Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Working Paper

Konstantinos Drakos and Ali M. Kutan

Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries

B 26
2001

Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries

by

Konstantinos Drakos* and Ali M. Kutan**

Abstract♣

A consumer-choice model developed by Enders, Sandler and Parise (1992) is utilized to study the regional effects of terrorism on competitors' market shares in tourism sector where involved countries enjoy significant tourism activities but are subject to high frequency of terrorist attacks. The theoretical model is tested for three Mediterranean countries, namely Greece, Israel, and Turkey, for the period from January 1996 to December 1999, using the seemingly unrelated regression model. Italy is used as a control variable in estimations, acting as a proxy for tourist activities in the rest of the Mediterranean region and providing an additional destination for tourists to visit. Evidence indicates that the tourism industry in Israel and Turkey are more sensitive to terrorism incidents than in Greece. There are also significant regional contagion effects of terrorism. We find that a higher level of terrorist incidents in Greece is associated with an increase in the relative market share of Israel in the region, while terrorism in Israel benefits Turkey's market share. We also document evidence that the location (urban versus rural) and the intensity of terrorist incidents play an important role in the decision-making process of tourists for choice of destinations. Policy implications of our findings are also discussed.

Keywords: Terrorism, Mediterranean tourism, time series, seemingly unrelated regression.

JEL classification: D1, F4, R1

---

*Department of Economics, University of Essex, Wivenhoe Park, Colchester, CO 4 3 SQ, UK. Tel: 0044 (01206) 872722, Email: kdrako@essex.ac.uk

** Southern Illinois University Edwardsville, USA and Centre for European Integration Studies (ZEI), University of Bonn, Germany. E-mail: akutan@siue.edu

♣ We would like to thank Josef Brada, Dimitris Georgarakos, Rik Hafer, and Tim Sullivan for their useful comments on an earlier version of the paper. Any remaining errors are our responsibility.

1. Introduction

International tourism is one of the world’s largest industries and many small, open economies heavily rely on tourism as a major source of foreign exchange earnings. In addition to its direct benefits, such as foreign exchange earnings, tourism is also a source of foreign direct investment (FDI) in many developing countries.

Terrorism can hurt the tourism sector by reducing tourist arrivals. Over time, continued terrorist attacks may also reduce FDI significantly. Besides such direct short- and long-term costs, indirect costs of terrorism include the need for greater advertising expenses to attract new or more tourists, reconstruction costs for damaged tourist facilities, and security enforcement expenses to lessen terrorist threats. Major airports in Europe and Mediterranean have had to made costly improvements in security in response to growing terrorist attacks. Most insurance companies now exclude coverage for losses suffered through terrorist-related injuries or losses (Hall, 1995), passing the cost of terrorism directly on tourists and the owners of tourist facilities.

Terrorism is more likely to have detrimental effects on tourist arrivals in countries with significant terrorist incidents. This paper examines some selected countries in the Mediterranean region that have a high incidence of terrorism. For example, Turkey has been facing several terrorist organizations, including the Islamic Great Eastern Raiders/Front, Kurdistan Worker's Party (PKK), and Turkish Workers' and Peasants' Liberation Army (TIKKO). Periodic bomb attacks and shootings by the PKK especially in Turkey during the 1990’s have had a likely negative effect on tourist arrivals.

In one such attack, a woman set off a bomb outside of an army barracks in East Turkey in December 1998, killing herself and a passer-by and injuring twenty-two people seriously. A month earlier, a bomb had exploded on a bus in central Turkey, killing four passengers and injuring seventeen, and a PKK suicide bomber killed herself with a bomb strapped to her body, killing 6 people outside a police station in southeast Turkey. These attacks came as a response to the arrest in Italy of the PKK leader, Abdullah Ocalan, in November 1998. According to Hall (1995), the number of tourists from the U.K. alone was expected to decline by 20 percent, as a result of the threat of Kurdish terrorism in Turkey. [1] This figure is quite significant, given that the tourism sector accounts for about 25 percent of Turkey's foreign currency earnings (Hall, 1995).

In addition to regular attacks by PKK and others, Turkey recently has been subject to new terrorist incidents due to the political instability in the region. For example, on May 2001 a hostage taking by 12 gunmen at a five-star Swiss-owned hotel in Istanbul to protest Russian military action in Chechnya added to the growing concern for Turkey's tourism industry, which hosted 10 million tourists who brought in $8 billion in 2000 into Turkey's economy (Toros, 2001).

At the same time, the Middle East conflict has likely disturbed the tourism sector activities in Israel. On February 14, 2001, a Palestinian driver crashed into a group of soldiers and civilians waiting at a bus stop south of Tel-Aviv, killing eight and injuring 20. A bomb on an urban bus injured 14 people in Tel-Aviv in December 28, 2000. The explosion occurred in the vicinity of the Israel diamond centre. In analysing the impact of recent incidents on economic activity in Israel, Piterman (2000), who is in charge of foreign currency operations at the Bank of Israel argues that “the most immediate and the strongest effects of the [terrorist] events is that on tourism (p.1).

Greece is another country that has been subject to significant terrorist incidents in recent years. On June 8, 2000, two gunmen on a motorcycle shot British Military Attaché, Brigadier Stephen Saunders. Four bombs exploded in central Athens to protest against a visit to Greece by President Clinton on November 10, 1999. A month later, on October 4, 1999, three gasoline bombs were thrown at a McDonald's restaurant close to Athens.

This paper investigates the impact of terrorism during 1990’s on tourist arrivals for three Mediterranean countries, Greece, Israel and Turkey. We focus on these countries for several reasons. First, tourism revenues constitute an important part of GDP in each country. Second, East Mediterranean Europe has an important world market share in terms of tourist income receipts. In 1999, Turkey, Greece, and Israel had a world market share of 1.8, 3.2, and 0.6 percent of tourist arrivals, respectively (World Tourist Organization, 2001). Third, as suggested by the examples of terrorist incidents above, these countries have became the center of terrorist activities by certain organized terrorist organisations during the last decade, including the PKK activities in Turkey, the Middle East conflict in Israel, and the left extremist groups, such as the N17, in Greece. As such, these countries offer a unique laboratory for studying the impact of terrorist activities on the tourism sector.

Looking forward, empirical findings presented in this paper justify the concerns that terrorism hurts tourism. In addition we find that some countries in the Mediterranean may gain from the problems of their neighbours in that their relative market shares increase as some tourists substitute away from high-risk places towards low-risk locations as the intensity of terrorist incidents increases in a given country. Overall, our study offers additional evidence from the 1990's and uses a new set of countries on the impact of terrorism on the tourism sector and on its contagion effects in a region. The findings developed here are of practical use for policymakers, helping them design effective domestic or region-wide strategies against terrorism.

This paper is organized as follows. In Section 2, we provide a brief review of the literature and outline our major contribution. In Section 3, we present a theoretical framework to motivate our empirical methodology, which is described in Section 4. Empirical findings are reported in Section 5. Finally, Section 6 discusses the policy implications of our findings and concludes the paper.

2. Literature Review

The literature on the impact of terrorism on tourism is scant.[2] To our knowledge, only two studies, by Enders and Sandler (1991) and Enders et al. (1992), provide empirical evidence on the link between terrorism and the tourism sector for a sample of European countries. Using monthly data from 1970 to 1988 and employing a vector autoregressive analysis (VAR), Enders and Sandler (1991) find a significant negative impact of terrorism on tourism in Spain. Enders et al. (1992) study a large sample of European countries during the 1974-88 period. They employ an ARIMA technique with a transfer function and construct a forecasting model for the share of tourism in these countries. Using quarterly data, they conclude that terrorist incidents have an adverse effect on tourism revenues in Europe and that tourists substitute away from some countries to others to minimize the risk of experiencing terrorist incidents. Our evidence in this paper supports these conclusions.

The current study differs from the earlier studies in a number of significant ways. First, we extend the influential work of Enders et al. (1992) by testing the cross-country effects of terrorism on tourist arrivals in the Mediterranean region, which has had growing terrorism incidents. In other words, we explore whether terrorism affects regional competition in the tourist industry. We hypothesize that a higher frequency of occurrence of terrorist incidents in one country will divert tourists to each competitor(s) and consequently, that will be reflected in relative market shares.

Second, our theoretical framework accommodates the testing of other interesting hypotheses. For example, we test whether the competition between the three countries can be approximated by a *'zero-sum' game*. In other words, we test whether a declining market share due to terrorist incidents (if such a relationship exists) is diffused into the country's competitors' shares at a one-to-one rate.

Third, we provide evidence from Mediterranean countries, while the focus of previous studies is on a sample of European countries, which also includes Greece. However, countries like Israel and Turkey are not investigated in the literature despite the growing intensity of terrorist incidents in these countries and the critical role played by the tourism sector in their domestic economy.

Fourth, we provide evidence from the 1990's whereas the earlier studies cover the 1970's and 1980's. This is important, because the intensity of terrorist incidents has especially increased during the last decade, especially in Turkey, and terrorist incidents have taken place more in urban areas in terms of suicide bombs. Therefore, we also examine whether the location (urban versus rural) and the intensity of terrorist incidents could have a different impact on tourists' decision to select a destination of their choice.

Fifth, unlike earlier work, we use Italy in our empirical and theoretical frameworks as a control country, representing the rest of the Mediterranean region, to estimate the effects of terrorism on others' market shares in the region. [3]

Finally, following the earlier work, we utilize an autoregressive model, but we use a more suitable estimation methodology, namely, the seemingly unrelated regression (SURE) method. This method has an important advantage over the previously employed OLS models in that it accounts for the cross-country correlations of disturbances in individual models. This issue becomes more important when the individual sectors studied are expected to be highly substitutable as in our case.

3. Theoretical Framework

The analysis focuses on the effect of terrorism on the competition for tourism services in the Mediterranean. We test for the interaction between three of the most popular tourist destinations in the region: Greece, Israel and Turkey. In particular, we explore the effect of terrorism, measured by the number of terrorist attacks (TA), on the dynamics of the relative market share of each of the three countries. Our theoretical framework follows the consumer choice approach employed by Enders et al. (1992).[4]

In our framework we assume that there is a three-way competition, where we ignore the effects running from/to other countries. However, if we were to define relative market shares that would add up to unity, this would guarantee that there will always be gross substitutability between at least two countries in a deterministic way.[5] To avoid any spurious correlations we augment the tourist destinations considered by including Italy.[6] Although Italy's market share is not modelled per se, it plays the highly significant role of the 'safe' benchmark.[7] Thus, for each month the (total) market is defined as the sum of the number of tourists entering the four countries. The relative market share, for each country, is defined as the ratio of that country's number of tourists to the total market. Defining $T_{B,t}$ $T_{G,t}$, $T_{T,t}$, and $T_{I,t}$ as the number of tourists visiting Italy (the benchmark), Greece, Turkey and Israel, respectively, at time t, we can express the 'total' market, M_t, is as:

$$M_t = T_{G,t} + T_{T,t} + T_{I,t} + T_{B,t} \tag{1}$$

and the relative market share at time t, $S_{j,t}$, is defined as:

$$S_{j,t} = \frac{T_{j,t}}{M_t} \tag{2}$$

Where j = Greece, Turkey, Israel, and Italy. [8]

The theoretical rationale behind our analysis is that consumers, who are also tourists, take terrorism into account in their spending decisions. Following the theoretical framework utilized by Enders et al. (1992), we assume a two-stage budget framework in which rational consumers make a spending decision between tourist and other activities based on the price index for tourism and the price of other goods. In the first stage, consumers determine their total spending on total tourism-related activities subject to a given budget constraint. In the second stage, they divide their expenditures on tourism among countries to be visited. Any increase in terrorist incidents in a particular country causing a relatively higher risk would bring about a standard substitution effect from this country to those of low-risk locations, including Italy.

Our theoretical framework assumes that each country's market share depends on a set of state variables (X), possibly country-specific, such as infrastructure, level of services, weather and amount of available endowment used to market tourist services. Although these state variables are bound to be critical for a country's market share, in our analysis they are taken as given, since our focus is on the effect (if any) of terrorism, which we introduce as an exogenous shock in the system. In particular, we assume the following set-up:

$$
\begin{aligned}
&S_G = f_G(X_G \mid TA) \\
&S_T = f_T(X_T \mid TA) \\
&S_I = f_I(X_I \mid TA) \qquad (3) \\
&S_G + S_T + S_I + S_B = 1 \\
&TA = TA_G + TA_T + TA_I
\end{aligned}
$$

where f is a continuous, differentiable function and S represents each country's market share at time *t.* The effect of domestic terrorism on each country's share is measured by the first derivative of f with respect to TA, the number of terrorist incidents. For instance, for the case of Greece that would be:

$$\frac{\partial S_G}{\partial T_G} = g \tag{4}$$

where g is a constant, capturing the effect of domestic terrorism on Greece.

Similarly, the overall effect of a terrorist incident, say in Greece, will have a direct effect on Greece (given by equation 4) and two indirect effects on Turkey and Israel. Formally, the total effect of a terrorist incident in Greece would be:

$$\frac{\partial S_G}{\partial TA_G} + \left(\frac{\partial S_T}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right) + \left(\frac{\partial S_I}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right) = g + i + t \tag{5}$$

where i and t are constants capturing the effect of Greek terrorism on Israel and Turkey, respectively. [9] Thus, we are predominantly interested in investigating whether terrorism affects competition. In other words, we test whether domestic terrorism affects domestic market share, or equivalently whether:

$$\frac{\partial S_j}{\partial T_j} \neq 0 \tag{6}$$

A natural extension of this model would be to test for the direction of substitution, that is, to test, for instance, whether a decline in Greek market share results in increases in both its competitors' shares or only one of them. In other words, it is tested whether:

$$\left(\frac{\partial S_T}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right) \neq 0 \quad \text{or} \quad \left(\frac{\partial S_I}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right) \neq 0 \tag{7}$$

Finally, we test whether the three-way competition among the countries is a 'zero-sum' game. More formally:

$$\frac{\partial S_G}{\partial TA_G}+\left(\frac{\partial S_T}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right)+\left(\frac{\partial S_I}{\partial S_G}\frac{\partial S_G}{\partial TA_G}\right)=0 \tag{8}$$

We can now further discuss the importance of considering Italy as the benchmark in our model. In particular, by doing so we allow the decision makers (tourists) to have two distinct choices depending on the level of their risk aversion. According to our hypothesis, an increase in terrorist attacks in one country (higher level of risk) can induce two alternative outcomes. It can either result in a substitution effect whereby tourists substitute away that country's services toward one of other competitors, provided they are gross substitutes, or switches away from the risky destination in favor of the safe one, in our case Italy. [10]

For a given level of risk aversion, moderate increases in a tourist destination's riskiness trigger a substitution effect among risky destinations, while a significant increase in the perceived riskiness might result in a discrete change in the consumer's decision in favour of the safe destination. Similarly, for a given level of destination riskiness, changes in attitude towards risk [11] (risk aversion) might produce the same set of alternative outcomes depending on the size of the change.

Finally, from an econometric point of view a negative effect of terrorism on a country's share does not necessarily increase its competitors' shares, since it might be absorbed by the benchmark's share, in which case it would not affect competition among the risky destination, at least in the way defined in our context. In the following section, we present a more complete description of the hypotheses to be tested and also explain our econometric methodology.

4. Methodology and Hypotheses

We specify a time series model and estimate it by the seemingly unrelated regressions (SURE) model (Zellner, 1962). The model with raw shares is as follows:

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \beta_{G,2} S_{G,t-2} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \beta_{T,2} S_{T,t-2} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + u_{T,t} \qquad (9)$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \beta_{I,2} S_{I,t-2} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + u_{I,t}$$

where S is each country's market share at time t, TA is the number of terrorist incidents in each country, the α's, β's, γ's are constant estimable parameters. Greece, Turkey and Israel are represented by (G), (T) and (I), respectively. Finally, u terms in the system of equations (9) are well-behaved disturbance terms, which we allow to be correlated across individual countries (equations).

Obviously, in our context, we are interested in the value and the statistical significance of the γ's which capture the impact of terrorism on relative market shares. We define the 'impact' matrix, Γ, as follows:

$$\Gamma = \begin{bmatrix} \gamma_{G,G} & \gamma_{G,T} & \gamma_{G,I} \\ \gamma_{T,G} & \gamma_{T,T} & \gamma_{T,I} \\ \gamma_{I,G} & \gamma_{I,T} & \gamma_{I,I} \end{bmatrix} \qquad (10)$$

We employ two subscripts to represent the own and cross-country effect. The elements on the main diagonal represent the effect of domestic terrorism on the same country's market share. The off-diagonal elements capture the cross-country impacts. For instance, $\gamma_{T,I}$ would capture the effect of Turkish terrorism on Israel's market share. There is no theoretical reason to believe that the impact matrix, Γ, would be symmetric. However, for completeness we initially allow for non-symmetry, essentially leaving Γ unconstrained, while later we impose symmetry, which we test by the means of a Likelihood Ratio test.

The dynamics specified in the model seek to capture the time series behaviour of the variables of interest rather than to mirror a particular structural model. For instance, in the system of equations (9), the dependent variables are lagged two periods in order to account for the observed time dependence in the series.

This specification allows for a number of hypotheses to be tested. First, it encompasses the specification utilized in Enders et al. (1992) by explicitly accommodating the effect of terrorism in a country relative to its market share. Additionally, it can be used for testing cross-country effects of terrorism. More formally, we test the following set of hypotheses, all of which are equivalent to imposing linear restrictions on the impact matrix, Γ:

H1: Terrorism does not exert any impact on the demand for tourist services of a country and therefore does not affect relative market shares. Consequently, the risk of terrorism is not priced in equilibrium and Γ is the null matrix.

We test this by testing the following null hypothesis:

$$H_0 : \gamma_{G,G} = \gamma_{T,T} = \gamma_{I,I} = \gamma_{G,T} = \gamma_{G,I} = \gamma_{T,G} = \gamma_{T,I} = \gamma_{I,G} = \gamma_{I,T} = 0$$

Rejecting this hypothesis would imply that consumers do indeed factor the terrorism record of a country into their decision process, and such a consideration of risk translates into changes in market shares.

H2: The effect of domestic terrorism on domestic market share is uniform across countries.

This is examined by testing the following null hypothesis:

$$H_0 : \gamma_{G,G} = \gamma_{T,T} = \gamma_{I,I}$$

Not rejecting the hypothesis would imply that the cost of terrorism is the same for each country in the region. Rejection of the hypothesis would suggest that there is a country-specific cost for terrorism.

H3: A given country's terrorism does not affect its competitors' markets shares.

This is investigated by testing the following hypotheses for each country individually as well as jointly for the system:

(a) $H_0 : \gamma_{G,T} = \gamma_{G,I} = 0$ (Greece)

(b) $H_0 : \gamma_{T,G} = \gamma_{T,I} = 0$ (Turkey)

(c) $H_0 : \gamma_{I,G} = \gamma_{I,T} = 0$ (Israel)

(d) $H_0 : \gamma_{G,T} = \gamma_{G,I} = \gamma_{T,G} = \gamma_{T,I} = \gamma_{I,G} = \gamma_{I,T} = 0$ (Joint)

Furthermore, testing for the individual significance of these coefficients can uncover which countries' tourism services can be viewed as being gross substitutes. For instance, a positive sign for $\gamma_{G,T}$ would imply that Greece's market share responds to terrorist incidents in Turkey. In this sense, one may thus conclude that tourists view the tourist services of the two countries as gross substitutes. Evidence obtained from the testing of these hypotheses, however, can allow us to make further inferences about whether the time path of market shares is statistically related to terrorism incidents in the domestic country as well as to those in its competitors.

H4: Terrorism's effects on country market shares constitute a zero-sum game.

We assess the validity of this by testing the following hypotheses for each country individually as well as jointly for the system:

$(a)\ H_0 : \gamma_{G,G} = -(\gamma_{G,T} + \gamma_{G,I})$ (Greece)

$(b)\ H_0 : \gamma_{T,T} = -(\gamma_{T,G} + \gamma_{T,I})$ (Turkey)

$(c)\ H_0 : \gamma_{I,I} = -(\gamma_{I,G} + \gamma_{I,T})$ (Israel)

$(d)\ H_0 : \gamma_{G,G} = -(\gamma_{G,T} + \gamma_{G,I})$ and $\gamma_{T,T} = -(\gamma_{T,G} + \gamma_{T,I})$ and

$\gamma_{I,I} = -(\gamma_{I,G} + \gamma_{I,T})$ (Joint)

5. Empirical Results

5.1. Data

Monthly data on the number of tourist visits were collected for the period from January 1996 to December 1999, with 48 data points. The choice for the sample period is dictated by data availability. Data ends in December 1999, because tourism statistics are published with a significant lag.

The Greek and Israeli National Tourism Organisations kindly provided tourism data for Greece and Israel, respectively. For Turkey, they were retrieved from the Data Delivery System (DDS) of the Central Bank of Turkey, while data for Italy were obtained from the National Statistical Institute

(Instituto Nazionale Di Statistica). Data on terrorist attacks were obtained from the International Terrorism Database (ITD) of the International Policy Institute (http://www.ict.org.il/). The terrorist incidents considered in our analysis are summarized in Table 1.

Bombing and suicide bomb attacks dominate the terrorist incidents reported in Table 1. Shooting between terrorists and military are particularly evident in Israel. The rest of the incidents are unevenly distributed across the countries. Turkey faces a diversified type of the terrorist incidents while a narrower type of incidents such as bombing, setting of incendiary devices, and rocket attacks take place in Greece. Israel has the highest number of incidents while Greece and Turkey share a similar number of terrorist actions.

5.2. Descriptive Statistics and Bivariate Correlations

The descriptive statistics for the relative market shares for the four countries are reported in Table 2.[12] Italy has the biggest market share of about 61 percent while Israel has the smallest with around 5 percent. Turkey and Greece share a similar market share of about 16-18 percent. Note that Greece has the highest standard deviation among the four countries, indicating that its market share is subject to greater and more sudden changes. On the other hand, Israel has the lowest standard deviation, indicating a relatively more stable market share.

Table 3 reports the sample correlation matrix. The unconditional sample bivariate correlations for the market shares indicate that Greece's market share is strongly negatively correlated both with that of Turkey's as well as that of Israel's. This would suggest that Greece's tourist services are viewed as gross substitutes for those supplied by Turkey and Israel. In contrast, tourism services between Turkey and Israel exhibit positive correlation, suggesting that consumers view them as complements.

We expect that our series have a strong seasonal component and might even contain a seasonal unit root. In such cases, the standard practice is to seasonally difference the series in order to remove the seasonal stochastic trend and consequently induce stationarity. However, in our case due to the relatively small sample, resorting to seasonal differencing would be very costly in terms of the loss of degrees of freedom. Bearing this in mind, we are sensitive to evidence of residual non-whiteness. Especially, we carefully monitor the residual autocorrelation in order to pick up higher degrees of persistence in their behaviour that would indicate spuriousness of our regression model. As will become apparent in the next section, the estimated residuals satisfy the standard diagnostic tests. In any case, for completeness and as a means for conducting sensitivity analysis we estimate the system of equations of model (9) by employing alternative specifications for the dependent variable: (i) 'raw' market shares with and without seasonal dummies as regressors, (ii) seasonally adjusted market shares, and (iii) seasonally differenced market shares.

5.3 Estimation Results

The system of equations in model (9) was estimated by SURE for the period from January 1996 to December 1999. In Tables 4a and 4b we report the estimation results for the raw market shares, without and with including (eleven) seasonal dummies.

A number of interesting findings are worth mentioning. First, when seasonal dummies are excluded the model captures the time series behaviour of country shares relatively well, explaining between 66 percent and 80 percent of their variations. Additionally, a battery of diagnostics indicates that the residuals satisfy the basic OLS assumptions regarding the whiteness of the error term.[13] When the seasonal dummies are included the model's explanatory power, as expected, increases significant and typically is above 93%. The two models provide very similar point estimates as well as statistical significance for the parameters of interest so we will adopt the more parsimonious of the two, the one without seasonal dummies, to save degrees of freedom. [14]

Focusing on our best specification in Table 4a, it is obvious that the time series properties of all three countries' market shares display a similar structure, exhibiting very strong positive first order dependence with point estimates for $\beta_{j,1}$ between 1.10 and 1.20 and negative second-order dependence with point estimates for $\beta_{j,2}$ between –0.39 and –0.64. Regarding the own effect of domestic terrorism, our findings indicate that terrorist attacks exert a negative impact on market share of the country in which they occur. [15] The estimated coefficients were -1.07 (p-value 0.14) for Greece ($\gamma_{G,G}$), -0.78 (p-value 0.06) for Turkey ($\gamma_{T,T}$), and -0.44 (p-value 0.01) for Israel ($\gamma_{I,I}$). In other words, a terrorist incident in Greece results in, on average, 1 percent decline in its relative market share. [16] For the case of Israel the impact is on average a decline of 0.44 percent, while for Turkey it is a drop of 0.78 percent. Regarding the effect of cross-country terrorism on relative market shares ($\gamma_{i,j}$), all but one of the relevant estimated coefficients attained a positive sign, which is consistent with the hypothesis of gross substitutability. A closer look however, reveals that the only statistically significant relationships are documented between Greece and Israel ($\gamma_{I,G}$) and Turkey and Israel ($\gamma_{T,I}$). In particular, a higher frequency of terrorist incidents in Greece is associated with an increase in the relative market share of Israel. Similarly, our findings indicate that an increase in terrorist incidents in Israel result in a gain of about 0.7 percent for Turkey (p-value 0.1). In other words, Turkey's market share increases on average by 0.7 percent due to a terrorist incident in Israel.

Turning attention again to the case of Greece and Israel [17], we attempt to quantify the impact on Israel's market share. The coefficient's point estimate, 1.01, implies that the occurrence of a terrorist incident in Greece results on, an average, gain of about 1 percent in Israel's market share. This result suggests strong substitutability between the two countries' tourist services. A terrorist incident in Greece results in about 1 percent decrease in its own relative market share while it increases Israel's share by the same amount, suggesting an almost one-to-one substitutability. In fact, a test of equality (in absolute value) for these two coefficients was not rejected with a probability value of 0.94.

The estimated coefficient (1.01) shows that Israel gains on average by 1.01 percent due to terrorism in Greece. Given that the average number of tourists entering the four-country market per month is about 4.5 million people, we can deduce that on average a terrorist incident in Greece results in 45 thousand tourists switching to Israel. We can further provide some monetary cost figures of terrorism based on 1999 figures. [18] Given that in 1999 Greece had 8.8 billion in US dollars tourist income and about 12 million tourists, then the average tourist expenditure was about 733 US Dollars. The number of tourists who visited the four countries was almost 58 million in 1999 and a 1 percent market share of this would be equivalent to 580 thousand tourists. Thus, the loss for Greece in pecuniary terms would approximately be 425 million in US Dollars (580,000 tourists * 733 US Dollars) per annum or $35 million per month.

The results of the formal hypotheses H1-H4 discussed earlier are reported in Table 5. We are able to reject H1 implying that terrorism indeed exerts an effect on the tourist industry of the three Mediterranean countries. By not rejecting H2, we also conclude that this effect is uniform across the three countries. Thus, decision makers, tourists, factor the risk of terrorism in this process and also respond in a homogeneous way, effectively using the same risk assessment criteria for different countries.

The null hypothesis of H3d was rejected, suggesting that cross-country terrorism affects competitors' market shares. Inspection of the disaggregated hypotheses (H3a-H3c) reveals that the main cause of this rejection is Greece, whose terrorism seems to benefit Israel's market share. This finding also verifies our previous conclusion reached by inspecting the individual coefficients from the estimation (see Table 4).

Turning now our attention to the hypotheses for H4a-c, we were able to reject H4b and H4c. Thus our findings suggest that a zero-sum game between Greece and its competitors exists. Utilising the inference from H3 we can further conclude that the only non-trivial zero-sum game seems to exist between Greece and Israel. [19]

6. Further Evidence: Decomposing terrorist incidents

Our principal measure of terrorist activity, the number of terrorist incidents TA_t within a given month, is crudely aggregated. In this section, an attempt is made to disaggregate terrorist incidents into different categories in order to test whether a particular geographic location in which a terrorist attack takes place (urban vs. rural) and the intensity of the attacks, measured by the number of fatal casualties, affect tourist activities differently. In order to capture any potential differential effects with respect to the location of the incident and its intensity we adopt the following estimation strategies.

Conditional[20] on the occurrence of a terrorist incident, we define the following two geographic dummies:

$GD_1 = 1$, if the incident took place in an urban area
$= 0$, otherwise

$GD_2 = 1$, if the incident took place in a rural area
$= 0$, otherwise

Additionally, in order to capture the effects of the intensity of the attack we define the following three level dummies:

$LD_1 = 1$, if there were no casualties
$= 0$, otherwise

$LD_2 = 1$, if the number of casualties ≤ 3
$= 0$, otherwise

$LD_3 = 1$, if the number of casualties > 3
$= 0$, otherwise

For each country, we estimate two models:

$$\left(Market\ Share\right)_t = a_0 + \alpha_1\left(TA_t * GD_1\right) + \alpha_2\left(TA_t * GD_2\right) + u_t \qquad (11)$$

and

$$\left(Market\ Share\right)_t = a_0 + \beta_1\left(TA_t * LD_1\right) + \beta_2\left(TA_t * LD_2\right) + \beta_3\left(TA_t * LD_3\right) + u_t \qquad (12)$$

where the total effect of terrorism on the market share is $\alpha_1 + \alpha_2$ for equation (11), while for equation (12) it is $\beta_1 + \beta_2 + \beta_3$. We can test whether tourists discount the location of the terrorist incident differently by testing the significance of the $\alpha 's$. Similarly, we can test whether the intensity of terrorist activity matters for consumers by testing the significance of the individual $\beta 's$. Finally, we can test whether the effect of the level of terrorism is uniform by testing the null hypothesis that $\beta_1 = \beta_2 = \beta_3$. If we reject this null, then we would have found evidence of asymmetries.[21]

6.1 Empirical Results

6.1.1. Intensity of Attacks

To test the significance of terrorist activity in terms of its intensity we estimate the following specification for each country in our sample.

$$\begin{aligned}\left(S\right)_{t,1} = {} & a_0 + \phi_1 S_{t-1,1} + \phi_2 S_{t-2,1} + \beta_1\left(TA_{t,1} * LD_{1,1}\right) + \beta_2\left(TA_{t,1} * LD_{2,1}\right) + \beta_3\left(TA_{t,1} * LD_{3,1}\right) + \\ & + \gamma_1\left(TA_{t,2} * LD_{1,2}\right) + \gamma_2\left(TA_{t,2} * LD_{2,2}\right) + \gamma_3\left(TA_{t,2} * LD_{3,2}\right) + \delta_1\left(TA_{t,3} * LD_{1,3}\right) + \\ & + \delta_2\left(TA_{t,3} * LD_{2,3}\right) + \delta_3\left(TA_{t,3} * LD_{3,3}\right) + u_t\end{aligned} \qquad (13)$$

The estimation results for all three countries are reported in Table 6. Inspecting the results on a general level, one observes that the basic findings we report in the previous sections of the paper hold. For instance, the fit of the estimated models is comparable to that of those from the previous section.

Similarly the residuals are consistent with a white noise process and the autoregressive nature of market shares is maintained.

Moving to the parameters of interest, consistent with our priors, all coefficients (β 's) capturing the effect of domestic terrorist activity on domestic market share carry the correct sign, being negative. Similarly, the coefficients measuring cross-country effects (γ 's and δ 's) also carry the correct sign[22] (positive) providing evidence for imperfect substitutability between the three countries' tourist services conditional on terrorist activity.

Starting with the case of Greece, terrorist attacks in urban[23] areas exert a significant negative effect on Greece's market share. The point estimate of $\beta_{1,G}$ is -1.37 suggesting that the occurrence of a terrorist attack in central Athens on average reduces Greek market share by 1.37%. The coefficients of cross-county effects are more informative, however. Greece's market share is sensitive to the occurrence of fatal terrorist incidents in Turkey. In particular, the estimate of $\gamma_{2,T}$ was 1.81 and significant implying that when a fatal terrorist incident takes place in Turkey the Greek market share increases about 1.81%. In general, our findings indicate that terrorist activity in Turkey, unless it is intensive enough involving fatal casualties, seems not to affect competition. With respect to terrorist activity in Israel, there seems to be only a marginally significant (at the 10% level) gain for Greek market share of about 1.28%. The Greek market share is insensitive to higher levels of intensity of terrorism in Israel and only responsive to the general level of terrorism as measured by the number of incidents.

Turning now our attention to the case of Israel, there is strong evidence for asymmetries in the effect of domestic terrorist activity's intensity on Israel's market share. In particular, our findings document that there is a significant negative effect on domestic market share as a result of the general level of terrorist activity ($\beta_{1,I}$ estimate of -0.97) but also as a result of extreme intensity (more than 3 fatal casualties) as measured by the estimate of $\beta_{3,I}$ (-0.78). Hence, the total loss in terms of market share is on average about 1.75%. With regards to cross-country effects, Israel gains significantly from urban terrorist activity in Greece, again on average 1.19 %. ($\gamma_{1,G}$ =1.19). This finding verifies our earlier conclusion for strong substitutability between Israel and Greece when conditioning on terrorist activity. Finally, no significant cross effects were uncovered running from Turkey to Israel.

As far as Turkey is concerned, asymmetric effect is also documented. It is only intense domestic terrorist activity that exerts a significant negative impact on its market share. Specifically, the estimate of $\beta_{3,T}$ indicates an average loss of 0.69% in terms of market share. Significant cross-country gains were also documented running both from Greece and Israel. For instance, Turkey's market share gains on average 1.23% (estimate of $\gamma_{1,G}$) due to urban terrorist activity in Greece. Additionally, Turkey's market share is responsive to terrorist incidents in Israel involving fatal casualties (estimate of $\delta_{2,I}$ 1.78).

6.1.2. Geographic Area of Attacks

In order to assess whether the location of terrorist incidents is of statistical importance we estimate the following specification.

$$\begin{aligned}(S)_{t,1} &= a_0 + \phi_1 S_{t-1,1} + \phi_2 S_{t-2,1} + \beta_1 \left(TA_{t,1} * GD_{1,1}\right) + \beta_2 \left(TA_{t,1} * GD_{2,1}\right) + \gamma_1 \left(TA_{t,2} * GD_{1,2}\right) + \\ &\quad + \gamma_2 \left(TA_{t,2} * GD_{2,2}\right) + \delta_1 \left(TA_{t,3} * GD_{1,3}\right) + \delta_2 \left(TA_{t,3} * GD_{2,3}\right) + u_t\end{aligned}$$

(14)

The estimation results for all three countries are reported in Table 7. Starting with Greece [24], the cross-country effects are not very informative. In particular, the Greek market share is insensitive to the location of terrorist activity in Turkey. Finally, with respect to terrorist activity in Israel, the estimation results indicate that the Greek market share significantly gains from rural terrorist activity in Israel.

Moving to the case of Israel, domestic urban terrorism exerts a significant a negative effect on domestic market share, which is on average -0.44% (estimate of $\beta_{1,I}$). Regarding cross-country effects, Israel's market share is positively affected by urban terrorism in Greece (estimate of $\gamma_{1,G}$ 1.19). There is an additional effect due to rural terrorist activity in Greece, which is negative but, in comparison to the urban effect, it is of smaller magnitude in absolute terms. With respect to the location of terrorist incidents in Turkey, the estimated value of $\delta_{1,T}$ is significant, suggesting that Israel's market share gains significantly on average by 1.28%

Turkey's market share is responsive to domestic rural terrorist activity, which induces a significant loss of 0.95% (estimate of $\beta_{2,T}$). Given that the PKK activities typically take place in such areas and they constituted the most important incidents compared to other terrorist groups during our sample period, this result is expected. The results for cross-country effects indicate that Turkey's market share is sensitive to urban terrorist activities in Greece. The estimated coefficient, $\gamma_{1,G}$, 0.83, indicates that Turkey's market share goes up by an average 0.83%. However, it is also negatively affected by rural terrorist activity in Greece. The coefficient estimate, $\gamma_{2,G}$ suggests that this effect is 2.72 %. Finally, there was no significant effect due to the location of Israel's terrorist incidents.

7. Policy Implications and Conclusions

We have examined the effects of terrorism in a regional setting. Our results broadly support the conclusions of Enders et al. (1992) that terrorism matters for tourism. We have found evidence that terrorism in Israel and Turkey significantly reduces tourist arrivals. One difference between Enders et al. and our findings is that they find strong support for the significance of terrorism in Greece while we do not. One reason for this different result would be the different sample periods examined. Enders et al. (1992) study covers the 1970's and 1980's while we focus on 1990's. It is possible that the intensity of terrorism incidents has declined in 1990's relative to that of 1980's in Greece and/or that Greek government has coped better with such incidents in the 1990's because they has learned from their experience with terrorism in the past decades.

When the terrorist incidents are decomposed into rural versus urban areas, however, incidents in the urban areas tend to have a negative and significant effect on tourist arrivals in Greece, supporting the findings of Enders et al. (1992). Our findings indicate the importance of decomposing terrorist incidents into different categories to truly identify the impact of terrorism on tourism. Overall, we have found that the intensity of causalities and geographic location of incidents have significant own and cross-country effects on the market shares of involved countries. Future research should focus on using more disaggregated terrorism data and provide more evidence from other countries.

We have also found significant contagion effects from terrorism in the region. There is evidence that, although terrorism may not directly affect tourist arrivals in Greece, it still hurts Greece's market share indirectly by increasing Israel's relative market share. Additionally, we have documented an effect of terrorism on the substitutability of market shares between Turkey and Israel. Again, the results are sensitive to the different categorization of terrorist incidents.

Given the significant effects of terrorism in the region, it may be wise for policymakers to establish and fund regional cooperation against terrorism by creating a multinational organization that would foster the exchange of information, cross-border investigations, and other cooperation. [25] In addition, joint military and police training exercises against terrorist attacks may result in economies scale and, more importantly, may increase the effectiveness of security enforcement. [26] As a result, regional economic and political relationships among the involved countries should also increase. This represents an important opportunity especially for Turkey and Greece, who have had experienced many years of political conflict. [27] However, in recent years, both countries have made a great progress in improving their relationship, especially following the recent earthquakes in both countries. Like natural disasters, terrorist threats in the region can be used positively to cerate new opportunities to further enhance the growing political and economic ties between the two countries.

Table 1 Terrorist Incidents

Type of Incident \Country	Greece	Turkey	Israel
Bombing	14	5	11
Shooting	1	4	8
Kidnapping	0	2	0
Incendiary Device	2	1	0
Rocket Attack	3	1	0
Hijacking	0	4	0
Arson	0	2	0
Suicide Bomb	0	4	10
Car Bomb	0	1	4
Knife Attack	0	0	4
Handgrenade	0	0	2
Other	0	0	2
Total number of incidents	20	24	41

Table 2 Relative Market Shares: January 1996 to December 1999

	Greece	Turkey	Israel	Italy
Mean	15.66	17.78	5.40	61.15
Maximum	25.96	26.73	12.76	73.90
Minimum	0.87	9.78	1.84	51.86
Std. Dev.	7.41	4.09	3.10	5.47
Observations	48	48	48	48

Notes: Market shares presented as a percentage.

Table 3 Bivariate Market Share Sample Correlations

	Greece	Turkey	Israel	Italy
Greece	1.00			
Turkey	-0.47*	1.00		
Israel	-0.85*	0.62*	1.00	
Italy	-0.53*	-0.47*	0.12	1.00

Notes: The asterisk denotes (one-tailed) significance at the 1 percent level.

Table 4a Estimation Results based on the Raw Market Share and unconstrained (allowing for asymmetry) Γ matrix

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \beta_{G,2} S_{G,t-2} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \beta_{T,2} S_{T,t-2} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + u_{T,t}$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \beta_{I,2} S_{I,t-2} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + u_{I,t}$$

Greece						
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate (t-ratio)	5.87 (3.77)***	1.20 (6.91)***	-0.60 (-4.52)***	-1.07 (-1.50)	0.70 (1.08)	0.59 (1.22)
Turkey						
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate (t-ratio)	4.98 (2.85)***	1.10 (9.19)***	-0.39 (-3.70)***	-0.78 (-1.89)*	0.56 (1.14)	0.70 (1.66)
Israel						
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate (t-ratio)	2.34 (4.80)***	1.20 (15.06)***	-0.64 (-5.58)***	-0.44 (-2.53)***	1.01 (2.51)***	-0.10 (-0.47)
Diagnostics						
	Adj. R^2	*F-stat*	*LM(1) serial corr.*	*DW*	*ARCH(1)*	*J-B*
Greece	0.71	19.62***	2.40	2.19	2.38	3.58
Turkey	0.66	16.00***	0.30	2.07	0.71	1.81
Israel	0.80	33.58***	0.08	1.94	1.90	3.28

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. One, asterisk denotes significance at the 10 percent level, while two and three asterisks denote significance at the 5 and 1 percent respectively. *Adj. R^2*, *F-stat*, *LM(1) serial correlation*, *ARCH(1), DW* and *J-B* stand for the adjusted coefficient of determination, the overall statistical significance of the regression equation, the Lagrange Multiplier serial correlation statistic, the Autoregressive Conditional Heteroscedascticity test, the Durbin-Watson statistic and the Jarque-Bera normality test, respectively.

Table 4b Estimation Results based on the Raw Market Share and unconstrained (allowing for asymmetry) Γ matrix and including seasonal dummies

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \beta_{G,2} S_{G,t-2} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + \sum_{i=1}^{11} \delta_{G,i} D_i + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \beta_{T,2} S_{T,t-2} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + + \sum_{i=1}^{11} \delta_{T,i} D_i + u_{T,t}$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \beta_{I,2} S_{I,t-2} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + + \sum_{i=1}^{11} \delta_{T,i} D_i + u_{I,t}$$

			Greece			
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate	15.66	0.14	-0.47	0.97	-0.21	0.096
(t-ratio)	(3.54)***	(0.66)	(-2.01)**	(1.29)	(-0.44)	(0.16)
			Turkey			
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate	3.56	0.93	-0.11	-0.78	-0.047	0.39
(t-ratio)	(1.33)	(6.03)***	(-0.65)	(-3.34)***	(-0.13)	(1.53)
			Israel			
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate	4.04	0.77	-0.14	-0.14	0.62	-0.14
(t-ratio)	(3.06)***	(4.96)***	(-0.86)	(-1.07)	(3.35)***	(-1.09)
			Diagnostics			
	Adj. R^2	*F-stat*	*LM(1) serial corr.*	*DW*	*ARCH(1)*	*J-B*
Greece	0.94	25.87***	0.26	1.81	0.14	3.11
Turkey	0.93	25.21***	3.68	2.29	1.09	2.25
Israel	0.97	69.37***	0.45	1.80	0.12	0.54

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. One, asterisk denotes significance at the 10 percent level, while two and three asterisks denote significance at the 5 and 1 percent respectively. *Adj. R^2*, *F-stat*, *LM(1) serial correlation*, *ARCH(1), DW* and *J-B* stand for the adjusted coefficient of determination, the overall statistical significance of the regression equation, the Lagrange Multiplier serial correlation statistic, the Autoregressive Conditional Heteroscedascticity test, the Durbin-Watson statistic and the Jarque-Bera normality test, respectively. The coefficients (and the respective t-ratios) associated with the seasonal dummies are not reported for brevity, they are however available upon request.

Table 5 Hypothesis Testing Results (based on estimation with raw market shares without seasonal dummies)

Null Hypothesis	Wald statistics (p-values)
H1	20.12*** (0.01)
H2	0.76 (0.76)
H3 a	10.83*** (0.00)
H3 b	1.13 (0.56)
H3 c	3.07 (0.21)
H3 d	15.75*** (0.01)
H4 a	5.07*** (0.02)
H4 b	3.77** (0.05)
H4 c	2.41 (0.12)
H4 d	9.08** (0.02)

Notes: Wald statistics with probability values in parentheses. One, asterisk denotes significance at the 10 percent level, while two and three asterisks denote significance at the 5 and 1 percent respectively.

Table 6 Decomposition in terms of the Intensity of attacks

$$\begin{aligned}(S)_{t,1} = a_0 + \phi_1 S_{t-1,1} + \phi_2 S_{t-2,1} + \beta_1 \left(TA_{t,1} * LD_{1,1}\right) + \beta_2 \left(TA_{t,1} * LD_{2,1}\right) + \beta_3 \left(TA_{t,1} * LD_{3,1}\right) + \\ + \gamma_1 \left(TA_{t,2} * LD_{1,2}\right) + \gamma_2 \left(TA_{t,2} * LD_{2,2}\right) + \gamma_3 \left(TA_{t,2} * LD_{3,2}\right) + \delta_1 \left(TA_{t,3} * LD_{1,3}\right) + \\ + \delta_2 \left(TA_{t,3} * LD_{2,3}\right) + \delta_3 \left(TA_{t,3} * LD_{3,3}\right) + u_t\end{aligned}$$

Greece		Israel		Turkey	
Coefficient	Estimates (t-ratio)	Coefficient	Estimates (t-ratio)	Coefficient	Estimates (t-ratio)
$\phi_{1,G}$	1.23 (6.31)***	$\phi_{1,I}$	1.23 (13.51)***	$\phi_{1,T}$	1.22 (10.63)***
$\phi_{2,G}$	-0.63 (-4.37)***	$\phi_{2,I}$	-0.67 (-5.22)***	$\phi_{2,T}$	-0.25 (-2.47)***
$\beta_{1,G}$	-1.37 (-1.97)**	$\beta_{1,I}$	-0.97 (-3.54)***	$\beta_{1,T}$	-1.75 (-0.86)
$\beta_{2,G}$	-1.10 (-0.79)	$\beta_{2,I}$	-0.18 (-0.66)	$\beta_{2,T}$	-0.65 (-0.57)
$\beta_{3,G}$	-	$\beta_{3,I}$	-0.78 (-2.54)***	$\beta_{3,T}$	-0.69 (-2.12)***
$\gamma_{1,T}$	3.71 (1.30)	$\gamma_{1,G}$	1.19 (2.90)***	$\gamma_{1,G}$	1.23 (2.67)***
$\gamma_{2,T}$	1.81 (2.89)****	$\gamma_{2,G}$	0.94 (1.59)	$\gamma_{2,G}$	0.80 (0.63)
$\gamma_{3,T}$	-0.22 (-0.55)	$\gamma_{3,G}$	-	$\gamma_{3,G}$	-
$\delta_{1,I}$	1.28 (1.88)*	$\delta_{1,T}$	-0.81 (-0.86)	$\delta_{1,I}$	-0.46 (-0.83)
$\delta_{2,I}$	0.55 (1.12)	$\delta_{2,T}$	-0.42 (-0.99)	$\delta_{2,I}$	1.78 (2.75)***
$\delta_{3,I}$	-0.27 (-0.19)	$\delta_{3,T}$	0.06 (0.26)	$\delta_{3,I}$	0.88 (1.40)
$\bar{R}^2$	0.67***	$\bar{R}^2$	0.78***	$\bar{R}^2$	0.59***
DW	2.08	DW	1.87	DW	1.83
LM(1) serial corr.	0.87	LM(1) serial corr.	0.34	LM(1) serial corr.	0.89
ARCH(1)	2.99	ARCH(1)	2.63	ARCH(1)	1.79
J-B	6.85**	J-B	2.59	J-B	0.04

Notes: The country index is 1, 2, 3 since we are modelling a three-way competition. The index in the equation is country-free, that is it represents the typical equation we use. The exact identification of countries with the index follows a rolling fashion and depends on which country's market share is modelled. For instance, when Turkey is analyzed, we assign 1 to Turkey, 2 to Greece and 3 to Israel. In the tables, we identify each country's coefficients by using the country name's first letter as a subscript.

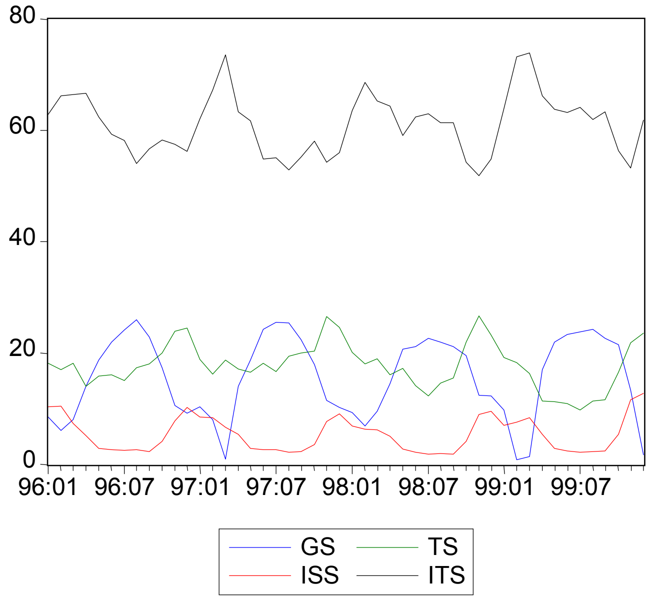
Table 7 Decomposition in terms of the location of attacks

$$(S)_{t,1} = a_0 + \phi_1 S_{t-1,1} + \phi_2 S_{t-2,1} + \beta_1\left(TA_{t,1} * GD_{1,1}\right) + \beta_2\left(TA_{t,1} * GD_{2,1}\right) + \gamma_1\left(TA_{t,2} * GD_{1,2}\right) +$$
$$+\gamma_2\left(TA_{t,2} * GD_{2,2}\right) + \delta_1\left(TA_{t,3} * GD_{1,3}\right) + \delta_2\left(TA_{t,3} * GD_{2,3}\right) + u_t$$

Greece			Israel			Turkey	
Coefficient	Estimates (t-ratio)		Coefficient	Estimates (t-ratio)		Coefficient	Estimates (t-ratio)
$\phi_{1,G}$	1.20 (6.26)***		$\phi_{1,I}$	1.20 (14.83)***		$\phi_{1,T}$	1.14 (9.68)***
$\phi_{2,G}$	-0.59 (-4.09)***		$\phi_{2,I}$	-0.63 (-5.33)***		$\phi_{2,T}$	-0.40 (-3.62)***
$\beta_{1,G}$	-1.45 (-1.89)*		$\beta_{1,I}$	-0.44 (-2.41)***		$\beta_{1,T}$	1.72 (1.72)
$\beta_{2,G}$	-0.06 (-0.08)		$\beta_{2,I}$	-0.37 (-1.21)		$\beta_{2,T}$	-0.95 (-2.28)***
$\gamma_{1,T}$	0.60 (0.68)		$\gamma_{1,G}$	1.19 (3.36)***		$\gamma_{1,G}$	0.83 (2.43)***
$\gamma_{2,T}$	0.63 (0.93)		$\gamma_{2,G}$	-0.80 (-4.29)***		$\gamma_{2,G}$	-2.72 (-4.30)***
$\delta_{1,I}$	0.34 (0.53)		$\delta_{1,T}$	1.28 (5.71)***		$\delta_{2,I}$	0.59 (1.29)
$\delta_{2,I}$	0.99 (1.98)*		$\delta_{2,T}$	-0.19 (-0.83)		$\delta_{3,I}$	1.09 (1.53)
$\bar{R}^2$	0.66***		$\bar{R}^2$	0.78***		$\bar{R}^2$	0.63***
DW	2.22		DW	2.05		DW	2.07
LM(1) serial corr.	2.88		LM(1) serial corr.	0.08		LM(1) serial corr.	0.21
ARCH(1)	1.99		ARCH(1)	0.85		ARCH(1)	0.33
J-B	5.64**		J-B	4.92*		J-B	2.41

Notes: For the case of Greece we can only apply the geographic decomposition since in our sample there were no fatal terrorist incidents. So, in both decompositions Greek entries correspond to geographic decomposition. The numbers in parentheses are the White heteroscedasticity adjusted t-ratios. One, two, three asterisks denote significance at the 10, 5, and 1 percent level respectively. For brevity we do not report the estimates and t-ratios for the intercepts terms. See also notes to Table 6.

Figure 1 Raw Relative Market Share



Notes: GS, TS, ISS and ITS stand for Greece's, Turkey's, Israel's and Italy's market shares (in percentages) respectively in the four-country market.

Figure 2 Residuals and Actual vs Fitted series for Greece (based on estimation with raw market shares without seasonal dummies)

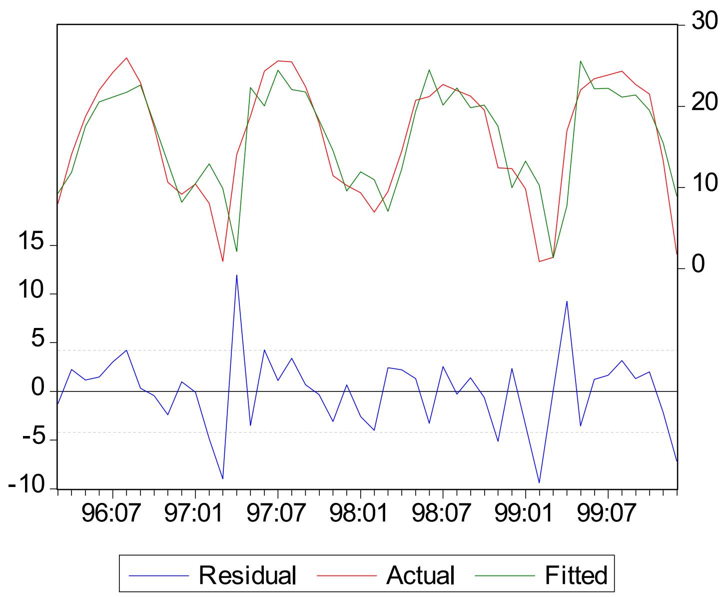
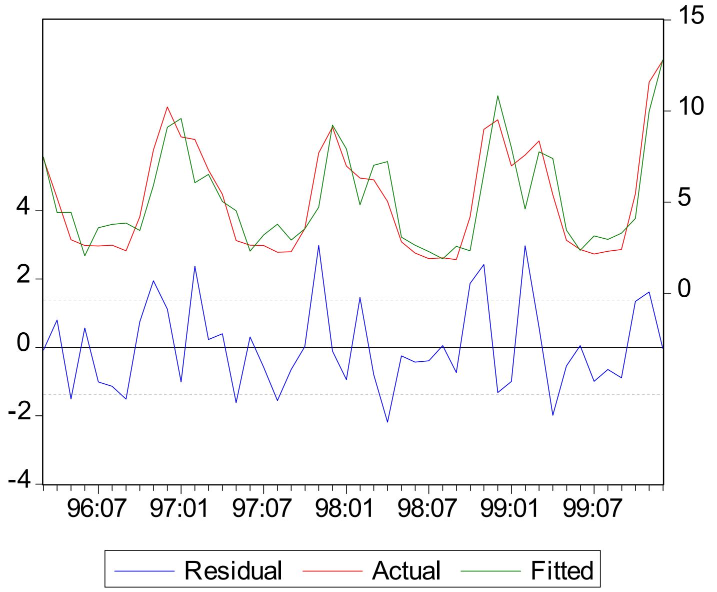


Figure 3 **Residuals and Actual vs Fitted series for Turkey** **(based on estimation with raw market shares without seasonal dummies)**

Figure 4 **Residuals and Actual vs Fitted series for Israel** **(based on estimation with raw market shares without seasonal dummies)**



Appendix

Table 4c Estimation Results based on the Raw Market Share and constrained (imposing symmetry) Γ matrix

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \beta_{G,2} S_{G,t-2} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \beta_{T,2} S_{T,t-2} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + u_{T,t}$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \beta_{I,2} S_{I,t-2} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + u_{I,t}$$

Subject to:

$$\gamma_{G,T} = \gamma_{T,G} \wedge \gamma_{T,I} = \gamma_{I,T} \wedge \gamma_{G,I} = \gamma_{I,G}$$

Greece						
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate (t-ratio)	4.67 (3.19)***	1.08 (9.17)***	-0.41 (-3.58)***	-1.04 (-1.07)	0.55 (1.15)	0.97 (3.25)***
Turkey						
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate (t-ratio)	7.12 (4.53)***	0.95 (7.96)***	-0.34 (-2.87)***	-0.59 (-1.36)	-	0.07 (0.33)
Israel						
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate (t-ratio)	2.15 (4.54)***	1.01 (11.94)***	-0.50 (-5.03)***	0.07 (0.33)	-	-
Likelihood Ratio test for the validity of the symmetry of the impact matrix: 5.12 (Chi-square critical value at 5% level: 7.82)						

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. ***, **, and * denote significance at the 10, 5, and 1 percent levels, respectively.

Table 4d Estimation Results based on the Raw Market Share and constrained (imposing symmetry) Γ matrix and including seasonal dummies

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \beta_{G,2} S_{G,t-2} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + \sum_{i=1}^{11} \delta_{G,i} D_i + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \beta_{T,2} S_{T,t-2} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + + \sum_{i=1}^{11} \delta_{T,i} D_i + u_{T,t}$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \beta_{I,2} S_{I,t-2} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + + \sum_{i=1}^{11} \delta_{T,i} D_i + u_{I,t}$$

Subject to:

$$\gamma_{G,T} = \gamma_{T,G} \wedge \gamma_{T,I} = \gamma_{I,T} \wedge \gamma_{G,I} = \gamma_{I,G}$$

Greece						
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate	15.66	0.09	-0.44	0.95	-0.11	0.51
(t-ratio)	(4.66)***	(0.58)	(-2.94)**	(1.74)	(-0.46)	(3.52)***
Turkey						
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate	3.26	0.89	-0.04	-0.69	-	-0.02
(t-ratio)	(1.73)	(6.71)***	(-0.29)	(-3.14)***		(-0.25)
Israel						
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate	4.12	0.74	-0.12	-0.20	-	-
(t-ratio)	(4.34)***	(5.95)***	(-0.83)	(-1.97)*		
Likelihood Ratio test for the validity of the symmetry of the impact matrix: 0.25 (Chi-square critical value at 5% level: 7.82)						

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. ***, **, and * denote significance at the 10, 5, and 1 percent levels, respectively.

Table 4e Estimation Results based on the Seasonally Adjusted Market Share and unconstrained (allowing for asymmetry) Γ matrix

$$S_{G,t} = \alpha_G + \beta_{G,1} S_{G,t-1} + \gamma_{G,G} TA_{G,t} + \gamma_{G,T} TA_{T,t} + \gamma_{G,I} TA_{I,t} + u_{G,t}$$

$$S_{T,t} = \alpha_T + \beta_{T,1} S_{T,t-1} + \gamma_{T,G} TA_{G,t} + \gamma_{T,T} TA_{T,t} + \gamma_{T,I} TA_{I,t} + u_{T,t}$$

$$S_{I,t} = \alpha_I + \beta_{I,1} S_{I,t-1} + \gamma_{I,G} TA_{G,t} + \gamma_{I,T} TA_{T,t} + \gamma_{I,I} TA_{I,t} + u_{I,t}$$

			Greece			
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate **(t-ratio)**	15.54 (6.08)***	-0.04 (-0.26)	-	1.98 (1.05)	-0.79 (-1.01)	0.78 (0.96)
			Turkey			
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate **(t-ratio)**	2.09 (1.71)	0.88 (13.03)***	-	-0.75 (-3.43)***	0.19 (0.68)	0.31 (1.44)
			Israel			
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate **(t-ratio)**	1.76 (2.93)***	0.66 (6.07)***	-	-0.03 (-0.38)	0.25 (2.13)**	-0.02 (-0.28)
			Diagnostics			
	Adj. R^2	*F-stat*	*LM(1) serial corr.*	*DW*	*ARCH(1)*	*J-B*
Greece	0.00	1.01	3.36	1.70	1.16	12.56
Turkey	0.74	31.66***	0.18	2.02	0.30	2.24
Israel	0.53	11.98***	0.00	1.92	0.03	0.81

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. One, asterisk denotes significance at the 10 percent level, while two and three asterisks denote significance at the 5 and 1 percent respectively. *Adj. R^2*, *F-stat*, *LM(1) serial correlation*, *ARCH(1), DW* and *J-B* stand for the adjusted coefficient of determination, the overall statistical significance of the regression equation, the Lagrange Multiplier serial correlation statistic, the Autoregressive Conditional Heteroscedascticity test, the Durbin-Watson statistic and the Jarque-Bera normality test, respectively.

Table 4f Estimation Results based on the Seasonally Differenced Market Share and unconstrained (allowing for asymmetry) Γ matrix

$$\Delta_{12}S_{G,t} = \alpha_G + \beta_{G,1}\Delta_{12}S_{G,t-1} + \gamma_{G,G}TA_{G,t} + \gamma_{G,T}TA_{T,t} + \gamma_{G,I}TA_{I,t} + u_{G,t}$$

$$\Delta_{12}S_{T,t} = \alpha_T + \beta_{T,1}\Delta_{12}S_{T,t-1} + \gamma_{T,G}TA_{G,t} + \gamma_{T,T}TA_{T,t} + \gamma_{T,I}TA_{I,t} + u_{T,t}$$

$$\Delta_{12}S_{I,t} = \alpha_I + \beta_{I,1}\Delta_{12}S_{I,t-1} + \gamma_{I,G}TA_{G,t} + \gamma_{I,T}TA_{T,t} + \gamma_{I,I}TA_{I,t} + u_{I,t}$$

			Greece			
	α_G	$\beta_{G,1}$	$\beta_{G,2}$	$\gamma_{G,G}$	$\gamma_{G,T}$	$\gamma_{G,I}$
Estimate	-0.42	0.09	-	1.04	-0.45	0.10
(t-ratio)	(-0.43)	(0.35)		(0.91)	(-0.70)	(0.16)
			Turkey			
	α_T	$\beta_{T,1}$	$\beta_{T,2}$	$\gamma_{T,T}$	$\gamma_{T,G}$	$\gamma_{T,I}$
Estimate	0.29	0.73	-	-0.84	-0.56	0.06
(t-ratio)	(0.65)	(5.23)***		(-3.24)***	(-2.09)**	(0.13)
			Israel			
	α_I	$\beta_{I,1}$	$\beta_{I,2}$	$\gamma_{I,I}$	$\gamma_{I,G}$	$\gamma_{I,T}$
Estimate	-0.01	0.88	-	0.12	0.45	-0.18
(t-ratio)	(-0.06)	(5.43)***		(1.13)	(3.89)***	(-1.87)*
			Diagnostics			
	Adj. R^2	*F-stat*	*LM(1) serial corr.*	*DW*	*ARCH(1)*	*J-B*
Greece	-0.06	0.48	4.04**	1.54	0.06	9.75***
Turkey	0.53	10.91***	0.22	1.74	0.00	4.50
Israel	0.64	16.41***	0.06	1.84	0.60	0.82

Notes: White heteroscedasticity-adjusted t-ratios in parentheses. One, asterisk denotes significance at the 10 percent level, while two and three asterisks denote significance at the 5 and 1 percent respectively. *Adj. R^2, F-stat*, *LM(1) serial correlation*, *ARCH(1), DW* and *J-B* stand for the adjusted coefficient of determination, the overall statistical significance of the regression equation, the Lagrange Multiplier serial correlation statistic, the Autoregressive Conditional Heteroscedascticity test, the Durbin-Watson statistic and the Jarque-Bera normality test, respectively. Δ_{12} is the seasonal differencing operator.

References

Atkinson, Scott E., Todd Sandler and John Tschirhart. “Terrorism in a Bargaining Framework”, *Journal of Law and Economics*, April 1987, 30, pp. 1-21.

Derek, Hall. “Terrorising the Tourist”, *The Geographical Magazine*, 67, February 1995, pp. 17.

Enders, Walter, Todd Sandler and Jon Cauley. “Assessing the Impact of Terrorist-Thwarting Polices: An Intervention Time Series Approach” *Defence Economics*, 2, 1990, pp. 1-18.

Enders, Walter and Todd Sandler. “Causality Between Transnational Terrorism and Tourism: The Case of Spain”, *Terrorism*, 14, 1991, pp. 49-58.

Enders, Walter, Todd Sandler, and Gerald F. Parise. “An Econometric Analysis of the Impact of Terrorism on Tourism”, *Kyklos*, 45, 1992, pp. 531-54.

Feichtinger, G., R.F. Hartl, P.M. Kprt, and A J. Novak. “Terrorism Control in the Tourism Industry” *Journal of Optimization Theory and Applications*, February 2001, 108(2), pp. 283-96.

Holden, Robert T. “Time Series Analysis of Contagious Process” *Journal of American Statistical Association*, Decembers 1987, 82, pp. 1019-26.

Im, Eric Iksoon, Jon Cauley and Todd Sandler. “Cycles and Substitution in Terrorist Activities*” Kyklos*, 1987, 2, pp. 223-55.

Lapan, Harvey E. and Sandler, Todd. “To Bargain or Not To Bargain: That is the Question”, *American Economic Review*, 78, May 1988, pp. 16-21.

Lee, Dwight R. “Free Riding and Paid Riding in the Fight Against Terrorism” *American Economic Review*, 78, May 1988, pp. 22-26.

Piterman, Sylvia. “Inflation, Exchange Rate, and Financial Markets and Growth: the “Giloh” Effect and Other Effects”, Bank of Israel, November 29, 2000. http://www.bankisrael.gov.il/deptdata/neumim/neum033e.htm

Sandler, Todd, John Tschirhart and Jon Cauley. “A Theoretical Analysis of Transnational Terrorism” *American Political Science Review*, March 1983, 77, pp. 36-54.

Sandler, Tood and Harvey E. Lapan. “The Calculus of Dissent: An Analysis of Terrorists’ Choice of Targets”, *Synthese*, 1988, 76, pp. 245-61.

Toros, Harmonie. “Turkey’s Tourism Was Held Hostage”, *Marketing News*, 11, May 21, 2001, pp.12.

Zellner, A. “An Efficient Method of Estimating Seemingly Unrelated Regressions and Test for Aggregation Bias”, *Journal of the American Statistical Association*, 57, 1962, pp. 348-368.

White, Halbert. “A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity”, *Econometrica*, 48(4), pp. 817-838.

World Tourism Organisation. “*Tourism Market Trends: World Overview and Tourism Topics*”, 2001.

Endnotes

[1] It is important to note that Hall (1995) does not provide any empirical estimates supporting his figures. In this sense, his analysis is purely descriptive.

[2] There have been many influential empirical studies examining the impact of terrorism from different perspectives. Atkinson et al. (1987) present empirical evidence that increases in bargaining costs lengthen a terrorist incident. Enders et al. (1990) investigate the effectiveness of several terrorist-thwarting polices undertaken during the 1970's and 1980's. Holden (1987) tests for the effects of previous successful hijackings on the subsequent rate of hijacking attempts.

[3] Due to lack of data for the whole Mediterranean region, we have chosen Italy as a proxy for representing tourist activities in the rest of the region. The significance of adding Italy in our framework is discussed in Section 3.

[4] The theoretical framework on terrorism-related issues in the literature is growing. Many studies have applied formal modelling such as game theory and constrained optimisation techniques to a variety of issues. Influential studies include applications to negotiation responses (Atkinson et. al, 1987 and Lapan and Sandler, 1988), retaliatory reactions of governments (Lee, 1988), resource assignment for thwarting terrorism (Sandler et al., 1983 and Im, 1987), the choice of targets by terrorists (Sandler and Lapan, 1988), and the prey-predator aspects of terrorism (Feichtinger et al., 2001)

[5] Gross substitutability is broadly defined as a negative correlation between marker shares. More discussion of this can be found in section 4.2.

[6] Based on 1999 figures, Italy is ranked as the 4th tourist destination in the world with a market share of about 10 percent in terms of tourist arrivals (World Trade Organization, 2001).

[7] To be precise, "safer" when compared to the three countries considered. During our sample period, there were only 8 incidents, resulting in 1 dead and a few injuries. In contrast, As Table 1 indicates, terrorist incidents in other countries were about 3 to 5 times higher.

[8] One could argue that the market share would be affected by "nominal" exchange rates. As Enders et al. (1992, footnote 5) argue, the key issue is the relative price of tourism. Nominal variables therefore cannot be used to represent relative prices. Our dependent variable is a real variable and therefore we need to rely on real variables. However, Enders et al. (1992) argue that using "real" exchange rate data as a proxy for the relative price of tourism may not be satisfactory. They correctly point out that tourism shares are stationary while real exchange rates are nonstationary and it is therefore not appropriate to regress a stationary variable against nonstationary series. In addition, they argue that available real exchange rate series are heavily weighted towards manufactures, instead of tourism services. For these reasons, we do not use real exchange rates in our estimations.

[9] Of course similar decompositions can be defined for Turkey and Israel.

[10] This setup parallels the mean-variance principle in portfolio analysis where one considers risky assets versus riskless assets. We thank Dimitris Georgarakos for pointing out to us the similarity.

[11] From a modelling approach, this case is less appealing since one would require stability of preferences. However, we feel it is worth mentioning.

[12] The plots for the raw market shares appear in the appendix (Figures 1).

[13] The full set of diagnostics is not reported for space considerations. They are available upon request from the authors. The graphs of the residual series as well as the fitted values and the actual series appear in the Figures section.

[14] As discussed earlier, a set of other models (seasonally adjusted, seasonally differenced) were also estimated as a means of conducting a sensitivity analysis. The results from these appear in the Appendix (**Tables 4c-4e**). In general our basic findings are not sensitive to alternative specifications, although a number of discrepancies between models are present. We choose to work with the generic model (whose estimation results are reported in Table 4a) since the rest of the specifications either do not 'pass' the diagnostic tests or do not 'fit' adequately the data.

[15] We also tested for the significance of past terrorist incidents on today's tourist arrivals by adding one lagged term for terrorist incidents in estimations. These terms were not statistically significant. These results are available from the authors upon request.

[16] Note that the evidence for Greece is very marginal. Assuming a 10 percent significance level, the own impact of terrorist attacks in Greece becomes insignificant.

[17] We elaborate on this case, because it appears to be the most significant in statistical terms. Of course a similar exercise can be conducted for Turkey and Israel.

[18] Unfortunately we do not have data for tourism income for the whole sample so we provide the relevant figures for 1999 as an approximate value.

[19] We attempted to replicate our estimations using the percentage change in tourist arrivals as the dependent variable. The results were not satisfactory, indicating that use of the market shares as a dependent variable is a better way to study the effects of terrorism.

[20] Conditional in the sense that these dummies are operational only in the occurrence of a terrorist incident. A third (fourth) dummy for the cases of location (intensity) is also defined but excluded in order to avoid the traditional multicollinearity problem, that takes the value of one when no terrorist incident took place and zero otherwise.

[21] A major advantage of this approach is that one has very clear priors as far as the sign of the α's and β's are concerned, which should be negative in order to capture the own effect of domestic terrorism on the country's market share. However, this does come at a cost, namely one can apply one decomposition at a time since simultaneous inclusion of the geographic dummies and intensity dummies result in multicollinearity. This so because of the way the explanatory variables have been defined. It should be noted that this is irrelevant to the standard multicollinearity problem. The intuition is that the total effect of terrorism can be decomposed in one dimension each time. That is either in terms of location or level. Similarly, if cross-county effects are considered, one has clear priors regarding the sign of the estimated parameters. Therefore, provided that consumers treat tourist services from different countries as (im)perfect substitutes, the cross-country α's and β's should be positive.

[22] At least for the cases of significant parameters.

[23] It should be noted that for the case of Greece we can only apply the geographic decomposition since in our sample there were no fatal terrorist incidents. So, in both decompositions Greek entries correspond to geographic decomposition.

[24] The own-country effects for Greece are identical in both specifications (see endnote 4).

[25] Following the September 11 attacks in the U.S., the European Commission formally proposed several EU-wide measures against terrorism, including better cross-border investigations, search and arrest warrants, and a minimum prison term of 20 years ("EU Moves to Unify Fight Against Terrorism", *Wall Street Journal*, September 24, 2001, A 16.)

[26] Israel and Turkey already have been enjoying such an alliance since both countries signed a military training and cooperation agreement in February 1996. This agreement provides joint military exercise opportunities and exchange of information. This cooperation could be extended to terrorism issues.

[27] This is particularly important for Turkey. Policymakers in Turkey can use their experience with terrorism to further improve their relationships with EU countries and thus their changes for full EU membership. According to recent news, the foreign ministers of EU member countries plan to discuss issues concerning terrorism with Turkey during their regular monthly meetings. More specifically, the European Council will be informed about recent political developments in Turkey and it will also evaluate Turkey's position in regards to the European Security and Defense Policy. Such meetings are important for Turkey to further improve her cooperation between EU members ("EU Council to meet to discuss Turkey, terrorism", October 8, 2001, *Turkish Daily News*
http://www.turkishdailynews.com/FrTDN/latest/for.htm#f9)

2008		
B01-08	**Euro-Diplomatie durch gemeinsame „Wirtschaftsregierung“**	*Martin Seidel*
2007		
B03-07	**Löhne und Steuern im Systemwettbewerb der Mitgliedstaaten der Europäischen Union**	*Martin Seidel*
B02-07	**Konsolidierung und Reform der Europäischen Union**	*Martin Seidel*
B01-07	**The Ratification of European Treaties - Legal and Constitutional Basis of a European Referendum.**	*Martin Seidel*
2006		
B03-06	**Financial Frictions, Capital Reallocation, and Aggregate Fluctuations**	*Jürgen von Hagen, Haiping Zhang*
B02-06	**Financial Openness and Macroeconomic Volatility**	*Jürgen von Hagen, Haiping Zhang*
B01-06	**A Welfare Analysis of Capital Account Liberalization**	*Jürgen von Hagen, Haiping Zhang*
2005		
B11-05	**Das Kompetenz- und Entscheidungssystem des Vertrages von Rom im Wandel seiner Funktion und Verfassung**	*Martin Seidel*
B10-05	**Die Schutzklauseln der Beitrittsverträge**	*Martin Seidel*
B09-05	**Measuring Tax Burdens in Europe**	*Guntram B. Wolff*
B08-05	**Remittances as Investment in the Absence of Altruism**	*Gabriel González-König*
B07-05	**Economic Integration in a Multicone World?**	*Christian Volpe Martincus, Jennifer Pédussel Wu*
B06-05	**Banking Sector (Under?)Development in Central and Eastern Europe**	*Jürgen von Hagen, Valeriya Dinger*
B05-05	**Regulatory Standards Can Lead to Predation**	*Stefan Lutz*
B04-05	**Währungspolitik als Sozialpolitik**	*Martin Seidel*
B03-05	**Public Education in an Integrated Europe: Studying to Migrate and Teaching to Stay?**	*Panu Poutvaara*
B02-05	**Voice of the Diaspora: An Analysis of Migrant Voting Behavior**	*Jan Fidrmuc, Orla Doyle*
B01-05	**Macroeconomic Adjustment in the New EU Member States**	*Jürgen von Hagen, Iulia Traistaru*
2004		
B33-04	**The Effects of Transition and Political Instability On Foreign Direct Investment Inflows: Central Europe and the Balkans**	*Josef C. Brada, Ali M. Kutan, Taner M. Yigit*
B32-04	**The Choice of Exchange Rate Regimes in Developing Countries: A Mulitnominal Panal Analysis**	*Jürgen von Hagen, Jizhong Zhou*
B31-04	**Fear of Floating and Fear of Pegging: An Empirical Anaysis of De Facto Exchange Rate Regimes in Developing Countries**	*Jürgen von Hagen, Jizhong Zhou*
B30-04	**Der Vollzug von Gemeinschaftsrecht über die Mitgliedstaaten und seine Rolle für die EU und den Beitrittsprozess**	*Martin Seidel*
B29-04	**Deutschlands Wirtschaft, seine Schulden und die Unzulänglichkeiten der einheitlichen Geldpolitik im Eurosystem**	*Dieter Spethmann, Otto Steiger*
B28-04	**Fiscal Crises in U.S. Cities: Structural and Non-structural Causes**	*Guntram B. Wolff*
B27-04	**Firm Performance and Privatization in Ukraine**	*Galyna Grygorenko, Stefan Lutz*
B26-04	**Analyzing Trade Opening in Ukraine: Effects of a Customs Union with the EU**	*Oksana Harbuzyuk, Stefan Lutz*
B25-04	**Exchange Rate Risk and Convergence to the Euro**	*Lucjan T. Orlowski*
B24-04	**The Endogeneity of Money and the Eurosystem**	*Otto Steiger*
B23-04	**Which Lender of Last Resort for the Eurosystem?**	*Otto Steiger*
B22-04	**Non-Discretonary Monetary Policy: The Answer for Transition Economies?**	*Elham-Mafi Kreft, Steven F. Kreft*
B21-04	**The Effectiveness of Subsidies Revisited: Accounting for Wage and Employment Effects in Business R+D**	*Volker Reinthaler, Guntram B. Wolff*
B20-04	**Money Market Pressure and the Determinants of Banking Crises**	*Jürgen von Hagen, Tai-kuang Ho*
B19-04	**Die Stellung der Europäischen Zentralbank nach dem Verfassungsvertrag**	*Martin Seidel*

B18-04	**Transmission Channels of Business Cycles Synchronization in an Enlarged EMU**	*Iulia Traistaru*
B17-04	**Foreign Exchange Regime, the Real Exchange Rate and Current Account Sustainability: The Case of Turkey**	*Sübidey Togan, Hasan Ersel*
B16-04	**Does It Matter Where Immigrants Work? Traded Goods, Non-traded Goods, and Sector Specific Employment**	*Harry P. Bowen, Jennifer Pédussel Wu*
B15-04	**Do Economic Integration and Fiscal Competition Help to Explain Local Patterns?**	*Christian Volpe Martincus*
B14-04	**Euro Adoption and Maastricht Criteria: Rules or Discretion?**	*Jiri Jonas*
B13-04	**The Role of Electoral and Party Systems in the Development of Fiscal Institutions in the Central and Eastern European Countries**	*Sami Yläoutinen*
B12-04	**Measuring and Explaining Levels of Regional Economic Integration**	*Jennifer Pédussel Wu*
B11-04	**Economic Integration and Location of Manufacturing Activities: Evidence from MERCOSUR**	*Pablo Sanguinetti, Iulia Traistaru, Christian Volpe Martincus*
B10-04	**Economic Integration and Industry Location in Transition Countries**	*Laura Resmini*
B09-04	**Testing Creditor Moral Hazard in Souvereign Bond Markets: A Unified Theoretical Approach and Empirical Evidence**	*Ayse Y. Evrensel, Ali M. Kutan*
B08-04	**European Integration, Productivity Growth and Real Convergence**	*Taner M. Yigit, Ali M. Kutan*
B07-04	**The Contribution of Income, Social Capital, and Institutions to Human Well-being in Africa**	*Mina Baliamoune-Lutz, Stefan H. Lutz*
B06-04	**Rural Urban Inequality in Africa: A Panel Study of the Effects of Trade Liberalization and Financial Deepening**	*Mina Baliamoune-Lutz, Stefan H. Lutz*
B05-04	**Money Rules for the Eurozone Candidate Countries**	*Lucjan T. Orlowski*
B04-04	**Who is in Favor of Enlargement? Determinants of Support for EU Membership in the Candidate Countries' Referenda**	*Orla Doyle, Jan Fidrmuc*
B03-04	**Over- and Underbidding in Central Bank Open Market Operations Conducted as Fixed Rate Tender**	*Ulrich Bindseil*
B02-04	**Total Factor Productivity and Economic Freedom Implications for EU Enlargement**	*Ronald L. Moomaw, Euy Seok Yang*
B01-04	**Die neuen Schutzklauseln der Artikel 38 und 39 des Beitrittsvertrages: Schutz der alten Mitgliedstaaten vor Störungen durch die neuen Mitgliedstaaten**	*Martin Seidel*
2003		
B29-03	**Macroeconomic Implications of Low Inflation in the Euro Area**	*Jürgen von Hagen, Boris Hofmann*
B28-03	**The Effects of Transition and Political Instability on Foreign Direct Investment: Central Europe and the Balkans**	*Josef C. Brada, Ali M. Kutan, Taner M. Yigit*
B27-03	**The Performance of the Euribor Futures Market: Efficiency and the Impact of ECB Policy Announcements (Electronic Version of International Finance)**	*Kerstin Bernoth, Juergen von Hagen*
B26-03	**Souvereign Risk Premia in the European Government Bond Market (überarbeitete Version zum Herunterladen)**	*Kerstin Bernoth, Juergen von Hagen, Ludger Schulknecht*
B25-03	**How Flexible are Wages in EU Accession Countries?**	*Anna Iara, Iulia Traistaru*
B24-03	**Monetary Policy Reaction Functions: ECB versus Bundesbank**	*Bernd Hayo, Boris Hofmann*
B23-03	**Economic Integration and Manufacturing Concentration Patterns: Evidence from Mercosur**	*Iulia Traistaru, Christian Volpe Martincus*
B22-03	**Reformzwänge innerhalb der EU angesichts der Osterweiterung**	*Martin Seidel*
B21-03	**Reputation Flows: Contractual Disputes and the Channels for Inter-Firm Communication**	*William Pyle*
B20-03	**Urban Primacy, Gigantism, and International Trade: Evidence from Asia and the Americas**	*Ronald L. Moomaw, Mohammed A. Alwosabi*
B19-03	**An Empirical Analysis of Competing Explanations of Urban Primacy Evidence from Asia and the Americas**	*Ronald L. Moomaw, Mohammed A. Alwosabi*

B18-03	**The Effects of Regional and Industry-Wide FDI Spillovers on Export of Ukrainian Firms**	*Stefan H. Lutz, Oleksandr Talavera, Sang-Min Park*
B17-03	**Determinants of Inter-Regional Migration in the Baltic States**	*Mihails Hazans*
B16-03	**South-East Europe: Economic Performance, Perspectives, and Policy Challenges**	*Iulia Traistaru, Jürgen von Hagen*
B15-03	**Employed and Unemployed Search: The Marginal Willingness to Pay for Attributes in Lithuania, the US and the Netherlands**	*Jos van Ommeren, Mihails Hazans*
B14-03	**FCIs and Economic Activity: Some International Evidence**	*Charles Goodhart, Boris Hofmann*
B13-03	**The IS Curve and the Transmission of Monetary Policy: Is there a Puzzle?**	*Charles Goodhart, Boris Hofmann*
B12-03	**What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Investment, Human Resources, and Geography**	*Gabriele Tondl, Goran Vuksic*
B11-03	**Die Weisungs- und Herrschaftsmacht der Europäischen Zentralbank im europäischen System der Zentralbanken - eine rechtliche Analyse**	*Martin Seidel*
B10-03	**Foreign Direct Investment and Perceptions of Vulnerability to Foreign Exchange Crises: Evidence from Transition Economies**	*Josef C. Brada, Vladimír Tomsík*
B09-03	**The European Central Bank and the Eurosystem: An Analysis of the Missing Central Monetary Institution in European Monetary Union**	*Gunnar Heinsohn, Otto Steiger*
B08-03	**The Determination of Capital Controls: Which Role Do Exchange Rate Regimes Play?**	*Jürgen von Hagen, Jizhong Zhou*
B07-03	**Nach Nizza und Stockholm: Stand des Binnenmarktes und Prioritäten für die Zukunft**	*Martin Seidel*
B06-03	**Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact**	*Jürgen von Hagen*
B05-03	**Reconsidering the Evidence: Are Eurozone Business Cycles Converging?**	*Michael Massmann, James Mitchell*
B04-03	**Do Ukrainian Firms Benefit from FDI?**	*Stefan H. Lutz, Oleksandr Talavera*
B03-03	**Europäische Steuerkoordination und die Schweiz**	*Stefan H. Lutz*
B02-03	**Commuting in the Baltic States: Patterns, Determinants, and Gains**	*Mihails Hazans*
B01-03	**Die Wirtschafts- und Währungsunion im rechtlichen und politischen Gefüge der Europäischen Union**	*Martin Seidel*
2002		
B30-02	**An Adverse Selection Model of Optimal Unemployment Assurance**	*Marcus Hagedorn, Ashok Kaul, Tim Mennel*
B29B-02	**Trade Agreements as Self-protection**	*Jennifer Pédussel Wu*
B29A-02	**Growth and Business Cycles with Imperfect Credit Markets**	*Debajyoti Chakrabarty*
B28-02	**Inequality, Politics and Economic Growth**	*Debajyoti Chakrabarty*
B27-02	**Poverty Traps and Growth in a Model of Endogenous Time Preference**	*Debajyoti Chakrabarty*
B26-02	**Monetary Convergence and Risk Premiums in the EU Candidate Countries**	*Lucjan T. Orlowski*
B25-02	**Trade Policy: *Institutional* Vs. *Economic* Factors**	*Stefan Lutz*
B24-02	**The Effects of Quotas on Vertical Intra-industry Trade**	*Stefan Lutz*
B23-02	**Legal Aspects of European Economic and Monetary Union**	*Martin Seidel*
B22-02	**Der Staat als *Lender of Last Resort* - oder: Die Achillesverse des Eurosystems**	*Otto Steiger*
B21-02	**Nominal and Real Stochastic Convergence Within the Transition Economies and to the European Union: Evidence from Panel Data**	*Ali M. Kutan, Taner M. Yigit*
B20-02	**The Impact of News, Oil Prices, and International Spillovers on Russian Fincancial Markets**	*Bernd Hayo, Ali M. Kutan*

B19-02	**East Germany: Transition with Unification, Experiments and Experiences**	*Jürgen von Hagen, Rolf R. Strauch, Guntram B. Wolff*
B18-02	**Regional Specialization and Employment Dynamics in Transition Countries**	*Iulia Traistaru, Guntram B. Wolff*
B17-02	**Specialization and Growth Patterns in Border Regions of Accession Countries**	*Laura Resmini*
B16-02	**Regional Specialization and Concentration of Industrial Activity in Accession Countries**	*Iulia Traistaru, Peter Nijkamp, Simonetta Longhi*
B15-02	**Does Broad Money Matter for Interest Rate Policy?**	*Matthias Brückner, Andreas Schaber*
B14-02	**The Long and Short of It: Global Liberalization, Poverty and Inequality**	*Christian E. Weller, Adam Hersch*
B13-02	**De Facto and Official Exchange Rate Regimes in Transition Economies**	*Jürgen von Hagen, Jizhong Zhou*
B12-02	**Argentina: The Anatomy of A Crisis**	*Jiri Jonas*
B11-02	**The Eurosystem and the Art of Central Banking**	*Gunnar Heinsohn, Otto Steiger*
B10-02	**National Origins of European Law: Towards an Autonomous System of European Law?**	*Martin Seidel*
B09-02	**Monetary Policy in the Euro Area - Lessons from the First Years**	*Volker Clausen, Bernd Hayo*
B08-02	**Has the Link Between the Spot and Forward Exchange Rates Broken Down? Evidence From Rolling Cointegration Tests**	*Ali M. Kutan, Su Zhou*
B07-02	**Perspektiven der Erweiterung der Europäischen Union**	*Martin Seidel*
B06-02	**Is There Asymmetry in Forward Exchange Rate Bias? Multi-Country Evidence**	*Su Zhou, Ali M. Kutan*
B05-02	**Real and Monetary Convergence Within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach**	*Josef C. Brada, Ali M. Kutan, Su Zhou*
B04-02	**Asymmetric Monetary Policy Effects in EMU**	*Volker Clausen, Bernd Hayo*
B03-02	**The Choice of Exchange Rate Regimes: An Empirical Analysis for Transition Economies**	*Jürgen von Hagen, Jizhong Zhou*
B02-02	**The Euro System and the Federal Reserve System Compared: Facts and Challenges**	*Karlheinz Ruckriegel, Franz Seitz*
B01-02	**Does Inflation Targeting Matter?**	*Manfred J. M. Neumann, Jürgen von Hagen*
2001		
B29-01	**Is Kazakhstan Vulnerable to the Dutch Disease?**	*Karlygash Kuralbayeva, Ali M. Kutan, Michael L. Wyzan*
B28-01	**Political Economy of the Nice Treaty: Rebalancing the EU Council. The Future of European Agricultural Policies**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B27-01	**Investor Panic, IMF Actions, and Emerging Stock Market Returns and Volatility: A Panel Investigation**	*Bernd Hayo, Ali M. Kutan*
B26-01	**Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries**	*Konstantinos Drakos, Ali M. Kutan*
B25-01	**Monetary Convergence of the EU Candidates to the Euro: A Theoretical Framework and Policy Implications**	*Lucjan T. Orlowski*
B24-01	**Disintegration and Trade**	*Jarko and Jan Fidrmuc*
B23-01	**Migration and Adjustment to Shocks in Transition Economies**	*Jan Fidrmuc*
B22-01	**Strategic Delegation and International Capital Taxation**	*Matthias Brückner*
B21-01	**Balkan and Mediterranean Candidates for European Union Membership: The Convergence of Their Monetary Policy With That of the Europaen Central Bank**	*Josef C. Brada, Ali M. Kutan*
B20-01	**An Empirical Inquiry of the Efficiency of Intergovernmental Transfers for Water Projects Based on the WRDA Data**	*Anna Rubinchik-Pessach*
B19-01	**Detrending and the Money-Output Link: International Evidence**	*R.W. Hafer, Ali M. Kutan*

B18-01	**Monetary Policy in Unknown Territory. The European Central Bank in the Early Years**	*Jürgen von Hagen, Matthias Brückner*
B17-01	**Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Carribean Countries**	*Mark Hallerberg, Patrick Marier*
B16-01	**Sources of Inflation and Output Fluctuations in Poland and Hungary: Implications for Full Membership in the European Union**	*Selahattin Dibooglu, Ali M. Kutan*
B15-01	**Programs Without Alternative: Public Pensions in the OECD**	*Christian E. Weller*
B14-01	**Formal Fiscal Restraints and Budget Processes As Solutions to a Deficit and Spending Bias in Public Finances - U.S. Experience and Possible Lessons for EMU**	*Rolf R. Strauch, Jürgen von Hagen*
B13-01	**German Public Finances: Recent Experiences and Future Challenges**	*Jürgen von Hagen, Rolf R. Strauch*
B12-01	**The Impact of Eastern Enlargement On EU-Labour Markets. Pensions Reform Between Economic and Political Problems**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B11-01	**Inflationary Performance in a Monetary Union With Large Wage Setters**	*Lilia Cavallar*
B10-01	**Integration of the Baltic States into the EU and Institutions of Fiscal Convergence: A Critical Evaluation of Key Issues and Empirical Evidence**	*Ali M. Kutan, Niina Pautola-Mol*
B09-01	**Democracy in Transition Economies: Grease or Sand in the Wheels of Growth?**	*Jan Fidrmuc*
B08-01	**The Functioning of Economic Policy Coordination**	*Jürgen von Hagen, Susanne Mundschenk*
B07-01	**The Convergence of Monetary Policy Between Candidate Countries and the European Union**	*Josef C. Brada, Ali M. Kutan*
B06-01	**Opposites Attract: The Case of Greek and Turkish Financial Markets**	*Konstantinos Drakos, Ali M. Kutan*
B05-01	**Trade Rules and Global Governance: A Long Term Agenda. The Future of Banking.**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B04-01	**The Determination of Unemployment Benefits**	*Rafael di Tella, Robert J. MacCulloch*
B03-01	**Preferences Over Inflation and Unemployment: Evidence from Surveys of Happiness**	*Rafael di Tella, Robert J. MacCulloch, Andrew J. Oswald*
B02-01	**The Konstanz Seminar on Monetary Theory and Policy at Thirty**	*Michele Fratianni, Jürgen von Hagen*
B01-01	**Divided Boards: Partisanship Through Delegated Monetary Policy**	*Etienne Farvaque, Gael Lagadec*

2000

B20-00	**Breakin-up a Nation, From the Inside**	*Etienne Farvaque*
B19-00	**Income Dynamics and Stability in the Transition Process, general Reflections applied to the Czech Republic**	*Jens Hölscher*
B18-00	**Budget Processes: Theory and Experimental Evidence**	*Karl-Martin Ehrhart, Roy Gardner, Jürgen von Hagen, Claudia Keser*
B17-00	**Rückführung der Landwirtschaftspolitik in die Verantwortung der Mitgliedsstaaten? - Rechts- und Verfassungsfragen des Gemeinschaftsrechts**	*Martin Seidel*
B16-00	**The European Central Bank: Independence and Accountability**	*Christa Randzio-Plath, Tomasso Padoa-Schioppa*
B15-00	**Regional Risk Sharing and Redistribution in the German Federation**	*Jürgen von Hagen, Ralf Hepp*
B14-00	**Sources of Real Exchange Rate Fluctuations in Transition Economies: The Case of Poland and Hungary**	*Selahattin Dibooglu, Ali M. Kutan*
B13-00	**Back to the Future: The Growth Prospects of Transition Economies Reconsidered**	*Nauro F. Campos*

B12-00	**Rechtsetzung und Rechtsangleichung als Folge der Einheitlichen Europäischen Währung**	*Martin Seidel*
B11-00	**A Dynamic Approach to Inflation Targeting in Transition Economies**	*Lucjan T. Orlowski*
B10-00	**The Importance of Domestic Political Institutions: Why and How Belgium Qualified for EMU**	*Marc Hallerberg*
B09-00	**Rational Institutions Yield Hysteresis**	*Rafael Di Tella, Robert MacCulloch*
B08-00	**The Effectiveness of Self-Protection Policies for Safeguarding Emerging Market Economies from Crises**	*Kenneth Kletzer*
B07-00	**Financial Supervision and Policy Coordination in The EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B06-00	**The Demand for Money in Austria**	*Bernd Hayo*
B05-00	**Liberalization, Democracy and Economic Performance during Transition**	*Jan Fidrmuc*
B04-00	**A New Political Culture in The EU - Democratic Accountability of the ECB**	*Christa Randzio-Plath*
B03-00	**Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990's**	*Jarko Fidrmuc, Jan Fidrmuc*
B02-00	**Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic**	*Josef C. Barda, Arthur E. King, Ali M. Kutan*
B01-00	**Monetary Union and Fiscal Federalism**	*Kenneth Kletzer, Jürgen von Hagen*
1999		
B26-99	**Skills, Labour Costs, and Vertically Differentiated Industries: A General Equilibrium Analysis**	*Stefan Lutz, Alessandro Turrini*
B25-99	**Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe**	*Bernd Hayo*
B24-99	**What Makes a Revolution?**	*Robert MacCulloch*
B23-99	**Informal Family Insurance and the Design of the Welfare State**	*Rafael Di Tella, Robert MacCulloch*
B22-99	**Partisan Social Happiness**	*Rafael Di Tella, Robert MacCulloch*
B21-99	**The End of Moderate Inflation in Three Transition Economies?**	*Josef C. Brada, Ali M. Kutan*
B20-99	**Subnational Government Bailouts in Germany**	*Helmut Seitz*
B19-99	**The Evolution of Monetary Policy in Transition Economies**	*Ali M. Kutan, Josef C. Brada*
B18-99	**Why are Eastern Europe's Banks not failing when everybody else's are?**	*Christian E. Weller, Bernard Morzuch*
B17-99	**Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia**	*Jan Fidrmuc, Julius Horvath and Jarko Fidrmuc*
B16-99	**Multinational Banks and Development Finance**	*Christian E.Weller and Mark J. Scher*
B15-99	**Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?**	*Christian E. Weller*
B14-99	**Industry Effects of Monetary Policy in Germany**	*Bernd Hayo and Birgit Uhlenbrock*
B13-99	**Fiancial Fragility or What Went Right and What Could Go Wrong in Central European Banking?**	*Christian E. Weller and Jürgen von Hagen*
B12 -99	**Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work**	*Mehmet Caner and Lutz Kilian*
B11-99	**Financial Supervision and Policy Coordination in the EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B10-99	**Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland**	*Christian Weller*
B09-99	**Monetary Policy, Parameter Uncertainty and Optimal Learning**	*Volker Wieland*
B08-99	**The Connection between more Multinational Banks and less Real Credit in Transition Economies**	*Christian Weller*

B07-99	**Comovement and Catch-up in Productivity across Sectors: Evidence from the OECD**	*Christopher M. Cornwell and Jens-Uwe Wächter*
B06-99	**Productivity Convergence and Economic Growth: A Frontier Production Function Approach**	*Christopher M. Cornwell and Jens-Uwe Wächter*
B05-99	**Tumbling Giant: Germany‘s Experience with the Maastricht Fiscal Criteria**	*Jürgen von Hagen and Rolf Strauch*
B04-99	**The Finance-Investment Link in a Transition Economy: Evidence for Poland from Panel Data**	*Christian Weller*
B03-99	**The Macroeconomics of Happiness**	*Rafael Di Tella, Robert MacCulloch and Andrew J. Oswald*
B02-99	**The Consequences of Labour Market Flexibility: Panel Evidence Based on Survey Data**	*Rafael Di Tella and Robert MacCulloch*
B01-99	**The Excess Volatility of Foreign Exchange Rates: Statistical Puzzle or Theoretical Artifact?**	*Robert B.H. Hauswald*
1998		
B16-98	**Labour Market + Tax Policy in the EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B15-98	**Can Taxing Foreign Competition Harm the Domestic Industry?**	*Stefan Lutz*
B14-98	**Free Trade and Arms Races: Some Thoughts Regarding EU-Russian Trade**	*Rafael Reuveny and John Maxwell*
B13-98	**Fiscal Policy and Intranational Risk-Sharing**	*Jürgen von Hagen*
B12-98	**Price Stability and Monetary Policy Effectiveness when Nominal Interest Rates are Bounded at Zero**	*Athanasios Orphanides and Volker Wieland*
B11A-98	**Die Bewertung der "dauerhaft tragbaren öffentlichen Finanzlage"der EU Mitgliedstaaten beim Übergang zur dritten Stufe der EWWU**	*Rolf Strauch*
B11-98	**Exchange Rate Regimes in the Transition Economies: Case Study of the Czech Republic: 1990-1997**	*Julius Horvath and Jiri Jonas*
B10-98	**Der Wettbewerb der Rechts- und politischen Systeme in der Europäischen Union**	*Martin Seidel*
B09-98	**U.S. Monetary Policy and Monetary Policy and the ESCB**	*Robert L. Hetzel*
B08-98	**Money-Output Granger Causality Revisited: An Empirical Analysis of EU Countries (überarbeitete Version zum Herunterladen)**	*Bernd Hayo*
B07-98	**Designing Voluntary Environmental Agreements in Europe: Some Lessons from the U.S. EPA’s 33/50 Program**	*John W. Maxwell*
B06-98	**Monetary Union, Asymmetric Productivity Shocks and Fiscal Insurance: an Analytical Discussion of Welfare Issues**	*Kenneth Kletzer*
B05-98	**Estimating a European Demand for Money (überarbeitete Version zum Herunterladen)**	*Bernd Hayo*
B04-98	**The EMU’s Exchange Rate Policy**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B03-98	**Central Bank Policy in a More Perfect Financial System**	*Jürgen von Hagen / Ingo Fender*
B02-98	**Trade with Low-Wage Countries and Wage Inequality**	*Jaleel Ahmad*
B01-98	**Budgeting Institutions for Aggregate Fiscal Discipline**	*Jürgen von Hagen*
1997		
B04-97	**Macroeconomic Stabilization with a Common Currency: Does European Monetary Unification Create a Need for Fiscal Insurance or Federalism?**	*Kenneth Kletzer*
B-03-97	**Liberalising European Markets for Energy and Telecommunications: Some Lessons from the US Electric Utility Industry**	*Tom Lyon / John Mayo*
B02-97	**Employment and EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B01-97	**A Stability Pact for Europe**	*(a Forum organized by ZEI)*

ISSN 1436 - 6053

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Walter-Flex-Strasse 3
D-53113 Bonn
Germany

Tel.: +49-228-73-1732
Fax: +49-228-73-1809
www.zei.de