capita origin country	
Log of population in the destination country	
Log of population in the origin country	
Rule of law in the destination country	Worldwide Governance Indicators (WGI) by the World Bank (Kaufman et al., 2007)(http://info.worldbank.org/governance/ wgi/index.aspx#home)
Rule of law in the origin country	
Log of distance between the destination and origin country	CEPII Geodist dyadic dataset (Head et al., 2010) (http://www.cepii.fr/cepii/en/bdd_modele/ presentation.asp?id=6)
Dummy variables indicating whether the two countries are contiguous	
Dummy variables indicating whether the two countries share a common official language	
Dummy variables indicating whether the two countries have ever had a colonial link	
Dummy variables indicating whether the two countries have had a colonial relationship after 1945	
Dummy variables indicating whether the two countries were/are the same country	
Dummy variables indicating whether the two countries belong to the same regional trade agreement	Regional Trade Agreements Information System elaborated by the World Trade Organization (http://rtais.wto.org/UI/Public MaintainRTAHome.aspx)
Religious similarity index.	World Religion Database (http://www.worldreligiondatabase.org)
Log of number of people killed in terrorist attacks in the destination country	Global Terrorism Database (http://www.start.umd.edu/gtd/)

Table A-2: Main results

	Overall effect		by year		by country	
	OLS-FE	**Panel-FE**	**OLS-FE**	**Panel-FE**	**OLS-FE**	**Panel-FE**
lngdppc_dest	0.452***	0.531***	0.452***	0.531***	0.462***	0.538***
	(0.0601)	(0.0504)	(0.0601)	(0.0504)	(0.0602)	(0.0508)
lngdppc_orig	0.259*	-0.165	0.254*	-0.171	0.255*	-0.169
	(0.152)	(0.138)	(0.152)	(0.138)	(0.152)	(0.138)
lnpop_dest	0.792***	0.733***	0.792***	0.733***	0.791***	0.732***
	(0.0651)	(0.0557)	(0.0651)	(0.0557)	(0.0652)	(0.0558)
lnpop_orig	0.745***	0.530***	0.746***	0.532***	0.743***	0.528***
	(0.154)	(0.125)	(0.154)	(0.125)	(0.154)	(0.125)
rlaw_dest	0.0156	-0.0578*	0.0136	-0.0618*	0.0149	-0.0586*
	(0.0379)	(0.0331)	(0.0380)	(0.0332)	(0.0380)	(0.0332)
rlaw_orig	0.0335	0.0403	0.0336	0.0404	0.0334	0.0402
	(0.0464)	(0.0389)	(0.0464)	(0.0389)	(0.0464)	(0.0389)
lndist	-1.351***		-1.351***		-1.351***	
	(0.0231)		(0.0231)		(0.0231)	
border	1.118***		1.118***		1.118***	
	(0.106)		(0.106)		(0.106)	
language	0.981***		0.981***		0.981***	
	(0.0403)		(0.0403)		(0.0403)	
colony	0.0418		0.0418		0.0418	
	(0.118)		(0.118)		(0.118)	
col45	1.105***		1.105***		1.105***	
	(0.192)		(0.192)		(0.192)	
smctry	0.352**		0.352**		0.352**	
	(0.138)		(0.138)		(0.138)	
rta	0.711***		0.711***		0.712***	
	(0.0401)		(0.0401)		(0.0401)	
relig	1.334***		1.334***		1.335***	
	(0.0628)		(0.0628)		(0.0628)	
ArabSpring (AS)	-0.580***	-0.645***				
	(0.0367)	(0.0310)				
AS*2011			-0.596***	-0.647***		
			(0.0427)	(0.0376)		
AS*2012			-0.522***	-0.583***		
			(0.0372)	(0.0311)		
AS*2013			-0.620***	-0.710***		
			(0.0433)	(0.0387)		
AS*Egypt					-0.586***	-0.655***
					(0.0415)	(0.0381)
AS*Tunisia					-0.561***	-0.610***
					(0.0717)	(0.0700)
AS*Syria					-0.776***	-0.801***
					(0.0847)	(0.0852)
AS*Yemen					-0.468***	-0.549***
					(0.126)	(0.0832)
Constant	-10.04***	-9.790***	-9.975***	-9.717***	-10.01***	-9.750***
	(3.330)	(2.868)	(3.332)	(2.870)	(3.331)	(2.868)
Observations	63,556	64,276	63,556	64,276	63,556	64,276
R-squared	0.859	0.078	0.859	0.079	0.859	0.079
Number of pairs		12,342		12,342		12,342

Notes: Robust standard errors (in parentheses) clustered by country pair. The coefficients are statistically significant at the *10%, **5%, or ***1% level. Year fixed effects are included in both models. Origin, destination and year fixed effects are not presented for simplicity.

Table A-3: Impact of tourists arrivals (Tou) on GDP

VARIABLES	**Direct**	**Total**
$\ln Tou$	0.218***	0.203***
	(0.0653)	(0.0602)
Observations	924	924
R-squared	0.467	0.446
Number of countries	157	157

Robust standard errors (in parentheses). The coefficients are statistically significant at the *10%, **5%, or ***1% level. Country and year fixed effects are included in both models.

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