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ISSN 1109-6691

ASSESSING THE IMPACT OF TERRORISM ON TRAVEL ACTIVITY IN GREECE

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ABSTRACT

The aim of this paper is to assess the volatility of Greek travel receipts by considering the extent to which terrorist strikes can bring about serious unexpected disturbances to the proceeds from tourism. The paper shows that the impact of terrorist attacks at an international level is not expected to bring about a considerable decline of the number of arrivals to Greece. This finding seems consistent with other sources in the literature that argue in favour of the transitory impact of terrorist attacks on the flow of tourists to a specific destination

JEL classification: H56, L83

Keywords: Terrorism, Tourism, Current Account

Acknowledgement: Thanks are due to Z. Bragoudakis, E. Kostika, D. Kosma and P. Liakopoulos for helpful comments. I am also indebted to H. Gibson for valuable assistance. The views expressed in the paper are of the authors and do not necessarily reflect those of the Bank of Greece.

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1. Introduction

Tourism has always been one of the two services pillars supporting the Greek current account. The receipts from travel activity added to those from international, mainly sea, transportation amount to more than 10% of the GDP and finance about two thirds of the trade deficit every year. Despite the fact that current accounts heavily relying on services are often a victim of their natural volatility, as they are frequently subjected to influences caused by often unexpected exogenous disturbances, the structure of the Greek current account does not leave any alternative options but a reliance on travel and transportation receipts to finance the trade deficit and substantial interest payments.

The purpose of the present paper is to consider the volatility of travel receipts by pointing to one of the exogenous determinants that may bring about serious unexpected disturbances to the proceeds from tourism, namely terrorism. In fact the threat of terrorism seems to have revived during the recent past when secret service sources acting on behalf of various countries have been pointing to the fact that Muslim terrorism has been in the process of selecting new targets for its future attacks. In addition, the British authorities have recently embarked on an investigation to assess the extent to which the MI5 could have averted terrorist attacks since 2005 and especially the one that claimed 52 lives that specific year. Thus, following Section II which outlines a brief description of the Greek current account structure, Section III takes a close look at terrorism and presents a review of the literature on this specific issue. The technical part in Section IV describes the method employed and the results obtained, followed by Section V with some conclusions.

2. The Greek current account

The current account deficit reached a spectacular 14.6% of the GDP in 2008 compared with an already high 14.4% of the GDP in 2007 and an average of about 10% of the GDP during the period 2003-2008; it declined to 11.2% in 2009 as a result of the conditions prevailing in the domestic and international economic environment. Despite the fact that a part of this huge deficit is counterbalanced by capital transfers, the

remainder, necessitating financing on the financial account, has risen to 12.8% of the GDP in 2008 compared to a 5.8% for 2003¹.

The main reason underlying the current account deficit rise is the low price and cost competitiveness performance of the Greek economy, a situation which is aggravated in cases of an appreciating euro (Bank of Greece 2010). The net oil bill is an additional burden to the trade deficit, but this is a problem about which nothing much can be done given the low price elasticity of demand and the high levels of energy dependence which characterise the economy and becomes more pronounced in an environment of high growth rates.

The services balance, has always financed a large part (about 40%) of the trade deficit. This has been all the more so since the decade of the 1980s when the economy slowly but gradually was transformed into a services economy, with all drawbacks such an economy may entail. In fact, the vulnerability of a current account reliant on services, due to the volatility of the proceeds of services, has been repeatedly exhibited in the Greek case. For example, the considerable decline in transport receipts after 2004 was a result of the fall in international freight rates which, for both the dry and the dirty bulk indices, recorded historical highs during the 2002-2003 period.² As regards tourism, international experience has shown how travel directives issued by state authorities can have a profound effect on travel proceeds, especially during a period of heightened terrorist activity or health epidemics.

Thus during the last few years, and particularly after 2004, the surplus on the services account, which is almost exclusively composed of travel and transportation net receipts, finances increasingly smaller trade deficit (as a percentage of GDP). Net travel receipts, in particular, which represent about half of the total surplus on the services

¹ According to the monetary authorities (Bank of Greece 2009), this disappointing performance, which reflects an excess of investment demand over national savings, can be attributed to excessive domestic demand during the last few years. This, in its turn, is reflected in the rise of the private consumption expenditure fostered by the boost in the consumer credit expansion.

² In fact the fall in the freight rates led to a decline in the rate of growth of transport receipts during the recent past from 39.0% in 2004 down to 4.2% in 2005 and 3.3% in 2006.

account, amounted to 3.4% of GDP in 2009 and financed 26% of the trade deficit during a year in which the performance of travel activity was more or less disappointing³.

The largest share of travel services revenue comes from EU-27 member-countries arrivals. However, over the last two years their share has been showing a downward trend. Approximately two-thirds of Greek travel revenue comes from residents of euro area, whose participation in all travel receipts amounted to 47.6% in 2008. Concerning the number of visitors, the two most important countries of origin are Germany and the UK with their respective shares to total arrivals being 16.5% and 16.1%. These shares, however, have declined by about two or even three percentage points in 2008 following the overall decline of the EU-27 shares during the recent past. Such developments may be counterbalanced in the future, however, by means of penetration into new, promising markets such as Russia or a number of emerging countries (Karapappas and Klouri 2010).

3. Introducing terrorism into the equation

It has been almost impossible to agree on a universally-accepted definition of terrorism in the literature. A plausible version would be the one offered by Harley and Sandler (2007) which argues that “terrorism as a form of non-conventional conflict is defined as “the premeditated use, or threat of use, of extra-normal violence or brutality to gain a political objective through intimidation or fear”. However, this definition leaves a lot to be desired as it provides ample room for subjective evaluation. Thus, one may start posing questions like e. g. to what extent could there ever be a level of violence or brutality that could be considered “normal”, or whether what one side may call “political objective”, the opposing side may define as a “threat to political stability” There is therefore a strong subjective element involved in this case that causes major difficulties to agreeing on a widely-accepted definition.

³ During 2009, in particular, net travel receipts fell by 10.6% while arrivals declined by 6.4%, the average length of stay remained flat, while the average expenditure per journey declined.

Moreover, in cases in which the target of a terrorist strike lies or belongs to another country then terrorism assumes a transnational dimension. This is a possibility that contributes to the publicity of the terrorists' cause especially when the international media focuses on it.

The reasoning underlying a terrorist plan is very close to that of a business venture, comparing costs to benefits. However, the same train of thought is followed by the opponent, namely the state authorities. Thus a terrorist "venture" will be considered successful if it convinces the authorities that the costs from yielding to the terrorists' demands are lower than the costs from not giving in to such demands. Thus, the cost imposed on society following a terrorist attack is regarded as being in direct proportion to the benefit derived by terrorists. One needs to focus, however, on the concept of the cost itself distinguishing between direct and indirect costs. The first category encompasses any form of direct losses following a terrorist attack (death, injury, infrastructure damage). Indirect costs, by contrast, refer to parallel losses in terms of higher insurance premiums and security cost. This paper has opted for incorporating only the direct losses due to the difficulties encountered when attempting to assess the indirect aspect of the costs of terrorism.

Given, however, that the choice of the terrorism variable entails, in any case, some degree of judgment, it is useful to know to what extent the results change when alternative variables are used. A reasonable choice to begin with is the number of incidents occurring on an annual basis at a global level. A plausible alternative, tailored to fit the Greek case, would be the terrorist incidents taking place only in Europe, bearing in mind that the overwhelming share of tourists come to Greece from European countries. And, of course, following Fray et al. (2007), a third possible variable is that representing terrorist casualties in terms of both dead and wounded again in Europe which is the main source of visitors to Greece. Finally, attacks that took place specifically in Greece have been selected as a fourth alternative representing terrorism in the function.

A different approach distinguishes between the macro and micro aspect of the cost, with the latter including the impact upon the cost structure of certain specific industries whereas the former describes the impact of a terrorist attack in terms of the cost incurred

at a national or international level. In our case, however, we feel that it would be more appropriate to restrict our analysis to the macro level, given that touching upon any micro aspects would require a wide selection of data and information at a business level which may be far from reliable in the Greek case.

Focusing on the macro aspect of the analysis, it is important to remember that national income as well as its growth rate can affect the extent to which a country can sustain the impact of a terrorist strike and avoid, in parallel, any adverse consequences for the economy. This happens because such strikes usually impose an adverse impact on international economic transactions and consequently production and economic activity. Such consequences are not expected to be equally disastrous for all economies that suffer terrorist attacks, but rather be influenced by their degree of development. Developed economies like the US, for example, can trigger more and better mechanisms through monetary or fiscal policy and use them to mitigate or even eliminate the consequences of a terrorist attack. The same applies for the money market of such countries that can easily recover following a terrorist strike and regain the investors' confidence. Developing economies, by contrast, are much more vulnerable because their production potential is usually concentrated on a small number of sectors like tourism (Sönmez, 1999). This means that a terrorist attack on one such sector is expected to impose a severe burden on the economy as a whole, sometimes bringing about disproportionately extensive adverse consequences on the country's GDP.⁴ One might expect, therefore, that, despite the fact that Greece cannot exactly be considered a developing country, the cost that its tourism industry would suffer following a terrorist attack would be considerable given its weight in the country's economy.

A further, equally important issue considered in the literature is the possibility that terrorist activity generates contagion between economies. For example, an increase in terrorist activity in country A entails a rise in the cost of its transactions and in such a case there will be a trade diversion effect away from country A to another one⁵. This

⁴ Following the Bali tragedy in 2002, for example, the impact on the country's GDP was described by a spectacular drop (Pambudi et al. 2009).

⁵ Transaction costs are not directly accrued in the value chain, but rather during the exchange of goods, services, and information. Ultimately, progress in globalization is a result of drastically lowered transaction

means that terrorism can be regarded as equivalent to imposing a tax or a tariff distorting free trade flows and raising transaction costs⁶. This is a fact that applies not only in the case of goods but also in the case of services, tourism in particular. Thus terrorist activity in a specific country is expected to benefit alternative travel destinations, although there are views that argue that alternative neighbouring destinations will share the adverse terrorist impact in cases in which tourists expect that the terrorist activity will expand to adjacent countries⁷.

The fact remains, however, that terrorism affects the choice of travel destination in more ways than one⁸. Finally, as pointed out earlier, it seems that tourism must be regarded as a rather volatile revenue source in the sense that a travel directive following an attack at any given time period will significantly reduce travel receipts diverting the flow of tourists to alternative destinations. This reaction has come to render terrorist strikes a very popular and effective way of exercising economic sabotage⁹.

It becomes obvious, therefore, that the regression employed in this paper has been designed to incorporate the effects of terrorism in more ways than one: directly, via an appropriately selected terrorism variable; and indirectly through any possible effects of

costs, especially in telecommunications and logistics systems. This category also includes lowered transaction costs in insurance, controlling, or travel. In this context, even “psychological costs”—like the fear of travelling to a particular country—must be viewed as transaction costs. Transaction costs have clearly skyrocketed since the September 11 terrorist attack.

⁶ Indeed, in a globalized environment there is the view that violence harms the economy in the sense that happens with the introduction of any intervention in the process of free trade. Therefore the government, which by definition is responsible (accountable) to the citizens to maximize the good "public safety" reacts to surge of terrorism increase, by defence spending. The case of higher defence spending to combat terrorism is perhaps the only case in the literature to which one may admit that there really is no question of 'peace dividend' in the sense that the term is used in Economics of Defence (e. g. Hartley and Sandler, 2007).

⁷ Araña and León, (2008).

⁸ There has always been an open issue in the literature as to the direction of causality between travel arrivals and terrorism incidents. Enders and Sandler (1991) find that there is a unidirectional causality between the two variables with terrorism affecting tourism, but not the reverse. For the purposes of this paper, a Granger causality test proved inconclusive.

⁹ For example, Enders and Sandler (1991) have calculated that the eighteen terrorist strikes that Spain suffered in 1988 reduced the number of arrivals by 50% per cent .It has also been calculated that Austria and Greece suffered arrival losses of the order of 40 and 25%, respectively, following terrorist attacks that took place between 1974 and 1988.

international terrorism on the prices of the host country in an effort to counterbalance the adverse repercussions following a terrorist attack¹⁰.

4. Empirical results

As already stated above, the paper uses three alternative terrorism measures, namely terrorist attacks at both European as well as at an international level while a third alternative is the number of casualties (both dead and wounded) suffered as a result of such attacks in Europe. The option of using terrorist attacks in Greece yielded very poor results and was, therefore, abandoned¹¹. However, the effects of terrorism may also be felt through the price of tourist services in the host country. Finally, there is always the possibility of an indirect influence from terrorism via its impact on the economic environment of the countries of origin, some of which have been suffering serious terrorist incidents.

Focusing on data sources on terrorism, the paper has resorted to using the Global Terrorism Database (GTD) which provides detailed information on over 80,000 terrorist events around the world since 1970. The database contains a number of measures of international terrorism including the number of deaths, the number of casualties and, of course, number of incidents.¹²

A typical long-run export volume function is expected to contain foreign demand and relative prices. The appropriate explanatory variables chosen to determine travel arrivals to Greece (ARR) are the income of the countries of origin (YF) and both

¹⁰ To the extent that terrorist attacks bring about an adverse impact on the target country's national income, then one might expect its effects to appear in the export function used through any changes in the economic environment of the countries of origin. However, there is no hard evidence on this in the literature so far. (Wang, 2009).

¹¹ The failure of the domestic terrorist incidents to determine travel arrivals has been occasionally justified in the sense that the majority of such strikes have occurred in the greater Athens area whereas the bulk of tourist activity takes place in the provinces and the islands, with Athens remaining just a transit destination. It must also be kept in mind that domestic terrorist incidents do not include extensive riots following massive demonstrations in Athens like the ones that took place during late 2008, as well as during 2010. The possibility of using domestic terrorist incidents was considered; however, it generated unsuccessful results and was therefore abandoned.

¹² For an extensive discussion on the use of the variable representing terrorism activity see e. g. Frey et al. (2007).

domestic and competitors' prices (CPIG) and (CPIF). Thus: The estimation period ranges between 1980 and 2009 using annual data in log form (Table 2).

$$ARR = f(YF, CPIG, CPIF)$$

The use of the number of arrivals as a dependent variable rather than travel receipts aims at avoiding collinearity problems with the price variables used as independent variables. The income variable is composed of the weighted average of income growth rates of the top nine countries of origin for arrivals in Greece, the weights representing the share of each of these countries in total arrivals in Greece. Given the extensive time period covered, the weights are allowed to vary annually to account for any possible structural changes occurring in the pattern of trade flows. Despite the fact that Cyprus is one of the top countries of tourism origin, it has been excluded from the basket used in order to avoid including a large number of arrivals for business purposes which would distort the picture. It must also be borne in mind that the length of the income series that extends back to 1980 has made it necessary to express the relevant figures in dollar terms to avoid any breaks in the series resulting from the Eurozone membership of the country.

Domestic prices are represented by the Greek CPI. This is considered preferable to a variable that represents domestic price developments as a weighted average of the local CPI and the prices offered by the hotels in the receiving country. Prices offered by the hotels suffer considerable reductions in the period between the signing of the contract, which is towards the end of the previous year, and the last minute booking period which is usually June or even July of the current year.

The competitors' price variable is the weighted average of the consumer price indices of the four main competitor countries, namely Italy, Spain, Portugal and Turkey, expressed in dollar terms. France has been excluded from the basket given that the package offered by France is not comparable to that of the four main competitors or that offered by Greece, which exhibit a strong seasonal pattern, with an emphasis on offering a combination of "sun and sea", without expanding on alternative forms of tourism. The weights used in this case are the shares of these four competitor countries in international travel activity; these weights are allowed to vary each decade to account for the long data period.

These series are initially tested for stationarity and Table 1 suggests that they all have a unit root. Hence, first differences of these series (the prefix D denoting first differences of the corresponding variables) are used in the short-run equations presented in Table 3.

Table 1: ADF Test Results (5% t-statistic -2.95)

Variable	ADF Critical Value
L. R. EQUATION RESIDUALS	-5.73
ARR	-1.15
YF	-2.19
CPIG	0.36
CPIF	-1.28
DARR	-5.00
DYF	-3.11
DCPIG	-4.10
DCPIF	-4.33

Table 2: Estimation results of the long-run arrivals function

DEPENDENT VARIABLE: ARR	COEFFICIENT	t- STATISTIC
CONSTANT	0.1617	0.6308
YF	1.096	12.2325
CPIG	-0.3959	-2.4125
CPIF	0.2688	1.8269

Table 3: Estimation results of the short-run arrivals function

DEPENDENT VARIABLE: DARR	COEFFICIENT (t – Statistic)	COEFFICIENT (t – Statistic)	COEFFICIENT (t – Statistic)
CONSTANT	-0.0084 (-0.3153)	0.0004 (0.0136)	-0.0050 (-0.1928)
DYF	3.3543 (7.1835)	3.3283 (6.8536)	3.1646 (7.1393)
DYF(-1)	-2.1611 (-4.6391)	-2.2576 (-4.5095)	-2.0508 (-4.5600)
DCPIG(-1)	-0.5732 (-3.1694)	-0.6018 (-3.1974)	-0.5319 (-2.9915)
DCPIF(-1)	0.3334 (2.3045)	0.3518 (2.3298)	0.3034 (2.1434)
DTERRINC	-0.0164 (-2.0745)		
DTERRINCE		-0.0078 (-1.6730)	

Table 3: continued

DTERRCASE			-0.0057 (-2.2983)
DPOIL(-1)	-0.0838 (-3.0582)	-0.0615 (-2.2342)	-0.0815 (-3.0828)
DEV	0.0508 (2.9069)	0.0525 (2.9050)	0.0609 (3.5045)
EURO	0.0068 (2.2767)	0.0053 (1.7685)	0.0055 (1.9617)
EX	0.0733 (4.0693)	0.0737 (3.9382)	0.0757 (4.2684)
RESIDUALS(-1)	-0.3488 (-2.9347)	-0.3515 (-2.8563)	-0.3824 (-3.2856)
R ²	0.84	0.82	0.85
S. E.	0.029	0.030	0.028
D. W.	2.56	2.690	2.687

The equations reported in Table 3 above show that, in the short run, travel arrivals (ARR) depend, in addition to income (YF) and prices - both domestic (CPIG) and foreign (CPIF) - on a number of variables. These are international oil prices (POIL), the three drachma devaluations that occurred in 1983, 1985 and 1998 (DEV), Eurozone membership of the country (EURO) and, our variable of particular interest, international and European terrorist incidents (TERRINC and TERRINCE) with their alternative being the casualties suffered as a result of terrorist attacks in Europe (TERRCASE). Finally, an extra variable (EX) has been used to take into account the effect of major exogenous disturbances on the travel flows to Greece. Note that the short-run equations include the lagged residuals of the long-run corresponding version (Table 2) which have been tested and found to be stationary (Table 1).

More specifically arrivals to Greece appear to be elastic with respect to income, during both the previous as well as the current year indicating that tourism is regarded as being a luxury good. This is not surprising since the majority of tourists to Greece belong to the middle or low income class brackets. Behaviour with regard to price changes, however, is inelastic. Concerning the behaviour of hotel owners and the question of whether they are price makers or takers in the market, it is important to point out that domestic market conditions are mainly dependent on the European market and more specifically on major European tour operators. This fact tends to cause considerable downward pressure on prices between their announcement and the signing of contracts. Tour operators seem reluctant to agree to sign contracts at the rather high prices offered by Greek hotels before the beginning of the season. Such tactics eventually cause Greek hotels to become price takers as they are forced to offer reduced prices in terms of last-minute bookings and “all-inclusive” packages aiming at covering at least their variable costs¹³. It goes without saying that under these circumstances and since operational costs are rising, the profitability of the tourist sector and the quality-to-price ratio are reduced to their minimum¹⁴. The inelastic behaviour of arrivals to oil price changes is more or less expected and adds to the inelastic response of arrivals to price since transportation costs constitute a large part of the tourist package price.

It is interesting to point out that it takes one year for most of the explanatory variables to influence travel arrivals in the short run. This is to be expected given that travel contracts with tour operators are usually signed sometime towards the end of the year prior to the travel period concerned. These tactics gave tour operators a major advantage during the period before Greece entered the euro area, given that the prices provided for in the contracts signed were expressed in drachma terms during a period in which the drachma followed a depreciating trend. This is the reasoning that accounts for the use of the dummy variable (DEV) capturing the effect of devaluations, as well as the

¹³ The recent (July 2010) government plans to restrict such tactics possibly aiming at attracting visitors belonging to higher income brackets has encountered fierce opposition from the part of the Greek tourism industry that was pressing instead for a VAT reduction.

¹⁴ An excellent analysis of the costs and profitability of the travel industry is found in the “Annual Travel Report”, Hellenic Chamber of Hoteliers, 2009, in which attention is drawn to the conclusion of reduced profitability in the industry for the past few years. It is hoped, however, that the recent ministerial decision for a VAT reduction from 11% down to 6.5% will contribute to the cost-competitiveness improvement of the Greek tourism industry.

application of a time trend (TEURO) to represent the influence of the period post euro area entry, with both variables having strong explanatory power. Finally, the volatility of travel arrivals is sensitive to exogenous disturbances. The variable (EX) provides for the response of tourism activity in Greece to the Gulf War, the Imia crisis and the recent recession in the domestic environment. All variables have the expected signs and they are significant at the 5% level. The explanatory power of the equations is substantial (82% to 85%) with the standard error of the regression limited to about 2.5%.

Focusing on the main question set by the paper, the equations in Table 3 suggest that, although terrorism, as represented by all three measures, appears significant in determining tourist arrivals in Greece, it appears that the variable measuring casualties resulting from terrorist attacks in Europe is marginally better. The fact remains, however, that in all cases the degree of responsiveness of the rate of arrivals to all three measures of terrorist activity seems to be rather weak, a view that seems consistent with other results in the literature (Aly and Strazicich, 2004) that argue in favour of the transitory impact of terrorist attacks on the flow of tourists to a specific destination

Diagram 1: Rate of travel arrivals in Greece and terrorist casualties in Europe

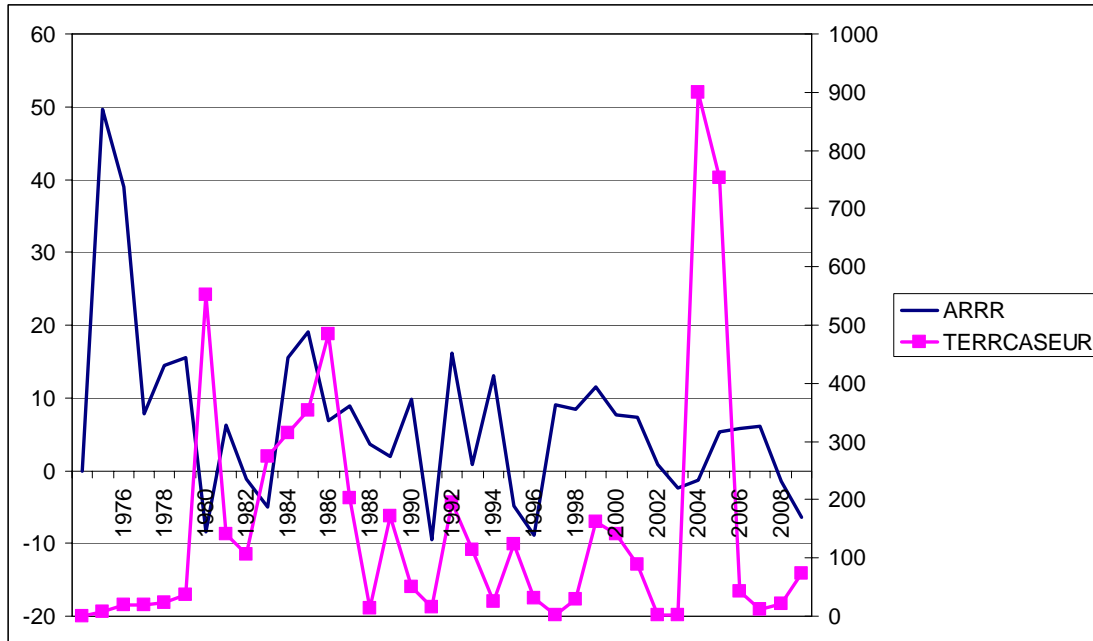


Diagram 1 depicts the extent to which the arrivals rate responds to terrorist strikes in Europe the latter expressed in terms of casualties suffered with its values denoted on the right-hand axis. A first glance may tend to convince the reader that there may have been periods during which culmination of terrorist activity in Europe may have discouraged travel arrivals to Greece. One must bear in mind, however, that foreign travel activity to Greece is affected by a wide selection of variables, including terrorism, of course. For example, Diagram 1 shows that 1991 marks a considerable drop of tourist arrivals to Greece. That specific year coincides with increased ETA Basque terrorist activity in Barcelona and a number of bombings in Constantinople, by the PKK, but it is also the year during which the Gulf War in Iraq took place, thus discouraging a number of prospective visitors to Greece. By contrast 2005 shows an increase in visitors to Greece over 2004, which itself was not just any random year, but the one during which the Olympic Games in Athens took place; the considerable terrorist activity in the UK during 2005 does not appear to have discouraged visitors to Greece.

The limited explanatory effect of terrorist activity on travel to Greece can be rationalised by the situational choice model used by Moss et al. (2007) which breaks tourists' behaviour down into three coordinates, namely problem recognition, constraint recognition and level of involvement¹⁵. Given that the overwhelming majority of tourists travelling to Greece come from Germany, the UK, France, the Netherlands and the Scandinavian countries, the "problem" and "constraint recognition" dimension as well as that describing the "level of involvement" affect one source of tourist visitors at a time, namely the country where the terrorist attack took place, leaving all other countries of origin unaffected. This diversion of the detrimental effect of terrorism upon travel activity restricts the adverse repercussions of the former upon the latter and explains the low degree of responsiveness of tourist arrivals to Greece to terrorist casualties in Europe.

¹⁵ Taking as an example the 2005 terrorist attacks in the UK, the three effects are broken down as follows: The travelling public in the UK felt that the specific attack significantly increased the danger associated with travel in the specific country (problem recognition), that they had no control over the increased danger (constraint recognition), and the event was personally relevant (level of involvement). A prospective traveller to Greece from Scandinavia, however, is not expected to be affected by this reasoning.

5. Conclusions

The services sector and especially its main items in the Greek current account namely travel and transportation receipts have always been considered as being notoriously volatile. It has thus been commonly thought that it may require just a minor exogenous disturbance to upset the flow of receipts from tourism thus threatening the financing of the trade deficit. This paper shows that, despite strong theoretical reasons for thinking that tourism might be affected by terrorism, empirically the impact of a major terrorist attack at a global level is found to be small. This is consistent with the situational choice model which leaves ample room for a wide selection of additional explanatory variables to determine the number of arrivals to Greece. Indeed the elasticities of arrivals with respect to income and both domestic and foreign price changes are much higher than the elasticity with respect to terrorist attacks. The parallel adverse repercussions resulting from the implications of a terrorist attack on the incomes of the sending countries do not seem to be enough to make matters worse. Finally, the possibility that providers of tourist services in Greece offer price decreases, to counterbalance the adverse effects of terrorism are rather remote given that in an environment of late bookings and all-inclusive strategies, the margins for price reduction are rather limited.

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