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"ETHICAL TOURISM" OR SELF-PRESERVATION? AN EMPIRICAL ANALYSIS OF THE EFFECT OF POLITICAL VIOLENCE ON TOURISM IN EGYPT IN THE 1990S

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"Ethical Tourism" or Self-Preservation?

An Empirical Analysis of the Effect of Political

Violence on Tourism in Egypt in the 1990s

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Abstract

This paper uses a new database of political violence in Egypt to study the effects of political violence on the monthly arrival of tourists from the EU and the US in Egypt in the 1990s. We use time series analysis to study the impact of different aspects of political violence and counter-violence. We find that both US and EU tourists respond negatively to attacks on tourists, but do not appear to be influenced by casualties arising in confrontations between domestic groups. However, European tourists are sensitive to the counter-violence measures implemented by the Egyptian government. There is also evidence of tourism in Egypt being affected by the Israeli / Palestinian conflict, with arrivals of US tourists into Egypt rising when fatalities in Israel increase, while European tourists reduce their demand for Egyptian holidays.

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1. Introduction

There is now a growing literature on the economic effects of political violence on macroeconomic outcomes, a large part of which is reviewed by Frey *et al* (2004). One channel through which political violence impacts on the economy is through its effects on tourism. In the recent literature on violence and tourism, tourists respond not only to relative prices in different destinations, but also to as well as to risk factors. Political violence in one destination induces a standard substitution effect between countries. The main themes explored in the empirical literature on terrorism and tourism are (a) the extent of the substitution effect between risky destinations and safer choices (Enders, Sandler and Cauley, 1991; Enders and Sandler, 1992); (b) generalisation effects, where terrorism in one country cause a whole region to be perceived as risky (Enders and Sandler, 1992); (c) the time profile of reaction to terrorist events (Enders and Sandler, 1992; Fielding and Shortland, 2005) and (d) differences in attitudes to risks between countries (Tremblay, 1989, Fielding and Shortland, 2005).

This paper extends the literature on tourism and violence by analysing the effects of several dimensions of political conflict on tourism in Egypt in the 1990s. During this period radical Islamist groups staged attacks of varying severity against Egyptian politicians, the security forces and civilians, and also targeted Egypt's tourism industry directly. The paper firstly explores whether tourists respond to the level of violence in the polity in general or whether they respond mainly to violence targeted at tourist installations. Secondly we explore the effects of counter-violence. The Egyptian government used its security forces to suppress the opposition Islamist movements, rather than seeking political accommodation. The main approach has been to arrest and detain people suspected of political activism; but heavy-handed policing has resulted in civilian casualties in riots and demonstrations and gun-battles with armed extremists. The question of the effect of the state's response to insurgent attacks on tourist flows has not yet been addressed in the context of violence and tourism, though tourists may be put off by the repression of opposition movements, human rights abuses and increased police presence around tourist installations. Thirdly we consider regional spillovers from the conflict in Israel/Palestine. The impact of the Israeli-Palestinian conflict could stem from generalisation effects, but there are also several episodes of Israelis being targeted on Egyptian territory, a recent example being the bombing of the Hilton hotel in the Red Sea resort of Taba in

October 2004. An increase in conflict intensity in Israel could therefore raise the expected level of violence in Egypt.

We use a more detailed and accurate measure of political violence than previously available. The dataset is based on details of civilian, tourist and security force casualties as well as arrests of Islamists reported in the Egyptian *Al Ahram* newspaper. We analyse monthly data on the conflict in Egypt; where previously only annual data has been used (Aly and Strazicich, 2000; Sakr and Massoud, 2003). We also examine the differences in attitudes to political violence among European and US tourists.

The interest in the effect of Islamist violence on the Egyptian tourism industry extends beyond the parochial. Recent years have seen a number of terrorist attacks on foreign nationals in several countries, many of them linked to radical Islamist groups, for example in Tunisia, Indonesia, Kenya and Turkey. A detailed analysis of Egypt's experience can inform policy-makers in countries in which the phenomenon of Islamist violence is more recent. Information on the severity and time profile of the effects of violent attacks gives information on potential subsidy requirements. Empirical evidence on the effects of repression on tourist choices can inform policy-makers as to whether to repress Islamist movements or to seek accommodation with them. We also find evidence of regional spill-over effects, which have policy implications for regional approaches to tackling the problem of Islamist violence.

The remainder of the paper is organised as follows. The following section gives some background information on the political conflict in Egypt. Section 3 describes the model of tourist destination choice; section 4 discusses the data and methodology employed in the estimation. Section 5 discusses the results and section 6 concludes.

2. Violent political conflict in Egypt

Egypt is a secular state in which Islamist movements have been excluded or marginalised from the political process. Islamist movements were banned under President Nasser, but a revival of Islamist groups started in the 1970s, their long-term goal being the establishment of an Islamic republic. Being excluded from the political process, some radical Islamist groups started a campaign of politically motivated violence. In the 1970s this was mainly inter-community violence between Islamists and the Coptic minority. In the 1980s violence increased in intensity in response to

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Egypt's rapprochement with Israel and the government's pro-Western stance. Attacks were increasingly targeted at the state, taking the form of riots, shoot-outs with the police and assassination attempts on politicians and other public figures (most notably the assassination of President Anwar Sadat in 1981). In the early 1990s the conflict escalated in response to the violent repression of Islamist movements by the government.

Most existing databases provide only a limited picture of the extent of political violence in Egypt, mainly focusing on trans-national terrorism and assassination attempts on important public figures. The International Institute for Counter-Terrorism database[1] lists 22 attacks in Egypt from 1990 to 2000, 15 of which were targeted at the tourism industry. The Terrorism Research Centre[2] lists 24 terrorist incidents directed against tourists and politicians; the US Department of State's publication "Patterns of Global Terrorism" reports 16 attacks against tourists and 6 attacks on political targets in the same period.[3]

The reported incidents do not provide a reliable picture of conflict intensity in Egypt. A detailed search of politically motivated incidents in the *Al Ahram* news archive provided details of 39 attacks on the tourism industry between 1990 and 2000, in 31 of which foreign nationals were wounded or killed. *Al Ahram* also provides details on Islamist violence against state and civilian targets. The government's response to Islamist violence is recounted in reports of arrests, trials, executions and extremists being killed or wounded by the security forces during arrests or in the policing of demonstrations and riots. Therefore our dataset is more precise than those based on sources outside Egypt[4]. We are aware that Islamist violence and counter-violence may have been subject to selective reporting as the Egyptian media are politically controlled[5]. However, we assume that there were no major changes in the policy regarding what proportion of incidents are reported in the period under investigation. In this paper we focus on the four dimensions of violence discussed below.

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[1] http://www.ict.org.il
[2] http://www.terrorism.com
[3] http://www.state.gov/s/ct/rls/pgtrpt/
[4] The publication *Civil Society* of the Ibn Khaldoun Centre has occasionally published political violence data, but details and updates are not available as the centre was closed and its founder and several of the research staff were arrested in 2000.
[5] The editor of *Al Ahram* is appointed by the President

Islamist violence directed against Egyptians

Islamist violence against Egyptians is illustrated in Figure 1. It has taken a number of different forms. One aspect has been inter-community violence: attacks on the Coptic Christian minority in which Copts, their churches and their property were attacked. Many of these attacks were initially about property or "protection money" but acquired political overtones. Secondly Islamists were seeking to impose *Sharia* laws in Egypt and attacked individuals and activities considered to be "un-Islamic" such as liquor stores, beer deliveries, video-stores and cinemas showing foreign films as well as individuals engaged in "vice". There was also political violence connected to elections, during which supporters of different candidates clashed in violent street fights. Thirdly there were assassination attempts on politicians and other public figures, such as poets, authors and academics, who were singled out for the moral or religious views taken in their writing. Finally there was the armed conflict between the extremist movements and the security forces in which extremists targeted both the official and secret police. Figure 1 shows an escalation of political violence in 1992 and 1993, slowly tailing off from 1994 to 1998. In 1999 one of the violent Islamist Organisations *Al Gama'at al Islamiya* initiated a ceasefire, but violence reignited in 2000.

Attacks on Tourists

Attacks on tourists and the tourism industry are part of the wider picture of political violence in Egypt. Targeting foreigners has helped radical Islamists to achieve a number of goals. Firstly, killing foreign nationals has generated national and international publicity in a country where the government tightly controls the local media. Secondly, tourism is a significant part of economic activity: according to Tohamy and Swinscoe (2000), it accounts for 11.6% of GDP if one includes the secondary effects of tourist spending. Disrupting the tourist industry has directly harmed government revenues and foreign exchange receipts. Attacking foreigners may also have had ideological objectives. Tourists could have been targeted as the indirect representatives of different ideological values and political cultures, which were seen to threaten national culture, tradition and religious convictions and whose presence brought little direct benefits to local communities (Aziz, 1996).

Attacks on tourists are illustrated in Figure 2. They have taken the form of sniper shooting at passing cruise ships, passenger trains and tourist buses, the

bombing of buses and cafes and the shooting of foreigners at tourist attractions. The main series of 25 attacks against tourists started in August 1992 and attacks occurred every 2-6 months until March 1995. A further series of three attacks occurred from November 1995 – March 1996 and the final two attacks in September and November 1997, the latter of them the shooting of 88 tourists and locals at the temple of Hatshepsout in Luxor. This massacre undermined public support for the Islamists and there were no further attacks on tourists during the sample period.

Counter-violence

The Egyptian security forces' response to Islamist violence reported in the Egyptian media includes arrests, detention (with and without trial) and death sentences for some of those convicted of terrorist offences. Often arrests have been preceded by gun battles in which both suspected Islamists and bystanders were killed and wounded. Demonstrations have also been subject to heavy-handed policing, often resulting in casualties and large-scale arrests. These events are summarised in Figure 3. Human rights organisations such as Amnesty International additionally report widespread human rights violations, such as torture and deaths in custody. Due to the nature of the reporting it is often impossible to distinguish between terrorists, members of the political opposition and innocent bystanders. Newspaper reports often refer to arrests of "dangerous terrorists" during which security forces find mainly "anti-government leaflets". From January 1988 to December 2000 a total of 19,915 arrests of suspected Islamists were reported by *Al Ahram*. In the same period 605 civilians were killed and 556 civilians were wounded by the security forces and 114 death sentences were carried out.

Conflict in the Middle East

Regional conflict has ambiguous effects on tourism to Egypt. On the one hand a "generalisation" effect has been observed, where tourist flows into whole regions are affected by terrorism in one country, even if other countries in the region are not themselves affected by terrorism.[6] Egypt has in fact seen a spill-over from the Israeli-Palestinian conflict, with Israeli citizens being attacked on Egyptian territory, particularly in the Sinai Peninsula, a popular holiday location for Israeli tourists. In April 1996 members of *Gama'at al-Islamiyah* killed eighteen Greek tourists in an

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[6] Enders and Sandler (1992)

assault on the Europa Hotel in Cairo, in the mistaken belief that they were Israeli tourists. Increasing violence in Israel would therefore be expected have a negative effect on tourism into Egypt. On the other hand tourists may substitute away from Israel and into Egypt if violence rises in Israel, as Egypt offers a similar mixture of cultural attractions and beaches. Violence in Israel and the West Bank and Gaza is illustrated in Figure 4. The data are provided by the Israeli NGO B'Tselem (http://www2.iol.co.il/btselem). Fatalities among Israelis in Israel, which are the best proxy for the risk to tourists in Israel, are highest in the period 1994-1996. Fatalities among the Palestinians in the West Bank and Gaza, which fuel anti-Israeli and anti-Western sentiment in Egypt, were relatively high between 1990 and 1994, relatively low between 1995 and 1999 and rose sharply with the beginning of the second *Intifada* in September 1999.

3: A Model of Tourist Destination Choice

Our empirical regression equations ought to be consistent with a plausible model of individual decision-making. In this section we derive a regression equation from the standard discrete choice theory outlined in Maddala (1983).

The model concerns a population of people who have already decided to take a vacation, and are deciding where to go.[7] Let the net utility an individual i derives from taking a vacation in location m 5 $\{1,..., M\}$ in month t be designated v_{imt}. We will assume that each person's utility is of the form:

$$v_{imt} = \mu_{mt}(X_{mt}, \varepsilon_{mt}) + u_{imt} \qquad (1)$$

where μ_{mt} is the average level of utility from visiting location m in month t for the vacationing population and u_{imt} is an individual's idiosyncratic deviation from this average. X_{mt} is a vector of identifiable time-varying factors that impact on one's net utility from a vacation in a particular location (including how expensive it is), and ε_{mt} is a stochastic term reflecting the unpredictable component of the average utility level (fads and fashions). We further assume that individual i chooses location m in period t if and only if:

$$v_{imt} = \max(v_{i1t},..., v_{iMt}) \qquad (2)$$

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[7] See Enders and Sandler (1992) for an explicit model of a two-stage budgeting decision.

It can be shown (Maddala, 1983) that if for any two locations (m,n) the distribution of u_{imt} is independent of that of u_{int}, and if each has a Weibull distribution, then the probability of any one individual choosing location m in period t is:

$$p_{imt} = \exp(\mu_{mt}) \Big/ \sum_{j=1}^{j=M} \exp(\mu_{jt}) \tag{3}$$

So, for a large population, the ratio of the number of people in period t visiting location m (p_{mt}) to the number visiting location n (p_{nt}) can be written as:

$$p_{mt}/p_{nt} = \exp(\mu_{mt})/\exp(\mu_{nt}) \tag{4}$$

and hence:

$$\ln(p_{mt}) - \ln(p_{nt}) = \mu_{mt}(X_{mt}, \varepsilon_{mt}) - \mu_{nt}(X_{nt}, \varepsilon_{nt}) \tag{5}$$

Location m here is to be interpreted as Egypt; the identity of the reference location n will be discussed later. If we know the functional forms of $\mu_{mt}(.)$ and $\mu_{nt}(.)$, then we can fit equation (5) to time-series data. In what follows, we assume that it is possible to find a linear specification such that:

$$\ln(p_{mt}) - \ln(p_{nt}) = B'[X_{mt} - X_{nt}] + \varepsilon_t \tag{6}$$

where ε_t is a linear function of ε_{mt} and ε_{nt}.

We will proceed with the assumption that $[X_{mt} - X_{nt}]$ comprises (a) seasonal factors, (b) the relative enjoyability of the two locations and (c) the several dimensions of political violence in Egypt and Israel. Our regressions are based on an equation of the form:

$$\ln(p_{mt}) - \ln(p_{nt}) = \Sigma_s \theta_s.h_{st} + \eta.E[w_{mt} - w_{nt}] + B_1' E[Z_{mt+1}] + B_2' Z_{mt} + \varepsilon_t \tag{7}$$

h_{st} is a dummy for month s. w_{mt} is the enjoyability of location m in period t, to which an expectations operator is attached, because new visitors will only find out whether they like a place when they get there. Z_{mt} is a vector of violence indicators in Egypt, the reference location n being assumed to be completely safe. Tourists are concerned about violence in the current month and also expected violence in the next month, because visits may straddle two months.

One might also wonder whether monthly variations in the relative cost of different locations make a difference to tourist numbers. However, our empirical

measures of relative cost never produced robust, interpretable statistically significant coefficients. It seems that, in our sample period at least, monthly variations in cost had no substantial impact on tourism to Egypt.

Application of the model requires us to specify the expectations formation process. We will work with the following assumptions:

$$E[w_{mt} - w_{nt}] = \alpha(L)[\ln(p_{mt-1}) - \ln(p_{nt-1})] \tag{8}$$

$$E[\boldsymbol{Z}_{mt}] = \boldsymbol{A}(L)' \, \boldsymbol{Z}_{mt-1} \tag{9}$$

Equation (8) builds some herding behavior into the model: if a destination has been popular in the past, people are more likely to consider it today. Equation (9) states that expectations about the current risk of violence are based on the past frequency of violent incidents. Substituting equations (8-9) into equation (7), we will have an ARDL equation of the form:

$$\gamma(L)[\ln(p_{mt}) - \ln(p_{nt})] = \Sigma_s \theta_s.h_{st} + \boldsymbol{\varGamma}(L)' \, \boldsymbol{Z}_{mt} + \varepsilon_t \tag{10}$$

Since the variables in the empirical regression equations turn out to be borderline-stationary, and we prefer not to make any *a priori* assumptions about their order of integration (as in Pesaran *et al.*, 2001), we will be using the equilibrium-correction form of this equation:

$$\phi(L)\Delta[\ln(p_{mt}) - \ln(p_{nt})] = \Sigma_s \theta_s.h_{st} + \boldsymbol{\varPhi}(L)' \, \Delta \boldsymbol{Z}_{mt} \tag{11}$$

$$- \omega.[\ln(p_{mt-1}) - \ln(p_{nt-1})] + \boldsymbol{\varOmega}' \, \boldsymbol{Z}_{mt-1} + \varepsilon_t$$

where $\omega^{-1}\boldsymbol{\varOmega}$ indicates the long-run effects of violence on tourism. The elements of the violence vector $\boldsymbol{Z}$ are as follows.

$\ln(tkw)$, where tkw is 1 + the number of tourists killed and wounded in Egypt.
$\ln(cas)$, where cas is 1 + the number of arrests by Egyptian security forces.
$\ln(csk)$, where csk is 1 + the number of civilians and security forces killed by radicals.
$\ln(iki)$, where iki is 1 + the number of Israelis killed in political attacks in Israel.
$\ln(kwg)$, where kwg is 1 + the number of deaths in fighting in the West Bank / Gaza.

Logarithmic transformations are used to ensure that the variables are approximately symmetrically distributed.

4. Empirical Modelling and Data

4.1 Data

Our sample period covers the 1990s, starting in March 1991 (to exclude any effects from the first Gulf war) and ending December 2000, the last month for which political violence data are available. Equation (11) is to be fitted to data for tourist arrivals into Egypt from (a) America and (b) Europe. In order to estimate the parameters of equation (11), we need to construct a dependent variable in which the number of visitors to Egypt from a certain population (American and European tourists respectively) is expressed relative to the number of visitors from that population to another location.

We use tourist flows to Malta as the comparison country, as Malta can be considered as a "safe" alternative destination in the Eastern Mediterranean and has a consistent dataset of tourist arrivals disaggregated by nationality for the sample period.[8] Thus for the American tourist sample, p_{mt} is interpreted as the number of American visitors to Egypt in a particular month and p_{nt} is interpreted as the number of American visitors to Malta. The Egyptian Ministry of Tourism provides detailed statistics of monthly arrivals of tourists, as well as a breakdown of these tourists into European and US American visitors in its annual publication "Tourism in Figures". The data on tourist arrivals into Malta are from Malta's National statistics Office[9].

The five violence variables are measured using the data collated from *Al Ahram* and from the B'Tselem database, which are described in Section 2 above. In all cases the violence statistics are expressed in terms of (the log of) the number of fatalities or arrests per month.

4.2 Results

Tables 1-2 report parameter estimates for our two samples – American and European tourists – using a lag order of two (selected on the basis of the Akaike Criterion; higher order lags are not statistically significant). Lags of *csk* and *kwg* were never

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[8] Ideally we would use a larger selection of "safe" destinations in the Eastern Mediterranean, such as Greece, Turkey and Cyprus, but it was impossible to obtain reliable data. Also, the recent histories of these countries may mean that they are not considered to be 100% safe.
[9] http://www.nso.gov.mt/

statistically significant in any regression equation, and were excluded from the regressions reported in Tables 1-2. Table 1 reports the regressions with the three elements of Z that are ever significant: *tkw* (tourist injuries and fatalities), *cas* (arrests) and *iki* (deaths in Israel). Table 2 reports corresponding equations in which the dynamics are restricted so as to minimize the Akaike Criterion for the regressions. It can be seen that these restrictions make no substantial difference to those coefficients that are statistically significant in Table 1. Test statistics indicate that the null of zero autocorrelation in the regression residuals (and residual variances) cannot be rejected; neither can one reject the null that the residuals are normally distributed.[10]

In both the American and the European sample, an F-test for the joint significance of the levels variables in Table 1 – that is, a test of the joint restrictions $\omega = 0$ and $\Omega = 0$ in equation (11) – indicates that there is a statistically significant long-run relationship between the variables of interest. Comparing the F-statistics with the critical values reported in Pesaran *et al*. (2001) indicates that the restrictions can be rejected even if we assume that the variables are I(1), and certainly if they are I(0).

We do not dwell on the individual regression coefficients, but interpret the regressions by plotting the implicit response of $[\ln(p_{mt}) - \ln(p_{nt})]$ to a permanent unit increase in each of the elements of Z.[11] The plots, based on the coefficients reported in Table 2, appear in Figures 5-6. Note that in these figures, the effect of a permanent change in *iki* (fatalities in Israel) or *cas* (arrests) on EU tourist numbers is only temporary, because the respective elements of Ω are insignificantly different from zero. Moreover, a change in *cas* has no impact on American tourist numbers, even in the short run, because the respective elements of both Φ and Ω are insignificantly different from zero.

As one might expect, attacks on tourists in Egypt reduce tourist numbers; for both American and Europeans, the effect is permanent, as illustrated in Figures 5(a) and 6(a). In both cases, the effect of a hypothetical change in the violence level is very gradual, taking a couple of years to come close to its asymptote. However, the effect on European tourist numbers is much larger. In the long run, the elasticity for

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[10] For the American sample, normality of the residual is achieved only when dummy variables for two outliers (May 1991 and September 1992) are included. Omission of the two dummies makes no substantial difference to the fitted regression coefficients.

[11] For these illustrative purposes, we assume that each element of Z is strictly exogenous, and hold the other elements constant in each case. The figures are designed to provide an intuitive picture of the dynamics of the regression equations; they are not impulse response functions in the strict sense.

Europeans is around 1.4, as compared with around 0.5 for Americans. One possible explanation for this difference is that many Europeans travel to Egypt for the sun and sand, not for its cultural attractions; this is unlikely to be the case for Americans, for whom Florida is much closer. If tourists attracted to Egypt for cultural reasons are less sensitive to the violence (perhaps they are more highly educated on average, and better able to work out which locations are relatively safe), then we might well see more reaction on average among the Europeans.

There is even more asymmetry between Americans and Europeans with regard to the effect of violence in Israel, as indicated in Figures 5(b) and 6(b). A unit increase in $\ln(iki)$ leads to an immediate 5% *increase* in American numbers, increasing to around 30% in the long run; it leads to a 3% *decrease* in European numbers, an effect that diminishes very rapidly within a couple of months.[12] It appears that *ceteris paribus* American tourists substitute between Egypt and Israel as tourist destinations: there is increasing the demand for Egyptian holidays, if the risk of travelling in Israel increases. European tourists, however, respond to shocks in political instability in Israel by substituting away from Egyptian holidays. Again, this may reflect demographic differences between the two populations.

Long run elasticities of tourist numbers to a permanent increase in violence

Long-run elasticities	Americans	Europeans
$\ln(tkw)$	-0.521	-1.432
$\ln(iki)$	0.294	*none*

Figure 6(c) shows the effect of a unit increase in the arrests variable $\ln(cas)$ on European tourists. Demand for Egyptian holidays contracts by a little over 1% with a unit increase in $\ln(cas)$, the maximum effect being two months after the shock. This effect diminishes very rapidly thereafter. On average, European tourists do respond to changes in the level of the state's response to insurgency, which might be viewed by some as excessive. However, the effect is relatively small and temporary. American tourists seem not to pay any attention to this dimension of the conflict. There is no

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[12] The results from the European sample should be treated with some caution, as in the unrestricted Table 1 regression there is a positive coefficient on contemporaneous $\Delta\ln(iki)$ with a t-ratio of 1.8, which is significant at the 10% level. But the t-ratio falls very close to zero when other insignificant variables are removed, and the AIC indicates the omission of contemporaneous $\Delta\ln(iki)$ from the regression.

significant response of American tourist numbers to changes in ln(*cas*), even in the short run.

5. Interpretation and Conclusion

Our results show that the campaign of radical Islamist organisations succeeded in inflicting heavy losses on the Egyptian tourist industry when their attacks were directly targeted at the tourist industry. Even though the actual danger of being caught up in a violent attack was extremely small even at the height of the conflict, many tourists decided to stay away from Egypt. Tourists mainly appear to care about their own safety, rather than being influenced by low level political conflict or the human rights record of their destination choice. Direct attacks on tourists have an almost immediate effect on people's destination choices and it takes about two years for the full effect of a successful attack to be felt.

There are interesting differences between US and European tourists. European tourists are more sensitive to political violence in Egypt than their American counterparts. This may be because a large number of Europeans go to Egypt on beach holidays, for which there are many alternative destinations. European tourists therefore react very strongly to violence against the tourism industry. For US tourists the emphasis is more likely to be on Egypt's archaeological attractions, for which there are no close substitutes. Europeans also respond negatively to surges in counter-violence, whereas US tourists do not. A possible explanation is that human rights issues are less well publicised in the US media than in Europe, whereas attacks on foreigners do make international headlines and influence official travel advice.

Conflict in Israel has ambiguous effects on the Egyptian tourist industry. While American tourists seem to substitute holidays in Egypt for holidays in Israel when violence increases in Israel, Europeans substitute away from Egypt when conflict in the region escalates.

Given these results there are strong policy implications regarding the importance of not letting a political conflict escalate to the point where radical splinter groups attack foreign nationals to publicise their cause. A heavy-handed state policy against extremists may also have negative effects on tourism, at least in the short run. There is some (limited) evidence for such an effect with respect to European tourists. The results might also motivate a policy of subsidising the tourist sector in response to attacks on tourists until tourism levels recover. The actual cost to the tourist industry

is likely to be higher than the changes in tourist numbers suggest, as tourist flows in the aftermath of an attack are often stimulated by aggressive price cuts.[13] Tourism revenues tend to take much longer to recover than the number of tourists (Tohamy and Swinscoe, 2000).

Finally, rising violence in Israel discourages European tourists from taking Egyptian holidays, at least in the short run, while attracting more US tourists; overall the long-run response is positive, as the American effect dominates. However, political violence in Israel does occasionally spill over into Egypt, resulting in attacks on tourists and hotels; this has unambiguously negative consequences for the Egyptian tourism industry, underlining the importance of the Egyptian government's involvement in the Middle East peace process.

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[13] Local hotel prices will be endogenous, which is the reason for their exclusion from the regression equations. To the extent that tourist numbers impact on prices, equation (11) should be viewed as reduced-form expression.

Table 1: Unrestricted Regression (Heteroskedasticity Corrected Std. Errors)

The equations also include a seasonally varying intercept.

$\Delta\ln(p_m/p_n)_t$ regression, American sample

	coefficient	s.e.	t ratio	partial R^2
$\Delta\ln(p_m/p_n)_{t-1}$	-0.31575	0.10280	-3.07	0.0968
$\Delta\ln(p_m/p_n)_{t-2}$	-0.05447	0.07745	-0.70	0.0056
$\Delta\ln(cas)_t$	-0.00308	0.01026	-0.30	0.0010
$\Delta\ln(cas)_{t-1}$	-0.00589	0.01453	-0.41	0.0019
$\Delta\ln(cas)_{t-2}$	-0.00558	0.00952	-0.59	0.0039
$\Delta\ln(tkw)_t$	-0.02561	0.01820	-1.41	0.0220
$\Delta\ln(tkw)_{t-1}$	0.09573	0.03209	2.98	0.0919
$\Delta\ln(tkw)_{t-2}$	0.03174	0.02019	1.57	0.0273
$\Delta\ln(iki)_t$	0.03676	0.01626	2.26	0.0549
$\Delta\ln(iki)_{t-1}$	-0.03320	0.02904	-1.14	0.0146
$\Delta\ln(iki)_{t-2}$	-0.03298	0.02027	-1.63	0.0292
$\ln(p_m/p_n)_{t-1}$	-0.24871	0.06244	-3.98	0.1528
$\ln(cas)_{t-1}$	0.01170	0.01561	0.75	0.0063
$\ln(tkw)_{t-1}$	-0.17201	0.04494	-3.83	0.1427
$\ln(iki)_{t-1}$	0.09174	0.03700	2.48	0.0653

$\sigma = 0.15$, $R^2 = 0.67$, AIC = -3.53, resid. normality: $\chi^2(2) = 1.88$ [0.39], LM AR: $F(1,87) = 0.05$ [0.82] LM ARCH: $F(1,86) = 0.00$ [0.98]

$\Delta\ln(p_m/p_n)_t$ regression, European sample

	coefficient	s.e.	t ratio	partial R^2
$\Delta\ln(p_m/p_n)_{t-1}$	-0.25729	0.10270	-2.50	0.0652
$\Delta\ln(p_m/p_n)_{t-2}$	-0.27271	0.07567	-3.60	0.1261
$\Delta\ln(cas)_t$	-0.02137	0.01109	-1.93	0.0396
$\Delta\ln(cas)_{t-1}$	0.00741	0.01670	0.44	0.0022
$\Delta\ln(cas)_{t-2}$	0.00762	0.01095	0.70	0.0054
$\Delta\ln(tkw)_t$	-0.00852	0.02119	-0.40	0.0018
$\Delta\ln(tkw)_{t-1}$	0.16475	0.04932	3.34	0.1103
$\Delta\ln(tkw)_{t-2}$	0.10997	0.03646	3.02	0.0918
$\Delta\ln(iki)_t$	0.03316	0.01847	1.80	0.0346
$\Delta\ln(iki)_{t-1}$	-0.05417	0.04085	-1.33	0.0192
$\Delta\ln(iki)_{t-2}$	-0.01134	0.02687	-0.42	0.0020
$\ln(p_m/p_n)_{t-1}$	-0.19806	0.03775	-5.25	0.2342
$\ln(cas)_{t-1}$	-0.02434	0.02003	-1.22	0.0161
$\ln(tkw)_{t-1}$	-0.26344	0.07931	-3.32	0.1092
$\ln(iki)_{t-1}$	0.06264	0.04520	1.39	0.0209

$\sigma = 0.15$, $R^2 = 0.89$, AIC = -0.81, resid. normality: $\chi^2(2) = 1.57$ [0.46], LM AR: $F(1,89) = 0.28$ [0.60] LM ARCH: $F(1,88) = 0.14$ [0.71], joint significance of levels variables: $F(4,90) = 18.88$

Table 2: Restricted Regression (Heteroskedasticity Corrected Std. Errors)

The equations also include a seasonally varying intercept.

$\Delta\ln(p_m/p_n)_t$ *regression, American sample*

	coefficient	*s.e.*	*t ratio*	*partial R^2*
$\Delta\ln(p_m/p_n)_{t-1}$	-0.30854	0.08311	-3.71	0.1222
$\Delta\ln(tkw)_t$	-0.02559	0.01600	-1.60	0.0252
$\Delta\ln(tkw)_{t-1}$	0.04604	0.01494	3.08	0.0876
$\Delta\ln(iki)_t$	0.04178	0.01529	2.73	0.0701
$\ln(p_m/p_n)_{t-1}$	-0.20908	0.05144	-4.06	0.1430
$\ln(tkw)_{t-1}$	-0.10897	0.02142	-5.09	0.2072
$\ln(iki)_{t-1}$	0.06155	0.02139	2.88	0.0771

$\sigma = 0.15$, $R^2 = 0.64$, AIC = -3.65, resid. normality: $\chi^2(2) = 2.69$ [0.26], LM AR: $F(1,98) = 0.27$ [0.60] LM ARCH: $F(1,97) = 0.10$ [0.76]

$\Delta\ln(p_m/p_n)_t$ *regression, European sample*

	coefficient	*s.e.*	*t ratio*	*partial R^2*
$\Delta\ln(p_m/p_n)_{t-1}$	-0.26082	0.05337	-4.89	0.1928
$\Delta\ln(p_m/p_n)_{t-2}$	-0.32897	0.05369	-6.13	0.2729
$\Delta\ln(cas)_t$	-0.01334	0.00825	-1.62	0.0255
$\Delta\ln(tkw)_{t-1}$	0.17909	0.03750	4.78	0.1857
$\Delta\ln(tkw)_{t-2}$	0.11782	0.03079	3.83	0.1277
$\Delta\ln(iki)_{t-1}$	-0.03281	0.01570	-2.09	0.0419
$\ln(p_m/p_n)_{t-1}$	-0.19380	0.03088	-6.28	0.2826
$\ln(tkw)_{t-1}$	-0.27763	0.04598	-6.04	0.2671

$\sigma = 0.15$, $R^2 = 0.88$, AIC = -0.87, resid. normality: $\chi^2(2) = 1.78$ [0.41], LM AR: $F(1,99) = 0.32$ [0.57] LM ARCH: $F(1,98) = 0.51$ [0.48]

Figure 1: Islamist Violence against Egyptians

□ *civilians wounded by civilians*   ■ *security forces wounded*

■ *civilians killed by civilians*   ■ *security forces killed*
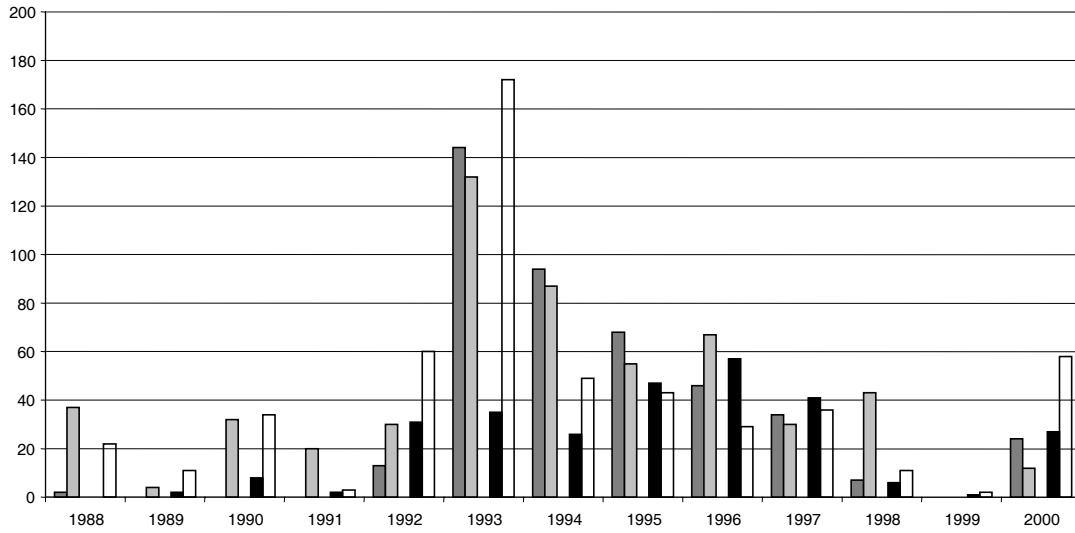
Figure 2: Attacks on Tourists

□ *tourists killed*   ■ *tourists wounded*
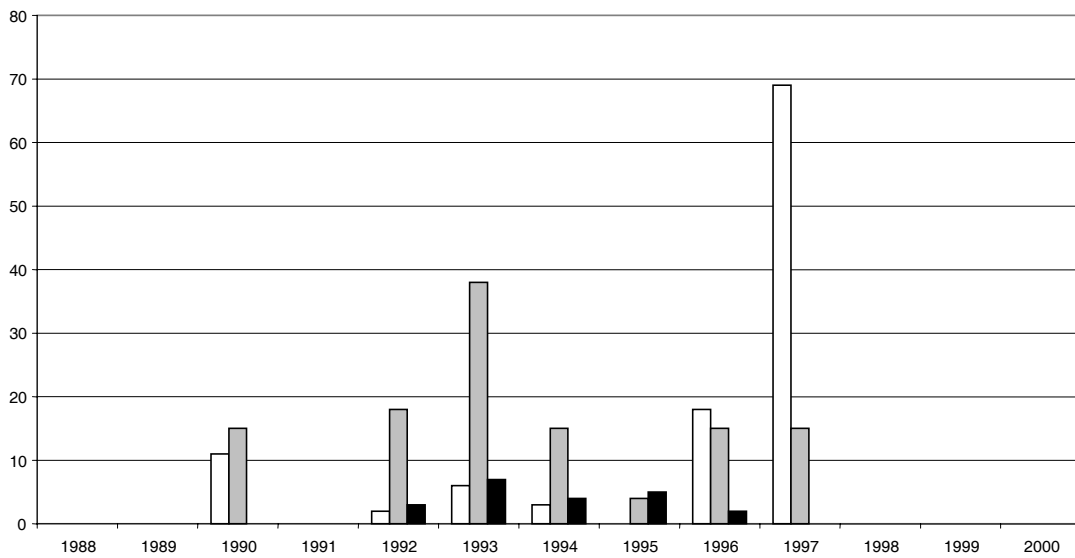
■ *tourists attacked without injury*

Figure 3

□ *civilians wounded by security forces*   ■ *arrests (✗ 0.1)*
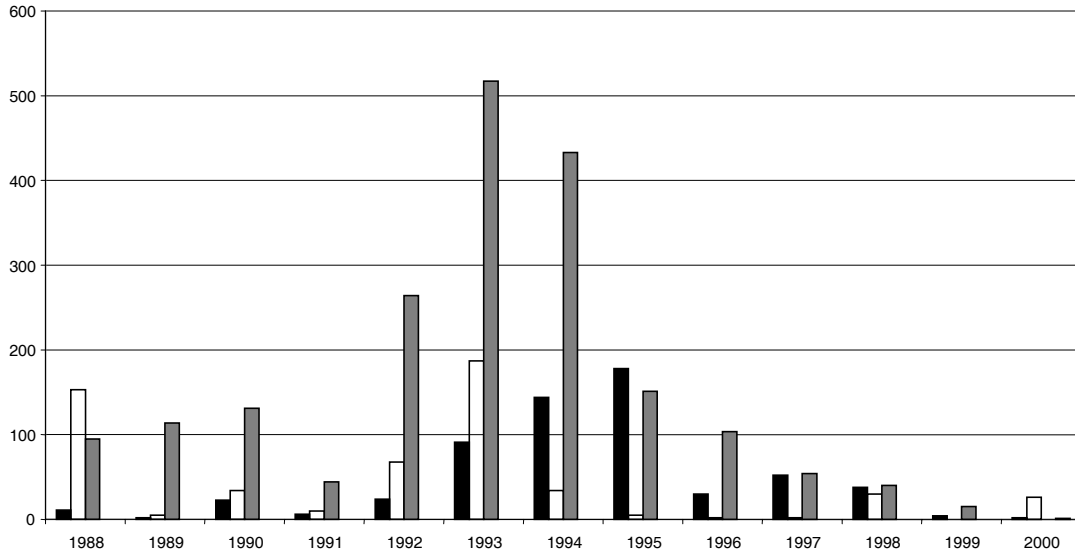■ *civilians killed by security forces*

Figure 4: The Israel / Palestine Conflict

□ *Palestinians killed in WBG*   ▨ *Israelis killed in WBG*
■ *Palestinians killed in Israel*   ▩ *Israelis killed in Israel*
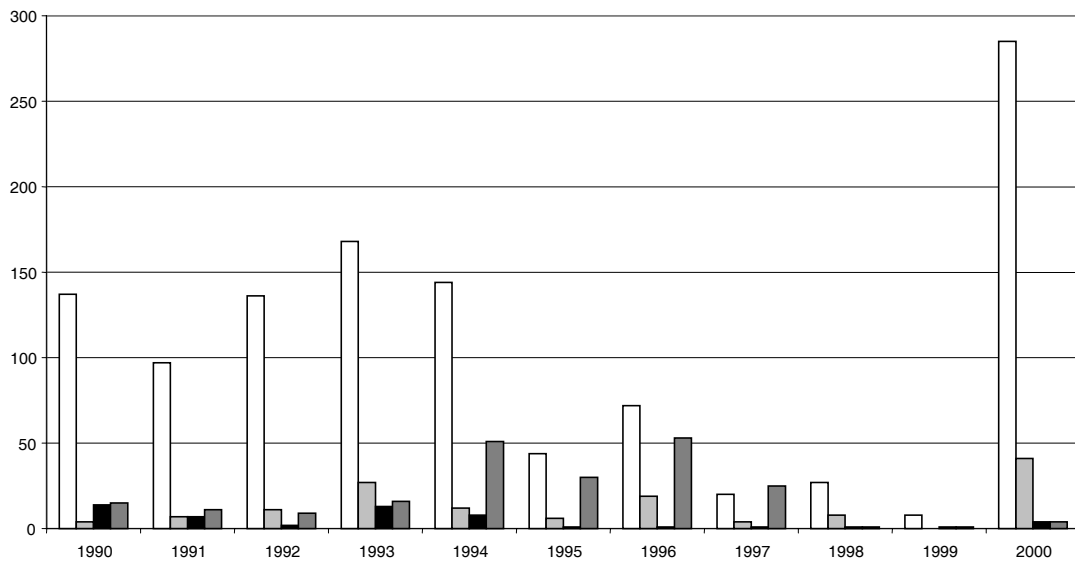
Figure 5

(a) Response of US tourist arrivals to a permanent unit increase in the number of tourists attacked in Egypt (ln(*tkw*)), first 36 months
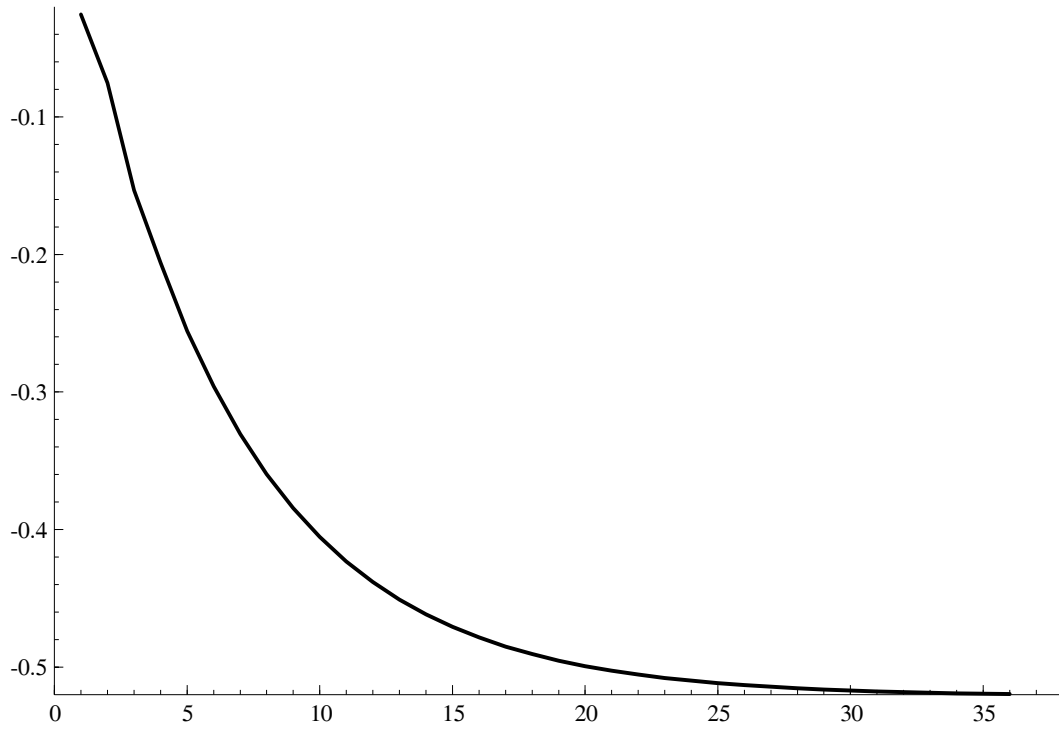
(b) Response of US tourist arrivals to a permanent unit increase in the number of violent deaths in Israel (ln(*iki*)), first 36 months
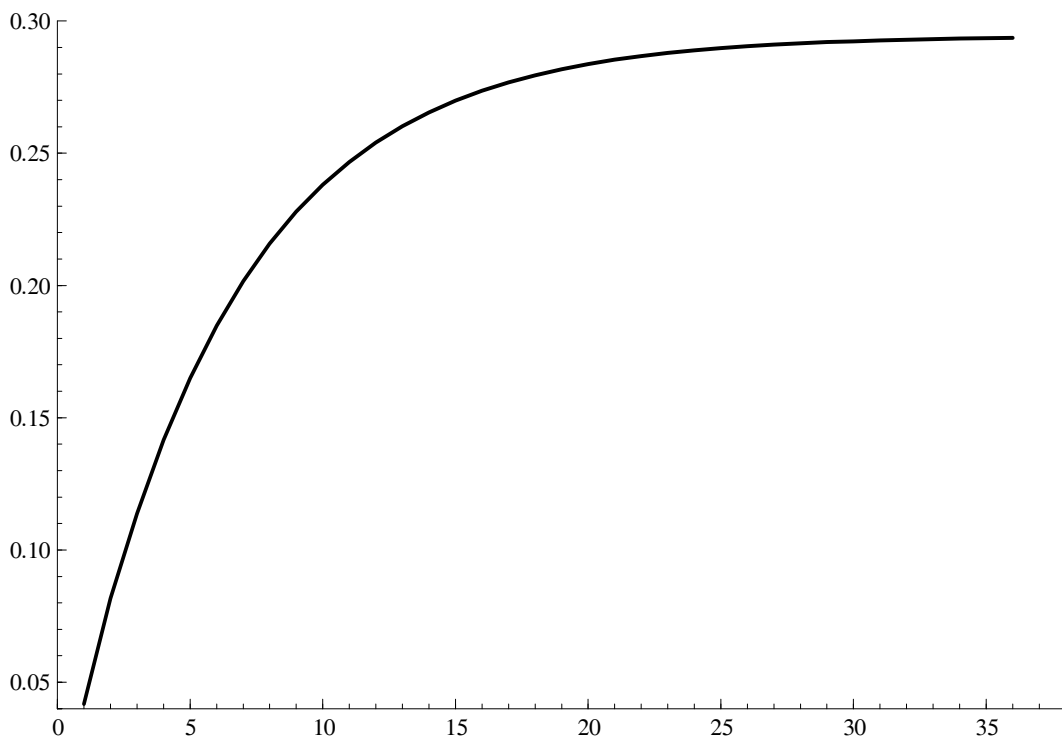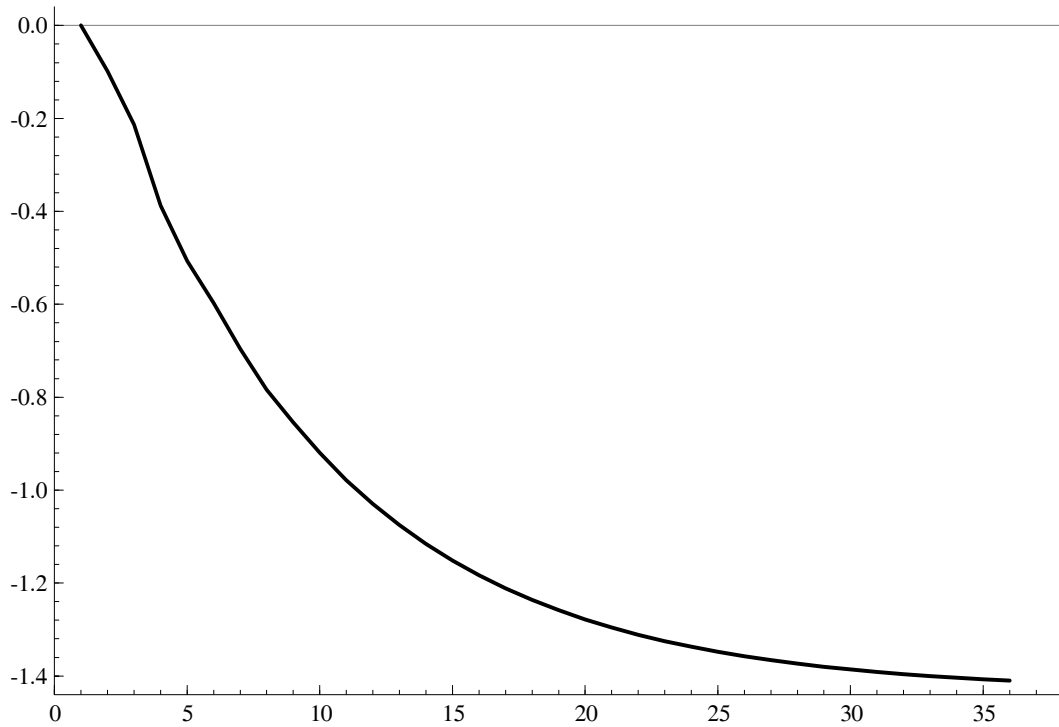
Figure 6

(a) Response of EU tourist arrivals to a permanent unit increase in the number of tourists attacked in Egypt (ln(*tkw*)), first 36 months

(b) Response of EU tourist arrivals to a permanent unit increase in the number of violent deaths in Israel (ln(*iki*)), first 36 months
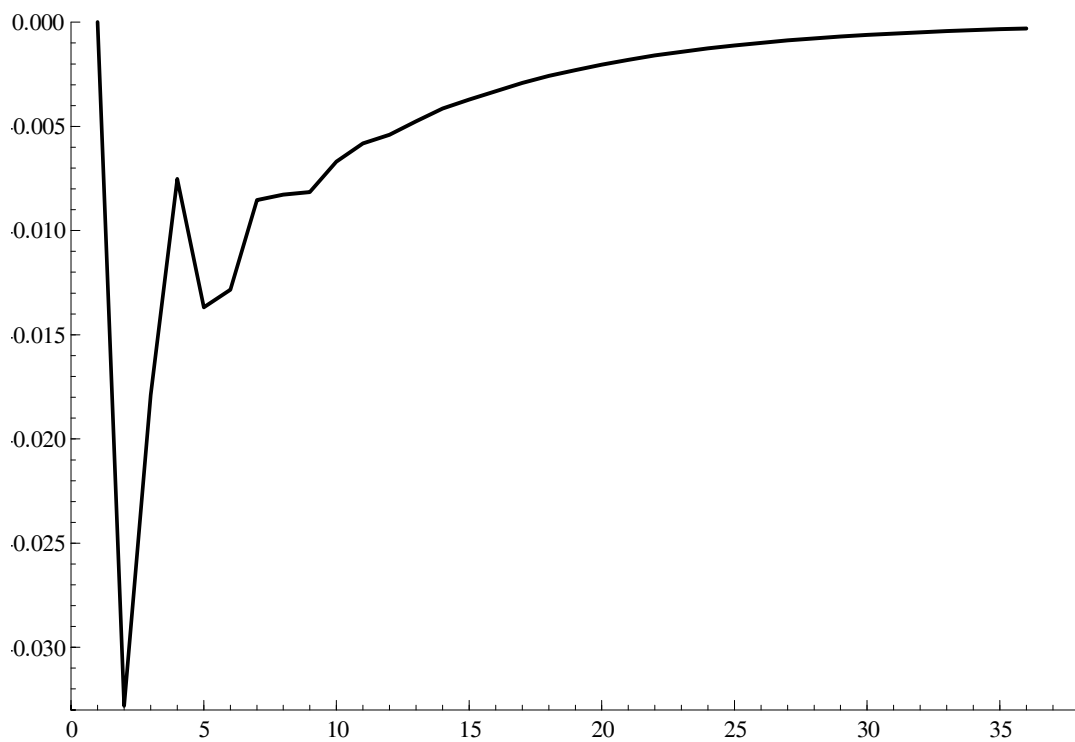
Figure 6(continued)

(c) Response of EU tourist arrivals to a permanent unit increase in the number of suspected Islamists arrested (ln(*cas*)), first 36 months